



# Anglia

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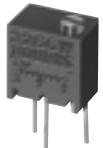
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Sandall Road, Wisbech,  
Cambs., PE13 2PS U.K.



## Product Range



### TRIMMERS



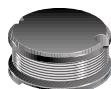
### FUSES



### DIALS



### ENCODERS



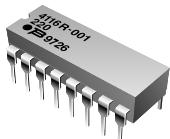
### INDUCTORS



### PANEL CONTROLS



### POTENTIOMETERS



### RESISTORS

## TRIMMERS

### Leaded

		Type
Single Turn	6mm round body, Open frame, Cermet, 100Ω - 1MΩ 1/4" round body, Sealed, Cermet, 10Ω - 1MΩ 1/4" square body, Sealed, Cermet, 10Ω - 2MΩ 9mm round body, Open frame, Cermet, 100Ω - 2MΩ 9mm round body, Open frame, Carbon, 100Ω - 1MΩ 3/8" square body, Sealed, Cermet, 10Ω - 2MΩ	3306 3329 3362 3309 3319 3386
Multiturn	1/4" square body, Sealed, Cermet, 10Ω - 1MΩ 1/4" square body, Sealed, Cermet, Standoffs, 10Ω - 1MΩ 5/16" round body, Sealed, Cermet, 10Ω - 1MΩ 3/8" square body, Sealed, Cermet, 10Ω - 5MΩ 3/8" square body, Sealed, Cermet, Quality drive, 10Ω - 2MΩ 3/8" square body, Sealed, Cermet, Narrow profile, 10Ω - 1MΩ 3/4" rectangular body, Sealed, Cermet, 10Ω - 2MΩ Panel adapter for 3006 trimmer 1 1/4" rectangular body, Sealed, Cermet, 10Ω - 2MΩ	3262 3266 3339 3296 3299 3292 3006 H-83P 3059

### Surface Mount

Single Turn	3mm, Open frame, Cermet, 100Ω - 1MΩ 4mm square body, Open Frame, Cermet, 100Ω - 1MΩ 4mm square body, Sealed, Cermet, 10Ω - 2MΩ 4mm square body, Sealed, Cermet, 100Ω - 2MΩ	3303 3364 3374 3314
Multiturn	4mm square body, Sealed, Cermet, 5-turn, 10Ω - 2MΩ 4mm square body, Sealed, Cermet, 11-turn, 10Ω - 2MΩ 1/4" square body, Sealed, Cermet, 10Ω - 1MΩ	3214 3224 3269

### Technical Information

## FUSES

### Radial

	Type
P.T.C. Resettable	MF-R
	MF-RX

### Axial

	Type
P.T.C. Resettable	MF-S
	MF-LR
	MF-LS

### Surface Mount

	Type
P.T.C. Resettable	MF-SM
	MF-MSM

### Technical Information

## DIALS

### 6.35mm Shaft

Turns-Counting	10-turn, 27mm dia., White on black, Positive brake, Front of panel 10-turn, 28mm dia., White on black, Positive brake, Recessed 15-turn, 22.2mm dia., Black on chrome, Positive brake 15-turn, 22.7mm dia., White on black, Positive brake 20-turn, 46mm dia., Black on chrome, Locking brake 30-turn, 25.4mm dia., White on black, Locking brake, Aluminium body 30-turn, 25.4mm dia., White on black, Locking brake, Black body	Type
	CT-23	CT-23
	CT-26	CT-26
	H-22	H-22
	H-506	H-506
	H-46	H-46
	H-492	H-492
	H-494	H-494

## ENCODERS

Rotary Optical	64-256 PPR, 2-channel quadrature output
Rotary Incremental	6-16 PPR, 9mm square, 2-bit gray code output, Sealed
Rotary Digital Contacting	6-24 PPR, 24 detents, Incremental encoder/quadrature output
Absolute Contacting	128 states/revolution, 8-bit gray code/digital output

Type
EN
3315
ECW
EAWS

## INDUCTORS

### Surface Mount

0603 Chip	0.0015µH - 0.1µH, 200mA - 500mA	Type
0805 Chip	0.0039µH - 1µH, 120mA - 540mA	CM16
1008 Chip	0.01µH - 100µH, 60mA - 280mA	CM20
1210 Chip	0.047µH - 220µH, 45mA - 450mA	CM25
1812 Chip	0.1µH - 1000µH, 30mA - 800mA	CM32
Chip Packaging	For CM series inductors	CM45
7.8mm dia. Power	10µH - 470µH, 0.34A - 2.3A	SDR0805
9.8mm dia. Power	10µH - 820µH, 0.24A - 2.6A	SDR1006

### Radial

High Current	3.3µH - 1000µH, 0.30A - 3.6A	RLB0914
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## PANEL CONTROLS

### Single Turn

Slimline	1kΩ - 10kΩ, 0.75W, Conductive plastic element, slimline	Type
9mm Square	1kΩ - 1MΩ, 0.25W, Conductive plastic element	PCW
12.5mm (1/2") Square	1kΩ & 10kΩ, 0.25W/1W, Conductive plastic/Cermet element	3310
16mm (5/8") Square	1kΩ & 10kΩ, 2W, Cermet element	51
16mm (5/8") Square	1kΩ - 1MΩ, 0.5W, Conductive plastic element	81
		91

## POTENTIOMETERS

### Rotary Shaft

Precision, Multiturn	10-turn, 1kΩ - 10kΩ, 5W, Bush mounting, Wirewound element 10-turn, 500Ω - 200kΩ, 2W, Bush mounting, Wirewound element 10-turn, 100Ω - 100kΩ, 2W, Bush mounting, Wirewound element, General purpose 3-turn, 1kΩ - 10kΩ, 1W, Bush mounting, Wirewound element 10-turn, 200Ω - 100kΩ, 2W, Bush mounting, Wirewound element, High withstand	Type
	3400	3400
	3500	3500
	3540	3540
	3543	3543
	3590	3590
Precision, Single Turn	Continuous, 5kΩ & 10kΩ, 1W, Servo mounting, Conductive plastic element Continuous, 1kΩ - 10kΩ, 1W, Servo mounting, Conductive plastic element, Ball bearing Continuous, 1kΩ - 10kΩ, 1W, Servo mounting, Conductive plastic element Continuous, 1kΩ - 20kΩ, 1W, Bush mounting, Conductive plastic element Continuous, 1kΩ - 10kΩ, 1W, Bush mounting, Conductive plastic element, MIL-STD-202 Continuous, 1kΩ - 10kΩ, 1.5W, Bush mounting, Conductive plastic element, MIL-STD-202	6537
	6538	6538
	6539	6539
	6639	6639
	6637	6637
	6657	6657

### Visual Readout

Precision, Analogue	10-turn, 1kΩ - 10kΩ, 1.5W, Bush mounting	Type
Precision, Digital	10-turn, 1kΩ - 10kΩ, 1.5W, Snap-in	3600
Precision, Digital	Pushbutton, 1kΩ - 1MΩ, 2W, Snap-in, 2 decade	3610
Precision, Digital	Pushbutton, 1kΩ - 1MΩ, 2W, Snap-in, 3 decade	3682
	Panel seal assembly for 3682/3683 potentiometers	3683
		H-385

### Technical Information

## RESISTORS

### Leaded

DIL Network	Isolated/commoned/dual terminator, 10Ω - 1MΩ, 14/16 pin, 7 - 28 resistors	Type
SIL Network	Isolated/commoned/dual terminator, 10Ω - 1MΩ, 5 - 10 pin, 3 - 9 resistors	4100R Series

4100R Series  
4600X Series

### Surface Mount

Moulded Body Network	Isolated/commoned, 10Ω - 1MΩ, 14/16 pin, 7 - 15 resistors	Type
1206 Chip Network	4 isolated element, 10Ω - 1MΩ, Concave/Convex terminals	4800P Series CAT/CAY

## BOURNS type 3306 (6mm round)

Open frame, single turn cermet trimming potentiometers in a range of values from 100Ω to 1MΩ and in a choice of top or side adjust orientations. The devices are fitted with dust/splash resistant covers.



- 6mm round body
- Cermet element
- Open frame construction
- Dust/splash resistant covers
- P.C.B. stand-offs & retention
- Single turn
- Top or side adjust (cross slot rotor)

### Specification

#### Electrical Characteristics

Resistance range	100Ω to 1MΩ
Resistance tolerance	±25%
Absolute minimum resistance	2% max. ( $\leq K = 30\Omega$ )
Contact resistance variation	3% max.
Resolution	Infinite
Adjustment angle	215° nominal

#### Environmental Characteristics

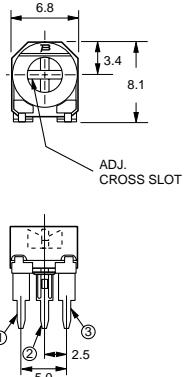
Power rating	0.2W @ 100V/70°C max
Temperature range	-25°C to +100°C
Temperature coefficient	±250ppm/°C
Load life	1000 hours 0.2W @ 70°C
total resistance shift	5% max.

#### Physical Characteristics

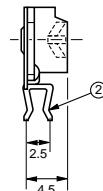
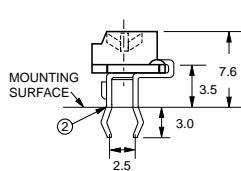
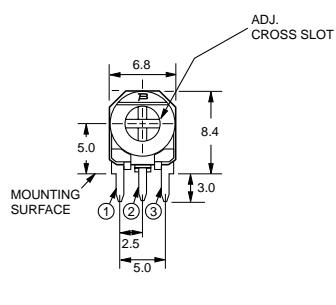
Operating torque	3.15Ncm max.
Stop strength	4.55Ncm min.

### Dimensions (mm)

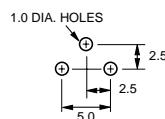
3306P (top adjust)



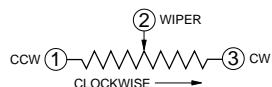
3306W (side adjust)



### P.C.B. Layout



### Circuit Diagram



● Other Styles Available

Please contact our Sales Dept. for details

**SPLT** 300pcs Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

## **BOURNS type 3329 (1/4" round)**

Sealed, single turn cermet trimming potentiometers in a range of values from 10Ω to 1MΩ. The devices are available in a choice of terminal configurations and top or side adjust orientations.



- 1/4" round body
- Cermet element
- Sealed (with stand-offs) for board washing
- Single turn
- 3 style options, top or side adjust

### Specification

#### Electrical Characteristics

Resistance range.....	10Ω to 1MΩ
Resistance tolerance .....	±10%
Absolute minimum resistance .....	1Ω or 2Ω max. (whichever is greater)
Contact resistance variation .....	3% or 3Ω max. (whichever is greater)
Voltage adjustability .....	±0.05%
Resistance adjustability .....	±0.15%
Resolution .....	Infinite
Insulation resistance .....	1000MΩ min. @ 500Vd.c.
Dielectric strength .....	600V.a.c.
Adjustment angle .....	240° nominal

#### Environmental Characteristics

Power rating .....	0.5W @ 300V/85°C max
Temperature range .....	-55°C to +150°C
Temperature coefficient .....	±100ppm/°C
Seal test.....	85°C Fluorinert™
Humidity .....	MIL-STD-202 method 106, 96 hours total resistance shift ..... 3% max./10MΩ insulation resistance
Vibration .....	30G total resistance shift ..... 1% max. voltage ratio shift ..... 1% max.
Shock .....	100G total resistance shift ..... 1% max. voltage ratio shift ..... 1% max.
Load life .....	1000 hours 0.5W @ 85°C total resistance shift ..... 3% max. contact resistance variation ..... 3% max.
Rotational life .....	200 cycles total resistance shift ..... 4% max. contact resistance variation ..... 4% max.

#### Physical Characteristics

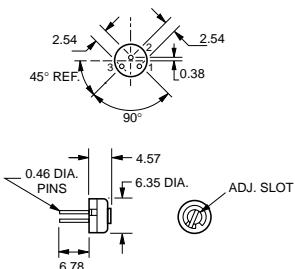
Operating torque .....	3.5Ncm max.
Stop strength .....	3.5Ncm min.
Wiper positioning .....	50% nominal

Value (Ω)	Bourns Part No. & <i>Anglia</i> Order Code	3329H	3329P	3329W
10R	3329H-1-100	3329P-1-100	3329W-1-100	
20R	3329H-1-200	3329P-1-200	3329W-1-200	
50R	3329H-1-500	3329P-1-500	3329W-1-500	
100R	3329H-1-101	3329P-1-101	3329W-1-101	
200R	3329H-1-201	3329P-1-201	3329W-1-201	
500R	3329H-1-501	3329P-1-501	3329W-1-501	
1K	3329H-1-102	3329P-1-102	3329W-1-102	
2K	3329H-1-202	3329P-1-202	3329W-1-202	
5K	3329H-1-502	3329P-1-502	3329W-1-502	
10K	3329H-1-103	3329P-1-103	3329W-1-103	
20K	3329H-1-203	3329P-1-203	3329W-1-203	
25K	3329H-1-253	3329P-1-253	3329W-1-253	
50K	3329H-1-503	3329P-1-503	3329W-1-503	
100K	3329H-1-104	3329P-1-104	3329W-1-104	
200K	3329H-1-204	3329P-1-204	3329W-1-204	
250K	3329H-1-254	3329P-1-254	3329W-1-254	
500K	3329H-1-504	3329P-1-504	3329W-1-504	
1M	3329H-1-105	3329P-1-105	3329W-1-105	

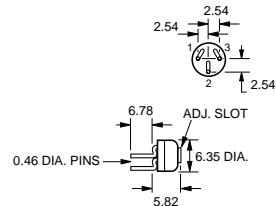
**SPLT** 50pcs Manufacturers smallest factory pack quantity for lot integrity and traceability.

#### Dimensions (mm)

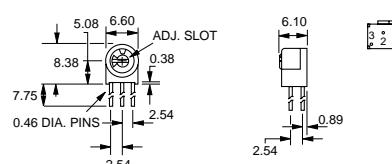
3329H (top adjust, 2.54 x 2.54mm footprint)



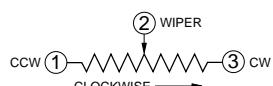
3329P (top adjust, 2.54 x 5.08mm footprint)



3329W (side adjust, 2.54 x 5.08mm footprint)



#### Circuit Diagram

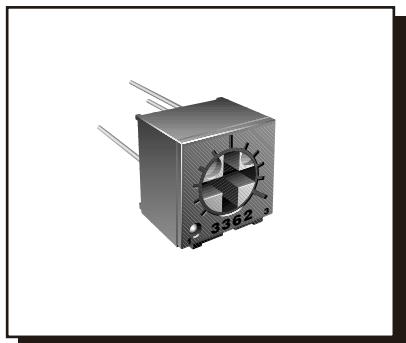


 • Other Styles Available

Please contact our Sales Dept. for details

## BOURNS type 3362 (1/4" square)

Sealed, single turn cermet trimming potentiometers in a range of values from  $10\Omega$  to  $2M\Omega$ . The devices are available in a choice of terminal configurations and top or side adjust orientations.



- 1/4" square body
- Cermet element
- Sealed (with stand-offs) for board washing
- Single turn
- 4 style options, top or side adjust (cross slot rotor)

### Specification

#### Electrical Characteristics

Resistance range	10 $\Omega$ to 2M $\Omega$
Resistance tolerance	$\pm 10\%$
Absolute minimum resistance	1% or 2 $\Omega$ max. (whichever is greater)
Contact resistance variation	1% or 3 $\Omega$ max. (whichever is greater)
Voltage adjustability	$\pm 0.05\%$
Resistance adjustability	$\pm 0.15\%$
Resolution	Infinite
Insulation resistance	1000M $\Omega$ min. @ 500Vdc.
Dielectric strength	900Vac.
Adjustment angle	240° nominal

#### Environmental Characteristics

Power rating	0.5W @ 300V/70°C max
Temperature range	-55°C to +125°C
Temperature coefficient	$\pm 100\text{ppm}/^\circ\text{C}$
Seal test	85°C Fluorinert™
Humidity	MIL-STD-202 method 103, 96 hours total resistance shift 2% max./10M $\Omega$ insulation resistance
Vibration	30G
total resistance shift	1% max.
voltage ratio shift	1% max.
Shock	100G
total resistance shift	1% max.
voltage ratio shift	1% max.
Load life	1000 hours 0.5Ω @ 70°C
total resistance shift	3%
contact resistance variation	3% or 3Ω max. (whichever is greater)
Rotational life	200 cycles
total resistance shift	4%
contact resistance variation	3% or 3Ω max. (whichever is greater)

#### Physical Characteristics

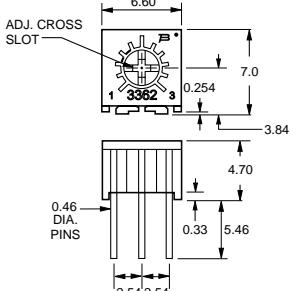
Operating torque	2.1Ncm max.
Stop strength	4.9Ncm min.
Wiper positioning	50% nominal
Flammability	UL94V-0

Value ( $\Omega$ )	Bourns Part No. & Anglia Order Code			
	3362P	3362U	3362W	3362X
10R	3362P-1-100	3362U-1-100	3362W-1-100	3362X-1-100
20R	3362P-1-200	3362U-1-200	3362W-1-200	3362X-1-200
50R	3362P-1-500	3362U-1-500	3362W-1-500	3362X-1-500
100R	3362P-1-101	3362U-1-101	3362W-1-101	3362X-1-101
200R	3362P-1-201	3362U-1-201	3362W-1-201	3362X-1-201
500R	3362P-1-501	3362U-1-501	3362W-1-501	3362X-1-501
1K	3362P-1-102	3362U-1-102	3362W-1-102	3362X-1-102
2K	3362P-1-202	3362U-1-202	3362W-1-202	3362X-1-202
5K	3362P-1-502	3362U-1-502	3362W-1-502	3362X-1-502
10K	3362P-1-103	3362U-1-103	3362W-1-103	3362X-1-103
20K	3362P-1-203	3362U-1-203	3362W-1-203	3362X-1-203
25K	3362P-1-253	3362U-1-253	3362W-1-253	3362X-1-253
50K	3362P-1-503	3362U-1-503	3362W-1-503	3362X-1-503
100K	3362P-1-104	3362U-1-104	3362W-1-104	3362X-1-104
200K	3362P-1-204	3362U-1-204	3362W-1-204	3362X-1-204
250K	3362P-1-254	3362U-1-254	3362W-1-254	3362X-1-254
500K	3362P-1-504	3362U-1-504	3362W-1-504	3362X-1-504
1M	3362P-1-105	3362U-1-105	3362W-1-105	3362X-1-105
2M	3362P-1-205	3362U-1-205	3362W-1-205	3362X-1-205

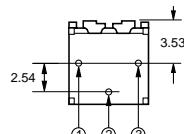
### Dimensions (mm)

#### Top Adjust

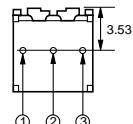
##### Common Dimensions



3362P (2.54 x 5.08mm footprint)

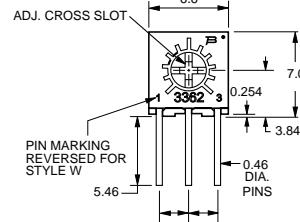


3362U (2.54 + 2.54mm footprint)

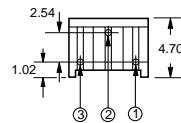


#### Side Adjust

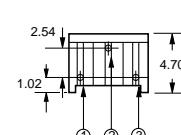
##### Common Dimensions



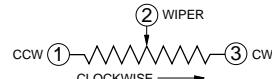
3362W (2.54 x 5.08mm footprint - reversed pin-out)



3362X (2.54 x 5.08mm footprint)



### Circuit Diagram



● Other Styles Available

Please contact our Sales Dept. for details

SPLT

50pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

## **BOURNS type 3309 (9mm round)**

Open frame, single turn cermet trimming potentiometers in a range of values from 100Ω to 2MΩ and a top adjust configuration. The devices are fitted with dust/splash resistant covers.



- 9mm round body
- Cermet element
- Open frame construction
- Dust/splash resistant covers
- P.C.B. stand-offs & retention
- Single turn
- Top adjust (cross slot rotor)

### Specification

#### Electrical Characteristics

Resistance range .....	100Ω to 2MΩ
Resistance tolerance .....	±25%
Absolute minimum resistance .....	2% max. ( $\leq 2K = 30\Omega$ max.)
Contact resistance variation .....	3% max.
Resolution .....	Infinite
Adjustment angle .....	235° nominal

#### Environmental Characteristics

Power rating .....	0.5W @ 250V/70°C max
Temperature range.....	-25°C to +100°C
Temperature coefficient.....	±250ppm/°C
Load life .....	1000 hours 0.5W @ 70°C total resistance shift..... 5% max.

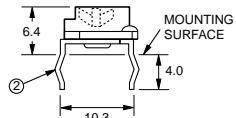
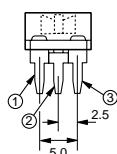
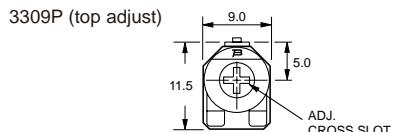
#### Physical Characteristics

Operating torque .....	3.5Ncm max.
Stop strength.....	7.7Ncm min.

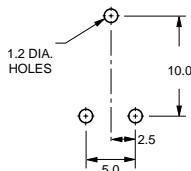
Value (Ω)	Bourns Part No. & <b>Anglia</b> Order Code
100R	3309P-1-101
200R	3309P-1-201
500R	3309P-1-501
1K	3309P-1-102
2K	3309P-1-202
5K	3309P-1-502
10K	3309P-1-103
20K	3309P-1-203
25K	3309P-1-253
50K	3309P-1-503
100K	3309P-1-104
200K	3309P-1-204
250K	3309P-1-254
500K	3309P-1-504
1M	3309P-1-105
2M	3309P-1-205

**SPLT** 200pcs Manufacturers smallest factory pack quantity for lot integrity and traceability.

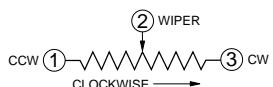
### Dimensions (mm)



### P.C.B. Layout



### Circuit Diagram



● Other Styles Available

Please contact our Sales Dept. for details

## BOURNS type 3319 (9mm round)

Open frame, single turn carbon trimming potentiometers in a range of values from 100Ω to 1MΩ and in a choice of top or side adjust orientations. The devices are fitted with dust/splash resistant covers.



- 9mm round body
- Carbon element
- Open frame construction
- Dust/splash resistant covers
- P.C.B. stand-offs & retention
- Single turn
- Top or side adjust (cross slot rotor)

### Specification

#### Electrical Characteristics

Resistance range .....	100Ω to 1MΩ
Resistance tolerance .....	±25%
End resistance .....	2% max. ( $\leq 2K = 30\Omega$ max.)
Contact resistance variation.....	3% max.
Resolution .....	Infinite
Adjustment angle .....	235° nominal

#### Environmental Characteristics

Power rating .....	0.2W @ 200V/70°C max.
Temperature range .....	-25°C to +100°C
Temperature coefficient.....	±1000ppm/°C
Load life .....	1000 hours 0.2W @ 70°C
total resistance shift.....	<100K = +3%/-7% ≥100K = +3%/-10%

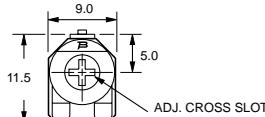
#### Physical Characteristics

Operating torque .....	3.5Ncm max.
Stop strength.....	7.7Ncm min.

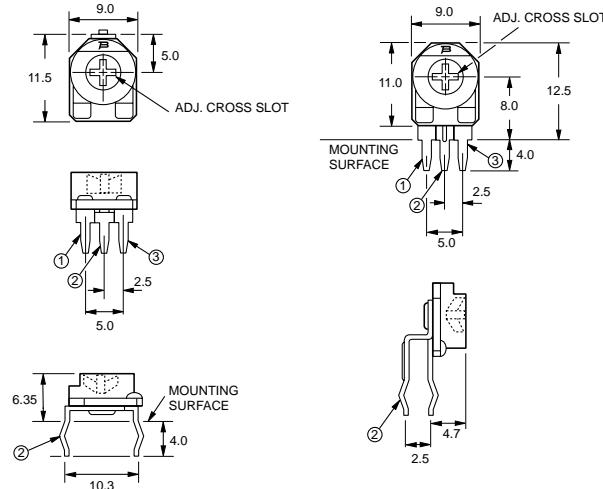
Value (Ω)	Bourns Part No. & Anglia Order Code	
	3319P	3319W
100R	3319P-1-101	3319W-1-101
200R	3319P-1-201	3319W-1-201
500R	3319P-1-501	3319W-1-501
1K	3319P-1-102	3319W-1-102
2K	3319P-1-202	3319W-1-202
5K	3319P-1-502	3319W-1-502
10K	3319P-1-103	3319W-1-103
20K	3319P-1-203	3319W-1-203
50K	3319P-1-503	3319W-1-503
100K	3319P-1-104	3319W-1-104
200K	3319P-1-204	3319W-1-204
500K	3319P-1-504	3319W-1-504
1M	3319P-1-105	3319W-1-105

### Dimensions (mm)

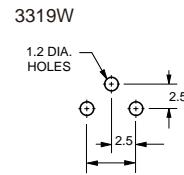
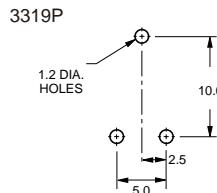
3319P (top adjust)



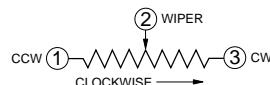
3319W (side adjust)



### P.C.B. Layout



### Circuit Diagram



• Other Styles Available

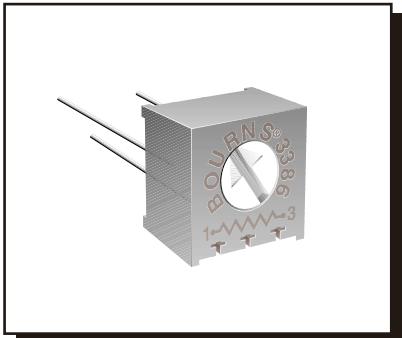
Please contact our Sales Dept. for details

SPLT

200pcs Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

## **BOURNS type 3386 (3/8" square)**

Sealed, single turn cermet trimming potentiometers in a range of values from  $10\Omega$  to  $2M\Omega$ . The devices are available in eight different terminal and adjustment orientation options including a finger adjust knob version.



- 3/8" square body
- Cermet element
- Sealed (with stand-offs) for board washing
- Single turn
- 8 style options, top or side adjust

### **Specification**

#### **Electrical Characteristics**

Resistance range .....	$10\Omega$ to $2M\Omega$
Resistance tolerance .....	$\pm 10\%$
Absolute minimum resistance.....	2 $\Omega$ max.
Contact resistance variation .....	2% or 3 $\Omega$ max. (whichever is greater)
Voltage adjustability .....	$\pm 0.05\%$
Resistance adjustability .....	$\pm 0.15\%$
Resolution .....	Infinite
Insulation resistance .....	$1000M\Omega$ min. @ 500Vd.c.
Dielectric strength .....	900V.a.c.
Adjustable angle .....	280° nominal

#### **Environmental Characteristics**

Power rating .....	0.5W @ 300V/85°C max
Temperature range.....	-55°C to +125°C
Temperature coefficient.....	$\pm 100\text{ppm}/^\circ\text{C}$
Seal test .....	85°C Fluorinert™
Humidity .....	MIL-STD-202 method 103, 96 hours total resistance shift..... 2% max./ $10M\Omega$ insulation resistance
Vibration .....	30G total resistance shift..... 1% max. voltage ratio shift ..... 1% max.
Shock .....	100G total resistance shift..... 1% max. voltage ratio shift ..... 1% max.
Load life .....	1000 hours 0.5W @ 70°C total resistance shift..... 3% max. contact resistance variation..... 1% or 1 $\Omega$ max. (whichever is greater)
Rotational life .....	200 cycles total resistance shift..... 4% max. contact resistance variation..... 1% or 1 $\Omega$ max. (whichever is greater)

#### **Physical Characteristics**

Operating torque .....	3.5Ncm max.
Stop strength.....	10.5Ncm min.
Wiper positioning .....	50% nominal

### **Dimensions (mm)**

*Refer to page overleaf*

### **Circuit Diagram**

*Refer to page overleaf*

**SPLIT** 50pcs Manufacturers smallest factory pack quantity  
(3386G 100pcs) for lot integrity and traceability.

Value ( $\Omega$ )	Bourns Part No. & <b>Anglia Order Code</b>							
	3386F	3386F(T)	3386G	3386H	3386P	3386V	3386W	3386X
10R	3386F-1-100	3386F-1-100-T	3386G-1-100	3386H-1-100	3386P-1-100	3386V-1-100	3386W-1-100	3386X-1-100
20R	3386F-1-200	3386F-1-200-T	3386G-1-200	3386H-1-200	3386P-1-200	3386V-1-200	3386W-1-200	3386X-1-200
50R	3386F-1-500	3386F-1-500-T	3386G-1-500	3386H-1-500	3386P-1-500	3386V-1-500	3386W-1-500	3386X-1-500
100R	3386F-1-101	3386F-1-101-T	3386G-1-101	3386H-1-101	3386P-1-101	3386V-1-101	3386W-1-101	3386X-1-101
200R	3386F-1-201	3386F-1-201-T	3386G-1-201	3386H-1-201	3386P-1-201	3386V-1-201	3386W-1-201	3386X-1-201
500R	3386F-1-501	3386F-1-501-T	3386G-1-501	3386H-1-501	3386P-1-501	3386V-1-501	3386W-1-501	3386X-1-501
1K	3386F-1-102	3386F-1-102-T	3386G-1-102	3386H-1-102	3386P-1-102	3386V-1-102	3386W-1-102	3386X-1-102
2K	3386F-1-202	3386F-1-202-T	3386G-1-202	3386H-1-202	3386P-1-202	3386V-1-202	3386W-1-202	3386X-1-202
5K	3386F-1-502	3386F-1-502-T	3386G-1-502	3386H-1-502	3386P-1-502	3386V-1-502	3386W-1-502	3386X-1-502
10K	3386F-1-103	3386F-1-103-T	3386G-1-103	3386H-1-103	3386P-1-103	3386V-1-103	3386W-1-103	3386X-1-103
20K	3386F-1-203	3386F-1-203-T	3386G-1-203	3386H-1-203	3386P-1-203	3386V-1-203	3386W-1-203	3386X-1-203
25K	3386F-1-253	3386F-1-253-T	3386G-1-253	3386H-1-253	3386P-1-253	3386V-1-253	3386W-1-253	3386X-1-253
50K	3386F-1-503	3386F-1-503-T	3386G-1-503	3386H-1-503	3386P-1-503	3386V-1-503	3386W-1-503	3386X-1-503
100K	3386F-1-104	3386F-1-104-T	3386G-1-104	3386H-1-104	3386P-1-104	3386V-1-104	3386W-1-104	3386X-1-104
200K	3386F-1-204	3386F-1-204-T	3386G-1-204	3386H-1-204	3386P-1-204	3386V-1-204	3386W-1-204	3386X-1-204
250K	3386F-1-254	3386F-1-254-T	3386G-1-254	3386H-1-254	3386P-1-254	3386V-1-254	3386W-1-254	3386X-1-254
500K	3386F-1-504	3386F-1-504-T	3386G-1-504	3386H-1-504	3386P-1-504	3386V-1-504	3386W-1-504	3386X-1-504
1M	3386F-1-105	3386F-1-105-T	3386G-1-105	3386H-1-105	3386P-1-105	3386V-1-105	3386W-1-105	3386X-1-105
2M	3386F-1-205	3386F-1-205-T	3386G-1-205	3386H-1-205	3386P-1-205	3386V-1-205	3386W-1-205	3386X-1-205

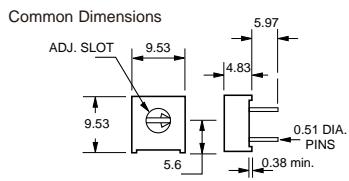
**3386 continued overleaf > > >**

**01945 47 47 47** • **01945 47 48 49** • **E-mail:** sales@angliac.co.uk

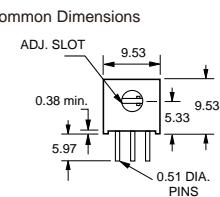
**BOURNS type 3386 (3/8" square) continued**

## Dimensions (mm)

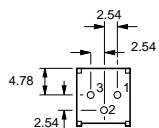
## Top Adjust



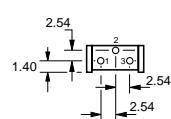
## Side Adjust



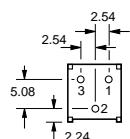
3386P (2.54 x 5.08mm footprint)



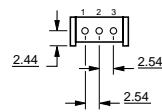
3386H (2.54 x 5.08mm footprint)



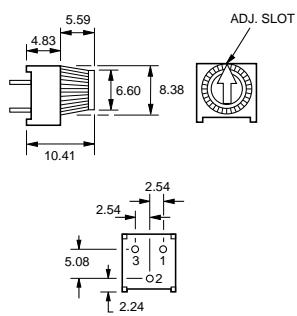
3386F (5.08 x 5.08mm footprint)



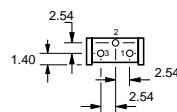
3386W (2.54 + 2.54mm footprint)



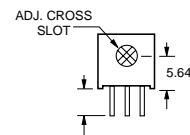
3386F(T) (5.08 x 5.08mm footprint - knob adjust)



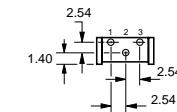
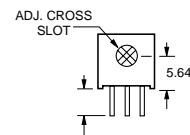
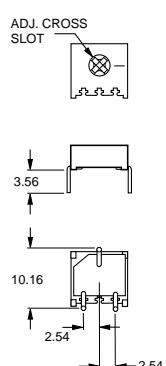
3386X (2.54 x 5.08mm footprint - reversed pin-out)



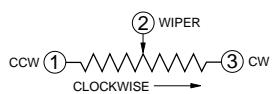
3386V (2.54 x 5.08mm footprint - inverted pin-out)



3386G (5.08 x 10.16mm footprint)



## Circuit Diagram

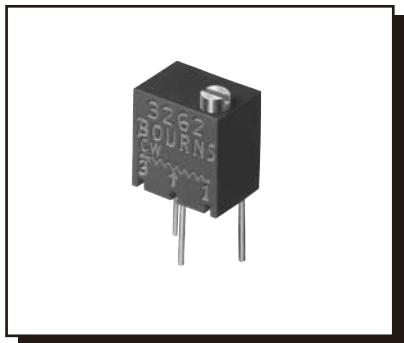


● Other Styles Available

Please contact our Sales Dept. for details

## **BOURNS type 3262 (1/4" square)**

Sealed, multiturn cermet trimming potentiometers in a range of values from  $10\Omega$  to  $1M\Omega$ . Available in a choice of top or side adjust orientations, the devices feature a high quality drive mechanism.



- 1/4" square body
- Cermet element
- Sealed for board washing
- Multiturn (12 turns)
- Top or side adjust
- Patented drive mechanism

### Specification

#### Electrical Characteristics

Resistance range .....	$10\Omega$ to $1M\Omega$
Resistance tolerance .....	$\pm 10\%$
Absolute minimum resistance .....	1% or $2\Omega$ max. (whichever is greater)
Contact resistance variation .....	3% or $3\Omega$ max. (whichever is greater)
Voltage adjustability .....	$\pm 0.02\%$
Resistance adjustability .....	$\pm 0.05\%$
Resolution .....	Infinite
Insulation resistance .....	$1000M\Omega$ min. @ 500Vdc.
Dielectric strength .....	600Vac.
Effective travel .....	12 turns nominal

#### Environmental Characteristics

Power rating .....	0.25W @ 300V/85°C max
Temperature range.....	-65°C to +150°C
Temperature coefficient.....	$\pm 100\text{ppm}/^\circ\text{C}$
Seal test .....	85°C Fluorinert™
Humidity .....	MIL-STD-202 method 103, 96 hours total resistance shift..... 2% max./ $100M\Omega$ insulation resistance
Vibration .....	30G total resistance shift..... 1% max.
voltage ratio shift .....	1% max.
Shock .....	100G total resistance shift..... 1% max.
voltage ratio shift .....	1% max.
Load life .....	1000 hours 0.25W @ 85°C total resistance shift..... 3% max.
contact resistance variation .....	3% or $3\Omega$ max. (whichever is greater)
Rotational life .....	200 cycles total resistance shift..... 2% max.
contact resistance variation .....	3% or $3\Omega$ max. (whichever is greater)

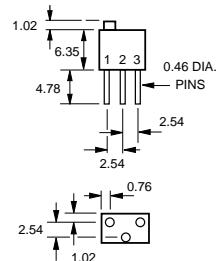
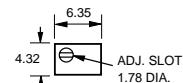
#### Physical Characteristics

Operating torque .....	2.1Ncm max.
Mechanical stops .....	Wiper idles (clutching action)
Wiper positioning .....	50% nominal
Flammability .....	UL94V-0

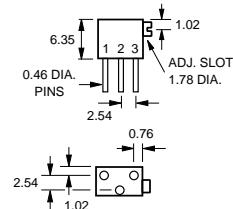
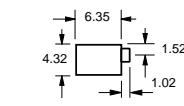
Value ( $\Omega$ )	Bourns Part No. & Anglia Order Code	
	3262W	3262X
10R	3262W-1-100	3262X-1-100
20R	3262W-1-200	3262X-1-200
50R	3262W-1-500	3262X-1-500
100R	3262W-1-101	3262X-1-101
200R	3262W-1-201	3262X-1-201
500R	3262W-1-501	3262X-1-501
1K	3262W-1-102	3262X-1-102
2K	3262W-1-202	3262X-1-202
5K	3262W-1-502	3262X-1-502
10K	3262W-1-103	3262X-1-103
20K	3262W-1-203	3262X-1-203
25K	3262W-1-253	3262X-1-253
50K	3262W-1-503	3262X-1-503
100K	3262W-1-104	3262X-1-104
200K	3262W-1-204	3262X-1-204
250K	3262W-1-254	3262X-1-254
500K	3262W-1-504	3262X-1-504
1M	3262W-1-105	3262X-1-105

### Dimensions (mm)

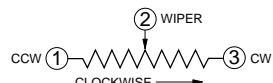
3262W (top adjust)



3262X (side adjust)



### Circuit Diagram



● Other Styles Available

Please contact our Sales Dept. for details

SPLT

50pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

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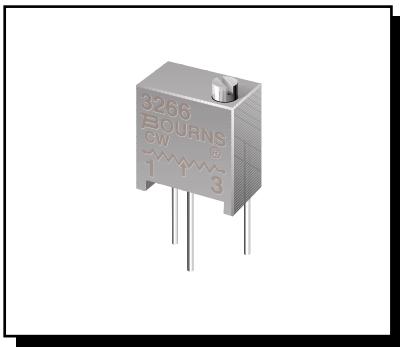
# TRIMMERS

# MULTITURN



## BOURNS type 3266 (1/4" square)

Sealed, multiturn cermet trimming potentiometers in a range of values from 10Ω to 1MΩ. Available in a choice of top or side adjust orientations, the devices feature a high quality drive mechanism and stand-offs for thorough p.c.b. washing.



### Specification

#### Electrical Characteristics

Resistance range .....	10Ω to 1MΩ
Resistance tolerance .....	±10%
Absolute minimum resistance .....	1% or 2Ω max. (whichever is greater)
Contact resistance variation .....	3% or 3Ω max. (whichever is greater)
Voltage adjustability .....	±0.02%
Resistance adjustability .....	±0.05%
Resolution .....	Infinite
Insulation resistance .....	1000MΩ min. @ 500Vd.c.
Dielectric strength .....	600V.a.c.
Effective travel .....	12 turns nominal

#### Environmental Characteristics

Power rating .....	0.25W @ 300V/70°C max
Temperature range .....	-55°C to +150°C
Temperature coefficient .....	±100ppm/°C
Seal test .....	85°F Fluorinert™
Humidity .....	MIL-STD-202 method 103, 96 hours total resistance shift .....
	2% max./10MΩ insulation resistance
Vibration .....	30G
total resistance shift .....	1% max.
voltage ratio shift .....	1% max.
Shock .....	100G
total resistance shift .....	1% max.
voltage ratio shift .....	1% max.
Load life .....	1000 hours 0.25W @ 70°C
total resistance shift .....	3% max.
contact resistance variation .....	3% max.
Rotational life .....	200 cycles
total resistance shift .....	4% max.
contact resistance variation .....	3% or 3Ω max. (whichever is greater)

#### Physical Characteristics

Operating torque .....	2.1Ncm max.
Mechanical stops .....	Wiper idles (clutching action)
Wiper positioning .....	50% nominal
Flammability .....	UL94V-0

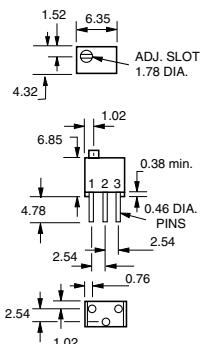
Value (Ω)	3266P	3266W	3266X
10R	3266P-1-100	3266W-1-100	3266X-1-100
20R	3266P-1-200	3266W-1-200	3266X-1-200
50R	3266P-1-500	3266W-1-500	3266X-1-500
100R	3266P-1-101	3266W-1-101	3266X-1-101
200R	3266P-1-201	3266W-1-201	3266X-1-201
500R	3266P-1-501	3266W-1-501	3266X-1-501
1K	3266P-1-102	3266W-1-102	3266X-1-102
2K	3266P-1-202	3266W-1-202	3266X-1-202
5K	3266P-1-502	3266W-1-502	3266X-1-502
10K	3266P-1-103	3266W-1-103	3266X-1-103
20K	3266P-1-203	3266W-1-203	3266X-1-203
25K	3266P-1-253	3266W-1-253	3266X-1-253
50K	3266P-1-503	3266W-1-503	3266X-1-503
100K	3266P-1-104	3266W-1-104	3266X-1-104
200K	3266P-1-204	3266W-1-204	3266X-1-204
250K	3266P-1-254	3266W-1-254	3266X-1-254
500K	3266P-1-504	3266W-1-504	3266X-1-504
1M	3266P-1-105	3266W-1-105	3266X-1-105

- 1/4" square body
- Cermet element
- Sealed (with stand-offs) for board washing
- Multiturn (12 turns)
- Patented drive mechanism
- 3 style options, top or side adjust

### Dimensions (mm)

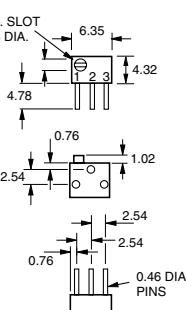
#### Top Adjust

3266W

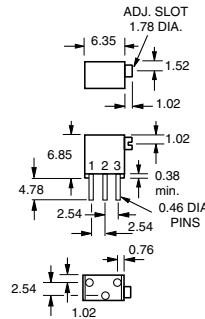


#### Side Adjust

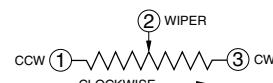
3266P (low profile)



3266X



### Circuit Diagram



• Other Styles Available

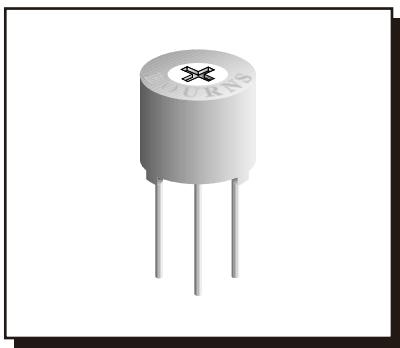
Please contact our Sales Dept. for details

SPLT 50pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

## **BOURNS type 3339 (5/16" round)**

Sealed, multiturn cermet trimming potentiometers in a range of values from 10Ω to 1MΩ and a top adjust configuration. The unique planetary drive offers precise wiper setting of a multiturn in a single turn package size.



