

## Chip Bead Cores

Type: **EXCCL**  
**EXCML**  
**EXC3B**



### ■ Features

- Effective noise suppression for power lines and high speed signal lines
- Easy pattern layout on PC Board
- RoHS compliant

Type: EXCCL, EXCML

- Low DC Resistance 3 to 8 mΩ typical: Rated current (3 and 4 Amperes) (type: EXCML)
- Low impedance

Type: EXC3B

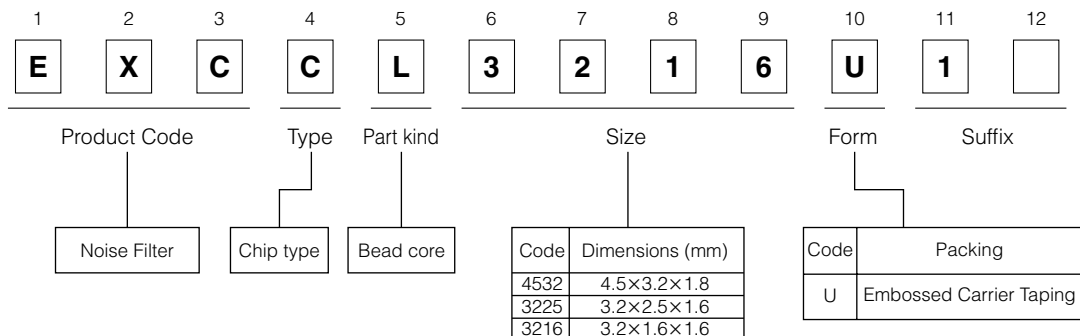
- High impedance for high speed signal line noise
- Increased attenuation
- 60 Ω-1 A, 120 Ω-0.5 A are achieved by using 1608 size (type: EXC3BP)

### ■ Recommended Applications

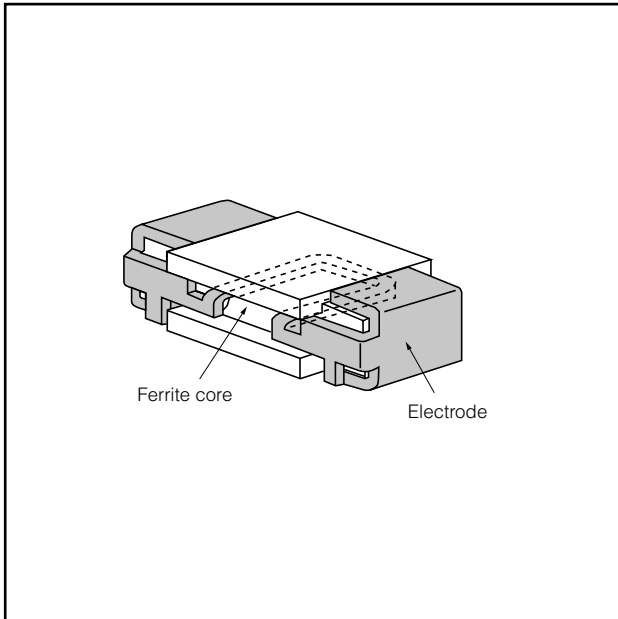
- Digital equipment such as PCs, word processors, printers, HDD, PCC, CD-ROMs, DVD-ROMs.
- Digital audio and video equipment such as VCRs, DVC, CD Players, DVD Players.
- AC adapters, and switching power supplies.
- Electronic musical instruments, and other digital equipment.

