

# OU/OUM Series



## Composite Film Ceramic Composition

### FEATURES

- Innovative and cost-effective composite film technology
- Conforms to ANSI/AAMI EC53:2013/ IEC 60601-2-27:2011
- Suitable replacement for ceramic composition resistors, which are required in many pulse applications
- Available in two packages to suit different board designs: through hole axial, and SMD MELF



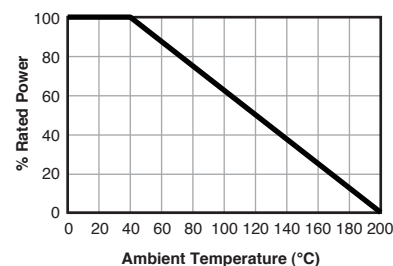
### SERIES SPECIFICATIONS

| Type | Power Rating (at 40°C) | Maximum Working Voltage | Maximum Permissible Surge Voltage | Resistance Range | Resistance Tolerance | Available Resistance Values |
|------|------------------------|-------------------------|-----------------------------------|------------------|----------------------|-----------------------------|
| OU   | 1W                     | 300V                    | 15KV                              | 33Ω - 22KΩ       | ±10%, ±20%           | E-6 / E-12                  |
| OUM  | 1W                     | 400V                    | 15KV                              | 33Ω - 22KΩ       | ±10%, ±20%           | E-6 / E-12                  |

### CHARACTERISTICS

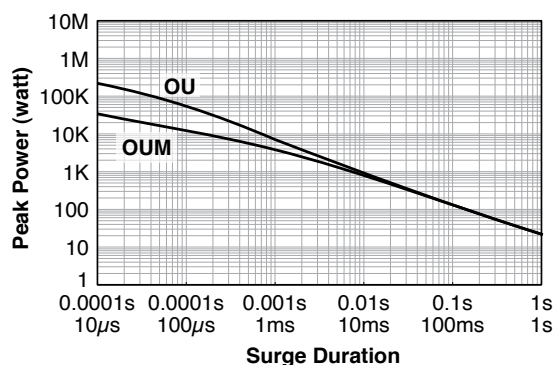
|                                        |                                    |
|----------------------------------------|------------------------------------|
| <b>Dielectric Withstanding Voltage</b> | 800 VAC or DC                      |
| <b>Temperature Coefficient</b>         | -3000 ppm/°C (Typical)             |
| <b>Operating Temperature Range</b>     | -55 ~ +200°C                       |
| <b>Insulation Resistance</b>           | >10 <sup>4</sup> MΩ                |
| <b>Failure Rate (OUM)</b>              | <1pcs/10 <sup>9</sup> device hours |

#### Derating

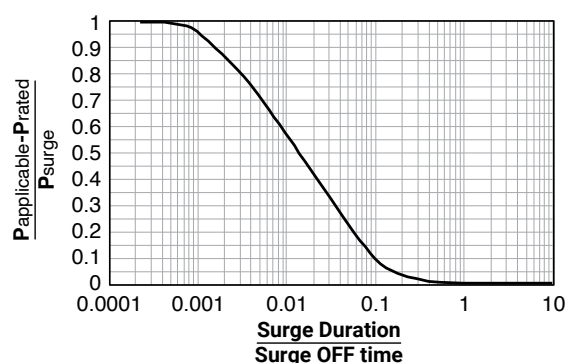


### SURGE PERFORMANCE

#### Single Surge Performance



#### Surge Power Derating Curve



- SINGLE SURGE PERFORMANCE graph is good for NON REPETITIVE applications operating in an ambient temperature of 40°C or less. For temperatures above 40°C, the graph power must be derated further linearly down to zero at 200°C.
- To determine applicable surge power in continuous-surge applications:
  1. Identify allowable duration and peak power  $P_{\text{surge}}$  of single surge;
  2. Determine ratio of surge duration/surge OFF time in application;
  3. Calculate  $P_{\text{applicable}}$  backwardly according to Y-axis of SURGE POWER DERATING CURVE.

