# Cyntec

## **Current Sensing Resistor**

### VSRP1206S1 Series Current Sensing Resistor (Lead / Halogen Free)

#### Features / Applications :

- High power rating is up to 1W
- Current sensing resistor for power supplies, motor circuits, etc.
- RoHS compliant & AEC-Q200 qualified
- Suitable for reflow soldering



#### Electrical Specifications :

Characteristics	Feature	
Power Rating*	1 W	
Resistance Range	0.01 $\Omega{\sim}$ 0.015 $\Omega$	0.016 $\Omega{\sim}$ 1 $\Omega$
Temperature Coefficient of Resistance(ppm/°C)	±200	±100
Resistance Tolerance	±1%(F), ±2%(G), ±5%(J)	
Operation Temperature Range	-55°C $\sim$ +155°C	

\*Note :

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



DOCUMENT : VSRP1206S1



#### Outline Drawing :



#### Type Designation :

VSRP	1206	S	1 -		
(1)	(2)	(3)	(4) -	(5)	(6)

#### Note :

- (1) Series No.
- (2) Size
- (3) Terminal type : S = Short 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%

DOCUMENT : VSRP1206S1



#### Characteristics :

#### Electrical

Item	Specification and Requirement	Test Method
Temperature	As electrical specifications	JIS-C-5201
Coefficient of		Room temperature
Resistance (TCR)		Room temperature+100 $^\circ\!\mathrm{C}$
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 $\Omega$ on Overcoat layer face up	JIS-C-5201-1 4.6
	Over 1,000 M $\Omega$ 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 <sub>AC</sub> (rms.) for 60 +10/-0 seconds.
	arcing, burning or breakdown	
ESD	△R: ± 1.0%	AEC-Q200-002
		Human body, 3KV.

#### Mechanical

Item	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 $10 \pm 1$ 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	<ul> <li>△R: ± 0.5%</li> <li>Without mechanical damage</li> <li>such as break</li> </ul>	MIL-STD-202 Method 204 5g's for 20 minutes, 12 cycles each of 3 orientations. Test from 10-2000Hz.
Mechanical Shock	<ul> <li>△R: ± 0.5%</li> <li>Without mechanical damage</li> <li>such as break</li> </ul>	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

Item	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 $\pm$ 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  $24\pm4$  hours after test conclusion for all reliability tests-parts.



#### **Recommend Land Pattern Dimensions :**



t: Copper toil minimum thickness of PCB

#### Packaging :

#### Tape packaging dimensions



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

DOCUMENT : VSRP1206S1



#### **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.





#### 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  $35^{\circ}$ C, humidity 30 to 80% 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.