- 5/16" round body
- Cermet element
- Sealed (with stand-offs) for board washing
- Multiturn accuracy in a single turn package
- Top adjust (cross slot rotor)

### Specification

#### Electrical Characteristics

Resistance range .....	10Ω to 1MΩ
Resistance tolerance .....	±10%
Absolute minimum resistance .....	1% or 2Ω max. (whichever is greater)
Contact resistance variation .....	3% or 3Ω max. (whichever is greater)
Voltage adjustability .....	±0.05%
Resistance adjustability .....	±0.1%
Resolution .....	Infinite
Insulation resistance .....	1000MΩ min. @ 500Vdc.
Dielectric strength .....	600Vac.
Effective travel .....	4 turns nominal

#### ENVIRONMENTAL CHARACTERISTICS

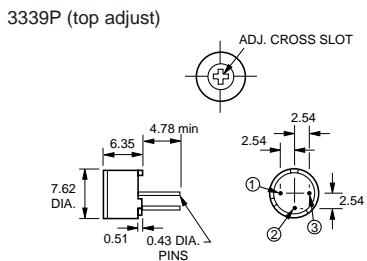
Power rating .....	0.5W @ 300V/85°C max
Temperature range.....	-55°C to +150°C
Temperature coefficient.....	±100ppm/°C
Seal test .....	85°C Fluorinert™
Humidity .....	MIL-STD-202 method 103, 96 hours total resistance shift..... 3% max./10MΩ insulation resistance
Vibration .....	30G total resistance shift..... 1% max.
voltage ratio shift .....	1% max.
Shock.....	100G total resistance shift..... 1% max.
voltage ratio shift .....	1% max.
Load life .....	1000 hours 0.5W @ 85°C total resistance shift..... 3% max.
contact resistance variation .....	3% or 3Ω max. (whichever is greater)
Rotational life .....	200 cycles total resistance shift..... 3% max.
contact resistance variation.....	3% or 3Ω max. (whichever is greater)

#### Physical Characteristics

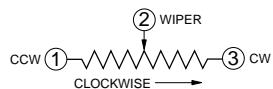
Operating torque .....	2.1Ncm max.
Mechanical stops .....	Wiper idles (clutching action)
Wiper positioning .....	50% nominal
Flammability .....	UL94V-0

Value (Ω)	Bourns Part No. & Anglia Order Code
10R	3339P-1-100
20R	3339P-1-200
50R	3339P-1-500
100R	3339P-1-101
200R	3339P-1-201
500R	3339P-1-501
1K	3339P-1-102
2K	3339P-1-202
5K	3339P-1-502
10K	3339P-1-103
20K	3339P-1-203
25K	3339P-1-253
50K	3339P-1-503
100K	3339P-1-104
200K	3339P-1-204
250K	3339P-1-254
500K	3339P-1-504
1M	3339P-1-105

#### Dimensions (mm)



#### Circuit Diagram



● Other Styles Available

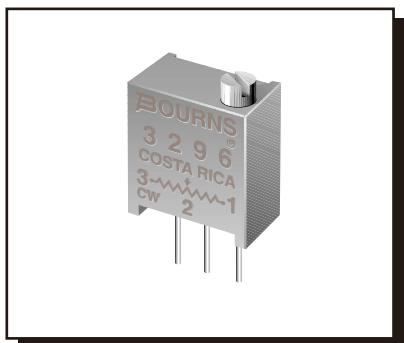
Please contact our Sales Dept. for details

**SPLT** 50pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

## BOURNS type 3296 (3/8" square)

Sealed, multiturn cermet trimming potentiometers in a range of values from 10Ω to 5MΩ. The devices are available in five different terminal and adjustment orientation options.



- 3/8" square body
- Cermet element
- Sealed (with stand-offs) for board washing
- Multiturn (25 turns)
- 5 style options, top or side adjust

### Specification

#### Electrical Characteristics

Resistance range .....	10Ω to 5MΩ
Resistance tolerance .....	±10%
Absolute minimum resistance .....	1% or 2Ω max. (whichever is greater)
Contact resistance variation .....	1% or 3Ω max. (whichever is greater)
Voltage adjustability .....	±0.01%
Resistance adjustability .....	±0.05%
Resolution .....	Infinite
Insulation resistance .....	1000MΩ min. @ 500Vd.c.
Dielectric strength .....	900V.a.c.
Effective travel .....	25 turns nominal

#### Environmental Characteristics

Power rating .....	0.5W @ 300V/70°C max
Temperature range .....	-55°C to +150°C
Temperature coefficient .....	±100ppm/°C
Seal test .....	85°C Fluorinert™
Humidity .....	MIL-STD-202 method 103, 96 hours total resistance shift..... 2% max./10MΩ insulation resistance
Vibration .....	20G total resistance shift..... 1% max. voltage ratio shift ..... 1% max.
Shock .....	100G total resistance shift..... 1% max. voltage ratio shift ..... 1% max.
Load life .....	1000 hours 0.5W @ 70°C total resistance shift..... 3% max. contact resistance variation .. 3% or 3Ω max. (whichever is greater)
Rotational life .....	200 cycles total resistance shift..... 4% max. contact resistance variation .. 3% or 3Ω max. (whichever is greater)

#### Physical Characteristics

Operating torque .....	2.1Ncm max.
Mechanical stops .....	Wiper idles (clutching action)
Wiper positioning .....	50% nominal
Flammability .....	UL94V-0

### Dimensions (mm)

Refer to page opposite

### Circuit Diagram

Refer to page opposite

**SPLT** 50pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

Value (Ω)	Bourns Part No. & Anglia Order Code				
	3296P	3296W	3296X	3296Y	3296Z
10R	3296P-1-100	3296W-1-100	3296X-1-100	3296Y-1-100	3296Z-1-100
20R	3296P-1-200	3296W-1-200	3296X-1-200	3296Y-1-200	3296Z-1-200
50R	3296P-1-500	3296W-1-500	3296X-1-500	3296Y-1-500	3296Z-1-500
100R	3296P-1-101	3296W-1-101	3296X-1-101	3296Y-1-101	3296Z-1-101
200R	3296P-1-201	3296W-1-201	3296X-1-201	3296Y-1-201	3296Z-1-201
500R	3296P-1-501	3296W-1-501	3296X-1-501	3296Y-1-501	3296Z-1-501
1K	3296P-1-102	3296W-1-102	3296X-1-102	3296Y-1-102	3296Z-1-102
2K	3296P-1-202	3296W-1-202	3296X-1-202	3296Y-1-202	3296Z-1-202
5K	3296P-1-502	3296W-1-502	3296X-1-502	3296Y-1-502	3296Z-1-502
10K	3296P-1-103	3296W-1-103	3296X-1-103	3296Y-1-103	3296Z-1-103
20K	3296P-1-203	3296W-1-203	3296X-1-203	3296Y-1-203	3296Z-1-203
25K	3296P-1-253	3296W-1-253	3296X-1-253	3296Y-1-253	3296Z-1-253
50K	3296P-1-503	3296W-1-503	3296X-1-503	3296Y-1-503	3296Z-1-503
100K	3296P-1-104	3296W-1-104	3296X-1-104	3296Y-1-104	3296Z-1-104
200K	3296P-1-204	3296W-1-204	3296X-1-204	3296Y-1-204	3296Z-1-204
250K	3296P-1-254	3296W-1-254	3296X-1-254	3296Y-1-254	3296Z-1-254
500K	3296P-1-504	3296W-1-504	3296X-1-504	3296Y-1-504	3296Z-1-504
1M	3296P-1-105	3296W-1-105	3296X-1-105	3296Y-1-105	3296Z-1-105
2M	3296P-1-205	3296W-1-205	3296X-1-205	3296Y-1-205	3296Z-1-205
5M	—	3296W-1-505	3296X-1-505	3296Y-1-505	—

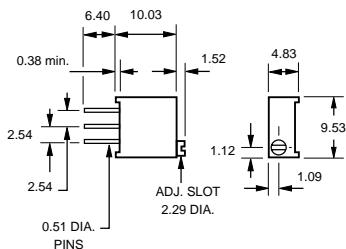
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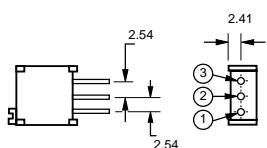
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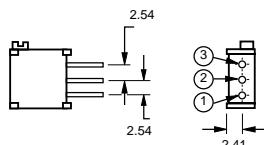
**E-mail: sales@angliac.co.uk**

**BOURNS type 3296 (3/8" square) continued**
**Dimensions (mm)**
**Common Dimensions**

**Top Adjust**

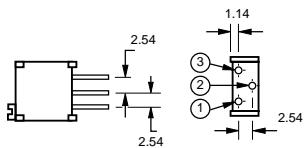
3296W (2.54 + 2.54mm footprint)


**Side Adjust**

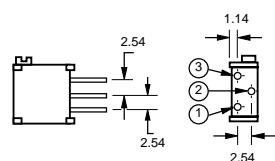
3296X (2.54 + 2.54mm footprint)



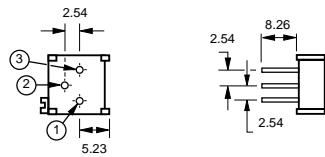
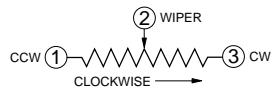
3296Y (2.54 x 5.08mm footprint)



3296Z (2.54 x 5.08mm footprint)

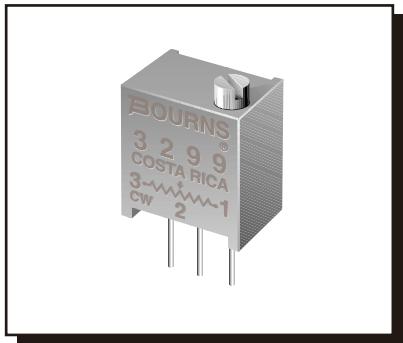


3296P (2.54 x 5.08mm - low profile)


**Circuit Diagram**


## BOURNS type 3299 (3/8" square)

Sealed, multiturn cermet trimming potentiometers in a range of values from 10Ω to 2MΩ. The devices are available in four different terminal and adjustment orientation options, all featuring a high quality drive mechanism.



- 3/8" square body
- Cermet element
- Sealed (with stand-offs) for board washing
- Multiturn (25 turns)
- Patented drive mechanism
- 4 style options, top or side adjust

### Specification

#### Electrical Characteristics

Resistance range .....	10Ω to 2MΩ
Resistance tolerance .....	±10%
Absolute minimum resistance .....	1% or 2Ω max. (whichever is greater)
Contact resistance variation.....	1% or 3Ω max. (whichever is greater)
Voltage adjustability.....	±0.01%
Resistance adjustability .....	±0.05%
Resolution.....	Infinite
Insulation resistance.....	1000MΩ min. @ 500Vd.c.
Dielectric strength.....	900V a.c.
Effective travel.....	25 turns nominal

#### Environmental Characteristics

Power rating .....	0.5W @ 300V/70°C max
Temperature range .....	-55°C to +125°C
Temperature coefficient .....	±100ppm/°C
Seal test .....	85°C Fluorinert™
Humidity.....	MIL-STD-202 method 103, 96 hours total resistance shift ..... 2% max./10MΩ insulation resistance
Vibration .....	20G total resistance shift ..... 1% max. voltage ratio shift ..... 1% max.
Shock.....	100G total resistance shift ..... 1% max. voltage ratio shift ..... 1% max.
Load life.....	1000 hours 0.5W @ 70°C total resistance shift ..... 3% max. voltage ratio shift ..... 3% or 3Ω max. (whichever is greater)
Rotational life.....	200 cycles total resistance shift ..... 4% max. voltage ratio shift ..... 3% or 3Ω max. (whichever is greater)

#### Physical Characteristics

Operating torque .....	2.1Nm max.
Mechanical stops.....	Wiper idles (clutching action)
Wiper positioning.....	Set at CW end
Flammability .....	UL94V-0

### Dimensions (mm)

Refer to page opposite

### Circuit Diagram

Refer to page opposite

SPLT 50pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

Value (Ω)	Bourns Part No. & Anglia Order Code			
	3299P	3299W	3299X	3299Y
10R	3299P-1-100	3299W-1-100	3299X-1-100	3299Y-1-100
20R	3299P-1-200	3299W-1-200	3299X-1-200	3299Y-1-200
50R	3299P-1-500	3299W-1-500	3299X-1-500	3299Y-1-500
100R	3299P-1-101	3299W-1-101	3299X-1-101	3299Y-1-101
200R	3299P-1-201	3299W-1-201	3299X-1-201	3299Y-1-201
500R	3299P-1-501	3299W-1-501	3299X-1-501	3299Y-1-501
1K	3299P-1-102	3299W-1-102	3299X-1-102	3299Y-1-102
2K	3299P-1-202	3299W-1-202	3299X-1-202	3299Y-1-202
5K	3299P-1-502	3299W-1-502	3299X-1-502	3299Y-1-502
10K	3299P-1-103	3299W-1-103	3299X-1-103	3299Y-1-103
20K	3299P-1-203	3299W-1-203	3299X-1-203	3299Y-1-203
25K	3299P-1-253	3299W-1-253	3299X-1-253	3299Y-1-253
50K	3299P-1-503	3299W-1-503	3299X-1-503	3299Y-1-503
100K	3299P-1-104	3299W-1-104	3299X-1-104	3299Y-1-104
200K	3299P-1-204	3299W-1-204	3299X-1-204	3299Y-1-204
250K	3299P-1-254	3299W-1-254	3299X-1-254	3299Y-1-254
500K	3299P-1-504	3299W-1-504	3299X-1-504	3299Y-1-504
1M	3299P-1-105	3299W-1-105	3299X-1-105	3299Y-1-105
2M	3299P-1-205	3299W-1-205	3299X-1-205	3299Y-1-205



01945 47 47 47



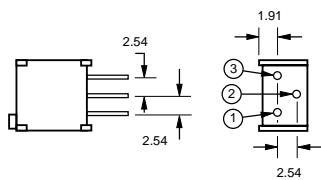
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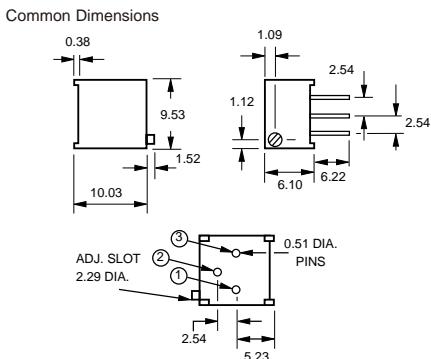
E-mail: sales@angliac.co.uk

**BOURNS type 3299 (3/8" square) continued**
**Dimensions (mm)**
**Top Adjust**

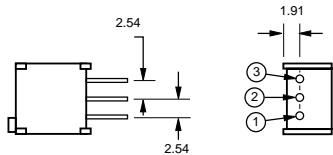
3299Y (2.54 x 5.08mm footprint)


**Side Adjust**

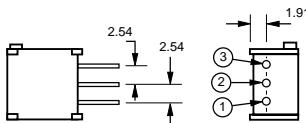
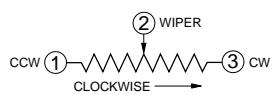
3299P (2.54 x 5.08mm footprint)



3299W (2.54 + 2.54mm footprint)

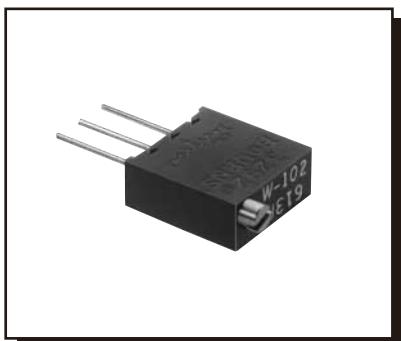


3299X (2.54 + 2.54mm footprint)


**Circuit Diagram**

**● Other Styles Available**
*Please contact our Sales Dept. for details*

## BOURNS type 3292 (3/8" square)

Sealed, multiturn cermet trimming potentiometers in a range of values from 10Ω to 1MΩ. Available in a choice of top or side adjust orientations, the devices feature a high quality drive mechanism and a narrow profile body.



- 3/8" square body
- Narrow profile
- Cermet element
- Sealed (with stand-offs) for board washing
- Multiturn (25 turns)
- Patented drive mechanism
- 3 style options, top or side adjust

### Specification

#### Electrical Characteristics

Resistance range	10Ω to 1MΩ
Resistance tolerance	±10%
Absolute minimum resistance	1% or 2Ω max. (whichever is greater)
Contact resistance variation	1% or 3Ω max. (whichever is greater)
Voltage adjustability	±0.01%
Resistance adjustability	±0.05%
Resolution	Infinite
Insulation resistance	1000MΩ min. @ 500Vdc.
Dielectric strength	1000Vdc.
Effective travel	25 turns nominal

#### Environmental Characteristics

Power rating	0.5W @ 400V/85°C max
Temperature range	-65°C to +150°C
Temperature coefficient	±100ppm/°C
Seal test	85°C Fluorinert™
Humidity	MIL-STD-202 method 103, 96 hours total resistance shift 1% max./10MΩ insulation resistance
Vibration	30G total resistance shift 1% max.
Shock	100G total resistance shift 1% max.
Load life	1000 hours 0.5W @ 85°C total resistance shift 2% max.
contact resistance variation	3% or 3Ω max. (whichever is greater)
Rotational life	200 cycles total resistance shift 2% max.
contact resistance variation	3% or 3Ω max. (whichever is greater)

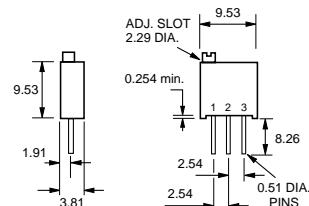
#### Physical Characteristics

Operating torque	3.5Ncm max.
Mechanical stops	Wiper idles (clutching action)
Wiper positioning	50% nominal
Flammability	UL94V-0

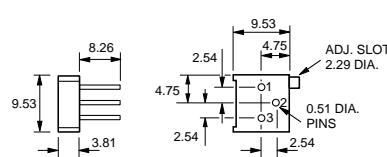
Value (Ω)	Bourns Part No. & Anglia Order Code		
	3292P	3292W	3292X
10R	3292P-1-100	3292W-1-100	3292X-1-100
20R	3292P-1-200	3292W-1-200	3292X-1-200
50R	3292P-1-500	3292W-1-500	3292X-1-500
100R	3292P-1-101	3292W-1-101	3292X-1-101
200R	3292P-1-201	3292W-1-201	3292X-1-201
500R	3292P-1-501	3292W-1-501	3292X-1-501
1K	3292P-1-102	3292W-1-102	3292X-1-102
2K	3292P-1-202	3292W-1-202	3292X-1-202
5K	3292P-1-502	3292W-1-502	3292X-1-502
10K	3292P-1-103	3292W-1-103	3292X-1-103
20K	3292P-1-203	3292W-1-203	3292X-1-203
25K	3292P-1-253	3292W-1-253	3292X-1-253
50K	3292P-1-503	3292W-1-503	3292X-1-503
100K	3292P-1-104	3292W-1-104	3292X-1-104
200K	3292P-1-204	3292W-1-204	3292X-1-204
250K	3292P-1-254	3292W-1-254	3292X-1-254
500K	3292P-1-504	3292W-1-504	3292X-1-504
1M	3292P-1-105	3292W-1-105	3292X-1-105

### Dimensions (mm)

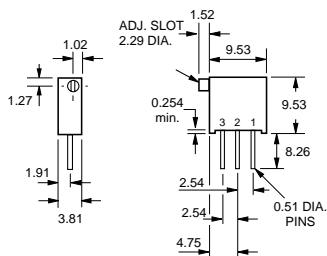
3292W (top adjust, 2.54 + 2.54mm footprint)



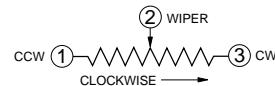
3292P (side adjust, 2.54 x 5.08mm footprint)



3292X (side adjust, 2.54 + 2.54mm footprint)



### Circuit Diagram



● Other Styles Available

Please contact our Sales Dept. for details

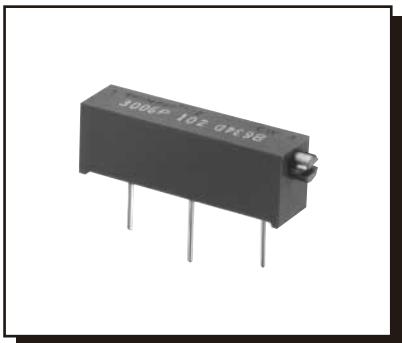
SPLT

50pcs Manufacturers smallest factory pack quantity for lot integrity and traceability.

**TRIMPOT®**

## **BOURNS type 3006 (3/4" rectangular)**

Sealed, multiturn cermet trimming potentiometers in a range of values from 10Ω to 2MΩ. The devices have end adjust orientation and are available with solid or transparent housings, the latter allowing easy visual setting. An adapter for panel mounting is available separately.



- 3/4" rectangular body
- Solid or transparent
- Cermet element
- Sealed (with stand-offs) for board washing
- Multiturn (15 turns)
- End adjust

### Specification

#### Electrical Characteristics

Resistance range .....	10Ω to 2MΩ
Resistance tolerance .....	±10%
Absolute minimum resistance .....	1% or 2Ω max. (whichever is greater)
Contact resistance variation .....	1% or 1Ω max. (whichever is greater)
Voltage adjustability .....	±0.01%
Resistance adjustability .....	±0.05%
Resolution .....	Infinite
Insulation resistance .....	1000MΩ min. @ 500Vdc.
Dielectric strength .....	1000Vdc.
Effective travel .....	15 turns nominal

#### Environmental Characteristics

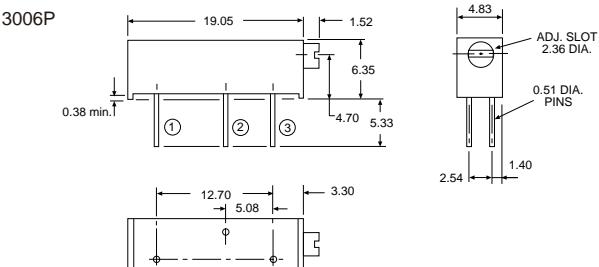
Power rating .....	0.75W @ 400V/70°C max
Temperature range .....	-55°C to +125°C
Temperature coefficient .....	±100ppm/°C
Seal test .....	85°C Fluorinert™
Humidity .....	MIL-STD-202 method 103, 96 hours total resistance shift..... 3% max./20MΩ insulation resistance
Vibration .....	20G total resistance shift..... 2% max.
Shock .....	voltage ratio shift .....
Load life .....	50G total resistance shift..... 2% max.
Rotational life .....	voltage ratio shift .....
contact resistance variation .....	1000 hours 0.75W @ 70°C total resistance shift..... 4% max.
total resistance shift..... 2% max.	200 cycles total resistance shift..... 3% max.
Wiper positioning .....	contact resistance variation..... 1% or 1Ω max. (whichever is greater)

#### Physical Characteristics

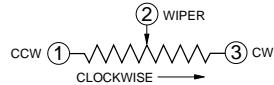
Operating torque .....	3.5Ncm max.
Mechanical stops .....	Wiper idles (clutching action)
Wiper positioning .....	50% nominal
Flammability .....	UL94V-0

Bourns Part No. & <b>Anglia</b> Order Code		
Value (Ω)	Solid Case	Transparent Case
10R	3006P-1-100	3006P-7-100
20R	3006P-1-200	3006P-7-200
50R	3006P-1-500	3006P-7-500
100R	3006P-1-101	3006P-7-101
200R	3006P-1-201	3006P-7-201
500R	3006P-1-501	3006P-7-501
1K	3006P-1-102	3006P-7-102
2K	3006P-1-202	3006P-7-202
5K	3006P-1-502	3006P-7-502
10K	3006P-1-103	3006P-7-103
20K	3006P-1-203	3006P-7-203
25K	3006P-1-253	3006P-7-253
50K	3006P-1-503	3006P-7-503
100K	3006P-1-104	3006P-7-104
200K	3006P-1-204	3006P-7-204
250K	3006P-1-254	3006P-7-254
500K	3006P-1-504	3006P-7-504
1M	3006P-1-105	3006P-7-105
2M	3006P-1-205	3006P-7-205

#### Dimensions (mm)



#### Circuit Diagram

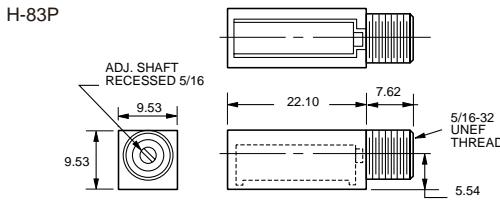

**● Other Styles Available**
*Please contact our Sales Dept. for details*
**SPLT**
**25pcs**
*Manufacturers smallest factory pack quantity for lot integrity and traceability.*

## **Panel Adapter type H-83P**

The H-83P panel mount adapter is designed for use with the range of 3006 type trimmers. Simply snap the trimmer into the plastic case and mount through the pre-drilled hole in the panel. Supplied complete with lock washer and mounting nut.


**Bourns Part No. & **Anglia** Order Code**  
**H-83P**
**SPLT** 50pcs

#### Dimensions (mm)

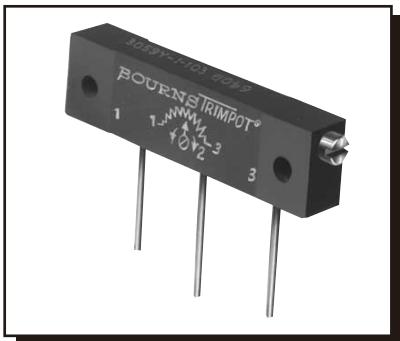

**01945 47 47 47**

**01945 47 48 49**

**E-mail: sales@angliac.co.uk**

**BOURNS type 3059 (1 1/4" rectangular)**

Sealed, multiturn cermet trimming potentiometers in a range of values from 10Ω to 2MΩ. The devices have end adjust orientation and are available in a choice of standard p.c.b. or flying lead terminations.



- 1 1/4" rectangular body

- Cermet element
- Sealed for board washing
- Flying lead option
- Multiturn (22 turns)
- End adjust

**Specification****Electrical Characteristics**

Resistance range.....	10Ω to 2MΩ
Resistance tolerance.....	±10%
Absolute minimum resistance.....	1% or 2Ω max. (whichever is greater)
Contact resistance variation.....	1% or 1Ω max. (whichever is greater)
Voltage adjustability.....	±0.01%
Resistance adjustability.....	±0.05%
Resolution.....	Infinite
Insulation resistance.....	1000MΩ min. @ 500Vdc.
Dielectric strength.....	. 900Vdc.
Effective travel.....	. 22 turns nominal

**Environmental Characteristics**

Power rating.....	. 1W @ 400V/70°C max
Temperature range.....	-55°C to +150°C
Temperature coefficient.....	±10ppm/°C
Seal test.....	. 85°C Fluorinert™
Humidity.....	. MIL-STD-202 method 106 total resistance shift ..... 2% max./10MΩ insulation resistance
Vibration.....	20G total resistance shift ..... 1% max.
Shock.....	voltage ratio shift ..... 1% max.
Load life.....	50G total resistance shift ..... 1% max. voltage ratio shift ..... 1% max.
Load life.....	1000 hours 1W @ 70°C total resistance shift ..... 3% max.
Rotational life.....	contact resistance variation..... 1% or 1Ω max. (whichever is greater) 200 cycles
total resistance shift ..... 2% max.	
contact resistance variation..... 1% or 1Ω max. (whichever is greater)	

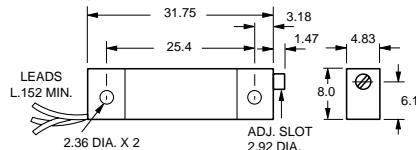
**Physical Characteristics**

Operating torque.....	. 3.5Ncm max.
Mechanical stops.....	Wiper idles (clutching action)
Wiper positioning.....	Set at CW end
Flammability.....	UL94V-0

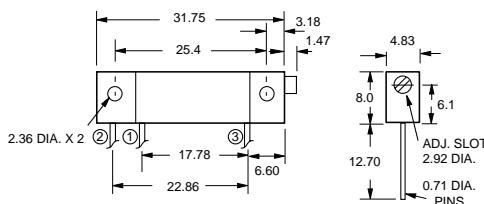
Value (Ω)	Bourns Part No. & Anglia Order Code		
	3059L	3059P	3059Y
10R	3059L-1-100	3059P-1-100	3059Y-1-100
20R	3059L-1-200	3059P-1-200	3059Y-1-200
50R	3059L-1-500	3059P-1-500	3059Y-1-500
100R	3059L-1-101	3059P-1-101	3059Y-1-101
200R	3059L-1-201	3059P-1-201	3059Y-1-201
500R	3059L-1-501	3059P-1-501	3059Y-1-501
1K	3059L-1-102	3059P-1-102	3059Y-1-102
2K	3059L-1-202	3059P-1-202	3059Y-1-202
5K	3059L-1-502	3059P-1-502	3059Y-1-502
10K	3059L-1-103	3059P-1-103	3059Y-1-103
20K	3059L-1-203	3059P-1-203	3059Y-1-203
25K	3059L-1-253	3059P-1-253	3059Y-1-253
50K	3059L-1-503	3059P-1-503	3059Y-1-503
100K	3059L-1-104	3059P-1-104	3059Y-1-104
200K	3059L-1-204	3059P-1-204	3059Y-1-204
250K	3059L-1-254	3059P-1-254	3059Y-1-254
500K	3059L-1-504	3059P-1-504	3059Y-1-504
1M	3059L-1-105	3059P-1-105	3059Y-1-105
2M	3059L-1-205	3059P-1-205	3059Y-1-205

**Dimensions (mm)**

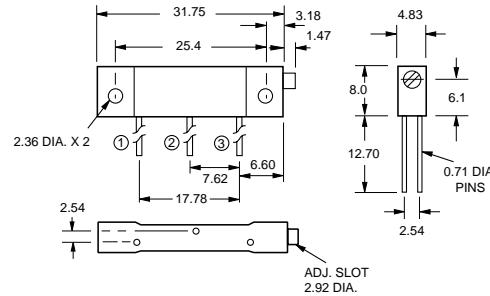
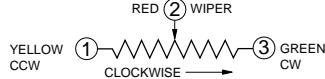
3059L (flying leads)



3059P (p.c.b. pins, in-line)



3059Y (p.c.b. pins)

**Circuit Diagram**

 • Other Styles Available

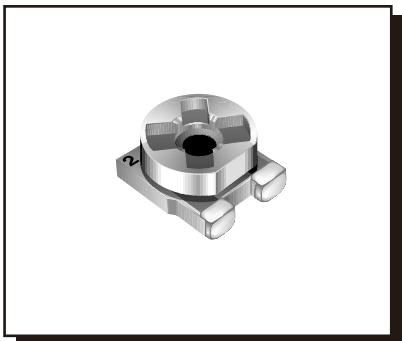
Please contact our Sales Dept. for details

SPLT

10pcs (3059L 25pcs) Manufacturers smallest factory pack quantity for lot integrity and traceability.

## **BOURNS type 3303 (3mm, surface mount)**

Open frame, single turn cermet trimming potentiometers in a range of values from 100Ω to 1MΩ and a top adjust configuration. Designed for reflow solder processing, the devices are suitable for use with pick and place assembly equipment.



- 3mm surface mount body
- Cermet element
- Open frame construction
- Single turn
- Top adjust (cross slot rotor)
- Supplied taped & reeled

### Specification

#### Electrical Characteristics

Resistance range .....	100Ω to 1MΩ
Resistance tolerance .....	±25%
Absolute minimum resistance .....	2% or 20Ω max. (whichever is greater)
Contact resistance variation .....	5% max.
Resolution .....	Infinite
Adjustment angle .....	260° ±20°

#### Environmental Characteristics

Power rating.....	0.15W @ 50Vd.c./70°C max
Temperature range.....	-40°C to +125°C
Temperature coefficient.....	±250ppm/°C
Humidity .....	95% RH/500 hours
total resistance shift .....	5% max.
Load life .....	500 hours 0.15W @ 70°C
total resistance shift.....	5% max.
Rotational life .....	20 turns
total resistance shift.....	15% max.
Soldering heat resistance .....	260°C/10s
total resistance shift.....	5% max.

#### Physical Characteristics

Operating torque.....	20 to 200g/cm
Mechanical angle .....	Continuous

Value (Ω)	Bourns Part No. & Anglia Order Code
100R	3303W-2-101E
200R	3303W-2-201E
500R	3303W-2-501E
1K	3303W-2-102E
2K	3303W-2-202E
5K	3303W-2-502E
10K	3303W-2-103E
20K	3303W-2-203E
50K	3303W-2-503E
100K	3303W-2-104E
200K	3303W-2-204E
500K	3303W-2-504E
1M	3303W-2-105E

SUPPLIED IN FULL REELS ONLY



● Other Styles Available

Please contact our Sales Dept. for details

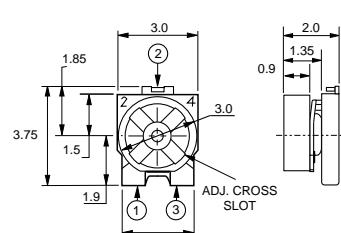
**SPLT**

2000pcs

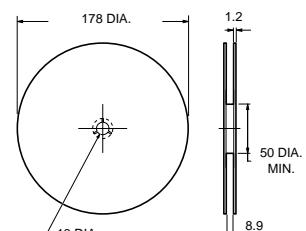
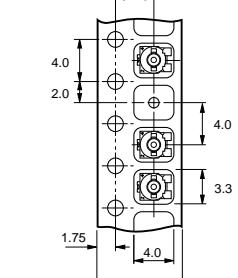
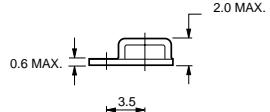
Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

### Dimensions (mm)

3303W (top adjust)

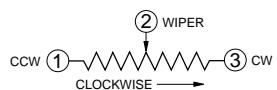


### Packaging



Reel quantity 2000pcs

### Circuit Diagram



## BOURNS type 3364 (4mm square, surface mount)

Open frame, single turn cermet trimming potentiometers in a range of values from 100Ω to 1MΩ and a top adjust configuration with terminal position option. Designed for reflow solder processing, the devices are suitable for use with automatic pick-and-place assembly equipment.



- 4mm square surface mount body
- Cermet element
- Open frame construction
- Single turn
- Top adjust (cross slot rotor)
- Terminal position option
- Supplied taped & reeled

### Specification

#### Electrical Characteristics

Resistance range .....	100Ω to 1MΩ
Resistance tolerance .....	±25%
End resistance .....	2% or 20Ω max. (whichever is greater)
Contact resistance variation .....	5% max. (voltage divider)
Resolution .....	Infinite
Adjustment angle .....	260° ±20%

#### Environmental Characteristics

Power rating.....	0.2W @ 50V/70°C max.
Temperature range.....	-40°C to +125°C
Temperature coefficient.....	±250ppm/°C
Humidity.....	500 hours
total resistance shift.....	5% max.
Load life .....	500 hours 0.2W @ 70°C
total resistance shift.....	5% max.
Rotational life .....	20 cycles
total resistance shift.....	15% max.

#### Physical Characteristics

Operating torque.....	20 to 200g/cm
Mechanical angle.....	Continuous

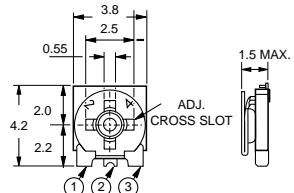
Value (Ω)	Bourns Part No. & Anglia Order Code	
	3364A	3364W
100R	3364A-1-101E	3364W-1-101E
200R	3364A-1-201E	3364W-1-201E
500R	3364A-1-501E	3364W-1-501E
1K	3364A-1-102E	3364W-1-102E
2K	3364A-1-202E	3364W-1-202E
5K	3364A-1-502E	3364W-1-502E
10K	3364A-1-103E	3364W-1-103E
20K	3364A-1-203E	3364W-1-203E
50K	3364A-1-503E	3364W-1-503E
100K	3364A-1-104E	3364W-1-104E
200K	3364A-1-204E	3364W-1-204E
500K	3364A-1-504E	3364W-1-504E
1M	3364A-1-105E	3364W-1-105E

SUPPLIED IN FULL REELS ONLY

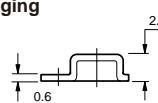
**SPLT** 1000pcs Manufacturers smallest factory pack quantity for lot integrity and traceability.

### Dimensions (mm)

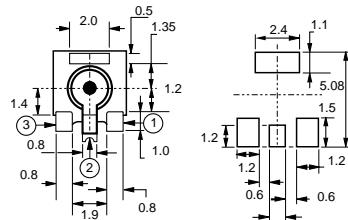
3364A (top adjust, in-line terminals)



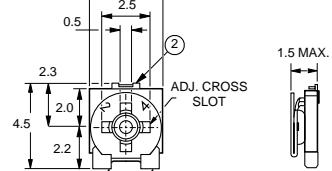
### Packaging



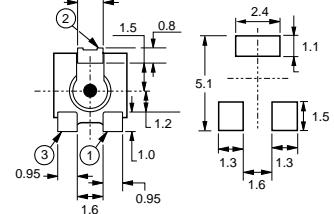
### Pad Pattern



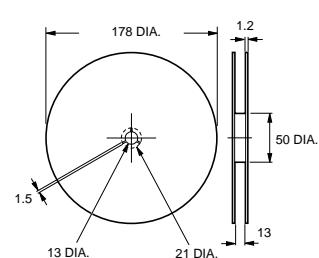
3364W (top adjust)



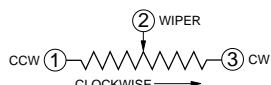
### Pad Pattern



Reel quantity 1000pcs



### Circuit Diagram



## BOURNS type 3374 (4mm square, surface mount)

Sealed, single turn cermet trimming potentiometers in a range of values from  $10\Omega$  to  $2M\Omega$  and a top adjust configuration. Designed for reflow solder processing, the devices are suitable for use with pick-and-place assembly equipment. An option is provided for product orientation with-in the tape.



- 4mm square surface mount body
- Cermet element
- Sealed for board washing
- Single turn
- Top adjust (cross slot rotor)
- Supplied taped & reeled
- Tape orientation option

### Specification

#### Electrical Characteristics

Resistance range .....	$10\Omega$ to $2M\Omega$
Resistance tolerance .....	$\pm 20\%$
End resistance .....	1% or $2\Omega$ max. (whichever is greater)
Contact resistance variation .....	3% or $3\Omega$ max. (whichever is greater)
Resolution .....	Infinite
Adjustment angle .....	240° nom.

#### Environmental Characteristics

Power rating .....	0.25W @ $70^\circ\text{C}$
Temperature range.....	-55°C to +125°C
Temperature coefficient.....	<500K = $\pm 100\text{ppm}/^\circ\text{C}$ ≥500K = $\pm 150\text{ppm}/^\circ\text{C}$
Seal .....	5 turns min.
Humidity .....	MIL-STD-202 method 103 20G
Vibration .....	total resistance shift..... 1% max. voltage ratio shift..... 1% max.
Shock.....	100G total resistance shift..... 1% max. voltage ratio shift..... 1% max.
Load life .....	1000 hours 0.25W @ $70^\circ\text{C}$
Rotational life .....	100 cycles total resistance shift..... 3% max.
Thermal shock .....	5 cycles total resistance shift..... 2% max. voltage ratio shift..... 1% max.

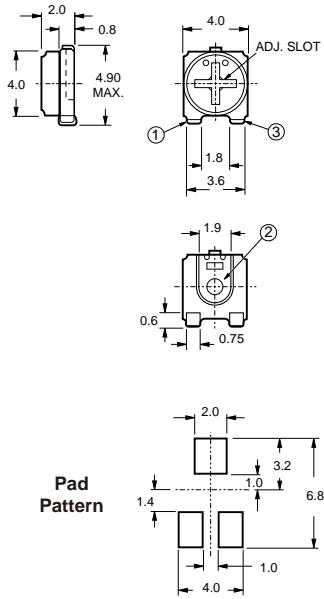
#### Physical Characteristics

Operating torque.....	18 to 180g/cm
Mechanical angle.....	Continuous
Wiper positioning .....	50% nominal

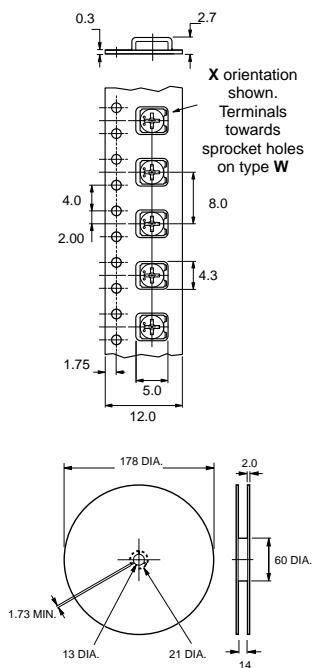
Bourns Part No. & Anglia Order Code		
Value ( $\Omega$ )	3374W	3374X
10R	3374W-1-100E	3374X-1-100E
20R	3374W-1-200E	3374X-1-200E
50R	3374W-1-500E	3374X-1-500E
100R	3374W-1-101E	3374X-1-101E
200R	3374W-1-201E	3374X-1-201E
500R	3374W-1-501E	3374X-1-501E
1K	3374W-1-102E	3374X-1-102E
2K	3374W-1-202E	3374X-1-202E
5K	3374W-1-502E	3374X-1-502E
10K	3374W-1-103E	3374X-1-103E
20K	3374W-1-203E	3374X-1-203E
50K	3374W-1-503E	3374X-1-503E
100K	3374W-1-104E	3374X-1-104E
200K	3374W-1-204E	3374X-1-204E
500K	3374W-1-504E	3374X-1-504E
1M	3374W-1-105E	3374X-1-105E
2M	3374W-1-205E	3374X-1-205E

### Dimensions (mm)

3374W/X

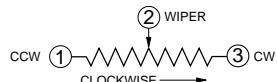


### Packaging



**Reel quantity 2000pcs**

### Circuit Diagram



**SPLT** 750pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

SUPPLIED IN FULL REELS ONLY

**01945 47 47 47**



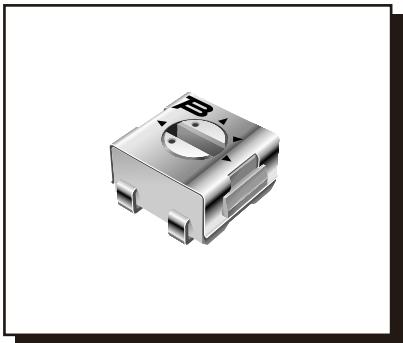
**01945 47 48 49**



**E-mail: sales@angliac.co.uk**

## BOURNS type 3314 (4mm square, surface mount)

Sealed, single turn cermet trimming potentiometers in a range of values from 100Ω to 2MΩ. The devices are available in top or side adjust orientation with a terminal option offered on top adjust. Compatible with all popular pick-and-place assembly equipment.



