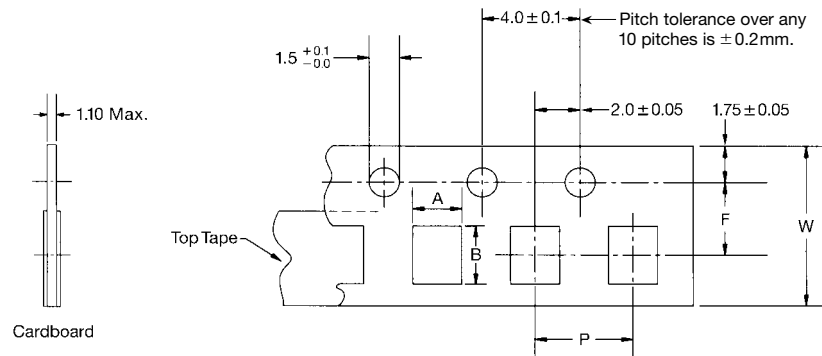


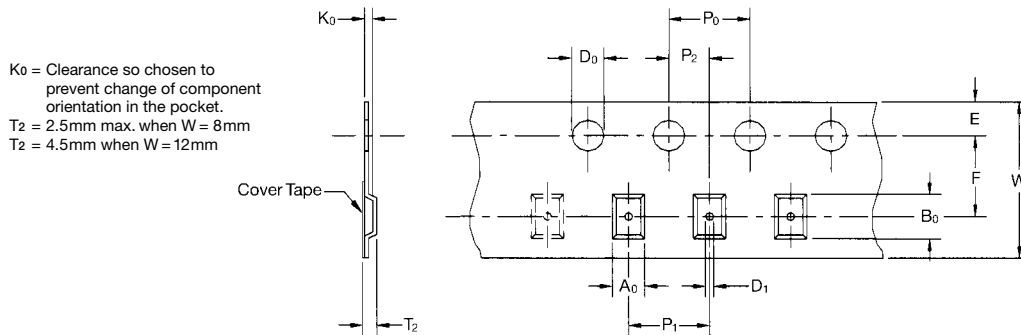
Standard Paper and Embossed Tape Specifications

Unit mm



Paper Tape Specifications

Dimension	Paper Tape Dimensions				
	0201	0402	0603	0805	1206
A	0.37 ± 0.03	0.62 ± 0.05	1.0 ± 0.20	1.5 ± 0.20	1.9 ± 0.20
B	0.67 ± 0.03	1.12 ± 0.05	1.8 ± 0.20	2.3 ± 0.20	3.5 ± 0.20
W	8.0 ± 0.20	8.0 ± 0.20	8.0 ± 0.20	8.0 ± 0.20	8.0 ± 0.20
F	3.5 ± 0.05	3.5 ± 0.05	3.5 ± 0.05	3.5 ± 0.05	3.5 ± 0.05
P	2.0 ± 0.10	2.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10



