

Surface Mount Resistors Series			Packaging (Standard Quantity : pcs./reel)				Page
Products	Type	Size mm (inch)	Pressed Carrier Taping (2 mm pitch)	Punched Carrier Taping (2 mm pitch)	Punched Carrier Taping (4 mm pitch)	Embossed Carrier Taping (4 mm pitch)	
Thick Film Chip Resistors	ERJXGN	0402 (01005)	20000 *	—	—	40000 **	3 to 4
	ERJ1GN	0603 (0201)	15000	—	—	—	
	ERJ2GE	1005 (0402)	—	10000, 20000	—	—	
	ERJ3GE	1608 (0603)	—	—	5000	—	
	ERJ6GE	2012 (0805)	—	—	5000	—	
	ERJ8GE	3216 (1206)	—	—	5000	—	
	ERJ14	3225 (1210)	—	—	—	5000	
	ERJ12	4532 (1812)	—	—	—	5000	
	ERJ12Z	5025 (2010)	—	—	—	5000	
	ERJ1T	6432 (2512)	—	—	—	4000	
Precision Thick Film Chip Resistors	ERJXGN	0402 (01005)	20000	—	—	—	5 to 7
	ERJ1GN/1RH	0603 (0201)	15000	—	—	—	
	ERJ2RH/2RK	1005 (0402)	—	10000	—	—	
	ERJ3RB/3RE/3EK	1608 (0603)	—	—	5000	—	
	ERJ6RB/6RE/6EN	2012 (0805)	—	—	5000	—	
	ERJ8EN	3216 (1206)	—	—	5000	—	
	ERJ14N	3225 (1210)	—	—	—	5000	
	ERJ12N	4532 (1812)	—	—	—	5000	
	ERJ12S	5025 (2010)	—	—	—	5000	
	ERJ1TN	6432 (2512)	—	—	—	4000	
Metal Film Chip Resistors, High Reliability Type	ERA1A	0603 (0201)	15000	—	—	—	8 to 9
	ERA2A	1005 (0402)	—	10000	—	—	
	ERA3A	1608 (0603)	—	—	5000	—	
	ERA6A	2012 (0805)	—	—	5000	—	
	ERA8A	3216 (1206)	—	—	5000	—	
Thick Film Chip Resistors/ Low Resistance Type	ERJ2BW	1005 (0402)	10000	—	—	—	10 to 13
	ERJ2BS/2BQ	1005 (0402)	—	10000	—	—	
	ERJ3R/3B/L03	1608 (0603)	—	—	5000	—	
	ERJ6R/6B/L06	2012 (0805)	—	—	5000	—	
	ERJ8R/8B/8C/L08	3216 (1206)	—	—	5000	—	
	ERJ14R/14B/L14	3225 (1210)	—	—	—	5000	
	ERJ12R/L12	4532 (1812)	—	—	—	5000	
	ERJ12Z/L1D	5025 (2010)	—	—	—	5000	
	ERJ1TR	6432 (2512)	—	—	—	4000	
	ERJL1W	6432 (2512)	—	—	—	3000	
Low Resistance Value Chip Resistors	ERJM03	1608 (0603)	—	—	5000	—	14 to 15
	ERJM1W	6432 (2512)	—	—	—	3000	
High Power Chip Resistors/ Wide Terminal Type	ERJA1	6432 (2512)	—	—	—	4000	16 to 18 28 to 29
	ERJB1/ERJC1 ⁽¹⁾	5025 (2010)	—	—	—	5000	
	ERJB2	3216 (1206)	—	—	5000	—	
	ERJB3	2012 (0805)	—	—	5000	—	