- 4mm square surface mount body
- Cermet element
- Sealed for board washing
- Single turn
- Top (slot) or side (cross slot) adjust
- Terminal option on top adjust
- Supplied taped & reeled



### Specification

#### Electrical Characteristics

Resistance range .....	100Ω to 2MΩ
Resistance tolerance .....	±20%
End resistance .....	1% or 2Ω max. (whichever is greater)
Contact resistance variation .....	1% or 3Ω max. (whichever is greater)
Resolution .....	Infinite
Insulation resistance .....	100MΩ min. @ 500Vdc.
Dielectric strength .....	500Vac for 1 minute
Adjustment angle .....	210° nominal

#### Environmental Characteristics

Power rating .....	0.25W @ 300V/70°C max.		
Temperature range .....	-55°C to +125°C		
Temperature coefficient .....	100ppm/°C		
Humidity .....	90-98% RH, 10 cycles, 240 hours total resistance shift .....	2% max./10MΩ insulation resistance	
Vibration .....	20G total resistance shift .....	1% max.	
Voltage ratio shift .....	1% max.		
Shock .....	100G total resistance shift .....	1% max.	
Voltage ratio shift .....	1% max.		
Load life .....	1000 hours 0.25W @70°C total resistance shift .....	3% max.	
Rotational life .....	100 cycles total resistance shift .....	3% max.	
Thermal shock .....	5 cycles total resistance shift .....	2% max. voltage ratio shift .....	1% max.
Soldering heat resistance .....	260°C/10s total resistance shift .....	1% max.	

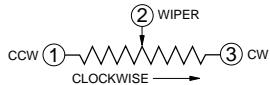
#### Physical Characteristics

Operating torque .....	180g/cm typ.
Mechanical angle .....	240° nom.
Stop strength .....	300g/cm typ.
Flammability .....	UL94V-0

### Dimensions (mm)

Refer to page opposite

### Circuit Diagram



● Other Styles Available

Please contact our Sales Dept. for details

SPLT

500pcs

(3314Z 200pcs)

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

Value (Ω)	Bourns Part No. & Anglia Order Code		
	3314G	3314J	3314Z
100R	3314G-1-101E	3314J-1-101E	3314Z-1-101E
200R	3314G-1-201E	3314J-1-201E	3314Z-1-201E
500R	3314G-1-501E	3314J-1-501E	3314Z-1-501E
1K	3314G-1-102E	3314J-1-102E	3314Z-1-102E
2K	3314G-1-202E	3314J-1-202E	3314Z-1-202E
5K	3314G-1-502E	3314J-1-502E	3314Z-1-502E
10K	3314G-1-103E	3314J-1-103E	3314Z-1-103E
20K	3314G-1-203E	3314J-1-203E	3314Z-1-203E
50K	3314G-1-503E	3314J-1-503E	3314Z-1-503E
100K	3314G-1-104E	3314J-1-104E	3314Z-1-104E
200K	3314G-1-204E	3314J-1-204E	3314Z-1-204E
500K	3314G-1-504E	3314J-1-504E	3314Z-1-504E
1M	3314G-1-105E	3314J-1-105E	3314Z-1-105E
2M	3314G-1-205E	3314J-1-205E	3314Z-1-205E

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01945 47 47 47 •

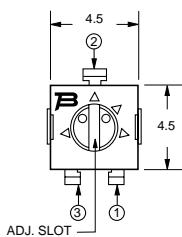
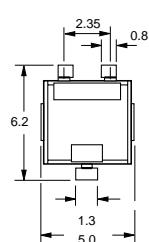
01945 47 48 49 •



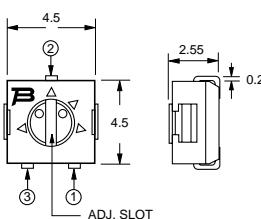
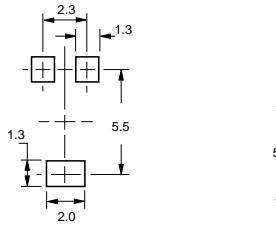
E-mail: sales@angliac.co.uk

**BOURNS type 3314 (4mm square, surface mount) continued**
**Dimensions (mm)**

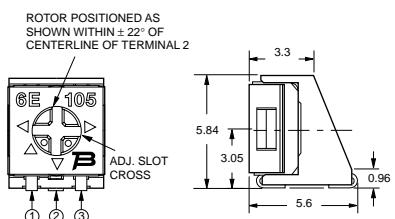
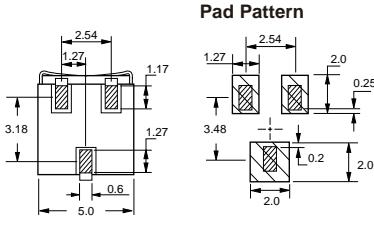
3314G (top adjust, gull wing)


**Pad Pattern**


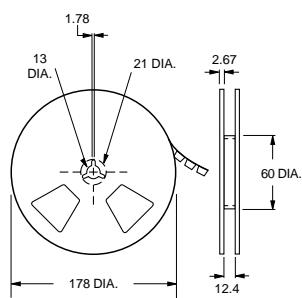
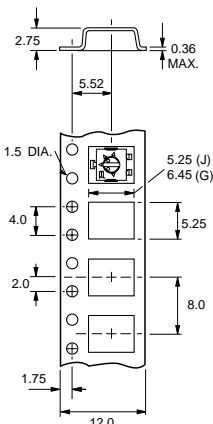
3314J (top adjust, J-hook)


**Pad Pattern**


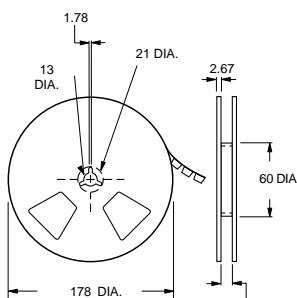
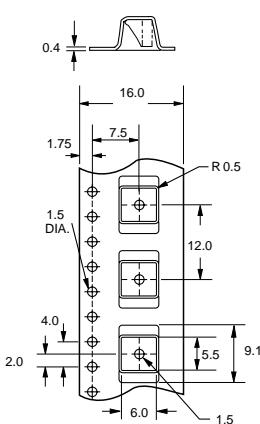
3314Z (side adjust)


**Pad Pattern**

**Packaging**

3314J/G

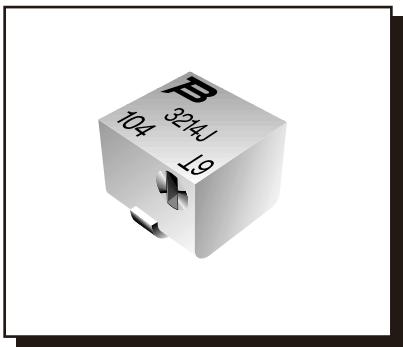


3314Z


*Reel quantity 500pcs*
*Reel quantity 200pcs*

## BOURNS type 3214 (4mm square, surface mount)

Sealed, multiturn cermet trimming potentiometers in a range of values from 10Ω to 2MΩ. The devices are available in a choice of flush fitting top or side adjust orientations utilising an advanced drive/wiper mechanism and feature pick and place centering design.



- 4mm square surface mount body
- Cermet element
- Sealed for board washing
- Multiturn (5 turns)
- Top or side adjust
- Supplied taped & reeled

### Specification

#### Electrical Characteristics

Resistance range .....	10Ω to 2MΩ
Resistance tolerance.....	±10%
Absolute minimum resistance .....	1% or 2Ω max. (whichever is greater)
Contact resistance variation.....	3% or 3Ω max. (whichever is greater)
Resolution .....	Infinite
Insulation resistance.....	100MΩ min. @ 500Vdc.
Dielectric strength.....	600Vac. for 1 minute
Effective travel.....	5 turns nominal

#### Environmental Characteristics

Power rating .....	0.25W @ 300V/85°C max.
Temperature range .....	-65°C to +150°C
Temperature coefficient .....	±100ppm/°C
Humidity .....	MIL-STD-202 method 106
total resistance shift .....	2% max./10MΩ insulation resistance
Vibration .....	20G
total resistance shift .....	1% max.
voltage ratio shift.....	1% max.
Shock .....	100G
total resistance shift .....	1% max.
voltage ratio shift.....	1% max.
Load life .....	1000 hours 0.25W @ 85°C
total resistance shift .....	3Ω or 3% max. (whichever is greater)
Rotational life.....	200 cycles
total resistance shift .....	3Ω or 3% max. (whichever is greater)
Thermal shock.....	5 cycles
total resistance shift .....	2% max.
voltage ratio shift.....	1% max.

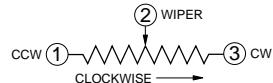
#### Physical Characteristics

Operating torque .....	180g/cm max.
Mechanical stops.....	Wiper idles (clutching action)
Wiper positioning .....	50% nominal
Flammability .....	UL94V-0

### Dimensions (mm)

Refer to page opposite

### Circuit Diagram



#### ● Other Styles Available

Please contact our Sales Dept. for details

SPLT

500pcs (3214W 250pcs) Manufacturers smallest factory pack quantity for lot integrity and traceability.

#### Bourns Part No. & Anglia Order Code

Value (Ω)	3214G	3214W
10R	3214G-1-100E	3214W-1-100E
20R	3214G-1-200E	3214W-1-200E
50R	3214G-1-500E	3214W-1-500E
100R	3214G-1-101E	3214W-1-101E
200R	3214G-1-201E	3214W-1-201E
500R	3214G-1-501E	3214W-1-501E
1K	3214G-1-102E	3214W-1-102E
2K	3214G-1-202E	3214W-1-202E
5K	3214G-1-502E	3214W-1-502E
10K	3214G-1-103E	3214W-1-103E
20K	3214G-1-203E	3214W-1-203E
50K	3214G-1-503E	3214W-1-503E
100K	3214G-1-104E	3214W-1-104E
200K	3214G-1-204E	3214W-1-204E
500K	3214G-1-504E	3214W-1-504E
1M	3214G-1-105E	3214W-1-105E
2M	3214G-1-205E	3214W-1-205E

SUPPLIED IN FULL REELS ONLY

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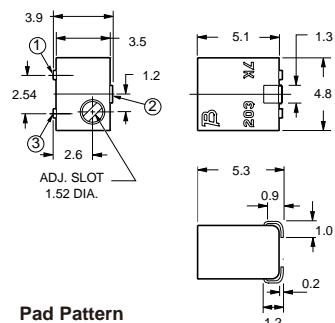
## MULTITURN (SMD)

# TRIMMERS

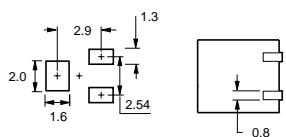
**BOURNS type 3214 (4mm square, surface mount) continued**

### Dimensions (mm)

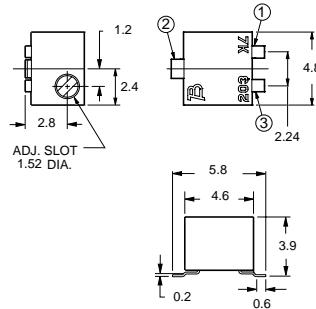
3214W (top adjust)



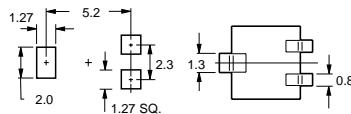
## Pad Pattern



3214G (side adjust)

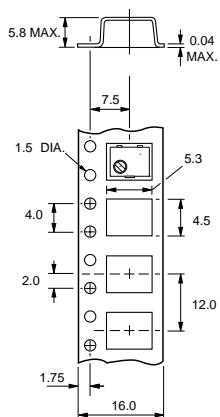


## Pad Pattern

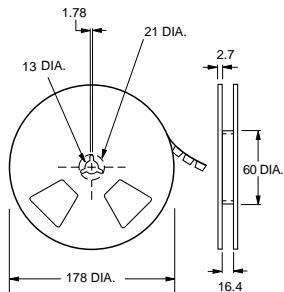
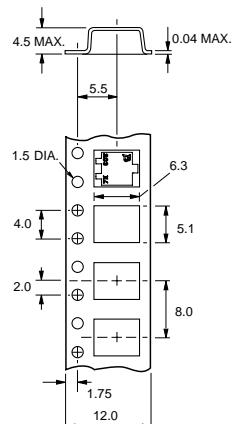


## Packaging

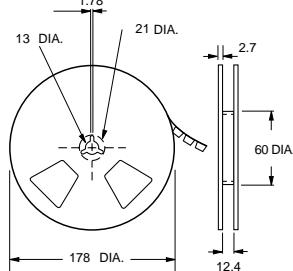
3214W



3214G



*Reel quantity 250pcs*



*Reel quantity 500pcs*

## BOURNS type 3224 (4mm square, surface mount)

Sealed, multiturn cermet trimming potentiometers in a range of values from 10Ω to 2MΩ with low contact resistance variation. The devices are available in a choice of flush fitting top or side adjust orientations and feature pick and place centering design.



- 4mm square surface mount body
- Cermet element
- Sealed for board washing
- Multiturn (11 turns)
- Top or side adjust
- Low contact resistance variation
- Supplied taped & reeled

### Specification

#### Electrical Characteristics

Resistance range .....	10Ω to 2MΩ
Resistance tolerance .....	±10%
Absolute minimum resistance .....	1% or 2Ω max. (whichever is greater)
Contact resistance variation .....	1% or 3Ω max. (whichever is greater)
Resolution .....	Infinite
Insulation resistance .....	100MΩ min. @ 500Vdc.
Dielectric strength .....	600Vac. for 1 minute
Effective travel .....	11 turns nominal

#### Environmental Characteristics

Power rating .....	0.25W @ 300V/85°C max.
Temperature range .....	-65°C to +150°C
Temperature coefficient .....	100ppm/°C
Humidity .....	MIL-STD-202 method 106 total resistance shift .....
	2%max./10MΩ insulation resistance
Vibration .....	20G
total resistance shift .....	1% max.
voltage ratio shift .....	1% max.
Shock .....	100G
total resistance shift .....	1% max.
voltage ratio shift .....	1% max.
Load life .....	1000 hours 0.25W @ 85°C
total resistance shift .....	3Ω or 3% max. (whichever is greater)
Rotational life .....	200 cycles
total resistance shift .....	3Ω or 3% max. (whichever is greater)
Thermal shock .....	5 cycles
total resistance shift .....	2% max.
voltage ratio shift .....	1% max.

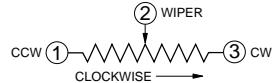
#### Physical Characteristics

Operating torque .....	180g/cm max.
Mechanical stops .....	Wiper idles (clutching action)
Wiper positioning .....	50% nominal
Flammability .....	UL94V-0

### Dimensions (mm)

Refer to page opposite

### Circuit Diagram



● Other Styles Available

Please contact our Sales Dept. for details

SPLT

500pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

(3224W 250pcs)

Value (Ω)	Bourns Part No. & Anglia Order Code	
	3224J	3224W
10R	3224J-1-100E	3224W-1-100E
20R	3224J-1-200E	3224W-1-200E
50R	3224J-1-500E	3224W-1-500E
100R	3224J-1-101E	3224W-1-101E
200R	3224J-1-201E	3224W-1-201E
500R	3224J-1-501E	3224W-1-501E
1K	3224J-1-102E	3224W-1-102E
2K	3224J-1-202E	3224W-1-202E
5K	3224J-1-502E	3224W-1-502E
10K	3224J-1-103E	3224W-1-103E
20K	3224J-1-203E	3224W-1-203E
25K	-	3224W-1-253E
50K	3224J-1-503E	3224W-1-503E
100K	3224J-1-104E	3224W-1-104E
200K	3224J-1-204E	3224W-1-204E
250K	-	3224W-1-254E
500K	3224J-1-504E	3224W-1-504E
1M	3224J-1-105E	3224W-1-105E
2M	3224J-1-205E	3224W-1-205E

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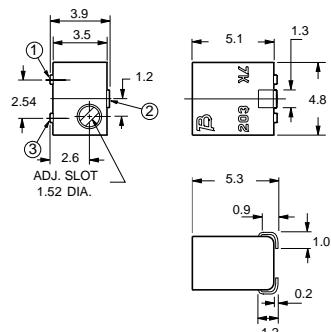
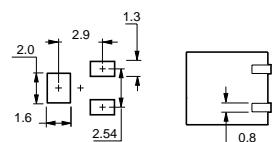
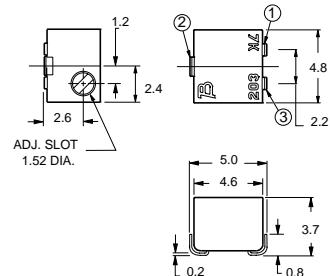
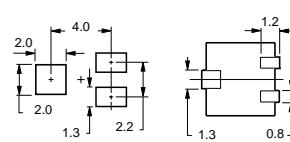
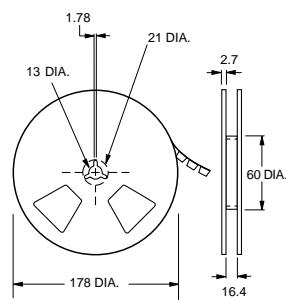
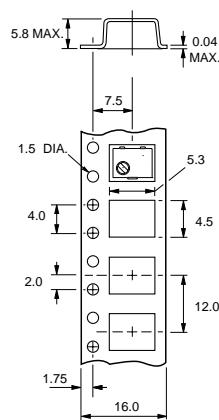
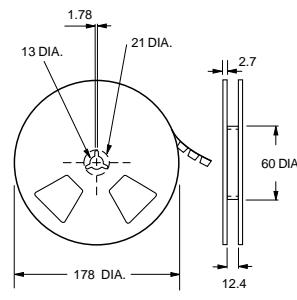
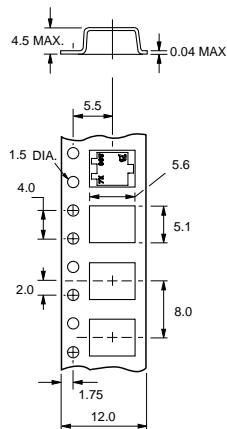
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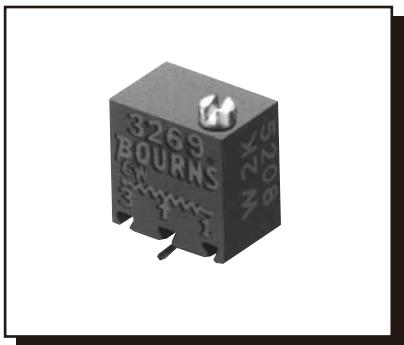


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**BOURNS type 3224 (4mm square, surface mount) continued**
**Dimensions (mm)**
**3224W (top adjust)**

**Pad Pattern**

**3224J (side adjust)**

**Pad Pattern**

**Packaging**
**3224W**

*Reel quantity 250pcs*
**3224J**

*Reel quantity 500pcs*

## BOURNS type 3269 (1/4" square, surface mount)

Sealed, multiturn cermet trimming potentiometers in a range of values from 10Ω to 1MΩ. The devices are available in a choice of top or side adjust orientations whilst being fully compatible with surface mount manufacturing processes.



- 1/4" square surface mount body
- Cermet element
- Sealed for board washing
- Multiturn (12 turns)
- 3 style options, top or side adjust
- Supplied taped & reeled

### Specification

#### Electrical Characteristics

Resistance range .....	10Ω to 1MΩ
Resistance tolerance .....	±10%
Absolute minimum resistance .....	1% or 2Ω max. (whichever is greater)
Contact resistance variation .....	3% or 3Ω max. (whichever is greater)
Voltage adjustability .....	±0.02%
Resistance adjustability .....	±0.05%
Resolution .....	Infinite
Insulation resistance .....	1000MΩ min. @ 500Vd.c.
Dielectric strength .....	600V.a.c.
Effective travel .....	12 turns nominal

#### Environmental Characteristics

Power rating .....	0.25W @ 300V/85°C max.
Temperature range .....	-65°C to +150°C
Temperature coefficient .....	±100ppm/°C
Seal test .....	85°C Fluorinert™
Humidity .....	MIL-STD-202 method 106 total resistance shift ..... 2% max./100MΩ insulation resistance
Vibration .....	30G total resistance shift ..... 1% max.
voltage ratio shift .....	1% max.
Shock .....	100G total resistance shift ..... 1% max.
voltage ratio shift .....	1% max.
Load life .....	1000 hours, 0.25W @ 85°C total resistance shift ..... 3% max.
contact resistance variation .....	3% or 3Ω max. (whichever is greater)
Rotational life .....	200 cycles total resistance shift ..... 2% max.
contact resistance variation .....	3% or 3Ω max. (whichever is greater)
Max. exposure (temp/time) .....	245°C/10s

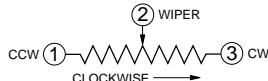
#### Physical Characteristics

Operating torque .....	2.1Ncm max.
Mechanical stops .....	Wiper idles (clutching action)

### Dimensions (mm)

Refer to page opposite

### Circuit Diagram

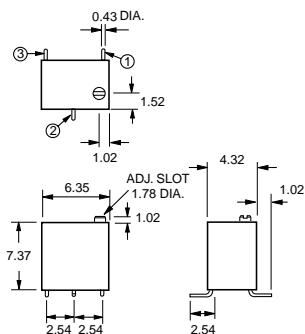
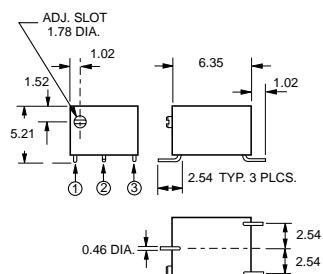
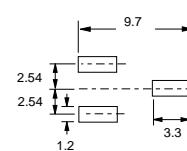
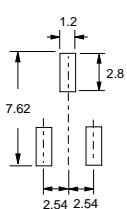
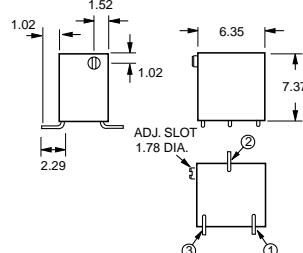
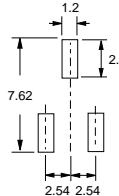
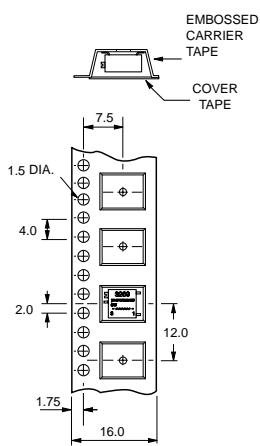
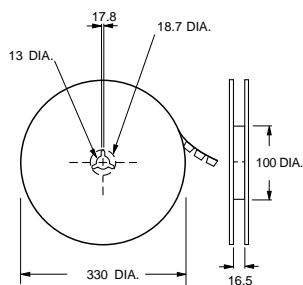
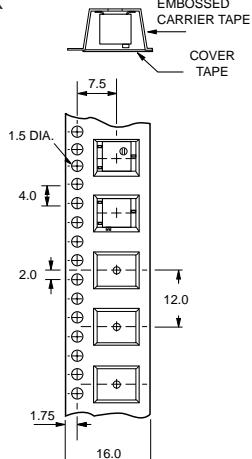
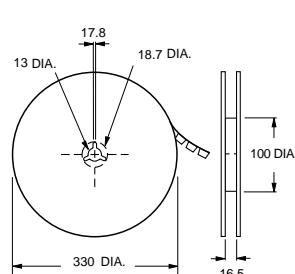


**SPLT** 500pcs  
(3269P 750pcs)

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

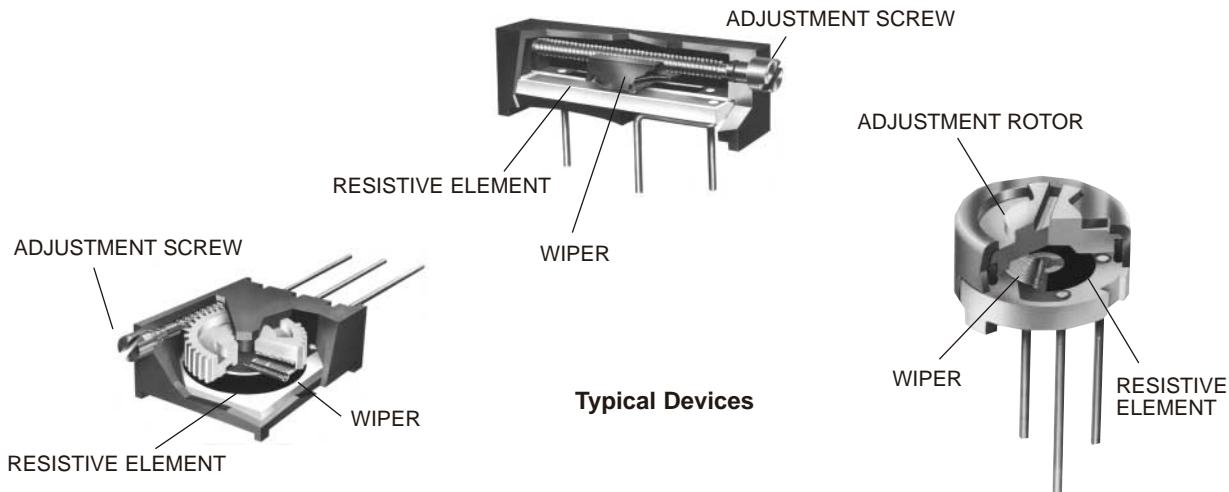
Value (Ω)	Bourns Part No. & <i>Anglia</i> Order Code		
	3269P	3269W	3269X
10R	3269P-1-100G	3269W-1-100G	3269X-1-100G
20R	3269P-1-200G	3269W-1-200G	3269X-1-200G
50R	3269P-1-500G	3269W-1-500G	3269X-1-500G
100R	3269P-1-101G	3269W-1-101G	3269X-1-101G
200R	3269P-1-201G	3269W-1-201G	3269X-1-201G
500R	3269P-1-501G	3269W-1-501G	3269X-1-501G
1K	3269P-1-102G	3269W-1-102G	3269X-1-102G
2K	3269P-1-202G	3269W-1-202G	3269X-1-202G
5K	3269P-1-502G	3269W-1-502G	3269X-1-502G
10K	3269P-1-103G	3269W-1-103G	3269X-1-103G
20K	3269P-1-203G	3269W-1-203G	3269X-1-203G
25K	3269P-1-253G	3269W-1-253G	3269X-1-253G
50K	3269P-1-503G	3269W-1-503G	3269X-1-503G
100K	3269P-1-104G	3269W-1-104G	3269X-1-104G
200K	3269P-1-204G	3269W-1-204G	3269X-1-204G
250K	3269P-1-254G	3269W-1-254G	3269X-1-254G
500K	3269P-1-504G	3269W-1-504G	3269X-1-504G
1M	3269P-1-105G	3269W-1-105G	3269X-1-105G

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**BOURNS type 3269 (1/4" square, surface mount) continued**
**Dimensions (mm)**
**3269W (top adjust)**

**3269P (side adjust, low profile)**

**Pad Pattern**

**Pad Pattern**

**3269X (side adjust)**

**Pad Pattern**

**Packaging**
**3269P**

**3269W/X**

**Reel quantity 750pcs**

**Reel quantity 500pcs**

## Definition

In its most common form, a trimmer is simply a device containing a resistive element and a adjustable wiper contacting the element. The wiper can be mechanically moved to vary the amount of voltage or resistance in the circuit.



## Terminology

### Absolute Minimum Resistance:

The resistance measured between the wiper terminal and each end terminal with the wiper positioned to give a minimum value. Expressed in % of total resistance or ohms ( $\Omega$ ). (See also End Resistance).

### Adjustability:

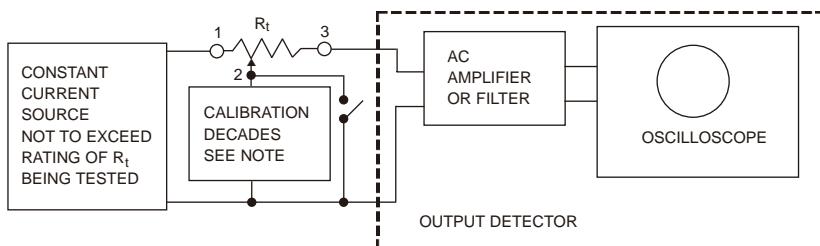
The precision with which the output resistance of a device may be set to the desired value.

### Adjustment Angle (Electrical):

The total travel of the adjustment shaft between minimum and maximum output resistances.

### Contact Resistance Variation (CRV):

The *apparent* resistance seen between the wiper and the resistance element when the wiper is energised with a specified current and moved over the adjustment angle/effective travel in either direction at a constant speed. The output variations are measured over a specified frequency bandwidth, exclusive of the effects due to roll-on or roll-off of the terminations, and is expressed in % of total resistance or ohms ( $\Omega$ ).



$R_t$  = Test trimmer

Output detector bandwidth = 100Hz to 50kHz

Minimum input impedance of output detector = 10 x Nominal test trimmer resistance.

NOTE: At the calibration of the decade, terminals 1 and 2 must be coincident. Calibration decade is to be set for the contact resistance variation (CRV) level of the specified nominal resistance being tested.

Test Current ( $\pm 20\%$ )	Total Resistance Range ( $\Omega$ )
30 mA	$2 < R_t = 200$
5 mA	$200 < R_t = 3K$
1 mA	$3K < R_t = 200K$
200 $\mu$ A	$200K < R_t = 1M$
50 $\mu$ A	$1M < R_t = 5M$

**Continuity:**

The maintenance of continuous electrical contact between the wiper and both end terminals of the resistive element.

**Continuity Travel:**

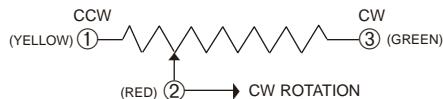
The total travel of the shaft over which electrical continuity is maintained between the wiper and the resistance element.

**Dielectric Strength:**

The ability to withstand the application of a specified potential of a given characteristic, between the terminals and all other external conducting members such as shaft, housing and mounting hardware without exceeding a defined leakage current value.

**Direction of Travel:**

Clockwise (CW) or counterclockwise (CCW) rotation when viewing the adjustment end of the potentiometer.



N.B. Colours applicable to trimmers fitted with flying lead terminations only.

**Effective Travel (Electrical):**

The total travel of the adjustment shaft between minimum and maximum output resistances.

**Element:**

Trimmers for commercial applications typically have a resistive element made of carbon or cermet (a combination of CERamic and METal), or of resistance wire wound on an insulated copper mandrel.

Cermet trimmers provide a wider resistance range than for that of wirewound. The wiper on a cermet trimmer can be set closer to the desired value since the resistive element presents a continuous surface for the wiper as opposed to the discrete turns (resolution) of the wire wound. Other advantages that cermet trimmers possess are the lower reactance in high frequency applications, the smaller sizes available and the general lower cost against wirewound types.

**End Resistance:**

The resistance measured between the wiper terminal and an end terminal when the wiper is positioned at the corresponding end of mechanical travel. Absolute minimum resistance and end resistance are synonymous for continuous rotation trimmers. (See also Absolute Minimum Resistance.)

**Insulation Resistance:**

The resistance to a specified D.C. voltage impressed between the terminals and all other external conducting members such as shaft, housing and mounting hardware.

**Load Life:**

The number of hours at which a device may dissipate rated power under specified operating conditions while remaining within specified allowable degradations.

**Mechanical Travel - Clutching Action:**

The total travel of the adjustment shaft between the points where clutch actuation begins. Continuity must be maintained throughout the travel and during clutch actuation.

**Mechanical Travel - Continuous Rotation:**

The total travel of the adjustment shaft when the wiper movement is unrestricted at either end of the resistive element as the adjustment shaft continues to be actuated.

**Mechanical Travel - Solid Stops:**

The total travel of the adjustment shaft between integral stops. Continuity must be maintained throughout the travel.

**Multiturn Adjustment:**

Requires more than 360° mechanical adjustment to cause the wiper to traverse the total resistive element.

**Operating Torque:**

The maximum moment in the clockwise and counterclockwise directions required to initiate shaft adjustment anywhere in the mechanical travel.

**Power Rating:**

The maximum power that a trimming potentiometer can dissipate across the total resistive element under specified conditions while meeting specified performance requirements.

*Terminology continued overleaf > > >*

**Resistance-Temperature Characteristic:** The difference between the total resistance values measured at a reference temperature of 25°C and the specified test temperature expressed as a percentage of the total resistance as follows:

$$RTC = \frac{R_2 - R_1}{R_1} \times 100$$

Where:  $R_1$  = Resistance at reference temperature (25°C) in ohms  
 $R_2$  = Resistance at the test temperature in ohms

**Resolution:**

The theoretical measurement of sensitivity to which the output ratio may be adjusted. With cermet and carbon trimmers the resolution is infinite. With wirewound trimmers it is the reciprocal of the number of turns of wire in the resistance winding expressed as a percentage where:

$$\text{Theoretical resolution percent} = \frac{1}{N} \times 100$$

N = Total number of resistance wire turns

**Single Turn Adjustment:**

Requires 360° or less mechanical input to cause the wiper to traverse the total resistance element.

**Stop Clutch:**

A device which allows the wiper to idle at the ends of the resistive element without damage as the adjustment shaft continues to be actuated in the same direction.

**Stop Solid:**

A positive limit to mechanical and/or electrical adjustment.

**Stop Strength:**

The maximum static moment that can be applied to the adjustment shaft at each mechanical stop for a specified period of time without loss of continuity or mechanical damage affecting the operational characteristics.

**Temperature Coefficient:**

The unit change in resistance per degree Celcius change from a reference temperature, expressed in parts per million per degree Celcius as follows:

$$TC = \frac{R_2 - R_1}{R_1 (T_2 - T_1)} \times 10^6$$

Where:  $R_1$  = Resistance at reference temperature in ohms  
 $R_2$  = Resistance at the test temperature in ohms  
 $T_1$  = Reference temperature in degrees Celcius  
 $T_2$  = Test temperature in degrees Celcius

**Total Resistance:**

The DC resistance between the input terminals with the wiper positioned to either end stop, or in dead band for continuous rotation potentiometers.

## Soldering and Cleaning Processes (SMD)

These application notes are designed to provide step-by-step processing proposals. It covers the popular SMD soldering processes currently in use and makes recommendations and cautions for each step. Since many variations of temperature, time, processes, cleaning agents and board types are found in the electronics industry, it is advisable to test and verify individual systems to ensure component integrity and compliance.

The process steps, recommendations and cautions are based upon surveys of SMD users, equipment manufacturers and material suppliers, together with ongoing component testing.

Process Step	REFLOW								FLOW				Material
	Hot Air; Infrared (Solvent)	Hot Air; Infrared (Semi-Aq)	Hot Air; Infrared (Aq)	Hot Air; Infrared (No-Clean)	Vapour Phase (Solvent)	Vapour Phase (Semi-Aq)	Vapour Phase (Aq)	Vapour Phase (No-Clean)	Wave (Solvent)	Wave (Semi-Aq)	Wave (Aq)	Wave (No-Clean)	
1. Solder Paste Printing	X	X	X	X	X	X	X	X					
2. Adhesive Application									X	X	X	X	
3. Component Placement	X	X	X	X	X	X	X	X	X	X	X	X	
4. Adhesive Cure									X	X	X	X	
5. Flux Application									X				Rosin
5. Flux Application										X			Rosin
5. Flux Application											X		Organic Acid
5. Flux Application												X	Synthetic Resin Based
6. Solder (Reflow)	X	X		X	X	X	X	X					Sn 63%/Pb 37%
7. Solder (Flow)									X	X	X	X	Sn 63%/Pb 37%
8. Wash (Solvent)	X				X				X				ODS Free
9. Wash (Semi-Aqueous)		X				X				X			Terpene, Hydrocarbon Based
10. Wash (Aqueous)			X				X				X		DI H <sup>2</sup> O/Surfactant/Saponifier
High Pressure Fluids			X				X				X		
Max. Temp. (°C/Sec)	235/40	235/40	235/40	235/40	215/180	215/180	215/180	215/180	260/5	260/5	260/5		
Min. Temp. (°C)	215	215	215	215	215	215	215	215	215	215	215		

		General	Recommended	Caution
1	<b>Solder Paste Printing Reflow</b> 	Use the optimum solder paste for the pattern, printing process, solder paste density and solder joint quality.	Use Sn 63%/Pb 37% solder paste. Use 0.2 to 0.25mm thickness for solder paste print.	Since solder paste usually contains a high percentage of activators, adequate cleaning must be instigated to remove all residues, unless no-clean (low solids) paste is used.
2	<b>Adhesive Application Flow (Wave)</b> 	The adhesive must hold the Surface Mount Device (SMD) in the correct orientation upon placement and maintain correct trimmer position during physical handling before final solder processing.	To ensure positional stability, place a single dot of epoxy under the SMD.	Stability after placement is a direct function of the volume of adhesive used. Use enough epoxy to ensure stability throughout the curing process.  Avoid overflow of epoxy to solder pad and terminal areas.
3	<b>SMD Placement</b> 	Use pick-and-place equipment with vacuum nozzle inside diameter (I.D.) size that allows adequate suction to pick the SMD out of the embossed cavity.	The nozzle I.D. should not exceed 2.54mm to ensure adequate suction and part alignment.	Ensure parts are placed so that all terminals are equidistant (<0.1 mm) from the solder pads.  Align terminals with solder belt direction of travel to avoid body shadowing effects during flow soldering.
4	<b>Adhesive Cure Flow (Wave)</b> 	Use heat/time cure method with either convection oven or infrared radiation (IR).	Cure using the temperature and times recommended by the adhesive manufacturer.	Use enough cure time to ensure complete adhesive transition from liquid to solid.

**Soldering and Cleaning Processes (SMD) continued overleaf > > >**

		General	Recommended	Caution
5	<b>Flux Application Flow (Wave)</b> 	Use the correct flux to remove surface oxides, prevent reoxidation and promote wetting.	<ul style="list-style-type: none"> <li>• RMA</li> <li>• No-clean Synthetic Resin Based (SRB).</li> <li>• Organic Acid (OA).</li> </ul>	Avoid highly activated fluxes.
6	<b>Solder Reflow: Hot Air, IR, Vapour Phase</b> 	Preheat sufficiently using both time and temperature to vaporise all solder paste solvents and moisture, leaving only solder and flux as component enters solder reflow phase.	Solder zone profile of 230°C for 20 seconds.	<p>Do not exceed time and temperature reflow profile of 235°C for 45 ±5 seconds for hot air/IR reflow and 215°C for 3 minutes for vapour phase reflow. Use 215°C as minimum reflow temperature.</p> <p>Minimise thermal shock by limiting temperature rise rate to 3°C/sec and by stabilising board and components temperature during preheating.</p>
7	<b>Solder Flow (Wave)</b> 	For maximum component reliability and performance, minimise the time of temperature exposure above 200°C.	Use Sn 63%/Pb 37% solder. Solder zone profile of 245°C for 5 seconds.	<p>Do not exceed 260°C peak temperature for dual wave solder process with a flow zone totalling 5 seconds.</p> <p>Minimise thermal shock by limiting temperature rise rate to 3°C/sec and by stabilising board and components temperature during preheating.</p>
8	<b>Wash Solvent</b> 	Use solvent cleaning primarily for non-polar contaminants such as rosin based flux residues.	Use any suitable washing solvents that meet ODC requirements.	Limit excessive direct spray pressure to 4 Bar (60psi) or below for optimum reliability.
9	<b>Wash Semi-Aqueous</b> 	Use semi-aqueous for non-polar contaminants such as rosin based flux residues.	Use terpene or hydrocarbon based for prewash. Use water for final wash.	Limit excessive direct spray pressure top 4 Bar (60psi) or below for optimum reliability.
10	<b>Wash Aqueous</b> 	Use aqueous cleaning primarily for polar contaminants such as organic flux residues.	<p>Use any of these aqueous wash materials:</p> <ul style="list-style-type: none"> <li>• De-ionised water</li> <li>• Surfactants</li> <li>• Saponifiers</li> </ul>	Limit excessive direct spray pressure to 4 Bar (60psi) or below for optimum reliability. Ultrasonics may cause component damage or failure.
11	<b>No-Wash</b>	No-wash is an option when no-clean (low solids) flux is used for solder operations.		
Board Rework		Excessive and/or repeated high temperature heat exposure may affect component performance and reliability.	Hot air reflow technique is preferred.	Avoid use of a soldering iron or wave soldering as a rework technique.

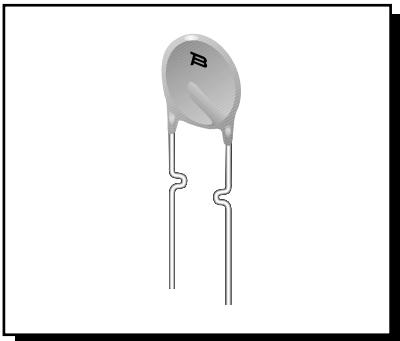


## P.T.C. RESETTABLE

**FUSES**

### BOURNS type MF-R (radial)

A range of radial lead, P.T.C. resettable, general purpose fuses with flame retardant bodies. Designed for fast tripping, the devices are available in an array of holding current values between 0.1A and 9A and feature appropriate European and North American approvals on most variants.



