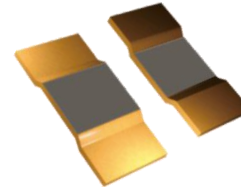


## Very Low TCR High-Precision Current Sense Resistor Surface Mount Metal Strip Power Resistors



Available  
**RoHS\***  
COMPLIANT



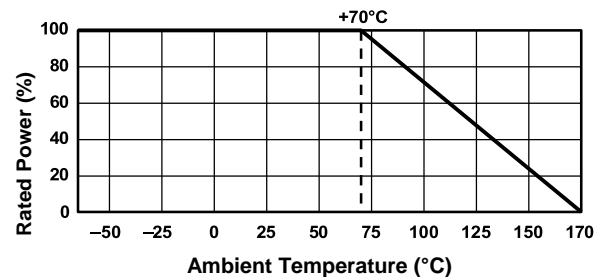
### FEATURES

- Temperature coefficient of resistance to  $\pm 25$  ppm/ $^{\circ}\text{C}$  max. (-55 $^{\circ}\text{C}$  to +170 $^{\circ}\text{C}$ , +20 $^{\circ}\text{C}$  Ref.)
- Power rating: to 4 W
- Resistance tolerance: to  $\pm 0.5\%$
- Resistance: 3 m $\Omega$
- Short time overload:  $\pm 0.5\%$  Max.
- Maximum current: up to 36 A
- AEC-Q200 qualified
- Proprietary processing techniques produce low resistance values and improved TCR
- Working Temperature -65 $^{\circ}\text{C}$  to +170 $^{\circ}\text{C}$
- Solderable terminations

### KEY APPLICATIONS

- Switching and linear power supplies
- Precision current-sensing
- Power management systems
- Automotive
- Power amplifiers
- Measurement instrumentation
- Precision instrumentation amplifiers
- Medical and automatic test equipment
- DC current sensing circuits
- Communication systems
- High current applications for the automotive market

**Figure 1 – Power Derating Curve**



**Table 1 – Specifications**

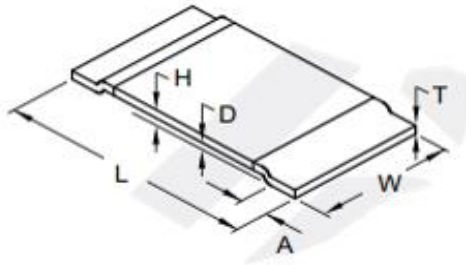
PARAMETER	CSM2512RLT
Resistance	3 m $\Omega$
Power Rating at 70 $^{\circ}\text{C}$	4 W (3 m $\Omega$ )
Maximum Current <sup>(1)</sup>	36 A
Tolerance	$\pm 0.5\%$ , $\pm 1\%$ , $\pm 5\%$
Temperature Coefficient Max. (-55 $^{\circ}\text{C}$ to +170 $^{\circ}\text{C}$ , +20 $^{\circ}\text{C}$ Ref.)	$\pm 25$ ppm/ $^{\circ}\text{C}$
Operating Temperature Range	-65 $^{\circ}\text{C}$ to +170 $^{\circ}\text{C}$
Maximum Working Voltage	(P x R) <sup>1/2</sup>

#### Notes

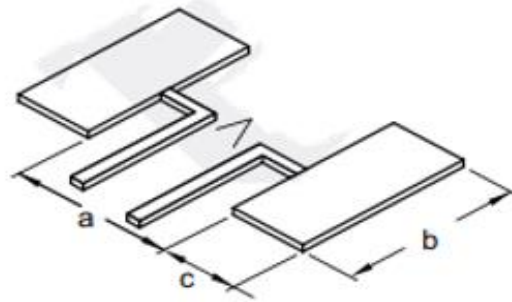
<sup>(1)</sup> Maximum current for a given resistance value is calculated using  $I = \sqrt{P/R}$

