

2 Terminals Current Sense Surface Mount Metal Strip Power Resistors

FEATURES

- Temperature coefficient of resistance to $\pm 15 \text{ ppm}/\text{C}$ max. ($+20^\circ\text{C}$ to $+120^\circ\text{C}$)
- Power rating: to 5 W
- Resistance tolerance: to $\pm 0.1\%$
- Resistance range: 1 m Ω to 100 m Ω
- Short time overload: $\pm 0.3\%$
- Maximum current: up to 70 A
- Working Temperature -65°C to 170°C
- E-Beam welding construction: Copper terminals and NiCr resistive element
- Proprietary processing techniques produce low resistance values and improved TCR
- Solderable terminations
- Quick prototype quantities available, please contact: foil@vpgsensors.com

Key Applications

Applications requiring accuracy and repeatability under stress conditions such as the following:

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



Figure 1 – Power Derating Curve

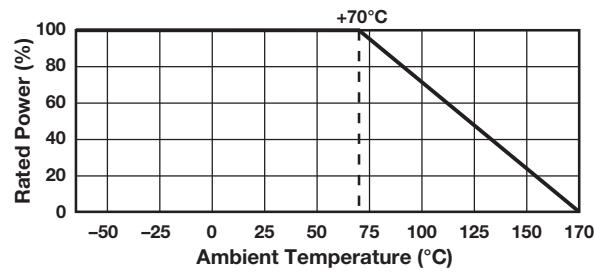


Table 1 – Specifications

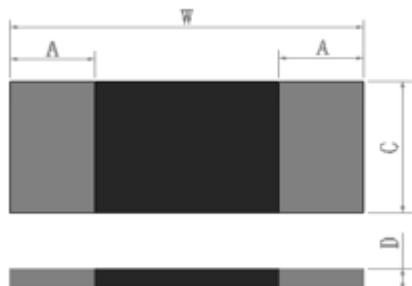
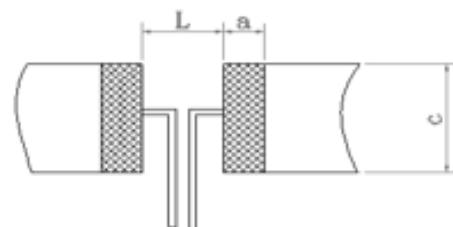
PARAMETER	CSM2817
Resistance Range	1 m Ω to 100 m Ω ⁽¹⁾
Power Rating at 70°C	5 W
Maximum Current ⁽²⁾	70 A
Tolerance	to $\pm 0.1\%$ (20 - 100 m Ω) to $\pm 0.5\%$ (1 - 19 m Ω)
Temperature Coefficient Max. ($+20^\circ\text{C}$ to $+120^\circ\text{C}$)	$\pm 75 \text{ ppm}/\text{C}$, (1 - 3 m Ω) $\pm 50 \text{ ppm}/\text{C}$, (4 - 100 m Ω) ⁽³⁾ $\pm 15 \text{ ppm}/\text{C}$, (4 - 100 m Ω) ⁽⁴⁾
Operating Temperature Range	-65°C to $+170^\circ\text{C}$
Maximum Working Voltage	$(P \times R)^{1/2}$
Weight (Maximum)	0.082 g

Notes

⁽¹⁾ For resistance values $> 50 \text{ m}\Omega$, contact foil@vpgsensors.com

⁽²⁾ Maximum current for a given resistance value is calculated using $I = \sqrt{P/R}$

⁽³⁾⁽⁴⁾ Please specify your preferred TCR value in global Part Number information (characteristics field in Figure 3)

Figure 2 - MECHANICAL DIMENSIONS and LAND PATTERN in millimeters**CSM2817 DIMENSIONS****CSM2817 LAND PATTERN****Dimensions**

