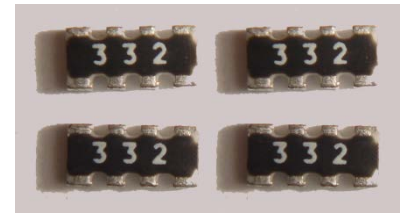
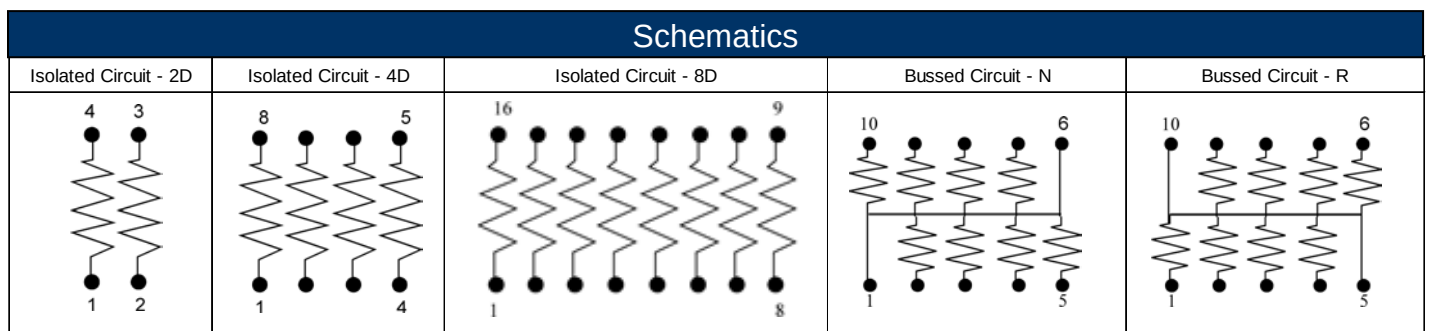


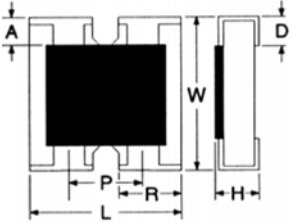
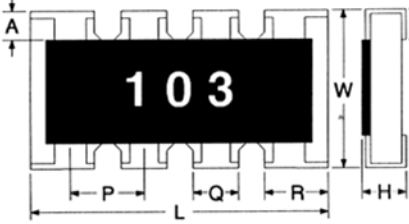
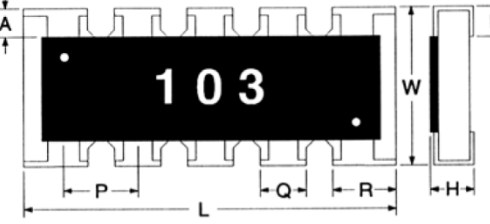
- Features:
- Thick film resistor element
  - Multiple circuit types available
  - Ideal SMD substitute for leaded networks
  - RoHS compliant / lead-free
  - Auto-placement capability
  - Square corner construction standard
  - Zero ohm jumper available
  - RAVF 324D is standard with scalloped corner



