

Features

- Lead free as standard
- RoHS compliant*
- Leadless
- High speed

Applications

- Cellular phones
- PDAs
- Desktop PCs and notebooks
- Digital cameras
- MP3 players

Switching Chip Diode Series - 0603 / 1005

General Information

The markets of portable communications, computing and video equipment are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers small-signal high-speed Switching Diodes for switching digital signal applications, in compact chip package 0603 and 1005 size format, which offer PCB real estate savings and are considerably smaller than competitive parts. The Switching Diodes offer a forward current of 100 mA or 150 mA, a reverse voltage of 80 V or 75 V and also have a low leakage reverse current option. The diodes are lead-free with Cu/Ni/Au plated terminations and are compatible with lead-free manufacturing processes, conforming to many industry and government regulations on lead-free components.

Bourns® Chip Diodes conform to JEDEC standards, easy to handle on standard pick and place equipment and their flat configuration makes roll away much more difficult.

Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

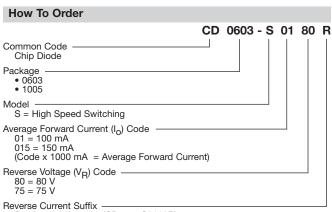
Parameter	Symbol	CDxxxx-S0180	CDxxxx-S01575	CDxxxx-S0180R	Unit
Forward Voltage (Max.)	V _F	1.00 (I _f = 100 mA)	1.00 (I _f = 50 mA)	1.00 (I _f = 100 mA)	V
Capacitance Between Terminals (Max.)	C _T	(f = 100 MHz, V _r = 1 V DC)			pF
Reverse Recovery Time (Max.)	t _{rr}	$(V_r = 6V, I_f = 10 \text{ mA}, R_L = 50 \Omega)$		nS	
Reverse Current (Max.)	I _R	0.1 (V _r = 80 V)	2.5 (V _r = 75 V)	0.05 (V _r = 75 V)	μΑ

Absolute Ratings (@ T_A = 25 °C Unless Otherwise Noted)

Parameter	Symbol	CDxxxx-S0180	CDxxxx-S01575	CDxxxx-S0180R	Unit
Repetitive Peak Reverse Voltage	V _{RRM}	90	100	90	V
Reverse Voltage	VR	80	75	80	V
Average Forward Current	I _o	100	150	100	mA
Forward Current, Surge Peak	I _{surge}	1*	4**	1*	Α
Power Dissipation - CD0603 Power Dissipation - CD1005	PD	150 300	150 300	150 300	mW
Storage Temperature	T _{STG}	-40 to +125			°C
Junction Temperature	TJ	-40 to +125			°C

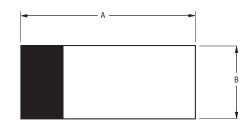
Condition: 8.3 ms single half sine-wave superimposed on rate load (JEDEC method).

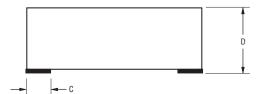
^{**} Condition: 1.0 µs single half sine-wave superimposed on rate load (JEDEC method).

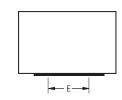


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Product Dimensions



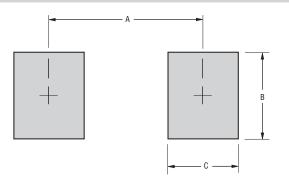




Dimension	0603	1005	
А	1.60 - 1.80	2.40 - 2.60	
	(0.063 - 0.071)	(0.095 - 0.102)	
В	0.80 - 1.00	1.10 - 1.30	
	(0.031 - 0.039)	(0.043 - 0.051)	
С	$\frac{0.45}{(0.018)}$ Typ.	$\frac{0.50}{(0.020)}$ Typ.	
	(0.018) Typ.	(0.020) Typ.	
D	0.70 - 0.85	0.70 - 0.90	
	(0.027 - 0.033)	(0.027 - 0.035)	
F	$\frac{0.70}{(0.000)}$ Typ.	$\frac{1.00}{(0.020)}$ Typ.	
	(0.028) Typ.	(0.039) Typ.	