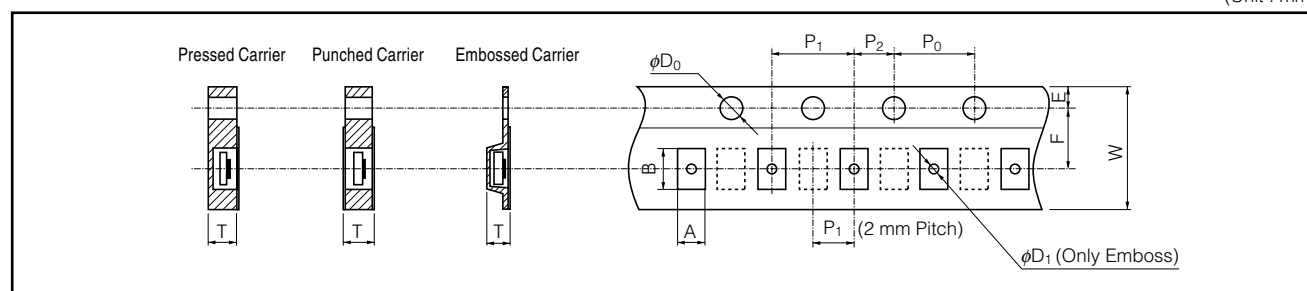
* W8P2 : Width 8 mm, Pitch 2 mm, ** W4P1 : Width 4 mm, Pitch 1 mm

(1) Anti-Sulfurated High Power Chip Resistors / Wide Terminal Type

Surface Mount Resistors Series			Packaging (Standard Quantity : pcs./reel)				Page
Products	Type	Size mm (inch)	Pressed Carrier Taping (2 mm pitch)	Punched Carrier Taping (2 mm pitch)	Punched Carrier Taping (4 mm pitch)	Embossed Carrier Taping (4 mm pitch)	
Anti-Surge Thick Film Chip Resistors/ Anti-Surge Thick Film Chip Resistors (Double-sided resistive elements structure)	ERJP03/PA3	1608 (0603)	—	—	5000	—	19 to 22
	ERJP06/P6W	2012 (0805)	—	—	5000	—	
	ERJP08	3216 (1206)	—	—	5000	—	
	ERJP14	3225 (1210)	—	—	—	5000	
Anti-Pulse Thick Film Chip Resistors	ERJT06	2012 (0805)	—	—	5000	—	23 to 24
	ERJT08	3216 (1206)	—	—	5000	—	
	ERJT14	3225 (1210)	—	—	—	5000	
Anti-Sulfurated Thick Film Chip Resistors	ERJU01	0603 (0201)	15000	—	—	—	25 to 27
	ERJS02/U02	1005 (0402)	—	10000	—	—	
	ERJS03/U03	1608 (0603)	—	—	5000	—	
	ERJS06/U06 ERJS6S/S6Q	2012 (0805)	—	—	5000	—	
	ERJS08/U08	3216 (1206)	—	—	5000	—	
	ERJS14/U14	3225 (1210)	—	—	—	5000	
	ERJS12/U12	4532 (1812)	—	—	—	5000	
	ERJS1D/U1D	5025 (2010)	—	—	—	5000	
	ERJS1T/U1T	6432 (2512)	—	—	—	4000	
Chip Resistor Array	EXB14V	0806 (0302)	—	10000	—	—	30 to 32
	EXB24V	1010 (0404)	—	10000	—	—	
	EXB34V	1616 (0606)	—	—	5000	—	
	EXBV4V	1616 (0606)	—	—	5000	—	
	EXB18V	1406 (0502)	—	10000	—	—	
	EXB28V	2010 (0804)	—	10000	—	—	
	EXBN8V	2010 (0804)	—	10000	—	—	
	EXB38V	3216 (1206)	—	—	5000	—	
	EXBV8V	3216 (1206)	—	—	5000	—	
	EXBS8V	5022 (2009)	—	—	—	2500	
	EXB2HV	3816 (1506)	—	—	5000	—	
Metal Film Chip Resistor Array	ERA38V	3216 (1206)	—	—	5000	—	33 to 34
Anti-Sulfurated Chip Resistor Array	EXBU24	1010 (0404)	—	10000	—	—	35 to 36
	EXBU34	1616 (0606)	—	—	5000	—	
	EXBU28	2010 (0804)	—	10000	—	—	
	EXBU38	3216 (1206)	—	—	5000	—	
	EXBU2H	3816 (1506)	—	—	5000	—	
Chip Resistor Networks	EXBD	3216 (1206)	—	—	5000	—	37 to 38
	EXBE	4021 (1608)	—	—	—	4000	
	EXBA	6431 (2512)	—	—	—	4000	
	EXBQ	3816 (1506)	—	—	5000	—	
Chip Attenuator	EXB14AT	0806 (0302)	—	10000	—	—	39 to 40
	EXB24AT	1010 (0404)	—	10000	—	—	
Fixed Metal (Oxide) Film Resistors	ERG(X)1H	—	—	—	—	2000	41 to 42
	ERG(X)2H	—	—	—	—	1000	