| Electrical Specifications                        |                                         |                                          |                                   |                                |                                           |                               |                                   |                                   |
|--------------------------------------------------|-----------------------------------------|------------------------------------------|-----------------------------------|--------------------------------|-------------------------------------------|-------------------------------|-----------------------------------|-----------------------------------|
| Type / Code /<br># of Elements /<br>Circuit Type | Power Rating<br>(per element)<br>@ 70°C | Power Rating<br>(Entire Array)<br>@ 70°C | Maximum<br>Working<br>Voltage (1) | Maximum<br>Overload<br>Voltage | Resistance<br>Temperature<br>Coefficient  | Ohmic Range (Ω) and Tolerance |                                   |                                   |
|                                                  |                                         |                                          |                                   |                                |                                           | 1%                            | 2%                                | 5%                                |
| RAVF052D                                         | 0.031W                                  | 0.063W                                   | 12.5V                             | 25V                            | ±500 ppm/°C<br>±300 ppm/°C<br>±200 ppm/°C | -                             | 3 - 10<br>10.1 - 1K<br>1.01K - 1M | 3 - 10<br>10.1 - 1K<br>1.01K - 1M |
| RAVF102D                                         | 0.063W                                  | 0.125W                                   | 25V                               | 50V                            | ±300 ppm/°C<br>±200 ppm/°C                | 10 - 1M                       | 1 - 10<br>10.1 - 1M               | 1 - 10<br>10.1 - 1M               |
| RAVF104D                                         | 0.063W                                  | 0.250W                                   | 25V                               | 50V                            | ±300 ppm/°C<br>±200 ppm/°C                | 10 - 1M                       | 1 - 10<br>10.1 - 1M               | 1 - 10<br>10.1 - 1M               |
| RAVF162D                                         | 0.063W                                  | 0.125W                                   | 50V                               | 100V                           | ±200 ppm/°C                               | 10 - 1M                       | 1 - 10M                           | 1 - 10M                           |
| RAVF164D                                         | 0.063W                                  | 0.250W                                   | 50V                               | 100V                           | ±200 ppm/°C                               | 10 - 1M                       | 1 - 10M                           | 1 - 10M                           |
| RAVF168D                                         | 0.063W                                  | 0.500W                                   | 25V                               | 50V                            | ±250 ppm/°C<br>±200 ppm/°C                | 10 - 1M                       | 1 - 1M                            | 1 - 1M                            |
| RAVF324D                                         | 0.125W                                  | 0.250W                                   | 200V                              | 400V                           | ±200 ppm/°C                               | 22 - 1M                       | 10 - 1M                           | 10 - 1M                           |
| RAVF328N                                         | 0.063W                                  | 0.500W                                   | 25V                               | 50V                            | ±200 ppm/°C                               | -                             | 22 - 1M                           | 22 - 1M                           |
| RAVF328R                                         | 0.063W                                  | 0.500W                                   | 25V                               | 50V                            | ±200 ppm/°C                               | -                             | 22 - 1M                           | 22 - 1M                           |

(1) Lesser of  $\sqrt{\text{PR}}$  or maximum working voltage.

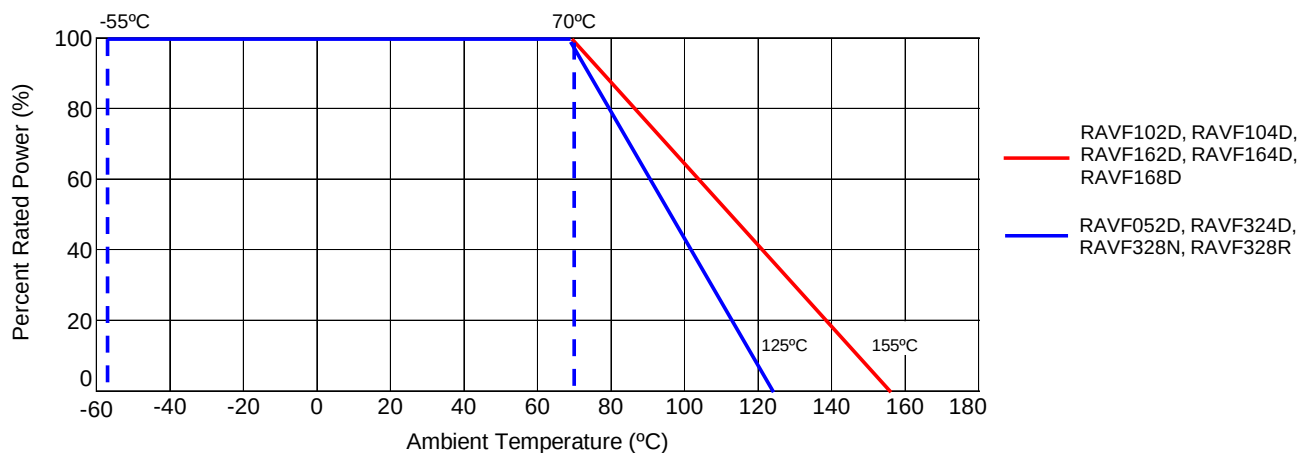


| Terminations                                                                      |                                                                                   |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| RAVF - 2 Resistors / 4 Terminations (D)                                           | RAVF - 4 Resistors / 8 Terminations (D)                                           | RAVF - 8 Resistors / 10 Terminations (N/R)                                          |
|  |  |  |