- Radial leaded
- Current ratings from 0.1A to 9A
- UL, CSA & TÜV approved
- Flame retardant to UL94V-0

#### Specification

##### Environmental Characteristics

Temperature range	-40°C to +85°C
storage	-40°C to +85°C
operating	-40°C to +85°C
Max. device surface temp.	125°C (in tripped state)
Passive ageing	1000 hours/+85°C ±5% typ. resistance change
Humidity ageing	1000 hours/+85°C/85% R.H. ±5% typ. resistance change
Thermal shock	MIL-STD-202F, method 107G ±10% typ. resistance change (+125°C to -40°C, 10 times)
Mechanical shock	MIL-STD-202, method 213, Condition 1 (100g/6 seconds) No resistance change
Vibration	MIL-STD-883C, method 2007.1, Condition A No change
Solvent resistance	MIL-STD-202, method 215 No change



APPROVAL	FILE NUMBER	MODELS COVERED
UL	E174545S	30V
CSA	CA110338	All models
TÜV	E9772255.01	30V

Current (A)		V Max. (V)	I Max. (A)	Initial Resistance (Ω)		1 Hour Post Trip Resistance (R <sub>1Ω</sub> )	Max. Time To Trip @ 5x Hold Current	Tripped Power Dissipation (W)	Bourns Part No. & Anglia Order Code	SPLT pcs							
@ 23°C				@ 23°C													
Hold	Trip			Min.	Max.												
0.10	0.20	60	40	2.50	4.50	7.50	4.0	0.38	MF-R010	500							
0.17	0.34	60	40	2.00	3.20	8.00	3.0	0.48	MF-R017	500							
0.20	0.40	60	40	1.50	2.84	4.40	2.2	0.40	MF-R020	500							
0.25	0.50	60	40	1.00	1.95	3.00	2.5	0.45	MF-R025	500							
0.30	0.60	60	40	0.76	1.36	2.10	3.0	0.50	MF-R030	500							
0.40	0.80	60	40	0.52	0.86	1.29	3.8	0.55	MF-R040	500							
0.50	1.00	60	40	0.41	0.77	1.17	4.0	0.75	MF-R050	500							
0.65	1.30	60	40	0.27	0.48	0.72	5.3	0.90	MF-R065	500							
0.75	1.50	60	40	0.18	0.40	0.60	6.3	0.90	MF-R075	500							
0.90	1.80	60	40	0.14	0.31	0.47	7.2	1.00	MF-R090	500							
0.90	1.80	30	40	0.07	0.12	0.22	5.9	0.60	MF-R090-0-009	500							
1.10	2.20	30	40	0.10	0.18	0.27	6.6	0.70	MF-R110	500							
1.35	2.70	30	40	0.065	0.115	0.17	7.3	0.80	MF-R135	500							
1.60	3.20	30	40	0.055	0.105	0.15	8.0	0.90	MF-R160	500							
1.85	3.70	30	40	0.04	0.07	0.11	8.7	1.00	MF-R185	500							
2.50	5.00	30	40	0.025	0.048	0.07	10.3	1.20	MF-R250	100							
2.50	5.00	30	40	0.025	0.048	0.07	10.3	1.20	MF-R250-0-010	500							
3.00	6.00	30	40	0.02	0.05	0.08	10.8	2.00	MF-R300	100							
4.00	8.00	30	40	0.01	0.03	0.05	12.7	2.50	MF-R400	100							
5.00	10.00	30	40	0.01	0.03	0.05	14.5	3.00	MF-R500	100							
6.00	12.00	30	40	0.005	0.02	0.04	16.0	3.50	MF-R600	100							
7.00	14.00	30	40	0.005	0.02	0.03	17.5	3.80	MF-R700	100							
8.00	16.00	30	40	0.005	0.02	0.03	18.8	4.00	MF-R800	100							
9.00	18.00	30	40	0.005	0.01	0.02	20.0*	4.20	MF-R900	100							

\*Tested at 40A

**SPLT**

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

**MF-R continued overleaf > > > >**

**01945 47 47 47**

**01945 47 48 49**



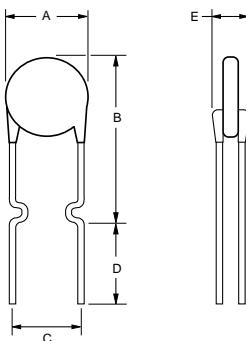
**E-mail: sales@angliac.co.uk**

**BOURNS type MF-R (radial) continued**

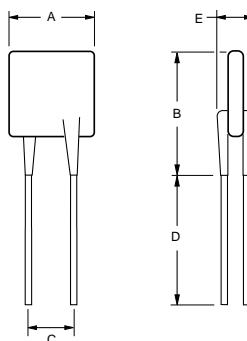
MULTIFUSE®

## Dimensions (mm)

Package style 1



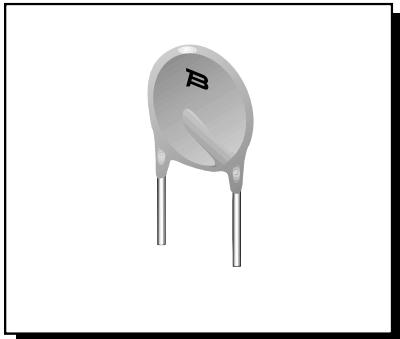
Package style 2



Part No.	Package Style	A Max.	B Max.	C		D Min.	E Max.	Lead Dia.
				Nom.	Tol. ±			
MF-R010	1	7.4	12.7	5.1	0.7	7.6	3.1	0.51
MF-R017	1	7.4	12.7	5.1	0.7	7.6	3.1	0.51
MF-R020	1	7.4	12.7	5.1	0.7	7.6	3.1	0.51
MF-R025	1	7.4	12.7	5.1	0.7	7.6	3.1	0.51
MF-R030	1	7.4	13.4	5.1	0.7	7.6	3.1	0.51
MF-R040	1	7.4	13.7	5.1	0.7	7.6	3.1	0.51
MF-R050	1	7.9	13.7	5.1	0.7	7.6	3.1	0.51
MF-R065	1	9.7	15.2	5.1	0.7	7.6	3.1	0.51
MF-R075	1	10.4	16.0	5.1	0.7	7.6	3.1	0.51
MF-R090	1	11.7	16.7	5.1	0.7	7.6	3.1	0.51
MF-R090-0-009	2	7.4	12.2	5.1	0.7	7.6	3.0	0.51
MF-R110	1	8.9	14.0	5.1	0.7	7.6	3.0	0.51
MF-R135	1	8.9	18.9	5.1	0.7	7.6	3.0	0.51
MF-R160	1	10.2	16.8	5.1	0.7	7.6	3.0	0.51
MF-R185	1	12.0	18.4	5.1	0.7	7.6	3.0	0.51
MF-R250	2	12.0	18.3	5.1	0.7	7.6	3.0	0.81
MF-R-250-0-010	2	12.0	18.3	5.1	0.7	7.6	3.0	0.51
MF-R300	2	12.0	18.3	5.1	0.7	7.6	3.0	0.81
MF-R400	2	14.4	24.8	5.1	0.7	7.6	3.0	0.81
MF-R500	2	17.4	24.9	10.2	0.7	7.6	3.0	0.81
MF-R600	2	19.3	31.9	10.2	0.7	7.6	3.0	0.81
MF-R700	2	22.1	29.8	10.2	0.7	7.6	3.0	0.81
MF-R800	2	24.2	32.9	10.2	0.7	7.6	3.0	0.81
MF-R900	2	24.2	32.9	10.2	0.7	7.6	3.0	0.81

**BOURNS type MF-RX (radial)**
**MULTIFUSE®**

Resettable radial lead fuses manufactured with the latest P.T.C. technology and offering a range of holding current values from 1.1A to 3.75A. The fuses conform to appropriate European and North American approvals and have flame retardant bodies.



- Radial leaded
- Higher voltage
- Current ratings from 1.1A to 3.75A
- UL, CSA & TÜV approved
- Flame retardant to UL94V-0

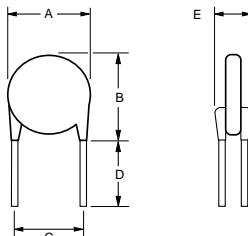
**Specification**
**Environmental Characteristics**

Temperature range	-40°C to +85°C
storage	-40°C to +85°C
operating	-40°C to +85°C
Max. device surface temp	125°C (in tripped state)
Passive ageing	1000 hours/+85°C ±5% typ. resistance change
Humidity ageing	1000 hours/+85°C/85% R.H. ±5% typ. resistance change
Thermal shock	MIL-STD-202F, method 107G ±10% typ. resistance change (+125°C to -40°C, 10 times)
Mechanical shock	MIL-STD-202, method 213 Condition 1 (100g/6 seconds) No change
Vibration	MIL-STD-883C, method 2007.1 Condition A No change
Solvent resistance	MIL-STD-202, method 215 No change



APPROVAL	FILE NUMBER
UL	E174545
CSA	CA110338-3
TÜV	E9772255.03

Current (A)	V Max. (V)	I Max. (A)	Initial Resistance (Ω)		1 Hour Post Trip Resistance (R <sub>1</sub> Ω)	Max. Time To Trip @ 5x Hold Current	Tripped Power Dissipation (W)	Bourns Part No. & <b>Anglia</b> Order Code	SPLT pcs
			@ 23°C						
			Hold	Trip	Min.	Max.	Max.	Secs.	@ 23°C
1.10	2.20	60	40	0.15	0.25	0.38	8.2	1.50	<b>MF-RX110</b> 100
1.35	2.70	60	40	0.12	0.19	0.30	9.6	1.70	<b>MF-RX135</b> 100
1.60	3.20	60	40	0.09	0.14	0.22	11.4	1.90	<b>MF-RX160</b> 100
1.85	3.70	60	40	0.08	0.12	0.19	12.6	2.10	<b>MF-RX185</b> 100
2.50	5.00	60	40	0.05	0.08	0.13	15.6	2.50	<b>MF-RX250</b> 100
3.00	6.00	60	40	0.04	0.06	0.10	19.8	2.80	<b>MF-RX300</b> 100
3.75	7.50	60	40	0.03	0.05	0.08	24.0	3.20	<b>MF-RX375</b> 100

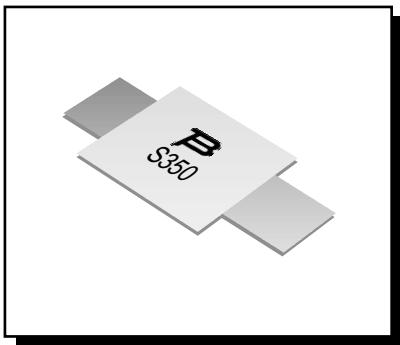
**Dimensions (mm)**


Part No.	A	B	C		D	E	Lead Dia.
	Max.	Max.	Nom.	Tol. ±	Min.	Max.	
MF-RX110	13.0	18.0	5.1	0.7	7.6	3.1	0.81
MF-RX135	14.5	19.6	5.1	0.7	7.6	3.1	0.81
MF-RX160	16.3	21.3	5.1	0.7	7.6	3.1	0.81
MF-RX185	17.8	22.9	5.1	0.7	7.6	3.1	0.81
MF-RX250	21.3	26.4	10.2	0.7	7.6	3.1	0.81
MF-RX300	24.9	30.0	10.2	0.7	7.6	3.1	0.81
MF-RX375	28.4	33.5	10.2	0.7	7.6	3.1	0.81

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

**BOURNS type MF-S (axial)**

A range of axial leaded P.T.C. resettable fuses with holding currents between 1.2A and 4.2A. Offering a low internal resistance and an industry compatible configuration, the ultra-low height of the device makes them especially suitable for applications requiring space saving capabilities.



- Axial leaded
- Low internal resistance
- Current ratings from 1.2A to 4.2A
- UL, TÜV & CSA approved
- Two package options
- Weldable nickel terminals
- Industry compatible

**Specification****Environmental Characteristics**

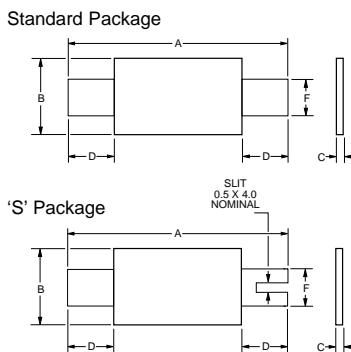
Temperature range	-40°C to +85°C
storage	-40°C to +85°C
operating	-40°C to +85°C
Max. device surface temp	125°C (in tripped state)
Passive ageing	1000 hours/+85°C ±5% typ. resistance change
Humidity ageing	1000 hours/+85°C/85% R.H. ±5% typ. resistance change
Thermal shock	MIL-STD-202F, method 107G ±10% typ. resistance change (+125°C to -40°C, 10 times)
Vibration	MIL-STD-883C, method 2007.1, Condition A No change



APPROVAL	FILE NUMBER	MODELS COVERED
UL	E174545S	MF-S120, 120S, 150, 175, 175S, 200, 350, 420
CSA	CA110338-2	All models
TÜV	E9772255.03	All models

Current (A)		V Max. (V)	I Max. (A)	Initial Resistance (Ω)		1 Hour Post Trip Resistance (R <sub>1Ω</sub> )	Max. Time To Trip @ 5x Hold Current	Tripped Power Dissipation (W)	Bourns Part No. & Anglia Order Code	Package Style					
@ 23°C				@ 23°C											
Hold	Trip			Min.	Max.	Max.	Secs.								
1.20	2.70	15	100	0.085	0.16	0.22	5.0	1.20	MF-S120	Std					
1.20	2.70	15	100	0.085	0.16	0.22	5.0	1.20	MF-S120S	S					
1.50	3.00	15	100	0.05	0.09	0.11	5.0	1.30	MF-S150	Std					
1.50	3.00	15	100	0.05	0.09	0.11	5.0	1.30	MF-S150S	S					
1.75	3.80	15	100	0.05	0.09	0.12	4.0	1.50	MF-S175	Std					
1.75	3.80	15	100	0.05	0.09	0.12	4.0	1.50	MF-S175S	S					
2.00	4.40	30	100	0.03	0.06	0.08	4.0	1.90	MF-S200	Std					
2.00	4.40	30	100	0.03	0.06	0.08	4.0	1.90	MF-S200S	S					
3.50	6.30	30	100	0.017	0.031	0.04	3.0*	2.50	MF-S350	Std					
3.50	6.30	30	100	0.017	0.031	0.04	3.0*	2.50	MF-S350S	S					
4.20	7.60	30	100	0.012	0.024	0.04	6.0*	2.90	MF-S420	Std					
4.20	7.60	30	100	0.012	0.024	0.04	6.0*	2.90	MF-S420S	S					

\*Tested at 20A

**Dimensions (mm)**

Part No.	Package Style	A		B		C		D		F	
		Min.	Max.								
MF-S120	Std	19.9	22.1	4.9	5.2	0.6	1.0	5.5	7.5	3.9	4.1
MF-S120S	S	19.9	22.1	4.9	5.2	0.6	1.0	5.5	7.5	3.9	4.1
MF-S150	Std	21.3	23.4	10.2	11.0	0.5	1.1	4.1	5.5	4.8	5.4
MF-S150S	S	21.3	23.4	10.2	11.0	0.5	1.1	4.1	5.5	4.8	5.4
MF-S175	Std	20.9	23.1	4.9	5.2	0.6	1.0	4.1	5.5	3.9	4.1
MF-S175S	S	20.9	23.1	4.9	5.2	0.6	1.0	4.1	5.5	3.9	4.1
MF-S200	Std	21.3	23.4	10.2	11.0	0.5	1.1	5.0	7.6	4.8	5.4
MF-S200S	S	21.3	23.4	10.2	11.0	0.5	1.1	5.0	7.6	4.8	5.4
MF-S350	Std	28.4	31.8	13.0	13.5	0.5	1.1	6.3	8.9	6.0	6.6
MF-S350S	S	28.4	31.8	13.0	13.5	0.5	1.1	6.3	8.9	6.0	6.6
MF-S420	Std	30.6	32.4	12.9	13.6	0.5	1.1	5.0	7.5	6.0	6.7
MF-S420S	S	30.6	32.4	12.9	13.6	0.5	1.1	5.0	7.5	6.0	6.7

SPLT 500pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

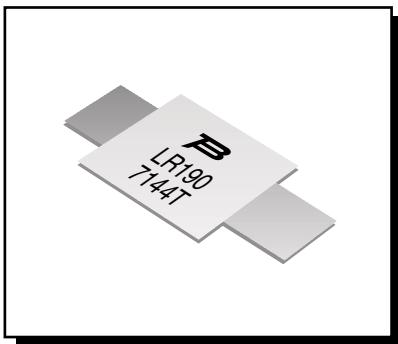


# P.T.C. RESETTABLE

# FUSES

## BOURNS type MF-LR (axial)

The MF-LR axial leaded P.T.C. resettable fuses are manufactured in a range of values from 1.9A to 7.3A holding current. Designed to offer low resistance protection on equipment requiring minimal component size and an industry compatible configuration.



- Axial leaded
- Low internal resistance
- Current ratings from 1.9A to 7.3A
- Weldable nickel terminals
- UL approved
- Industry compatible

### Specification

#### Environmental Characteristics

Temperature range	-40°C to +85°C
storage.....	-40°C to +85°C
operating.....	-40°C to +85°C
Max. device surface temp.....	125°C (in tripped state)
Passive ageing.....	1000 hours/+85°C ±5% typ. resistance change
Humidity ageing.....	1000 hours/+85°C/85% R.H. ±5% typ. resistance change
Thermal shock.....	MIL-STD-202F, method 107G ±10% typ. resistance change (+125°C to -40°C, 10 times)
Vibration.....	MIL-STD-883C, method 2007.1, Condition A No change



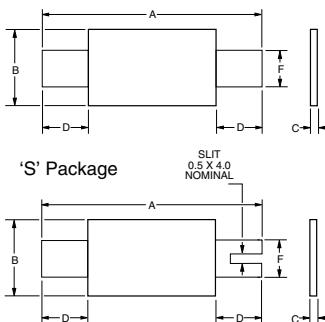
APPROVAL	FILE NUMBER	MODELS COVERED
UL	E174545	MF-LR190, 380, 600

Current (A)		V Max. (V)	I Max. (A)	Initial Resistance (Ω)		1 Hour Post Trip Resistance (R <sub>1Ω</sub> )		Max. Time to Trip		Tripped Power Dissipation (W)	Bourns Part No. & Anglia Order Code	Package Style					
@ 23°C				@ 23°C		@ 23°C		@ 23°C									
Hold	Trip			Min.	Max.	Max	Secs	Amps	@ 23°C								
1.90	3.90	15	100	0.039	0.072	0.102	5.0	9.5	1.2	MF-LR190	Std.						
1.90	3.90	15	100	0.039	0.072	0.102	5.0	9.5	1.2	MF-LR190S	S						
2.60	5.80	15	100	0.020	0.042	0.063	5.0	13.0	2.5	MF-LR260S	S						
3.80	8.30	15	100	0.013	0.026	0.037	5.0	19.0	2.5	MF-LR380	Std.						
4.50	8.90	20	100	0.011	0.020	0.028	5.0	22.5	2.5	MF-LR450	Std.						
5.50	10.50	20	100	0.009	0.016	0.022	5.0	27.5	2.8	MF-LR550	Std.						
6.00	11.70	20	100	0.007	0.014	0.016	5.0	30.0	2.8	MF-LR600	Std.						
7.30	14.10	20	100	0.006	0.012	0.015	5.0	30.0	3.3	MF-LR730*	Std.						

\*UL approval pending

#### Dimensions (mm)

##### Standard Package



Part No.	Package Style	A Min.	A Max.	B Min.	B Max.	C Min.	C Max.	D Min.	D Max.	F Min.	F Max.
MF-LR190	Std.	19.9	22.1	4.9	5.5	0.6	1.0	55	7.5	3.9	4.1
MF-LR190S	S	19.9	22.1	4.9	5.5	0.6	1.0	55	7.5	3.9	4.1
MF-LR260S	S	20.9	23.1	4.9	5.5	0.6	1.0	55	7.5	3.9	4.1
MF-LR380	Std.	24.0	26.0	6.9	7.5	0.6	1.0	4.1	5.5	4.9	5.1
MF-LR450	Std.	24.0	26.0	9.9	10.5	0.6	1.0	5.3	6.7	5.9	6.1
MF-LR550	Std.	35.0	37.0	6.9	7.5	0.6	1.0	5.3	6.7	4.9	5.1
MF-LR600	Std.	24.0	26.0	13.9	14.5	0.6	1.0	4.1	5.5	5.9	6.1
MF-LR730	Std.	26.0	29.1	13.9	14.5	0.6	1.0	4.1	5.5	5.9	6.1



500pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

**01945 47 47 47**



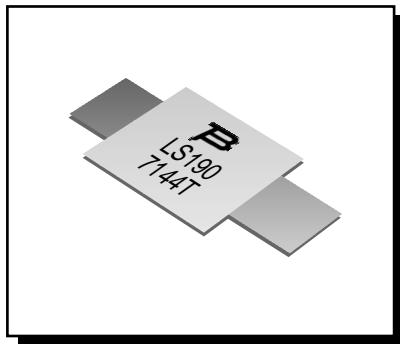
**01945 47 48 49**



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## BOURNS type MF-LS (axial)

Designed to complement the MF-S and MF-LR ranges of P.T.C. fuses, the MF-LS series features a 24V rating in a similarly sized package. The devices additionally offer low trip temperatures and possess relevant European and North American approvals.



- Axial leaded
- Low internal resistance
- Low trip temperatures
- Current ratings from 1A to 3.4A
- UL, CSA & TÜV approved
- Two package options
- Weldable nickel terminals
- Industry compatible

### Specification

#### Environmental Characteristics

Temperature range	-40°C to +85°C
storage	-40°C to +85°C
operating	-40°C to +85°C
Max. device surface temp	125°C (in tripped state)
Passive ageing	1000 hours/+85°C
Humidity ageing	±5% typ. resistance change 1000 hours/+85°C/85% R.H
Thermal shock	±5% typ. resistance change MIL-STD-202F, method 107G
Vibration	±10% typ. resistance change (+125°C to -40°C, 10 times) MIL-STD-883C, method 2007.1, Condition A
	No change

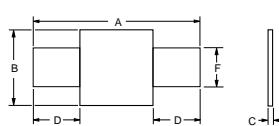


APPROVAL	FILE NUMBER	MODELS COVERED
UL	E174545	MF-LS100S, 180, 180S, 190, 260, 300, 340
CSA	CA110338-9	All models
TÜV	R9772280	MF-LS100S, 180, 180S, 190, 260, 300, 340

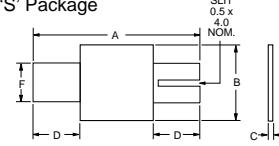
Current (A)		V Max. (V)	I Max. (A)	Initial Resistance (Ω)		1 Hour Post Trip Resistance (R <sub>1Ω</sub> )	Max. Time to Trip		Tripped Power Dissipation (W)	Bourns Part No. & <a href="#">Anglia</a> Order Code	Package Style
Hold	Trip			Min.	Max.		Max.	Secs	Amps		
1.0	2.5	24	100	0.070	0.130	0.260	7.0	5	1.5	<b>MF-LS100S</b>	S
1.8	3.8	24	100	0.040	0.068	0.120	2.9	9	2.0	<b>MF-LS180</b>	Std.
1.8	3.8	24	100	0.040	0.068	0.120	2.9	9	2.0	<b>MF-LS180S</b>	S
1.9	4.2	24	100	0.030	0.057	0.100	3.0	10	1.9	<b>MF-LS190</b>	Std.
1.9	4.2	24	100	0.030	0.057	0.100	3.0	10	1.9	<b>MF-LS190S</b>	S
2.6	5.2	24	100	0.025	0.042	0.076	5.0	13	2.3	<b>MF-LS260</b>	Std.
2.6	5.2	24	100	0.025	0.042	0.076	5.0	13	2.3	<b>MF-LS260S</b>	S
3.0	6.3	24	100	0.015	0.031	0.055	4.0	15	2.0	<b>MF-LS300</b>	Std.
3.0	6.3	24	100	0.015	0.031	0.055	4.0	15	2.0	<b>MF-LS300S</b>	S
3.4	6.8	24	100	0.016	0.027	0.050	5.0	17	2.7	<b>MF-LS340</b>	Std.
3.4	6.8	24	100	0.016	0.027	0.050	5.0	17	2.7	<b>MF-LS340S</b>	S

### Dimensions (mm)

#### Standard Package



#### 'S' Package



Part No.	Package Style	A		B		C		D		F	
		Min.	Max.								
MF-LS100S	S	20.9	23.1	4.9	5.2	0.6	1.0	4.1	5.5	3.9	4.1
MF-LS180	Std.	24.0	26.0	4.9	5.2	0.6	1.0	4.1	5.5	3.9	4.1
MF-LS180S	S	24.0	26.0	4.9	5.2	0.6	1.0	4.1	5.5	3.9	4.1
MF-LS190	Std.	21.3	23.4	10.2	11.0	0.5	1.1	5.0	7.6	4.8	5.4
MF-LS190S	S	21.3	23.4	10.2	11.0	0.5	1.1	5.0	7.6	4.8	5.4
MF-LS260	Std.	24.0	26.0	10.8	11.9	0.6	1.0	5.0	7.0	5.9	6.1
MF-LS260S	S	24.0	26.0	10.8	11.9	0.6	1.0	5.0	7.0	5.9	6.1
MF-LS300	Std.	28.4	31.8	13.0	13.5	0.5	1.1	6.3	8.9	6.0	6.6
MF-LS300S	S	28.4	31.8	13.0	13.5	0.5	1.1	6.3	8.9	6.0	6.6
MF-LS340	Std.	24.0	26.0	14.8	15.9	0.6	1.0	4.0	5.0	5.9	6.1
MF-LS340S	S	24.0	26.0	14.8	15.9	0.6	1.0	4.0	5.0	5.9	6.1

**SPLIT**

500pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.



# P.T.C. RESETTABLE (SMD)

**FUSES**

## BOURNS type MF-SM (surface mount)

The latest surface mount technology, combined with proven advanced P.T.C. principles, is offered in the MF-SM range of resettable fuses. Featuring holding currents of between 0.3A and 2.6A and voltage capabilities of up to 60V, the devices are suitable for a wide range of applications and have relevant European and North American approvals.



- Surface mount package
- Current ratings from 0.3A to 2.6A
- UL, CSA & TÜV approved
- Industry compatible

### Specification

#### Environmental Characteristics

Temperature range	-40°C to +85°C
storage	-40°C to +85°C
operating	-40°C to +85°C
Max. device surface temp.	125°C (in tripped state)
Passive ageing	1000 hours/+85°C ±5% typ. resistance change
Humidity ageing	1000 hours/+85°C/85% R.H ±5% typ. resistance change
Thermal shock	MIL-STD-202F, method 107G ±10% typ. resistance change (+125°C to -40°C, 10 times)
Mechanical shock	MIL-STD-202, method 213 Condition 1 (100g/6 seconds) No resistance change
Vibration	MIL-STD-883C, method 2007.1, Condition A No change
Solvent resistance	MIL-STD-202, method 215 No change

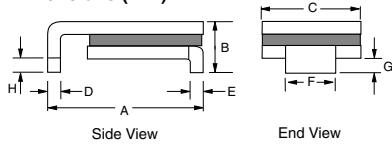


APPROVAL	FILE NUMBER
UL	E174545
CSA	CA110338-5
TÜV	R9772280

SUPPLIED IN FULL REELS ONLY

Current (A)		V Max. (V)	I Max. (A)	Initial Resistance (Ω)	1 Hour Post Trip Resistance (R <sub>1Ω</sub> )	Max. Time to Trip		Tripped Power Dissipation (W)	Bourns Part No. & Anglia Order Code	Reel Qty SPLT pcs
Hold	Trip					Min.	Max.	Secs		
@ 23°C				@ 23°C		@ 23°C		@ 23°C		
Hold	Trip									
0.30	0.60	60	10	0.90	4.80	3.0	1.5	1.7	MF-SM030-2	2000
0.50	1.00	30	10	0.35	1.40	4.0	2.5	1.7	MF-SM050-2	2000
0.75	1.50	30	40	0.27	1.00	0.3	8.0	1.7	MF-SM075-2	2000
1.10	2.20	15	40	0.12	0.48	0.5	8.0	1.7	MF-SM100-2	2000
1.25	2.50	15	40	0.07	0.25	2.0	8.0	1.7	MF-SM125-2	2000
1.50	3.00	15	40	0.06	0.25	5.0	8.0	1.9	MF-SM150-2	1500
2.00	4.00	15	40	0.05	0.125	12.0	8.0	1.9	MF-SM200-2	1500
2.50	5.00	15	40	0.035	0.085	25.0	8.0	1.9	MF-SM250-2	1500
2.60	5.20	6	40	0.025	0.075	20.0	8.0	1.7	MF-SM260-2	2000

#### Dimensions (mm)

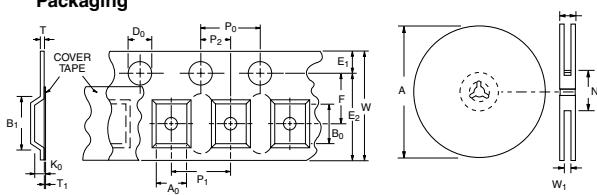


Part No.	A Min.	A Max.	B Max.	C Max.	D Min.	D Max.	E Min.	E Max.	F Min.	F Max.	G Min.	G Max.	H Min.
MF-SM030-2	6.73	7.98	3.18	5.44	0.56	0.71	0.56	0.71	2.16	2.41	0.66	1.37	0.43
MF-SM050-2	6.73	7.98	3.18	5.44	0.56	0.71	0.20	0.30	2.16	2.41	0.66	1.37	0.43
MF-SM075-2	6.73	7.98	3.18	5.44	0.56	0.71	0.56	0.71	2.16	2.41	0.66	1.37	0.43
MF-SM100-2	6.73	7.98	3.00	5.44	0.56	0.71	0.56	0.71	2.16	2.41	0.66	1.37	0.43
MF-SM125-2	6.73	7.98	3.00	5.44	0.56	0.71	0.56	0.71	2.16	2.41	0.66	1.37	0.43
MF-SM150-2	8.00	9.50	3.00	6.71	0.56	0.71	0.56	0.71	3.68	3.94	0.66	1.37	0.43
MF-SM200-2	8.00	9.50	3.00	6.71	0.56	0.71	0.71	0.71	3.68	3.94	0.66	1.37	0.43
MF-SM250-2	8.00	9.50	3.00	6.71	0.56	0.71	0.56	0.71	3.68	3.94	0.66	1.37	0.43
MF-SM260-2	6.73	7.98	3.00	5.44	0.56	0.71	0.56	0.71	2.16	2.41	0.66	1.37	0.43

MF-SM030, 050, 075, 100, 125, 260

MF-SM150, 200, 250

#### Packaging



MF-SM Parts	W	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	A <sub>0</sub>	B <sub>0</sub>	B <sub>1</sub>	D <sub>0</sub>	F	E <sub>1</sub>	E <sub>2</sub>	T <sub>1</sub>	K <sub>0</sub>	A	N	W <sub>1</sub>	W <sub>2</sub>	
030, 050, 075, 100, 125, 260	16	4	8	2	5.7	8.1	9.1	1.5	7.5	1.75	14.25	0.4	0.1	3.4	360	50	16.4	22.4
150, 200, 250	16	4	12	2	6.9	10	11	1.5	7.5	1.75	14.25	0.4	0.1	3.5	360	50	16.4	22.4

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

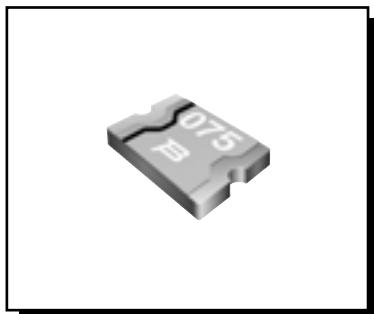
SPLT

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**BOURNS type MF-MSMC (surface mount)**

MULTIFUSE®

The MF-MSMC range of P.T.C. fuses are designed for applications requiring fast tripping resettable circuit protection and a small component size. The fuses are available in a range of holding currents from 0.2A to 1.1A and possess relevant European and North American approvals.



- Surface mount package
- Small size (4.5mm)
- Fast tripping
- Low internal resistance
- Current ratings from 0.2A to 1.1A
- UL, CSA & TÜV recognition

**Specification**

## Environmental Characteristics

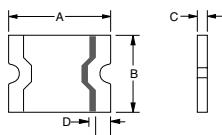
Temperature range	.....	-40°C to +85°C
storage	.....	-40°C to +85°C
operating	.....	125°C (in tripped state)
Max. device surface temp	.....	1000 hours/+85°C
Passive ageing	.....	±5% typ. resistance change
Humidity ageing	.....	1000 hours/+85°C/85% R.H ±5% typ. resistance change
Thermal shock	.....	MIL-STD-202F, method 107G ±10% typ. resistance change (+125°C to -40°C, 10 times)
Vibration	.....	MIL-STD-883C, method 2007.1, Condition A = No change



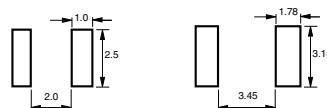
APPROVAL	FILE NUMBER
UL	E174545
CSA	CA110338-7
TÜV	E9772255.04

SUPPLIED IN FULL REELS ONLY

Current (A)	V Max. (V)	I Max. (A)	Initial Resistance (Ω)		1 Hour Post Reflow Resistance (R <sub>1Ω</sub> )		Max. Time To Trip @ 8A		Tripped Power Dissipation (W)	Bourns Part No. & <a href="#">Anglia</a> Order Code	Reel Qty [SPLT] pcs			
			@ 23°C				@ 23°C							
			Hold	Trip	Min.	Max.	Max.	Secs						
0.20	0.40	30.0	10		0.80	1.20	5.0	0.02	0.8	<b>MF-MSMC020-2</b>	1500			
0.35	0.70	6.0	40		0.32	0.48	1.30	0.10	0.6	<b>MF-MSMC035-2</b>	1500			
0.50	1.00	15.0	40		0.15	0.22	1.0	0.15	0.8	<b>MF-MSMC050-2</b>	1500			
0.75	1.50	13.2	40		0.11	0.17	0.45	0.20	0.8	<b>MF-MSMC075-2</b>	1500			
1.10	2.20	6.0	40		0.04	0.06	0.21	0.30	0.8	<b>MF-MSMC110-2</b>	1500			

**Dimensions (mm)**

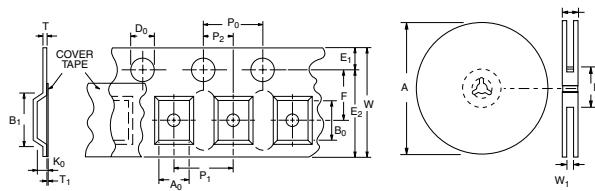
These devices utilize a castalated termination which enhances the solder joint inspectability when installed on a printed circuit board.

**Pad Pattern**

MF-MSMC035

MF-MSMC020, 050, 075, 110

Part No.	A		B		C		D		E	
	Min.	Max.								
MF-MSMC020-2	4.37	4.73	3.07	3.41	0.56	0.81	0.65	N/A	N/A	
MF-MSMC035-2	3.00	3.43	2.35	2.80	0.38	0.62	0.35	0.25	0.50	
MF-MSMC050-2	4.37	4.73	3.07	3.41	0.38	0.62	0.30	0.25	0.50	
MF-MSMC075-2	4.37	4.73	3.07	3.41	0.38	0.62	0.30	0.25	0.50	
MF-MSMC110-2	4.37	4.73	3.07	3.41	0.38	0.62	0.30	0.25	0.50	

**Packaging**

MF-MSMC Parts	W	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	A <sub>0</sub>	B <sub>0</sub>	B <sub>1</sub>	D <sub>0</sub>	F	E <sub>1</sub>	E <sub>2</sub>	T	T <sub>1</sub>	K <sub>0</sub>	A	N	W <sub>1</sub>	W <sub>2</sub>
020, 050	12	4	8	2	3.5	5.1	5.9	1.5	5.5	1.75	10.25	0.6	0.1	0.9	185	50	12.4	18.4
075, C110	8	4	4	2	2.8	3.5	4.35	1.5	3.5	1.75	6.25	0.6	0.1	1.1	185	50	8.4	14.4

SPLIT

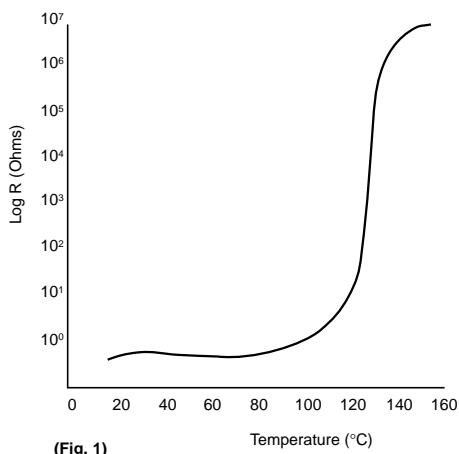
Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

## MF type Resettable Fuses - Theory of P.T.C. Circuit Protection

### Introduction

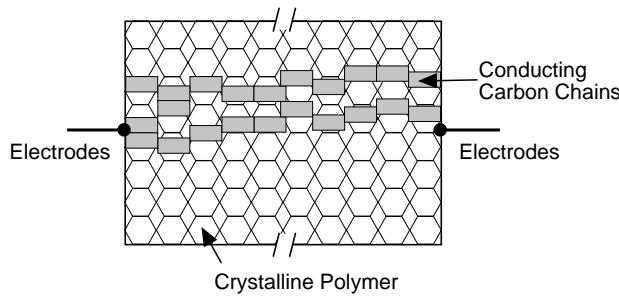
All MF type fuses are manufactured using the latest polymeric Positive Temperature Coefficient (P.T.C.) circuit protection technology. The devices are constructed from sheets of conductive plastic with electrodes attached to either side. The conductive plastic is manufactured from a non-conductive crystalline polymer and a highly conductive carbon black. The electrodes ensure even distribution of power through the device and provide a surface for leads to be attached.

Polymeric devices in general, exhibit a very large non-linear positive temperature coefficient when heated. What makes the MF fuses unique is the magnitude of the resistance increase. This rate of increase is so great that is typically expressed on a log scale. (Fig. 1)



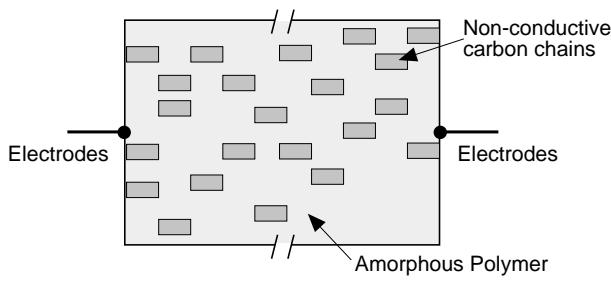
(Fig. 1)

### Principle of Operation



(Fig. 2)

The conductive carbon black filler in the MF devices is dispersed in a polymer that has a crystalline structure. This structure densely packs the carbon particles into its crystalline boundary so they are close enough to each other to allow current to flow through the polymer insulator via these carbon "chains." (Fig. 2)



(Fig. 3)

When the conductive plastic is at room ambient temperature, numerous conductive "chains" exist within the material. Under fault conditions, excessive current flows through the device, causing a rise in heat due to increased  $I^2R$  losses. Once the heat rise exceeds the phase transformation temperature of the material, the densely packed crystalline polymer matrix changes to an amorphous structure. This phase change creates a small expansion, causing the conductive particles to move apart from each other. Since most of these particles no longer conduct current, the resistance of the device rapidly increases. (Fig. 3)

Whilst the power is maintained, the material will stay "hot" and the resistance remain high. In this state, the device will continue to be latched, providing continuous protection until the fault is cleared and the power removed. Reversing the phase transformation allows the carbon chains to re-form as the polymer re-crystallises. The resistance then quickly returns to its original value.

## BOURNS type CT-23/CT-26 (digital)

The CT-23/26 family of turns-counting dials provides an accurate indicator for precision rotary devices up to 10 turns and utilising 6.35mm (1/4") adjustment shafts. The dials are offered in a choice of mounting options allowing fixing to be achieved on the front (CT-23) or recessed into the panel (CT-26). Both variants are fitted with a high force, positive brake and are manufactured in an attractive and functional white digits/black background format.



- For use with precision rotary devices up to 10 turns
- High quality, rugged construction
- Choice of front or panel or recessed mounting
- 27mm/28mm diameter
- White digits on black background
- Accept 6.35mm (1/4 in) shaft diameter
- No backlash – mounted directly to shaft
- High force, positive brake

### Specification

#### Mechanical and Physical Characteristics

Number of turns .....	0 to 10
Readability .....	Within 1/500 of a turn
Markings .....	White on black background
Locking brake.....	Positive, friction

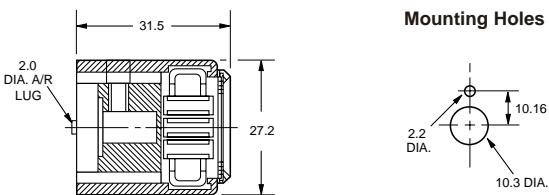
#### Shaft and Bush Requirements

Min. shaft extension beyond face of locator plate .....	11.05mm
Max. shaft extension beyond face of locator plate .....	16.25mm
Max. bush extension beyond face of locator plate .....	4.0mm
Shaft diameter acceptance .....	6.35mm

### CT-23

Front of panel mounting, digital turns-counting dial which saves valuable internal space. Highly accurate, it will enhance the man/machine interface of any control panel. Easy to read white on black numerals provide excellent legibility and accurate readings within 1/500 of a turn.

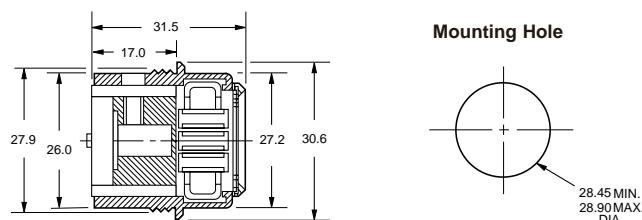
#### Dimensions (mm)



### CT-26

A recessed mounting digital turns-counting dial, counterpart to the Bourns type CT-23, which provides a lower panel profile. The design simplifies installation requiring only one panel hole. The CT-26 maintains the same high level of symmetry, legibility and accuracy of its counterpart.

#### Dimensions (mm)



#### CT-23 MOUNTING INSTRUCTIONS

1. Drill or punch panel according to mounting hole details above.
2. Mount potentiometer in panel with nut and lockwasher supplied with the potentiometer.
3. Turn potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio. This is not necessarily identical with the mechanical stop.
4. Loosen set screw in dial. Set the dial readout to "000."
5. Slip the dial carefully over the potentiometer shaft. Tighten the set screw without causing movement of the dial readout or potentiometer shaft.

Bourns Part No. &  
**Anglia** Order Code  
CT-23-6A

#### CT-26 MOUNTING INSTRUCTIONS

1. Drill or punch panel according to mounting hole details above.
2. Insert dial in panel and secure with mounting nut.
3. Secure locator plate to potentiometer bushing using two hex nuts.
4. Turn potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio. This is not necessarily identical with the mechanical stop.
5. Loosen set screw in dial. Set the dial readout to "000."
6. Slip the potentiometer shaft into the dial, ensuring that the notch in the locator plate is over the pin at the rear of the dial. Tighten the set screw without causing movement of the dial readout or potentiometer shaft.

Bourns Part No. &  
**Anglia** Order Code  
CT-26-6A

**SPLT** 10pcs Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

**01945 47 47 47** • **01945 47 48 49** • **E-mail: sales@angliac.co.uk**

## **BOURNS type H-22**

An attractive black-on-chrome dial, suitable for precision rotary devices up to 15 turns and utilising 6.35mm (1/4") adjustment shafts. Fitted with a high force, "click brake", the dial provides accurate setting yet has an outside diameter of only 22.2mm.