■ Carrier Tape

(Unit : mm)



■ Pressed Carrier Taping (2 mm Pitch)

- Rectangular Type

(Unit : mm)

Type	Size mm (inch)	A	B	W	F	E	P ₁	P ₂	P ₀	φD ₀	T
ERJXGN	0402(01005)	0.24 ^{±0.03}	0.45 ^{±0.03}	8.00 ^{±0.20}	3.50 ^{±0.05}	1.75 ^{±0.10}	2.00 ^{±0.10}	2.00 ^{±0.05}	4.00 ^{±0.10}	1.50 ^{+0.10} ₀	0.31 ^{±0.05}
ERJ1GN ERJ1R□ ERJU01 ERA1A	0603 (0201)	0.38 ^{±0.05}	0.68 ^{±0.05}								0.42 ^{±0.05}
ERJ2BW	1005(0402)	0.67 ^{±0.10}	1.17 ^{±0.10}								0.61 ^{±0.05}

■ Punched Carrier Taping (2 mm Pitch)

- Rectangular Type

(Unit : mm)

Type	Size mm (inch)	A	B	W	F	E	P ₁	P ₂	P ₀	φD ₀	T
ERJ2□ ERJS02 ERJU02 ERA2A	1005 (0402)	0.67 ^{+0.05}	1.17 ^{+0.05}	8.00 ^{±0.20}	3.50 ^{+0.05}	1.75 ^{+0.10}	2.00 ^{±0.10}	2.00 ^{±0.05}	4.00 ^{±0.10}	1.50 ^{+0.10} ₀	0.52 ^{+0.05}

● Chip Resistor Array / Anti-Sulfurated Chip Resistor Array / Chip Attenuator

(Unit : mm)

Type	Size mm (inch)	A	B	W	F	E	P ₁	P ₂	P ₀	φD ₀	T
EXB14V EXB14AT	0806 (0302)	0.70 ^{+0.10} _{-0.05}	0.95 ^{+0.05} _{-0.10}	8.00 ^{±0.20}	3.50 ^{±0.05}	1.75 ^{±0.10}	2.00 ^{±0.10}	2.00 ^{±0.05}	4.00 ^{±0.10}	1.50 ^{+0.10} ₀	0.52 ^{±0.05}
EXB18V	1406(0502)		1.60 ^{±0.10}								
EXB24V EXBU24 EXB24AT	1010 (0404)	1.20 ^{±0.10}	1.20 ^{±0.10}								
EXB28V EXBU28 EXBN8V	2010 (0804)		2.20 ^{±0.10}								

■ Punched Carrier Taping (4 mm Pitch)

- Rectangular Type

(Unit : mm)

