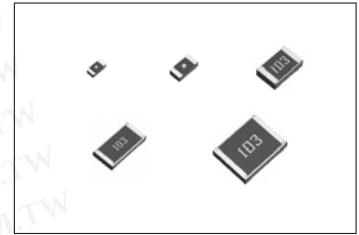


●Features

- 1) Exclusive resistive element pattern and laser trimming technology results in significantly improved surge resistance characteristics.
- 2) 2kV to 5kV electrostatic discharge resistance.
- 3) Superior power ratings.
- 4) ROHM resistors have obtained ISO9001 / ISO / TS16949 certification.



●Products List

Part No.	Size		Rated Power (70°C) (W)	Limiting Element Voltage (V)	Temperature Coefficient (ppm / °C)	Resistance Tolerance (%)	Resistance Range	Operating Temperature Range (°C)	Automotive Grade Available (AEC-Q200)
	(mm)	(inch)							
ESR01	1005	0402	0.2	50	+500 / -250 ±200	J(±5%)	1Ω to 9.1Ω (E24 Series) 10Ω to 10MΩ (E24 Series)	-55 to +155	YES
					±100	F(±1%)	10Ω to 976kΩ (E24,96 Series) 1MΩ to 2.2MΩ (E24 Series)		
ESR03	1608	0603	0.25	150	±200	J(±5%)	1Ω to 10MΩ (E24 Series)		YES
					±200 ±100	F(±1%)	1Ω to 9.76Ω (E24,96 Series) 10Ω to 10MΩ (E24,96 Series)		
					±100	D(±0.5%)	10Ω to 1MΩ (E24,96 Series)		
ESR10	2012	0805	0.4	150	±200	J(±5%)	1Ω to 30MΩ (E24 Series)		YES
					±100	F(±1%)	1Ω to 10MΩ (E24,96 Series)		
					±100	D(±0.5%)	10Ω to 1MΩ (E24,96 Series)		
ESR18	3216	1206	0.33 ^{*1}	200	±200	J(±5%)	1Ω to 15MΩ (E24 Series)		YES
					±100	F(±1%)	1Ω to 10MΩ (E24,96 Series)		
					±100	D(±0.5%)	10Ω to 1MΩ (E24,96 Series)		
ESR25	3225	1210	0.5 ^{*1}	200	±200	J(±5%)	1Ω to 10MΩ (E24 Series)		YES
					±100	F(±1%)	1Ω to 10MΩ (E24,96 Series)		
					±100	D(±0.5%)	10Ω to 1MΩ (E24,96 Series)		

^{*1} Please contact us for the higher rated power.

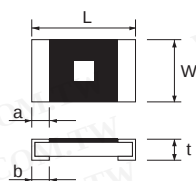
* E24 : Standard products, E96 : Custom products.

●Part Number Description

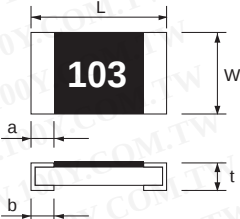
E S R	1 0	E Z P	J	1 0 0																														
Part No. ESR (Anti-surge chip resistors)	Size (mm [inch]) 01 (1005 [0402]) 03 (1608 [0603]) 10 (2012 [0805]) 18 (3216 [1206]) 25 (3225 [1210])	Packaging Specifications Code <table><tr><th>Part No.</th><th>Code</th><th>Packaging specifications</th><th>Quantity / Reel</th></tr><tr><td>ESR01</td><td>MZP</td><td>Paper tape (4mm Pitch)</td><td>10,000</td></tr><tr><td>ESR03</td><td>EZP</td><td>Paper tape (4mm Pitch)</td><td>5,000</td></tr><tr><td>ESR10</td><td>EZP</td><td>Paper tape (4mm Pitch)</td><td>5,000</td></tr><tr><td>ESR18</td><td>EZP</td><td>Paper tape (4mm Pitch)</td><td>5,000</td></tr><tr><td>ESR25</td><td>JZP</td><td>Embossed tape (4mm Pitch)</td><td>4,000</td></tr></table>	Part No.	Code	Packaging specifications	Quantity / Reel	ESR01	MZP	Paper tape (4mm Pitch)	10,000	ESR03	EZP	Paper tape (4mm Pitch)	5,000	ESR10	EZP	Paper tape (4mm Pitch)	5,000	ESR18	EZP	Paper tape (4mm Pitch)	5,000	ESR25	JZP	Embossed tape (4mm Pitch)	4,000	Resistance Tolerance D (±0.5%) F (±1%) J (±5%)	Nominal Resistance Resistance code, 3 or 4 digits. 000 denotes jumper type. <table><tr><th>Resistance tolerance</th><th>Resistance code</th></tr><tr><td>D,F</td><td>: 4 digits</td></tr><tr><td>J</td><td>: 3 digits</td></tr></table> Ex.) 1Ω = 1R00 (±1%) 1R0 (±5%) 10 Ω = 10R0 (±0.5%, ±1%) 100 (±5%) 1M Ω = 1004 (±0.5%, ±1%) 105 (±5%)	Resistance tolerance	Resistance code	D,F	: 4 digits	J	: 3 digits
Part No.	Code	Packaging specifications	Quantity / Reel																															
ESR01	MZP	Paper tape (4mm Pitch)	10,000																															
ESR03	EZP	Paper tape (4mm Pitch)	5,000																															
ESR10	EZP	Paper tape (4mm Pitch)	5,000																															
ESR18	EZP	Paper tape (4mm Pitch)	5,000																															
ESR25	JZP	Embossed tape (4mm Pitch)	4,000																															
Resistance tolerance	Resistance code																																	
D,F	: 4 digits																																	
J	: 3 digits																																	

