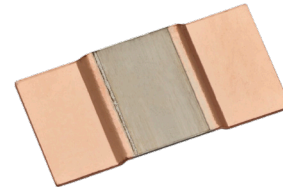


## 2 Terminals Current Sense Surface Mount Metal Strip Power Resistors

### FEATURES

- Typical temperature coefficient of resistance  $\pm 25$  ppm/ $^{\circ}\text{C}$  max. (+20 $^{\circ}\text{C}$  to +120 $^{\circ}\text{C}$ )
- Power rating: to 15 W
- Resistance tolerance: to  $\pm 1\%$
- Resistance range: 0.1m $\Omega$  to 3 m $\Omega$
- Short time overload:  $\pm 0.5\%$
- Maximum current: up to 387 A
- Low Inductance <3nH
- **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
- Quick prototype quantities available, please contact: [foil@vpgsensors.com](mailto:foil@vpgsensors.com)



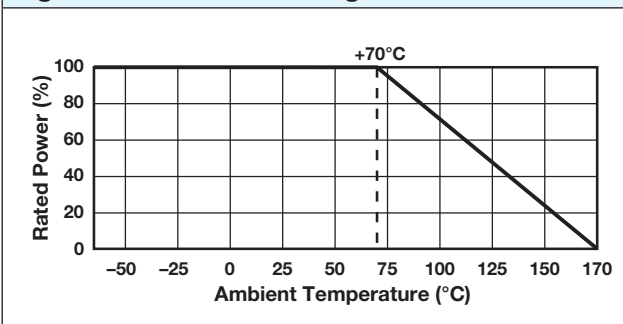
**RoHS\***  
COMPLIANT

### 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
- Power amplifiers
- Measurement instrumentation
- Precision instrumentation amplifiers
- Medical and automatic test equipment
- Frequency converters
- Communication systems
- High current applications for the automotive market

**Figure 1 – Power Derating Curve**



**Table 1 – Specifications**

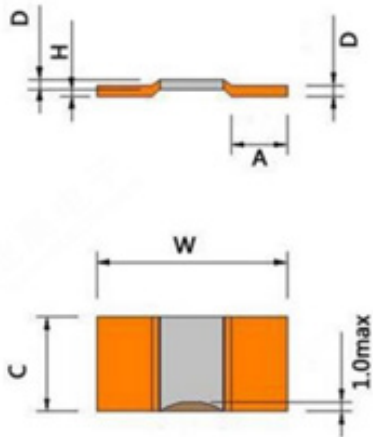
| PARAMETER  | CSM5930A  |
|--|---|
| Resistance Range   | 0.1 m $\Omega$ to 3 m $\Omega$  |
| Power Rating at 70 $^{\circ}\text{C}$  | 15 W (0.1 - 0.2 m $\Omega$ )<br>10 W (0.5 - 0.75 m $\Omega$ )<br>9 W (1 m $\Omega$ )<br>7 W (2 - 3 m $\Omega$ ) |
| Maximum Current <sup>(1)</sup>   | 387 A   |
| Tolerance  | to $\pm 1\%$  |
| Typical Temperature Coefficient of Resistance (+20 $^{\circ}\text{C}$ to +120 $^{\circ}\text{C}$ ) | $\pm 25$ ppm/ $^{\circ}\text{C}$  |
| Operating Temperature Range  | -65 $^{\circ}\text{C}$ to +170 $^{\circ}\text{C}$   |
| Maximum Working Voltage  | $(P \times R)^{1/2}$  |

#### Notes

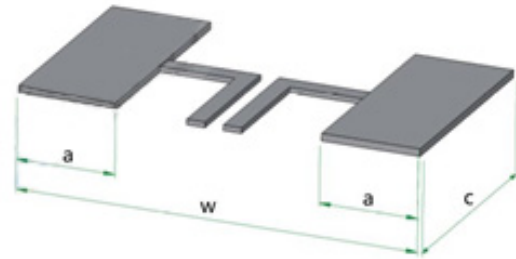
- <sup>(1)</sup> Maximum current for a given resistance value is calculated using  $I = \sqrt{P/R}$

