

# 250 Series



## 'Thin' Stackohm® Vitreous Enamel Power



When limited space is a consideration, choose Ohmite's "thin" stackable 250 Type resistors. These oval-shaped ceramic-core resistors feature a low profile to permit installation in spaces with height restrictions. They are also equipped with integral mounting brackets so they can be fastened to a chassis and stacked in locations with limited surface area.

When properly fastened, the mounting brackets add a heat sinking benefit resulting in a smaller size per watt. Durable 250 Type resistors are fully welded and coated with lead free vitreous enamel.

### FEATURES

- Small size-to-power ratio.
- Stackable
- Integral mounting bracket conducts heat to mounting surface.
- Low profile for use in equipment where space is limited.
- All-welded construction.
- RoHS compliant product available. Add "E" suffix to part number to specify.

### SERIES SPECIFICATIONS

| Series | Wattage | Ohms    | Max. Voltage* |
|--------|---------|---------|---------------|
| F10    | 10      | 1.0-15K | 187           |
| F20    | 20      | 1.0-50K | 815           |
| F30    | 30      | 1.0-10K | 281           |
| F40    | 40      | 1.0-25K | 655           |
| F55    | 55      | 1.0-30K | 1405          |

Adjustable versions and other sizes available; Consult Ohmite Also available in low cost Centohm or Silicone coating; Consult Ohmite.

\* Maximum Voltage is based on Ohm's Law  $[V=\sqrt{P \cdot R}]$  as limited by the resistance value of specified product

### CHARACTERISTICS

|   |  |
|---|--|
| <b>Coating</b>                          | Lead free vitreous enamel  |
| <b>Core</b>                             | Ceramic  |
| <b>Terminals</b>                        | Tinned lug with hole. RoHS solder composition is 96% Sn, 3.5% Ag, 0.5% Cu  |
| <b>Derating</b>                         | Linearly from 100% @ +25°C to 0% @ +350°C  |
| <b>Tolerance</b>                        | ±5% (J)  |
| <b>Power rating</b>                     | Based on mounting a single resistor on a metal surface measuring 10" (254mm) square by 0.04" (1.016mm) thick. Reduce rating by 15% when mounting on non-metallic surface |
| <b>Overload</b>                         | 10x rated wattage for 5 seconds if max. voltage is not exceeded  |
| <b>Temperature coefficient</b>          | 1 to 20Ω: ±400 ppm/°C<br>Over 20Ω: ±260 ppm/°C   |
| <b>Dielectric with-standing voltage</b> | 500 VAC: 10 and 20 watt rating. 1000 VAC: 30, 40 and 55 watt rating (measured from lug to mounting bracket)  |
| <b>Max. amps</b>                        | To calculate, use the formula $\sqrt{P/R}$   |

# 250 Series

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### DIMENSIONS

(in. / mm)



| Series | Wattage | Length L       | Length A        |
|--------|---------|----------------|-----------------|
| F10    | 10      | 0.750 / 19.050 | 1.000 / 25.400  |
| F20    | 20      | 2.000 / 50.800 | 2.313 / 58.750  |
| F30    | 30      | 1.250 / 31.750 | 2.000 / 50.800  |
| F40    | 40      | 2.000 / 50.800 | 2.750 / 69.850  |
| F55    | 55      | 3.500 / 88.900 | 4.250 / 107.950 |

\*Reference dimension only; varies according to resistance value.

**Note:** When resistors are stacked, use washers or spacers as required to insure clearance and improve power dissipation.

### MOUNTING

In addition to the standard box bracket, stud type brackets are available for stacking the standard size resistors. Stud type brackets are available in two heights: standard (SS, 0.437"/11.113mm) and high (SSH, 0.531"/13.494mm). The SSH stud is recommended when stacking the adjustable Type 260, as it assures clearance for the adjustable lugs to pass each other. Spacer washer No. 6027 (O.D. 0.219"/5.556mm, I.D. 0.125"/3.175mm, thickness 0.094"/2.381mm) is recommended for use with the miniature adjustable and fixed resistors to provide clearance, as explained above, or increased wattage. See chart.

