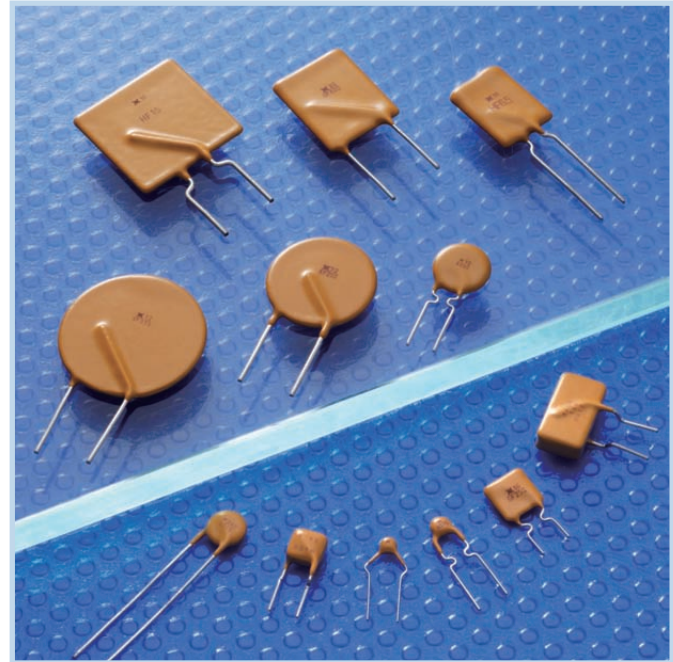


## PolySwitch Resettable Devices

### Radial-leaded Devices

Tyco Electronics' PolySwitch radial-leaded products represent the most comprehensive and complete set of PPTC products available in the industry today.

- RGEF series for hold currents up to 14A
- RHEF series for flatter thermal derating and operating temperatures up to 125°C
- RUEF series for balance of voltage rating (30V) and hold current (up to 9A)
- RUSBF series for fast time-to-trip and low-resistance computer applications
- RTEF series for IEEE-1394 applications
- RXEF series for low hold currents (down to 50mA) and high voltage rating (up to 72V)
- RKEF series for balance of voltage rating (60V) and hold current (up to 5A)
- BBRF series for cable telephone applications
- Now offering RoHS versions of all products



#### Benefits

- Many product choices give engineers more design flexibility
- Compatible with high-volume electronics assembly
- Assists in meeting regulatory requirements
- Higher voltage ratings allow use in new applications

#### Features

- RoHS compliant
- Broadest range of radial-leaded resettable devices available in the industry
- Current ratings from 50mA to 15A
- Voltage ratings from 6V (computer and electronic applications) to 99V
- Agency recognition : UL, CSA, TÜV
- Fast time-to-trip
- Low resistance

#### Applications

- |                             |                                  |                                 |
|-----------------------------|----------------------------------|---------------------------------|
| • Satellite video receivers | • USB hub, ports and peripherals | • Phones                        |
| • Industrial controls       | • IEEE1394 ports                 | • Fax machines                  |
| • Transformers              | • CD-ROMs                        | • Analog and digital line cards |
| • Computer motherboards     | • Game machines                  | • Printers                      |
| • Modems                    | • Battery packs                  |                                 |

## Application Selection Guide for Radial-led Devices

The guide below lists PolySwitch radial-led devices that are typically used in these applications. Specifications for the suggested device part numbers can be found in this section. Once a part number has been selected, the user should evaluate and test each product for its intended application.

### PolySwitch Resettable Devices — Key Selection Criteria

| Protection Application                      | Small Size               | Flatter Derating | Lower Current Higher Voltage |
|---|--------------------------|------------------|------------------------------|
| Electromagnetic loads                       | RGEF (<16V), RUEF (<30V) | RHEF (<16V)      | RXEF (<72V), RKEF(<60V)      |
| Halogen lighting                            | RGEF (<16V), RUEF (<30V) | RHEF (<16V)      | RXEF (<72V), RKEF(<60V)      |
| Lighting ballast                            | RXEF (<72V), BBRF (<99V) |                  |                              |
| Loudspeakers                                | RXEF (<72V)              |                  | RXEF (<72V), RKEF(<60V)      |
| Medical equipment                           | RGEF (<16V), RUEF (<30V) | RHEF (<16V)      | RXEF (<72V), RKEF(<60V)      |
| MOSFET devices                              | RGEF (<16V), RUEF (<30V) | RHEF (<16V)      | RXEF (<72V), RKEF(<60V)      |
| Motors, fans and blowers                    | RXEF (<72V), RGEF (<16V) | RHEF (<16V)      |                              |
| POS equipment                               | RXEF (<72V), RUEF (<30V) |                  |                              |
| Process and industrial controls             | RXEF (<72V), RUEF (<30V) |                  |                              |
| Satellite video receivers                   | RGEF (<16V), RUEF (<30V) | RHEF (<16V)      | RXEF (<72V), RKEF(<60V)      |
| Security and fire alarm systems             | RGEF (<16V), RUEF (<30V) | RHEF (<16V)      | RXEF (<72V), RKEF(<60V)      |
| Test and measurement equipment              | RGEF (<16V), RUEF (<30V) | RHEF (<16V)      | RXEF (<72V), RKEF(<60V)      |
| Transformers                                | RGEF (<16V), RUEF (<30V) | RHEF (<16V)      | RXEF (<72V), RKEF(<60V)      |
| DDC computer and consumer electronics       | RUEF (<30V)              |                  |                              |
| IEEE-1394 computer and consumer electronics | RTEF (<33V)              |                  |                              |
| Mouse and keyboard                          | RUEF (<30V)              |                  |                              |
| SCSI  | RUEF (<30V)              |                  |                              |
| USB   | RUSBF (<16V)             |                  |                              |
| Traces and printed circuit board protection | RGEF (<16V), RUEF (<30V) | RHEF (<16V)      | RXEF (<72V), RKEF(<60V)      |

**Note:** This list is not exhaustive. Tyco Electronics welcomes customer's input for additional application ideas for PolySwitch resettable devices.

**Table R1** Product Series - Current Rating, Voltage Rating / Typical Resistance for Radial-led Devices

| Voltage Rating          | BBRF<br>99V | RXEF<br>72V | RKEF<br>60V | RXEF<br>60V | RTEF<br>33V | RUEF<br>30V | RGEF<br>16V | RHEF<br>16V | RHEF<br>30V | RUSBF<br>16V | RUSBF<br>6V |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|
| <b>Hold Current (A)</b> |             |             |             |             |             |             |             |             |             |              |             |
| 0.050                   | —           | —           | —           | 9.20Ω       | —           | —           | —           | —           | —           | —            | —           |
| 0.100                   | —           | —           | —           | 3.50Ω       | —           | —           | —           | —           | —           | —            | —           |
| 0.170                   | —           | —           | —           | 4.30Ω       | —           | —           | —           | —           | —           | —            | —           |
| 0.200                   | —           | 2.290Ω      | —           | —           | —           | —           | —           | —           | —           | —            | —           |
| 0.250                   | —           | 1.600Ω      | —           | —           | —           | —           | —           | —           | —           | —            | —           |
| 0.300                   | —           | 1.110Ω      | —           | —           | —           | —           | —           | —           | —           | —            | —           |
| 0.400                   | —           | 0.710Ω      | —           | —           | —           | —           | —           | —           | —           | —            | —           |
| 0.500                   | —           | 0.640Ω      | 0.425Ω      | —           | —           | —           | —           | —           | 0.68Ω       | —            | —           |
| 0.550                   | 1.05Ω       | —           | —           | —           | —           | —           | —           | —           | —           | —            | —           |
| 0.650                   | —           | 0.400Ω      | 0.350Ω      | —           | —           | —           | —           | —           | —           | —            | —           |
| 0.700                   | —           | —           | —           | —           | —           | —           | —           | —           | 0.42Ω       | —            | —           |
| 0.750                   | —           | 0.325Ω      | 0.295Ω      | —           | —           | —           | —           | —           | —           | —            | 0.140Ω      |
| 0.900                   | —           | 0.255Ω      | 0.255Ω      | —           | —           | 0.095Ω      | —           | —           | —           | 0.100Ω       | —           |
| 1.000                   | —           | —           | —           | —           | —           | —           | —           | —           | 0.24Ω       | —            | —           |
| 1.100                   | —           | 0.200Ω      | 0.225Ω      | —           | —           | 0.075Ω      | —           | —           | —           | 0.075Ω       | —           |
| 1.200                   | —           | —           | —           | —           | 0.097Ω      | —           | —           | —           | —           | —            | 0.080Ω      |
| 1.350                   | —           | 0.155Ω      | 0.165Ω      | —           | 0.080Ω      | 0.060Ω      | —           | —           | —           | 0.060Ω       | —           |
| 1.550                   | —           | —           | —           | —           | —           | —           | —           | —           | —           | —            | 0.058Ω      |
| 1.600                   | —           | 0.115Ω      | 0.150Ω      | —           | —           | 0.050Ω      | —           | —           | —           | 0.050Ω       | —           |
| 1.850                   | —           | 0.100Ω      | 0.106Ω      | —           | —           | 0.045Ω      | —           | —           | —           | 0.045Ω       | —           |
| 1.900                   | —           | —           | —           | —           | 0.054Ω      | —           | —           | —           | —           | —            | —           |