| Mechanical Specifications                  |                              |                              |                              |                              |                              |                              |                              |                              |              |
|--------------------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| Type / Code / # of Elements / Circuit Type | L Body Length                | W Body Width                 | H Body Height                | P Element Spacing            | Q Termination Width          | R Termination Width          | D Bottom Termination         | A Top Termination            | Unit         |
| RAVF052D                                   | 0.031 ± 0.004<br>0.80 ± 0.10 | 0.024 ± 0.004<br>0.60 ± 0.10 | 0.012 ± 0.002<br>0.30 ± 0.05 | 0.020 ± 0.006<br>0.50 ± 0.15 | -<br>-                       | 0.014 ± 0.004<br>0.35 ± 0.10 | 0.006 ± 0.002<br>0.15 ± 0.05 | 0.006 ± 0.004<br>0.15 ± 0.10 | Inches<br>mm |
| RAVF102D                                   | 0.039 ± 0.004<br>1.00 ± 0.10 | 0.039 ± 0.004<br>1.00 ± 0.10 | 0.014 ± 0.004<br>0.35 ± 0.10 | 0.026 ± 0.002<br>0.65 ± 0.05 | -<br>-                       | 0.013 ± 0.002<br>0.33 ± 0.05 | 0.010 ± 0.002<br>0.25 ± 0.05 | 0.006 ± 0.004<br>0.15 ± 0.10 | Inches<br>mm |
| RAVF104D                                   | 0.079 ± 0.008<br>2.00 ± 0.20 | 0.039 ± 0.006<br>1.00 ± 0.15 | 0.014 ± 0.006<br>0.35 ± 0.15 | 0.020 ± 0.006<br>0.50 ± 0.15 | 0.012 ± 0.004<br>0.30 ± 0.10 | 0.016 ± 0.004<br>0.40 ± 0.10 | 0.010 ± 0.004<br>0.25 ± 0.10 | 0.008 ± 0.004<br>0.20 ± 0.10 | Inches<br>mm |
| RAVF162D                                   | 0.063 ± 0.006<br>1.60 ± 0.15 | 0.063 ± 0.006<br>1.60 ± 0.15 | 0.020 ± 0.006<br>0.50 ± 0.15 | 0.031 ± 0.002<br>0.80 ± 0.05 | -<br>-                       | 0.024 ± 0.006<br>0.60 ± 0.15 | 0.012 ± 0.006<br>0.30 ± 0.15 | 0.012 ± 0.006<br>0.30 ± 0.15 | Inches<br>mm |
| RAVF164D                                   | 0.126 ± 0.008<br>3.20 ± 0.20 | 0.063 ± 0.008<br>1.60 ± 0.20 | 0.020 ± 0.004<br>0.50 ± 0.10 | 0.031 ± 0.002<br>0.80 ± 0.05 | 0.020 ± 0.004<br>0.50 ± 0.10 | 0.026 ± 0.004<br>0.65 ± 0.10 | 0.012 ± 0.006<br>0.30 ± 0.15 | 0.012 ± 0.008<br>0.30 ± 0.20 | Inches<br>mm |
| RAVF168D                                   | 0.157 ± 0.008<br>4.00 ± 0.20 | 0.063 ± 0.006<br>1.60 ± 0.15 | 0.016 ± 0.004<br>0.40 ± 0.10 | 0.020 ± 0.006<br>0.50 ± 0.15 | 0.010 ± 0.004<br>0.25 ± 0.10 | 0.015 ± 0.004<br>0.38 ± 0.10 | 0.012 ± 0.008<br>0.30 ± 0.20 | 0.012 ± 0.008<br>0.30 ± 0.20 | Inches<br>mm |
| RAVF324D                                   | 0.200 ± 0.008<br>5.08 ± 0.20 | 0.122 ± 0.008<br>3.10 ± 0.20 | 0.022 ± 0.004<br>0.55 ± 0.10 | 0.050 ± 0.004<br>1.27 ± 0.10 | 0.031 ± 0.008<br>0.80 ± 0.20 | -<br>-                       | 0.012 ± 0.008<br>0.30 ± 0.20 | 0.020 ± 0.008<br>0.50 ± 0.20 | Inches<br>mm |
| RAVF328N                                   | 0.126 ± 0.006<br>3.20 ± 0.15 | 0.063 ± 0.006<br>1.60 ± 0.15 | 0.022 ± 0.004<br>0.55 ± 0.10 | 0.025 ± 0.002<br>0.64 ± 0.05 | 0.013 ± 0.006<br>0.34 ± 0.15 | 0.019 ± 0.006<br>0.49 ± 0.15 | 0.010 ± 0.006<br>0.25 ± 0.15 | 0.012 ± 0.008<br>0.30 ± 0.20 | Inches<br>mm |
| RAVF328R                                   | 0.126 ± 0.006<br>3.20 ± 0.15 | 0.063 ± 0.006<br>1.60 ± 0.15 | 0.022 ± 0.004<br>0.55 ± 0.10 | 0.025 ± 0.002<br>0.64 ± 0.05 | 0.013 ± 0.006<br>0.34 ± 0.15 | 0.019 ± 0.006<br>0.49 ± 0.15 | 0.010 ± 0.006<br>0.25 ± 0.15 | 0.012 ± 0.008<br>0.30 ± 0.20 | Inches<br>mm |