### ■ Type: EXCCL

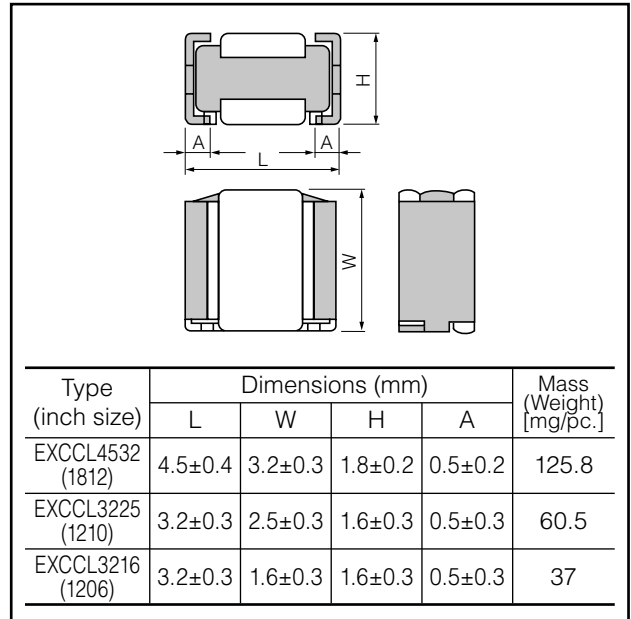
#### ● Explanation of Part Numbers



### Construction

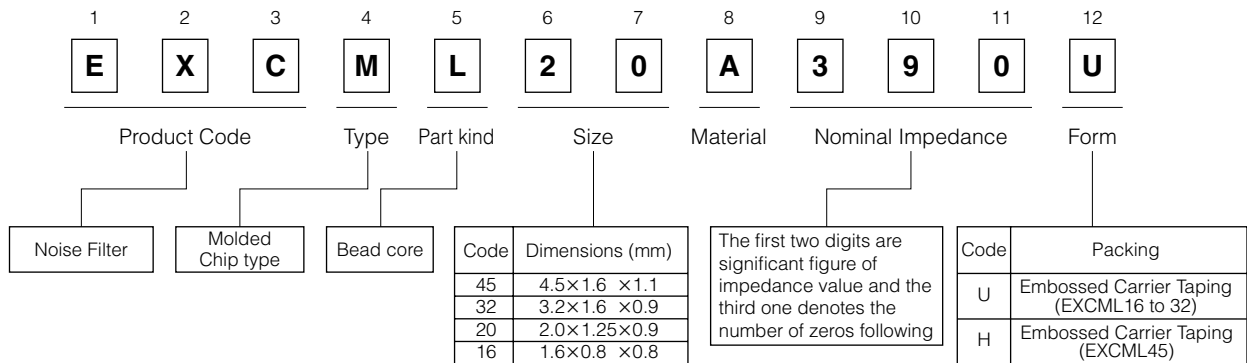


### Dimensions in mm (not to scale)

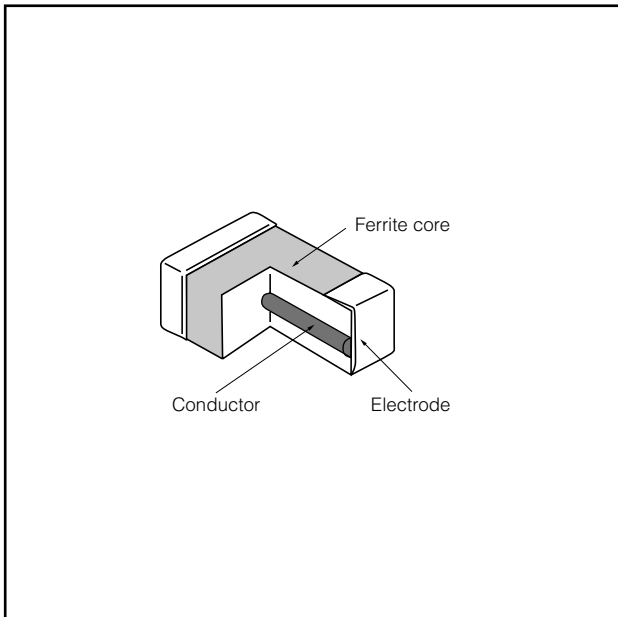


### Type: EXCML

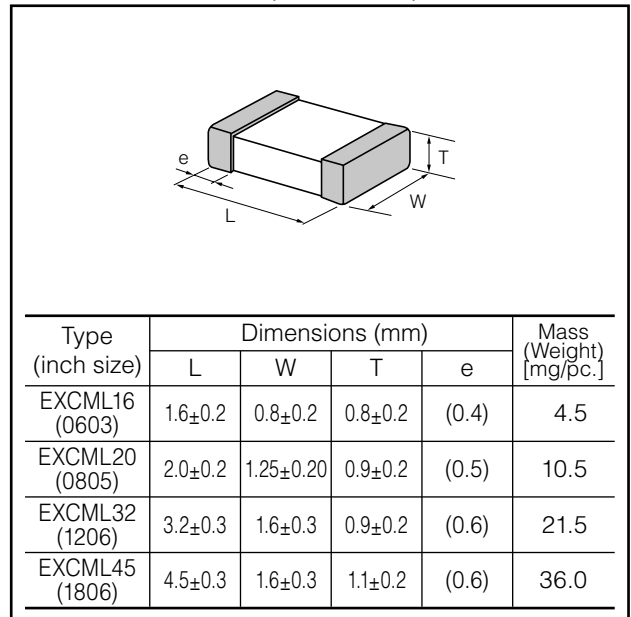
#### Explanation of Part Numbers



### Construction

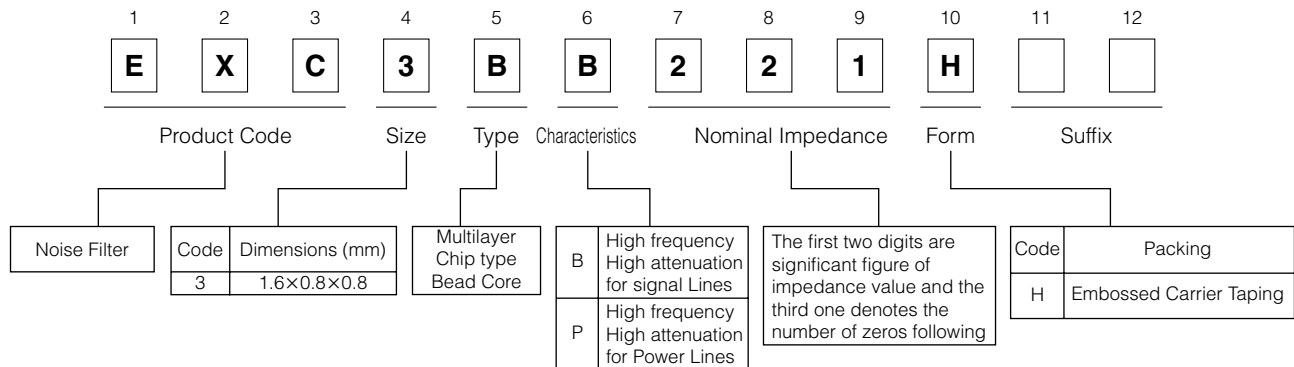


### Dimensions in mm (not to scale)

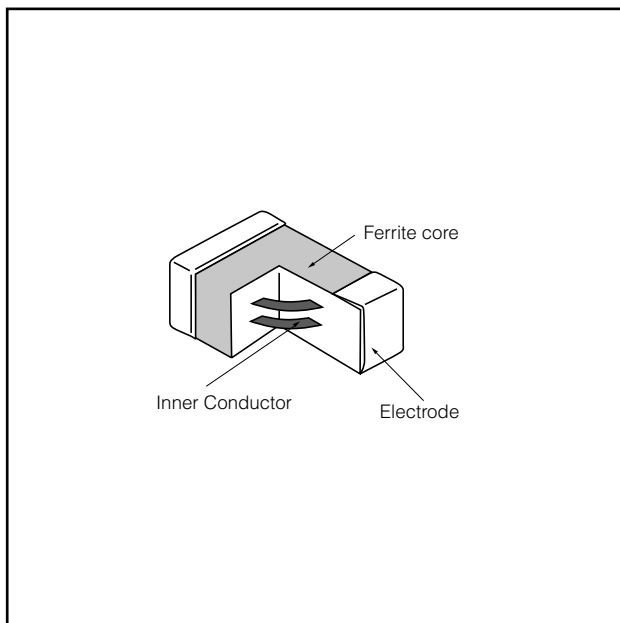


