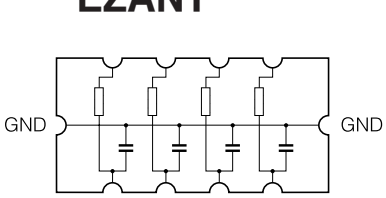
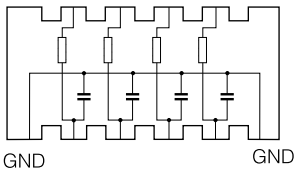
Chip RC Networks

Type: **EZADT**
EZAST/SS
EZANT



Type: **EZASTB/SSB**



■ Features

1. Smallest SMD R/C networks

- 4 popular noise reduction circuits made from damping resistors and bypass capacitors in a smallest chip
  EZADT : 3.2 mm × 1.6 mm × 0.65 mm, 0.635 mm pitch
  EZAST/SS : 4.0 mm × 2.1 mm × 0.65 mm, 0.8 mm pitch
  EZASTB/SSB : 4.0 mm × 2.1 mm × 0.65 mm, 0.65 mm pitch
  EZANT : 6.4 mm × 3.1 mm × 0.80 mm, 1.27 mm pitch
- Smaller occupied space than discrete chip resistor & chip capacitor
  EZADT:50 % of 0402 (1.0 mm × 0.5 mm) chips placing area
  EZAST/SS, EZASTB/SSB:70 % of 0402 (1.0 mm × 0.5 mm) chips placing area
  EZANT:45 % of 0805 (2.0 mm × 1.2 mm) chips placing area

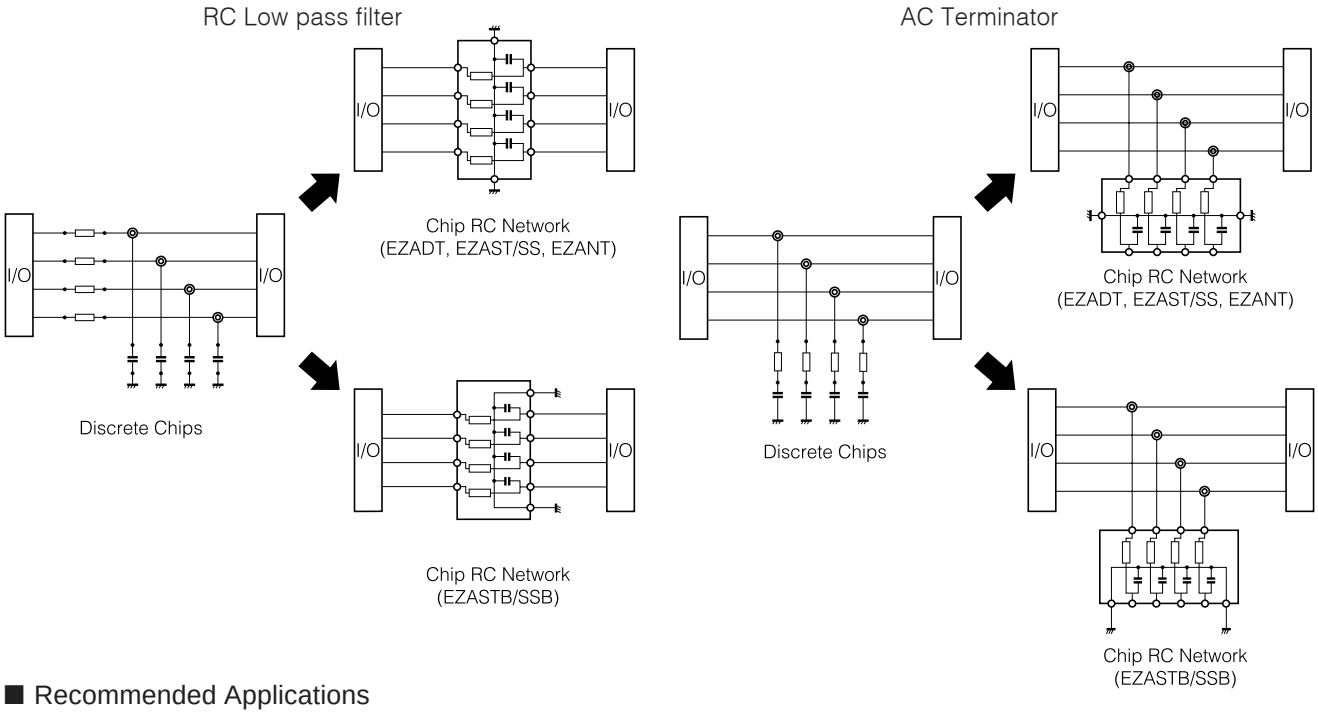
2. Type:EZADT, EZAST/SS, EZANT(Concave terminal type)