Type	Size mm (inch)	A	B	W	F	E	P ₁	P ₂	P ₀	φD ₀	T
ERJ3□ ERJ3BW ERJ□□3 ERA3A	1608 (0603)	1.10 ^{±0.10}	1.90 ^{±0.10}	8.00 ^{±0.20}	3.50 ^{±0.05}	1.75 ^{±0.10}	4.00 ^{±0.10}	2.00 ^{±0.05}	4.00 ^{±0.10}	1.50 ^{±0.10} ₀	0.70 ^{±0.05}
ERJ6□ ERJ□06 ERJS6□ ERJB3 ERA6A	2012 (0805)	1.65 ^{±0.15}	2.50 ^{±0.20}								0.84 ^{±0.05}
ERJ6BW ERJP6W	2012(0805)	1.55 ^{±0.15}	2.30 ^{±0.20}								
ERJ8□ ERJ8□W ERJ□08 ERJB2 ERA8A	3216 (1206)	2.00 ^{±0.15}	3.60 ^{±0.20}								

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

06 Jan. 2014

● Chip Resistor Array / Metal Film Chip Resistor Array / Anti-Sulfurated Chip Resistor Array / Chip Resistor Networks (Unit : mm)

Type	Size mm (inch)	A	B	W	F	E	P ₁	P ₂	P ₀	φD ₀	T
EXB34V EXBU34	1616(0606)	1.95 ^{+0.15}	1.95 ^{+0.20}	8.00 ^{+0.20}	3.50 ^{+0.05}	1.75 ^{+0.10}	4.00 ^{+0.10}	2.00 ^{+0.05}	4.00 ^{+0.10}	1.50 ^{+0.10} ₀	0.70 ^{+0.05}
EXB38V ERA38V EXBU38	3216(1206)		3.60 ^{+0.20}								
EXB2HV EXBU2H	3816(1506)		4.10 ^{+0.15}								
EXBV4V	1616(0606)		1.95 ^{+0.20}								
EXBV8V	3216(1206)		3.60 ^{+0.20}								
EXBD	3216(1206)	2.00 ^{+0.20}	3.60 ^{+0.20}								0.84 ^{+0.10}
EXBQ	3816(1506)	1.90 ^{+0.20}	4.10 ^{+0.20}								0.64 ^{+0.05}

■ Embossed Carrier Taping (1 mm Pitch)

● Rectangular Type (Unit : mm)

Type	Size mm (inch)	A	B	W	F	E	P ₁	P ₂	P ₀	φD ₀	T
ERJXGN	0402(01005)	0.25 ^{+0.05}	0.45 ^{+0.05}	4.00 ^{+0.20}	1.80 ^{+0.05}	0.90 ^{+0.10}	1.00 ^{+0.10}	1.00 ^{+0.10}	2.00 ^{+0.10}	0.80 ^{+0.10}	0.5 max.

■ Embossed Carrier Taping (4 mm Pitch)

● Rectangular Type (Unit : mm)

Type	Size mm (inch)	A	B	W	F	E	P ₁	P ₂	P ₀	φD ₀	T	φD ₁	
ERJ14□ ERJ□14	3225 (1210)	2.80 ^{±0.20}	3.50 ^{±0.20}	8.00 ^{±0.30}	3.50 ^{±0.05}	1.75 ^{±0.10}	4.00 ^{±0.10}	2.00 ^{±0.05}	4.00 ^{±0.10}	1.50 ^{+0.10} ₀	1.00 ^{±0.10}	1.00 ^{+0.10} ₀	
ERJ12□ ERJ□12	4532 (1812)	3.50 ^{±0.20}	4.80 ^{±0.20}	12.00 ^{±0.30}	5.50 ^{±0.20}							1.5 min.	
ERJ12Z ERJ12S ERJ□1D ERJB1 ERJC1	5025 (2010)	2.80 ^{±0.20}	5.30 ^{±0.20}										
ERJ1T□ ERJ□1T	6432 (2512)	3.60 ^{±0.20}	6.90 ^{±0.20}										1.60 ^{±0.10}
ERJL1W													1.50 ^{±0.20}
ERJM1W													1.10 ^{±0.20}
ERJA1													3.50 ^{±0.20}

