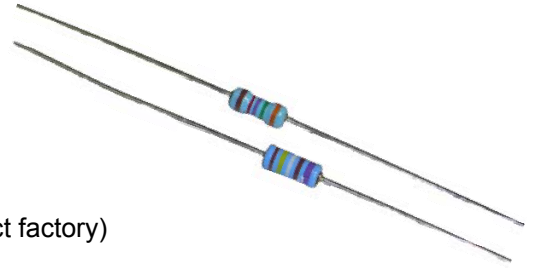


- Features:
- Precision metal film
  - Superior electrical, TCR performances
  - Flame-retardant coatings are standard
  - Panasert available (selected sizes: contact factory)
  - RNMF (mini) an ideal choice where size constraints apply
  - RNF 5% replaces MP series
  - RoHS compliant / lead-free
  - Lower or higher resistance values may be possible (contact factory)

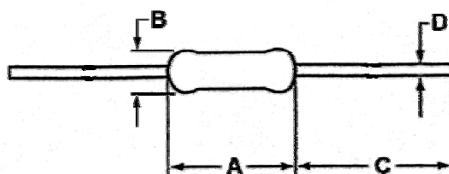


| Electrical Specifications |         |                             |                                    |                                 |                                    |                               |             |             |             |             |           |            |
|---------------------------|---------|-----------------------------|------------------------------------|---------------------------------|------------------------------------|-------------------------------|-------------|-------------|-------------|-------------|-----------|------------|
| Type / Code               | Mil Ref | Power Rating (Watts) @ 70°C | Maximum Working Voltage (Vrms) (1) | Maximum Overload Voltage (Vrms) | Resistance Temperature Coefficient | Ohmic Range (Ω) and Tolerance |             |             |             |             |           |            |
|                           |         |                             |                                    |                                 |                                    | 0.05%                         | 0.1%        | 0.25%       | 0.5%        | 1%          | 2%        | 5%         |
| RNF18                     | RN 50   | 0.125W                      | 200V                               | 400V                            | ±10 ppm/°C                         | 100 - 100K                    | 100 - 100K  | 100 - 100K  | 100 - 100K  | 100 - 100K  | -         | -          |
|                           |         |                             |                                    |                                 | ±25 ppm/°C                         | 100 - 100K                    | 100 - 100K  | 100 - 100K  | 30.1 - 499K | 49.9 - 499K | -         | -          |
|                           |         |                             |                                    |                                 | ±50 ppm/°C                         | 100 - 100K                    | 100 - 100K  | 100 - 100K  | 10 - 1M     | 1 - 1M      | -         | -          |
|                           |         |                             |                                    |                                 | ±100 ppm/°C                        | 100 - 100K                    | 51.1 - 100K | 100 - 100K  | 10 - 1M     | 1 - 10M     | 1 - 22M   | 1 - 22M    |
| RNF14                     | RN 55   | 0.25W                       | 250V                               | 500V                            | ±10 ppm/°C                         | 100 - 100K                    | 100 - 100K  | -           | -           | -           | -         | -          |
|                           |         |                             |                                    |                                 | ±25 ppm/°C                         | 100 - 100K                    | 1 - 2.2M    | 1 - 2.2M    | 1 - 2.2M    | 10 - 1M     | -         | -          |
|                           |         |                             |                                    |                                 | ±50 ppm/°C                         | 100 - 100K                    | 1 - 2.2M    | 1 - 2.2M    | 1 - 2.2M    | 1 - 5.11M   | -         | 1.1M - 10M |
|                           |         |                             |                                    |                                 | ±100 ppm/°C                        | 100 - 100K                    | 1 - 2.2M    | 1 - 2.2M    | 1 - 2.2M    | 1 - 10M     | 5.6 - 10M | 1 - 10M    |
| RNF12                     | RN 60   | 0.5W                        | 350V                               | 700V                            | ±25 ppm/°C                         | 100 - 100K                    | 100 - 300K  | 100 - 100K  | 49.9 - 499K | 49.9 - 499K | -         | -          |
|                           |         |                             |                                    |                                 | ±50 ppm/°C                         | 100 - 100K                    | 100 - 100K  | 100 - 100K  | 10 - 1M     | 1 - 4.99M   | -         | -          |
|                           |         |                             |                                    |                                 | ±100 ppm/°C                        | 100 - 100K                    | 100 - 100K  | 100 - 100K  | 10 - 1M     | 1 - 10M     | 1 - 10M   | 1 - 10M    |
| RNF1                      | RN 65   | 1W                          | 350V                               | 700V                            | ±25 ppm/°C                         | -                             | -           | -           | -           | -           | -         | -          |
|                           |         |                             |                                    |                                 | ±50 ppm/°C                         | -                             | -           | -           | 10 - 1M     | 10 - 470K   | -         | -          |
|                           |         |                             |                                    |                                 | ±100 ppm/°C                        | -                             | -           | -           | 10 - 1M     | 1 - 1M      | -         | -          |
| RNF2                      | -       | 2W                          | 350V                               | 800V                            | ±25 ppm/°C                         | -                             | -           | -           | -           | -           | -         | -          |
|                           |         |                             |                                    |                                 | ±50 ppm/°C                         | -                             | -           | -           | -           | 10 - 1M     | -         | -          |
|                           |         |                             |                                    |                                 | ±100 ppm/°C                        | -                             | -           | -           | -           | 10 - 1M     | -         | 10 - 1M    |
| RNMF14                    | -       | 0.25W                       | 200V                               | 400V                            | ±25 ppm/°C                         | -                             | 100 - 100K  | 100 - 100K  | 30.1 - 499K | 30.1 - 499K | -         | -          |
|                           |         |                             |                                    |                                 | ±50 ppm/°C                         | -                             | 100 - 100K  | 100 - 100K  | 10 - 1M     | 1 - 1M      | -         | -          |
|                           |         |                             |                                    |                                 | ±100 ppm/°C                        | -                             | 100 - 100K  | 100 - 100K  | 10 - 1M     | 1 - 2.15M   | 1 - 2.2M  | 1 - 2.2M   |
| RNMF12                    | RL 07   | 0.5W                        | 350V                               | 600V                            | ±25 ppm/°C                         | -                             | 30.1 - 294K | 30.1 - 294K | 49.9 - 1M   | 49.9 - 1M   | -         | -          |
|                           |         |                             |                                    |                                 | ±50 ppm/°C                         | -                             | 30.1 - 1M   | 30.1 - 1M   | 10 - 1M     | 1 - 1M      | -         | -          |
|                           |         |                             |                                    |                                 | ±100 ppm/°C                        | -                             | 30.1 - 1M   | 30.1 - 1M   | 10 - 1M     | 1 - 10M     | 1 - 10M   | 1 - 10M    |