### ■ Type: EXC3B

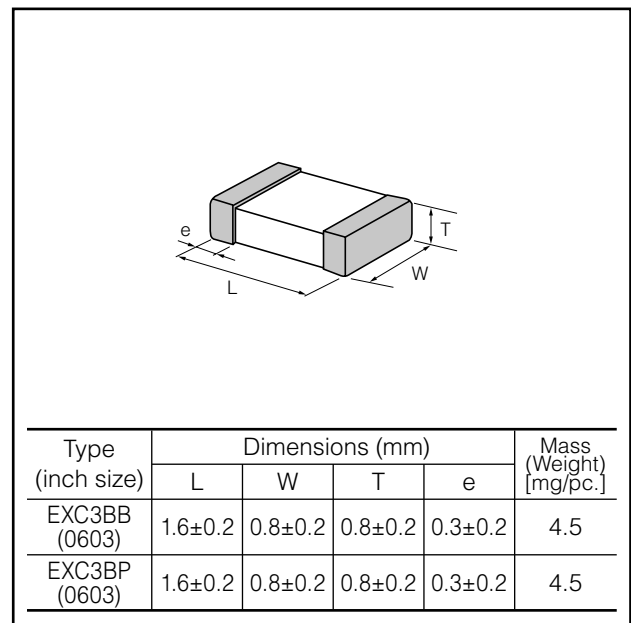
#### ● Explanation of Part Numbers



### ■ Construction



### ■ Dimensions in mm (not to scale)



### ■ Ratings

Type	Part Number	Impedance		Rated Current (mA DC)	DC Resistance (Ω) max.
		(Ω) at 100 MHz	tol.(%)		
4532	EXCCL4532U1	115	±25	2000	0.1
3225	EXCCL3225U1	45		2000	0.05
3216	EXCCL3216U1	25		2000	0.05
4516	EXCML45A910H	91		3000	0.016
3216	EXCML32A680U	68		3000	0.012
2012	EXCML20A390U	39		4000	0.008
1608	EXCML16A270U	27		4000	0.006