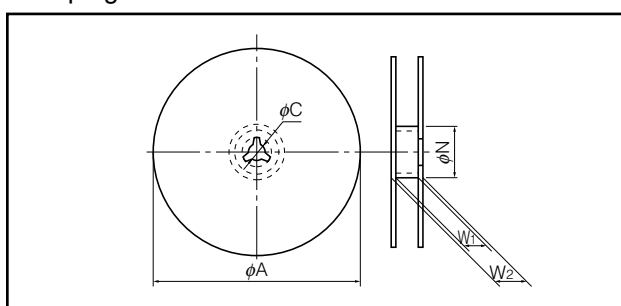
● Chip Resistor Array / Chip Resistor Networks (Unit : mm)

Type	Size mm (inch)	A	B	W	F	E	P ₁	P ₂	P ₀	φD ₀	T	φD ₁
EXBS8V	5022(2029)	2.80 ^{+0.20}	5.70 ^{+0.20}	12.00 ^{+0.30}	5.50 ^{+0.20}	1.75 ^{+0.10}	4.00 ^{+0.10}	2.00 ^{+0.05}	4.00 ^{+0.10}	1.50 ^{+0.10} ₀	1.6 max.	1.5 min.
EXBE	4021(1608)	2.50 ^{+0.20}	4.40 ^{+0.20}								1.10 ^{+0.20}	
EXBA	6431(2512)	3.50 ^{+0.20}	6.80 ^{+0.20}									

● Fixed Metal (Oxide) Film Resistors (Unit : mm)

Type	A	B	W	F	E	P ₁	P ₂	P ₀	φD ₀	T	φD ₁
ERG(X)1H	6.20 ^{+0.20}	13.70 ^{+0.20}	24.0 ^{+0.30}	11.50 ^{+0.10}	1.75 ^{+0.10}	8.00 ^{+0.10}	2.00 ^{+0.10}	4.00 ^{+0.10}	1.50 ^{+0.10} ₀	5.70 ^{+0.10}	1.5 min.
ERG(X)2H	7.00 ^{+0.20}	16.20 ^{+0.20}				12.00 ^{+0.10}				6.40 ^{+0.10}	

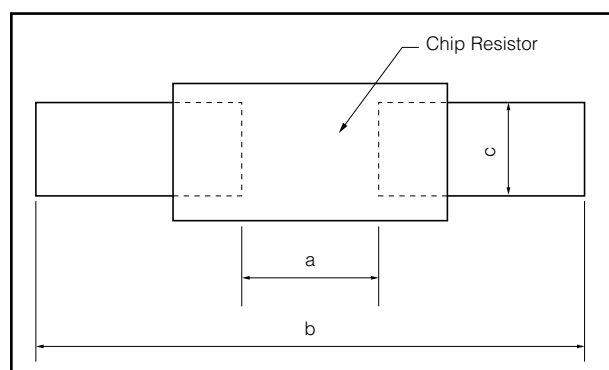
■ Taping Reel



Tape Width(W)	φA	φN	φC	W ₁	W ₂
4mm Width	180.0 ^{+3.0}	60.0 ^{+1.0} ₀	13.0 ^{+0.2}	4.5 ^{+0.5}	7.0 ^{+0.5}
8mm Width	180.0 ^{+1.5}			9.0 ^{+1.0}	11.4 ^{+1.0}
12mm Width				13.0 ^{+1.0}	15.4 ^{+1.0}
24mm Width	380.0 ^{+2.0}	80.0 ^{+1.0}		25.4 ^{+1.0}	29.4 ^{+1.0}

■ Recommended Land Pattern

- An example of a land pattern for the Rectangular Type is shown below.