- For use with precision rotary devices up to 15 turns
- High quality, rugged construction
- Compact size, 22.2mm diameter
- Black markings on hard chrome finish
- Accepts 6.35mm (1/4 in) shaft diameter
- No backlash – mounted directly to shaft
- High force, positive brake

### Specification

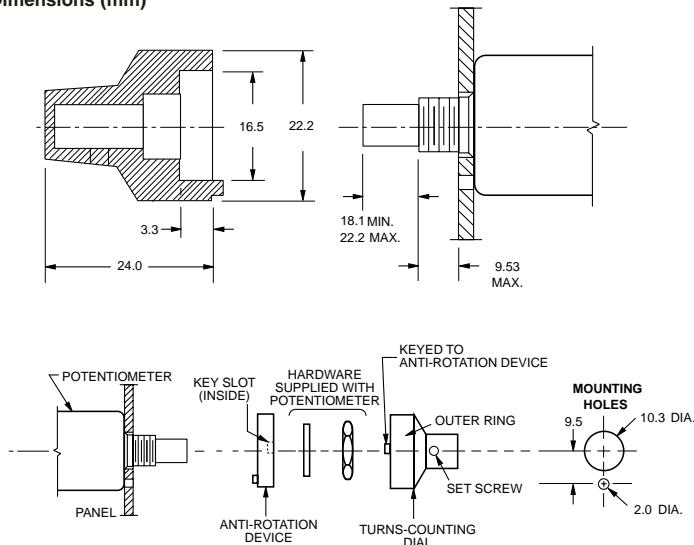
#### Mechanical and Physical Characteristics

Number of turns.....	0 to 15
Dial divisions.....	50 per turn
Readability.....	2 parts in 1000 (over 10 turns)
Torque with brake engaged.....	350cm/g min.
Markings.....	Black on chrome background
Mechanical life.....	10,000 cycles

#### Shaft and Bush Requirements

Min. shaft extension beyond panel.....	18.1mm
Max. shaft extension beyond panel.....	22.2mm
Max. bush extension beyond panel.....	9.53mm
Shaft diameter acceptance.....	6.35mm

### Dimensions (mm)



### H-22 MOUNTING INSTRUCTIONS

1. Drill panel according to mounting hole details shown.
2. Insert potentiometer in panel.
3. Install anti-rotation device using hardware supplied with potentiometer.
4. Turn potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio. This is not necessarily identical with the mechanical stop.
5. Loosen set screw in knob of dial. Set the dial to "0.0" and brake 'on'.
6. Insert dial on the potentiometer shaft and position lightly against the panel.
7. Tighten set screw to potentiometer shaft.

Bourns Part No. &  
**Anglia Order Code**  
**H-22-6A**

**SPLT**

10pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

**01945 47 47 47** • **01945 47 48 49** • **E-mail: sales@angliac.co.uk**

## BOURNS type H-506

Designed for use with precision rotary devices up to 15 turns and utilising 6.35mm (1/4") adjustment shafts, the H-506 gives a combination of accuracy and quality with a rugged construction combined with a space saving 22.7mm outside diameter. The dial is fitted with a high force, positive brake and has an compact and an easy to read white-on-black finish.



- For use with precision rotary devices up to 15 turns
- High quality, rugged construction
- Compact size, 22.7mm diameter
- White markings on black background
- Accepts 6.35mm (1/4 in) shaft diameter
- No backlash – mounted directly to shaft
- High force, positive brake

### Specification

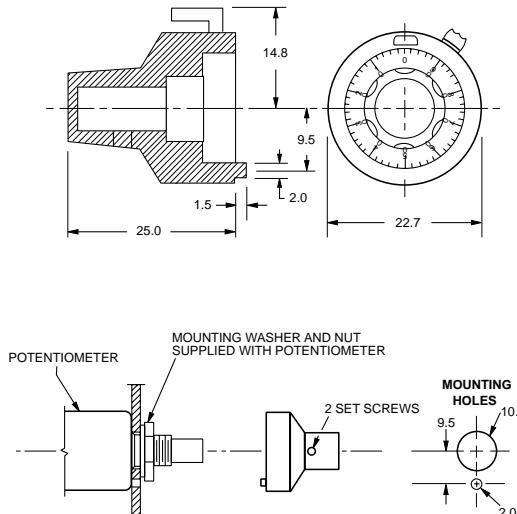
#### Mechanical and Physical Characteristics

Number of turns.....	0 to 15
Dial divisions.....	50 per turn
Readability.....	2 parts in 1000 (over 10 turns)
Torque with brake engaged.....	5Ncm min.
Markings .....	White on black background

#### Shaft and Bush Requirements

Min. shaft extension beyond panel.....	17.5mm
Max. shaft extension beyond panel.....	22.5mm
Max. bush extension beyond panel.....	10mm
Shaft diameter acceptance .....	6.35mm

### Dimensions (mm)



### H-506 MOUNTING INSTRUCTIONS

1. Drill panel according to mounting hole details shown.
2. Mount potentiometer in panel with nut and lockwasher supplied with the potentiometer.
3. Turn potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio. This is not necessarily identical with the mechanical stop.
4. Loosen set screws in knob of dial. Set dial to "0.0" reading.
5. While holding outer ring of dial, position unit lightly against panel. Tighten knob set screws to potentiometer shaft.

Bourns Part No. &  
**Anglia** Order Code  
H-506-1/4

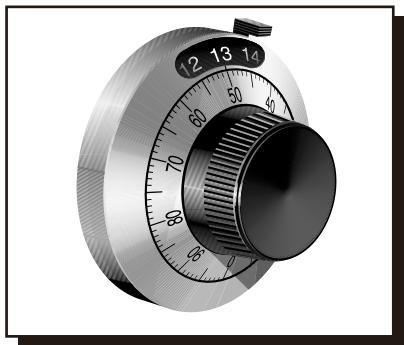
SPLT

10pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

## **BOURNS type H-46**

The H-46 turns-counting dial is designed for use with precision rotary devices of up to 20 turns and utilising 6.35mm (1/4") adjustment shafts. Offering a choice of anti-rotation installation methods, the device is fitted with a locking brake and features a quality mechanism with black markings on chrome finish, giving excellent readability.



- For use with precision rotary devices up to 20 turns
- High quality, rugged construction
- Cast housing
- 46mm diameter
- Black markings on chrome background
- Excellent readability
- Accepts 6.35mm (1/4 in) shaft diameter
- Precision feel - no backlash
- Fitted brake

### Specification

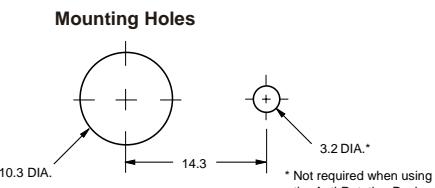
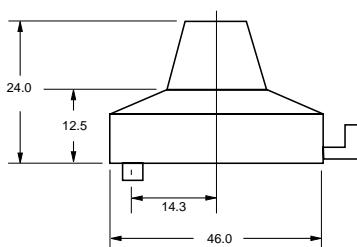
#### Mechanical and Physical Characteristics

Number of turns .....	0 to 20
Readability .....	Within 1/100 of a turn
Markings.....	Black on chrome background
Locking brake.....	Yes

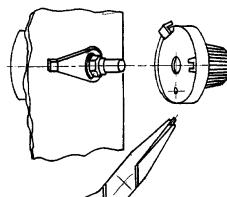
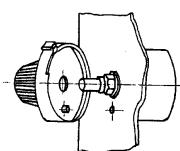
#### Shaft and Bush Requirements

Min. shaft extension beyond panel .....	17.5mm
Max. shaft extension beyond panel .....	23.5mm
Max. bush extension beyond panel .....	4.5mm
Shaft diameter acceptance .....	6.35mm

### Dimensions (mm)



### H-46 MOUNTING INSTRUCTIONS



#### Using the existing Anti-Rotation Lug

1. Drill panel according to mounting hole details above.
2. Mount potentiometer in panel with nut and lockwasher supplied with the potentiometer.
3. Turn potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio. This is not necessarily identical with the mechanical stop.
4. Loosen set screws in knob of dial. Set dial to "0.0" reading.
5. While holding outer ring of dial, position unit lightly against panel. Tighten knob set screws to potentiometer shaft.

#### Using the separate Anti-Rotation Device

1. Drill panel according to mounting hole details above.
2. Remove anti-rotation lug from dial by using pliers.
3. Mount potentiometer in panel with anti-rotation device nut (supplied with dial) and lockwasher (supplied with potentiometer).
4. Turn potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio. This is not necessarily identical with the mechanical stop.
5. Loosen set screws in knob of dial. Set dial to "0.0" reading.
6. While holding outer ring of dial, position unit lightly against panel. Tighten knob set screws to potentiometer shaft.

Bourns Part No. &  
**Anglia Order Code**  
**H-46-6A**

**SPLT**

10pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

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## BOURNS type H-492/H-494

A range of turns-counting dials with white markings on a black background and a choice of body finishes. The dials accept 6.35mm (1/4") adjustment shafts from precision rotary devices of up to 30 turns and are fitted with a locking brake, yet measure only 25.4mm on the outside diameter.



- For use with precision rotary devices up to 30 turns
- Compact size, 25.4mm diameter
- White markings on black background
- Accept 6.35mm (1/4 in) shaft diameter
- No backlash – mounted directly to shaft
- Choice of body finish
- Fitted brake

### Specification

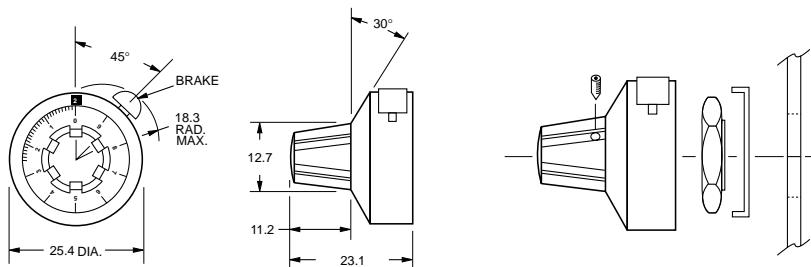
#### Mechanical and Physical Characteristics

Number of turns .....	0 to 30
Dial divisions .....	100 per turn
Readability.....	1 part in 1000 (over 10 turns)
Torque with brake engaged.....	3.5Ncm min.
Weight .....	7g approx.
Markings.....	White on black background
Locking brake.....	Yes
Operating temperature range.....	-15°C to 85°C
Mechanical life .....	10,000 cycles

#### Shaft and Bush Requirements

Min. shaft extension beyond panel .....	15.75mm
Max. shaft extension beyond panel .....	21.21mm
Max. bush extension beyond panel .....	9.02mm
Shaft diameter acceptance .....	6.35mm

### Dimensions (mm)



### H-490 MOUNTING INSTRUCTIONS

1. Discard standard mounting nut and lockwasher supplied with the potentiometer; they will not be used.
  2. Insert potentiometer in panel.
  3. Using parts supplied with dial, position anti-rotation washer against panel. Tangs of washer should stick out from panel.
  4. Install mounting nut supplied with dial. Be sure:
    - a. Shoulder on nut engages hold of anti rotation washer.
    - b. Tangs of anti-rotation washer are aligned vertically.
- This positions the turns-counting window properly.
5. Turn potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio. This is not necessarily identical with the mechanical stop.
  6. Loosen set screws in knob of dial. Set dial to "0.00" reading. Slip dial over end of potentiometer shaft.
  7. Holding outer ring of dial, engage locating tangs on anti-rotation washer in notches on dial assembly.
  8. While holding outer ring, position unit lightly against panel. Uniformly tighten knob set screws to potentiometer shaft.

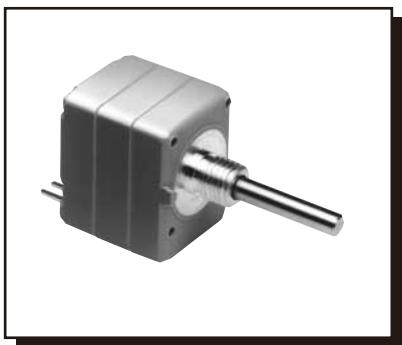
Body Finish	Bourns Part No. & <b>Anglia Order Code</b>
Aluminium (illustrated)	<b>H-492-3</b>
Black	<b>H-494-3</b>

**SPLT** 10pcs Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

## BOURNS type EN

A self-contained rotary optical encoder which produces a 2-bit quadrature signal, suitable for digital systems, where both magnitude and direction of adjustment must be provided. Ideal for use as a digital panel control or as a position sensing device in applications where long life, reliability, high resolution and precise linearity are critical.

The EN encoder converts rotary input into electrical signals, which can be used by microprocessors without A/D conversion, whilst outputs are square wave digital pulses which do not require de-bounce circuitry. These features make it possible to significantly reduce the memory overhead, wiring and wiring interconnects required by other types of control devices.



- Resolution up to 256PPR
- Two channel quadrature output
- Square wave signal
- CMOS and TTL compatible
- Choice of bush/shaft size
- Bearing option for extended life

### Specification

#### Electrical Characteristics

Resolution range .....	64PPR to 256PPR
Output.....	2-bit gray code, Channel A leads Channel B by 90° (electrical) with clockwise rotation
Supply voltage.....	5Vdc. ±0.25Vdc.
Supply current.....	26mA max.
Output voltage	
low output.....	0.8V max.
high output.....	4V min.
Output current	
low output.....	25mA min.
Insulation resistance.....	1,000MΩ min. @ 500Vdc.
Rise/fall time.....	200ns typ.
Shaft rpm.....	3,000 rpm max. (ball bearing)
Power consumption.....	136mW max.
Pulse width.....	180° ±45° typ. (electrical degrees/channel) 360° ±90° typ. (index channel)
Phase .....	90° ±45° typ. (electrical degrees, channel A to B)
Index channel.....	0° ±45° (centred on 1-state combination of A and B channels)

#### Environmental Characteristics

Temperature range .....	-40°C to +85°C
Vibration .....	5G
Shock.....	50G
Humidity.....	MIL-STD-202, method 103B, condition B

#### Mechanical Characteristics

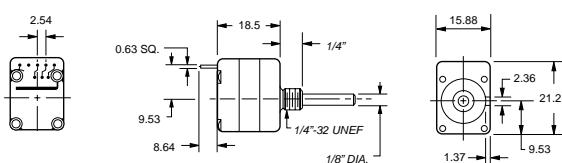
Operating torque	
A & C code bushes .....	1.05Ncm max. (spring loaded)
S & T code bushes.....	0.07Ncm max. (ball bearing)
Mechanical rotation.....	Continuous
Shaft end play .....	0.3mm T.I.R. max.
Shaft radial play.....	0.13mm T.I.R. max.
Rotational life	
A & C code bushes .....	10,000,000 revolutions (300 rpm max.)*
S & T code bushes.....	200,000,000 revolutions (3,000 rpm max.)*

\*For resolutions ≤128 quadrature cycles per shaft revolution

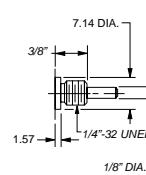
#### Dimensions (mm) Bush/shaft sizes shown in inches



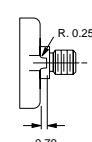
#### Common Body Dimensions



Bush Style C

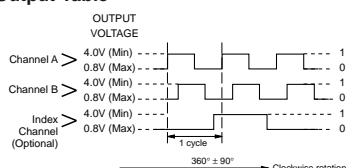


Bush Style T  
(Ball Bearing)

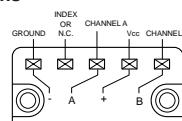


Anti-Rotation Lug  
View

#### Output Table



#### Terminations



\*Measured from mounting surface

SPLT

1pc

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

01945 47 47 47

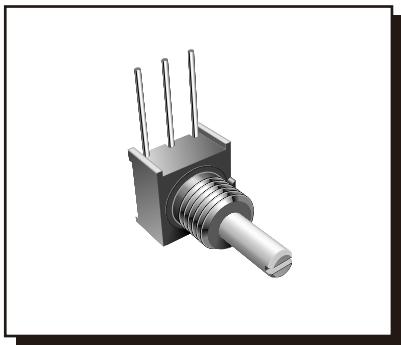
01945 47 48 49



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## BOURNS type 3315

A range of miniature low cost incremental encoders with conductive plastic elements and quadrature outputs. Featuring industry standard 2.54mm side exit or 5.08mm rear exit terminals, the devices are suitable for bush or p.c.b. mounting.



- Miniature 9mm square sealed package
- Quadrature output
- Conductive plastic element
- Long operating life
- Bush or p.c.b. mounted
- Choice of terminal position
- Slotted 3.18mm (1/8 in) shaft

### Specification

#### Electrical Characteristics

Resolution range.....	6 to 16PPR
Output .....	2-bit gray code, Channel A leads Channel B electrically with clockwise rotation
Closed circuit resistance.....	5Ω max.
Contact rating.....	100mA @ 16Vdc. max.
Insulation resistance.....	1,000MΩ min. @ 500Vdc.
Dielectric withstand voltage.....	900V.a.c. min.
Electrical travel.....	Continuous
Contact bounce.....	5ms max. @ 15rpm
Operating rpm.....	120 max.

#### Environmental Characteristics

Temperature range.....	-55°C to +125°C
Vibration.....	30G
Contact bounce.....	5ms max.
Shock.....	100G
Contact bounce.....	5ms max.

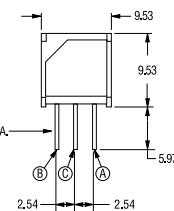
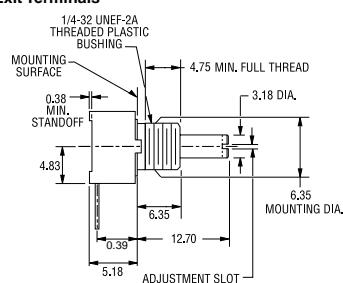
#### Mechanical Characteristics

Operating torque.....	3.5Ncm max.
Mechanical rotation.....	Continuous
Rotational life	
6PPR .....	100,000 cycles
16PPR .....	25,000 cycles

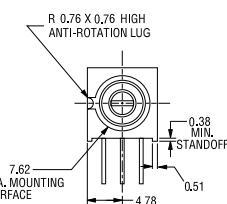
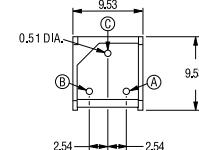
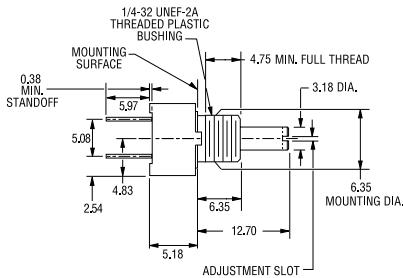
Resolution (Pulses Per Revolution)	Terminal Configuration	Bourns Part No. & Anglia Order Code
6	Side exit, 2.54mm in-line	<b>3315C-001-006</b>
	Rear exit, 5.08mm x 5.08mm triangular pattern	<b>3315Y-001-006</b>
16	Side exit, 2.54mm in-line	<b>3315C-001-016</b>
	Rear exit, 5.08mm x 5.08mm triangular pattern	<b>3315Y-001-016</b>

### Dimensions (mm)

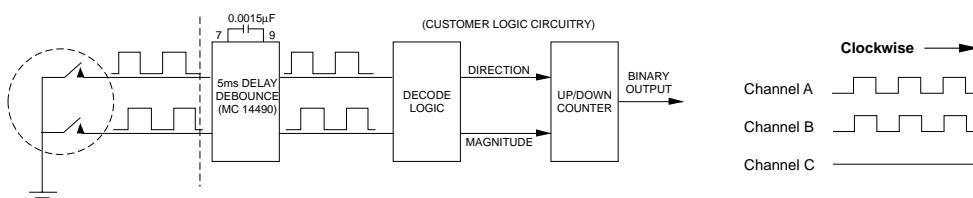
#### Side Exit Terminals



#### Rear Exit Terminals



### Incremental Control Diagram



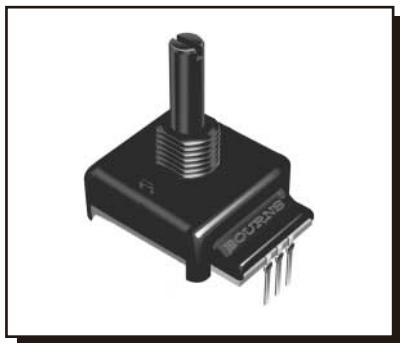
• Other Bush, Shaft and Terminal Styles Available

Please contact our Sales Dept. for details

**SPLT** 50pcs Manufacturers smallest factory pack quantity for lot integrity and traceability.

## BOURNS type ECW

Digital contacting encoders can also be referred to as digital panel controls, bit switches, gray switches or digital switches. All such devices utilise a digital gray code signal output rather than a conventional potentiometric voltage ratio output. The advantage with digital contacting encoders is that they permit the direct entry of digitised analogue data into a digital circuit without A/D conversion. The two channel gray coded signal of this incremental encoder allows the user's decoder circuit to sense analogue direction of rotation, as well as up/down counter capabilities. This permits a reduction in memory overheads, wiring & wiring interconnects and can provide greater MPU speed.



- Incremental encoder/quadrature output
- Long operating life
- High operating temperature
- Sturdy construction
- Bush mounted
- Slotted 6.35mm (1/4 in) shaft

### Specification

#### Electrical Characteristics

Resolution range .....	6PPR to 24PPR
Output.....	2-bit gray code, Channel A leads Channel B by 90° electrically with clockwise rotation
Closed circuit resistance.....	5Ω max.
Open circuit resistance.....	100kΩ min.
Contact rating .....	10mA @ 10Vdc. or 0.1W max.
Insulation resistance .....	1,000MΩ min. @ 500Vdc.
Dielectric withstand voltage.....	MIL-STD-202 method 301 1,000Vac. min.
Electrical travel .....	Continuous
Contact bounce .....	5ms max. @ 15rpm
Operating rpm.....	120 max.

#### Environmental Characteristics

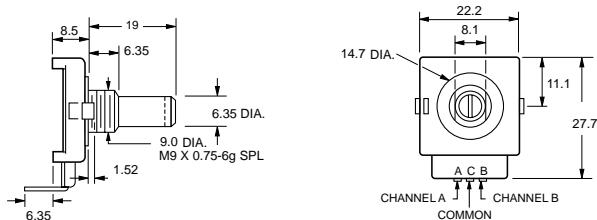
Temperature range	-40°C to +140°C
storage .....	-40°C to +140°C
operating .....	+1°C to +125°C
Humidity.....	MIL-STD-202, method 103B, condition B
Vibration.....	15G
contact bounce .....	0.1ms max.
Shock.....	50G
contact bounce .....	0.1ms max.

#### Mechanical Characteristics

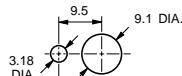
Operating torque.....	0.52 to 1.57Ncm
Mechanical rotation .....	Continuous
Rotational life.....	200,000 shaft revolutions
Static shaft side load .....	44.5N

Resolution (Pulses Per Revolution)	Detents	Cycles Per Detent	Bourns Part No. & <a href="#">Anglia Order Code</a>
6	24	1/4	<a href="#">ECW0J-B24-AC0006</a>
24		1	<a href="#">ECW1J-B24-AC0024</a>

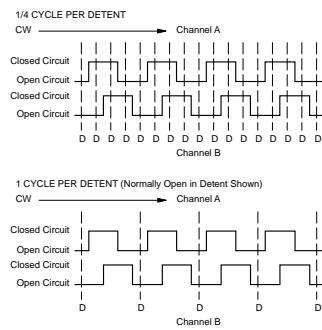
### Dimensions (mm)



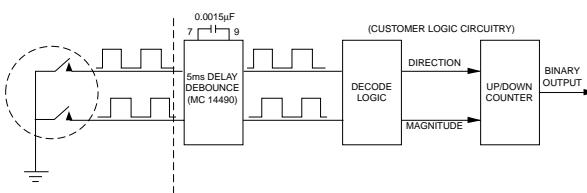
### Mounting Holes



### Quadrature Output Table



### Incremental Control Diagram



• P.C.B. Brackets and other  
Shaft Styles Available

Please contact our Sales Dept. for details

SPLT 1pc

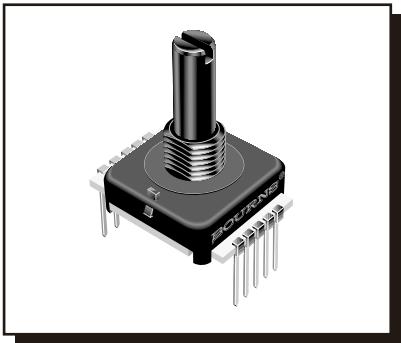
Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

• 01945 47 47 47 • 01945 47 48 49 • E-mail: [sales@angliac.co.uk](mailto:sales@angliac.co.uk)

## BOURNS type EAW

ACE™

Through the use of combinatorial mathematics, the gray-code pattern of the Absolute Contacting Encoder (ACE™) is placed on a single track for a very economical, energy-efficient and compact product. The device also provides an absolute digital output that will retain its last position in the event of power failure. An intelligent alternative to incremental encoders and potentiometers, the ACE™ is ideally suited for many industrial, automotive, medical and consumer product applications.



- Absolute encoder/gray code output
- Digital output
- High operating temperature
- Sturdy construction
- Bush or p.c.b. mounted
- Slotted 6.35mm (1/4 in) shaft

### Specification

#### Electrical Characteristics

Resolution range .....	8-bit gray code with 128 absolute states
Closed circuit resistance .....	5Ω max.
Open circuit resistance .....	100kΩ min.
Contact rating .....	10mA @ 10Vd.c. or 0.1W max.
Insulation resistance .....	1,000MΩ @ 500Vd.c. min.
Dielectric withstand voltage .....	MIL-STD-202 method 301 1,000V a.c. min.
Electrical travel .....	Continuous
Contact bounce .....	2.7ms max. @ 60rpm
Operating rpm .....	120 max.

#### Environmental Characteristics

Temperature range	-40°C to +140°C
storage .....	-40°C to +140°C
operating .....	-40°C to +125°C
Humidity .....	MIL-STD-202, method 103B, condition B
Vibration .....	15G
contact bounce .....	0.1ms max.
Shock .....	50G
contact bounce .....	0.1ms max.

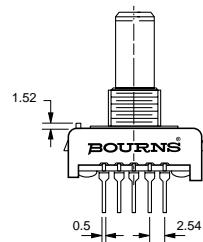
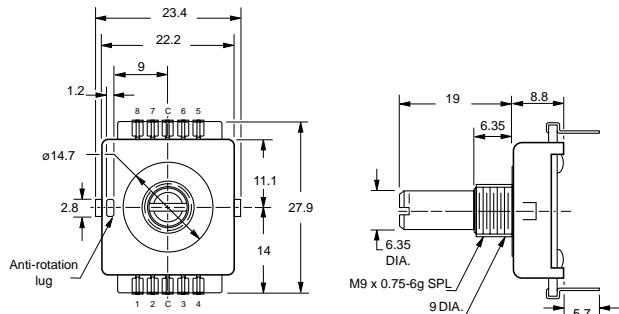
#### Mechanical Characteristics

Operating torque .....	0.52 to 1.75Ncm
Mechanical rotation .....	Continuous
Rotational life .....	50,000 shaft revolutions min.
Static shaft side load .....	44.5N

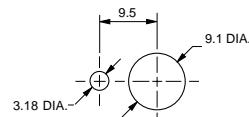
Bourns Part No. &  
**Anglia** Order Code

**EAW0J-B24-AE0128**

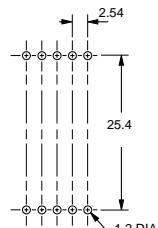
### Dimensions (mm)



### Mounting Holes



### P.C.B. Layout



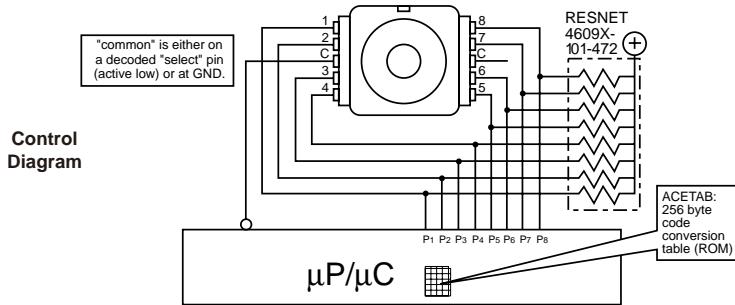
● P.C.B. Brackets and other  
Shaft Styles Available

Please contact our Sales Dept. for details

**SPLT** 1pc

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.



**BOURNS type EAW continued**
**ACE™**

**Pin Output Code**

Position	P8	P7	P6	P5	P4	P3	P2	P1	Decimal Output
0	0	1	1	1	1	1	1	1	127
1	0	0	1	1	1	1	1	1	63
2	0	0	1	1	1	1	1	0	62
3	0	0	1	1	1	0	1	0	58
4	0	0	1	1	1	0	0	0	56
5	1	0	1	1	1	0	0	0	184
6	1	0	0	1	1	0	0	0	152
7	0	0	0	1	1	0	0	0	24
8	0	0	0	0	1	0	0	0	8
9	0	1	0	0	1	0	0	0	72
10	0	1	0	0	0	1	0	1	73
11	0	1	0	0	1	1	0	1	77
12	0	1	0	0	1	1	1	1	79
13	0	0	0	0	1	1	1	1	15
14	0	0	1	0	1	1	1	1	47
15	1	0	1	0	1	1	1	1	175
16	1	0	1	1	1	1	1	1	191
17	1	0	0	1	1	1	1	1	159
18	0	0	0	1	1	1	1	1	31
19	0	0	0	1	1	1	0	1	29
20	0	0	0	1	1	1	0	0	28
21	0	1	0	1	1	1	0	0	92
22	0	1	0	0	1	1	0	0	76
23	0	0	0	0	1	1	0	0	12
24	0	0	0	0	0	1	0	0	4
25	0	0	1	0	0	1	0	0	36
26	1	0	1	0	0	1	0	0	164
27	1	0	1	0	0	1	1	0	166
28	1	0	1	0	0	1	1	1	167
29	1	0	0	0	0	1	1	1	135
30	1	0	0	1	0	1	1	1	151
31	1	1	0	1	0	1	1	1	215
32	1	1	0	1	1	1	1	1	223
33	1	1	0	0	1	1	1	1	207
34	1	0	0	0	1	1	1	1	143
35	1	0	0	0	1	1	1	0	142
36	0	0	0	0	1	1	1	0	14
37	0	0	1	0	1	1	1	0	46
38	0	0	1	0	0	1	1	0	38
39	0	0	0	0	0	1	1	0	6
40	0	0	0	0	0	0	1	0	2
41	0	0	0	1	0	0	1	0	18
42	0	1	0	1	0	0	1	0	82
43	0	1	0	1	0	0	1	1	83
44	1	1	0	1	0	0	1	1	211
45	1	1	0	0	0	0	1	1	195
46	1	1	0	0	1	0	1	1	203
47	1	1	1	0	1	0	1	1	235
48	1	1	1	0	1	1	1	1	239
49	1	1	1	0	0	1	1	1	231
50	1	1	0	0	0	1	1	1	199
51	0	1	0	0	0	1	1	1	71
52	0	0	0	0	0	1	1	1	7
53	0	0	0	1	0	1	1	1	23
54	0	0	0	1	0	0	1	1	19
55	0	0	0	0	0	0	1	1	3
56	0	0	0	0	0	0	0	1	1
57	0	0	0	0	1	0	0	1	9
58	0	0	1	0	1	0	0	1	41
59	1	0	1	0	1	0	0	1	169
60	1	1	1	0	1	0	0	1	233
61	1	1	1	0	0	0	0	1	225
62	1	1	1	0	0	1	0	1	229
63	1	1	1	1	0	1	0	1	245

Position	P8	P7	P6	P5	P4	P3	P2	P1	Decimal Output
64	1	1	1	1	0	1	1	1	247
65	1	1	1	1	0	0	1	1	243
66	1	1	1	0	0	0	1	1	227
67	1	0	1	0	0	0	1	1	163
68	1	0	0	0	0	0	1	1	131
69	1	0	0	0	1	0	1	1	139
70	1	0	0	0	1	0	0	1	137
71	1	0	0	0	0	0	0	1	129
72	1	0	0	0	0	0	0	0	128
73	1	0	0	0	0	1	0	0	132
74	1	0	0	1	0	1	0	0	148
75	1	1	0	1	0	1	0	0	212
76	1	1	1	1	0	1	0	0	244
77	1	1	1	1	0	0	0	0	240
78	1	1	1	1	1	0	0	1	242
79	1	1	1	1	1	1	0	1	250
80	1	1	1	1	1	1	0	1	251
81	1	1	1	1	1	1	0	0	249
82	1	1	1	1	0	0	0	1	241
83	1	1	0	1	0	0	0	1	209
84	1	1	0	0	0	0	0	1	193
85	1	1	0	0	0	1	0	1	197
86	1	1	0	0	0	1	0	0	196
87	1	1	0	0	0	0	0	0	192
88	0	1	0	0	0	0	0	0	64
89	0	1	0	0	0	0	0	1	66
90	0	1	0	0	1	0	1	0	74
91	0	1	1	0	1	0	1	0	106
92	0	1	1	1	1	1	0	1	122
93	0	1	1	1	1	1	0	0	120
94	0	1	1	1	1	1	0	0	121
95	0	1	1	1	1	1	1	0	125
96	1	1	1	1	1	1	1	0	253
97	1	1	1	1	1	1	1	0	252
98	1	1	1	1	1	1	0	0	248
99	1	1	1	1	0	1	0	0	232
100	1	1	1	1	0	0	0	0	224
101	1	1	1	1	0	0	0	1	226
102	0	1	1	0	0	0	0	1	98
103	0	1	1	0	0	0	0	0	96
104	0	0	1	0	0	0	0	0	32
105	0	0	1	0	0	0	0	1	33
106	0	0	1	0	0	0	1	0	37
107	0	0	1	1	0	1	0	1	53
108	0	0	1	1	1	1	1	0	61
109	0	0	1	1	1	1	1	0	60
110	1	0	1	1	1	1	1	0	188
111	1	0	1	1	1	1	1	1	190
112	1	1	1	1	1	1	1	1	254
113	0	1	1	1	1	1	1	1	126
114	0	1	1	1	1	1	1	0	124
115	0	1	1	1	1	0	1	0	116
116	0	1	1	1	1	0	0	0	112
117	0	1	1	1	1	0	0	1	113
118	0	0	1	1	0	0	0	1	49
119	0	0	1	1	0	0	0	0	48
120	0	0	0	1	0	0	0	0	16
121	1	0	0	1	0	0	0	0	144
122	1	0	0	1	0	0	1	0	146
123	1	0	0	1	1	1	0	1	154
124	1	0	0	1	1	1	1	0	158
125	0	0	0	1	1	1	1	1	30
126	0	1	0	1	1	1	1	1	94
127	0	1	0	1	1	1	1	1	95

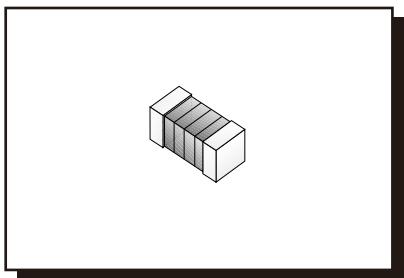
# INDUCTORS

## CHIP (SMD)



### BOURNS type CM16 (size 0603, surface mount)

Industry standard 0603 size SMD chip inductors in a range of values from 0.0015µH to 0.1µH. The inductors are supplied in tape & reel packaging multiples of 3000 pieces for efficient surface mount manufacturing and feature high heat, humidity, shock and pressure resistance.

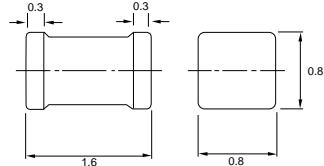


- Chip size 0603
- Inductance values from 0.0015µH to 0.1µH
- High heat & humidity resistance
- Resistance to shock & pressure
- Supplied taped & reeled

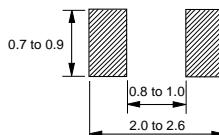
#### Specification

Inductance range .....	0.0015µH to 0.1µH
Temperature rise .....	20°C max.
Ambient temperature.....	80°C max.
Operating temperature.....	-20°C to +100°C
Storage temperature .....	-40°C to +100°C
Resistance to soldering heat.....	260°C for 5 seconds

#### Dimensions (mm)



#### Pad Pattern



SUPPLIED IN FULL REELS ONLY

Value (µH)	Tolerance	Q Min.	Test Freq. (MHz)	SRF Min. (MHz)	R d.c. Max. (Ω)	I d.c. Max. (mA)	Bourns Part No. & Anglia Order Code
0.0015	±0.0003µH	8	100	6000	0.07	500	CM160808-1N5D
0.0018	±0.0003µH	8	100	6000	0.08	500	CM160808-1N8D
0.0022	±0.0003µH	8	100	6000	0.09	500	CM160808-2N2D
0.0027	±0.0003µH	8	100	6000	0.10	500	CM160808-2N7D
0.0033	±0.0003µH	9	100	5500	0.12	500	CM160808-3N3D
0.0039	±5%	9	100	5500	0.15	450	CM160808-3N9J
0.0047	±5%	9	100	4800	0.17	450	CM160808-4N7J
0.0056	±5%	9	100	4600	0.18	430	CM160808-5N6J
0.0068	±5%	9	100	3550	0.20	430	CM160808-6N8J
0.0082	±5%	9	100	3500	0.28	400	CM160808-8N2J
0.01	±5%	10	100	2800	0.32	400	CM160808-10NJ
0.012	±5%	10	100	2800	0.35	400	CM160808-12NJ
0.015	±5%	10	100	2500	0.41	350	CM160808-15NJ
0.018	±5%	10	100	2300	0.45	350	CM160808-18NJ
0.022	±5%	10	100	2000	0.50	300	CM160808-22NJ
0.027	±5%	10	100	2000	0.55	300	CM160808-27NJ
0.033	±5%	10	100	1800	0.60	300	CM160808-33NJ
0.039	±5%	11	100	1800	0.80	300	CM160808-39NJ
0.047	±5%	11	100	1800	0.95	250	CM160808-47NJ
0.056	±5%	12	100	1800	1.2	250	CM160808-56NJ
0.068	±5%	12	100	1500	1.3	250	CM160808-68NJ
0.082	±5%	12	100	1500	1.5	250	CM160808-82NJ
0.1	±5%	12	100	1300	1.8	200	CM160808-R10J

#### Inductance Values – Conversion Guide

nH	µH	mH
1.5	0.0015	–
3.9	0.0039	–
10	0.01	–
100	0.1	–
1000	1.0	0.001
–	10	0.01
–	100	0.1
–	1000	1.0

#### Reel quantity 3000pcs

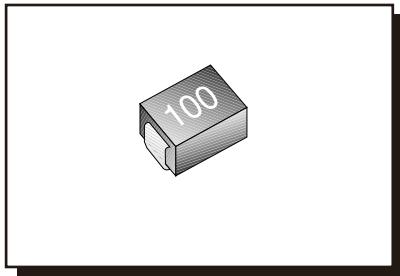
For other packaging information refer to page 61

**SPLIT** 3000pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

## **BOURNS type CM20 (size 0805, surface mount)**

Industry standard 0805 size SMD chip inductors in a range of values from 0.0039µH to 1µH. The inductors are supplied in tape & reel packaging multiples of 3000 pieces for efficient surface mount manufacturing and feature high heat, humidity, shock and pressure resistance.



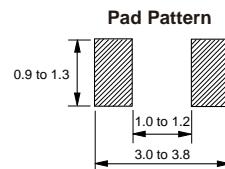
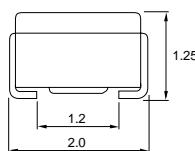
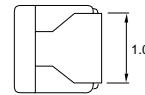
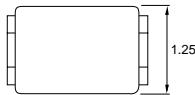
- Chip size 0805
- Inductance values 0.0039µH to 1µH
- High heat & humidity resistance
- Resistance to shock & pressure
- Supplied taped & reeled

### Specification

Inductance range .....	0.0039µH to 1µH
Temperature rise .....	20°C max.
Ambient temperature.....	80°C max.
Operating temperature .....	-20°C to +100°C
Storage temperature .....	-40°C to +100°C
Resistance to soldering heat .....	260°C for 5 seconds

SUPPLIED IN FULL REELS ONLY

### Dimensions (mm)



Pad Pattern

Value (µH)	Tolerance	Q Min.	Test Freq. (MHz)	SRF Min. (MHz)	R d.c. Max. (Ω)	I d.c. Max. (mA)	Bourns Part No. & <a href="#">Anglia</a> Order Code
0.0039	±20%	6	100	6000	0.10	540	<a href="#">CM201212-3N9M</a>
0.0047	±20%	6	100	6000	0.10	540	<a href="#">CM201212-4N7M</a>
0.0056	±20%	6	100	5000	0.12	540	<a href="#">CM201212-5N6M</a>
0.0068	±20%	8	100	5000	0.15	540	<a href="#">CM201212-6N8M</a>
0.0082	±20%	8	100	5000	0.16	540	<a href="#">CM201212-8N2M</a>
0.01	±10%	10	100	3300	0.20	540	<a href="#">CM201212-10NK</a>
0.012	±10%	10	100	3300	0.23	535	<a href="#">CM201212-12NK</a>
0.015	±10%	12	100	3000	0.25	520	<a href="#">CM201212-15NK</a>
0.018	±10%	12	100	3000	0.27	480	<a href="#">CM201212-18NK</a>
0.022	±10%	15	100	2600	0.29	465	<a href="#">CM201212-22NK</a>
0.027	±10%	15	100	2500	0.32	455	<a href="#">CM201212-27NK</a>
0.033	±10%	15	100	2000	0.37	395	<a href="#">CM201212-33NK</a>
0.039	±10%	15	100	2000	0.38	390	<a href="#">CM201212-39NK</a>
0.047	±10%	15	100	1600	0.42	385	<a href="#">CM201212-47NK</a>
0.056	±10%	15	100	1500	0.45	360	<a href="#">CM201212-56NK</a>
0.068	±10%	15	100	1400	0.52	340	<a href="#">CM201212-68NK</a>
0.082	±10%	15	100	1100	0.60	330	<a href="#">CM201212-82NK</a>
0.1	±10%	8	25.2	800	0.78	285	<a href="#">CM201212-R10K</a>
0.12	±10%	8	25.2	600	0.99	275	<a href="#">CM201212-R12K</a>
0.15	±10%	10	25.2	600	1.47	230	<a href="#">CM201212-R15K</a>
0.18	±10%	10	25.2	600	1.61	195	<a href="#">CM201212-R18K</a>
0.22	±10%	10	25.2	500	1.84	170	<a href="#">CM201212-R22K</a>
0.27	±10%	10	25.2	300	1.95	165	<a href="#">CM201212-R27K</a>
0.33	±10%	10	25.2	200	2.16	160	<a href="#">CM201212-R33K</a>
0.39	±10%	10	25.2	150	2.35	150	<a href="#">CM201212-R39K</a>
0.47	±10%	10	25.2	150	2.57	145	<a href="#">CM201212-R47K</a>
0.56	±10%	10	25.2	100	2.65	140	<a href="#">CM201212-R56K</a>
0.68	±10%	10	25.2	100	2.99	130	<a href="#">CM201212-R68K</a>
0.82	±10%	10	25.2	80	3.35	125	<a href="#">CM201212-R82K</a>
1.0	±10%	8	7.96	80	3.82	120	<a href="#">CM201212-1R0K</a>

**SPLT**

3000pcs

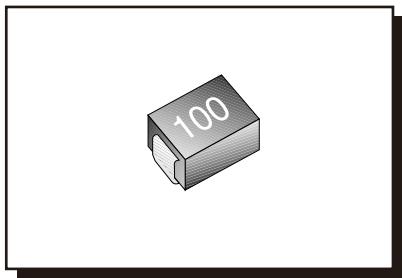
Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

**Reel quantity 3000pcs**

For other packaging information refer to page 61

**BOURNS type CM25 (size 1008, surface mount)**

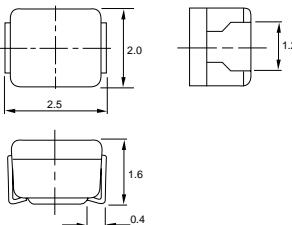
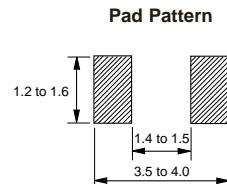
Industry standard 1008 size SMD chip inductors in a range of values from 0.01µH to 100µH. The inductors are supplied in tape & reel packaging multiples of 2000 pieces for efficient surface mount manufacturing and feature high heat, humidity, shock and pressure resistance.