**Figure 2 – Mechanical Dimensions in millimeters**

**CSM2512RLT DIMENSIONS**



**CSM2512RLT LAND PATTERN**



**Dimensions in millimeters**

MODEL	RESISTANCE (mΩ)	L	A	W	D	T
CSM2512RLT	3	6.3 ± 0.2	1.0 ± 0.2	3.0 ± 0.2	0.35 ± 0.1	0.45 ± 0.1

**Land Pattern Dimensions in millimeters**

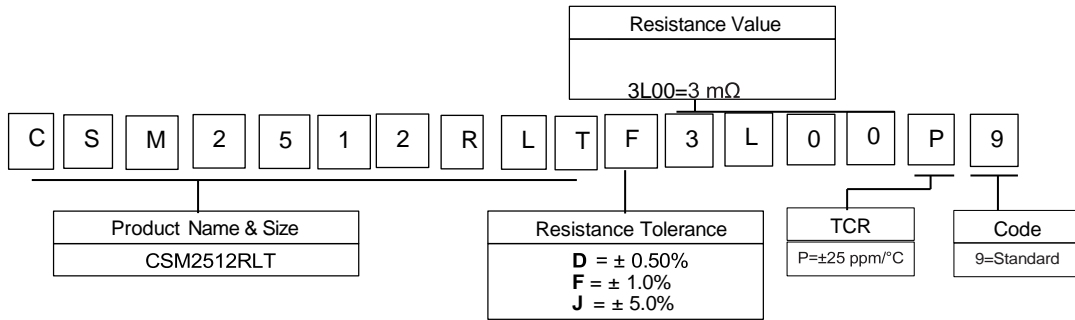
MODEL	RESISTANCE (mΩ)	a	c	b
CSM2512RLT	3	3.9 ± 0.25	1.8 ± 0.25	3.4 ± 0.25

**Table 2 - PERFORMANCE SPECIFICATIONS**

Test	Test Method	Standards	Typical	Max.
Thermal Shock	55°C~+125°C, 1000 cycles, measured 24±2h after test	JESD22 Method JA-104	ΔR≤±0.1%	ΔR≤±0.5%
Load Life	+70°C, 2000h, rated power, measured 24±2h after test	MIL-STD-202 Method 108	ΔR≤±0.5%	ΔR≤±1.0%
Resistance to Solvent	Immerse in solvent for 3 min and then wipe 10 times 3 cycles of 3 solvents, clean and dry at ambient temperature	MIL-STD-202 Method 215	Clear marking. No visible damage	
Mechanical shock	100g, 6ms, half-sine shock wave, 3 times/direction, 18 times measured 24±2h after test	MIL-STD-202 Method 107	ΔR≤±0.05%	ΔR≤±0.2%
Vibration	Frequency varied 10Hz to 2000Hz in 20 minutes, acceleration 5g X-Y-Z direction °C 12 cycles	MIL-STD-202 Method 204	ΔR≤±0.05%	ΔR≤±0.2%
Resistance to Solder Heat	+260, ±5°C, 10s±1s, measured 24±2h after test	MIL-STD-202 Method 210	ΔR≤±0.2%	ΔR≤±0.5%
Solderability	+235°C±5°C, 2s±0.5s	J-STD-202	No visible damage 95% minimum coverage	
TCR	-55°C and +170°C, +20°C Ref.	IEC 60115-1 4.8	Max. value ± 25ppm/°C	
Substrate Bending	2mm. Duration: 60s	AEC-Q200-005	ΔR≤±0.01%	ΔR≤±0.1%
Short time Overload	5x rated power for 5s, measured 24±2h after test	MIL-STD-202 Method 201	ΔR≤±0.1%	ΔR≤±0.5%
Low Temperature Storage	-65°C for 96h, measured 24±2h after test	IEC 60068-2-1	ΔR≤±0.1%	ΔR≤±0.5%
Moisture Resistance	T=24h/cycle, no load, 7a and 7b not required, measured 24±2h after test	MIL-STD-202 Method 106	ΔR≤±0.2%	ΔR≤±0.5%
High temp. & high humidity	+85°C, 85%RH, 10% of rated power, 1000h, measured 24±2h after test	MIL-STD-202 Method 103	ΔR≤±0.2%	ΔR≤±0.5%
Terminal strength	Force 17.7N, hold for 60s	AEC-Q200-006	ΔR≤±0.01%	ΔR≤±0.1%
Low temp. operation	-55°C, no load for 1h, rated voltage load for 45 min, no load for 15 min	IEC 60115-1 4.36	ΔR≤±0.2%	ΔR≤±0.5%

**Figure 3 –Part Number Information**

Example: CSM2512RLTF3L00P9 (CSM2512RLT  $\pm 1.0\%$  3 m $\Omega$   $\pm 2$  5ppm/ $^{\circ}$ C Standard)





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