Metal Film Chip Resistors, Rectangular Type 0603, 0805, 1210

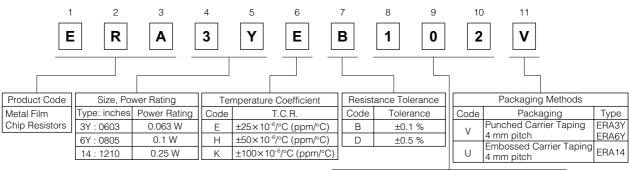
Type: ERA 3Y, 6Y, 14



Features

- Small size and lightweight
- High reliability
 Low T.C.R. & current noise, excellent non-linearity
- Suitable for both reflow and flow soldering
- Reference Standards
 IEC 60115-8, JIS C 5201-8, EIAJ RC-2133A

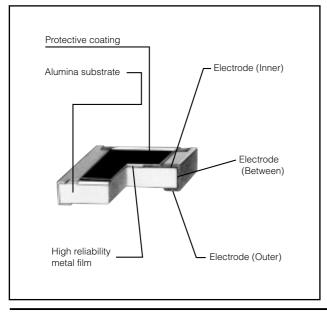
■ Explanation of Part Numbers



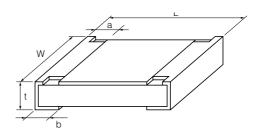
Resistance Value

The first two digits are significant figures of resistance and the third one denotes number of zeros following.

■ Construction



■ Dimensions in mm (not to scale)



Туре		Mass (Weight)				
(inches)	L	W	а	b	t	[g/1000 pcs.]
ERA3Y (0603)	1.60 ^{±0.20}	0.80 ^{±0.20}	0.30 ^{±0.20}	0.30 ^{±0.20}	0.45 ^{±0.10}	2
ERA6Y (0805)	2.00 ^{±0.20}	1.25 ^{±0.10}	0.40 ^{±0.25}	0.40 ^{±0.25}	0.50 ^{±0.10}	4
ERA14 (1210)	3.20 ^{±0.20}	2.50 ^{±0.20}	0.50 ^{±0.20}	0.50 ^{±0.20}	0.60 ^{±0.10}	16

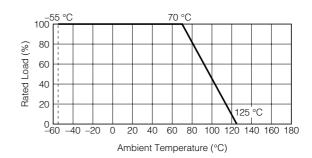
■ Ratings

Type (inches)	Power Rating at 70 °C (W)	Limiting Element Voltage (Maximum RCWV) ⁽¹⁾ (V)	Maximum Overload Voltage ⁽²⁾ (V)	Resistance Tolerance (%)	Resistance Range ⁽³⁾ (Ω)	T.C.R. [×10 ⁻⁶ /°C (ppm/°C)]	Category Temperature Range (Operating Temperature Range) (°C)
ERA3Y (0603)	0.063	75	150	±0.5	10 to 91 (E24) 100 to 33 k (E24) 36 k to 330 k (E24)	± 50 ± 25 ±100	
				±0.1	100 to 33 k (E24) 10 to 91 (E24)	± 25 ± 50	
ERA6Y (0805)	0.1	100	200	±0.5	100 to 100 k (E24) 110 k to 1 M (E24)	± 25 ± 100	-55 to +125
				±0.1	100 to 100 k (E24)	± 25	
ERA14				±0.5	10 to 91 (E24)	± 50	
(1210)	0.25	150	300		100 to 200 k (E24)	± 25	
				±0.1	100 to 200 k (E24)	± 25	

⁽¹⁾ Rated Continuous Working Voltage (RCWV) shall be determined from RCWV=VRated Power × Resistance Values, or Limiting Element Voltage

Power Derating Curve

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

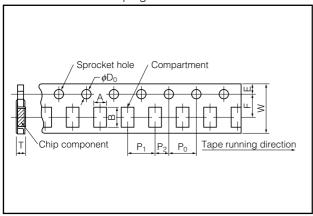


■ Packaging Methods (Taping)