- Firm solder joint(2 times of convex terminal)
- Self-alignment of placement at reflow soldering

3. Type:EZASTB/SSB(Convex terminal type)

- Vision recognition shall be easy

<Effect of high density placing, PWB space saving>



■ Recommended Applications

- Digital equipment such as Personal computers, Printers, HDD, PCMCIA cards, PDA and Word processors
- Communication equipment, Digital cordless phones, Automobile phones, GSM, PHS, DECT
- Digital audio and Video equipment
- Electric musical instruments, and digital devices

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.

■ Explanation of Part Number

● EZADT • EZAST • EZANT (R/C Standard Combination)

1	2	3	4	5	6	7	8	9	10	11	12
E	Z	A	S	T	3	3	A	A	A	J	
Common Code			Dimension and Circuit Configuration		R/C Standard Combination		Design Configuration			Resistance Tolerance	Suffix for Special Requirement

Common Code: Thick Film Noise Suppression and Filtering Components

Dimension and Circuit Configuration:

DT	3.2 mm ×1.6 mm	Chip RC Networks
ST	4.0 mm ×2.1 mm	
NT	6.4 mm ×3.1 mm	

R/C Standard Combination:

Resistance Value Configuration		Capacitance Value Configuration ✻	
1	22 Ω	1	22 pF
2	47 Ω	2	47 pF
3	100 Ω	3	100 pF
4	220 Ω	4	220 pF
5	470 Ω	5	470 pF
6	1 k Ω	6	1000 pF

Design Configuration: AAA Standard

Resistance Tolerance: J ±5 %

✻ 220 pF to 1000 pF available for EZANT, 22 pF to 100 pF available for EZAST, EZADT

● EZADT • EZASS • EZANT (R/C Except the standard Combination)

1	2	3	4	5	6	7	8	9	10	11	12
E	Z	A	S	S	7	0	1	Y	A	J	
Common Code			Dimension and Circuit Configuration		Design Number					Resistance Tolerance	Suffix for Special Requirement

Common Code: Thick Film Noise Suppression and Filtering Components

Dimension and Circuit Configuration:

DT	3.2 mm ×1.6 mm	Chip RC Networks
SS	4.0 mm ×2.1 mm	
NT	6.4 mm ×3.1 mm	

Design Number:

DT	Resistance Value : 10 Ω to 100 kΩ Capacitance Value : 10 pF to 100 pF In above-mentioned range, it is possible to choose optional R/C.
SS	Resistance Value : 10 Ω to 100 kΩ Capacitance Value : 10 pF to 180 pF In above-mentioned range, it is possible to choose optional R/C.
NT	Resistance Value : 10 Ω to 100 kΩ Capacitance Value : 220 pF to 1000 pF In above-mentioned range, it is possible to choose optional R/C.