**Table R1** Product Series - Current Rating, Voltage Rating / Typical Resistance for Radial-leaded Devices Cont'd

| Voltage Rating          | BBRF<br>99V | RXEF<br>72V | RKEF<br>60V | RXEF<br>60V | RTEF<br>33V | RUEF<br>30V | RGEF<br>16V | RHEF<br>16V | RHEF<br>30V | RUSBF<br>16V | RUSBF<br>6V |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|
| <b>Hold Current (A)</b> |             |             |             |             |             |             |             |             |             |              |             |
| 2.000                   | —           | —           | —           | —           | —           | —           | —           | 0.0610Ω     | —           | —            | —           |
| 2.500                   | —           | 0.065Ω      | 0.063Ω      | —           | —           | 0.030Ω      | 0.0380Ω     | —           | —           | 0.030Ω       | —           |
| 3.000                   | —           | 0.050Ω      | 0.040Ω      | —           | —           | 0.035Ω      | 0.0514Ω     | 0.0430Ω     | —           | —            | —           |
| 3.750                   | —           | 0.040Ω      | 0.029Ω      | —           | —           | —           | —           | —           | —           | —            | —           |
| 4.000                   | —           | —           | 0.026Ω      | —           | —           | 0.020Ω      | 0.0300Ω     | 0.0320Ω     | —           | —            | —           |
| 4.500                   | —           | —           | —           | —           | —           | —           | —           | 0.0290Ω     | —           | —            | —           |
| 5.000                   | —           | —           | 0.021Ω      | —           | —           | 0.020Ω      | 0.0192Ω     | —           | —           | —            | —           |
| 5.500                   | —           | —           | —           | —           | —           | —           | —           | 0.0200Ω     | —           | —            | —           |
| 6.000                   | —           | —           | —           | —           | —           | 0.013Ω      | 0.0145Ω     | 0.0175Ω     | —           | —            | —           |
| 6.500                   | —           | —           | —           | —           | —           | —           | —           | 0.0144Ω     | —           | —            | —           |
| 7.000                   | —           | —           | —           | —           | —           | 0.013Ω      | 0.0105Ω     | 0.0132Ω     | —           | —            | —           |
| 7.500                   | —           | —           | —           | —           | —           | —           | —           | 0.0120Ω     | —           | —            | —           |
| 8.000                   | —           | —           | —           | —           | —           | 0.013Ω      | 0.0086Ω     | 0.0110Ω     | —           | —            | —           |
| 9.000                   | —           | —           | —           | —           | —           | 0.008Ω      | 0.0070Ω     | 0.0100Ω     | —           | —            | —           |
| 10.00                   | —           | —           | —           | —           | —           | —           | 0.0056Ω     | 0.0083Ω     | —           | —            | —           |
| 11.00                   | —           | —           | —           | —           | —           | —           | 0.0050Ω     | 0.0073Ω     | —           | —            | —           |
| 12.00                   | —           | —           | —           | —           | —           | —           | 0.0046Ω     | —           | —           | —            | —           |
| 13.00                   | —           | —           | —           | —           | —           | —           | —           | 0.0055Ω     | —           | —            | —           |
| 14.00                   | —           | —           | —           | —           | —           | —           | 0.0040Ω     | 0.0050Ω     | —           | —            | —           |
| 15.00                   | —           | —           | —           | —           | —           | —           | —           | 0.0050Ω     | —           | —            | —           |

**Table R2** Thermal Derating for Radial-leaded Devices [Hold Current (A) at Ambient Temperature (°C)]

| Part Number     | Maximum Ambient Temperature |       |      |      |       |      |       |       |       |      |       |
|-----------------|-----------------------------|-------|------|------|-------|------|-------|-------|-------|------|-------|
|                 | -40°C                       | -20°C | 0°C  | 20°C | 25°C  | 40°C | 50°C  | 60°C  | 70°C  | 85°C | 125°C |
| <b>BBRF 99V</b> |                             |       |      |      |       |      |       |       |       |      |       |
| BBRF550         | 0.85                        | 0.75  | 0.65 | 0.55 | —     | 0.45 | 0.40  | 0.35  | 0.30  | 0.22 | —     |
| <b>RXEF 60V</b> |                             |       |      |      |       |      |       |       |       |      |       |
| RXEF005         | 0.078                       | 0.068 | 0.06 | 0.05 | 0.048 | 0.04 | 0.035 | 0.032 | 0.027 | 0.02 | —     |
| RXEF010         | 0.160                       | 0.140 | 0.11 | 0.10 | 0.096 | 0.08 | 0.072 | 0.067 | 0.050 | 0.04 | —     |
| RXEF017         | 0.260                       | 0.230 | 0.21 | 0.17 | 0.160 | 0.14 | 0.120 | 0.110 | 0.090 | 0.07 | —     |
| <b>RXEF 72V</b> |                             |       |      |      |       |      |       |       |       |      |       |
| RXEF020         | 0.31                        | 0.27  | 0.24 | 0.20 | 0.19  | 0.16 | 0.14  | 0.13  | 0.11  | 0.08 | —     |
| RXEF025         | 0.39                        | 0.34  | 0.30 | 0.25 | 0.24  | 0.20 | 0.18  | 0.16  | 0.14  | 0.10 | —     |
| RXEF030         | 0.47                        | 0.41  | 0.36 | 0.30 | 0.29  | 0.24 | 0.22  | 0.20  | 0.16  | 0.12 | —     |
| RXEF040         | 0.62                        | 0.54  | 0.48 | 0.40 | 0.38  | 0.32 | 0.29  | 0.25  | 0.22  | 0.16 | —     |
| RXEF050         | 0.78                        | 0.68  | 0.60 | 0.50 | 0.48  | 0.41 | 0.36  | 0.32  | 0.27  | 0.20 | —     |
| RXEF065         | 1.01                        | 0.88  | 0.77 | 0.65 | 0.62  | 0.53 | 0.47  | 0.41  | 0.35  | 0.26 | —     |
| RXEF075         | 1.16                        | 1.02  | 0.89 | 0.75 | 0.72  | 0.61 | 0.54  | 0.47  | 0.41  | 0.30 | —     |
| RXEF090         | 1.40                        | 1.22  | 1.07 | 0.90 | 0.86  | 0.73 | 0.65  | 0.57  | 0.49  | 0.36 | —     |
| RXEF110         | 1.71                        | 1.50  | 1.31 | 1.10 | 1.06  | 0.89 | 0.79  | 0.69  | 0.59  | 0.44 | —     |
| RXEF135         | 2.09                        | 1.84  | 1.61 | 1.35 | 1.30  | 1.09 | 0.97  | 0.85  | 0.73  | 0.54 | —     |
| RXEF160         | 2.48                        | 2.18  | 1.90 | 1.60 | 1.54  | 1.30 | 1.15  | 1.01  | 0.86  | 0.64 | —     |
| RXEF185         | 2.87                        | 2.52  | 2.20 | 1.85 | 1.78  | 1.50 | 1.33  | 1.17  | 1.00  | 0.74 | —     |
| RXEF250         | 3.88                        | 3.40  | 2.98 | 2.50 | 2.40  | 2.03 | 1.80  | 1.58  | 1.35  | 1.00 | —     |
| RXEF300         | 4.65                        | 4.08  | 3.57 | 3.00 | 2.88  | 2.43 | 2.16  | 1.89  | 1.62  | 1.20 | —     |
| RXEF375         | 5.81                        | 5.10  | 4.46 | 3.75 | 3.60  | 3.04 | 2.70  | 2.36  | 2.03  | 1.50 | —     |