Standard Quantity

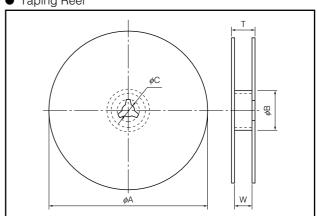
Туре	Kind of Taping	Pitch (P ₁)	Quantity	
ERA3Y	Dunahad Carrier Taning	4 mm	5000 pag /rool	
ERA6Y	Punched Carrier Taping	4 mm	5000 pcs./reel	
ERA14	Embossed Carrier Taping	4 mm	5000 pcs./reel	

Punched Carrier Taping



	Туре	Α	В	W	F	Е
Dimensions	3Y	1.10 ^{±0.10}	1.90 ^{±0.10}			
(mm)	6Y	1.65 ^{±0.15}	$2.50^{\pm0.20}$	8.00 ^{±0.20}	$3.50^{\pm0.05}$	1.75 ^{±0.10}
	14	2.80 ^{±020}	$3.50^{\pm0.20}$			
	Type	l P₁	P_2	P ₀	\ \ \	т
	турс	11	1.2	1 0	ϕD_0	
Dimensions		1 1	1 2	10	-	0.70 ^{±0.05}
Dimensions (mm)				-	-	

Taping Reel



	Type	ϕ A	ϕ B	φC
Dimensions	3Y			
(mm)	6Y	180.0 +0 -3.0	60 min.	13.0 ^{±1.0}
	14			
	Туре	W	T	
Dimensions	3Y			
(mm)	6Y	9.0 ^{±1.0}	11.4 ^{±1.0}	
	14			

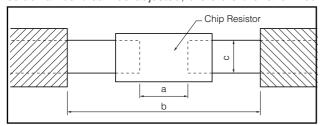
⁽max. RCWV) listed above, whichever less.

Overload (Short-time Overload) Test Voltage (SOTV) shall be determined from SOTV=2.5 × Power Rating or max. Overload Voltage listed above whichever less.

⁽³⁾ E96 series resistance values are also available. Please contact us for details. Part Number of E96 series is shown ERA3E. , ERA6E.

■ Recommended Land Pattern

In case of flow soldering, the land width must be smaller than the Chip Resistor width to properly control the solder amount properly. Generally, the land width should be 0.7 to 0.8 times (W) of the width of chip resistor. In case of reflow soldering, solder amount can be adjusted, therefore the land width should be set to 1.0 to 1.3 times chip resistor width (W).

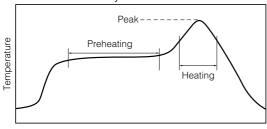


Type	Di	imensions (mm)		
(inches)	а	b	С	
ERA3Y (0603)	0.7 to 0.9	2 to 2.2	0.8 to 1	
ERA6Y (0805)	1 to 1.4	3.2 to 3.8	0.9 to 1.4	
ERA14 (1210)	2 to 2.4	4.4 to 5.0	1.8 to 2.8	

Recommended Soldering Conditions

Recommendations and precautions are described below.

- Recommended soldering conditions for reflow
- · Reflow soldering shall be performed a maximum of
- · 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.



Time

Recommended soldering conditions for flow

For soldering	(Exampl	e : 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				

<u> </u>						
	For so	ldering	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		

The following are precautions for individual products. Please also refer to the precautions common to Fixed Resistors shown on page ER3 of this catalog.