Resistance Tolerance: J ±5 %

● EZASTB (R/C Standard Combination)

1	2	3	4	5	6	7	8	9	10	11	12
E	Z	A	S	T	B	3	3	A	A	J	
Common Code			Dimension and Circuit Configuration			R/C Standard Combination		Design Configuration		Resistance Tolerance	Suffix for Special Requirement

Common Code: Thick Film Noise Suppression and Filtering Components

Dimension and Circuit Configuration: STB | 4.0 mm ×2.1 mm | Convex terminal type Chip RC Networks

R/C Standard Combination:

Resistance Value Configuration		Capacitance Value Configuration	
1	22 Ω	1	22 pF
2	47 Ω	2	47 pF
3	100 Ω	3	100 pF
4	220 Ω		
5	470 Ω		
6	1 k Ω		

Design Configuration: AA Standard

Resistance Tolerance: J ±5 %

● EZASSB (R/C Except the standard Combination)

1	2	3	4	5	6	7	8	9	10	11	12
E	Z	A	S	S	B	7	0	1	A	J	
Common Code			Dimension and Circuit Configuration			Design Number				Resistance Tolerance	Suffix for Special Requirement

Common Code: Thick Film Noise Suppression and Filtering Components

Dimension and Circuit Configuration: SSB | 4.0 mm ×2.1 mm | Convex terminal type Chip RC Networks

Design Number: Resistance Value : 10 Ω to 100 kΩ
Capacitance Value : 10 pF to 180 pF
In above-mentioned range, it is possible to choose optional R/C.

Resistance Tolerance: J ±5 %

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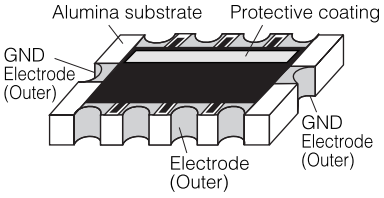
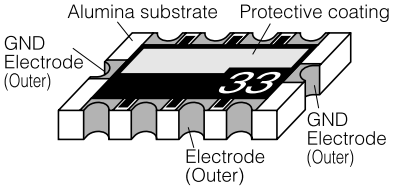
■ Construction

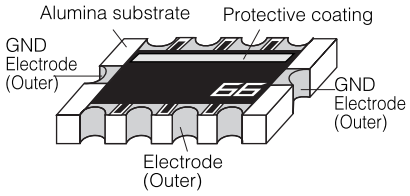
EZADT



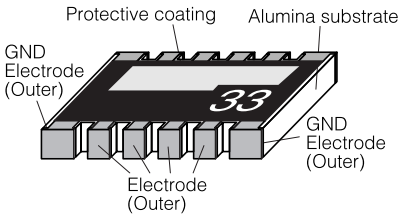
EZAST/SS



EZANT

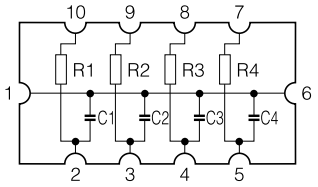


EZASTB/SSB



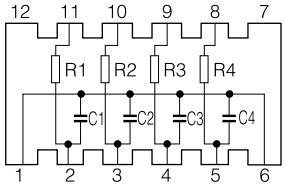
■ Circuit Configuration

EZANT • EZAST/SS • EZADT



R1=R2=R3=R4
C1=C2=C3=C4

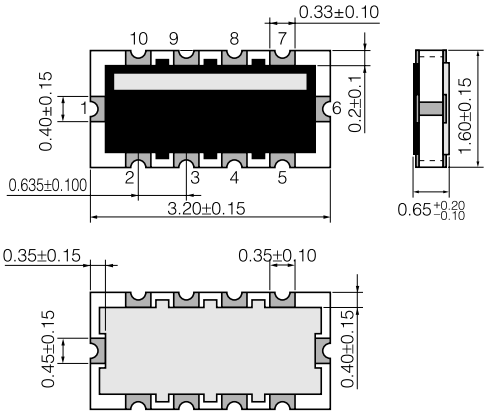
EZASTB/SSB



R1=R2=R3=R4
C1=C2=C3=C4

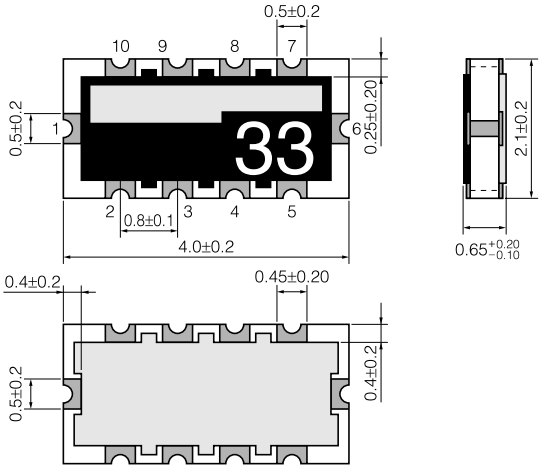
■ Dimensions in mm(not to scale)