**Table R2 Thermal Derating for Radial-leaded Devices**  
**[Hold Current (A) at Ambient Temperature (°C)]**

Cont'd

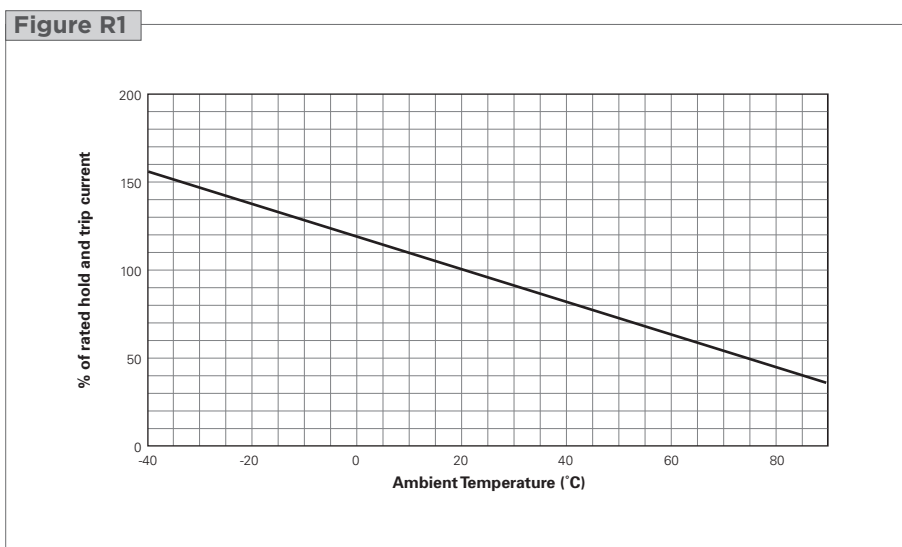
| Part Number                   | Maximum Ambient Temperature |       |       |      |      |      |      |      |      |      |       |
|-------------------------------|-----------------------------|-------|-------|------|------|------|------|------|------|------|-------|
|                               | -40°C                       | -20°C | 0°C   | 20°C | 25°C | 40°C | 50°C | 60°C | 70°C | 85°C | 125°C |
| <b>RKEF</b>                   |                             |       |       |      |      |      |      |      |      |      |       |
| <b>60V</b>                    |                             |       |       |      |      |      |      |      |      |      |       |
| RKEF050                       | 0.73                        | 0.65  | 0.58  | 0.50 | 0.48 | 0.42 | 0.38 | 0.34 | 0.31 | 0.26 | —     |
| RKEF065                       | 0.94                        | 0.85  | 0.75  | 0.65 | 0.63 | 0.54 | 0.50 | 0.44 | 0.40 | 0.34 | —     |
| RKEF075                       | 1.09                        | 0.98  | 0.86  | 0.75 | 0.73 | 0.62 | 0.58 | 0.51 | 0.46 | 0.39 | —     |
| RKEF090                       | 1.30                        | 1.17  | 1.04  | 0.90 | 0.87 | 0.75 | 0.69 | 0.61 | 0.55 | 0.47 | —     |
| RKEF110                       | 1.60                        | 1.43  | 1.27  | 1.10 | 1.06 | 0.92 | 0.85 | 0.75 | 0.67 | 0.57 | —     |
| RKEF135                       | 1.96                        | 1.76  | 1.55  | 1.35 | 1.31 | 1.12 | 1.04 | 0.92 | 0.83 | 0.71 | —     |
| RKEF160                       | 2.32                        | 2.08  | 1.84  | 1.60 | 1.55 | 1.33 | 1.23 | 1.08 | 0.98 | 0.83 | —     |
| RKEF185                       | 2.68                        | 2.41  | 2.13  | 1.85 | 1.79 | 1.54 | 1.43 | 1.26 | 1.13 | 0.96 | —     |
| RKEF250                       | 3.63                        | 3.25  | 2.88  | 2.50 | 2.43 | 2.08 | 1.93 | 1.70 | 1.52 | 1.31 | —     |
| RKEF300                       | 4.35                        | 3.90  | 3.45  | 3.00 | 2.91 | 2.50 | 2.30 | 2.04 | 1.84 | 1.55 | —     |
| RKEF375                       | 5.44                        | 4.88  | 4.31  | 3.75 | 3.64 | 3.11 | 2.90 | 2.54 | 2.29 | 1.94 | —     |
| RKEF400                       | 5.80                        | 5.20  | 4.60  | 4.00 | 3.88 | 3.32 | 3.08 | 2.73 | 2.45 | 2.08 | —     |
| RKEF500                       | 7.25                        | 6.50  | 5.75  | 5.00 | 4.85 | 4.15 | 3.85 | 3.41 | 3.06 | 2.59 | —     |
| <b>RTEF</b>                   |                             |       |       |      |      |      |      |      |      |      |       |
| <b>33V</b>                    |                             |       |       |      |      |      |      |      |      |      |       |
| RTEF120                       | 1.74                        | 1.56  | 1.38  | 1.20 | 1.16 | 1.00 | 0.92 | 0.82 | 0.73 | 0.60 | —     |
| RTEF135                       | 1.96                        | 1.76  | 1.55  | 1.35 | 1.31 | 1.12 | 1.04 | 0.92 | 0.82 | 0.68 | —     |
| RTEF190                       | 2.76                        | 2.47  | 2.19  | 1.90 | 1.84 | 1.58 | 1.50 | 1.29 | 1.16 | 0.95 | —     |
| <b>RUEF</b>                   |                             |       |       |      |      |      |      |      |      |      |       |
| <b>30V</b>                    |                             |       |       |      |      |      |      |      |      |      |       |
| RUEF090                       | 1.31                        | 1.17  | 1.04  | 0.90 | 0.87 | 0.75 | 0.69 | 0.61 | 0.55 | 0.47 | —     |
| RUEF110                       | 1.60                        | 1.43  | 1.27  | 1.10 | 1.07 | 0.91 | 0.85 | 0.75 | 0.67 | 0.57 | —     |
| RUEF135                       | 1.96                        | 1.76  | 1.55  | 1.35 | 1.31 | 1.12 | 1.04 | 0.92 | 0.82 | 0.70 | —     |
| RUEF160                       | 2.32                        | 2.08  | 1.84  | 1.60 | 1.55 | 1.33 | 1.23 | 1.09 | 0.98 | 0.83 | —     |
| RUEF185                       | 2.68                        | 2.41  | 2.13  | 1.85 | 1.79 | 1.54 | 1.42 | 1.26 | 1.13 | 0.96 | —     |
| RUEF250                       | 3.63                        | 3.25  | 2.88  | 2.50 | 2.43 | 2.08 | 1.93 | 1.70 | 1.53 | 1.30 | —     |
| RUEF300                       | 4.35                        | 3.90  | 3.45  | 3.00 | 2.91 | 2.49 | 2.31 | 2.04 | 1.83 | 1.56 | —     |
| RUEF400                       | 5.80                        | 5.20  | 4.60  | 4.00 | 3.88 | 3.32 | 3.08 | 2.72 | 2.44 | 2.08 | —     |
| RUEF500                       | 7.25                        | 6.50  | 5.75  | 5.00 | 4.85 | 4.15 | 3.85 | 3.40 | 3.05 | 2.60 | —     |
| RUEF600                       | 8.70                        | 7.80  | 6.90  | 6.00 | 5.82 | 4.98 | 4.62 | 4.08 | 3.66 | 3.12 | —     |
| RUEF700                       | 10.15                       | 9.10  | 8.05  | 7.00 | 6.79 | 5.81 | 5.39 | 4.76 | 4.27 | 3.64 | —     |
| RUEF800                       | 11.60                       | 10.40 | 9.20  | 8.00 | 7.76 | 6.64 | 6.16 | 5.44 | 4.88 | 4.16 | —     |
| RUEF900                       | 13.05                       | 11.70 | 10.35 | 9.00 | 8.73 | 7.47 | 6.93 | 6.12 | 5.49 | 4.68 | —     |
| <b>RHEF</b>                   |                             |       |       |      |      |      |      |      |      |      |       |
| <b>30V - High Temperature</b> |                             |       |       |      |      |      |      |      |      |      |       |
| RHEF050                       | 0.68                        | 0.62  | 0.56  | 0.51 | 0.50 | 0.44 | 0.40 | 0.36 | 0.34 | 0.28 | 0.12  |
| RHEF070                       | 0.95                        | 0.87  | 0.79  | 0.72 | 0.70 | 0.62 | 0.56 | 0.51 | 0.47 | 0.39 | 0.17  |
| RHEF100                       | 1.36                        | 1.24  | 1.13  | 1.03 | 1.00 | 0.89 | 0.80 | 0.73 | 0.67 | 0.56 | 0.24  |
| <b>RUSBF</b>                  |                             |       |       |      |      |      |      |      |      |      |       |
| <b>16V</b>                    |                             |       |       |      |      |      |      |      |      |      |       |
| RUSBF090                      | 1.31                        | 1.17  | 1.04  | 0.90 | 0.87 | 0.75 | 0.69 | 0.61 | 0.55 | 0.47 | —     |
| RUSBF110                      | 1.60                        | 1.43  | 1.27  | 1.10 | 1.07 | 1.00 | 0.92 | 0.75 | 0.67 | 0.57 | —     |
| RUSBF135                      | 1.96                        | 1.76  | 1.55  | 1.35 | 1.31 | 1.12 | 1.04 | 0.92 | 0.82 | 0.70 | —     |
| RUSBF160                      | 2.32                        | 2.08  | 1.84  | 1.60 | 1.55 | 1.33 | 1.23 | 1.09 | 0.98 | 0.83 | —     |
| RUSBF185                      | 2.68                        | 2.41  | 2.13  | 1.85 | 1.79 | 1.54 | 1.42 | 1.26 | 1.13 | 0.96 | —     |
| RUSBF250                      | 3.63                        | 3.25  | 2.88  | 2.50 | 2.43 | 2.08 | 1.93 | 1.70 | 1.53 | 1.30 | —     |
| <b>RGEF</b>                   |                             |       |       |      |      |      |      |      |      |      |       |
| <b>16V</b>                    |                             |       |       |      |      |      |      |      |      |      |       |
| RGEF250                       | 3.7                         | 3.3   | 3.0   | 2.6  | 2.50 | 2.2  | 2.0  | 1.8  | 1.6  | 1.2  | —     |
| RGEF300                       | 4.4                         | 4.0   | 3.6   | 3.1  | 3.00 | 2.6  | 2.4  | 2.1  | 1.9  | 1.4  | —     |
| RGEF400                       | 5.9                         | 5.3   | 4.8   | 4.1  | 4.00 | 3.5  | 3.2  | 2.8  | 2.5  | 1.9  | —     |
| RGEF500                       | 7.3                         | 6.6   | 6.0   | 5.2  | 5.00 | 4.4  | 4.0  | 3.6  | 3.1  | 2.4  | —     |
| RGEF600                       | 8.8                         | 8.0   | 7.2   | 6.2  | 6.00 | 5.2  | 4.8  | 4.2  | 3.8  | 2.8  | —     |
| RGEF700                       | 10.3                        | 9.3   | 8.4   | 7.3  | 7.00 | 6.2  | 5.6  | 5.0  | 4.4  | 3.3  | —     |