- Chip size 1008
- Inductance values from 0.01µH to 100µH
- High heat & humidity resistance
- Resistance to shock & pressure
- Supplied taped & reeled

**Specification**

Inductance range .....	0.01µH to 100µH
Temperature rise.....	20°C max.
Ambient temperature .....	80°C max.
Operating temperature.....	-20°C to +100°C
Storage temperature.....	-40°C to +100°C
Resistance to soldering heat .....	260°C for 5 seconds

**SUPPLIED IN FULL REELS ONLY**
**Dimensions (mm)**

**Pad Pattern**


Value (µH)	Tolerance	Q Min.	Test Freq. (MHz)	SRF Min. (MHz)	R d.c. Max. (Ω)	I d.c. Max. (mA)	Bourns Part No. & Anglia Order Code
0.01	±10%	10	100	2500	0.32	280	CM252016-10NK
0.012	±10%	10	100	2200	0.34	270	CM252016-12NK
0.015	±10%	10	100	1800	0.38	255	CM252016-15NK
0.018	±10%	10	100	1550	0.40	250	CM252016-18NK
0.022	±10%	15	100	1350	0.43	240	CM252016-22NK
0.027	±10%	15	100	1150	0.47	230	CM252016-27NK
0.033	±10%	15	100	1000	0.51	220	CM252016-33NK
0.039	±10%	15	100	890	0.55	215	CM252016-39NK
0.047	±10%	15	100	770	0.59	205	CM252016-47NK
0.056	±10%	15	100	670	0.63	200	CM252016-56NK
0.068	±10%	15	100	590	0.68	190	CM252016-68NK
0.082	±10%	15	100	520	0.73	185	CM252016-82NK
0.1	±10%	10	25.2	460	0.80	175	CM252016-R10K
0.12	±10%	10	25.2	400	0.87	170	CM252016-R12K
0.15	±10%	10	25.2	340	0.98	160	CM252016-R15K
0.18	±10%	10	25.2	300	1.05	155	CM252016-R18K
0.22	±20%	25	25.2	230	0.70	190	CM252016-R22M
0.27	±20%	25	25.2	210	0.75	180	CM252016-R27M
0.33	±20%	25	25.2	190	0.85	170	CM252016-R33M
0.39	±20%	25	25.2	175	0.95	160	CM252016-R39M
0.47	±20%	25	25.2	160	1.00	155	CM252016-R47M
0.56	±20%	25	25.2	150	1.10	150	CM252016-R56M
0.68	±20%	25	25.2	135	1.25	140	CM252016-R68M
0.82	±20%	25	25.2	125	1.40	130	CM252016-R82M
1.0	±10%	25	7.96	115	0.65	195	CM252016-1R0K
1.2	±10%	25	7.96	100	0.75	180	CM252016-1R2K
1.5	±10%	25	7.96	90	0.85	170	CM252016-1R5K
1.8	±10%	25	7.96	85	0.95	160	CM252016-1R8K
2.2	±10%	25	7.96	80	1.05	155	CM252016-2R2K
2.7	±10%	25	7.96	75	1.2	145	CM252016-2R7K
3.3	±10%	25	7.96	65	1.3	135	CM252016-3R3K
3.9	±10%	25	7.96	60	1.4	130	CM252016-3R9K
4.7	±10%	25	7.96	55	1.6	125	CM252016-4R7K
5.6	±10%	25	7.96	50	1.8	120	CM252016-5R6K
6.8	±10%	25	7.96	45	1.9	115	CM252016-6R8K
8.2	±10%	25	7.96	40	2.2	105	CM252016-8R2K
10	±10%	25	2.52	32	3.5	80	CM252016-100K
12	±10%	25	2.52	30	3.8	75	CM252016-120K
15	±10%	25	2.52	28	4.4	70	CM252016-150K
18	±10%	25	2.52	25	5.0	65	CM252016-180K
22	±10%	25	2.52	22	5.8	60	CM252016-220K
27	±10%	20	2.52	21	6.3	115	CM252016-270K
33	±10%	20	2.52	20	7.1	110	CM252016-330K
39	±10%	20	2.52	18	9.5	90	CM252016-390K
47	±10%	20	2.52	17	11.0	80	CM252016-470K
56	±10%	20	2.52	16	12.1	75	CM252016-560K
68	±10%	20	2.52	15	16.6	70	CM252016-680K
82	±10%	20	2.52	13	19.0	65	CM252016-820K
100	±10%	15	0.796	12	21.0	60	CM252016-101K

**SPLT**

2000pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.**Reel quantity 2000pcs**

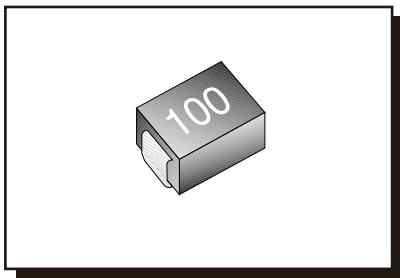
For other packaging information refer to page 61

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**01945 47 48 49**

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**BOURNS TYPE CM32 (size 1210, surface mount)**

Industry standard 1210 size SMD chip inductors in a range of values from 0.047µH to 220µH. The inductors are supplied in tape & reel packaging multiples of 1000 pieces for efficient surface mount manufacturing and feature high heat, humidity, shock and pressure resistance.

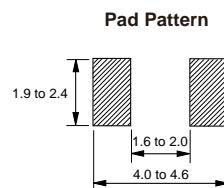
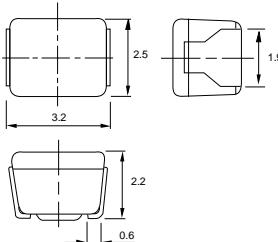


- Chip size 1210
- Inductance values from 0.047µH to 220µH
- High heat & humidity resistance
- Resistance to shock & pressure
- Supplied taped & reeled

**Specification**

Inductance range ..... 0.047µH to 220µH  
 Temperature rise ..... 20°C max.  
 Ambient temperature ..... 80°C max.  
 Operating temperature ..... -20°C to +100°C  
 Storage temperature ..... -40°C to +100°C  
 Resistance to soldering heat ..... 260°C for 5 seconds

**SUPPLIED IN FULL REELS ONLY**

**Dimensions (mm)**


Value (µH)	Tolerance	Q Min.	Test Freq. (MHz)	SRF Min. (MHz)	R d.c. Max. (Ω)	I d.c. Max. (mA)	Bourns Part No. & Anglia Order Code
0.047	±20%	10	100	680	0.20	450	CM322522-47NM
0.056	±20%	10	100	600	0.22	420	CM322522-56NM
0.068	±20%	10	100	540	0.25	400	CM322522-68NM
0.082	±20%	10	100	500	0.27	380	CM322522-82NM
0.1	±20%	10	100	450	0.30	360	CM322522-R10M
0.12	±20%	10	25.2	400	0.67	240	CM322522-R12M
0.15	±20%	10	25.2	350	0.72	230	CM322522-R15M
0.18	±20%	10	25.2	320	0.81	220	CM322522-R18M
0.22	±20%	25	25.2	230	0.29	360	CM322522-R22M
0.27	±20%	25	25.2	210	0.32	345	CM322522-R27M
0.33	±20%	25	25.2	190	0.35	330	CM322522-R33M
0.39	±20%	25	25.2	175	0.39	305	CM322522-R39M
0.47	±20%	25	25.2	160	0.44	290	CM322522-R47M
0.56	±20%	25	25.2	150	0.49	275	CM322522-R56M
0.68	±20%	25	25.2	135	0.55	260	CM322522-R68M
0.82	±20%	25	25.2	125	0.61	245	CM322522-R82M
1.0	±10%	30	7.96	115	0.69	230	CM322522-1R0K
1.2	±10%	30	7.96	100	0.75	215	CM322522-1R2K
1.5	±10%	30	7.96	90	0.75	210	CM322522-1R5K
1.8	±10%	30	7.96	85	0.82	200	CM322522-1R8K
2.2	±10%	30	7.96	80	0.95	190	CM322522-2R2K
2.7	±10%	30	7.96	75	1.1	180	CM322522-2R7K
3.3	±10%	30	7.96	65	1.2	180	CM322522-3R3K
3.9	±10%	30	7.96	60	1.3	175	CM322522-3R9K
4.7	±10%	30	7.96	55	1.5	165	CM322522-4R7K
5.6	±10%	30	7.96	50	1.6	160	CM322522-5R6K
6.8	±10%	30	7.96	45	1.8	150	CM322522-6R8K
8.2	±10%	30	7.96	40	2.0	140	CM322522-8R2K
10	±10%	30	2.52	36	2.1	140	CM322522-100K
12	±10%	30	2.52	33	2.5	125	CM322522-120K
15	±10%	30	2.52	30	2.8	120	CM322522-150K
18	±10%	30	2.52	27	3.3	110	CM322522-180K
22	±10%	30	2.52	25	3.7	105	CM322522-220K
27	±10%	30	2.52	22	5.0	90	CM322522-270K
33	±10%	30	2.52	20	5.6	85	CM322522-330K
39	±10%	30	2.52	20	6.4	80	CM322522-390K
47	±10%	30	2.52	15	7.0	75	CM322522-470K
56	±10%	30	2.52	15	8.0	70	CM322522-560K
68	±10%	30	2.52	15	9.0	65	CM322522-680K
82	±10%	30	2.52	11	10.0	60	CM322522-820K
100	±10%	20	0.796	10	10.0	60	CM322522-101K
120	±10%	20	0.796	10	11.0	55	CM322522-121K
150	±10%	20	0.796	8	15.0	50	CM322522-151K
180	±10%	20	0.796	7	17.0	50	CM322522-181K
220	±10%	20	0.796	7	21.0	45	CM322522-221K

**SPLT**

1000pcs

 Manufacturers smallest factory pack quantity  
 for lot integrity and traceability.

**Reel quantity 1000pcs**

For other packaging information refer to page 61

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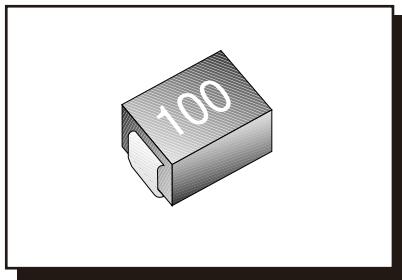
# INDUCTORS

## CHIP (SMD)



### BOURNS type CM45 (size 1812, surface mount)

Industry standard 1812 size SMD chip inductors in a range of values from 0.1 $\mu$ H to 1000 $\mu$ H. The inductors are supplied in tape & reel packaging multiples of 500 pieces for efficient surface mount manufacturing and feature high heat, humidity, shock and pressure resistance.



#### Specification

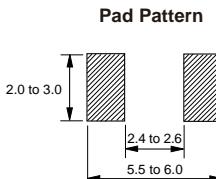
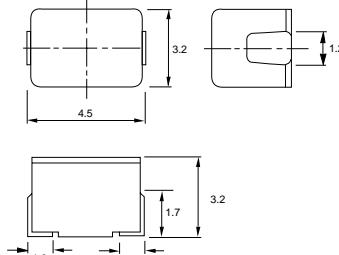
Inductance range ..... 0.1 $\mu$ H to 1000 $\mu$ H  
Temperature rise ..... 20°C max.  
Ambient temperature ..... 80°C max.  
Operating temperature ..... -20°C to +100°C  
Storage temperature ..... -40°C to +100°C  
Resistance to soldering heat ..... 260°C for 5 seconds

SUPPLIED IN FULL REELS ONLY

- Chip size 1812
- Inductance values 0.1 $\mu$ H to 1000 $\mu$ H
- High heat & humidity resistance
- Resistance to shock & pressure
- Supplied taped & reeled



#### Dimensions (mm)



Value ( $\mu$ H)	Tolerance	Q Min.	Test Freq. (MHz)	SRF Min. (MHz)	R d.c. Max. ( $\Omega$ )	I d.c. Max. (mA)	Bourns Part No. & Anglia Order Code
0.1	$\pm 20\%$	35	25.2	300	0.18	800	CM453232-R10M
0.12	$\pm 20\%$	35	25.2	280	0.20	770	CM453232-R12M
0.15	$\pm 20\%$	35	25.2	250	0.22	730	CM453232-R15M
0.18	$\pm 20\%$	35	25.2	220	0.24	700	CM453232-R18M
0.22	$\pm 20\%$	40	25.2	200	0.25	665	CM453232-R22M
0.27	$\pm 20\%$	40	25.2	180	0.26	635	CM453232-R27M
0.33	$\pm 20\%$	40	25.2	165	0.28	605	CM453232-R33M
0.39	$\pm 20\%$	40	25.2	150	0.30	575	CM453232-R39M
0.47	$\pm 20\%$	40	25.2	145	0.32	545	CM453232-R47M
0.56	$\pm 20\%$	40	25.2	140	0.36	520	CM453232-R56M
0.68	$\pm 20\%$	40	25.2	135	0.40	500	CM453232-R68M
0.82	$\pm 20\%$	40	25.2	130	0.45	475	CM453232-R82M
1.0	$\pm 10\%$	50	7.96	100	0.50	450	CM453232-1R0K
1.2	$\pm 10\%$	50	7.96	80	0.55	430	CM453232-1R2K
1.5	$\pm 10\%$	50	7.96	70	0.60	410	CM453232-1R5K
1.8	$\pm 10\%$	50	7.96	60	0.65	390	CM453232-1R8K
2.2	$\pm 10\%$	50	7.96	55	0.70	380	CM453232-2R2K
2.7	$\pm 10\%$	50	7.96	50	0.75	370	CM453232-2R7K
3.3	$\pm 10\%$	50	7.96	45	0.80	355	CM453232-3R3K
3.9	$\pm 10\%$	50	7.96	40	0.90	330	CM453232-3R9K
4.7	$\pm 10\%$	50	7.96	35	1.0	315	CM453232-4R7K
5.6	$\pm 10\%$	50	7.96	33	1.1	300	CM453232-5R6K
6.8	$\pm 10\%$	50	7.96	27	1.2	285	CM453232-6R8K
8.2	$\pm 10\%$	50	7.96	25	1.4	270	CM453232-8R2K
10	$\pm 10\%$	50	2.52	20	1.6	250	CM453232-100K
12	$\pm 10\%$	50	2.52	18	2.0	225	CM453232-120K
15	$\pm 10\%$	50	2.52	17	2.5	200	CM453232-150K
18	$\pm 10\%$	50	2.52	15	2.8	190	CM453232-180K
22	$\pm 10\%$	50	2.52	13	3.2	180	CM453232-220K
27	$\pm 10\%$	50	2.52	12	3.6	170	CM453232-270K
33	$\pm 10\%$	50	2.52	11	4.0	160	CM453232-330K
39	$\pm 10\%$	50	2.52	10	4.5	150	CM453232-390K
47	$\pm 10\%$	50	2.52	10	5.0	140	CM453232-470K
56	$\pm 10\%$	50	2.52	9	5.5	135	CM453232-560K
68	$\pm 10\%$	50	2.52	9	6.0	130	CM453232-680K
82	$\pm 10\%$	50	2.52	8	7.0	120	CM453232-820K
100	$\pm 10\%$	40	2.52	8	8.0	110	CM453232-101K
120	$\pm 10\%$	40	0.796	6	8.0	110	CM453232-121K
150	$\pm 10\%$	40	0.796	5	9.0	105	CM453232-151K
180	$\pm 10\%$	40	0.796	5	9.5	102	CM453232-181K
220	$\pm 10\%$	40	0.796	4	10.0	100	CM453232-221K
270	$\pm 10\%$	40	0.796	4	12.0	92	CM453232-271K
330	$\pm 10\%$	40	0.796	3.5	14.0	85	CM453232-331K
390	$\pm 10\%$	40	0.796	3	18.0	80	CM453232-391K
470	$\pm 10\%$	40	0.796	3	26.0	62	CM453232-471K
560	$\pm 10\%$	30	0.796	3	30.0	50	CM453232-561K
680	$\pm 10\%$	30	0.796	3	30.0	50	CM453232-681K
820	$\pm 10\%$	30	0.796	2.5	35.0	30	CM453232-821K
1000 (1mH)	$\pm 10\%$	30	0.252	2.5	40.0	30	CM453232-102K

SPLT

500pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

Reel quantity 500pcs

For other packaging information refer to page 61

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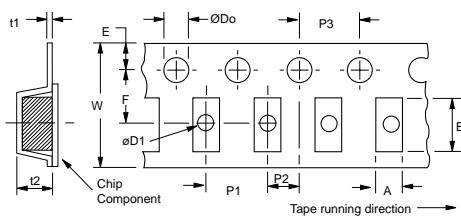
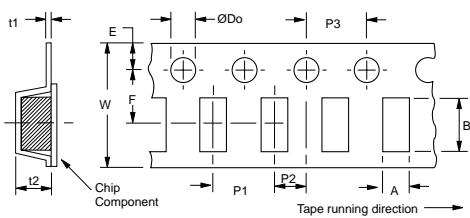
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## **BOURNS type CM series**

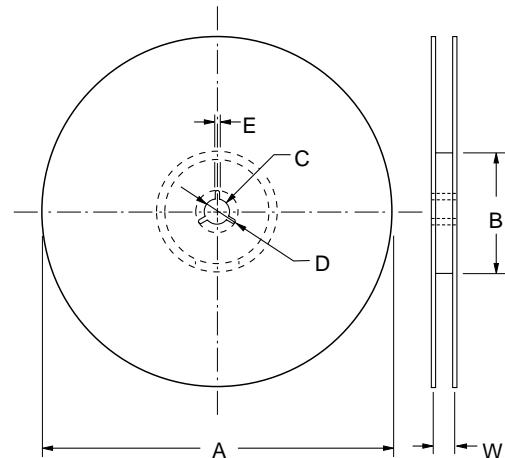
### Taping Specification

**CM16,20,25,32**

**CM45**


Type	A	B	W	F	E	P1	P2	P3	ØD0	ØD1	t1	t2
CM16	1.00	1.80	8.00	3.50	1.75	4.00	2.00	4.00	1.50	0.60	0.27	1.20
CM20	1.45	2.25	8.00	3.50	1.75	4.00	2.00	4.00	1.50	1.00	0.25	1.55
CM25	2.40	2.90	8.00	3.50	1.75	4.00	2.00	4.00	1.50	1.10	0.25	1.85
CM32	2.80	3.60	8.00	3.50	1.75	4.00	2.00	4.00	1.50	—	0.25	2.40
CM45	3.60	4.90	12.00	5.50	1.75	8.00	2.00	4.00	1.50	—	0.30	3.50

### Reel Dimensions

Type	A	B	C	D	E	W
CM16	178	60 min.	13	21	2	9
CM20	178	60 min.	13	21	2	9
CM25	178	60 min.	13	21	2	9
CM32	178	60 min.	13	21	2	9
CM45	178	60 min.	13	21	2	13



### Soldering Specification

Flow Soldering	Infra-Red Soldering	Vapour-Phase Soldering
 Preheat: 100 to 150° 2 minutes min.	 Preheat: 100 to 150° 2 minutes min.	 Preheat: 100 to 150° 2 minutes min.
Recommended 260°C for 5 seconds max. (2 waves solder method)	Recommended 200°C for 60 seconds with peak 240°C for 5 seconds max. Pre-fixing component with adhesive is advised.	Recommended 215°C for between 20 to 60 seconds max.

## BOURNS type SDR0805 (surface mount)

A range of SMD power inductors featuring current capabilities of up to 2.3A in a package size diameter of only 7.8mm. The components are supplied in taped & reeled multiples of 1000 pieces to maximise efficiency of surface mount manufacturing techniques.



- Small size
- 7.8mm diameter surface mount package
- Inductance values from 10µH to 470µH
- Current ratings up to 2.3A

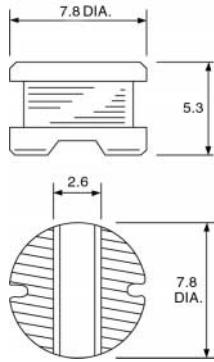
### Specification

Inductance range.....	10µH to 470µH
Operating temperature .....	-20°C to +85°C
Storage temperature .....	-25°C to +85°C
Test frequency (inductance) .....	1KHz
Test voltage .....	1V
Reflow soldering.....	230°C, 10 sec. max.

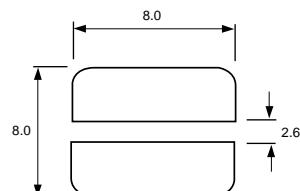
SUPPLIED IN FULL REELS ONLY

Value (µH)	Tol.	Q	Test Freq. (MHz)	R d.c. Max. (Ω)	I d.c. Max. (A)	Bourns Part No. & <i>Anglia</i> Order Code
10	±20%	25	2.520	0.07	2.3	<b>SDR0805-100M</b>
12	±20%	25	2.520	0.08	2.0	<b>SDR0805-120M</b>
15	±20%	25	2.520	0.09	1.8	<b>SDR0805-150M</b>
18	±20%	20	2.520	0.10	1.6	<b>SDR0805-180M</b>
22	±20%	20	2.520	0.11	1.5	<b>SDR0805-220M</b>
27	±10%	20	2.520	0.12	1.3	<b>SDR0805-270K</b>
33	±10%	15	2.520	0.14	1.2	<b>SDR0805-330K</b>
39	±10%	15	2.520	0.16	1.1	<b>SDR0805-390K</b>
47	±10%	15	2.520	0.20	1.0	<b>SDR0805-470K</b>
56	±10%	15	2.520	0.24	0.94	<b>SDR0805-560K</b>
68	±10%	15	2.520	0.30	0.85	<b>SDR0805-680K</b>
82	±10%	12	0.796	0.37	0.78	<b>SDR0805-820K</b>
100	±10%	12	0.796	0.45	0.72	<b>SDR0805-101K</b>
120	±10%	12	0.796	0.48	0.66	<b>SDR0805-121K</b>
150	±10%	12	0.796	0.68	0.58	<b>SDR0805-151K</b>
180	±10%	12	0.796	0.77	0.51	<b>SDR0805-181K</b>
220	±10%	12	0.796	0.96	0.49	<b>SDR0805-221K</b>
270	±10%	12	0.796	1.11	0.42	<b>SDR0805-271K</b>
330	±10%	12	0.796	1.26	0.40	<b>SDR0805-331K</b>
390	±10%	12	0.796	1.77	0.36	<b>SDR0805-391K</b>
470	±10%	12	0.796	1.96	0.34	<b>SDR0805-471K</b>

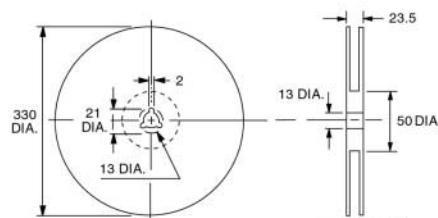
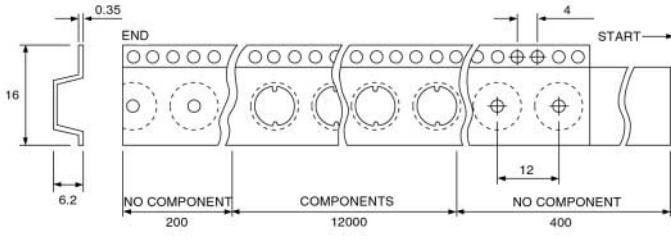
### Dimensions (mm)



### Pad Pattern



### Packaging Specifications



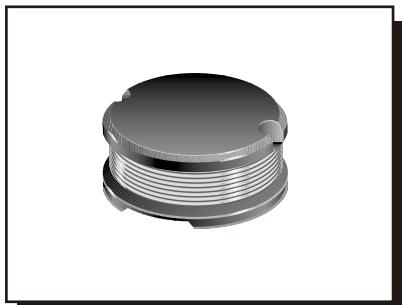
**Reel quantity 1000pcs**

**SPLT**

1000pcs    Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

**BOURNS type SDR1006 (surface mount)**

A range of SMD power inductors featuring current capabilities of up to 2.6A in a package size diameter of only 9.8mm. The components are supplied in taped & reeled multiples of 1000 pieces to maximise efficiency of surface mount manufacturing techniques.



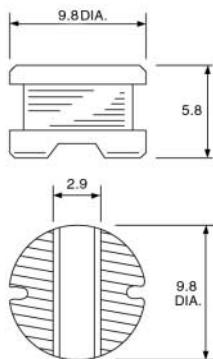
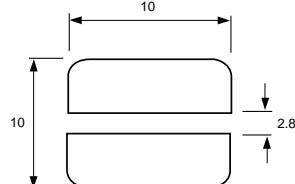
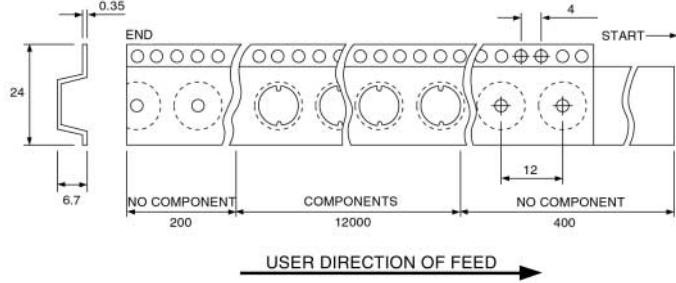
- Small size
- 9.8mm diameter surface mount package
- Inductance values from 10µH to 820µH
- Current ratings up to 2.6A

**Specification**

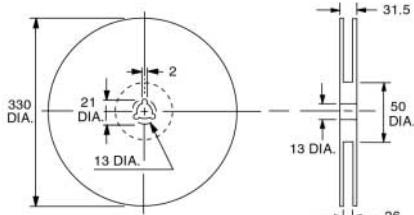
Inductance range ..... 10µH to 820µH  
 Operating temperature ..... -20°C to +85°C  
 Storage temperature ..... -25°C to +85°C  
 Test frequency (inductance) ..... 1kHz  
 Test voltage ..... 1V  
 Reflow soldering ..... 230°C, 10 sec. max.

SUPPLIED IN FULL REELS ONLY

Value (µH)	Tol.	Q	Test Freq. (MHz)	R d.c. Max. (Ω)	I d.c. Max. (A)	Bourns Part No. & <i>Anglia</i> Order Code
10	±20%	30	2.520	0.06	2.60	<a href="#">SDR1006-100M</a>
12	±20%	30	2.520	0.07	2.45	<a href="#">SDR1006-120M</a>
15	±20%	30	2.520	0.08	2.25	<a href="#">SDR1006-150M</a>
18	±20%	30	2.520	0.09	2.15	<a href="#">SDR1006-180M</a>
22	±20%	25	2.520	0.10	1.95	<a href="#">SDR1006-220M</a>
27	±10%	25	2.520	0.11	1.75	<a href="#">SDR1006-270K</a>
33	±10%	25	2.520	0.12	1.50	<a href="#">SDR1006-330K</a>
39	±10%	20	2.520	0.14	1.35	<a href="#">SDR1006-390K</a>
47	±10%	20	2.520	0.17	1.25	<a href="#">SDR1006-470K</a>
56	±10%	20	2.520	0.19	1.15	<a href="#">SDR1006-560K</a>
68	±10%	15	2.520	0.22	1.10	<a href="#">SDR1006-680K</a>
82	±10%	15	2.520	0.25	1.00	<a href="#">SDR1006-820K</a>
100	±10%	15	0.796	0.35	0.97	<a href="#">SDR1006-101K</a>
120	±10%	15	0.796	0.40	0.89	<a href="#">SDR1006-121K</a>
150	±10%	15	0.796	0.47	0.78	<a href="#">SDR1006-151K</a>
180	±10%	12	0.796	0.63	0.72	<a href="#">SDR1006-181K</a>
220	±10%	12	0.796	0.73	0.66	<a href="#">SDR1006-221K</a>
270	±10%	12	0.796	0.97	0.57	<a href="#">SDR1006-271K</a>
330	±10%	12	0.796	1.15	0.52	<a href="#">SDR1006-331K</a>
390	±10%	12	0.796	1.30	0.48	<a href="#">SDR1006-391K</a>
470	±10%	12	0.796	1.48	0.42	<a href="#">SDR1006-471K</a>
560	±10%	12	0.796	1.90	0.33	<a href="#">SDR1006-561K</a>
680	±10%	12	0.796	2.25	0.28	<a href="#">SDR1006-681K</a>
820	±10%	12	0.796	2.55	0.24	<a href="#">SDR1006-821K</a>

**Dimensions (mm)****Pad Pattern****Packaging Specifications**

USER DIRECTION OF FEED →



**Reel quantity 800pcs**

**SPLT**

800pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

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# INDUCTORS

## RADIAL



### BOURNS type RLB0914

Radial leaded inductors designed for high current circuits and offering current carrying capabilities of up to 3.6A in a 9mm diameter package. Available in values between 3.3 $\mu$ H and 1000 $\mu$ H, the components feature a standard 5mm lead pitch to aid design and manufacture.

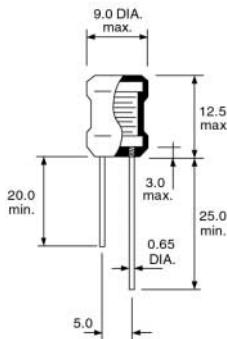


- Small size
- 9mm diameter radial lead package
- 5mm pitch
- Inductance values from 3.3 $\mu$ H to 1000 $\mu$ H
- Designed for high current circuits

#### Specification

Inductance range ..... 3.3 $\mu$ H to 1000 $\mu$ H  
Temperature rise ..... 40°C max. at rated current  
Operating temperature ..... -20°C to +80°C

#### Dimensions (mm)



Values ( $\mu$ H)	Tol.	Q. Min.	Test Freq. (MHz)	SRF Min. (MHz)	R.d.c. Max. ( $\Omega$ )	I.d.c. Max. (A)	Bourns Part No. & Anglia Order Code
3.3	$\pm 20\%$	20	7.96	70	0.027	3.60	RLB0914-3R3M
4.7	$\pm 20\%$	20	7.96	50	0.033	3.20	RLB0914-4R7M
6.8	$\pm 20\%$	20	7.96	30	0.039	3.00	RLB0914-6R8M
10	$\pm 10\%$	50	2.52	20	0.048	2.70	RLB0914-100K
12	$\pm 10\%$	50	2.52	15	0.055	2.50	RLB0914-120K
15	$\pm 10\%$	50	2.52	10	0.060	2.40	RLB0914-150K
18	$\pm 10\%$	40	2.52	9.5	0.065	2.30	RLB0914-180K
22	$\pm 10\%$	40	2.52	9.0	0.090	1.90	RLB0914-220K
27	$\pm 10\%$	40	2.52	8.5	0.110	1.80	RLB0914-270K
33	$\pm 10\%$	40	2.52	8.0	0.120	1.70	RLB0914-330K
39	$\pm 10\%$	30	2.52	7.0	0.130	1.60	RLB0914-390K
47	$\pm 10\%$	30	2.52	6.0	0.140	1.50	RLB0914-470K
56	$\pm 10\%$	30	2.52	5.0	0.200	1.30	RLB0914-560K
68	$\pm 10\%$	30	2.52	4.5	0.210	1.20	RLB0914-680K
82	$\pm 10\%$	30	2.52	4.0	0.230	1.10	RLB0914-820K
100	$\pm 10\%$	30	0.796	3.5	0.280	1.00	RLB0914-101K
120	$\pm 10\%$	30	0.796	3.0	0.320	0.90	RLB0914-121K
150	$\pm 10\%$	30	0.796	2.8	0.370	0.80	RLB0914-151K
180	$\pm 10\%$	30	0.796	2.6	0.540	0.75	RLB0914-181K
220	$\pm 10\%$	20	0.796	2.4	0.600	0.70	RLB0914-221K
270	$\pm 10\%$	20	0.796	2.2	0.680	0.65	RLB0914-271K
330	$\pm 10\%$	20	0.796	2.0	0.760	0.60	RLB0914-331K
390	$\pm 10\%$	20	0.796	1.9	0.850	0.55	RLB0914-391K
470	$\pm 10\%$	20	0.796	1.8	1.300	0.50	RLB0914-471K
560	$\pm 10\%$	20	0.796	1.7	1.400	0.45	RLB0914-561K
680	$\pm 10\%$	20	0.796	1.6	1.600	0.40	RLB0914-681K
820	$\pm 10\%$	20	0.796	1.5	1.800	0.35	RLB0914-821K
1000 (1mH)	$\pm 10\%$	40	0.252	1.3	2.100	0.30	RLB0914-102K

**SPLT** 300pcs Manufacturers smallest factory pack quantity for lot integrity and traceability.

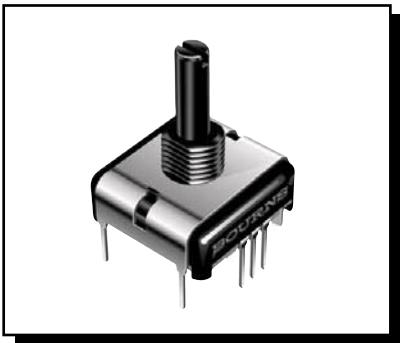


● Other Body Styles and Tape & Reel Available

Please contact our Sales Dept. for details

**BOURNS type PCW**

Single turn, conductive plastic element potentiometers housed in a space saving slimline package. Ranging in values from 1kΩ to 10kΩ, the devices can be obtained in standard or central detent configurations, making them suitable for either incremental or balancing functions.



- Slimline potentiometer
- Space saving design
- Conductive plastic element
- Resistance values from 1kΩ to 10kΩ
- Available with or without centre detents
- Bush or p.c.b. mounted
- Slotted 6.35mm (1/4 in) shaft

**Specification****Electrical Characteristics**

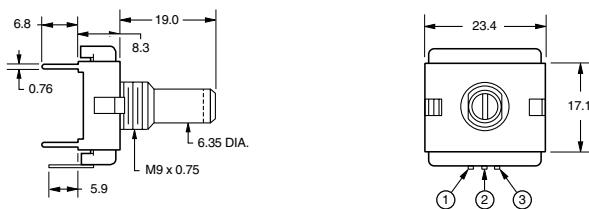
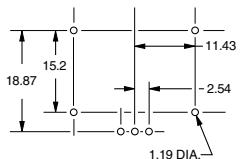
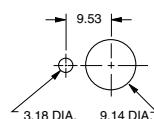
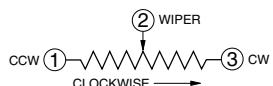
Resistance range .....	1kΩ to 10kΩ
Power rating .....	0.75W/70°C (voltage limited by power dissipation or 350V a.c. whichever is less)
Resistance tolerance.....	±20%
Independent linearity.....	±5%
Absolute minimum resistance .....	5Ω max.
Insulation resistance .....	1000MΩ min. @ 500V d.c.
Dielectric withstand voltage .....	MIL-STD-202, method 301 1000V a.c. min.
Effective electrical angle .....	270° ±5%

**Environmental Characteristics**

Temperature range	
storage .....	-40°C to +125°C
operating .....	+1°C to +125°C
Load life.....	1000 hours (0.75W, 70°C, 20%RH)
total resistance shift.....	10% max.
Rotational life .....	50,000 cycles
total resistance shift.....	10Ω or 12% (whichever is greater)

**Physical Characteristics**

Operating torque .....	0.2 to 1.1Ncm
Stop strength.....	79Ncm
Mechanical angle .....	300° ±5°

**Dimensions (mm)****P.C.B. Layout****Mounting Holes****Circuit Diagram**

Value (Ω)	Bourns Part No. & <i>Anglia</i> Order Code				
	No Detents	Centre Detent	No Detents (with Panel Mount Hardware)	Centre Detent (with Panel Mount Hardware)	
1K	—	—	PCW1J-B24-KAB102	PCW1J-B24-KCB102	
5K	PCW1J-B24-BAB502	—	PCW1J-B24-KAB502	PCW1J-B24-KCB502	
10K	PCW1J-B24-BAB103	PCW1J-B24-BCB103	PCW1J-B24-KAB103	PCW1J-B24-KCB103	

**SPLT**1pc    Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

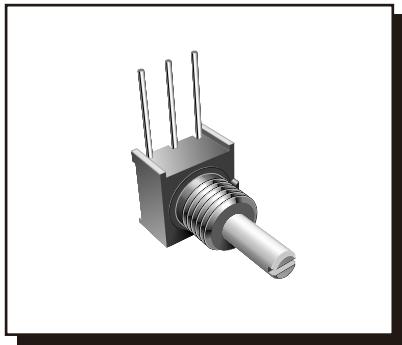
● Other Styles Available

Please contact our Sales Dept. for details

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## BOURNS type 3310

Sealed, single turn conductive plastic panel controls with a side/rear terminal option and values from 1kΩ to 1MΩ. The series also offers a choice of circuit configurations with the single circuit pot devices being complemented by dual circuit pot/pot and pot/switch variants. Designed to withstand typical industrial washing processes, the panel controls benefit from a high resistive specification in a compact package.



- Compact 9mm square package
- Fully sealed
- Conductive plastic element
- Resistance values from 1kΩ to 1MΩ
- Side or rear terminal option
- Dual circuit configurations available
- Bush or p.c.b. mounted
- Slotted 3.18mm (1/8 in) shaft

### Specification

#### Electrical Characteristics

Resistance range .....	1kΩ to 1MΩ
Power rating.....	0.25W/70°C (voltage limited by power dissipation or 200V.a.c. whichever is less)
Resistance tolerance .....	±20%
Independent linearity.....	±5%
Absolute minimum resistance .....	2Ω max.
Contact resistance variation .....	1% or 1Ω (whichever is greater)
Insulation resistance .....	1000MΩ min.
Dielectric withstand voltage .....	900V.a.c. min.
Effective electrical angle .....	270° ±15%

#### Environmental Characteristics

Temperature range	-55°C to +125°C
storage.....	-55°C to +125°C
operating.....	+1°C to 125°C
Temperature coefficient.....	±100ppm/°C
Moisture resistance.....	10% total resistance shift
Vibration.....	30G
total resistance shift.....	1% max.
voltage ratio shift .....	1% max.
Shock .....	100G
total resistance shift.....	1% max.
voltage ratio shift .....	1% max.
Load life .....	1000 hours
total resistance shift.....	10% max.
Rotational life .....	50,000 cycles
total resistance shift.....	5% max.
contact resistance variation .....	3% or 3Ω (whichever is greater)

#### Physical Characteristics

Operating torque .....	3.5Ncm
Stop strength.....	5.6Ncm
Mechanical angle .....	300° nom.
Flammability.....	UL94V-0
Terminals.....	Solderable pins

### Dimensions (mm)

Refer to page overleaf

### Circuit Diagram

Refer to page overleaf



● Other Styles Available

Please contact our Sales Dept. for details

**SPLT** 50pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

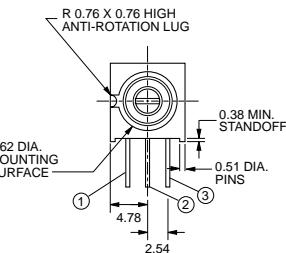
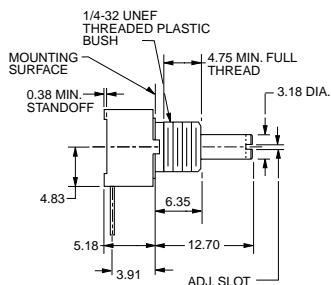
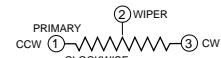
Value (Ω)	Bourns Part No. & Anglia Order Code				
	3310C-001	3310P-001	3310Y-001	3310H-001	3310H-003
1K	3310C-001-102	3310P-001-102	3310Y-001-102	3310H-001-102	3310H-003-102
2K	3310C-001-202	3310P-001-202	3310Y-001-202	3310H-001-202	3310H-003-202
5K	3310C-001-502	3310P-001-502	3310Y-001-502	3310H-001-502	3310H-003-502
10K	3310C-001-103	3310P-001-103	3310Y-001-103	3310H-001-103	3310H-003-103
20K	3310C-001-203	3310P-001-203	3310Y-001-203	3310H-001-203	3310H-003-203
50K	3310C-001-503	3310P-001-503	3310Y-001-503	3310H-001-503	3310H-003-503
100K	3310C-001-104	3310P-001-104	3310Y-001-104	3310H-001-104	3310H-003-104
200K	3310C-001-204	3310P-001-204	3310Y-001-204	3310H-001-204	3310H-003-204
500K	3310C-001-504	3310P-001-504	3310Y-001-504	3310H-001-504	3310H-003-504
1M	3310C-001-105	3310P-001-105	3310Y-001-105	3310H-001-105	3310H-003-105

**BOURNS type 3310 continued**

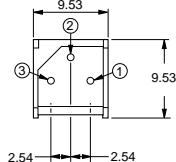
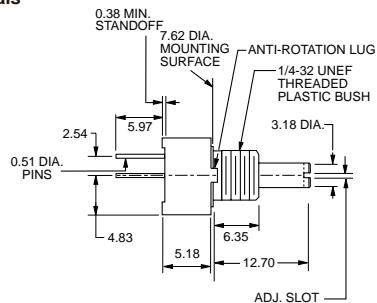
Dimensions (mm)

**Side Terminals**

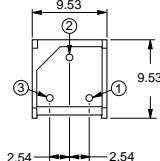
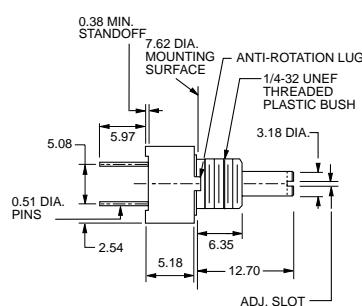
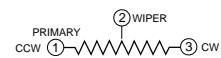
3310C


**Circuit Diagram**

**Rear Terminals**

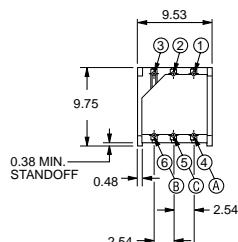
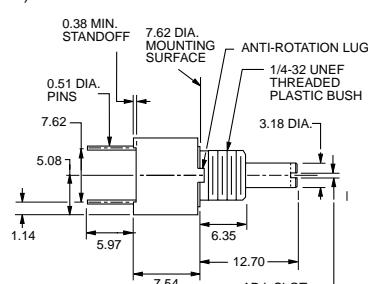
3310P

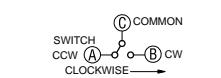
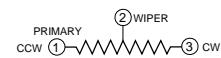

**Circuit Diagram**


3310Y


**Circuit Diagram**


3310H (Dual Circuit)


**Circuit Diagram**

**-003 Pot/Switch**


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## BOURNS type 51

Single turn panel controls available with either conductive plastic elements for audio applications or cermet elements for linear functions. Manufactured with a metal bush and shaft, the controls are fully sealed for board washing.