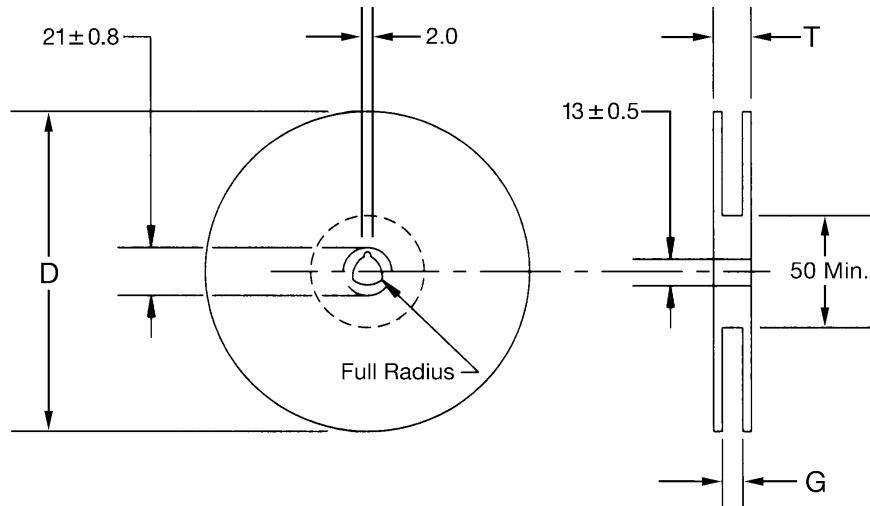
Embossed Tape Specifications

Dimension	Embossed Tape Dimensions				
	0805	1206	1210	1808	1812
A0 Nominal Clearance (Note 1)	0.2	0.3	0.3	0.4	0.4
B0 Nominal Clearance (Note 1)	0.2	0.3	0.3	0.4	0.4
K0 Nominal Clearance (Note 1)	0.05	0.05	0.05	0.05	0.05
W	8.1 ± 0.20	8.1 ± 0.20	8.1 ± 0.20	12 ± 0.20	12 ± 0.20
E	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10
F	3.5 ± 0.05	3.5 ± 0.05	3.5 ± 0.05	5.5 ± 0.05	5.5 ± 0.05
D0	1.5 + 0.1, - 0.0	1.5 + 0.1, - 0.0	1.5 + 0.1, - 0.0	1.5 + 0.1, - 0.0	1.5 + 0.1, - 0.0
D1	1 min. + 0.1, - 0.0	1 min. + 0.1, - 0.0	1 min. + 0.1, - 0.0	1.5 min. + 0.1, - 0.0	1.5 min. + 0.1, - 0.0
P0 (Note 2)	4 ± 0.10	4 ± 0.10	4 ± 0.10	4 ± 0.10	4 ± 0.10
P1	4 ± 0.10	4 ± 0.10	4 ± 0.10	8 ± 0.10	8 ± 0.10
P2	2 ± 0.05	2 ± 0.05	2 ± 0.05	2 ± 0.05	2 ± 0.05

Note 1: Typical capacitor displacement in pocket.
 Note 2: P0 pitch tolerance over any 10 pitches is ± 0.2mm.

Standard Reel Specifications

Unit mm



Reel Dimensions

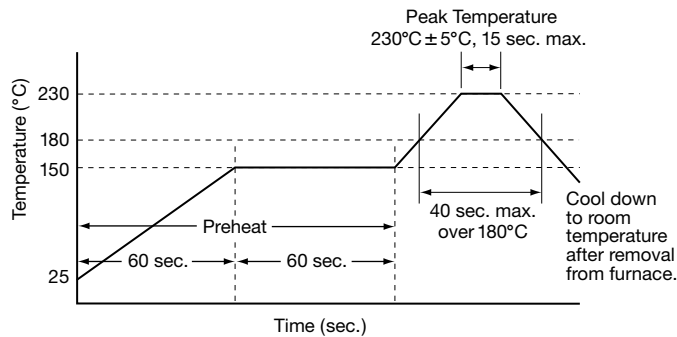
Tape Width (mm)	G (mm)	T max. (mm)	D (mm)
8	10.0 ± 1.5	14.4	180
8	10.0 ± 1.5	14.4	250
8	10.0 ± 1.5	14.4	330
12	14.0 ± 1.5	18.4	180

Quantity Per Reel

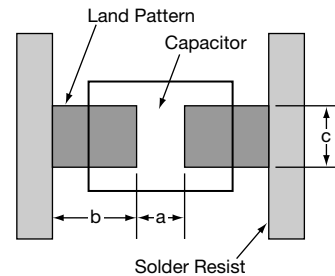
Thickness (mm)		Pieces Per Reel					
		180mm Reel Diameter		220mm Reel Diameter		330mm Reel Diameter	
Code	Dimensions	Paper Tape	Embossed Tape	Paper Tape	Embossed Tape	Paper Tape	Embossed Tape
A	0.30 ± 0.03	15,000	-	-	-	-	-
B	0.50 ± 0.05	10,000	-	-	-	50,000	-
C	0.60 ± 0.10	4,000	4,000	10,000	10,000	15,000	15,000
D	0.80 ± 0.10	4,000	4,000	10,000	10,000	15,000	15,000
E	0.85 ± 0.10	4,000	4,000	10,000	10,000	15,000	15,000
F	1.15 ± 0.10	-	3,000	-	-	-	10,000
G	1.25 ± 0.10	-	3,000	-	-	-	10,000
H	1.50 ± 0.15	-	1,500	-	-	-	-
K	1.10 ± 0.20	-	3,000	-	-	-	-
L	1.60 ± 0.15	-	2,000	-	-	-	-

Soldering Guidelines

Recommended Reflow Temperature Profile



Recommended PCB Land Pattern



PCB Land Pattern Dimensions For Standard Case Sizes

MLCC Size		MLCC Pad Dimensions		
Size Code	L × W (mm)	a (mm)	b (mm)	c (mm)
0201	0.6 × 0.3	0.20 to 0.30	0.20 to 0.35	0.20 to 0.40
0402	1.0 × 0.5	0.30 to 0.50	0.35 to 0.45	0.40 to 0.60
0603	1.6 × 0.8	0.70 to 1.00	0.80 to 1.00	0.60 to 0.80
0805	2.0 × 1.25	1.00 to 1.30	1.00 to 1.20	0.80 to 1.00
1206	3.2 × 1.6	2.10 to 2.50	1.10 to 1.30	1.00 to 1.30
1210	3.2 × 2.5	2.10 to 2.50	1.10 to 1.30	1.90 to 2.30
1808	4.5 × 2.0	2.50 to 3.20	1.80 to 2.30	2.60 to 1.80
1812	4.5 × 3.2	2.50 to 3.20	1.80 to 2.30	2.60 to 3.00

Soldering Precautions

Resin Molding

1. Use a low shrinkage resin when a large amount of resin is used for molding chips. This will prevent cracking that may occur due to contraction stress on the chip capacitors during curing.
2. Use a low moisture absorption resin to avoid degradation of the insulation resistance of the chip capacitors caused by moisture retention.
3. Carefully check that the resin does not generate harmful gases during the curing process or during normal storage. Such gases may crack the chip capacitors.