High power (double-sided resistive elements structure) type

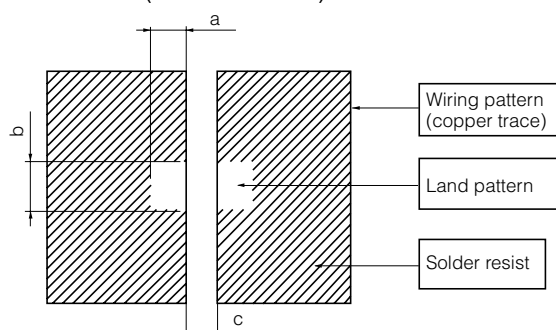
Type	Size mm/inch	Dimensions (mm)		
		a	b	c
ERJ2BW	1005/0402	0.52	1.4 to 1.6	0.4 to 0.6
ERJ3BW	1608/0603	0.5 to 0.8	2.5 to 2.7	0.9 to 1.1
ERJ6BW	2012/0805	0.9	3.2 to 3.8	1.1 to 1.4
ERJ8BW				
ERJ8CW (10 to 16 mΩ)	3216/1206	1.2	4.4 to 5.0	1.3 to 1.8
ERJ8CW (18 to 50 mΩ)	3216/1206	2.0 to 2.6	4.4 to 5.0	1.2 to 1.8

Size mm/inch	Dimensions (mm)		
	a	b	c
0402/01005	0.15 to 0.20	0.5 to 0.7	0.20 to 0.25
0603/0201	0.3 to 0.4	0.8 to 0.9	0.25 to 0.35
1005/0402	0.5 to 0.6	1.4 to 1.6	0.4 to 0.6
1608/0603	0.7 to 0.9	2.0 to 2.2	0.8 to 1.0
2012/0805	1.0 to 1.4	3.2 to 3.8	0.9 to 1.4
3216/1206	2.0 to 2.4	4.4 to 5.0	1.2 to 1.8
3225/1210	2.0 to 2.4	4.4 to 5.0	1.8 to 2.8
4532/1812	3.3 to 3.7	5.7 to 6.5	2.3 to 3.5
5025/2010	3.6 to 4.0	6.2 to 7.0	1.8 to 2.8
6432/2512	5.0 to 5.4	7.6 to 8.6	2.3 to 3.5
6432/2512*	3.6 to 4.0	7.6 to 8.6	2.3 to 3.5

* ERJL1W

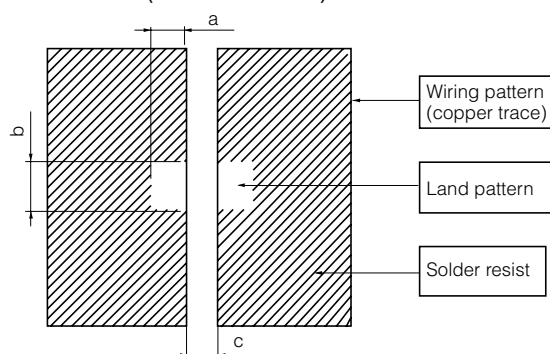
- An example of a land pattern for Low Resistance Value Chip Resistors is shown below.

ERJM03 (Size 1608/0603)



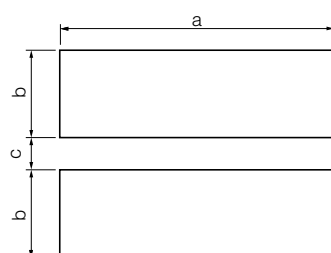
Type	Dimensions (mm)		
	a	b	c
ERJM03N	0.65	0.8	0.7

ERJM1W (Size 6432/2512)



Type	Dimensions (mm)		
	a	b	c
ERJM1WS	2.1	3.4	4.2
ERJM1WT	3.1	3.4	2.2

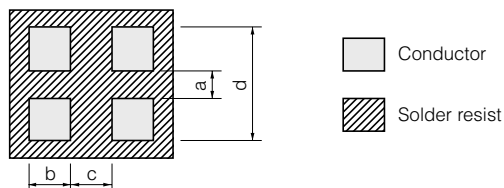
- An example of a land pattern for High Power Chip Resistors / Wide Terminal Type is shown below.