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

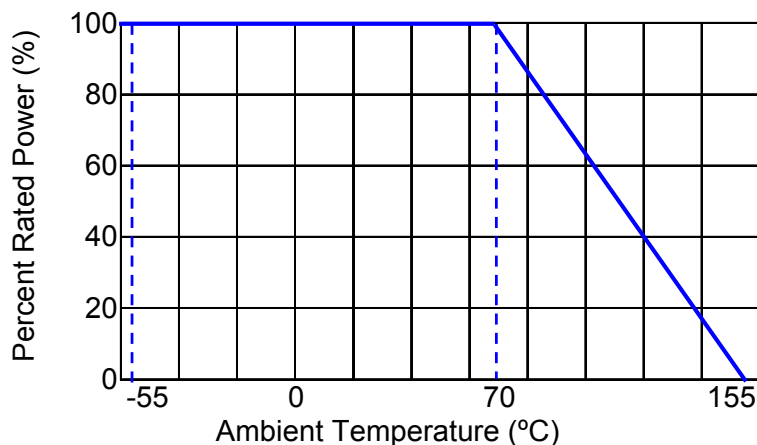
| Performance Characteristics |                         |             |
|-----------------------------|-------------------------|-------------|
| Test                        | Standard / Method       | Requirement |
| Biased Humidity             | MIL-STD 202, Method 103 | ± 1.5%      |
| Resistance to Solder Heat   | MIL-STD 202, Method 210 | ± 0.5%      |
| Insulation Resistance       | JIS C 5202 5.6          | ± 0.5%      |
| Load Life                   | MIL-STD 202, Method 108 | ± 1%        |
| Terminal Strength           | MIL-STD 202, Method 211 | ± 0.2%      |
| Temperature Cycling         | JESD22 Method JA-104    | ± 1%        |
| Moisture Resistance         | MIL-STD 202, Method 106 | ± 0.5%      |