**Figure 2 – Mechanical Dimensions** in millimeters

**CSM5930A DIMENSIONS**



**CSM5930A LAND PATTERN**



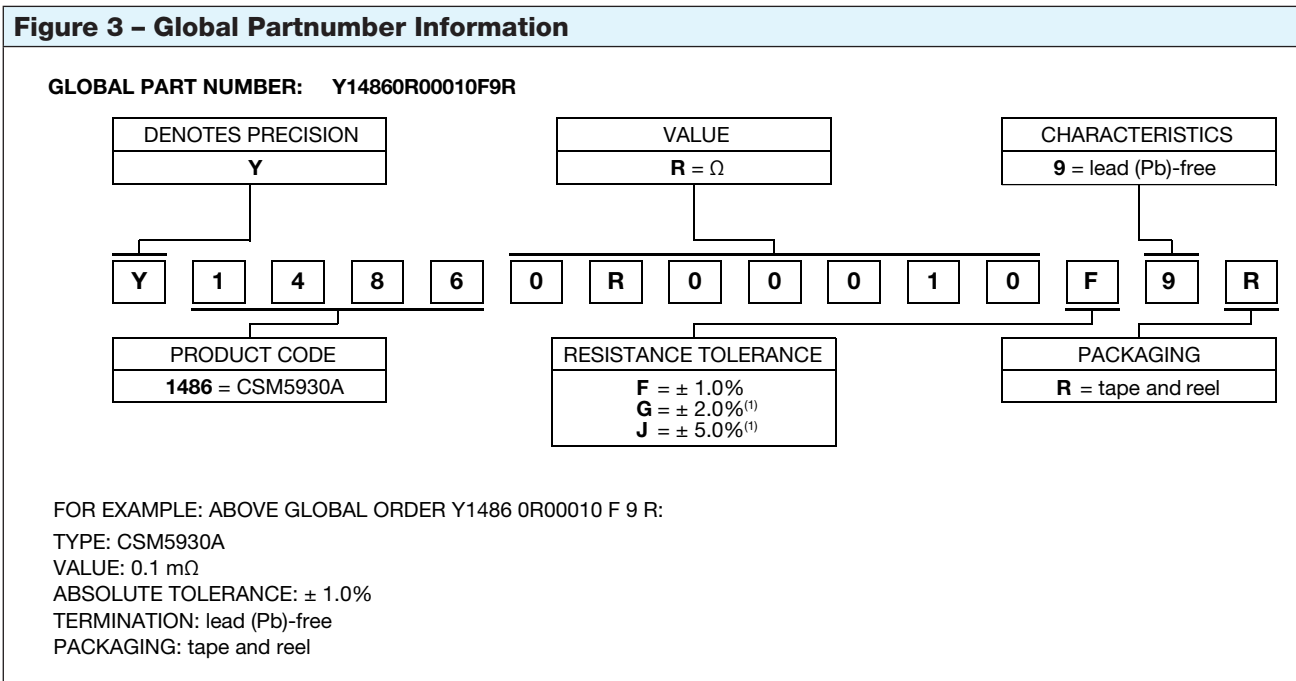
**Dimensions** in millimeters

| MODEL    | RESISTANCE RANGE (mΩ) | W        | A         | C         | H         | D          |
|----------|-----------------------|----------|-----------|-----------|-----------|------------|
| CSM5930A | 0.1                   | 15 ± 0.3 | 4.2 ± 0.3 | 7.6 ± 0.4 | 0.5 ± 0.1 | 2.0 ± 0.1  |
|          | 0.2                   | 15 ± 0.3 | 4.2 ± 0.3 | 7.6 ± 0.4 | 0.5 ± 0.1 | 1.5 ± 0.1  |
|          | 0.5                   | 15 ± 0.3 | 4.2 ± 0.3 | 7.6 ± 0.4 | 0.5 ± 0.1 | 0.6 ± 0.1  |
|          | 0.75                  | 15 ± 0.3 | 4.2 ± 0.3 | 7.6 ± 0.4 | 0.5 ± 0.1 | 0.41 ± 0.1 |
|          | 1                     | 15 ± 0.3 | 4.2 ± 0.3 | 7.6 ± 0.4 | 0.5 ± 0.1 | 0.86 ± 0.1 |
|          | 2                     | 15 ± 0.3 | 4.2 ± 0.3 | 7.6 ± 0.4 | 0.5 ± 0.1 | 0.4 ± 0.1  |
|          | 3                     | 15 ± 0.3 | 4.2 ± 0.3 | 7.6 ± 0.4 | 0.5 ± 0.1 | 0.29 ± 0.1 |

**Land Pattern Dimensions** in millimeters

| MODEL    | RESISTANCE RANGE (mΩ) | a   | c    | w  |
|----------|-----------------------|-----|------|----|
| CSM5930A | 0.1 to 3              | 5.2 | 8.75 | 16 |

| Table 2 – CSM5930A Performance Specifications |  |                        |                      |
|---|--|------------------------|----------------------|
| TEST  | CONDITIONS   | MIL Reference          | ΔR LIMITS            |
| Temperature Cycling                           | 1000 Cycles(-55°C to +125°C)   | JESD22 Method JA-104   | ±0.5%                |
| High Temperature Exposure                     | 100hrs.@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 | ±0.5%                |
| Biased Humidity                               | 1000hrs 85°C/85%RH. Note:Specified conditions:10% of operating power.  | MIL-STD-202 Method 103 | ±0.5%                |
| Operational Life                              | Condition D Steady State TA=125°C at rated power.  | MIL-STD-202 Method 108 | ±0.5%                |
| Solderability                                 | 245°C±5°C,5s+0.5s/-0   | J-STD-002C             | 95% Coverage Minimum |
| Vibration                                     | 5 g's for 20 min, 12 cycles each of 3 orientations. Note: Use 8"X5" PCB .031" thick 7 secure points on one long side and 2 secure points at corners of opposite sides. Parts mounted within 2" from any secure point. Test from 10-2000 Hz | MIL-STD-202 Method 204 | ±0.5%                |
| Resistance to Soldering Heat                  | 260°C±5°C, 10s±1s  | MIL-STD-202 Method 210 | ±0.5%                |
| Short Time Overload                           | 5×Rated power for 5 s  | MIL-STD-202 Method 301 | ±0.5%                |



**Note**  
<sup>(1)</sup> Please contact foil@vpgsensors.com



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