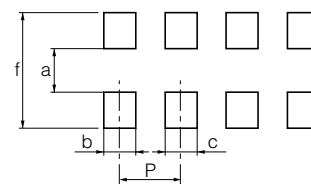
Type	Dimensions (mm)		
	a	b	c
ERJA1	6.4	1.70	0.60
ERJB1 ERJC1 ⁽¹⁾	5.0	1.30	0.75
ERJB2	3.2	0.95	0.70
ERJB3	2.0	0.80	0.60

(1) Anti-Sulfurated High Power Chip Resistors / Wide Terminal Type

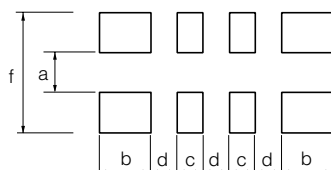
- An example of a land pattern for Chip Resistor Array, Metal Film Chip Resistor Array, Anti-Sulfurated Chip Resistor Array and Chip Attenuator is shown below.



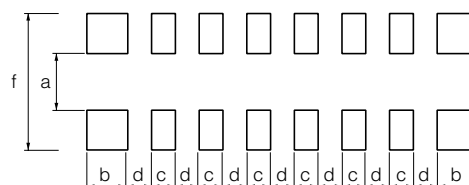
Type	Dimensions (mm)			
	a	b	c	d
EXB14V EXB14A	0.30	0.30	0.30	0.80 to 0.90
EXB24V EXBU24 EXB24A	0.5	0.35 to 0.40	0.30	1.4 to 1.5



Type	Dimensions (mm)				
	a	b	c	f	P
EXB18V	0.20 to 0.30	0.15 to 0.20	0.15 to 0.20	0.80 to 0.90	0.40
EXBV4V,V8V	0.7 to 0.9	0.4 to 0.45	0.4 to 0.45	2 to 2.4	0.80
EXB34V,38V EXBU34,U38 ERA38V	0.7 to 0.9	0.4 to 0.5	0.4 to 0.5	2.2 to 2.6	0.80
EXBS8V	1 to 1.2	0.5 to 0.75	0.5 to 0.75	3.2 to 3.8	1.27



Type	Dimensions (mm)				
	a	b	c	d	f
EXB28V EXBU28	0.40	0.525	0.25	0.25	1.40
EXBN8V	0.45 to 0.50	0.35 to 0.38	0.25	0.25	1.40 to 2.00



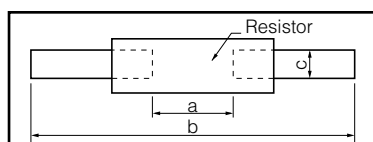
Type	Dimensions (mm)				
	a	b	c	d	f
EXB2HV EXBU2H	1.00	0.425	0.25	0.25	2.00

- An example of a land pattern for Chip Resistor Networks is shown below.

	EXBA	EXBE
For popular pattern	Pitch 1.27 mm 	Pitch 0.8 mm
For high density pattern*	Pitch 0.635 mm Through-hole less EXBA10P EXBA10E 	Pitch 0.4 mm Through-hole less
	EXBD	EXBQ
For popular pattern	Pitch 0.635 mm 	Pitch 0.5 mm

- * When designing high density land patterns, examine the reliability of isolation among the lines and adopt the chip resistor networks.

- An example of a land pattern for Fixed Metal (Oxide) Film Resistors (SMD) is shown below.



Type	Dimensions (mm)		
	a	b	c
ERG(X)1H	3.5 to 4.0	14.5 to 15.0	2.8 to 3.3
ERG(X)2H	4.0 to 4.5	17.0 to 17.5	3.1 to 3.6

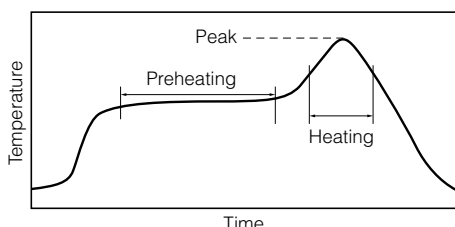
■ Recommended Soldering Conditions

Recommendations and precautions are described below.