1608	EXC3BP600H	60		1000	0.07
	EXC3BP121H	120		500	0.1
	EXC3BB221H	220		200	0.3
	EXC3BB601H	600	100	0.8	
	EXC3BB102H	1000	50	1	

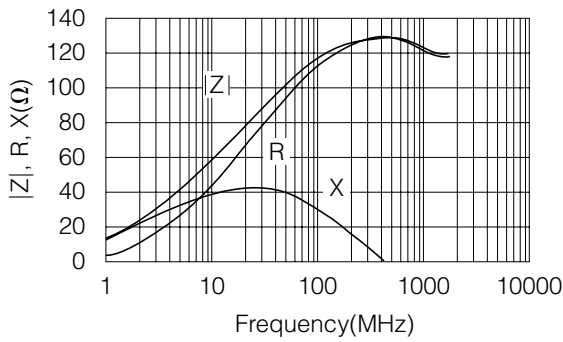
● Category Temperature Range -25 °C to +85 °C

### Impedance Characteristics (Reference Data)

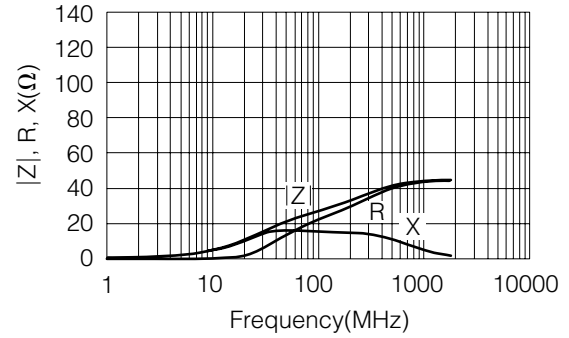
Measured by HP4291A

|Z| : Impedance    R : Resistance    X : Reactance

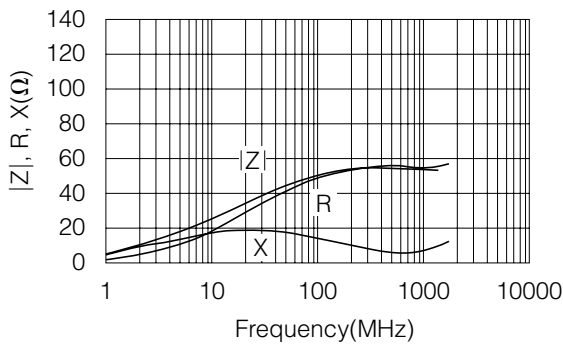
●EXCCL4532U1 (4532)



●EXCML16A270U (1608)