MODEL	RESISTANCE RANGE (mΩ)	W	C	A	D
CSM2817	1 -100	7.1 ± 0.2	4.3 ± 0.2	1.2 ± 0.2	0.8 ± 0.1

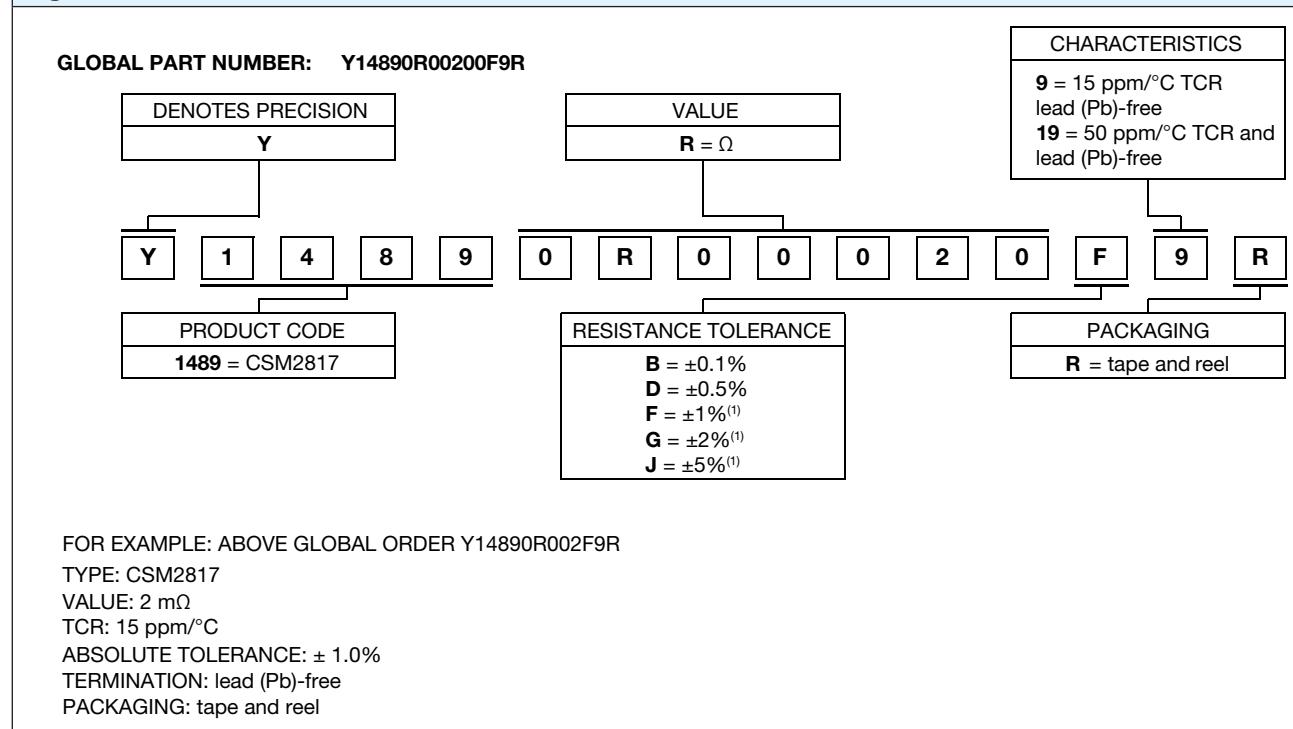
Land Pattern Dimensions

MODEL	RESISTANCE RANGE (mΩ)	a	c	L
CSM2817	1 -100	2.7	5.2	3.5

Table 2 – CSM2817 Performance Specifications

TEST	CONDITIONS	MIL Reference	ΔR LIMITS
Temperature Cycling	1000 Cycles(-55°C to +150°C)	JESD22 Method JA-104	±0.5%
High Temperature Exposure	1000hrs. @T=170°C. Unpowered.	MIL-STD-202 Method 108	±0.5%
Moisture Resistance	t=24hrs/cycle. Note: Steps 7a & 7b not required. Unpowered.	MIL-STD-202 Method 106	±0.3%
Biased Humidity	1000hrs 85°C/85%RH. Note: Specified conditions: 10% of operating power.	MIL-STD-202 Method 103	±0.3%
Operational Life	Condition D Steady State TA=125°C at rated power.	MIL-STD-202 Method 108	±0.5%
Solderability	235°C±5°C, 2s±0.5s	J-STD-202	95% Coverage Minimum
Resistance to Soldering Heat	260°C±5°C 10s±1s	MIL-STD-202 Method 210	±0.3%
Short Time Overload	5xRated power for 5 s *2.5xRated power for 10 s	MIL-STD-202 Method 201	±0.3%

*For value range of 11mOhm to 19mOhm, the test method is 2.5xRated power for 10 s

Figure 3 – Global Part Number Information**Note**

⁽¹⁾ Please contact foil@vpgsensors.com