- 12.5mm (1/2 in) square package
- Fully sealed
- Conductive plastic or cermet elements
- Resistance values 1kΩ & 10kΩ
- Metal bush/shaft (choice of metric or imperial sizes)
- Bush or p.c.b. mounted

### Specification

#### Electrical Characteristics

	51xxx-xxx-Dxx	51xxx-xxx-Axx
Conductive Plastic (Audio)	Cermet (Linear)	
Resistance range .....	10kΩ	1kΩ and 10kΩ
Resistance tolerance .....	±20%	±10%
Independent Linearity .....	±5%	
Effective electrical angle .....	270° ±5°	
Absolute minimum resistance .....	2Ω max	
Contact resistance variation.....	2% max	
Power rating (voltage limited by power dissipation) .....	0.25W @70°C or 350V.a.c., whichever is less	1W
Insulation resistance.....	1000MΩ min	
Dielectric withstand voltage.....	1500V.a.c. min	
Tracking (multiple sections).....	3dB	

#### Environmental Characteristics

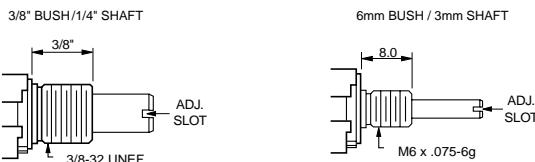
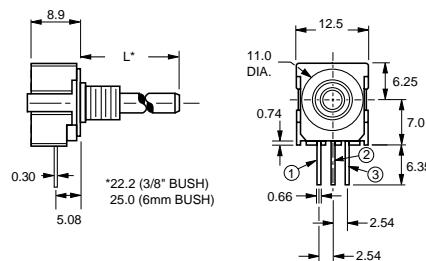
Temperature range		
static .....	-55°C to +125°C	
dynamic .....	+1°C to +125°C	
Temperature coefficient .....	±1000ppm/°C	±150ppm/°C
Moisture resistance		
total resistance shift .....	10%	5%
Vibration .....	15G	
total resistance shift .....	2% max	
voltage ratio shift .....	5% max	
Shock.....	30G	
total resistance shift .....	2% max	
voltage ratio shift .....	5% max	
Load life .....	1000 hours	
total resistance shift .....	10%	5%
Rotational life (no load) .....	50,000 revolutions	25,000 revolutions
total resistance shift .....	10%	10%
Contact resistance variation		
@25,000 cycles .....	2%	4%

#### Mechanical Characteristics

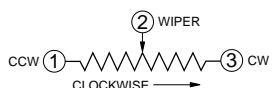
Operating torque .....	0.35Ncm max
Stop strength .....	56Ncm
Mechanical angle .....	290° ±5°

All specifications measured at +25°C ambient and 50%RH except where otherwise stated

### Dimensions (mm) Imperial sizes shown where appropriate



### Circuit Diagram



Value (Ω)	Bourns Part No. & Anglia Order Code		
	Conductive Plastic (Audio) 3/8" Bush	Cermet (Linear) 3/8" Bush	Cermet (Linear) 6mm Bush
1K	—	—	51SAD-U25-A10
10K	51AAD-B28-D15	51AAD-B28-A15	51SAD-U25-A15

**SPLT** 10pcs Manufacturers smallest factory pack quantity for lot integrity and traceability.

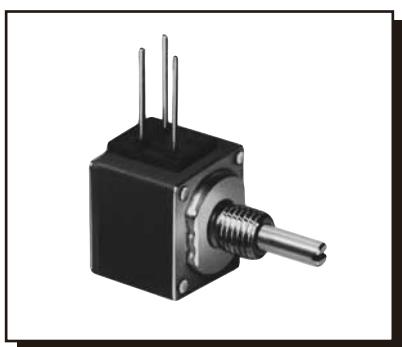


● Other Styles, Values and Solder Terminals Available

Please contact our Sales Dept. for details

## **BOURNS type 81**

Single turn, high quality, cermet element panel controls available in 1kΩ and 10kΩ values. Featuring a consistent, smooth rotational action, the devices are manufactured with a metal bush and shaft.



- 16mm (5/8 in) square package
- Cermet element
- Resistance values 1kΩ & 10kΩ
- Metal bush
- Slotted 6.35mm (1/4 in) metal shaft
- Bush or p.c.b. mounted

### Specification

#### Electrical Characteristics

Resistance range .....	1kΩ and 10kΩ
Power rating .....	2W/70°C (voltage limited by power dissipation or 350V a.c. whichever is less)
Resistance tolerance.....	±10%
Independent linearity.....	±5%
Resolution .....	Infinite
Absolute minimum resistance .....	2Ω max.
Contact resistance variation.....	1% or 3Ω (whichever is greater)
Insulation resistance .....	1000MΩ @ 500V d.c. min.
Dielectric withstand voltage .....	MIL-STD-202, method 301 1500V a.c. min.
Effective electrical angle .....	240° ±6%

#### Environmental Characteristics

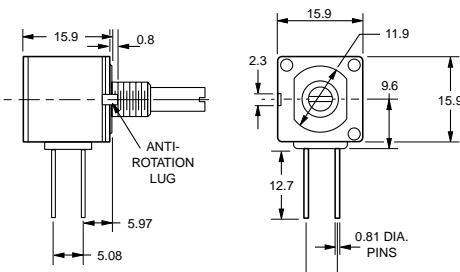
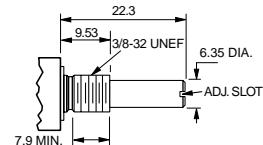
Temperature range	
storage .....	-55°C to +125°C
operating .....	+1°C to 125°C
Temperature coefficient.....	±150ppm/C
Moisture resistance .....	MIL-STD-202, method 103, condition B total resistance shift 5% max.
Vibration .....	15G total resistance shift 2% max. voltage ratio shift..... 5% max.
Shock .....	30G total resistance shift 2% max.
Voltage ratio shift .....	5% max.
Load life.....	1000 hours total resistance shift 5% max.
Rotational life .....	100,000 cycles total resistance shift..... 10Ω or 10% (whichever is greater)

#### Physical Characteristics

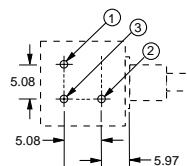
Operating torque .....	0.14 to 1.1Ncm
Stop strength.....	45Ncm
Mechanical angle .....	300° ±5°

All specifications measured at +25°C ambient and 50%RH except where otherwise stated

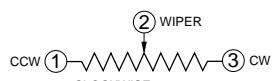
### Dimensions (mm)



### P.C.B. Layout



### Circuit Diagram



Value (Ω)	Bourns Part No. & <a href="#">Anglia</a> Order Code
1K	81A1AB28A10
10K	81A1AB28A15

**SPLT**

5pcs    Manufacturers smallest factory pack quantity  
for lot integrity and traceability.



● Other Styles, Values  
and Terminals Available

Please contact our Sales Dept. for details

## BOURNS type 91

Single turn, linear taper conductive plastic element panel controls available in a range of values from 1kΩ to 1MΩ. Manufactured in a one-piece moulded body, the devices are designed for general purpose applications requiring a combination of quality and cost-effectiveness.



- 16mm (5/8 in) square package
- Single piece moulding
- Conductive plastic element
- Resistance values from 1kΩ to 1MΩ
- Bush or p.c.b. mounted
- Slotted 6.35mm (1/4 in) metal shaft

### Specification

#### Electrical Characteristics

Resistance range .....	1kΩ to 1MΩ
Power rating .....	0.5W/70°C (voltage limited by power dissipation or 350V a.c. whichever is less)
Resistance tolerance .....	±20%
Independent linearity .....	±5%
Resolution .....	Infinite
Absolute minimum resistance .....	2Ω max.
Contact resistance variation .....	1%
Insulation resistance .....	1000MΩ min. @ 500V d.c.
Dielectric withstand voltage .....	MIL-STD-202, method 301 1500V a.c. min.
Effective electrical angle .....	240° ±5%

#### Environmental Characteristics

Temperature range	-55°C to +125°C
storage .....	+1°C to 125°C
operating .....	+1°C to 125°C
Temperature coefficient .....	±1000ppm/°C
Moisture resistance .....	MIL-STD-202, method 103, condition B total resistance shift 10% max.
total resistance shift .....	10% max.
Vibration .....	15G
total resistance shift .....	2% max.
voltage ratio shift .....	5% max.
Shock .....	30G
total resistance shift .....	2% max.
voltage ratio shift .....	5% max.
Load life .....	1000 hours
total resistance shift .....	10% max.
Rotational life .....	100,000 cycles
total resistance shift .....	10Ω or 15% (whichever is greater)

#### Physical Characteristics

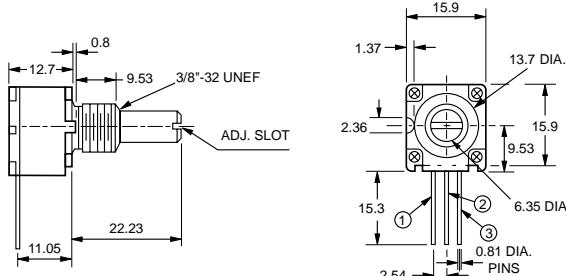
Operating torque .....	1.1Ncm
Torque variation .....	0.35Ncm/45° shaft travel
Stop strength .....	45Ncm
Mechanical angle .....	300° ±5°

Value (Ω)	Bourns Part No. & Anglia Order Code
1K	91A1AB28B10
2K5	91A1AB28B12
5K	91A1AB28B13
10K	91A1AB28B15
25K	91A1AB28B17
50K	91A1AB28B18
100K	91A1AB28B20
250K	91A1AB28B22
500K	91A1AB28B23
1M	91A1AB28B25

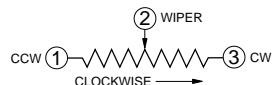
SPLT

5pcs Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

### Dimensions (mm)



### Circuit Diagram



● Other Styles and  
Terminals Available

Please contact our Sales Dept. for details

## **BOURNS type 3400**

A range of bush mounted, 10-turn precision potentiometers offering values of 1k $\Omega$  to 10k $\Omega$  with excellent wiper stability. Featuring long rotational life and high stop strength, the devices are especially suited for general purpose/extended life requirements.



- Multiturn (10 turns)
- Wirewound element
- Resistance values from 1k $\Omega$  to 10k $\Omega$
- Excellent wiper stability
- Rotational life 2,000,000 revolutions
- High stop strength
- Slotted 6.35mm (1/4 in) shaft

### **Specification**

#### **Electrical Characteristics**

Resistance range.....	1k $\Omega$ to 10k $\Omega$
Resistance tolerance.....	$\pm 3\%$
Independent linearity.....	$\pm 0.15\%$
Resolution.....	See part number table
Effective electrical angle.....	3600° $+4^\circ/-0^\circ$
Absolute minimum resistance.....	1 $\Omega$ or 0.15% max. (whichever is greater)
Noise.....	100 $\Omega$ ENR max.
Power rating.....	5W/40°C (voltage limited by power dissipation or 1000V a.c. whichever is less)
Dielectric withstand voltage.....	MIL-STD-202, method 301 1000V a.c. min.
Insulation resistance.....	1000M $\Omega$ @ 500V d.c. min.

#### **Environmental Characteristics**

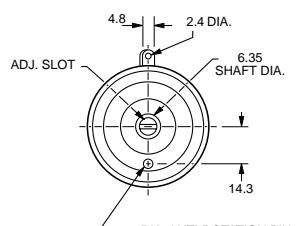
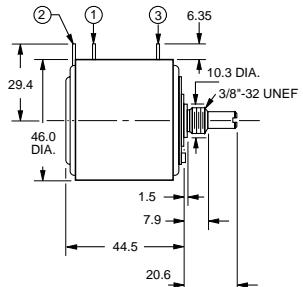
Temperature range	
storage .....	-65°C to +125°C
operating .....	+1°C to +125°C
Temperature coefficient .....	$\pm 20\text{ppm}/^\circ\text{C}$
Moisture resistance .....	MIL-STD-202, method 103, condition B total resistance shift ..... 2% max.
Vibration.....	10G wiper bounce ..... 0.1ms max. total resistance shift ..... 2% max. voltage ratio shift ..... 0.1% max.
Shock.....	50G wiper bounce ..... 0.1ms max. total resistance shift ..... 2% max. voltage ratio shift ..... 0.1% max.
Load life.....	1000 hours, 5W total resistance shift ..... 2% max.
Rotational life (no load) .....	2,000,000 revolutions total resistance shift ..... 5% max.

#### **Mechanical Characteristics**

Operating torque.....	1.4Ncm max.
Mechanical angle.....	3600° $+4^\circ/-0^\circ$
Shaft runout.....	0.05mm T.I.R.
Shaft end play.....	0.13mm T.I.R.
Shaft radial play.....	0.06mm T.I.R.
Pilot diameter runout.....	0.05mm T.I.R.
Lateral runout.....	0.13mm T.I.R.
Stop strength .....	388Ncm min.
Backlash .....	1° max.
Terminals .....	Gold plated solder lugs

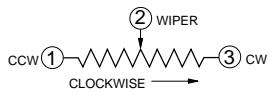
All specifications measured at +25°C ambient and 50%RH except where otherwise stated

### **Dimensions (mm)**



NOTE: LOCKWASHER AND HEX NUT SUPPLIED WITH EACH UNIT.

### **Circuit Diagram**



Value (Ω)	Bourns Part No. & <i>Anglia Order Code</i>	Resolution
1K	3400S-1-102	0.20
5K	3400S-1-502	0.13
10K	3400S-1-103	0.10

**SPLT** 1pc Manufacturers smallest factory pack quantity for lot integrity and traceability.

## BOURNS type 3500

Bush mounted, 10-turn precision potentiometers in a range of values between 500Ω and 200kΩ. Offering a long rotational life, together with excellent shock and vibration resistance characteristics, the device is especially suited for use in arduous environments.



- Multiturn (10 turns)
- Wirewound element
- Resistance values from 500Ω to 200kΩ
- Rotational life 2,000,000 revolutions
- High vibration/shock resistance
- Slotted 6.35mm (1/4 in) shaft

### Specification

#### Electrical Characteristics

Resistance range	500Ω to 200kΩ
Resistance Tolerance	±3%
Independent linearity	±0.2%
Resolution	See part number table
Effective electrical angle	360° +10°/-0°
Absolute minimum resistance/min. voltage	1Ω or 0.1% max. (whichever is greater)
Noise	100Ω ENR max.
Power rating	2W/70°C (voltage limited by power dissipation or 325V a.c. whichever is less)
Dielectric withstand voltage	MIL-STD-202, method 301 1500V a.c. min.
Insulation resistance	1000MΩ @ 500V d.c. min.

#### Environmental Characteristics

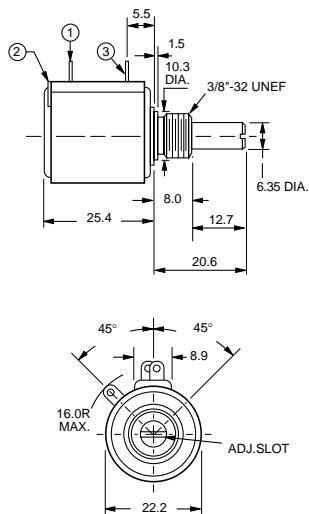
Temperature range	-65°C to +125°C
storage	-65°C to +125°C
operating	+1°C to +125°C
Temperature coefficient	±50ppm/°C
Moisture resistance	MIL-STD-202, method 103, condition B
total resistance shift	2% max.
Vibration	20G
wiper bounce	0.1ms max.
total resistance shift	2% max.
voltage ratio shift	0.1% max.
Shock	100G
wiper bounce	0.1ms max.
total resistance shift	2% max.
voltage ratio shift	0.1% max.
Load life	1000 hours, 2W
total resistance shift	2% max.
Rotational life (no load)	2,000,000 revolutions
total resistance shift	5% max.

#### Mechanical Characteristics

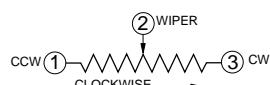
Operating torque	0.42Ncm max.
Mechanical angle	360° +10° -0°
Shaft runout	0.05mm T.I.R.
Shaft end play	0.13mm T.I.R.
Shaft radial play	0.08mm T.I.R.
Pilot diameter runout	0.05mm T.I.R.
Lateral runout	0.13mm T.I.R.
Stop strength	68Ncm min.
Backlash	1° max.
Terminals	Gold plated solder lugs

All specifications measured at +25°C ambient and 50%RH except where otherwise stated

### Dimensions (mm)



### Circuit Diagram



SPLT 5pcs

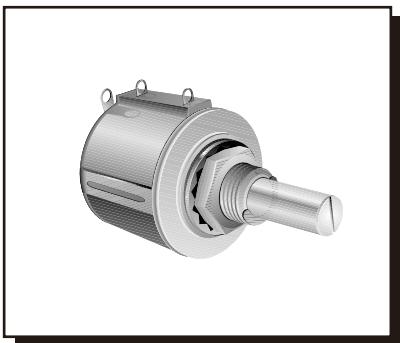
Manufacturers smallest factory pack quantity for lot integrity and traceability.

Value (Ω)	Bourns Part No. & Anglia Order Code	Resolution
500R	3500S-2-501	*
1K	3500S-2-102	0.30
2K	3500S-2-202	*
5K	3500S-2-502	0.18
10K	3500S-2-103	0.19
20K	3500S-2-203	*
50K	3500S-2-503	*
100K	3500S-2-104	*
200K	3500S-2-204	*

\* Please contact our Technical Support Department for details

## **BOURNS type 3540**

Bush mounted, 10-turn precision potentiometers in a range of values between 100Ω and 100kΩ. The devices are manufactured with a wirewound element, giving a good all-round stable performance and making them suitable for many general purpose applications.



- Multiturn (10 turns)
- Wirewound element
- Resistance values from 100Ω to 100kΩ
- Rotational life 1,000,000 revolutions
- Suitable for general purpose use
- Slotted 6.35mm (1/4 in) shaft

### **Specification**

#### **Electrical Characteristics**

Resistance range.....	100Ω to 100kΩ
Resistance tolerance .....	±5%
Independent linearity .....	±0.25%
Resolution .....	See part number table
Effective electrical angle .....	3600° +10°/-0°
End resistance/min. voltage.....	1Ω or 0.1% max. (whichever is greater)
Noise.....	100Ω ENR max.
Power rating.....	2W/70°C (voltage limited by power dissipation or 447V.a.c. whichever is less)
Dielectric withstand voltage.....	MIL-STD-202, method 301 1000V.a.c. min.
Insulation resistance.....	1000MΩ @ 500Vd.c. min.

#### **Environmental Characteristics**

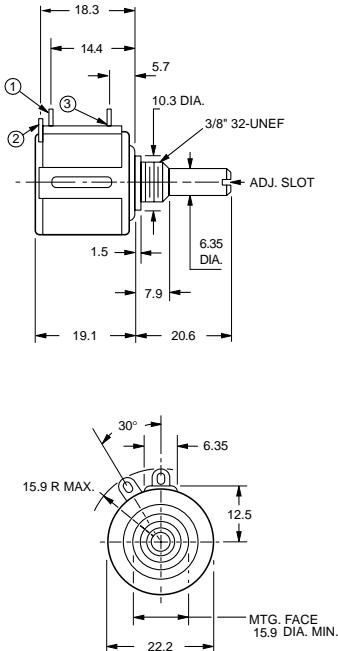
Temperature range	
storage.....	-55°C to +125°C
operating.....	+1°C to +125°C
Temperature coefficient .....	±50ppm/°C
Moisture resistance.....	MIL-STD-202, method 103, condition B total resistance shift..... 2% max.
Vibration.....	15G
wiper bounce .....	0.1ms max.
Shock.....	50G
wiper bounce .....	0.1ms max.
Load life .....	1000 hours, 2W
total resistance shift.....	2% max.
Rotational life (no load).....	1,000,000 revolutions total resistance shift..... 5% max.

#### **Mechanical Characteristics**

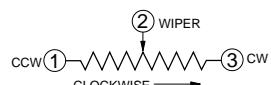
Operating torque.....	0.35Ncm max.
Mechanical angle.....	3600° +10°, -0°
Shaft runout.....	0.08mm T.I.R.
Shaft end play.....	0.30mm T.I.R.
Shaft radial play .....	0.08mm T.I.R.
Pilot diameter runout.....	0.08mm T.I.R.
Lateral runout.....	0.13mm T.I.R.
Stop strength .....	53Ncm min.
Backlash .....	1° max.
Terminals.....	Gold plated solder lugs

All specifications measured at +25°C ambient and 50%RH except where otherwise stated

### **Dimensions (mm)**



### **Circuit Diagram**



**SPLT**

1pc Manufacturers smallest factory pack quantity for lot integrity and traceability.

Value (Ω)	Bourns Part No. & Anglia Order Code	Resolution
100R	3540S-1-101	*
200R	3540S-1-201	0.42
500R	3540S-1-501	0.31
1K	3540S-1-102	0.27
2K	3540S-1-202	0.21
5K	3540S-1-502	0.21
10K	3540S-1-103	0.19
20K	3540S-1-203	0.14
50K	3540S-1-503	*
100K	3540S-1-104	*

\* Please contact our Technical Support Department for details

**01945 47 47 47**

**01945 47 48 49**



**E-mail: sales@angliac.co.uk**

## BOURNS type 3543

Bush mounted, 3-turn precision potentiometers in a range of values between 1kΩ and 10kΩ. Designed for medium duty applications, the devices can control up to 1 Watt of power.



- Multiturn (3 turns)
- Wirewound element
- Resistance values from 1kΩ to 10kΩ
- Rotational life 300,000 revolutions
- Slotted 6.35mm (1/4 in) shaft

### Specification

#### Electrical Characteristics

Resistance range	1kΩ to 10kΩ
Resistance tolerance	±5%
Independent linearity	±0.25%
Resolution	See part number table
Effective electrical angle	1080° +10°/-0°
Absolute minimum resistance/min. voltage	10Ω or 0.1% max. (whichever is greater)
Noise	100Ω ENR max.
Power rating	1W/ 70°C (voltage limited by power dissipation or 224V a.c. whichever is less)
Dielectric withstand voltage	MIL-STD-202, method 301 1000V a.c. min.
Insulation resistance	1000MΩ @ 500V d.c. min.

#### Environmental Characteristics

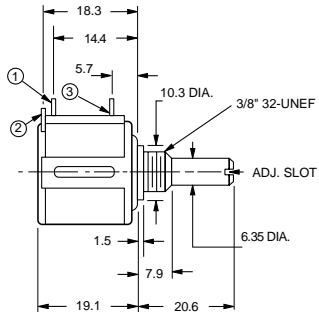
Temperature range	-55°C to +125°C
storage	-55°C to +125°C
operating	+1°C to +125°C
Temperature coefficient	±50ppm/°C
Moisture resistance	MIL-STD-202, method 103, condition B
total resistance shift	±2% max.
Vibration	15G
wiper bounce	0.1ms max.
Shock	50G
wiper bounce	0.1ms max.
Load life	1000 hours, 1W
total resistance shift	2% max.
Rotational life (no load)	300,000 revolutions
total resistance shift	5% max.

#### Mechanical Characteristics

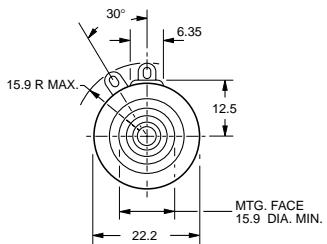
Operating torque	0.35Ncm max.
Mechanical angle	1080° +10°, -0°
Shaft runout	0.08mm T.I.R.
Shaft end play	0.25mm T.I.R.
Shaft radial play	0.08mm T.I.R.
Pilot diameter runout	0.08mm T.I.R.
Lateral runout	0.13mm T.I.R.
Stop strength	53Ncm min.
Backlash	1° max.
Terminals	Gold plated solder lugs

All specifications measured at +25°C ambient and 50%RH except where otherwise stated

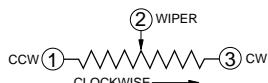
### Dimensions (mm)



NOTE: LOCKWASHER AND MOUNTING NUTS SUPPLIED



### Circuit Diagram



Value (Ω)	Bourns Part No. & Anglia Order Code	Resolution
1K	3543S-1-102	0.63
2K	3543S-1-202	0.62
5K	3543S-1-502	0.47
10K	3543S-1-103	0.40

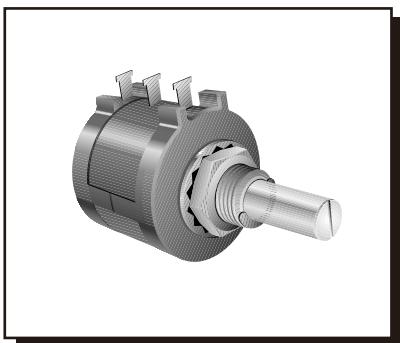
SPLT

5pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

## **BOURNS type 3590**

Bush mounted, 10-turn precision potentiometers in a range of values between 200Ω and 100kΩ. The devices feature a high dielectric strength withstand, making them particularly effective in applications where high voltage levels may be present.



- Multiturn (10 turns)
- Wirewound element
- Resistance values from 200Ω to 100kΩ
- Rotational life 1,000,000 revolutions
- High withstand voltage
- Slotted 6.35mm (1/4 in) shaft

### **Specification**

#### **Electrical Characteristics**

Resistance range .....	200Ω to 100kΩ
Resistance tolerance.....	±5%
Independent linearity.....	±0.25%
Resolution .....	See part number table
Effective electrical angle .....	3600° +10°/-0°
Absolute minimum resistance .....	1Ω or 0.1% max. (whichever is greater)
Noise .....	100Ω ENR max.
Power rating .....	2W/40°C (voltage limited by power dissipation or 450Vdc. whichever is less)
Dielectric withstand voltage.....	MIL-STD-202, method 301 2000Vdc. min.
Insulation resistance .....	1000MΩ @ 500Vdc.min.

#### **Environmental Characteristics**

Temperature range	
storage .....	-55°C to +125°C
operating .....	+1°C to +125°C
Temperature coefficient <sup>†</sup> .....	±50ppm/°C
Moisture resistance .....	MIL-STD-202, method 103, condition B
total resistance shift .....	2% max.
Vibration .....	15G
wiper bounce.....	0.1ms max.
shock.....	50G
wiper bounce.....	0.1ms max.
Load life .....	1000 hours, 2W
total resistance shift .....	2% max.
Rotational life (no load) .....	1,000,000 revolutions
total resistance shift .....	5% max.

#### **Mechanical Characteristics**

Operating torque .....	0.4Ncm max. (unsealed) 1.1Ncm max. (sealed)
Mechanical angle .....	3600° +10°, -0°
Shaft runout.....	0.13mm T.I.R.
Shaft end play .....	0.25mm T.I.R.
Shaft radial play .....	0.13mm T.I.R.
Pilot diameter runout .....	0.08mm T.I.R.
Lateral runout .....	0.20mm T.I.R.
Stop strength.....	45Ncm min.
Backlash.....	1° max.
Terminals.....	Solder lugs

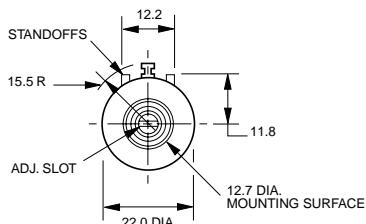
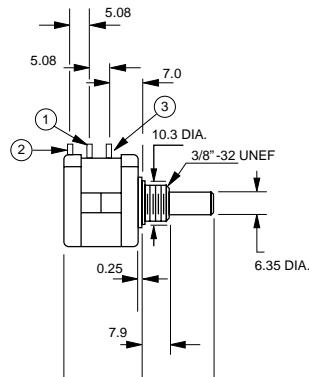
All specifications measured at +25°C ambient and 50%RH except where otherwise stated

<sup>†</sup> Please contact our Technical Support Department for specification details of values below 1000Ω

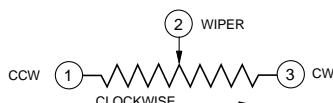
Value (Ω)	Bourns Part No. & <i>Anglia</i> Order Code	Resolution
200R	3590S-2-201	*
500R	3590S-2-501	*
1K	3590S-2-102	0.29
2K	3590S-2-202	0.23
5K	3590S-2-502	0.25
10K	3590S-2-103	0.20
20K	3590S-2-203	0.16
50K	3590S-2-503	0.13
100K	3590S-2-104	0.09

\* Please contact our Technical Support Department for details

### **Dimensions (mm)**



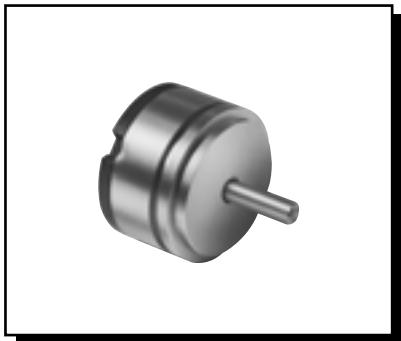
### **Circuit Diagram**



**SPLT** 5pcs Manufacturers smallest factory pack quantity for lot integrity and traceability.

**BOURNS type 6537/6538**

Single turn, continuous angle servo mounted precision potentiometers in a range of values between 1kΩ and 10kΩ and with a choice of standard (type 6537), or extended life (type 6538) versions offering up to 20,000,000 operations.

**Specification****Electrical Characteristics**

Resistance range.....	1kΩ to 10kΩ
Resistance tolerance .....	±10%
Independent linearity .....	±1%
Resolution .....	Infinite
Effective electrical angle .....	340° +3°
End voltage .....	0.5% max.
Output smoothness.....	0.25% max.
Power rating.....	1W/70°C (voltage limited by power dissipation or 300V a.c. whichever is less)
Dielectric withstand voltage .....	MIL-STD-202, method 301 750V a.c. min.
Insulation resistance .....	1000MΩ @ 500V d.c. min.

**Environmental Characteristics**

Temperature range	
storage.....	-65°C to +125°C
operating.....	+1°C to +125°C
Temperature coefficient.....	±500ppm/°C
Moisture resistance.....	MIL-STD-202, method 106
total resistance shift.....	10% max.
Vibration.....	15G
wiper bounce .....	0.1ms max.
total resistance shift.....	5% max.
voltage ratio shift .....	±0.5% max.
Shock.....	50G
wiper bounce .....	0.1ms max.
total resistance shift.....	5% max.
voltage ratio shift .....	0.5% max.
Load life .....	1000 hours, 1W
total resistance shift.....	10% max.
Rotational life (no load).....	10,000,000 revolutions (6537) 20,000,000 revolutions (6538)
total resistance shift.....	10% max.

**Mechanical Characteristics**

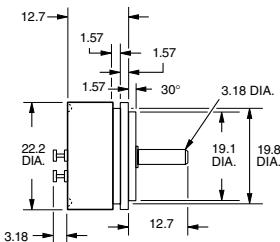
Operating torque.....	0.40Ncm max. (6537) 0.18Ncm max. (6538)
Mechanical angle.....	Continuous
Shaft runout .....	0.13mm T.I.R. (6537) 0.025mm T.I.R. (6538)
Shaft end play.....	0.13mm T.I.R. (6537)
Shaft radial play.....	0.13mm T.I.R. (6537) 0.08mm T.I.R. (6538)
Pilot diameter runout.....	0.06mm T.I.R.
Lateral runout.....	0.08mm T.I.R.
Backlash .....	0.1° max.

All specifications measured at +25°C ambient and 50%RH except where otherwise stated

- Single turn (continuous)
- Conductive plastic element
- Resistance values from 1kΩ to 10kΩ
- Servo mounting
- Bearing option for extended life up to 20,000,000 revolutions
- 3.18mm (1/8 in) shaft

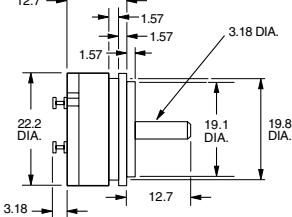
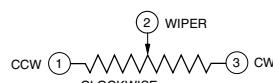
**Dimensions (mm)**

6537



6538

(Ball Bearing)

**Circuit Diagram**

**SPLT** 1pc Manufacturers smallest factory pack quantity for lot integrity and traceability.

Value (Ω)	Bourns Part No. & <i>Anglia</i> Order Code	
	6537 (Std)	6538 (Extended life)
1K	—	6538S-1-102
2K	—	6538S-1-202
5K	6537S-1-502	6538S-1-502
10K	6537S-1-103	6538S-1-103

## BOURNS type 6539/6639

Single turn, continuous angle precision potentiometers in a choice of servo or bush mounting options. Available in a range of values between 1kΩ and 20kΩ, the devices feature an extended operating capability of 10 million rotational operations within a compact package and are designed for general purpose applications.



- Single turn (continuous)
- Conductive plastic element
- Resistance values from 1kΩ to 20kΩ
- Rotational life 10,000,000 revolutions
- Option of servo mount with 3.18mm (1/8 in) shaft or bush mount with slotted 6.35mm (1/4 in) shaft

### Specification

#### Electrical Characteristics

Resistance range	1kΩ to 20kΩ
Resistance tolerance	±15%
Independent linearity	±2%
Resolution	Infinite
Effective electrical angle	340° +3°
End voltage	0.5% max.
Output smoothness	0.25% max.
Power rating	1W/70°C (voltage limited by power dissipation or 300V a.c. whichever is less)
Dielectric withstand voltage	MIL-STD-202, method 301 750V a.c. min.
Insulation resistance	1000MΩ @ 500V d.c. min.

#### Environmental Characteristics

Temperature range	-65°C to +125°C
storage	-65°C to +125°C
operating	+1°C to +125°C
Vibration	15G
wiper bounce	0.1ms max.
Shock	50G
wiper bounce	0.1ms max.
Rotational life (no load)	10,000,000 revolutions
total resistance shift	10% max.

#### Mechanical Characteristics

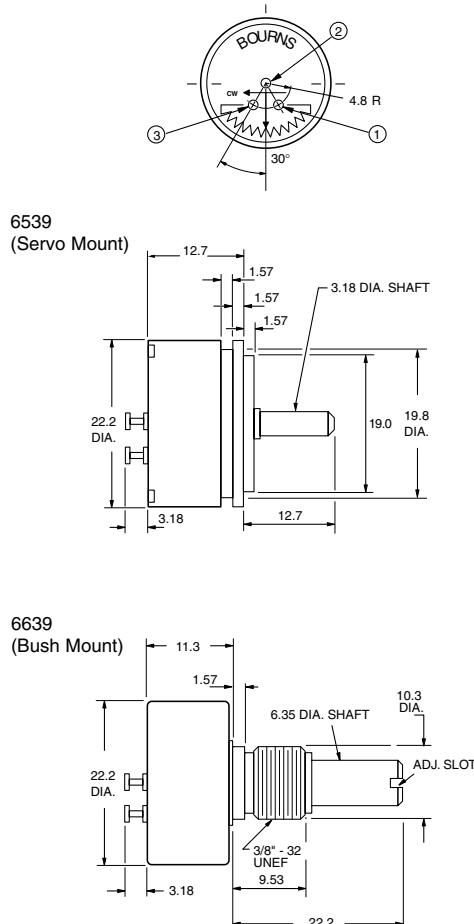
Operating torque	0.4Ncm max.
Mechanical angle	Continuous
Shaft runout	0.13mm T.I.R.
Shaft end play	0.13mm T.I.R.
Shaft radial play	0.13mm T.I.R.
Pilot diameter runout	0.06mm T.I.R.
Lateral runout	0.08mm T.I.R.

All specifications measured at +25°C ambient and 50%RH except where otherwise stated

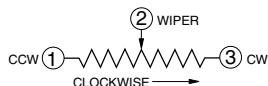
Value (Ω)	Bourns Part No. & Anglia Order Code	
	Servo Mount	Bush Mount
1K	<b>6539S-1-102</b>	<b>6639S-1-102</b>
2K	–	<b>6639S-1-202</b>
5K	<b>6539S-1-502</b>	<b>6639S-1-502</b>
10K	<b>6539S-1-103</b>	<b>6639S-1-103</b>
20K	–	<b>6639S-1-203</b>

**SPLT** 1pc Manufacturers smallest factory pack quantity for lot integrity and traceability.

### Dimensions (mm)

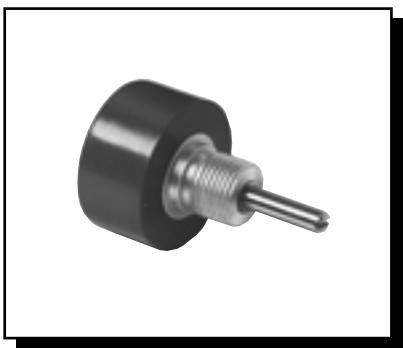


### Circuit Diagram



## BOURNS type 6637

Bush mounted, single turn, continuous angle precision potentiometers in a range of values between 1kΩ and 10kΩ. The devices offer a long rotational life, and are moisture resistant to MIL-STD-202.



- Single turn (continuous)
- Conductive plastic element
- Resistance values from 1kΩ to 10kΩ
- Rotational life 10,000,000 revolutions
- Moisture resistant to MIL-STD-202
- Slotted 3.18mm (1/8 in) shaft

### Specification

#### Electrical Characteristics

Resistance range.....	1kΩ to 10kΩ
Resistance tolerance .....	±10%
Independent linearity .....	±1%
Resolution.....	Infinite
Effective electrical angle.....	340° +3°
End voltage.....	0.5% max.
Output smoothness.....	0.25% max.
Power rating.....	1W/70°C (voltage limited by power dissipation or 300Vdc. whichever is less)
Dielectric withstand voltage .....	MIL-STD-202, method 301 750Vdc. min.
Insulation resistance.....	1000MΩ @ 500Vdc. min.

#### Environmental Characteristics

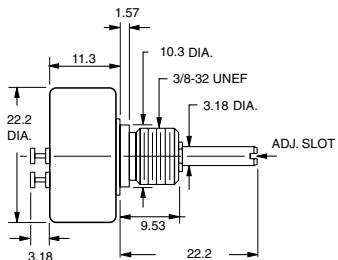
Temperature range	-65°C to +125°C
storage.....	-65°C to +125°C
operating.....	+1°C to +125°C
Temperature coefficient .....	500ppm/°C
Moisture resistance.....	MIL-STD-202, method 106
total resistance shift.....	10% max.
Vibration.....	15G
wiper bounce .....	0.1ms max.
total resistance shift.....	5% max.
voltage ratio shift .....	0.5% max.
Shock.....	50G
wiper bounce .....	0.1ms max.
total resistance shift.....	5% max.
voltage ratio shift .....	0.5% max.
Load life .....	1000 hours, 1W
total resistance shift.....	10% max.
Rotational life (no load).....	10,000,000 revolutions
total resistance shift.....	10% max.

#### Mechanical Characteristics

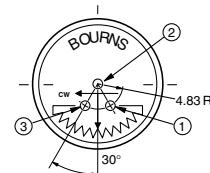
Operating torque.....	0.4Ncm max.
Mechanical angle.....	Continuous
Shaft runout .....	0.025mm T.I.R.
Shaft end play.....	0.13mm T.I.R.
Shaft radial play.....	0.13mm T.I.R.
Backlash .....	0.1°max.

All specifications measured at +25°C ambient and 50%RH except where otherwise stated

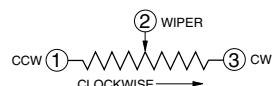
### Dimensions (mm)



NOTE: SHAFT SUPPORTED BY FRONT SLEEVE BEARING.



### Circuit Diagram



**SPLIT** 1pc Manufacturers smallest factory pack quantity for lot integrity and traceability.

Value (Ω)	Bourns Part No. & Anglia Order Code
1K	6637S-1-102
5K	6637S-1-502
10K	6637S-1-103

**BOURNS type 6657**

Bush mounted, single turn, continuous angle precision potentiometers in a range of values between 1kΩ and 10kΩ. The devices have an extended rotational life expectancy of 10,000,000 operations and a maximum power handling capability of 1.5W.



- Single turn (continuous)
- Conductive plastic element
- Resistance values from 1kΩ to 10kΩ
- Power rating 1.5W
- Rotational life 10,000,000 revolutions
- Moisture resistant to MIL-STD-202
- Slotted 6.35mm (1/4 in) shaft

**Specification****Electrical Characteristics**

Resistance range .....	1kΩ to 10kΩ
Resistance tolerance .....	±10%
Independent linearity .....	±1%
Resolution.....	Infinite
Effective electrical angle.....	340° ±3°
End voltage.....	0.5% max.
Output smoothness.....	0.25% max.
Power rating .....	1.5W/70°C (voltage limited by power dissipation or 300Vdc. whichever is less)
Dielectric withstand voltage.....	MIL-STD-202, method 301 750Vdc. min.
Insulation resistance.....	1000MΩ @ 500Vdc. min.

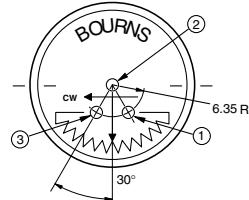
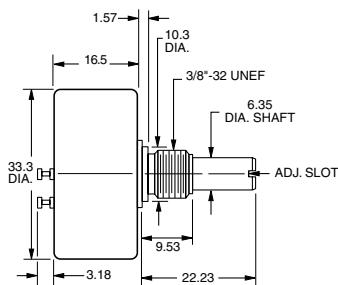
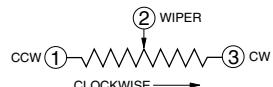
**Environmental Characteristics**

Temperature range	-65°C to +125°C
storage .....	-65°C to +125°C
operating .....	+1°C to +125°C
Temperature coefficient .....	±500ppm/°C
Moisture resistance .....	MIL-STD-202, method 106
total resistance shift .....	15% max.
Vibration .....	15G
wiper bounce .....	0.1ms max.
total resistance shift .....	5% max.
voltage ratio shift .....	0.5% max.
Shock.....	50G
wiper bounce .....	0.1ms max.
total resistance shift .....	5% max.
voltage ratio shift .....	0.5% max.
Load life.....	1000 hours, 1.5W
total resistance shift .....	10% max.
Rotational life (no load) .....	10,000,000 revolutions
total resistance shift .....	10% max.

**Mechanical Characteristics**

Operating torque .....	0.4Ncm max.
Mechanical angle .....	Continuous
Shaft runout.....	0.025mm T.I.R.
Shaft end play .....	0.13mm T.I.R.
Shaft radial play.....	0.13mm T.I.R.
Backlash.....	0.1° max.

All specifications measured at +25°C ambient and 50%RH except where otherwise stated

**Dimensions (mm)****Circuit Diagram**

**SPLT** 1pc

Manufacturers smallest factory pack quantity for lot integrity and traceability.

Value (Ω)	Bourns Part No. & Anglia Order Code
1K	<a href="#">6657S-1-102</a>
2K	<a href="#">6657S-1-202</a>
5K	<a href="#">6657S-1-502</a>
10K	<a href="#">6657S-1-103</a>

## BOURNS type 3600 (analogue)

Bush mounted, 10-turn precision potentiometers with an analogue (clock face) readout. Available in a range of values between 1kΩ and 100kΩ, the devices are designed for applications where ease of potentiometer setting and subsequent monitoring are required.