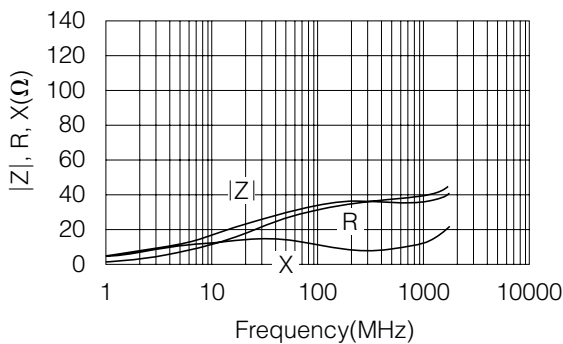
●EXCCL3225U1 (3225)



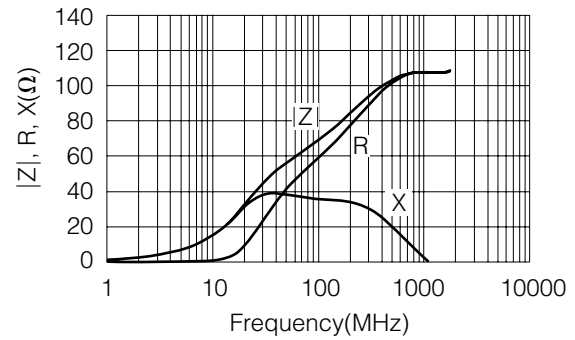
●EXCML20A390U (2012)



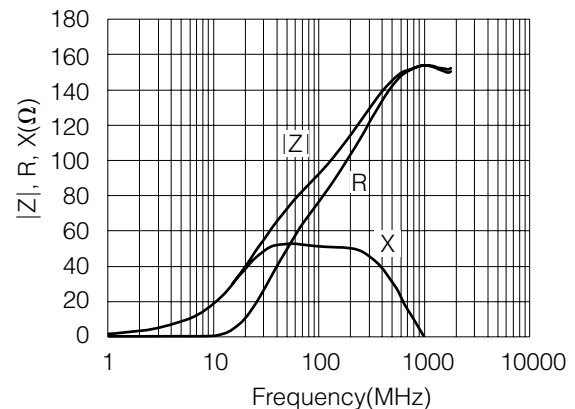
●EXCCL3216U1 (3216)



●EXCML32A680U (3216)



●EXCML45A910H (4516)



■ Impedance Characteristics (Reference Data)

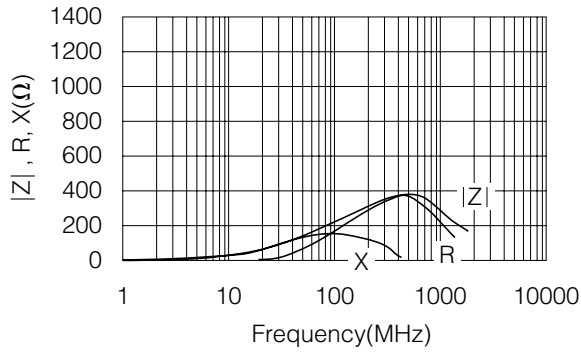
Measured by HP4291A

|Z| : Impedance

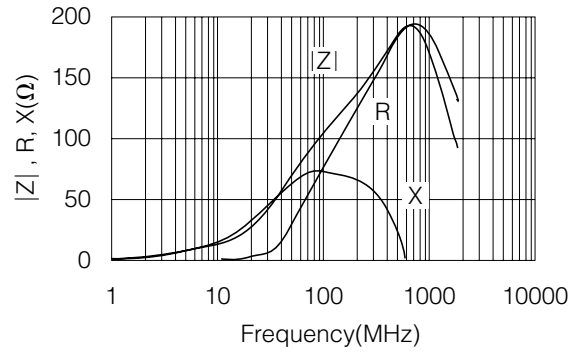
R : Resistance

X : Reactance

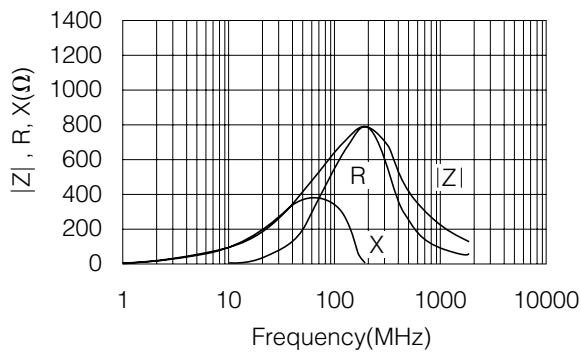
●EXC3BB221H (1608)