**Table R2 Thermal Derating for Radial-leaded Devices [Hold Current (A) at Ambient Temperature (°C)]** Cont'd

| Part Number                   | Maximum Ambient Temperature |       |       |       |       |       |       |       |      |      |       |
|-------------------------------|-----------------------------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|
|                               | -40°C                       | -20°C | 0°C   | 20°C  | 25°C  | 40°C  | 50°C  | 60°C  | 70°C | 85°C | 125°C |
| <b>RGEF</b>                   |                             |       |       |       |       |       |       |       |      |      |       |
| <b>16V</b>                    |                             |       |       |       |       |       |       |       |      |      |       |
| RGEF800                       | 11.7                        | 10.7  | 9.6   | 8.3   | 8.00  | 6.9   | 6.4   | 5.6   | 5.1  | 3.7  | —     |
| RGEF900                       | 13.2                        | 11.9  | 10.7  | 9.4   | 9.00  | 7.9   | 7.2   | 6.4   | 5.6  | 4.2  | —     |
| RGEF1000                      | 14.7                        | 13.3  | 12.0  | 10.3  | 10.00 | 8.7   | 8.0   | 7.0   | 6.3  | 4.7  | —     |
| RGEF1100                      | 16.1                        | 14.6  | 13.1  | 11.5  | 11.00 | 9.7   | 8.8   | 7.8   | 6.9  | 5.2  | —     |
| RGEF1200                      | 17.6                        | 16.0  | 14.4  | 12.4  | 12.00 | 10.4  | 9.6   | 8.4   | 7.6  | 5.6  | —     |
| RGEF1400                      | 20.5                        | 18.7  | 16.8  | 14.5  | 14.00 | 12.1  | 11.2  | 9.8   | 8.9  | 6.5  | —     |
| <b>RHEF</b>                   |                             |       |       |       |       |       |       |       |      |      |       |
| <b>16V - High Temperature</b> |                             |       |       |       |       |       |       |       |      |      |       |
| RHEF200                       | 2.71                        | 2.49  | 2.26  | 2.06  | 2.00  | 1.77  | 1.60  | 1.46  | 1.34 | 1.11 | 0.49  |
| RHEF300                       | 4.07                        | 3.74  | 3.41  | 3.09  | 3.00  | 2.65  | 2.40  | 2.21  | 2.00 | 1.66 | 0.74  |
| RHEF400                       | 5.57                        | 5.11  | 4.65  | 4.22  | 4.00  | 3.62  | 3.29  | 3.01  | 2.73 | 2.27 | 1.01  |
| RHEF450                       | 6.10                        | 5.60  | 5.10  | 4.60  | 4.50  | 4.00  | 3.60  | 3.30  | 3.00 | 2.50 | 1.10  |
| RHEF550                       | 7.47                        | 6.86  | 6.24  | 5.66  | 5.50  | 4.85  | 4.41  | 4.04  | 3.66 | 3.05 | 1.36  |
| RHEF600                       | 8.20                        | 7.50  | 6.80  | 6.20  | 6.00  | 5.30  | 4.90  | 4.40  | 4.00 | 3.30 | 1.50  |
| RHEF650                       | 8.80                        | 8.10  | 7.40  | 6.70  | 6.50  | 5.70  | 5.30  | 4.80  | 4.30 | 3.60 | 1.60  |
| RHEF700                       | 9.51                        | 8.73  | 7.95  | 7.20  | 7.00  | 6.17  | 5.61  | 5.15  | 4.66 | 3.88 | 1.73  |
| RHEF750                       | 10.20                       | 9.40  | 8.60  | 7.70  | 7.50  | 6.60  | 6.10  | 5.60  | 5.00 | 4.10 | 1.90  |
| RHEF800                       | 10.87                       | 9.98  | 9.08  | 8.23  | 8.00  | 7.06  | 6.41  | 5.88  | 5.33 | 4.43 | 1.97  |
| RHEF900                       | 12.21                       | 11.19 | 10.16 | 9.26  | 9.00  | 7.97  | 7.20  | 6.56  | 6.04 | 5.01 | 2.19  |
| RHEF1000                      | 13.60                       | 12.50 | 11.40 | 10.30 | 10.00 | 8.80  | 8.10  | 7.40  | 6.60 | 5.50 | 2.50  |
| RHEF1100                      | 14.94                       | 13.72 | 12.49 | 11.31 | 11.00 | 9.70  | 8.82  | 8.09  | 7.32 | 6.09 | 2.71  |
| RHEF1300                      | 17.70                       | 16.30 | 14.80 | 13.40 | 13.00 | 11.40 | 10.50 | 9.60  | 8.60 | 7.20 | 3.30  |
| RHEF1400                      | 19.01                       | 17.46 | 15.89 | 14.40 | 14.00 | 12.35 | 11.22 | 10.29 | 9.32 | 7.76 | 3.45  |
| RHEF1500                      | 20.40                       | 18.80 | 17.10 | 15.50 | 15.00 | 13.20 | 12.10 | 11.10 | 9.90 | 8.30 | 3.80  |
| <b>RUSBF</b>                  |                             |       |       |       |       |       |       |       |      |      |       |
| <b>6V</b>                     |                             |       |       |       |       |       |       |       |      |      |       |
| RUSBF075                      | 1.05                        | 0.95  | 0.85  | 0.75  | 0.73  | 0.65  | 0.60  | 0.55  | 0.50 | 0.43 | —     |
| RUSBF120                      | 1.69                        | 1.52  | 1.36  | 1.20  | 1.16  | 1.04  | 0.96  | 0.88  | 0.80 | 0.68 | —     |
| RUSBF155                      | 2.17                        | 1.96  | 1.75  | 1.55  | 1.50  | 1.34  | 1.24  | 1.14  | 1.03 | 0.88 | —     |