Operating Temperature Range: -55°C to +155°C

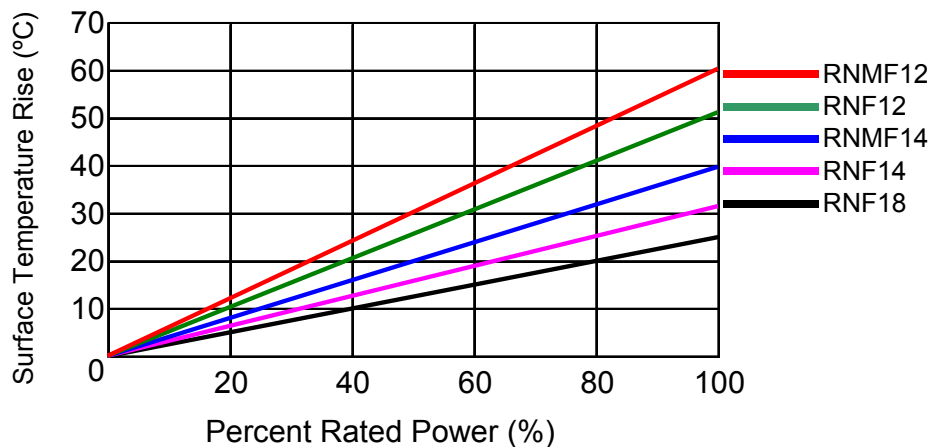


| Mechanical Specifications |                  |                    |                         |                    |        |
|---------------------------|------------------|--------------------|-------------------------|--------------------|--------|
| Type / Code               | A<br>Body Length | B<br>Body Diameter | C<br>Lead Length (Bulk) | D<br>Lead Diameter | Unit   |
| RNF18                     | 0.130 ± 0.012    | 0.071 ± 0.012      | 1.102 ± 0.118           | 0.018 ± 0.003      | inches |
|                           | 3.30 ± 0.30      | 1.80 ± 0.30        | 28.00 ± 3.00            | 0.45 ± 0.07        | mm     |
| RNF14                     | 0.250 ± 0.026    | 0.093 ± 0.010      | 1.102 ± 0.118           | 0.022 ± 0.003      | inches |
|                           | 6.35 ± 0.65      | 2.35 ± 0.25        | 28.00 ± 3.00            | 0.56 ± 0.08        | mm     |
| RNF12                     | 0.344 ± 0.030    | 0.108 ± 0.039      | 1.102 ± 0.197           | 0.026 ± 0.004      | inches |
|                           | 8.75 ± 0.75      | 2.75 ± 1.00        | 28.00 ± 5.00            | 0.65 ± 0.10        | mm     |
| RNF1                      | 0.433 ± 0.039    | 0.177 ± 0.020      | 1.181 ± 0.118           | 0.030 ± 0.002      | inches |
|                           | 11.00 ± 1.00     | 4.50 ± 0.50        | 30.00 ± 3.00            | 0.75 ± 0.05        | mm     |
| RNF2                      | 0.591 ± 0.039    | 0.197 ± 0.020      | 1.181 ± 0.118           | 0.028 ± 0.004      | inches |
|                           | 15.00 ± 1.00     | 5.00 ± 0.50        | 30.00 ± 3.00            | 0.70 ± 0.10        | mm     |
| RNMF14                    | 0.130 ± 0.012    | 0.070 ± 0.003      | 1.102 ± 0.118           | 0.017 ± 0.002      | inches |
|                           | 3.30 ± 0.30      | 1.78 ± 0.08        | 28.00 ± 3.00            | 0.44 ± 0.05        | mm     |
| RNMF12                    | 0.250 ± 0.026    | 0.093 ± 0.010      | 1.102 ± 0.118           | 0.022 ± 0.003      | inches |
|                           | 6.35 ± 0.65      | 2.35 ± 0.25        | 28.00 ± 3.00            | 0.56 ± 0.08        | mm     |

Power Derating Curve:



Surface Temperature Rise:



## How to Order

|                |                 | 1    | 2      | 3         | 4     | 5        | 6         | 7             | 8                                           | 9 | 10        | 11   | 12               |                                                                                                                           |
|----------------|-----------------|------|--------|-----------|-------|----------|-----------|---------------|---------------------------------------------|---|-----------|------|------------------|---------------------------------------------------------------------------------------------------------------------------|
|                |                 | R    | N      | F         | 1     | 4        | F         | T             | D                                           | 4 | K         | 7    | 5                |                                                                                                                           |
|                |                 |      |        |           |       |          |           |               |                                             |   |           |      |                  |                                                                                                                           |
| Product Series |                 | Size | Power  | Tolerance |       |          | Packaging |               |                                             |   | TCR       |      | Resistance Value |                                                                                                                           |
| RNF            | Standard        | 18   | 0.125W | Code      | Tol   | Value    | Code      | Description   | Size                                        |   | Quantity  | Code | ppm              | Four characters with the multiplier used as the decimal holder.<br><br>10 ohm = 10R0<br>10.2 Kohm = 10K2<br>1 Mohm = 1M00 |
| RNMF           | Mini            | 14   | 0.25W  | A         | 0.05% | E96, E24 | T         | Tape and Reel | RNF18, RNF14<br>RNMF14, RNMF12              |   | 5,000     | T    | 10               |                                                                                                                           |
| PRNF           | Panaset<br>RoHS | 12   | 0.5W   | B         | 0.1%  |          |           |               | RNF12, RNF1                                 |   | 2,500     | E    | 25               |                                                                                                                           |
|                |                 | 1    | 1W     | C         | 0.25% |          |           |               | RNF2                                        |   | 1,000     | C    | 50               |                                                                                                                           |
|                |                 | 2    | 2W     | D         | 0.5%  |          |           |               | RNF18, RNF14<br>RNMF14, RNMF12              |   | 5,000 (*) | D    | 100              |                                                                                                                           |
|                |                 |      |        | F         | 1%    | E24      | A         | Ammo          | RNF12                                       |   | 2,000     |      |                  |                                                                                                                           |
|                |                 |      |        | G         | 2%    |          |           |               | RNF1, RNF2                                  |   | 1,000     |      |                  |                                                                                                                           |
|                |                 |      |        | J         | 5%    |          |           |               | RNF18, RNF14, RNF12, RNF2<br>RNMF12, RNMF14 |   | 1,000     |      |                  |                                                                                                                           |
|                |                 |      |        |           |       |          | B         | Bulk          |                                             |   |           |      |                  |                                                                                                                           |

(\*) Precision metal film resistors with tolerances <1% may be available in smaller quantities. Contact factory for more details.

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

| SEI Type   | Code       | TCR       | Nominal Resistance | Tolerance | Packaging |
|------------|------------|-----------|--------------------|-----------|-----------|
| <b>RNF</b> | <b>1/4</b> | <b>T1</b> | <b>4.75K</b>       | <b>1%</b> | <b>R</b>  |

| Type | Description | Code | TCR | Tol    | Values |
|------|-------------|------|-----|--------|--------|
| RNF  | Standard    | 1/8  | T1  | 100ppm |        |
| RNMF | Mini        | 1/4  | T2  | 50ppm  |        |
| PRN  | Panaset     | 1/2  | T9  | 25ppm  |        |
| PRNF | Pana - RoHS | 1    | TB  | 10ppm  |        |
|      |             | 2    |     |        |        |

| SEI Types                                       | Pkg Qty   | Code | Description   |
|-------------------------------------------------|-----------|------|---------------|
| RNF18, RNF14, RNMF14, RNMF12                    | 5,000     | R    | Tape and Reel |
| RNF12, RNF1                                     | 2,500     |      |               |
| RNF2                                            | 1,000     |      |               |
| RNF18, RNF14, RNMF14, RNMF12                    | 5,000 (*) | T    | Ammo          |
| RNF12                                           | 2,000     |      |               |
| RNF1, RNF2                                      | 1,000     |      |               |
| RNF18, RNF14, RNF12, RNF2, RNF1, RNMF14, RNMF12 | 1,000     | A    | Bulk          |

(\*) Precision metal film resistors with tolerances <1% may be available in smaller quantities. Contact factory for more details.