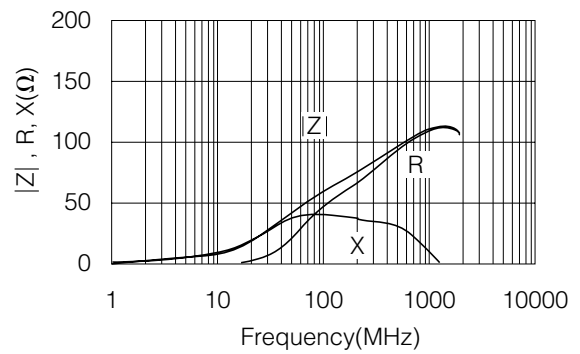
●EXC3BP121H (1608)



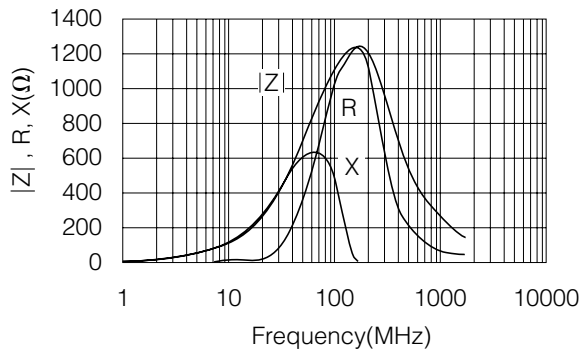
●EXC3BB601H (1608)



●EXC3BP600H (1608)



●EXC3BB102H (1608)

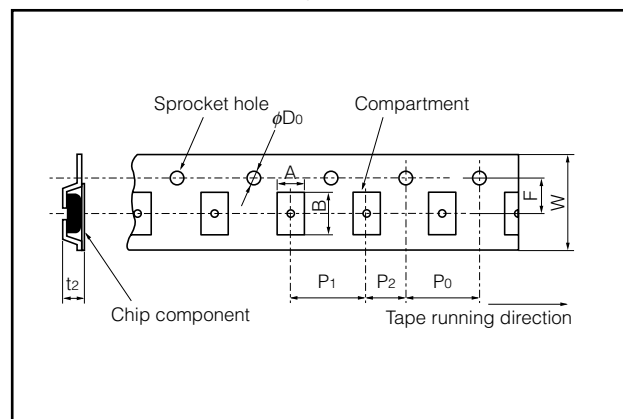


### ■ Packaging Methods (Taping)

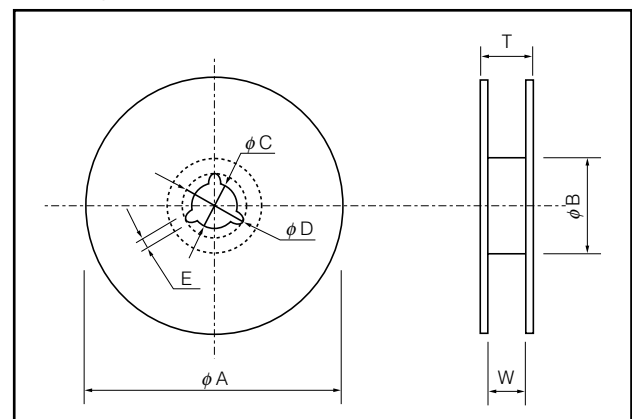
#### ● Standard Quantity

Part Number	Kind of Taping	Pitch (P <sub>1</sub> )	Quantity
EXCCL4532U1	Embossed Carrier Taping	8 mm	1000 pcs./reel
EXCCL3225U1		4 mm	2000 pcs./reel
EXCCL3216U1			3000 pcs./reel
EXCML45A910H			4000 pcs./reel
EXCML32A680U			
EXCML20A390U			
EXCML16A270U			
EXC3B□□□□H			

#### ● Embossed Carrier Taping



#### ● Taping Reel



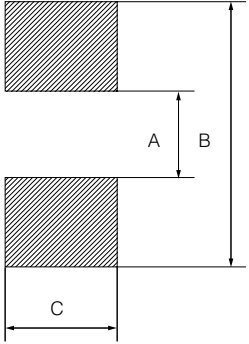
#### Embossed Carrier Dimensions (mm)