(continued)

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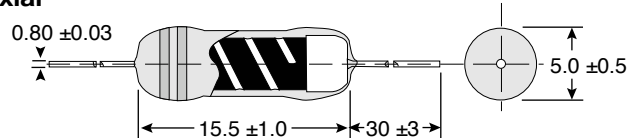
### PERFORMANCE

| Test                         | Condition                                                                                                                                                                                          | Max. $\Delta R$                   |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Short Time Over Load         | IEC 60115-1 4.13; 5 seconds 2.5x rated voltage (not over 2x max working voltage)                                                                                                                   | $\pm 2\%$                         |
| Load Life In Humidity        | IEC 60115-1 4.24; 56 days rated load at $(40 \pm 2)^\circ\text{C}$ and $(93 \pm 3)\%$ relative humidity                                                                                            | $\pm 5\%$                         |
| Load Life                    | IEC 60115-1 4.25.1; Rated load (not over max. working voltage) 1,000 hours with 1.5 hours ON, 0.5 hours OFF, at $(40 \pm 2)^\circ\text{C}$                                                         | $\pm 5\%$                         |
| Resistance To Soldering Heat | IEC 60115-1 4.18.2; Leads immersed till 3mm from the body in $(260 \pm 5)^\circ\text{C}$ solder for $10 \pm 1$ seconds                                                                             | OU: $\pm 2\%$<br>OUM: $\pm 2.5\%$ |
| Solderability                | IEC 60115-1 4.17.2; Solder area covered after $(235 \pm 3)^\circ\text{C}$ / $(2 \pm 0.2)$ seconds with flux applied                                                                                | 95% min. coverage                 |
| Vibration                    | IEC 60115-1 4.22; Six hours in each parallel and axial direction with a simple harmonic motion having an amplitude of 0.75mm and 10 to 500 Hz.                                                     | $\pm 2\%$                         |
| Thermal Endurance            | IEC 60115-1 4.25.3; 1000 hours at $200^\circ\text{C}$ without load                                                                                                                                 | $\pm 5\%$                         |
| Thermal Shock                | IEC 60115-1 4.19; $-55^\circ\text{C}$ 30minutes, $+155^\circ\text{C}$ 30minutes, 5 cycles                                                                                                          | $\pm 3\%$                         |
| Surge Test                   | Surge voltage = $\sqrt{40,000 \times P \times R}$ DC (P is power rating, R is resistance value); surge voltage is not more than 15KV. Surge duration 1.2/50 $\mu\text{s}$ , period 60s, 100 surges | $\pm 5\%$                         |

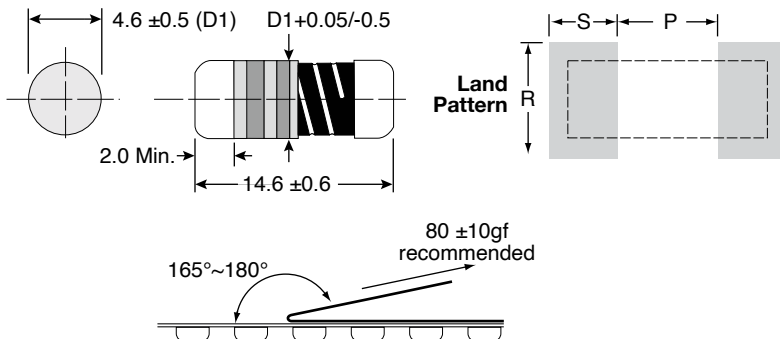
### DIMENSIONS

mm

#### OU: Axial



#### OUM: MELF



### ORDERING INFORMATION

| RoHS compliant  |                                           |                                                                                              |                      |
|-----------------|-------------------------------------------|----------------------------------------------------------------------------------------------|----------------------|
| O U M 4 7 1 K E |                                           |                                                                                              |                      |
| OU Series       | Construction<br>M = MELF<br>blank = axial | Resistance<br>first two digits are significant;<br>third is multiplier<br>471 = 470 $\Omega$ | Tolerance<br>K = 10% |

### Standard Part Numbers

| Axial                         | MELF                                         |
|-------------------------------|----------------------------------------------|
| OU470KE                       | OUM560KE<br>OUM820KE                         |
| OU101KE<br>OU151KE            | OUM101KE<br>OUM181KE                         |
| OU221KE<br>OU471KE            | OUM471KE<br>OUM821KE                         |
| OU102KE<br>OU152KE            | OUM102KE<br>OUM182KE<br>OUM332KE<br>OUM472KE |
| OU472KE<br>OU822KE            |                                              |
| OU103KE<br>OU153KE<br>OU223KE | OUM103KE<br>OUM183KE<br>OUM223KE             |