EZADT



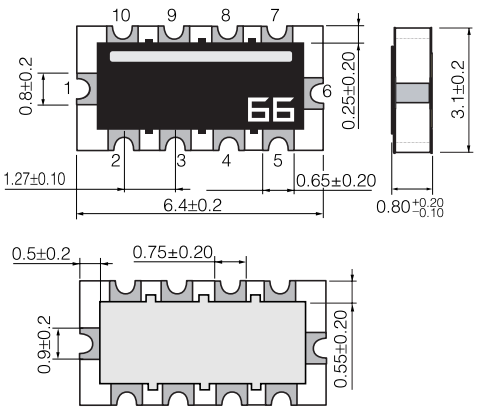
Mass (Weight) [1000 pcs.] :11 g

EZAST/SS



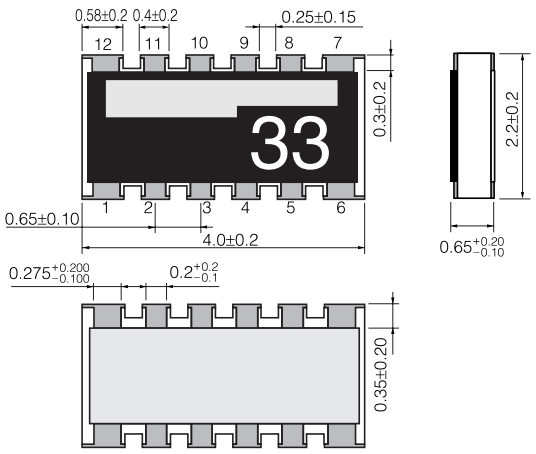
Mass (Weight) [1000 pcs.] :17 g

EZANT



Mass (Weight) [1000 pcs.] :55 g

EZASTB/SSB



Mass (Weight) [1000 pcs.] :18 g

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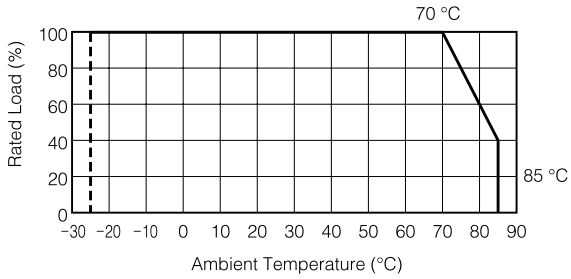
■ Ratings

	Item	Specification
Resistor	Resistance Values	10 Ω to 100 kΩ Standard : 22 Ω, 47 Ω, 100 Ω, 220 Ω, 470 Ω, 1 kΩ
	Resistance Tolerance	±5 %
	Temperature Cofficient of Resistor (T.C.R.)	±200 × 10^{-6}/°C(ppm/°C)
	Rated Power	0.063 W(≦70 °C(1))
	Limiting Element Voltage (Maximum Rated Continuous Working Voltage)	25 V(2)
Capacitor	Capacitance Values (25 °C, 1 kHz(3), 1 Vrms)	EZAD : 10 pF to 100 pF EZAS : 10 pF to 180 pF Standard : 22 pF, 47 pF, 100 pF EZAN : 220 pF to 1000 pF Standard : 220 pF, 470 pF, 1000 pF
	Capacitance Tolerance	+30 %/–20 %
	Capacitance Temperature Characteristics	E Characteristic: +20 %/–55 %(–25 °C to +85 °C)
	Dissipation Factor	Less than 3 %(25 °C, 1 kHz(3), 1 Vrms)
	Rated Voltage	EZAD : 12 V EZAS : 25 V EZAN : 50 V
	Category Temperature Range (Operating Temperature Range)	–25 °C to +85 °C

(1) For resistors operated in ambient temperature above 70 °C, rated power shall be derated.("Power Derating Curve" is shown below)
(2) Rated Voltage for resistor shall be determined from √Rated Power×Resistance Value, or Limiting Element Voltage (Max. Rated Continuous Working Voltage) whichever less.
(3) In measuring at 1 MHz, Capacitance and Dissipation Factor are different.