Part Number	A	B	W	F	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	$\phi D_0$	t <sub>2</sub>
EXCCL4532U1	3.6±0.2	4.9±0.2	12.0±0.2	5.5±0.1	8.0±0.1				2.4 max.
EXCCL3225U1	2.9±0.2	3.6±0.2	8.0±0.2	3.5±0.1					
EXCCL3216U1	2.0±0.2	3.6±0.2	12.0±0.2	5.5±0.1	4.0±0.1	2.0±0.1	4.0±0.1	1.5±0.1	1.8 max.
EXCML45A910H	1.9±0.2	4.8±0.2							
EXCML32A680U	1.9±0.2	3.5±0.2							
EXCML20A390U	1.5±0.2	2.3±0.2							
EXCML16A270U	1.0±0.2	1.8±0.2	8.0±0.2	3.5±0.1				1.6 max.	
EXC3B□□□□H	1.0±0.1	1.8±0.1							

#### Standard Reel Dimensions (mm)

Part Number	$\phi A$	$\phi B$	$\phi C$	$\phi D$	E	W	T
EXCCL4532U1	180.0 <sup>0</sup> <sub>-3.0</sub>	60.0±1.0	13.0±0.5	21.0±0.8	2.0±0.5	13.0±0.3	16.5 max.
EXCCL3225U1						9.0±0.3	13 max.
EXCCL3216U1						13.0±0.3	16.5 max.
EXCML45A910H						9.0±0.3	13 max.
EXCML32A680U							
EXCML20A390U							
EXCML16A270U							
EXC3B□□□□H							

■ Recommended Land Pattern Dimensions in mm (not to scale)



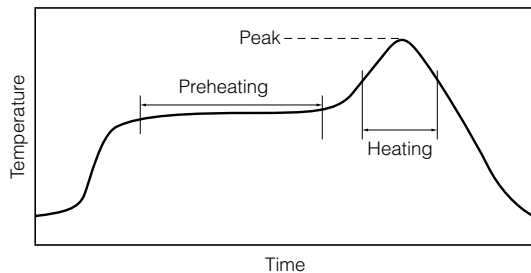
Part Number	A	B	C
EXCCL4532U1	3	5.4	2.8
EXCCL3225U1	1.7	4.1	2.1
EXCCL3216U1	1.7	4.1	1.2
EXCML45A910H	2.6 to 3	5.5 to 6.5	1.2 to 1.6
EXCML32A680U	1.6 to 2	4 to 5	1.2 to 1.6
EXCML20A390U	0.8 to 1.2	3 to 4	1 to 1.2
EXCML16A270U	0.6 to 1	2 to 3	0.8 to 1
EXC3B□□□□H	0.8 to 1	2 to 2.6	0.8 to 1

■ Recommended Soldering Conditions

Recommendations and precautions are described below.

● 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-37Pb)

	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 ± 10 °C	max. 10 s

For lead-free soldering (Example : Sn/3Ag/0.5Cu)

	Temperature	Time
Preheating	150 °C to 170 °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

- Flow soldering may cause this product to come off because the adhesiveness of the product element is low. Please consult our sales representative in advance about flow soldering.

<Repair with hand soldering>

- Preheat with a blast of hot air or similar method. Use a soldering iron with a tip temperature of 350 °C or less. Solder each electrode for 3 seconds or less.
- Never touch this product with the tip of a soldering iron.



⚠ Safety Precautions

The following are precautions for individual products. Please also refer to the common precautions for Noise Suppression Device shown on this catalog.

1. Use rosin-based flux or halogen-free flux.
2. For cleaning, use an alcohol-based cleaning agent. Before using any other type, consult with our sales person in advance.
3. Do not apply shock to Chip Bead Cores (hereafter called the bead cores) or pinch them with a hard tool (e.g. pliers and tweezers). Otherwise, their bodies may be chipped, affecting their performance.  
Excessive mechanical stress may damage the bead cores. Handle with care.
4. Store the bead cores in a location with a temperature ranging from -5 °C to +40 °C and a relative humidity of 40 % to 60 %, where there are no rapid changes in temperature or humidity.
5. Use the bead cores within a year (EXC3B Type: within half a year) after the date of the outgoing inspection indicated on the packages.

## Looking for pricing, stock, or lifecycle information?

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-  [Panasonic Information](#)

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