●Chip Resistor Dimensions and Markings

■ ESR01 / 03



■ ESR10 / 18 / 25



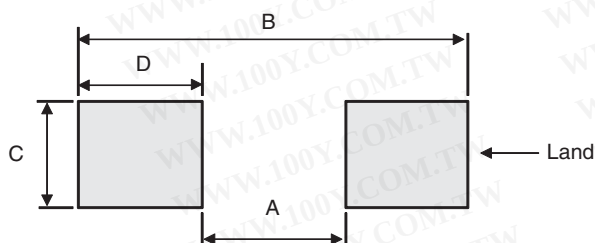
<Marking method>

There are three or four digits used for the calculation number according to IEC code and "R" is used for the decimal point.

(Unit : mm)								
Part No.	(mm)	(inch)	L	W	t	a	b	Marking existence
ESR01	1005	0402	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	0.25 ^{+0.05} _{-0.1}	No *
ESR03	1608	0603	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2	No *
ESR10	2012	0805	2.0±0.1	1.25±0.1	0.55±0.1	0.3±0.2	0.4±0.2	Yes
ESR18	3216	1206	3.2±0.15	1.6±0.15	0.55±0.1	0.3±0.25	0.5±0.25	Yes
ESR25	3225	1210	3.2±0.15	2.5±0.15	0.55±0.1	0.3±0.25	0.5±0.25	Yes

*Only with square mark

●Land pattern Example

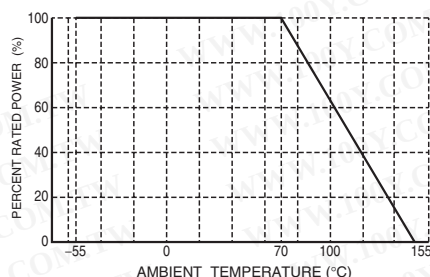


(Unit : mm)				
Part No.	A	B	C	D
ESR01	0.5	1.3	0.5	0.4
ESR03	1.0	2.0	0.8	0.5
ESR10	1.2	2.6	1.15	0.7
ESR18	2.2	4.0	1.5	0.9
ESR25	2.2	4.0	2.3	0.9

●Derating Curve

When the ambient temperature exceeds 70°C, power dissipation must be adjusted according to the derating curves below.

■ ESR01 / 03 / 10 / 18 / 25



●Characteristics

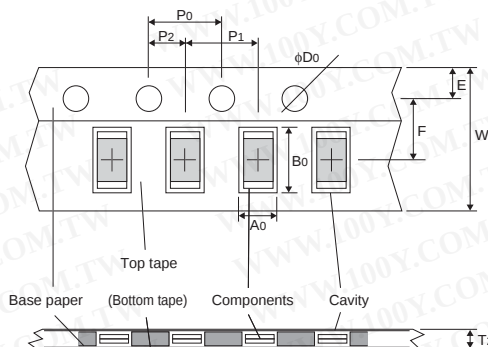
Test Items	Guaranteed Value	Test Conditions
	Resistor Type	
Resistance	See P.1	20°C
Variation of resistance with temperature	See P.1	Measurement : +20 / -55 / +20 / +125°C
Overload	$\pm (2.0\%+0.1\Omega)$	Test voltage is the smaller one of ① or ② ① Rated voltage (current) $\times 2.5$ (ESR03/10/18/25), 2s. $\times 2$ (ESR01), 2s. ② Maximum overload voltage ※
Solderability	A new uniform coating of minimum of 95% of the surface being immersed and no soldering damage.	Rosin·Ethanol : 25% (Weight) Soldering condition : 235±5°C Duration of immersion : 2.0±0.5s
Resistance to soldering heat	$\pm (1.0\%+0.05\Omega)$ No remarkable abnormality on the appearance.	Soldering condition : 260±5°C Duration of immersion : 10±1s
Rapid change of temperature	$\pm (1.0\%+0.05\Omega)$	Test temp. : -55°C to +125°C 5cycle
Damp heat, steady state	$\pm (3.0\%+0.1\Omega)$	40°C, 93%RH (Relative Humidity) Test time : 1,000h to 1,048h
Endurance at 70°C	$\pm (3.0\%+0.1\Omega)$	70°C Rated voltage (current) 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h
Endurance	$\pm (3.0\%+0.1\Omega)$	155°C Test time : 1,000h to 1,048h
Resistance to solvent	$\pm (1.0\%+0.05\Omega)$	23±5°C, Immersion cleaning, 5±0.5min Solvent : 2-propanol
Bend strength of the end face plating	$\pm (1.0\%+0.05\Omega)$ Without mechanical damage such as breaks.	—
Static electric characteristics	$\pm (5.0\%+0.05\Omega)$	EIAJ ED-4701 / 300 TEST METHOD304 Voltage : 2kV (ESR01) 3kV (ESR03 / 10 / 18) 5kV (ESR25) C : 100pF R : 1.5kΩ Apply cycle : 1time

