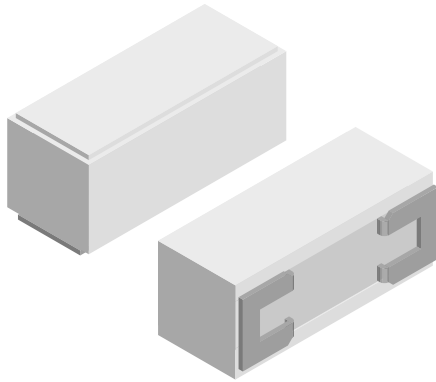


Wirewound/Metal Oxide Resistors, Commercial Power, Surface Mount



FEATURES

- Direct mounting on printed circuit board
- High wattage capabilities, low board temperatures
- Meets or exceeds EIA-RS-344 requirements
- Special inorganic potting compound and ceramic case provide high thermal conductivity in a fireproof package
- Superior surge capability
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING $P_{40^\circ\text{C}}$ W | RESISTANCE RANGE Ω WIREWOUND | RESISTANCE RANGE Ω METAL OXIDE | TOLERANCE \pm % | WEIGHT (typical) g |
|--------------|------------------|---|---|---|----------------------|--------------------------|
| CPSM03 | CPSM-3 | 3 | 0.1 to 100 | - | 5, 10 | 5.5 |
| CPSM05 | CPSM-5 | 5 | 0.1 to 100 | 110 to 33K | 5, 10 | 6.5 |

Note

- E24 decade values are available, although others may be available upon request.

TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | CPSM RESISTOR CHARACTERISTICS |
|-----------------------------|--------|--|
| Temperature Coefficient | ppm/°C | ± 400 |
| Short Time Overload | - | 5 x rated power for 5 s |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |
| Terminal Strength | lb | 10 minimum |
| Operating Temperature Range | °C | -65 to +275 for wirewound, -65 to +225 for metal oxide |

GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: CPSM0315R00JE31

C P S M 0 3 1 5 R 0 0 J E 3 1

GLOBAL MODEL
CPSM03
CPSM05

VALUE
R = decimal
K = thousand
R1500 = 0.15 Ω
100R0 = 100 Ω
1K000 = 1 k Ω

TOLERANCE
J = ± 5.0 %
K = ± 10 %

PACKAGING
E31 = lead (Pb)-free,
4 layer bulk

SPECIAL
(dash number)
(up to 3 digits)
from 1 to 999
as applicable

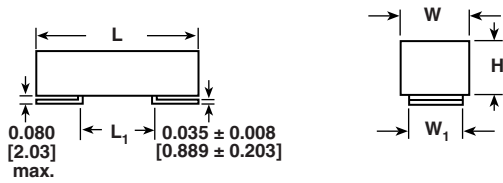
Historical Part Numbering example: CPSM-3 15 Ω 5 % E31

CPSM-3
HISTORICAL MODEL

15 Ω
RESISTANCE VALUE

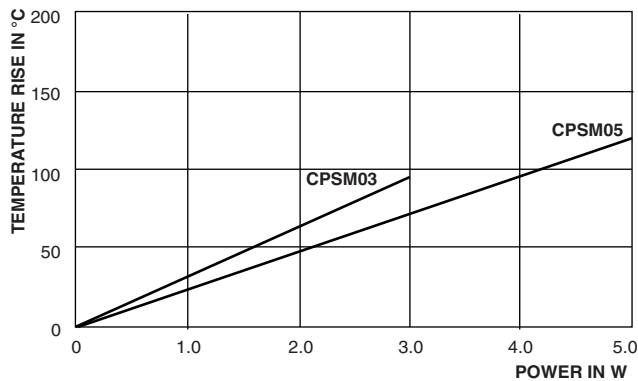
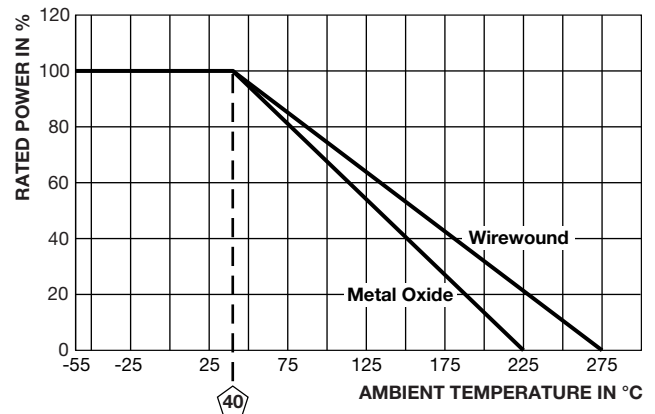
5 %
TOLERANCE CODE

E31
PACKAGING

DIMENSIONS


| MODEL | DIMENSIONS in inches [millimeters] | | | | |
|--------|------------------------------------|------------------------|-------------------------------------|--------------------------------------|------------------------|
| | L ± 0.059 [1.50] | W ± 0.039 [0.99] | L ₁ ± 0.059 [1.50] | W ₁ ± 0.016 [0.406] | H ± 0.039 [0.99] |
| CPSM03 | 0.944 [23.98] | 0.354 [8.99] | 0.492 [12.50] | 0.287 [7.29] | 0.354 [8.99] |
| CPSM05 | 1.10 [27.94] | 0.394 [10.01] | 0.590 [14.99] | 0.287 [7.29] | 0.394 [10.01] |

| MODEL | SOLDER PAD DIMENSIONS in inches [millimeters] | | |
|--------|---|-----------------|------------------|
| | a | b | l |
| CPSM03 | 0.420 [10.67] | 0.340 [8.64] | 0.380 [9.65] |
| CPSM05 | 0.440 [11.18] | 0.340 [8.64] | 0.490 [12.45] |

TEMPERATURE RISE

DERATING

MATERIAL SPECIFICATIONS

| | |
|--------------|---|
| Element | Wirewound = copper-nickel alloy or nickel-chrome alloy, depending on resistance value; metal oxide = high temperature fired metal oxide film |
| Core | Ceramic |
| Body | Steatite ceramic case with cement potting compound |
| Terminals | Tin plated steel |
| Part Marking | Dale, model, wattage, value, tolerance, date code |

PERFORMANCE

| TEST | CONDITIONS OF TEST | TEST LIMITS |
|---------------------------------|--|------------------------|
| Thermal Shock | -55 °C to +275 °C (+225 °C for metal oxide), 5 cycles, 30 min dwell time | ± (5.0 % + 0.05 Ω) ΔR |
| Short Time Overload | 5 x rated power for 5 s | ± (4.0 % + 0.05 Ω) ΔR |
| Dielectric Withstanding Voltage | 1000 V _{RMS} for 1 min | ± (2.0 % + 0.05 Ω) ΔR |
| Low Temperature Operation | -65 °C, full rated working voltage for 45 min | ± (3.0 % + 0.05 Ω) ΔR |
| Humidity | 75 °C, 90 % to 100 % RH, 240 h | ± (5.0 % + 0.05 Ω) ΔR |
| Load Life | 1000 h at rated power, +40 °C, 1.5 h "ON", 0.5 h "OFF" | ± (10.0 % + 0.05 Ω) ΔR |
| Terminal Strength | 5 pounds for 30 s; body twisted about axis, 3 x 360° rotations | ± (2.0 % + 0.05 Ω) ΔR |
| Resistance to Solder Heat | Terminal immersed 3.5 s in molten solder at 1/8" to 3/16" from body | ± (4.0 % + 0.05 Ω) ΔR |



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