#### Derating for stacked mounting

Stacked resistors should be derated to prevent excessive temperatures due to proximity. Approximate ratings are given in the table.

| No. of Resistors | Percent of Single Unit Rating |           |  |
|------------------|-------------------------------|-----------|--|
|                  | Std. or Inter.                | Miniature | Miniature with 0.094" (2.381 mm) Spacer Washer |
| 2                | 70                            | 70        | 75   |
| 3                | 60                            | 60        | 69   |
| 4                | 50                            | 50        | 60   |



(continued)

# 250 Series

## 'Thin' Stackohm® Vitreous Enamel Power

### CORE AND TERMINAL SELECTION

For Made to Order Type 250 Stackohm Resistors

| Free Air<br>Wattage<br>Rating* | Core Dimensions†   |                   |                  | Min.<br>Ohms | Max.<br>Practical<br>Ohms | Code<br>for<br>Core<br>Dia. | Fig.<br>No. | Dimension A                              | Dimension B       | Standard<br>Terminal |
|--------------------------------|--------------------|-------------------|------------------|--------------|---------------------------|-----------------------------|-------------|--|-------------------|----------------------|
|                                | Length L           | Width W           | Thickness T      |              |                           |                             |             |  |                   |                      |
| <b>Miniature</b>               |                    |                   |                  |              |                           |                             |             |  |                   |                      |
| 10                             | 0.750" (19.050mm)  | 0.375" (9.525mm)  | 0.125" (3.175mm) | 1            | 15,000                    | TA                          | 1           | 1.000" (25.400mm)                        | 0.375" (9.525mm)  | 51                   |
| 15                             | 1.000" (25.400mm)  | 0.375" (9.525mm)  | 0.125" (3.175mm) | 1            | 25,000                    | TA                          | 1           | 1.250" (31.750mm)                        | 0.375" (9.525mm)  | 51                   |
| 20                             | 2.000" (50.800mm)  | 0.375" (9.525mm)  | 0.125" (3.175mm) | 1            | 50,000                    | TA                          | 1           | 2.313" (58.750mm)                        | 0.375" (9.525mm)  | 51                   |
| 12                             | 0.688" (17.463mm)  | 0.594" (15.081mm) | 0.234" (5.953mm) | 1            | 20,000                    | TB                          | **          |  |                   | 51                   |
| <b>Intermediate</b>            |                    |                   |                  |              |                           |                             |             |  |                   |                      |
| 21                             | 1.000" (25.400mm)  | 0.813" (20.638mm) | 0.250" (6.350mm) | 1            | 8,000                     | TD                          | 2           | 1.313" (33.350mm)                        | 0.594" (15.081mm) | 51                   |
| 25                             | 1.500" (38.100mm)  | 0.813" (20.638mm) | 0.250" (6.350mm) | 1            | 15,000                    | TD                          | 2           | 1.813" (46.050mm)                        | 0.594" (15.081mm) | 51                   |
| <b>Standard</b>                |                    |                   |                  |              |                           |                             |             |  |                   |                      |
| 30                             | 1.250" (31.750mm)  | 1.000" (25.400mm) | 0.250" (6.350mm) | 1            | 10,000                    | TE                          | 3, 4        | 1.750" (44.450mm)<br>2.000" (50.800mm)   | 0.938" (23.813mm) | 57                   |
| 40                             | 2.000" (50.800mm)  | 1.000" (25.400mm) | 0.250" (6.350mm) | 1            | 25,000                    | TE                          | 3, 4        | 2.500" (63.500mm)<br>2.750" (69.850mm)   | 0.938" (23.813mm) | 57                   |
| 55                             | 3.500" (88.900mm)  | 1.000" (25.400mm) | 0.250" (6.350mm) | 1            | 30,000                    | TE                          | 3, 4        | 4.000" (11.600mm)<br>4.250" (107.950mm)  | 0.938" (23.813mm) | 57                   |
| 70                             | 4.750" (120.650mm) | 1.000" (25.400mm) | 0.250" (6.350mm) | 1            | 120,000‡                  | TE                          | 3, 4        | 5.250" (133.350mm)<br>5.500" (139.700mm) | 0.938" (23.813mm) | 57                   |
| 95                             | 6.000" (152.400mm) | 1.000" (25.400mm) | 0.250" (6.350mm) | 1            | 150,000‡                  | TE                          | 3, 4        | 6.500" (165.100mm)<br>6.750" (171.450mm) | 0.938" (23.813mm) | 57                   |

\*Based on mounting on steel panel 10" (254mm) x 10" x 0.040" (1.016mm).

