

Chip Resistor Networks

Type: **EXBD:1206**
EXBE:1608
EXBA:2512
EXBQ:1506

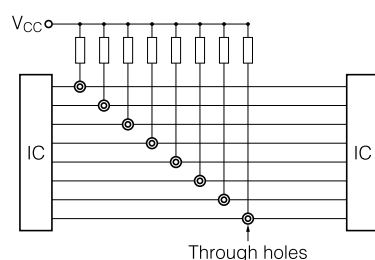


■ Features

- High density placing for digital signal circuits
 - Bussed 8 or 15 resistors for pull up/down circuits
 EXBD: 3.2 mm × 1.6 mm × 0.55 mm, 0.635 mm pitch
 EXBE: 4.0 mm × 2.1 mm × 0.55 mm, 0.8 mm pitch
 EXBA: 6.4 mm × 3.1 mm × 0.55 mm, 1.27 mm pitch
 EXBQ: 3.8 mm × 1.6 mm × 0.45 mm, 0.5 mm pitch
 - Available direct placing on the bus line by means of half pitch spacing without through-holes on PWB
 ("High density placing" is shown below)
- High speed mounting by conventional placing machine
- Approved under the ISO 9001 system

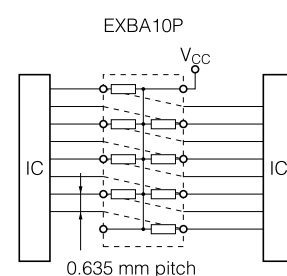
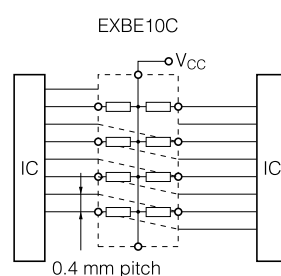
<High density placing>

Pull up resistors

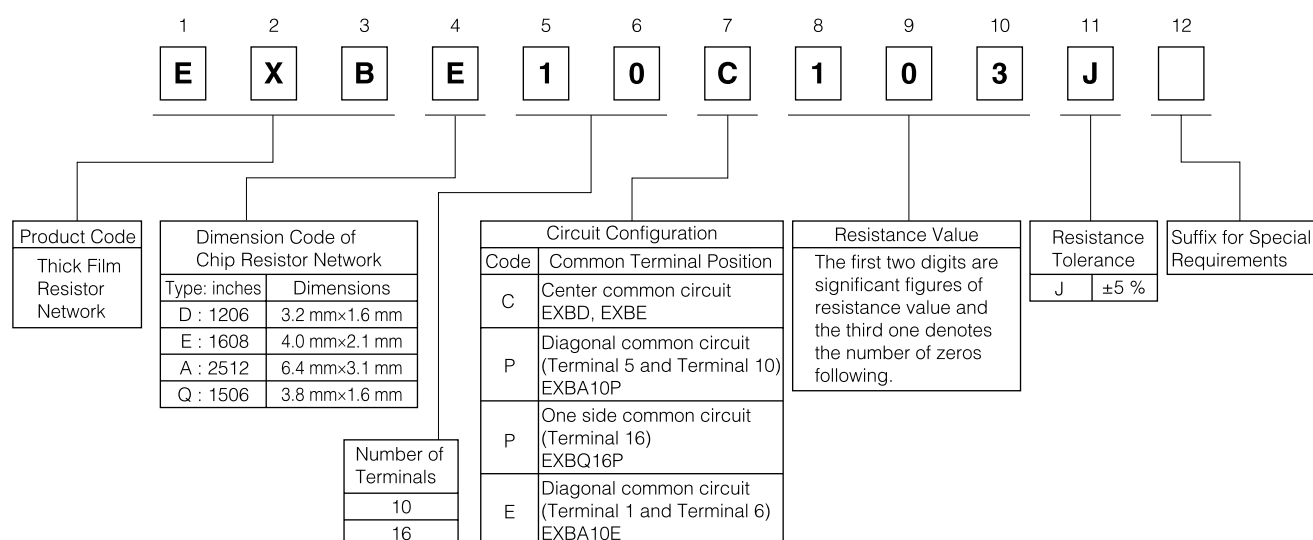


No through hole

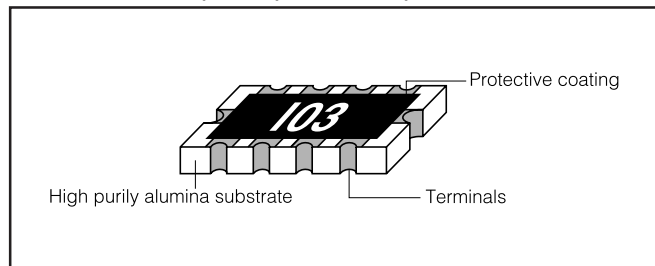
Direct placing on the bus line



■ Explanation of Part Numbers



■ Construction (Example : EXBD)



■ Dimensions in mm (not to scale)

EXBD	EXBE	EXBA	EXBQ
Technical drawing of EXBD 104 sensor showing top, side, and front views with dimensions.	Technical drawing of EXBE 103 sensor showing top, side, and front views with dimensions.	Technical drawing of EXBA 103 and 10E sensors showing top, side, and front views with dimensions.	Technical drawing of EXBQ 472 sensor showing top, side, and front views with dimensions.