| Performance Characteristics  |                           |
|------------------------------|---------------------------|
| Test                         | Test Results (JIS C 5202) |
| Load Life in Moisture        | ±3%                       |
| Temperature cycle            | ±1%                       |
| Load Life                    | ±3%                       |
| Resistance to Soldering heat | ±1%                       |
| Terminal Adhesion            | ±1%                       |
| Short Time Overload          | ±2%                       |

**Power Derating Curve:**



**How to Order**

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| R | A | V | F | 1 | 6 | 4 | D | J | T  | 1  | 0  | K  | 0  |

| Product Series | Size   | Power  | Tolerance(1) |        |       | Packaging |               |                  |          | Resistance Value                                                |
|----------------|--------|--------|--------------|--------|-------|-----------|---------------|------------------|----------|-----------------------------------------------------------------|
| RAVF           | Convex | RoHS   | Code         | Tol    | Value | Code      | Description   | Size             | Quantity | Four characters with the multiplier used as the decimal holder. |
|                | 052D   | 0.031W | F            | 1%     | E24   | T         | Tape and Reel | 052D, 102D, 104D | 10,000   | 10 ohm = 10R0                                                   |
|                | 102D   | 0.063W | G            | 2%     |       |           |               | 162D, 164D, 168D | 5,000    | 10.2 Kohm = 10K2                                                |
|                | 104D   | 0.063W | J            | 5%     |       |           |               | 328N, 328R       | 4,000    | 1 Mohm = 1M00                                                   |
|                | 162D   | 0.063W | Z            | jumper |       |           |               | 324D             |          | Zero ohm jumper = 0R00                                          |
|                | 164D   | 0.063W |              |        |       |           |               |                  |          |                                                                 |
|                | 168D   | 0.063W |              |        |       |           |               |                  |          |                                                                 |
|                | 324D   | 0.125W |              |        |       |           |               |                  |          |                                                                 |
|                | 328N   | 0.063W |              |        |       |           |               |                  |          |                                                                 |
|                | 328R   | 0.063W |              |        |       |           |               |                  |          |                                                                 |

Note (1): 1% tolerance is available in E24 values only. E96 values are generally not available. Contact factory for details.

D = Isolated  
N = Bussed  
R = Bussed

**Legacy Part Number (before January 3, 2011):**

| SEI Type | Code | Number of Elements | Circuit Type | Nominal Resistance | Tolerance | Packaging |
|----------|------|--------------------|--------------|--------------------|-----------|-----------|
| RAVF     | 16   | 4                  | D            | 10K                | 5%        | R         |

| Type | Description | Code | Elements | Circuit Type | Tolerance | Values | SEI Types                    | Pkg Qty | Description   | Code |
|------|-------------|------|----------|--------------|-----------|--------|------------------------------|---------|---------------|------|
| RAVF | Convex      | 05   | 2        | D = Isolated | 1%        | E24    | 052D, 102D, 104D             | 10,000  | tape and reel | R    |
|      |             | 10   | 4        | N = Bussed   | 2%        | E24    | 162D, 164D, 168D, 328N, 328R | 5,000   |               |      |
|      |             | 16   | 8        | R = Bussed   | 5%        | E24    |                              |         |               |      |
|      |             | 32   |          |              |           |        | 324D                         | 4,000   |               |      |