- 1. Keep the rated power and ambient temperature within the specified derating curve.
 - When positioning and mounting Metal Film Chip Resistors (hereafter called the resistors), make allowance for the effect of heat generated through close contact between the resistors and neighboring components and for the temperature rise of adjacent heat-generating components.
- 2. If a transient load (heavy load in a short time) like a pulse is expected to be applied, check and evaluate the operations of the resistors when installed in your products before use.
 - When applying pulses to the resistors, keep the pulse peak within the rated voltage.
- 3. Do not use halogen-based or other high-activity flux. Otherwise, the residue may impair the resistors' performance and/or reliability.
- 4. When soldering with a soldering iron, never touch the resistors' bodies with the tip of the soldering iron. When using a soldering iron with a high temperature tip, finish 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 resistors increases, causing problems such as cracks and faulty characteristics. Avoid applying an excessive amount of solder.
- 6. When the resistors' protective coatings are chipped, flawed, or removed, the characteristics of the resistors may be impaired. Take special care not to apply mechanical shock during automatic mounting or cause damage during handling of the boards with the resistors mounted.
- 7. Do not apply shock to the resistors or pinch them with a hard tool (e.g. pliers and tweezers). Otherwise, the resistors' protective coatings and bodies may be chipped, affecting their performance.
- 8. Avoid excessive bending of printed circuit boards in order to protect the resistors from abnormal stress.
- 9. Do not immerse the resistors in solvent for a long time. Before using solvent, carefully check the effects of immersion.

Panasonic

(Common precautions for Fixed Resistors)

- 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 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 Cl2, H2S, NH3, SO2, or NO2
 - 4. Electric Static Discharge (ESD) Environment

These components are sensitive to static electricity and can be damaged under static shock (ESD).

Please take measures to avoid any of these environments.

Smaller components are more sensitive to ESD environment.

5. Electromagnetic Environment

Avoid any environment where strong electromagnetic waves exist.

- 6. In an environment where these products cause dew condensation
- 7. 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.
- 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 %.

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 Cl₂, H₂S, NH₃, SO₂, or NO₂
- 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.

Mouser Electronics

Authorized Distributor

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ERA-6YED473V ERA-3YEB104V ERA-3YEB101V ERA-3YEB102V ERA-3YEB103V ERA-3YEB111V ERA-3YEB112V ERA-3YEB113V ERA-3YEB121V ERA-3YEB122V ERA-3YEB123V ERA-3YEB131V ERA-3YEB132V ERA-3YEB133V ERA-3YEB151V ERA-3YEB152V ERA-3YEB153V ERA-3YEB161V ERA-3YEB162V ERA-3YEB163V ERA-3YEB181V ERA-3YEB182V ERA-3YEB183V ERA-3YEB201V ERA-3YEB202V ERA-3YEB203V ERA-3YEB221V ERA-3YEB222V ERA-3YEB223V ERA-3YEB241V ERA-3YEB242V ERA-3YEB243V ERA-3YEB271V ERA-3YEB272V ERA-3YEB273V ERA-3YEB301V ERA-3YEB302V ERA-3YEB303V ERA-3YEB331V ERA-3YEB332V ERA-3YEB333V ERA-3YEB361V ERA-3YEB362V ERA-3YEB391V ERA-3YEB392V ERA-3YEB431V ERA-3YEB432V ERA-3YEB471V ERA-3YEB472V ERA-3YEB511V ERA-3YEB512V ERA-3YEB561V ERA-3YEB562V ERA-3YEB621V ERA-3YEB622V ERA-3YEB681V ERA-3YEB682V ERA-3YEB751V ERA-3YEB752V ERA-3YEB821V ERA-3YEB822V ERA-3YEB911V ERA-3YEB912V ERA-3YED103V ERA-3YED302V ERA-3YED303V ERA-6YEB101V ERA-6YEB102V ERA-6YEB103V ERA-6YEB104V ERA-6YEB111V ERA-6YEB112V ERA-6YEB113V ERA-6YEB121V ERA-6YEB122V ERA-6YEB123V ERA-6YEB131V ERA-6YEB132V ERA-6YEB133V ERA-6YEB151V ERA-6YEB152V ERA-6YEB153V ERA-6YEB161V ERA-6YEB162V ERA-6YEB163V ERA-6YEB181V ERA-6YEB182V ERA-6YEB183V ERA-6YEB201V ERA-6YEB202V ERA-6YEB203V ERA-6YEB221V ERA-6YEB222V ERA-6YEB223V ERA-6YEB241V ERA-6YEB242V ERA-6YEB243V ERA-6YEB271V ERA-6YEB272V ERA-6YEB273V