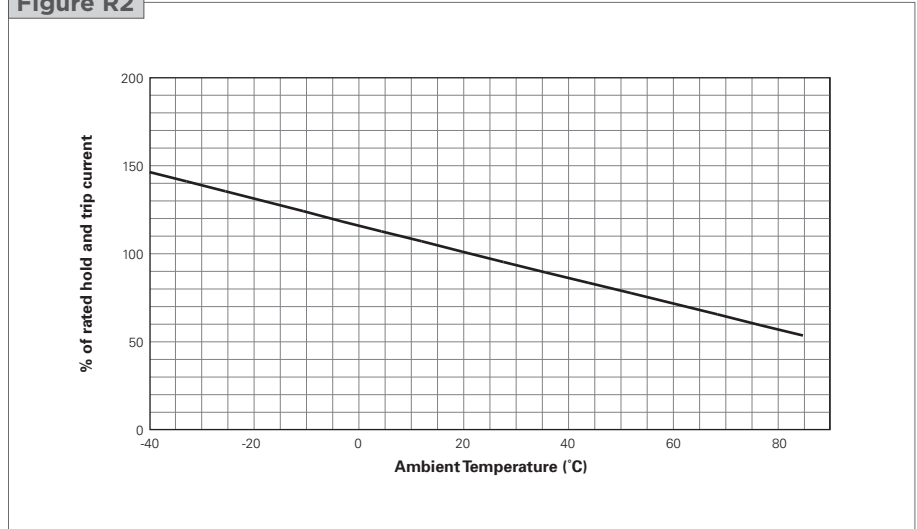
**Figure R1-R5 Thermal Derating Curve for Radial-leaded Devices**