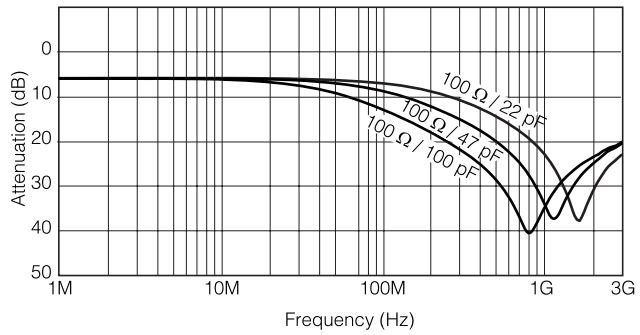
Power Derating Curve

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

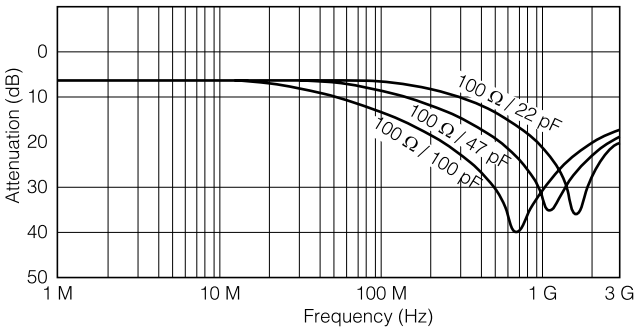


■ Attenuation Characteristics

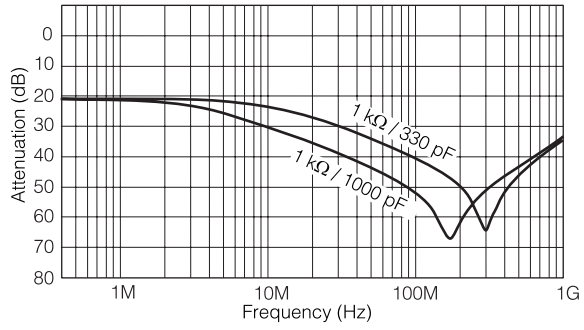
●EZADT



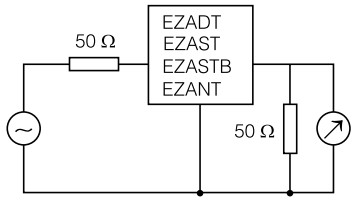
●EZST • EZASTB



●EZANT



Measurement Circuit



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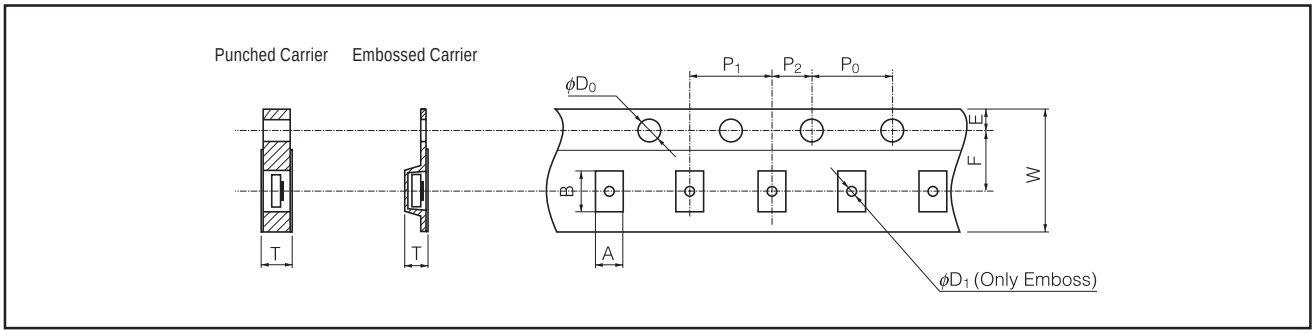
■ Packaging Methods (Taping)