■ Circuit Configuration

EXBD, EXBE	EXBA		EXBQ
	EXBA10P	EXBA10E	

■ Ratings

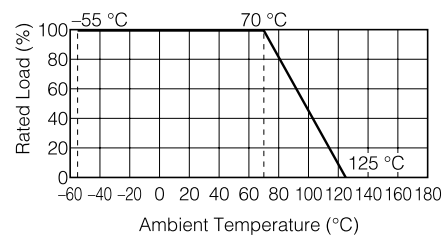
Item	Specifications			
Series	EXBD	EXBE	EXBA	EXBQ
Resistance Range	47 Ω to 1 M Ω (E12 series)			100 Ω to 470 k Ω (E6 series)
Resistance Tolerance	$\pm 5\%$			
Number of Terminals	10 terminals			16 terminals
Number of Resistors	8 resistors			15 resistors
Power Rating at 70 °C	0.05 W/element	0.063 W/element		0.025 W/element
Limiting Element Voltage (Maximum Rated Continuous Working Voltage) ⁽¹⁾	25 V		50 V	25 V
Maximum Overload Voltage ⁽²⁾	50 V		100 V	50 V
T.C.R.	$\pm 200 \times 10^{-6}/^{\circ}\text{C}$ (ppm/ $^{\circ}\text{C}$)			
Category Temperature Range (Operating Temperature Range)	-55 °C to +125 °C			

(1) Rated Continuous Working Voltage (RCWV) shall be determined from $RCWV = \sqrt{\text{Power Rating} \times \text{Resistance Value}}$, or Limiting Element Voltage (maximum RCWV) listed above, whichever less.

(2) Overload (Short-time Overload) Test Voltage (SOTV) shall be determined from $SOTV = 2.5 \times RCWV^*$ or Maximum Overload Voltage listed above whichever less.

Power Derating Curve

For resistors operated in ambient temperature above 70 °C, power rating shall be derated in accordance with the right figure.



■ Recommended Land Pattern (mm)

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

* At designing high density land pattern, examine further the reliability of isolation among the lines and adopt the chip resistor networks.

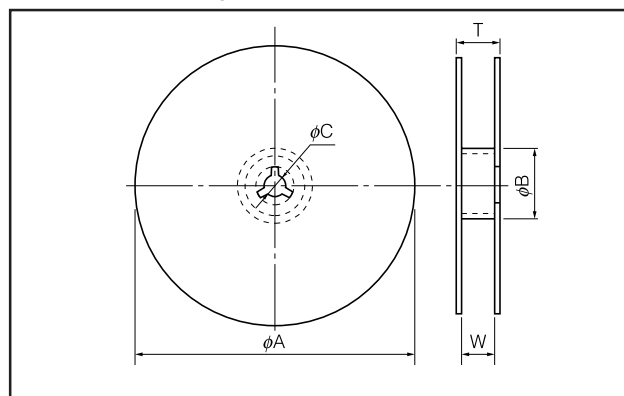
■ Packaging Methods

● Standard Quantity

Type (inches)	Thickness (mm)	Weight (mg)	Punched (Paper) Taping	Embossed Taping
EXBD (1206)	0.55 ± 0.10	10	5000 pcs./reel	—
EXBE (1608)		16	—	4000 pcs./reel
EXBA (2512)		40		
EXBQ (1506)	0.45 ± 0.10	9	5000 pcs./reel	—