- Multiturn (10 turns)
- Wirewound element
- Analogue readout
- Resistance values from 1kΩ to 100kΩ
- Rotational life 200,000 revolutions
- Ease of setting/monitoring

### Specification

#### Electrical Characteristics

Resistance range .....	1kΩ to 100kΩ
Resistance tolerance .....	±5%
Accuracy .....	±0.5% voltage ratio (correlation of dial readout to voltage ratio output)
Repeatability of dial readout.....	±0.1% voltage ratio
Resolution.....	See part number table
Effective electrical angle.....	3600° nominal
End resistance.....	1Ω or 0.1% max. (whichever is greater)
Noise .....	100Ω ENR max.
Power rating .....	1.5W/25°C (voltage limited by power dissipation or 385V a.c. whichever is less)
Dielectric withstand voltage.....	MIL-STD-202, method 301 1000V a.c. min.
Insulation resistance.....	1000MΩ @ 500V d.c. min.

#### Environmental Characteristics

Temperature range	
storage .....	-65°C to +85°C
operating .....	+1°C to +85°C
Temperature coefficient .....	±50ppm/°C
Moisture resistance .....	MIL-STD-202, method 103, condition B
total resistance shift .....	2% max.
Vibration .....	10G
wiper bounce.....	0.1ms max.
total resistance shift .....	2% max.
voltage ratio shift.....	0.2% max.
Shock.....	50G
wiper bounce..	0.1ms max.
total resistance shift .....	2% max.
voltage ratio shift.....	0.2% max.
Load life.....	1000 hours, 1.5W
total resistance shift .....	2% max.
Rotational life (no load) .....	200,000 revolutions
total resistance shift .....	2% max.

#### Mechanical Characteristics

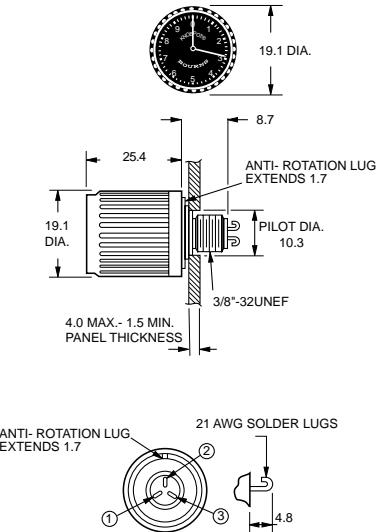
Operating torque .....	2.8Ncm max.
variation.....	0.7Ncm max.
Mechanical angle .....	3600° +20°, -0°
Stop strength .....	14Ncm min.
Backlash .....	1° max.
Terminals .....	Gold plated J-hooks

All specifications measured at +25°C ambient and 50%RH except where otherwise stated

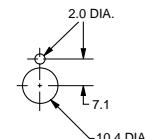
Value (Ω)	Bourns Part No. & <i>Anglia</i> Order Code	Resolution
1K	<b>3600S-1-102</b>	0.35
5K	<b>3600S-1-502</b>	0.27
10K	<b>3600S-1-103</b>	0.22
100K	<b>3600S-1-104</b>	*

\* Please contact our Technical Support Department for details

### Dimensions (mm)

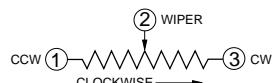


### Mounting Holes



LOCKWASHER AND MOUNTING NUT  
SUPPLIED WITH EACH UNIT

### Circuit Diagram



**SPLT** 5pcs Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

**BOURNS type 3610 (digital)**

*Snap-in panel mounted, 10-turn precision potentiometers with digital dial readout for easy setting and monitoring. Available in a range of values between 1kΩ and 10kΩ, the devices offer space saving capabilities with the device protruding only 16mm behind most panels.*



- Multiturn (10 turns)
- Wirewound element
- Digital readout
- Resistance values from 1kΩ to 10kΩ
- Compact design, snap-in mounting
- Ease of setting/monitoring

**Specification****Electrical Characteristics**

Resistance range .....	1kΩ to 10kΩ
Resistance tolerance.....	±5%
Accuracy .....	±0.5% voltage ratio (correlation of dial readout to voltage ratio output)
Repeatability of dial readout .....	±0.1% voltage ratio
Resolution .....	See part number table
Effective electrical angle .....	3600° nominal
Absolute minimum resistance .....	1Ω or 0.1% max. (whichever is greater)
Noise .....	100Ω ENR max.
Power rating .....	1.5W/25°C (voltage limited by power dissipation or 385V.a.c. whichever is less)
Dielectric withstand voltage.....	MIL-STD-202, method 301 1000V.a.c. min.
Insulation resistance .....	1000MΩ @ 500V.d.c. min.

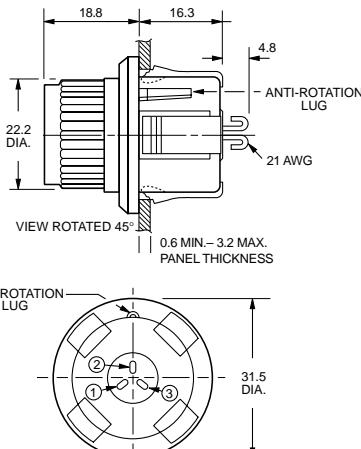
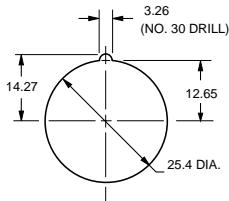
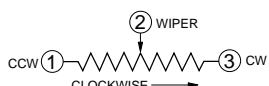
**Environmental Characteristics**

Temperature range	-25°C to +85°C
storage .....	-25°C to +85°C
operating .....	+1°C to +85°C
Temperature coefficient .....	±50ppm/°C
Moisture resistance .....	MIL-STD-202, method 103, condition B
total resistance shift .....	2% max.
Vibration .....	10G
wiper bounce .....	0.1ms max.
total resistance shift .....	2% max.
voltage ratio shift.....	0.2% max.
Shock .....	50G
wiper bounce .....	0.1ms max.
total resistance shift .....	2% max.
voltage ratio shift.....	0.2% max.
Load life.....	1000 hours, 1.5W
total resistance shift .....	2% max.
Rotational life (no load) .....	50,000 revolutions
total resistance shift .....	2% max.

**Mechanical Characteristics**

Operating torque .....	2.8Ncm max.
variation .....	0.7Ncm max.
Mechanical angle .....	3600° +20°, -0°
Stop strength .....	14Ncm min.
Backlash.....	1° max.
Terminals .....	Gold plated J-hooks

All specifications measured at +25°C ambient and 50%RH except where otherwise stated

**Dimensions (mm)****Mounting Hole****Circuit Diagram**

**SPLT** 5pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

Value (Ω)	Bourns Part No. & <i>Anglia</i> Order Code	Resolution
1K	3610S-1-102	0.35
5K	3610S-1-502	0.27
10K	3610S-1-103	0.22

## BOURNS type 3682/3683 (digital)

Snap-in panel mounted, 10-turn precision potentiometers with a push-button digital readout. Available in a range of values between 1kΩ and 1MΩ, the devices are designed for applications where ease of potentiometer setting and subsequent monitoring are required. A panel seal assembly is available separately.



- Multiturn (10 turns)
- Cermet element
- Digital readout (push-button adjustment)
- Resistance values from 1kΩ to 1MΩ
- 2 or 3 decade option
- Snap-in mounting
- Ease of setting/monitoring

### Specification

#### Electrical Characteristics

Resistance range .....	1kΩ to 1MΩ
Resistance tolerance .....	±3%
Accuracy .....	±0.5% full scale (dial reading to output ratio)
Resolution .....	1% (3682) 0.1% (3683)
Absolute minimum resistance .....	3Ω or 0.2% max. (whichever is greater)
Power rating .....	2W/25°C (voltage limited by power dissipation or 500Vdc. whichever is less)
Dielectric withstand voltage .....	MIL-STD-202, method 301 1000Vdc. min.
Insulation resistance .....	1000MΩ @ 500Vdc. min.

#### Environmental Characteristics

Temperature range.....	-25°C to +85°C
Temperature coefficient.....	±100ppm/°C
Vibration .....	10G
wiper bounce .....	0.1ms max.
total resistance shift .....	1% max.
voltage ratio shift .....	0.2% max.
Shock .....	50G
wiper bounce .....	0.1ms max.
total resistance shift .....	1% max.
voltage ratio shift .....	0.2% max.
Load life .....	1000 hours, 2W
total resistance shift .....	2% max.
Life expectancy .....	75,000 operations/button
total resistance shift .....	2% max.

#### Mechanical Characteristics

Terminals.....	2.8mm x 0.4mm tinned solder lugs
Readout marking.....	0-9

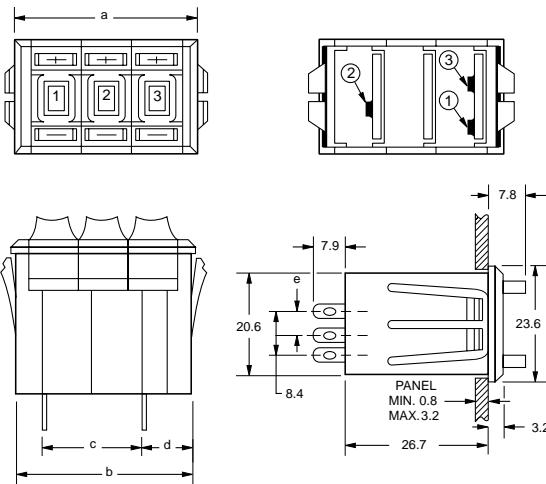
All specifications measured at +25°C ambient and 50%RH except where otherwise stated

Value (Ω)	Bourns Part No. & <a href="#">Anglia Order Code</a>	
	2 Decade	3 Decade
1K	3682S-1-102	3683S-1-102
5K	3682S-1-502	3683S-1-502
10K	3682S-1-103	3683S-1-103
50K	3682S-1-503	3683S-1-503
100K	3682S-1-104	3683S-1-104
500K	3682S-1-504	3683S-1-504
1M	3682S-1-105	3683S-1-105

**SPLT** 5pcs

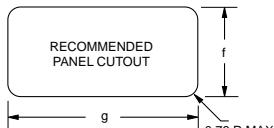
Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

### Dimensions (mm)



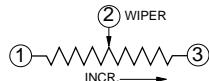
Model	Dimensions				
	a	b	c	d	e
3682	26.7	25.2	10.7	11.9	8.4
3683	37.1	35.3	18.5	11.9	4.2

### Mounting Hole



Model	Dimensions	
	f	g
3682	21.1	25.9
3683	21.1	36.1

### Circuit Diagram

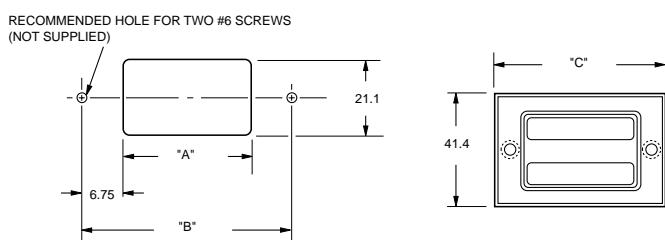


**BOURNS type 3682/3683 (digital) continued****Panel Seal Assembly type H-385**

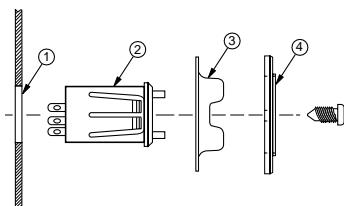
Designed to be utilised in conjunction with the Bourns type 3682/3683 digital push-button precision potentiometers, the H-385 assembly protects the front of the device from the ingress of water, dust grease and oils and so maintains its operational integrity. The assembly comprises a transparent tear resistant cover, allowing easy viewing of the numerals and offering a minimum life expectancy of 100,000 actuations. The outer frame is manufactured in matt black plastic and designed to aesthetically complement most panels.



Dimensions (mm)



Applicable Potentiometer Type	Panel Cut-Out/Hole Spacing		Frame Width C	Bourns Part No. & Anglia Order Code
	A	B		
3682	25.9	39.4	50.6	H-385-2
3683	36.1	49.5	60.8	H-385-3



## H-385 MOUNTING INSTRUCTIONS

1. Cut out and drill panel ① as per above dimensions.
2. Install snap-in potentiometer ②.
3. Locate silicone boot ③ and frame ④ over potentiometer and holes.
4. Attach panel seal assembly to panel with two #6 screws (not supplied).

SPLT 1pc

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

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01945 47 48 49 •



E-mail: sales@angliac.co.uk

## Terminology

### Absolute Minimum Resistance:

The resistance measured between the wiper terminal and either end terminal when the wiper is positioned to give a minimum value on the measuring device. Expressed in ohms or % of total resistance.

### Contact Resistance Variation (CRV):

The *apparent* resistance seen between the wiper and the resistance element when the wiper is energised with a specified current and moved over the adjustment travel in either direction at a constant speed. The output variations are measured over a specified frequency bandwidth, exclusive of the efforts due to roll-on or roll-off of the terminations, and is expressed in ohms or % of total resistance.

### Dielectric Withstand Voltage:

The ability to withstand under prescribed conditions, a specified potential of a given characteristic between the terminals of each cup and exposed conducting surface of the potentiometer, or between the terminals of each cup and the terminals of every other cup in the assembly without exceeding a specified leakage current value.

### Elements (Cermet):

Cermet (CERamic/METal) trimmers are available in a wide range of resistance values and tapers. They offer essentially infinite resistance and excellent stability in the most severe environmental conditions. Static and dynamic noise (CRV) performance is good but not as good as that of conductive plastic.

The temperature coefficient of cermet elements, though not as good as wirewound, are better than conductive plastic or carbon elements. Frequency response is excellent and the practical application range extends well beyond 100MHz.

### Elements (Conductive Plastic):

Conductive plastic is a thick film ink, similar to cermet but has a smoother surface. This characteristic offers several operational advantages over cermet. Dynamic noise characteristics (CRV or output smoothness) and rotational life are measurably improved as a result of the surface smoothness. Resolution is essentially infinite. Conductive plastic elements are generally available in a wide range of resistance values and tapers. Moisture resistance, temperature coefficient, power dissipation and wiper current capacity are inferior to cermet elements.

### Elements (Wirewound):

Wirewound elements offer good stability, excellent linearity, low noise, high power capabilities and good operational life. Wirewound elements offer a wide selection of resistance values up to 500kΩ. One primary limitation of wirewound elements is the finite resolution steps, which result from the wiper moving from turn to turn. These steps are distinct, sudden and repeatable changes in output. Resolution improves as resistance values increase due to the manufacturing processes whereby smaller wire and a higher number of turns are utilised. In systems that might be sensitive to such discrete steps, care should be taken to select an element with resolution fine enough to avoid such problems. The many turns of resistance wire exhibit an inductive reactance that increases directly with frequency. This effect is most noticeable in low resistance elements because the inductive reactance can be larger than the resistance, even at frequencies as low as 20kHz. The performance of wirewound elements is also affected by inherent capacitance. This exists from turn to turn and also between the winding and the mandrel. Capacitance effects are most significant in high total resistance elements.

### Equivalent Noise Resistance (ENR):

Defined as any spurious variation in the electrical output not present in the input, defined quantitatively in terms of an equivalent parasitic transient resistance in ohms, appearing between the contact and the resistance element when the shaft is rotated or translated. The equivalent noise resistance is defined independently of the resolution, the functional characteristics and the total travel. The magnitude of the equivalent noise resistance is the maximum departure from a specified reference line. The wiper of the potentiometer is required to be excited by a specified current and moved at a specified speed.

### Independent Linearity:

The maximum deviation, expressed as a percent of the total applied voltage, of the actual function characteristic from a straight line whose slope and position minimise the maximum deviations over the actual electrical travel, or any specified portion thereof.

### Insulation Resistance:

The resistance to a specified impressed d.c. voltage between the terminals of each cup and the exposed conducting surfaces of the potentiometer, or between the terminals of each cup and the terminals of every other cup in the gang, under prescribed conditions.

### Output Smoothness:

The spurious variations in the electrical output not present in the input. They are measured for specific travel increments over the theoretical electrical travel and expressed as a percentage of the total applied voltage.

**Power Rating:**

The maximum power, in watts, that a potentiometer can dissipate across the entire resistive element under specified conditions while meeting specified operating performance requirements.

**Resolution:**

Applicable to wirewound potentiometers only, resolution is a measure of the sensitivity to which the output of a potentiometer may be set.

Theoretical resolution is the reciprocal of the number of turns of wire in the resistance winding in the actual travel, expressed as a percentage.

Travel resolution is the maximum value of shaft travel (in degrees for rotary devices) in one direction per incremental voltage stop in any specified portion of the resistance element.

Voltage resolution is the maximum incremental change in output ratio with shaft travel in one direction in any specified portion of the resistance element.

**Temperature Coefficient:**

The unit change in resistance per degree Celcius change from a reference temperature, expressed in parts per million per degree Celcius as follows:

$$TC = \frac{R_2 - R_1}{R_1 (T_2 - T_1)} \times 10^6$$

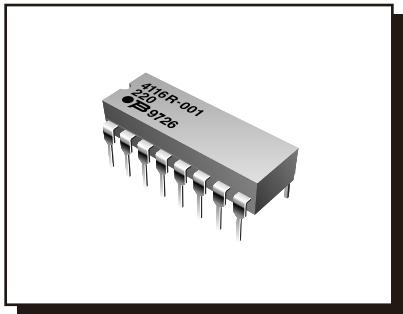
Where:  
R<sub>1</sub> = Resistance at reference temperature in ohms  
R<sub>2</sub> = Resistance at the test temperature in ohms  
T<sub>1</sub> = Reference temperature in degrees Celcius  
F<sub>2</sub> = Test temperature in degrees Celcius

**Total Resistance:**

The DC resistance between the end terminals of a potentiometer with the shaft positioned so as to give a maximum resistance value.

## BOURNS type 4100R Series (dual in-line)

A comprehensive series of thick film resistor networks housed in 14 or 16 pin moulded dual in-line packages. Available in a range of values from 10Ω to 1MΩ with a choice of circuit configurations. Offering between 7 and 28 resistors per package, the components are fully compatible with automatic insertion equipment and have an operating temperature range of -55°C to 125°C.



- Moulded 14/16 pin DIL packages
- 7 to 28 resistors
- Resistance values from 10Ω to 1MΩ
- Isolated/commoned/dual terminator options
- Automatic insertion equipment compatible
- High package integrity

### Specification

#### Electrical Characteristics

Resistance range .....	10Ω to 1MΩ
Resistance tolerance	
<56Ω .....	±1Ω
≥56Ω .....	±2%
Max. operating voltage .....	100V
Power rating/package @ 70°C	
14 pin .....	2W
16 pin .....	2.25W
Power rating/resistor @ 70°C	
isolated (001 circuit) .....	0.25W
commoned (002 circuit) .....	0.125W
dual terminator (003 circuit) .....	0.125W
Temperature coefficient of resistance	
<56Ω .....	±250ppm/°C
≥56Ω .....	±100ppm/°C
TCR tracking .....	50ppm/°C max; equal values
Operating temperature range .....	-55°C to +125°C
Insulation resistance .....	10,000MΩ min.
Dielectric withstand voltage .....	200Vrms

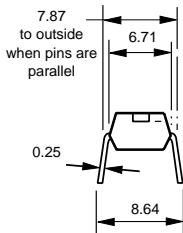
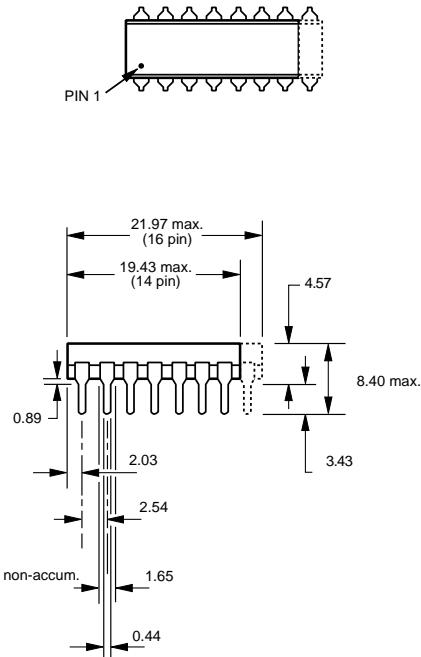
#### Environmental Characteristics

Tests per MIL-STD-202 (ΔR max.)	
short time overload .....	±0.25%
load life .....	±1%
moisture resistance .....	±0.5%
soldering heat resistance .....	±0.25%
terminal strength .....	±0.25%
thermal shock .....	±0.25%

#### Physical Characteristics

Lead solderability .....	Meets MIL-STD-202 method 208
Flammability .....	Meets UL94V-0

### Dimensions (mm)



● Other Values and Circuit Configurations Available

Please contact our Sales Dept. for details

SPLT

25pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

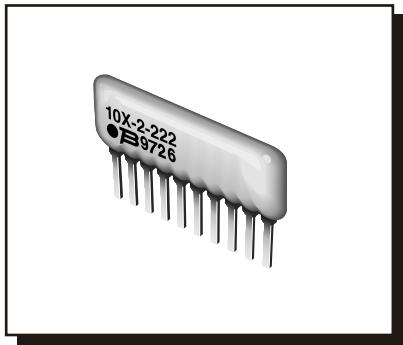
**BOURNS type 4100R Series (dual in-line) continued**

Value (Ω)	Isolated Resistors (001 Circuit)*		Commoned Resistors (002 Circuit)*		Dual Terminator (003 Circuit)*	
	Bourns Part No. & <i>Anglia</i> Order Code					
	14 Pin	16 Pin	14 Pin	16 Pin	14 Pin	16 Pin
10R	—	4116R-001-100	—	—	—	—
22R	4114R-001-220	4116R-001-220	—	4116R-002-220	—	—
27R	—	4116R-001-270	—	4116R-002-270	—	—
33R	—	4116R-001-330	—	4116R-002-330	—	—
39R	—	4116R-001-390	—	4116R-002-390	—	—
47R	4114R-001-470	4116R-001-470	—	4116R-002-470	—	—
56R	—	4116R-001-560	—	—	—	—
68R	4114R-001-680	4116R-001-680	—	4116R-002-680	—	—
75R	—	4116R-001-750	—	—	—	—
82R	—	4116R-001-820	—	—	—	—
100R	4114R-001-101	4116R-001-101	—	4116R-002-101	—	—
120R	—	4116R-001-121	—	—	—	—
150R	4114R-001-151	4116R-001-151	—	4116R-002-151	—	—
180R	—	4116R-001-181	—	—	—	—
220R	4114R-001-221	4116R-001-221	—	4116R-002-221	—	—
220R/330R	—	—	—	—	4114R-003-221/331	4116R-003-221/331
270R	4114R-001-271	4116R-001-271	—	—	—	—
330R	4114R-001-331	4116R-001-331	—	4116R-002-331	—	—
390R	4114R-001-391	4116R-001-391	—	—	—	—
470R	4114R-001-471	4116R-001-471	—	—	—	—
680R	4114R-001-681	4116R-001-681	—	4116R-002-681	—	—
1K	4114R-001-102	4116R-001-102	4114R-002-102	4116R-002-102	—	—
1K2	—	4116R-001-122	—	—	—	—
1K5	4114R-001-152	4116R-001-152	—	—	—	—
1K8	—	4116R-001-182	—	—	—	—
2K	—	4116R-001-202	—	—	—	—
2K2	4114R-001-222	4116R-001-222	4114R-002-222	4116R-002-222	—	—
2K7	—	4116R-001-272	—	4116R-002-272	—	—
3K3	4114R-001-332	4116R-001-332	—	4116R-002-332	—	—
4K7	4114R-001-472	4116R-001-472	4114R-002-472	4116R-002-472	—	—
5K6	—	4116R-001-562	—	—	—	—
6K8	—	4116R-001-682	—	4116R-002-682	—	—
10K	4114R-001-103	4116R-001-103	4114R-002-103	4116R-002-103	—	—
18K	—	4116R-001-183	—	—	—	—
22K	4114R-001-223	4116R-001-223	—	4116R-002-223	—	—
27K	—	4116R-001-273	—	4116R-002-273	—	—
33K	—	—	—	—	—	—
47K	4114R-001-473	4116R-001-473	4114R-002-473	4116R-002-473	—	—
100K	4114R-001-104	4116R-001-104	4114R-002-104	4116R-002-104	—	—
220K	4114R-001-224	4116R-001-224	—	—	—	—
470K	4114R-001-474	4116R-001-474	—	—	—	—
1M	—	4116R-001-105	—	4116R-002-105	—	—
No. of Resistors	7	8	13	15	24	28

\*16 pin package circuit diagram shown

## BOURNS type 4600X Series (single in-line)

Offering a choice of isolated or commoned circuit configurations, the 4600X thick film resistor network series provides superior operational characteristics within a low profile conformal SIL package. The components feature an operating temperature range of -55°C to +125°C and are available in values from 10Ω to 1MΩ, with options of between 3 and 9 resistors per package.



- Conformal 5 to 10 pin SIL packages
- Low profile (5mm max.)
- 3 to 9 resistors
- Resistance values from 10Ω to 1MΩ
- Isolated/commoned option

### Specification

#### Electrical Characteristics

Resistance range ..... 10Ω to 1MΩ

Resistance tolerance

<56Ω ..... ±1Ω

≥56Ω ..... ±2%

Max. operating voltage ..... 100V

Power rating/package @ 70°C

5 pin ..... 0.63W

6 pin ..... 0.75W

8 pin ..... 1W

9 pin ..... 1.13W

10 pin ..... 1.25W

Power rating/resistor @ 70°C

isolated (102 circuit) ..... 0.3W

commoned (101 circuit) ..... 0.2W

Temperature coefficient of resistance

<56Ω ..... ±250ppm/°C

≥56Ω ..... ±100ppm/°C

TCR tracking ..... 50ppm/°C max; equal values

Operating temperature range ..... -55°C to +125°C

Insulation resistance ..... 10,000MΩ min.

Dielectric withstand voltage ..... 200Vrms

#### Environmental Characteristics

Tests per MIL-STD-202 (ΔR max.)

short time overload ..... ±0.25%

load life ..... ±1%

moisture resistance ..... ±0.5%

soldering heat resistance ..... ±0.25%

terminal strength ..... ±0.25%

mechanical shock ..... ±0.25%

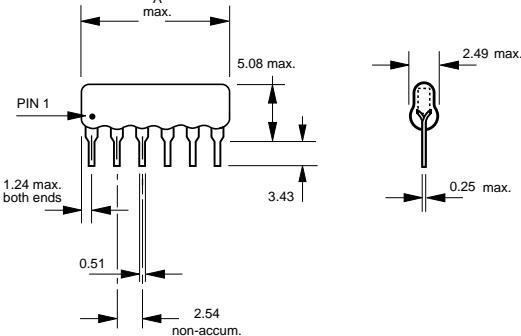
thermal shock ..... ±0.25%

vibration ..... ±0.25%

#### Physical Characteristics

Flammability ..... Meets UL94V-0

### Dimensions (mm)



Pin Count	A max.
5	12.65
6	15.19
8	20.27
9	22.81
10	25.35



#### Other Values and Circuit Configurations Available

Please contact our Sales Dept. for details

SPLT

100pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

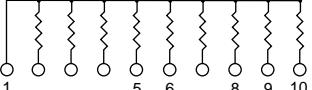
**BOURNS type 4600X Series (single in-line) continued**

Value (Ω)				
	Isolated Resistors (102 Circuit)*			
	Bourns Part No. & <i>Anglia</i> Order Code	6 Pin	8 Pin	10 Pin
10R		—	4608X-102-100	4610X-102-100
22R		—	4608X-102-220	4610X-102-220
27R		—	4608X-102-270	—
33R		—	4608X-102-330	4610X-102-330
39R		—	4608X-102-390	—
47R		—	4608X-102-470	4610X-102-470
56R		—	4608X-102-560	4610X-102-560
68R		—	4608X-102-680	—
100R	4606X-102-101		4608X-102-101	4610X-102-101
120R		—	4608X-102-121	—
150R		—	4608X-102-151	4610X-102-151
180R		—	4608X-102-181	—
220R		—	4608X-102-221	4610X-102-221
270R		—	4608X-102-271	—
330R		—	4608X-102-331	4610X-102-331
390R		—	4608X-102-391	—
470R	4606X-102-471		4608X-102-471	4610X-102-471
680R		—	4608X-102-681	—
820R		—	4608X-102-821	4610X-102-821
1K	4606X-102-102		4608X-102-102	4610X-102-102
1K5		—	4608X-102-152	—
1K8		—	4608X-102-182	—
2K		—	4608X-102-202	—
2K2	4606X-102-222		4608X-102-222	4610X-102-222
2K7		—	4608X-102-272	—
3K3		—	4608X-102-332	—
4K7	4606X-102-472		4608X-102-472	4610X-102-472
6K8		—	4608X-102-682	—
8K2		—	4608X-102-822	—
10K	4606X-102-103		4608X-102-103	4610X-102-103
22K		—	4608X-102-223	—
33K		—	4608X-102-333	—
47K	4606X-102-473		4608X-102-473	4610X-102-473
100K	4606X-102-104		4608X-102-104	4610X-102-104
220K		—	4608X-102-224	—
330K		—	4608X-102-334	—
470K		—	4608X-102-474	—
820K		—	4608X-102-824	—
1M	4606X-102-105		4608X-102-105	4610X-102-105
No. of Resistors	3	4	5	

\*10 pin package circuit diagram shown

4600X Series (Commoned Resistors) continued overleaf > > > >

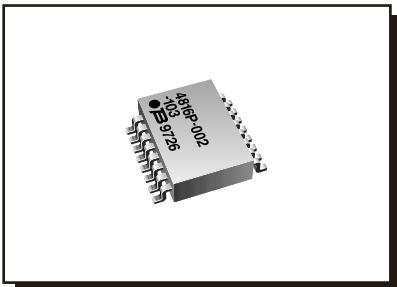
**BOURNS type 4600X Series (single in-line) continued**

Value (Ω)					
	 <b>Commoned Resistors (101 Circuit)*</b>				
	<b>Bourns Part No. &amp; <a href="#">Anglia Order Code</a></b>				
	5 Pin	6 Pin	8 Pin	9 Pin	10 Pin
10R	—	—	—	4609X-101-100	—
22R	—	—	4608X-101-220	4609X-101-220	—
33R	—	—	4608X-101-330	4609X-101-330	4610X-101-330
47R	—	—	4608X-101-470	4609X-101-470	4610X-101-470
68R	—	—	—	4609X-101-680	—
100R	—	4606X-101-101	4608X-101-101	4609X-101-101	4610X-101-101
150R	—	4606X-101-151	—	4609X-101-151	4610X-101-151
180R	—	—	4608X-101-181	4609X-101-181	—
220R	4605X-101-221	4606X-101-221	4608X-101-221	4609X-101-221	4610X-101-221
270R	—	—	—	4609X-101-271	4610X-101-271
330R	—	4606X-101-331	4608X-101-331	4609X-101-331	4610X-101-331
470R	4605X-101-471	4606X-101-471	4608X-101-471	4609X-101-471	4610X-101-471
560R	—	4606X-101-561	4608X-101-561	4609X-101-561	4610X-101-561
680R	4605X-101-681	4606X-101-681	4608X-101-681	4609X-101-681	4610X-101-681
1K	4605X-101-102	4606X-101-102	4608X-101-102	4609X-101-102	4610X-101-102
1K2	4605X-101-122	—	4608X-101-122	4609X-101-122	4610X-101-122
1K5	—	4606X-101-152	4608X-101-152	4609X-101-152	4610X-101-152
2K	—	—	—	4609X-101-202	4610X-101-202
2K2	4605X-101-222	4606X-101-222	4608X-101-222	4609X-101-222	4610X-101-222
2K7	—	4606X-101-272	—	4609X-101-272	4610X-101-272
3K3	4605X-101-332	4606X-101-332	4608X-101-332	4609X-101-332	4610X-101-332
3K9	—	—	—	4609X-101-392	4610X-101-392
4K7	4605X-101-472	4606X-101-472	4608X-101-472	4609X-101-472	4610X-101-472
5K6	—	—	—	4609X-101-562	4610X-101-562
6K8	—	4606X-101-682	4608X-101-682	4609X-101-682	—
10K	4605X-101-103	4606X-101-103	4608X-101-103	4609X-101-103	4610X-101-103
15K	—	—	—	4609X-101-153	—
18K	—	—	—	4609X-101-183	—
20K	—	—	—	4609X-101-203	4610X-101-203
22K	4605X-101-223	4606X-101-223	4608X-101-223	4609X-101-223	4610X-101-223
33K	—	—	4608X-101-333	4609X-101-333	4610X-101-333
47K	4605X-101-473	4606X-101-473	4608X-101-473	4609X-101-473	4610X-101-473
100K	4605X-101-104	4606X-101-104	4608X-101-104	4609X-101-104	4610X-101-104
220K	—	4606X-101-224	4608X-101-224	4609X-101-224	4610X-101-224
330K	—	—	4608X-101-334	4609X-101-334	—
470K	—	4606X-101-474	4608X-101-474	4609X-101-474	4610X-101-474
560K	—	—	—	4609X-101-564	—
1M	—	4606X-101-105	4608X-101-105	4609X-101-105	4610X-101-105
No. of Resistors	4	5	7	8	9

\*10 pin package circuit diagram shown

## **BOURNS type 4800P Series (surface mount)**

Designed to be fully compatible with automatic placement equipment, the range of 4800P thick film, moulded body, surface mount resistor networks are available in a range of values from 10Ω to 1MΩ. The devices feature an operating temperature range of -55°C to 125°C and are available in either isolated or commoned circuit configurations, offering between 7 and 15 resistors per package.



- Moulded 14/16 pin surface mount packages
- 7 to 15 resistors
- Resistance values from 10Ω to 1MΩ
- Isolated/commoned option
- Compatible with automatic placement equipment
- Supplied in tubes

### Specification

#### Electrical Characteristics

Resistance range.....	10Ω to 1MΩ
Resistance tolerance	
<56Ω.....	±1%
≥56Ω.....	±2%
Max. operating voltage.....	50V
Power rating/package @ 70°C	
14 pin.....	1.12W
16 pin.....	1.28W
Power rating/resistor @ 70°C	
isolated (001 circuit).....	0.16W
commoned (002 circuit).....	0.08W
Temperature coefficient of resistance	
<56Ω.....	±250ppm/°C
≥56Ω.....	±100ppm/°C
TCR tracking.....	50ppm/°C max; equal values 100ppm/°C ≥50W
Operating temperature range.....	-55°C to +125°C
Insulation resistance.....	10,000MΩ min.
Dielectric withstand voltage.....	200VRms

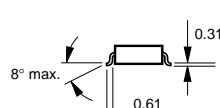
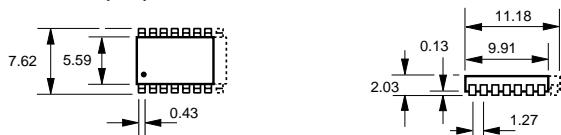
#### Environmental Characteristics

Tests per MIL-STD-202 (ΔR max.)	
short time overload.....	±0.25%
load life.....	±1%
moisture resistance.....	±0.5%
soldering heat resistance.....	±0.25%
thermal shock.....	±0.25%

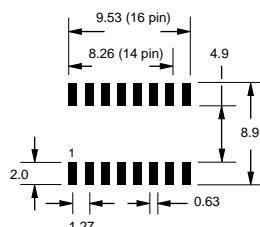
#### Physical Characteristics

Flammability.....	Meets UL94V-0
Lead solderability.....	Meets MIL-STD-202, method 208

#### Dimensions (mm)



#### Pad Pattern



SUPPLIED IN FULL TUBES OF 50 PCS ONLY

**SPLT** 50pcs

Manufacturers smallest factory pack quantity  
for lot integrity and traceability.

Value (Ω)	Isolated Resistors (001 Circuit)*			Commoned Resistors (002 Circuit)*		
	14 Pin	16 Pin	16 Pin	Bourns Part No. & <a href="#">Anglia Order Code</a>		
10R	—	4816P-T01-100	—			
22R	4814P-T01-220	4816P-T01-220	—			
33R	4814P-T01-330	4816P-T01-330	4816P-T02-330			
47R	—	4816P-T01-470	—			
56R	—	4816P-T01-560	—			
68R	—	4816P-T01-680	—			
82R	—	4816P-T01-820	—			
100R	4814P-T01-101	4816P-T01-101	4816P-T02-101			
120R	—	4816P-T01-121	—			
220R	4814P-T01-221	4816P-T01-221	4816P-T02-221			
270R	—	4816P-T01-271	—			
330R	—	4816P-T01-331	—			
470R	4814P-T01-471	4816P-T01-471	4816P-T02-471			
820R	—	4816P-T01-821	—			
1K	4814P-T01-102	4816P-T01-102	4816P-T02-102			
1K5	—	4816P-T01-152	—			
2K2	4814P-T01-222	4816P-T01-222	4816P-T02-222			
4K7	4814P-T01-472	4816P-T01-472	4816P-T02-472			
10K	4814P-T01-103	4816P-T01-103	4816P-T02-103			
22K	—	4816P-T01-223	—			
47K	—	4816P-T01-473	4816P-T02-473			
100K	—	4816P-T01-104	4816P-T02-104			
1M	—	4816P-T01-105	4816P-T02-105			
No. of Resistors	7	8	15			

\*16 pin package circuit diagram shown

**01945 47 47 47**

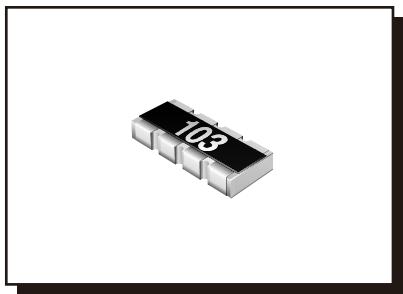
**01945 47 48 49**



**E-mail: sales@angliac.co.uk**

## BOURNS type CAT/CAY (surface mount)

The CAT/CAY surface mount chip resistor arrays utilise the latest manufacturing techniques to provide a range of devices which offer excellent resistive characteristics in an industry standard 1206 size package. The devices feature a 4 isolated element design with either concave or convex terminals and are available in values between 10Ω and 1MΩ, all being suitable for operating temperatures of -55°C to 125°C.



- Chip size 1206
- 4 isolated resistors
- Resistance values from 10Ω to 1MΩ
- Concave or **convex** terminal option
- Supplied taped & reeled

### Specification

#### Electrical Characteristics

Resistance range.....	10Ω to 1MΩ
Resistance tolerance.....	±5%
Max. operating voltage.....	50V
Power rating @ 70°C.....	62mW max.
Temperature coefficient of resistance.....	200ppm/°C
Operating temperature range.....	-55°C to +125°C

#### Environmental Characteristics

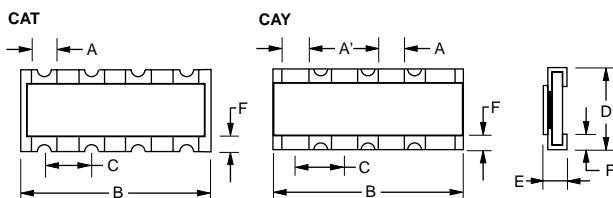
Short time overload .....	±1% (2.5 x rated voltage/5 seconds)
Load life general .....	±2%
moisture.....	±2%
Soldering heat .....	±1% (260°C ±5%, 10 seconds ±1 second)
Temperature cycling .....	±1% 125°C (30 minutes) – normal (15 minutes), -30°C (30 minutes) – normal (15 minutes)

Value (Ω)	Isolated Resistors	
	Bourns Part No.	Anglia Order Code
10R	CAT16-100J4	CAY16-100J4
15R	CAT16-150J4	CAY16-150J4
22R	CAT16-220J4	CAY16-220J4
33R	CAT16-330J4	CAY16-330J4
47R	CAT16-470J4	CAY16-470J4
68R	CAT16-680J4	CAY16-680J4
100R	CAT16-101J4	CAY16-101J4
150R	CAT16-151J4	CAY16-151J4
220R	CAT16-221J4	CAY16-221J4
330R	CAT16-331J4	CAY16-331J4
470R	CAT16-471J4	CAY16-471J4
680R	CAT16-681J4	CAY16-681J4
1K	CAT16-102J4	CAY16-102J4
1K5	CAT16-152J4	CAY16-152J4
2K2	CAT16-222J4	CAY16-222J4
3K3	CAT16-332J4	CAY16-332J4
4K7	CAT16-472J4	CAY16-472J4
6K8	CAT16-682J4	CAY16-682J4
10K	CAT16-103J4	CAY16-103J4
15K	CAT16-153J4	CAY16-153J4
22K	CAT16-223J4	CAY16-223J4
33K	CAT16-333J4	CAY16-333J4
47K	CAT16-473J4	CAY16-473J4
68K	CAT16-683J4	CAY16-683J4
100K	CAT16-104J4	CAY16-104J4
150K	CAT16-154J4	CAY16-154J4
220K	CAT16-224J4	CAY16-224J4
330K	CAT16-334J4	CAY16-334J4
470K	CAT16-474J4	CAY16-474J4
680K	CAT16-684J4	CAY16-684J4
1M	CAT16-105J4	CAY16-105J4

SUPPLIED IN FULL REELS OF 5K PCS ONLY

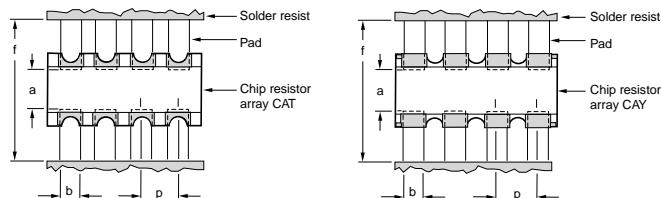
**SPLT** 5000pcs Manufacturers smallest factory pack quantity for lot integrity and traceability.

### Dimensions (mm)



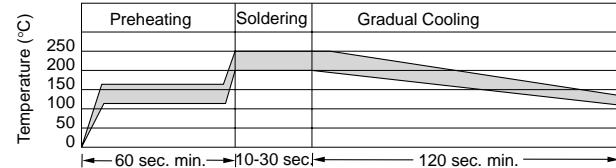
Model	A	A'	B	C	D	E	F
CAT	0.5	–	3.2	0.8	1.6	0.5	0.3
CAY	0.5	0.65	3.2	0.8	1.6	0.5	0.3

### Pad Pattern



Model	a	b	p	f
CAT	0.7 to 0.9	0.4 to 0.45	0.80	2.0 to 2.2
CAY	0.7 to 0.9	0.4 to 0.45	0.80	2.4 to 2.8

### Soldering



**NOTE!** When hand soldering, avoid skin contact with the protective coating on the chip. Do not exceed 3 seconds soldering time when temperature is over 280°C.

### Cleaning

Solvents	Cleaning Condition	
	Dipping	Ultrasonic Wave Washing
Isopropyl alcohol	5 minutes maximum	1 minute maximum Power: 20W/L Frequency: 10 to 100kHz