DIMENSIONS: $\frac{MM}{(INCHES)}$

Recommended Pad Layout



Dimension	0603	1005	
A (Max)	_ 1.25_	2.00	
A (Max.)	(0.049)	(0.079)	
B (Min.)	1.00	1.3	
	(0.039)	(0.051)	
C (Min.)	0.6	0.7	
	(0.024)	(0.028)	

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

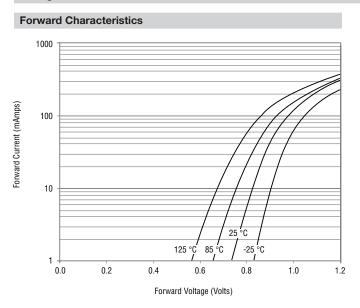
Physical Specifications

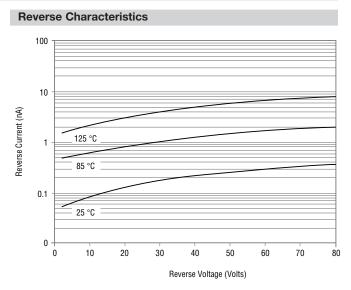
Typical Part Marking

CDxxxx-S0180	S1
CDxxxx-S01575	S3
CDvvvv-S0180B	\$2

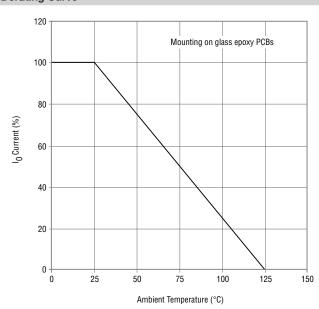
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Rating and Characteristic Curves: CDxxxx-S0180

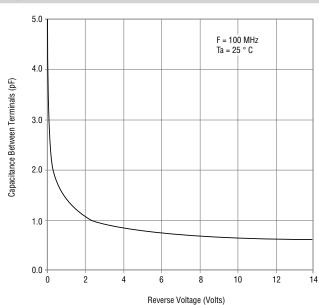




Derating Curve

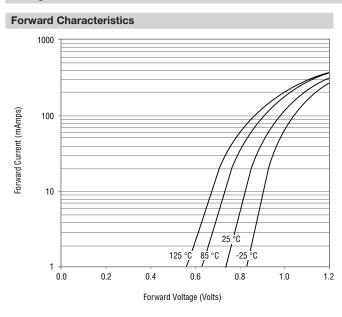


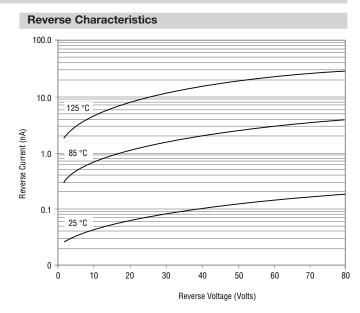
Capacitance Between Terminals



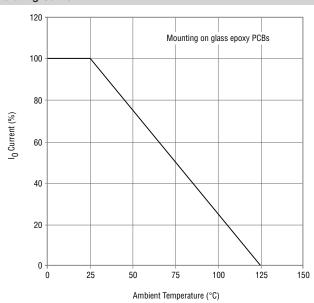
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Rating and Characteristic Curves: CDxxxx-S01575