● Rectangular Type

● Recommended soldering conditions for reflow

- Reflow soldering shall be performed a maximum of two times.
- Please contact us for additional information when used in conditions other than those specified.
- Please measure the temperature of the terminals and study every kind of solder and printed circuit board for solderability before actual use.



For soldering (Example : Sn/Pb)

	Temperature	Time
Preheating	140 °C to 160 °C	60 s to 120 s
Main heating	Above 200 °C	30 s to 40 s
Peak	235 ± 5 °C	max. 10 s

For lead-free soldering (Example : Sn/Ag/Cu)

	Temperature	Time
Preheating	150 °C to 180 °C	60 s to 120 s
Main heating	Above 230 °C	30 s to 40 s
Peak	max. 260 °C	max. 10 s

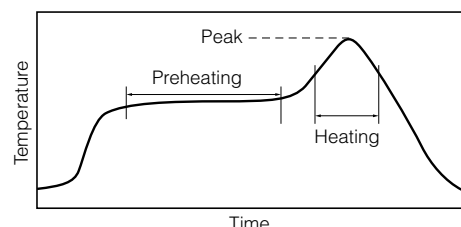
● Recommended soldering conditions for flow

	For soldering		For lead-free soldering	
	Temperature	Time	Temperature	Time
Preheating	140 °C to 180 °C	60 s to 120 s	150 °C to 180 °C	60 s to 120 s
Soldering	245 ± 5 °C	20 s to 30 s	max. 260 °C	max. 10 s

● Chip Resistor Array, Chip Resistor Networks and Chip Attenuator

● Recommended soldering conditions for reflow

- Reflow soldering shall be performed a maximum of two times.
- Please contact us for additional information when used in conditions other than those specified.
- Please measure the temperature of the terminals and study every kind of solder and printed circuit board for solderability before actual use.



For soldering (Example : Sn/Pb)

	Temperature	Time
Preheating	140 °C to 160 °C	60 s to 120 s
Main heating	Above 200 °C	30 s to 40 s
Peak	235 ± 5 °C	max. 10 s

For lead-free soldering (Example : Sn/Ag/Cu)

	Temperature	Time
Preheating	150 °C to 180 °C	60 s to 120 s
Main heating	Above 230 °C	30 s to 40 s
Peak	max. 260 °C	max. 10 s

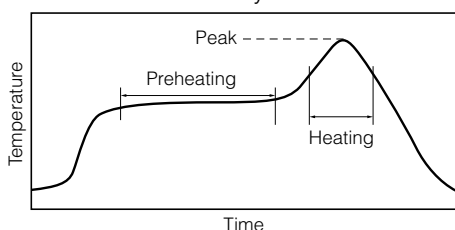
● Flow soldering

We do not recommend flow soldering, because a solder bridge may form. Please contact us regarding flow soldering of EXBA series.

● Fixed Metal (Oxide) Film Resistors, Surface Mount Type

● Recommended soldering conditions for reflow

- Reflow soldering shall be performed a maximum of two times.
- Please contact us for additional information when used in conditions other than those specified.
- Please measure the temperature of the terminals and study every kind of solder and printed circuit board for solderability before actual use.



For soldering (Example : Sn/Pb)

	Temperature	Time
Preheating	150 °C to 180 °C	60 s to 120 s
Main heating	Above 200 °C	30 s to 40 s
Peak	235 °C	max. 10 s

For lead-free soldering (Example : Sn/Ag/Cu)

	Temperature	Time
Preheating	150 °C to 180 °C	60 s to 120 s
Main heating	Above 230 °C	30 s to 40 s
Peak	255 °C	max. 5 s