※ Maximum overload voltage (Test voltage)

ESR01	ESR03	ESR10	ESR18	ESR25
100V	200V	200V	400V	400V

Compliance Standard(s) : IEC60115-8
JISC 5201-8

■ Paper Tape

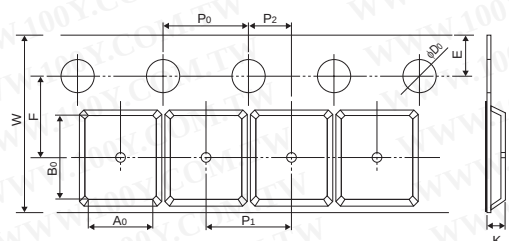


(Unit : mm)

Part No.	W	F	E	A0	B0
ESR01	8.0±0.3	3.5±0.05	1.75±0.1	0.7±0.1	1.2±0.1
ESR03	8.0±0.3	3.5±0.05	1.75±0.1	1.1±0.1	1.9±0.1
ESR10	8.0±0.3	3.5±0.05	1.75±0.1	1.65 ^{+0.2} _{-0.1}	2.4 ^{+0.2} _{-0.1}
ESR18	8.0±0.3	3.5±0.05	1.75±0.1	1.95 ^{+0.1} _{-0.05}	3.5 ^{+0.15} _{-0.05}

Part No.	D0	P0	P1	P2	T2
ESR01	ϕ1.5 ^{+0.1} ₀	4.0±0.1	2.0±0.05	2.0±0.05	Max 1.1
ESR03	ϕ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
ESR10	ϕ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
ESR18	ϕ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1

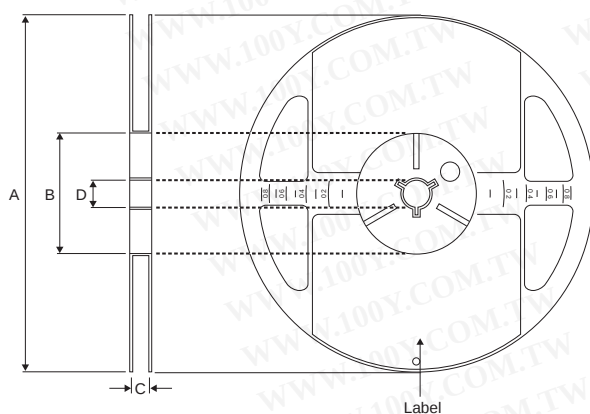
■ Embossed Tape



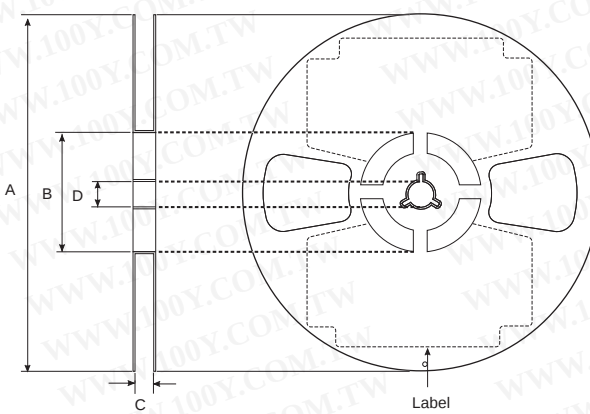
(Unit : mm)

Part No.	W	F	E	A0	B0
ESR25	8.0±0.3	3.5±0.05	1.75±0.1	3.0±0.1	3.5±0.1
	D0	P0	P1	P2	K
	ϕ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1

● Reel Dimensions



ACCORDING TO EIAJ ET-7200B



ACCORDING TO EIAJ ET-7200B (RRV)

(Unit : mm)

Part No.	A	B	C	D
ESR01	ϕ180 ⁰ _{-1.5}	ϕ60 ^{+1.0} ₀	9 ^{+1.0} ₀	ϕ13±0.2
ESR03				
ESR10				
ESR18				
ESR25				