■ Taping Dimensions

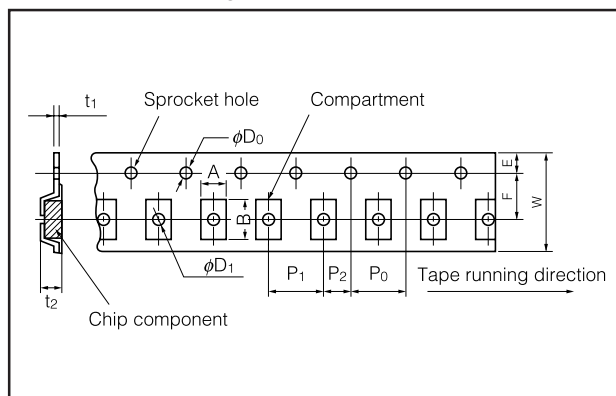
● Embossed Taping Reel



	Type	φA	φB	φC
Dimensions (mm)	EXBE	180.0 ⁰ _{-3.0}	60 min.	13.0±1.0
	EXBA			

	Type	W	T
Dimensions (mm)	EXBE	13.0±1.0	15.4±2.0
	EXBA		

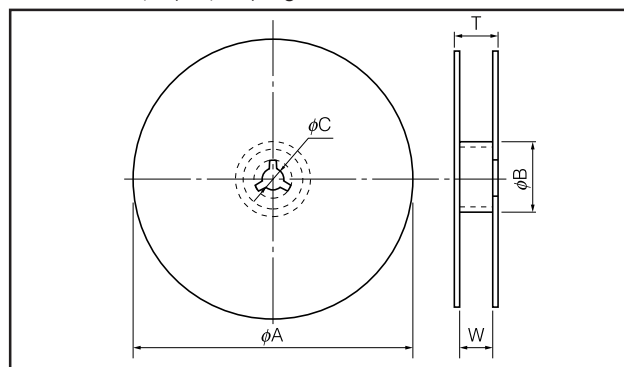
● Embossed Taping



	Type	A	B	W	F	E	P ₀
Dimensions (mm)	EXBE	2.50±0.20	4.40±0.20	12.00±0.30	5.50±0.10	1.75±0.20	4.00±0.10
	EXBA	3.50±0.20	6.80±0.20				

	Type	P ₁	P ₂	φD ₀	t ₁	t ₂	φD ₁
Dimensions (mm)	EXBE	4.00±0.10	2.00±0.10	1.50 ^{+0.10} ₀	0.25±0.05	1.10±0.20	1.50 ^{+0.10} ₀
	EXBA						

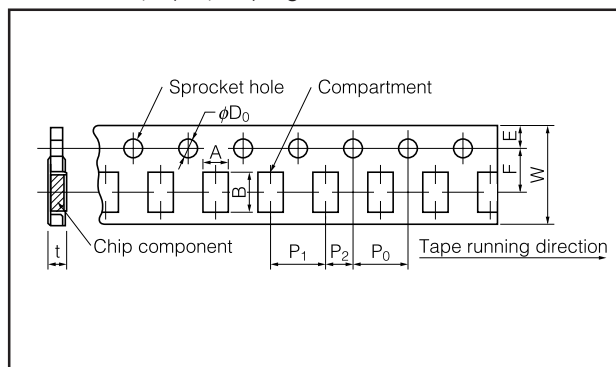
● Punched (Paper) Taping Reel



	Type	φA	φB	φC
Dimensions (mm)	EXBD	180.0 ⁰ _{-3.0}	60 min.	13±1.0
	EXBQ			

	Type	W	T
Dimensions (mm)	EXBD	9.0±1.0	11.4±2.0
	EXBQ		

● Punched (Paper) Taping



	Type	A	B	W	F	E	P ₀
Dimensions (mm)	EXBD	2.00±0.20	3.60±0.20	8.00±0.20	3.50±0.10	1.75±0.10	4.00±0.10
	EXBQ	1.90±0.20	4.10±0.20				

	Type	P ₁	P ₂	φD ₀	t
Dimensions (mm)	EXBD	4.00±0.10	2.00±0.10	1.50 ^{+0.10} ₀	0.84±0.10
	EXBQ				0.64±0.05

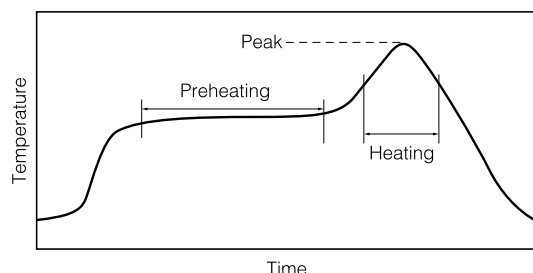
⚠ Cautions for Safety

1. Soldering

Recommendation for soldering method is noted below.

● Recommended soldering conditions for reflow

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



For solder (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 solder (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

Ask the flow soldering of EXBA series to us. We can not recommended the flow soldering to Chip Resistor Networks: EXBD/EXBE/EXBQ, because we are afraid that solder bridge happens owing to narrow 0.635 mm/0.8 mm/0.5 mm pitch of EXBD/EXBE/EXBQ series.

● Iron soldering

① Solder at 350 °C max. and 3 seconds max. with the soldering iron tip.

② The soldering iron tip shall not touch the protective coating of the part.

● Use rosin type flux. Do not use high-activity flux (the chlorine content is 0.2 wt% or more).

● Allow enough preheating so that the difference of soldering temperature and temperature of surface of the part is 100 °C or less. This temperature difference shall be kept in rapid cooling by immersion into solvent.

● Avoid excessive amount of solder. More amount of solder gives more mechanical stress to the part resulting in crack of impaired characteristics.

2. Cleaning

● Residual flux after board washing may cause solder migration. Carefully check the status of board washing.

Study type and amount of flux to be used when no washing is made. Study type of water-soluble flux and cleaning agent and drying condition when water washing is made. Confirm they will not cause any trouble.

3. Others

● Take necessary precautions to avoid any abnormal stress caused by bend of board.

● Do not use the product in dewy atmospheres.