RXEF and BBRF



RKEF

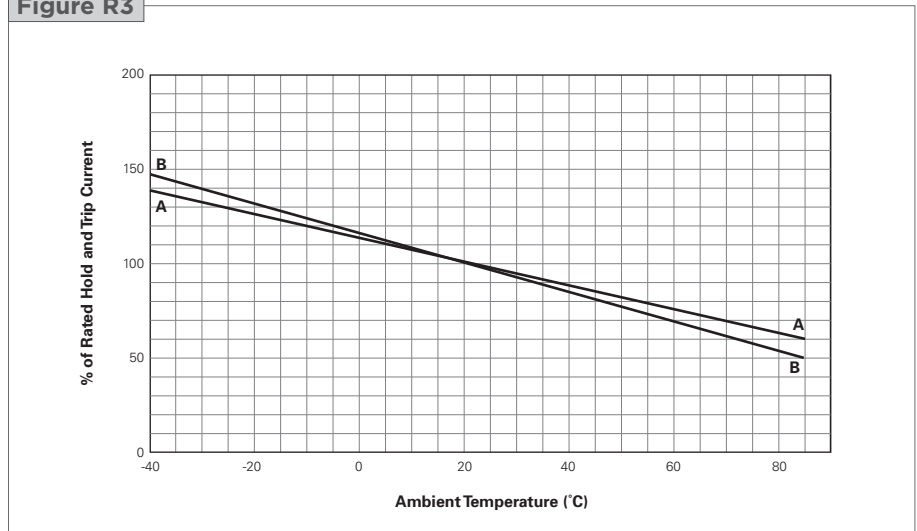
Figure R2



A = RUSBF075,  
RUSBF120,  
RUSBF155

B = RUEF,  
RTEF,  
and all other RUSBF

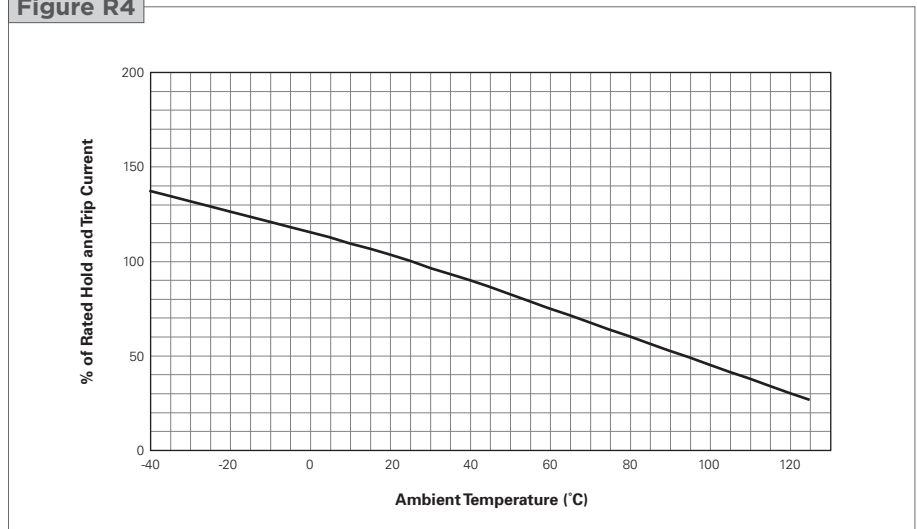
Figure R3



10

RHEF

Figure R4

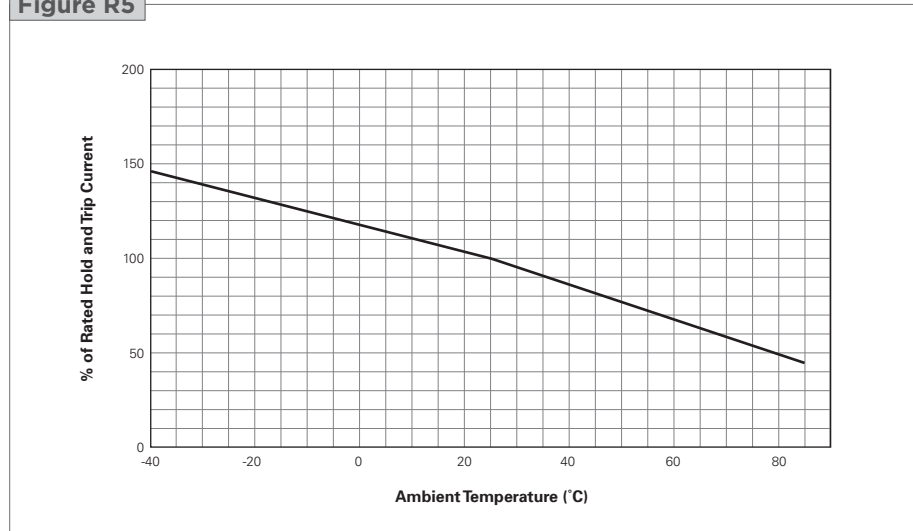


**Figure R1-R5 Thermal Derating Curve for Radial-leaded Devices**

Cont'd

RGEF

**Figure R5**



**Table R3 Electrical Characteristics for Radial-leaded Devices**

| Part Number     | I <sub>H</sub> (A) | I <sub>T</sub> (A) | V <sub>MAX</sub> (V) | I <sub>MAX</sub> (A) | P <sub>D</sub> TYP (W) | Max. Time-to-trip (A) (s) |      | R <sub>MIN</sub> (Ω) | R <sub>MAX</sub> (Ω) | R <sub>1MAX</sub> (Ω) | Lead Size [mm <sup>2</sup> (AWG)] |
|-----------------|--------------------|--------------------|----------------------|----------------------|------------------------|---------------------------|------|----------------------|----------------------|-----------------------|-----------------------------------|
| <b>BBRF 99V</b> |                    |                    |                      |                      |                        |                           |      |                      |                      |                       |                                   |
| BBRF550         | 0.55               | 1.10               | 99                   | 20                   | 1.5                    | 1.60                      | 60   | 0.8                  | 1.30                 | 1.95                  | [0.520mm <sup>2</sup> (20)]       |
| <b>RXEF 60V</b> |                    |                    |                      |                      |                        |                           |      |                      |                      |                       |                                   |
| RXEF005         | 0.05               | 0.10               | 60                   | 40                   | 0.22                   | 0.25                      | 5.0  | 7.3                  | 11.10                | 20.00                 | [0.128mm <sup>2</sup> (26)]       |
| RXEF010         | 0.10               | 0.20               | 60                   | 40                   | 0.38                   | 0.50                      | 4.0  | 2.5                  | 4.50                 | 7.50                  | [0.205mm <sup>2</sup> (24)]       |
| RXEF017         | 0.17               | 0.34               | 60                   | 40                   | 0.48                   | 0.85                      | 3.0  | 3.3                  | 5.21                 | 8.00                  | [0.205mm <sup>2</sup> (24)]       |
| <b>RXEF 72V</b> |                    |                    |                      |                      |                        |                           |      |                      |                      |                       |                                   |
| RXEF020         | 0.20               | 0.40               | 72                   | 40                   | 0.41                   | 1.00                      | 2.2  | 1.83                 | 2.75                 | 4.40                  | [0.205mm <sup>2</sup> (24)]       |
| RXEF025         | 0.25               | 0.50               | 72                   | 40                   | 0.45                   | 1.25                      | 2.5  | 1.25                 | 1.95                 | 3.00                  | [0.205mm <sup>2</sup> (24)]       |
| RXEF030         | 0.30               | 0.60               | 72                   | 40                   | 0.49                   | 1.50                      | 3.0  | 0.88                 | 1.33                 | 2.10                  | [0.205mm <sup>2</sup> (24)]       |
| RXEF040         | 0.40               | 0.80               | 72                   | 40                   | 0.56                   | 2.00                      | 3.8  | 0.55                 | 0.86                 | 1.29                  | [0.205mm <sup>2</sup> (24)]       |
| RXEF050         | 0.50               | 1.00               | 72                   | 40                   | 0.77                   | 2.50                      | 4.0  | 0.50                 | 0.77                 | 1.17                  | [0.205mm <sup>2</sup> (24)]       |
| RXEF065         | 0.65               | 1.30               | 72                   | 40                   | 0.88                   | 3.25                      | 5.3  | 0.31                 | 0.48                 | 0.72                  | [0.205mm <sup>2</sup> (24)]       |
| RXEF075         | 0.75               | 1.50               | 72                   | 40                   | 0.92                   | 3.75                      | 6.3  | 0.25                 | 0.40                 | 0.60                  | [0.205mm <sup>2</sup> (24)]       |
| RXEF090         | 0.90               | 1.80               | 72                   | 40                   | 0.99                   | 4.50                      | 7.2  | 0.20                 | 0.31                 | 0.47                  | [0.205mm <sup>2</sup> (24)]       |
| RXEF110         | 1.10               | 2.20               | 72                   | 40                   | 1.50                   | 5.50                      | 8.2  | 0.15                 | 0.25                 | 0.38                  | [0.520mm <sup>2</sup> (20)]       |
| RXEF135         | 1.35               | 2.70               | 72                   | 40                   | 1.70                   | 6.75                      | 9.6  | 0.12                 | 0.19                 | 0.30                  | [0.520mm <sup>2</sup> (20)]       |
| RXEF160         | 1.60               | 3.20               | 72                   | 40                   | 1.90                   | 8.00                      | 11.4 | 0.09                 | 0.14                 | 0.22                  | [0.520mm <sup>2</sup> (20)]       |
| RXEF185         | 1.85               | 3.70               | 72                   | 40                   | 2.10                   | 9.25                      | 12.6 | 0.08                 | 0.12                 | 0.19                  | [0.520mm <sup>2</sup> (20)]       |
| RXEF250         | 2.50               | 5.00               | 72                   | 40                   | 2.50                   | 12.50                     | 15.6 | 0.05                 | 0.08                 | 0.13                  | [0.520mm <sup>2</sup> (20)]       |
| RXEF300         | 3.00               | 6.00               | 72                   | 40                   | 2.80                   | 15.00                     | 19.8 | 0.04                 | 0.06                 | 0.10                  | [0.520mm <sup>2</sup> (20)]       |
| RXEF375         | 3.75               | 7.50               | 72                   | 40                   | 3.20                   | 18.75                     | 24.0 | 0.03                 | 0.05                 | 0.08                  | [0.520mm <sup>2</sup> (20)]       |
| <b>RKEF 60V</b> |                    |                    |                      |                      |                        |                           |      |                      |                      |                       |                                   |
| RKEF050         | 0.50               | 1.00               | 60                   | 40                   | 1.00                   | 8.00                      | 0.8  | 0.320                | 0.529                | 0.900                 | [0.205mm <sup>2</sup> (24)]       |
| RKEF065         | 0.65               | 1.30               | 60                   | 40                   | 1.25                   | 8.00                      | 1.0  | 0.250                | 0.450                | 0.720                 | [0.205mm <sup>2</sup> (24)]       |
| RKEF075         | 0.75               | 1.50               | 60                   | 40                   | 1.40                   | 8.00                      | 1.5  | 0.200                | 0.390                | 0.640                 | [0.205mm <sup>2</sup> (24)]       |
| RKEF090         | 0.90               | 1.80               | 60                   | 40                   | 1.50                   | 8.00                      | 2.0  | 0.190                | 0.320                | 0.520                 | [0.205mm <sup>2</sup> (24)]       |
| RKEF110         | 1.10               | 2.20               | 60                   | 40                   | 2.20                   | 8.00                      | 3.0  | 0.170                | 0.280                | 0.470                 | [0.520mm <sup>2</sup> (20)]       |
| RKEF135         | 1.35               | 2.70               | 60                   | 40                   | 2.30                   | 8.00                      | 4.5  | 0.110                | 0.220                | 0.370                 | [0.520mm <sup>2</sup> (20)]       |