● Standard Quantity

Type	Kind of Taping	Pitch (P_1)	Quantity
EZADT	Punched Carrier Taping	4 mm	5000 pcs./reel
EZAST/SS	Embossed Carrier Taping		4000 pcs./reel
EZASTB/SSB			
EZANT			

● Carrier Tape

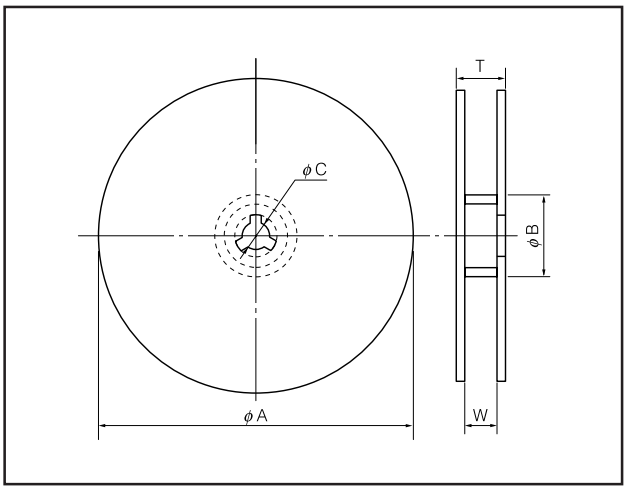
(Unit : mm)



Type	A	B	W	F	E	P_1	P_2	P_0	ϕD_0	T	ϕD_1
EZADT	$2.00^{\pm0.20}$	$3.60^{\pm0.20}$	$8.00^{\pm0.20}$	$3.50^{\pm0.05}$	$1.75^{\pm0.10}$	$4.00^{\pm0.10}$	$2.00^{\pm0.05}$	$4.00^{\pm0.10}$	$1.50^{+0.10}_{-0}$	$0.84^{\pm0.10}$	–
EZAST/SS	$2.50^{\pm0.20}$	$4.40^{\pm0.20}$	$12.00^{\pm0.30}$	$5.50^{\pm0.20}$	$1.75^{\pm0.20}$					$1.15^{\pm0.20}$	$1.50^{+0.10}_{-0}$
EZASTB/SSB											
EZANT	$3.50^{\pm0.20}$	$6.80^{\pm0.20}$								$1.30^{\pm0.20}$	

● Taping Reel

(Unit : mm)



Type	φA	φB	φC	W	T
EZADT	$180.0^{+0}_{-3.0}$	60 min.	$13.0^{\pm1.0}$	$9.0^{\pm1.0}$	$11.4^{\pm1.0}$
EZAST/SS				$13.0^{\pm1.0}$	$15.4^{\pm2.0}$
EZASTB/SSB					
EZANT					

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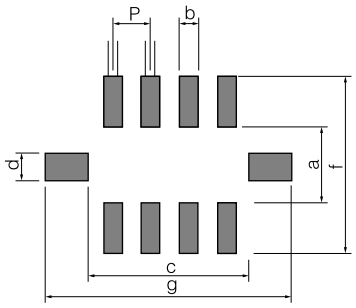
■ Recommended Land Pattern Design