Soldering Methods

1. Follow the recommended reflow soldering profile shown above.
2. Ceramic is easily damaged by rapid heating or cooling. If some heat shock is unavoidable, limit the temperature difference (ΔT) to within 130°C.
3. When using a soldering iron, preheat the chip capacitors to approximately 150°C, then quickly solder on a hot plate using a soldering iron temperature between 250°C to 280°C.

Soldering PCB Land Patterns

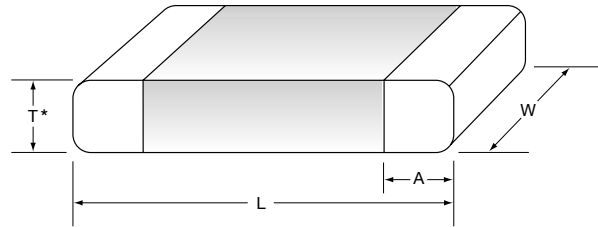
When mounting chip capacitors to a substrate, it is important to consider that the amount of solder used (size of fillet) has a direct effect upon the capacitor after it is mounted.

1. Follow the recommended land pattern dimensions shown in the table above.
2. Be aware that the greater the amount of solder, the greater the stress on the elements, and this may cause the substrate to crack or break.
3. In a situation where two or more devices are mounted onto a common land, use soldering resist to separate the individual pad patterns for each device.

Mechanical Specifications

Dimensions (mm)

Size Code	L	W	A min./max.
0201	0.6±0.03	0.3±0.03	0.10/0.20
0402	1.0±0.05	0.5±0.05	0.20/0.30
0603	1.6±0.10	0.8±0.10	0.25/0.65
0805	2.0±0.10	1.25±0.10	0.25/0.75
1206	3.2±0.15	1.6±0.15	0.25/0.75
1210	3.2±0.20	2.5±0.20	0.25/0.75
1808	4.5±0.20	2.0±0.20	0.25/0.75
1812	4.5±0.20	3.2±0.20	0.25/0.75



*T = Thickness. For thickness dimensions and coding system, refer to the Standard Products tables.

Handling and Storage

Handling

1. Chip capacitors should be handled with care to avoid contamination or damage.
2. The use of vacuum pick-up or plastic tweezers is recommended for manual placement.
3. Tape and reel packages are suitable for automatic pick-and-place machines.

Storage

1. Chip capacitors shall be packaged in carrier tapes or bulk cases.
2. Keep storage area temperature from +5°C to +35°C and humidity from 45 to 70% RH.
3. The storage environment must be free of harmful gases such as sulfur or chlorine. Avoid exposing capacitors to saline moisture. If capacitors are exposed to such atmospheric conditions, oxidation will occur and affect the solderability of the terminations.
4. Solderability is assured for 12 months from our final inspection date if the above storage conditions are followed.

General Information

Product Specification

All descriptions, drawings and other particulars (including dimensions, materials and performance data) given by Evox Rifa are as accurate as possible but, being given for general information, are not binding on Evox Rifa unless specifically agreed in writing. All dimensions and materials are, unless otherwise stated, subject to reasonable variations resulting from the raw material available or arising in the ordinary course of manufacture. Any performance data are based upon Evox Rifa's experience and are such as Evox Rifa normally expects to achieve.

Warranty, Product Liability

Evox Rifa warrants that the goods manufactured by Evox Rifa are free from defects in design, material and workmanship.

Evox Rifa's liability under this warranty shall be limited to replacement or repair free of charge, at one of Evox Rifa's factories selected by Evox Rifa, provided that notification of such failure or defect is given to Evox Rifa immediately upon the same becoming apparent and that on Evox Rifa's request and instruction the goods are promptly returned to Evox Rifa carriage paid by buyer.

In case the goods thus returned as defective, prove to be without fault or defect, Evox Rifa is entitled to charge buyer 10% of the value of the returned goods.

If the goods supplied or part thereof are not manufactured by or branded Evox Rifa, Evox Rifa will only extend to the buyer the benefit of the warranty granted by the manufacturer of the goods. Evox Rifa's liability is further limited to a period of 12 months from the date of shipment to buyer.

Evox Rifa shall not be liable for any defect which is due to accident, fair wear and tear, negligent use, tampering, improper handling, improper use, improper operation or improper storage or any other default on the part of any person other than Evox Rifa.

Evox Rifa shall have no other liabilities in case of defective goods than those stated above and shall under no circumstances be liable for any consequential loss or damage arising from the use of goods sold by Evox Rifa. Liability under paragraph 823 BGB is expressly excluded.

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