**Table R3 Electrical Characteristics for Radial-leaded Devices**

Cont'd

| Part Number                         | I <sub>H</sub> (A) | I <sub>T</sub> (A) | V <sub>MAX</sub> (V) | I <sub>MAX</sub> (A) | P <sub>D Typ</sub> (W) | Max. Time-to-trip |      | R <sub>MIN</sub> (Ω) | R <sub>MAX</sub> (Ω) | R <sub>1MAX</sub> (Ω) | Lead Size [mm <sup>2</sup> (AWG)] |
|-------------------------------------|--------------------|--------------------|----------------------|----------------------|------------------------|-------------------|------|----------------------|----------------------|-----------------------|-----------------------------------|
|                                     |                    |                    |                      |                      |                        | (A)               | (s)  |                      |                      |                       |                                   |
| <b>RKEF 60V</b>                     |                    |                    |                      |                      |                        |                   |      |                      |                      |                       |                                   |
| RKEF160                             | 1.60               | 3.20               | 60                   | 40                   | 2.40                   | 8.20              | 9.0  | 0.100                | 0.200                | 0.320                 | [0.520mm <sup>2</sup> (20)]       |
| RKEF185                             | 1.85               | 3.70               | 60                   | 40                   | 2.60                   | 9.25              | 12.6 | 0.060                | 0.152                | 0.250                 | [0.520mm <sup>2</sup> (20)]       |
| RKEF250                             | 2.50               | 5.00               | 60                   | 40                   | 2.80                   | 12.50             | 15.6 | 0.040                | 0.085                | 0.140                 | [0.520mm <sup>2</sup> (20)]       |
| RKEF300                             | 3.00               | 6.00               | 60                   | 40                   | 3.20                   | 15.00             | 19.8 | 0.030                | 0.050                | 0.080                 | [0.520mm <sup>2</sup> (20)]       |
| RKEF375                             | 3.75               | 7.50               | 60                   | 40                   | 3.40                   | 18.75             | 22.0 | 0.017                | 0.040                | 0.060                 | [0.520mm <sup>2</sup> (20)]       |
| RKEF400                             | 4.00               | 8.00               | 60                   | 40                   | 3.70                   | 20.00             | 24.0 | 0.014                | 0.038                | 0.060                 | [0.520mm <sup>2</sup> (20)]       |
| RKEF500                             | 5.00               | 10.00              | 60                   | 40                   | 5.00                   | 25.00             | 28.0 | 0.012                | 0.030                | 0.050                 | [0.520mm <sup>2</sup> (20)]       |
| <b>RTEF 33V</b>                     |                    |                    |                      |                      |                        |                   |      |                      |                      |                       |                                   |
| RTEF120                             | 1.20               | 2.30               | 33                   | 40                   | 0.78                   | 6.00              | 3.5  | 0.074                | 0.120                | 0.180                 | [0.205mm <sup>2</sup> (24)]       |
| RTEF135                             | 1.35               | 2.50               | 33                   | 40                   | 0.84                   | 6.75              | 4.5  | 0.059                | 0.100                | 0.143                 | [0.205mm <sup>2</sup> (24)]       |
| RTEF190                             | 1.90               | 3.00               | 33                   | 40                   | 0.90                   | 9.50              | 3.5  | 0.045                | 0.063                | 0.092                 | [0.205mm <sup>2</sup> (24)]       |
| <b>RUEF 30V</b>                     |                    |                    |                      |                      |                        |                   |      |                      |                      |                       |                                   |
| RUEF090                             | 0.90               | 1.80               | 30                   | 100                  | 0.60                   | 4.50              | 5.9  | 0.070                | 0.120                | 0.22                  | [0.205mm <sup>2</sup> (24)]       |
| RUEF110                             | 1.10               | 2.20               | 30                   | 100                  | 0.70                   | 5.50              | 6.6  | 0.070                | 0.100                | 0.17                  | [0.205mm <sup>2</sup> (24)]       |
| RUEF135                             | 1.35               | 2.70               | 30                   | 100                  | 0.80                   | 6.75              | 7.3  | 0.040                | 0.080                | 0.13                  | [0.205mm <sup>2</sup> (24)]       |
| RUEF160                             | 1.60               | 3.20               | 30                   | 100                  | 0.90                   | 8.00              | 8.0  | 0.030                | 0.070                | 0.11                  | [0.205mm <sup>2</sup> (24)]       |
| RUEF185                             | 1.85               | 3.70               | 30                   | 100                  | 1.00                   | 9.25              | 8.7  | 0.030                | 0.060                | 0.09                  | [0.205mm <sup>2</sup> (24)]       |
| RUEF250                             | 2.50               | 5.00               | 30                   | 100                  | 1.20                   | 12.50             | 10.3 | 0.020                | 0.040                | 0.07                  | [0.205mm <sup>2</sup> (24)]       |
| RUEF300                             | 3.00               | 6.00               | 30                   | 100                  | 2.00                   | 15.00             | 10.8 | 0.020                | 0.050                | 0.08                  | [0.520mm <sup>2</sup> (20)]       |
| RUEF400                             | 4.00               | 8.00               | 30                   | 100                  | 2.50                   | 20.00             | 12.7 | 0.010                | 0.030                | 0.05                  | [0.520mm <sup>2</sup> (20)]       |
| RUEF500                             | 5.00               | 10.00              | 30                   | 100                  | 3.00                   | 25.00             | 14.5 | 0.010                | 0.030                | 0.05                  | [0.520mm <sup>2</sup> (20)]       |
| RUEF600                             | 6.00               | 12.00              | 30                   | 100                  | 3.50                   | 30.00             | 16.0 | 0.005                | 0.020                | 0.04                  | [0.520mm <sup>2</sup> (20)]       |
| RUEF700                             | 7.00               | 14.00              | 30                   | 100                  | 3.80                   | 35.00             | 17.5 | 0.005                | 0.020                | 0.03                  | [0.520mm <sup>2</sup> (20)]       |
| RUEF800                             | 8.00               | 16.00              | 30                   | 100                  | 4.00                   | 40.00             | 18.8 | 0.005                | 0.013                | 0.02                  | [0.520mm <sup>2</sup> (20)]       |
| RUEF900                             | 9.00               | 18.00              | 30                   | 100                  | 4.20                   | 45.00             | 20.0 | 0.005                | 0.010                | 0.02                  | [0.520mm <sup>2</sup> (20)]       |
| <b>RHEF* 30V - High Temperature</b> |                    |                    |                      |                      |                        |                   |      |                      |                      |                       |                                   |
| RHEF050                             | 0.5                | 0.9                | 30                   | 40                   | 0.9                    | 2.5               | 2.5  | 0.480                | 0.780                | 1.10                  | [0.205mm <sup>2</sup> (24)]       |
| RHEF070                             | 0.7                | 1.4                | 30                   | 40                   | 1.4                    | 3.5               | 3.2  | 0.300                | 0.540                | 0.80                  | [0.205mm <sup>2</sup> (24)]       |
| RHEF100                             | 1.0                | 1.8                | 30                   | 40                   | 1.4                    | 5.0               | 5.2  | 0.180                | 0.300                | 0.43                  | [0.205mm <sup>2</sup> (24)]       |
| <b>RUSBF 16V</b>                    |                    |                    |                      |                      |                        |                   |      |                      |                      |                       |                                   |
| RUSBF090                            | 0.90               | 1.8                | 16                   | 40                   | 0.6                    | 8.0               | 1.2  | 0.070                | 0.120                | 0.180                 | [0.205mm <sup>2</sup> (24)]       |
| RUSBF110                            | 1.10               | 2.2                | 16                   | 40                   | 0.7                    | 8.0               | 2.3  | 0.050                | 0.095                | 0.140                 | [0.205mm <sup>2</sup> (24)]       |
| RUSBF135                            | 1.35               | 2.7                | 16                   | 40                   | 0.8                    | 8.0               | 4.5  | 0.040                | 0.074                | 0.112                 | [0.205mm <sup>2</sup> (24)]       |
| RUSBF160                            | 1.60               | 3.2                | 16                   | 40                   | 0.9                    | 8.0               | 9.0  | 0.030                | 0.061                | 0.110                 | [0.205mm <sup>2</sup> (24)]       |
| RUSBF185                            | 1.85               | 3.7                | 16                   | 40                   | 1.0                    | 8.0               | 10.0 | 0.030                | 0.051                | 0.090                 | [0.205mm <sup>2</sup> (24)]       |
| RUSBF250                            | 2.50               | 5.0                | 16                   | 40                   | 1.2                    | 8.0               | 40.0 | 0.020                | 0.036                | 0.060                 | [0.205mm <sup>2</sup> (24)]       |
| <b>RGEF* 16V</b>                    |                    |                    |                      |                      |                        |                   |      |                      |                      |                       |                                   |
| RGEF250                             | 2.5                | 4.7                | 16                   | 100                  | 1.0                    | 12.5              | 5.0  | 0.0220               | 0.0350               | 0.0530                | [0.205mm <sup>2</sup> (24)]       |
| RGEF300                             | 3.0                | 5.1                | 16                   | 100                  | 2.3                    | 15.0              | 1.0  | 0.0380               | 0.0645               | 0.0975                | [0.520mm <sup>2</sup> (20)]       |
| RGEF400                             | 4.0                | 6.8                | 16                   | 100                  | 2.4                    | 20.0              | 1.7  | 0.0210               | 0.0390               | 0.0600                | [0.520mm <sup>2</sup> (20)]       |
| RGEF500                             | 5.0                | 8.5                | 16                   | 100                  | 2.6                    | 25.0              | 2.0  | 0.0150               | 0.0240               | 0.0340                | [0.520mm <sup>2</sup> (20)]       |
| RGEF600                             | 6.0                | 10.2               | 16                   | 100                  | 2.8                    | 30.0              | 3.3  | 0.0100               | 0.0190               | 0.0280                | [0.520mm <sup>2</sup> (20)]       |
| RGEF700                             | 7.0                | 11.9               | 16                   | 100                  | 3.0                    | 35.0              | 3.5  | 0.0077               | 0.0131               | 0.0200                | [0.520mm <sup>2</sup> (20)]       |
| RGEF800                             | 8.0                | 13.6               | 16                   | 100                  | 3.0                    | 40.0              | 5.0  | 0.0056               | 0.0110               | 0.0175                | [0.520mm <sup>2</sup> (20)]       |
| RGEF900                             | 9.0                | 15.3               | 16                   | 100                  | 3.3                    | 45.0              | 5.5  | 0.0047               | 0.0091               | 0.0135                | [0.520mm <sup>2</sup> (20)]       |
| RGEF1000                            | 10.0               | 17.0               | 16                   | 100                  | 3.6                    | 50.0              | 6.0  | 0.0040               | 0.0070               | 0.0102                | [0.520mm <sup>2</sup> (20)]       |
| RGEF1100                            | 11.0               | 18.7               | 16                   | 100                  | 3.7                    | 55.0              | 7.0  | 0.0037               | 0.0060               | 0.0089                | [0.520mm <sup>2</sup> (20)]       |
| RGEF1200                            | 12.0               | 20.4               | 16                   | 100                  | 4.2                    | 60.0              | 7.5  | 0.0033               | 0.0057               | 0.0086                | [0.823mm <sup>2</sup> (18)]       |
| RGEF1400                            | 14.0               | 23.8               | 16                   | 100                  | 4.6                    | 70.0              | 9.0  | 0.0026               | 0.0043               | 0.0064                | [0.823mm <sup>2</sup> (18)]       |