●EZADT

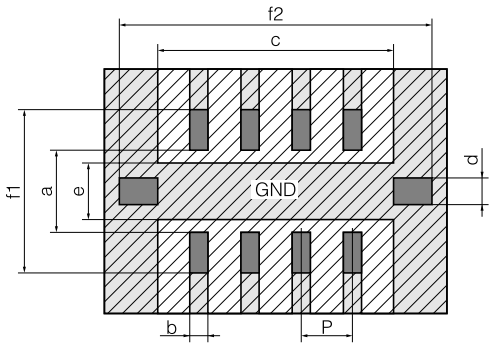


Land pattern

	a	b	c	d
Dimensions (mm)	0.9 to 1.1	0.2 to 0.3	2.6 to 2.8	0.3 to 0.4

	f	g	P
Dimensions (mm)	2.0 to 2.6	3.6 to 4.2	0.635

●EZAST/SS



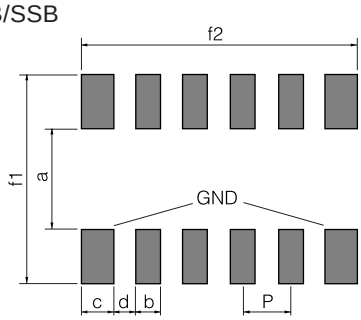
Solder resistant

Land pattern

	a	b	c	d
Dimensions (mm)	1.2 to 1.4	0.4	3.1 to 3.3	0.4 to 0.5

	e	f1	f2	P
Dimensions (mm)	0.8	2.9 to 3.3	4.8 to 5.2	0.8

●EZASTB/SSB

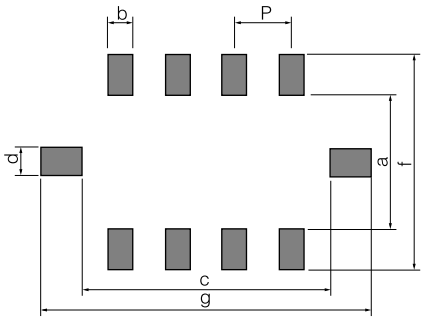


Land pattern

	a	b	c	d
Dimensions (mm)	1.4 to 1.6	0.35	0.45	0.3

	f1	f2	P
Dimensions (mm)	2.7 to 3.5	3.8	0.65

●EZANT



Land pattern

	a	b	c	d
Dimensions (mm)	2.3 to 2.5	0.4 to 0.6	5.6 to 5.8	0.4 to 0.8

	f	g	P
Dimensions (mm)	4.3 to 4.7	7.6 to 8.0	1.27

- Design to make GND pattern as large as possible, because high frequency noise is removed from GND terminals of chip RC network.

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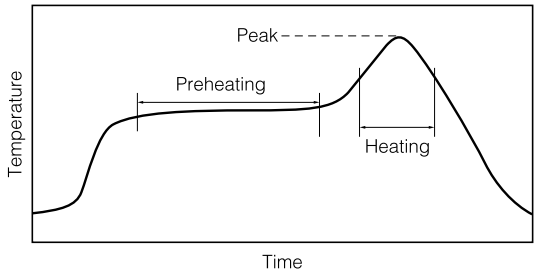
■ Recommended Soldering Conditions

Recommendations and precautions are described 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 to120 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

This product has circuits on both sides. Do not use adhesives, because we are afraid that characteristics is impaired by adhesives.

● Flow Soldering

We can not recommend the flow soldering to the product, because we are afraid that solder bridge may happen owing to narrow pitch of it's terminals and the characteristic of the product may be badly affected when using adhesive to fix it on circuit board.

⚠Cautions for Safety

The following are precautions for individual products. Please also refer to the precautions common to CR Combinations, Fuses, and Sensors shown on page EX3 of this catalog.

1. Take measures against mechanical stress during and after mounting of Chip RC Networks (hereafter called the RC Networks) so as not to damage their electrodes and protective coatings.
   Be careful not to misplace the RC Networks on the land patterns. Otherwise, solder bridges may be caused.
2. Do not use halogen-based or other high-activity flux. Otherwise, the residue may impair the RC Networks' performance and/or reliability.
3. Perform sufficient preheating so that the difference of the solder temperature and the RC Networks chip surface temperature becomes 100 °C or less. Maintain the temperature difference within 100 °C during rapid cooling by immersion into solvent after soldering.
4. When soldering with a soldering iron, never touch the RC Networks' bodies with the tip of the soldering iron. When using a soldering iron with a high temperature tip, finish the soldering as quickly as possible (within three seconds at 350 °C max.).
5. As the amount of applied solder becomes larger, the mechanical stress applied to the RC Networks increases, causing problems such as cracks and faulty characteristics. Avoid applying an excessive amount of solder.
6. Do not apply a shock to the RC Networks or pinch them with a hard tool (e.g. pliers and tweezers). Otherwise, the RC Networks' protective coatings and bodies may be chipped, affecting their performance.
7. Avoid excessive bend of printed circuit boards in order to protect the RC Networks from abnormal stress.
8. The static capacitance may decrease by a few percent from the time of shipment due to the characteristics peculiar to dielectric materials having a high dielectric constant.