‡These sizes are Ohmicone (silicone-ceramic) coated-type 450-460.

†Inside dimensions of core are: 0.250" (6.350mm) x 0.047" (1.191mm) for TA; 0.406" (10.319mm) x 0.047" (1.191mm) for TB; 0.438" (11.113mm) x 0.063" (1.588mm) for TD; 0.672" (17.069mm) x 0.063" (1.588mm) for TE.

\*\*User supplies brackets.

### ORDERING INFORMATION



#### Made-to-order Parts

See website for custom core info

Terminal Type: See "Resistor Terminals for Tubular Cores"

Tolerance: J = 5% | RoHS Compliant

**2 5 3 0 T E 5 7 B 1 R 0 0 J E**

Series: Vitreous enamel: 25 = 250 Fixed, 26 = 260 Adjustable; Silicone ceramic: 45 = 450 Fixed, 46 = 460 Adjustable

Wattage & Core Code: See "Core and Terminal Selection"

Mounting Brackets: (user supplies bracket for core TB) B = Stacking box, S = Stacking stud, std. height, H = Stacking stud high, U = Unit type

Ohms: Example: 1R00 = 1Ω, 250R = 250Ω, 1K00 = 1,000Ω, 25K0 = 25,000Ω, 25K5 = 25,500Ω

#### Standard Values

| Ohmic value | Part No. Prefix Suffix | Wattage |      |      |      |      | Ohmic value | Part No. Prefix Suffix | Wattage |      |      |      |      | Ohmic value | Part No. Prefix Suffix | Wattage |      |      |      |      |
|-------------|------------------------|---------|------|------|------|------|-------------|------------------------|---------|------|------|------|------|-------------|------------------------|---------|------|------|------|------|
|             |                        | F10J    | F20J | F30J | F40J | F55J |             |                        | F10J    | F20J | F30J | F40J | F55J |             |                        | F10J    | F20J | F30J | F40J | F55J |
| 1           | —1R0E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 50          | —50RE                  | ✓       | ✓    | ✓    | ✓    | ✓    | 1,500       | —1K5E                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 1.5         | —1R5E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 75          | —75RE                  | ✓       | ✓    | ✓    | ✓    | ✓    | 2,000       | —2K0E                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 2           | —2R0E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 100         | —100E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 2,500       | —2K5E                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 3           | —3R0E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 150         | —150E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 3,000       | —3K0E                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 4           | —4R0E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 200         | —200E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 4,000       | —4K0E                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 5           | —5R0E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 250         | —250E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 5,000       | —5K0E                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 7.5         | —7R5E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 300         | —300E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 6,000       | —6K0E                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 10          | —10RE                  | ✓       | ✓    | ✓    | ✓    | ✓    | 400         | —400E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 7,500       | —7K5E                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 15          | —15RE                  | ✓       | ✓    | ✓    | ✓    | ✓    | 500         | —500E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 10,000      | —10KE                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 20          | —20RE                  | ✓       | ✓    | ✓    | ✓    | ✓    | 750         | —750E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 15,000      | —15KE                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 25          | —25RE                  | ✓       | ✓    | ✓    | ✓    | ✓    | 800         | —800E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 20,000      | —20KE                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 30          | —30RE                  | ✓       | ✓    | ✓    | ✓    | ✓    | 1,000       | —1K0E                  | ✓       | ✓    | ✓    | ✓    | ✓    | 25,000      | —25KE                  | ✓       | ✓    | ✓    | ✓    | ✓    |
| 40          | —40RE                  | ✓       | ✓    | ✓    | ✓    | ✓    | 1,250       | —1K25E                 | ✓       | ✓    | ✓    | ✓    | ✓    | 40,000      | —40KE                  | ✓       | ✓    | ✓    | ✓    | ✓    |

✓ = Standard values; check availability at [www.ohmite.com](http://www.ohmite.com)