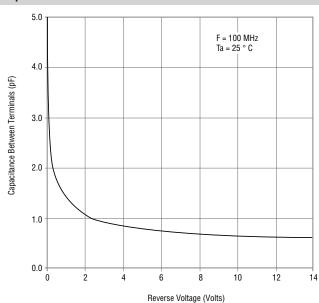




Derating Curve

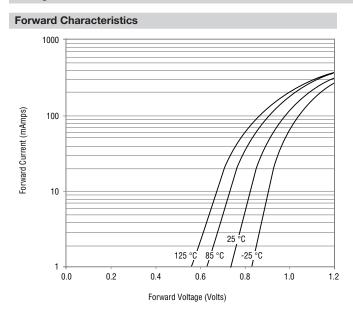


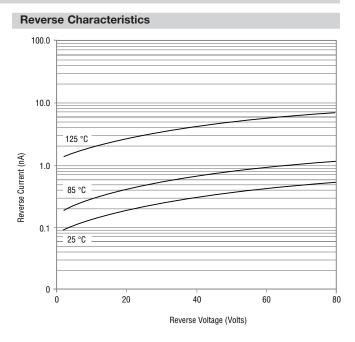
Capacitance Between Terminals

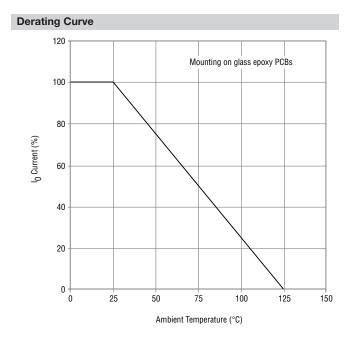


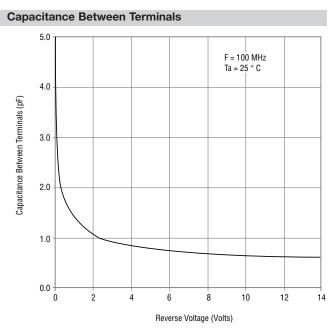
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Rating and Characteristic Curves: CDxxxx-S0180R



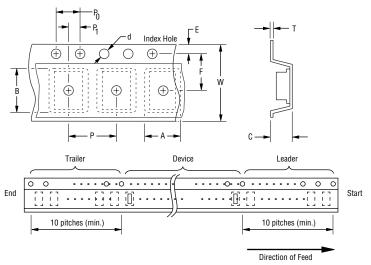


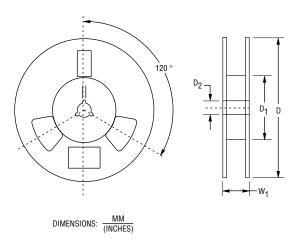




Packaging Information

The product will be dispensed in Tape and Reel format (see diagram below).





Devices are packed in accordance with EIA standard RS-481-A and specifications shown here.

Item	Symbol	0603	1005
Carrier Width	A	1.00 ± 0.10	1.55 ± 0.10
Carrier Width	^	(0.039 - 0.004)	(0.061 - 0.004)
Carrier Length	В	$\frac{1.85 \pm 0.10}{(0.070 \pm 0.004)}$	$\frac{2.65 \pm 0.10}{(0.104 \pm 0.004)}$
		$ (0.073 - 0.004) $ $ 1.00 \pm 0.10 $	$ (0.104 - 0.004) $ $ 1.05 \pm 0.10 $
Carrier Depth	С	$\frac{1.00 \pm 0.10}{(0.039 - 0.004)}$	$\frac{1.03 \pm 0.10}{(0.041 - 0.004)}$
		1.55 ± 0.05	1.55 ± 0.10
Sprocket Hole	d	(0.061 - 0.002)	(0.061 - 0.004)
Reel Outside Diameter	D	178	<u>178</u>
Tion Outside Biarriotor	5	(7.008)	(7.008)
Reel Inner Diameter	D ₁	$\frac{60.0}{(0.000)}$ MIN.	60.0 MIN.
	<u>'</u>	(2.362) WIIN. 13.0 ± 0.20	(2.362) 13.0 ± 0.20
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 - 0.008)}$	(0.512 - 0.008)
O 1 111 1 D 33	Е	1.75 ± 0.10	1.75 ± 0.10
Sprocket Hole Position		(0.069 - 0.004)	(0.069 - 0.004)
Punch Hole Position	F	3.50 ± 0.05	3.50 ± 0.05
		(0.138 - 0.002)	(0.138 - 0.002)
Punch Hole Pitch	Р	$\frac{4.00 \pm 0.10}{(0.157 + 0.004)}$	$\frac{4.00 \pm 0.10}{(0.457 \pm 0.004)}$
		(0.157 - 0.004)	(0.157 - 0.004)
Sprocket Hole Pitch	P ₀	$\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$	$\frac{4.00 \pm 0.10}{(0.157 - 0.004)}$
Embossment Center	P ₁	2.00 ± 0.05	2.00 ± 0.05
		(0.079 - 0.002)	(0.079 - 0.002)
Overall Tape Thickness	Т	0.20 ± 0.05	0.25 ± 0.05
		(0.008 - 0.002)	(0.010 - 0.002)
Tape Width	W	8.00 ± 0.20	8.00 ± 0.20
		(0.315 - 0.008)	(0.315 - 0.008)
Reel Width	W ₁	$\frac{13.5}{(0.531)}$ MAX.	13.5 (0.531) MAX.
Quantity per Reel		4,000	4,000