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Should a safety concern arise regarding this product, please be sure to contact us immediately.

⚠Caution for Safety (Common precautions for CR Combinations, Fuses, and Sensors)

- When using our products, no matter what sort of equipment they might be used for, be sure to make a written agreement on the specifications with us in advance. The design and specifications in this catalog are subject to change without prior notice.
- Do not use the products beyond the specifications described in this catalog.
- This catalog explains the quality and performance of the products as individual components. Before use, check and evaluate their operations when installed in your products.
- Install the following systems for a failsafe design to ensure safety if these products are to be used in equipment where a defect in these products may cause the loss of human life or other significant damage, such as damage to vehicles (automobile, train, vessel), traffic lights, medical equipment, aerospace equipment, electric heating appliances, combustion/gas equipment, rotating equipment, and disaster/crime prevention equipment.

✻Systems equipped with a protection circuit and a protection device
✻Systems equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault

(1) Precautions for use

- These products are designed and manufactured for general purpose and standard use in general electronic equipment (e.g. AV equipment, home electric appliances, office equipment, information and communication equipment)
- These products are not intended for use in the following special conditions. Before using the products, carefully check the effects on their quality and performance, and determine whether or not they can be used.
  1. In liquid, such as water, oil, chemicals, or organic solvent
  2. In direct sunlight, outdoors, or in dust
  3. In salty air or air with a high concentration of corrosive gas, such as Cl_2, H_2S, NH_3, SO_2, or NO_2
  4. In an environment where strong static electricity or electromagnetic waves exist
  5. In an environment where these products cause dew condensation
  6. Sealing or coating of these products or a printed circuit board on which these products are mounted, with resin or other materials
- These products generate Joule heat when energized. Carefully position these products so that their heat will not affect the other components.
- Carefully position these products so that their temperatures will not exceed the category temperature range due to the effects of neighboring heat-generating components. Do not mount or place heat-generating components or inflammables, such as vinyl-coated wires, near these products (except Thermal Cutoffs).
- Note that non-cleaning solder, halogen-based highly active flux, or water-soluble flux may deteriorate the performance or reliability of the products.
- Carefully select a flux cleaning agent for use after soldering. An unsuitable agent may deteriorate the performance or reliability. In particular, when using water or a water-soluble cleaning agent, be careful not to leave water residues. Otherwise, the insulation performance may be deteriorated.

(2) Precautions for storage

The performance of these products, including the solderability, is guaranteed for a year from the date of arrival at your company, provided that they remain packed as they were when delivered and stored at a temperature of 5 °C to 35 °C and a relative humidity of 45 % to 85 %.
The performance of Combinations(EMI Filters) is guaranteed for 6 months or a year from the outgoing inspection date indicated on the packages, provided that they are stored at a temperature of -5 °C to +40 °C and a relative humidity of 40 % to 60 %. Check the guarantee period in the specifications. The performance of Thermal Cutoffs is guaranteed for a year from the outgoing inspection date indicated on the packages, provided that they are stored at a temperature of -10 °C to +40 °C and a relative humidity of 30 % to 75 %.

Even within the above guarantee periods, do not store these products in the following conditions. Otherwise, their electrical performance and/or solderability may be deteriorated, and the packaging materials (e.g. taping materials) may be deformed or deteriorated, resulting in mounting failures.
1. In salty air or in air with a high concentration of corrosive gas, such as Cl_2, H_2S, NH_3, SO_2, or NO_2
2. In direct sunlight

<Package markings>
Package markings include the product number, quantity, and country of origin.
In principle, the country of origin should be indicated in English.