Cyntec

Current Sensing Resistor

VSRP0612W1 Series Current Sensing Resistor (Lead / Halogen Free)

Features / Applications :

- High power rating is up to 1W
- Low TCR ($\pm 100 \text{ ppm/}^{\circ}\text{C}$)
- Current sensing resistor for power supplies, motor circuits, etc.
- RoHS compliant & AEC-Q200 qualified
- Suitable for reflow soldering
- Excellent heat dissipation by wide terminal type



Electrical Specifications :

Characteristics	Feature			
Power Rating*	1 W			
Resistance Range	$0.01\Omega{\sim}0.03\Omega$	0.031Ω~0.05Ω	0.051 $\Omega{\sim}1\Omega$	
Temperature Coefficient of Resistance(ppm/°C)	±100	±150	±100	
Resistance Tolerance	±1%(F), ±2%(G), ±5%(J)			
Operation Temperature Range	-55℃ ~ +155℃			

*Note :

For sensor operated at ambient temperature in excess of 70°C, the maximum load shall be derated in accordance with the following curve.



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Outline Drawing :



Type Designation :

VSRP	0612	W	1	-			
(1)	(2)	(3)	(4)	-	(5)	(6)	
Note	:						
(1) S	eries No.						
(2) Size							
(3) T	erminal t	ype : W	/ = W	/ide	terminal		

- (4) Power Rating : 1 = 1W
- (5) Resistance value:

The "R" shall be used as a decimal point, For example --

 $R010 = 0.01\Omega;$

(6) Tolerance (%)

F=±1%, G=±2%, J=±5%

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Characteristics :

Electrical

ltem	Specification and Requirement	Test Method	
Temperature	As electrical specifications	JIS-C-5201	
Coefficient of		+25°C/ +125°C.	
Resistance (TCR)			
Short Time Overload	△R: ± 0.5%	JIS-C-5201-1 4.13	
	Without damage by flashover, spark,	2.5 x rated power for 5 seconds.	
	arcing, burning or breakdown		
Insulation Resistance	Over 100 M Ω on Overcoat layer face up	JIS-C-5201-1 4.6	
	Over 1,000 M Ω on Substrate side face up	$100V_{DC}$ for 60 +10/-0 seconds.	
Voltage Proof	△R: ± 1.0%	JIS-C-5201-1 4.7	
	Without damage by flashover, spark,	400V _{AC} (rms.) for 60 +10/-0 seconds.	
	arcing, burning or breakdown		
ESD	△R: ± 1.0%	AEC-Q200-002	
		Human body, 3KV.	

Mechanical

ltem	Specification and Requirement	Test Method	
Solderability	The surface of terminal immersed shall be	JIS-C-5201-1 4.17	
	minimum of 95% covered with a new	245 \pm 5°C for 3 \pm 0.5 seconds.	
	coating of solder		
Resistance to Solder	△R: ± 1.0%	JIS-C-5201-1 4.18	
Heat	Without distinct deformation in	$260 \pm 5^{\circ}C$ for 10 ± 1 seconds.	
	appearance		
Bending Test	△R: ± 1.0%	AEC-Q200-005	
	Without mechanical damage such as	Bending value: 2 mm for 60 ± 1	
	break	seconds.	
Resistance to solvent	Without mechanical and distinct damage	MIL-STD-202 Method 215	
	in appearance	Add Aqueous wash chemical- OKEM	
		Clean or equivalent.	
		Do not use banned solvents.	



Item	Specification and Requirement	Test Method	
Vibration	$\triangle R: \pm 0.5\%$	MIL-STD-202 Method 204	
	such as break	orientations. Test from 10-2000Hz.	
Mechanical Shock	 △R: ± 0.5% Without mechanical damage such as break 	MIL-STD-202 Method 213 100g's peak value, 6ms, Half-sine waveform, 12.3ft/sec.	
Terminal Strength (SMD)	No visible damage	JIS-C-5201-1 Force of 1.8Kg for 60 seconds.	

Endurance

ltem	Specification and Requirement	Test Method	
Temperature Cycling	△R: ± 1.0%	MIL-STD-002 Method 107	
	Without distinct damage in appearance	1000 cycles, (-55°C~125°C)	
		30min maximum dwell time at each	
		temperature.	
Biased Humidity	△R: ± 1.0%	MIL-STD-202 Method 103	
		1000 hours, 85°C/85%R.H,	
		applied for 10% rated power	
		Measurement at 24 ± 4 hours after test	
		conclusion.	
Damp heat,	△R: ± 1.0%	IEC 60068-2	
steady state		(40 ± 2) °C; (93 ± 3) % RH;56 days.	
Load Life	△R: ± 2.0%	MIL-STD-202 Method 108	
	Without distinct	70°C, applied for 100% rated power	
	damage in appearance	1.5 Hour ON, 0.5 Hour OFF For total	
		1000 hours.	
High Temperature	△R: ± 1.0%	MIL-STD-202 Method 108	
Store	Without distinct	155°C for total 1,000 hours.	
	damage in appearance		

Note : Measurement at 24 ± 4 hours after test conclusion for all reliability tests-parts.



Recommend Land Pattern Dimensions :



Size	W	L	D	t
	(mm)	(mm)	(mm)	(mm)
1632W	3.30	2.80	1.10	0.105

t: Copper toil minimum thickness of PCB

Packaging :

Tape packaging dimensions



Remark: Leader tape length≧30 cm(150 Hollow carrier cavity)

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Reel dimensions



Numbers of Taping : 4,000 pieces /reel

The following items shall be marked on the reel.

- (1) Type designation.
- (2) Quantity
- (3) Manufacturing date code
- (4) Manufacturer's name

Peel force of top cover tape

The peel speed shall be about 300 mm/min. The peel force of top cover tape shall be between 0.1 to 0.7 N.



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Care Note :

Care note for storage

- (1) Chip resistor shall be stored in a room where temperature and humidity must be controlled. (temperature 5 to 35° C, humidity 45 to 85% RH) However, a humidity keep it low, as it is possible.
- (2) Chip resistor shall be stored as direct sunshine doesn't hit on it.
- (3) Chip resistor shall be stored with no moisture, dust, a material that will make solderability inferior, and a harmful gas (Chloridation hydrogen, sulfurous acid gas, and sulfuration hydrogen).

Care note for operating and handling

- (1) It is necessary to protect the edge and protection coat of resistors from mechanical stress.
- (2) Handle with care when printing circuit board (PCB) is divided or fixed on support body, because bending of printing circuit board (PCB) mounting will make mechanical stress for resistors.
- (3) Resistors shall be used with in rated range shown in specification. Especially, if voltage more than specified value will be loaded to resistor, there is a case it will make damage for machine because of temperature rise depending on generating of heat, and increase resistance value or breaks.
- (4) In case that resistor is loaded a rated voltage, it is necessary to confirms temperature of a resistor and to reduce a load power according to load reduction curve, because a temperature rise of a resistor depends on influence of heat from mounting density and neighboring element.
- (5) Observe Limiting element voltage and maximum overload voltage specified in each specification
- (6) If there is possibility that a large voltage (pulse voltage, shock voltage) charge to resistor, it is necessary that operating condition shall be set up before use.