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**Table R3 Electrical Characteristics for Radial-leaded Devices** Cont'd

| Part Number                   | I <sub>H</sub> (A) | I <sub>T</sub> (A) | V <sub>MAX</sub> (V) | I <sub>MAX</sub> (A) | P <sub>D TYP</sub> (W) | Max. Time-to-trip |      | R <sub>MIN</sub> (Ω) | R <sub>MAX</sub> (Ω) | R <sub>1MAX</sub> (Ω) | Lead Size [mm <sup>2</sup> (AWG)] |
|-------------------------------|--------------------|--------------------|----------------------|----------------------|------------------------|-------------------|------|----------------------|----------------------|-----------------------|-----------------------------------|
|                               |                    |                    |                      |                      |                        | (A)               | (s)  |                      |                      |                       |                                   |
| <b>RHEF*</b>                  |                    |                    |                      |                      |                        |                   |      |                      |                      |                       |                                   |
| <b>16V - High Temperature</b> |                    |                    |                      |                      |                        |                   |      |                      |                      |                       |                                   |
| RHEF200                       | 2.0                | 3.8                | 16                   | 100                  | 1.4                    | 10.0              | 4.3  | 0.0450               | 0.07400              | 0.1100                | [0.205mm <sup>2</sup> (24)]       |
| RHEF300                       | 3.0                | 6.0                | 16                   | 100                  | 3.0                    | 15.0              | 5.0  | 0.0330               | 0.05300              | 0.0790                | [0.520mm <sup>2</sup> (20)]       |
| RHEF400                       | 4.0                | 7.5                | 16                   | 100                  | 3.3                    | 20.0              | 5.0  | 0.0240               | 0.04000              | 0.0600                | [0.520mm <sup>2</sup> (20)]       |
| RHEF450                       | 4.5                | 7.8                | 16                   | 100                  | 3.6                    | 22.5              | 3.0  | 0.0220               | 0.03600              | 0.0540                | [0.520mm <sup>2</sup> (20)]       |
| RHEF550                       | 5.5                | 10.0               | 16                   | 100                  | 3.5                    | 27.5              | 6.0  | 0.0150               | 0.02500              | 0.0370                | [0.520mm <sup>2</sup> (20)]       |
| RHEF600                       | 6.0                | 10.8               | 16                   | 100                  | 4.1                    | 30.0              | 5.0  | 0.0130               | 0.02150              | 0.0320                | [0.520mm <sup>2</sup> (20)]       |
| RHEF650                       | 6.5                | 12.0               | 16                   | 100                  | 4.1                    | 32.5              | 5.5  | 0.0110               | 0.01750              | 0.0260                | [0.520mm <sup>2</sup> (20)]       |
| RHEF700                       | 7.0                | 13.0               | 16                   | 100                  | 4.0                    | 35.0              | 7.0  | 0.0100               | 0.01640              | 0.0250                | [0.520mm <sup>2</sup> (20)]       |
| RHEF750                       | 7.5                | 13.1               | 16                   | 100                  | 4.5                    | 37.5              | 7.0  | 0.0094               | 0.01530              | 0.0220                | [0.520mm <sup>2</sup> (20)]       |
| RHEF800                       | 8.0                | 15.0               | 16                   | 100                  | 4.2                    | 40.0              | 8.0  | 0.0080               | 0.01350              | 0.0200                | [0.520mm <sup>2</sup> (20)]       |
| RHEF900                       | 9.0                | 16.5               | 16                   | 100                  | 5.0                    | 45.0              | 10.0 | 0.0074               | 0.01200              | 0.0170                | [0.520mm <sup>2</sup> (20)]       |
| RHEF1000                      | 10.0               | 18.5               | 16                   | 100                  | 5.3                    | 50.0              | 9.0  | 0.0062               | 0.01050              | 0.0150                | [0.520mm <sup>2</sup> (20)]       |
| RHEF1100                      | 11.0               | 20.0               | 16                   | 100                  | 5.5                    | 55.0              | 11.0 | 0.0055               | 0.00900              | 0.0130                | [0.520mm <sup>2</sup> (20)]       |
| RHEF1300                      | 13.0               | 24.0               | 16                   | 100                  | 6.9                    | 65.0              | 13.0 | 0.0041               | 0.00690              | 0.0100                | [0.823mm <sup>2</sup> (18)]       |
| RHEF1400                      | 14.0               | 27.0               | 16                   | 100                  | 6.9                    | 70.0              | 13.0 | 0.0030               | 0.00600              | 0.0090                | [0.823mm <sup>2</sup> (18)]       |
| RHEF1500                      | 15.0               | 28.0               | 16                   | 100                  | 7.0                    | 75.0              | 20.0 | 0.0032               | 0.00613              | 0.0092                | [0.823mm <sup>2</sup> (18)]       |
| <b>RUSBF</b>                  |                    |                    |                      |                      |                        |                   |      |                      |                      |                       |                                   |
| <b>6V</b>                     |                    |                    |                      |                      |                        |                   |      |                      |                      |                       |                                   |
| RUSBF075                      | 0.75               | 1.30               | 6                    | 40                   | 0.3                    | 8.0               | 0.4  | 0.110                | 0.1750               | 0.23                  | [0.205mm <sup>2</sup> (24)]       |
| RUSBF120                      | 1.20               | 2.00               | 6                    | 40                   | 0.6                    | 8.0               | 0.5  | 0.070                | 0.0975               | 0.14                  | [0.205mm <sup>2</sup> (24)]       |
| RUSBF155                      | 1.55               | 2.65               | 6                    | 40                   | 0.6                    | 7.8               | 2.2  | 0.040                | 0.0705               | 0.10                  | [0.205mm <sup>2</sup> (24)]       |

**Notes:**

- I<sub>H</sub> : Hold current: maximum current device will pass without interruption in 20°C still air.
  - I<sub>T</sub> : Trip current: minimum current that will switch the device from low resistance to high resistance in 20°C still air.
  - V<sub>MAX</sub> : Maximum continuous voltage device can withstand without damage at rated current.
  - I<sub>MAX</sub> : Maximum fault current device can withstand without damage at rated voltage.
  - P<sub>D</sub> : Power dissipated from device when in the tripped state in 20°C still air.
  - R<sub>MIN</sub> : Minimum resistance of device as supplied at 20°C unless otherwise specified.
  - R<sub>MAX</sub> : Maximum resistance of device as supplied at 20°C unless otherwise specified.
  - R<sub>1MAX</sub> : Maximum resistance of device when measured one hour post reflow (surface-mount device) or one hour post trip (radial-leaded device) at 20°C unless otherwise specified.
- \* Electrical characteristics determined at 25°C.

**Figure R6-R14 Dimension Figures for Radial-leaded Devices**

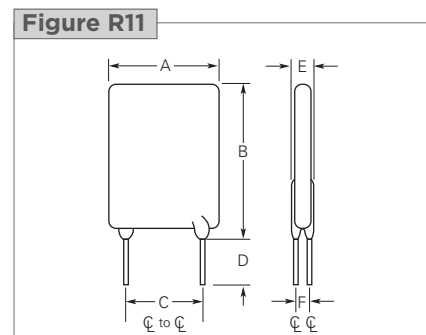
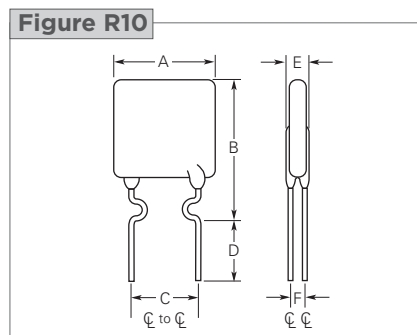
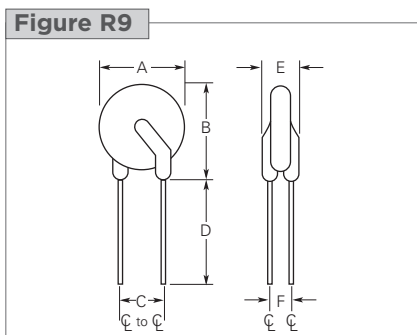
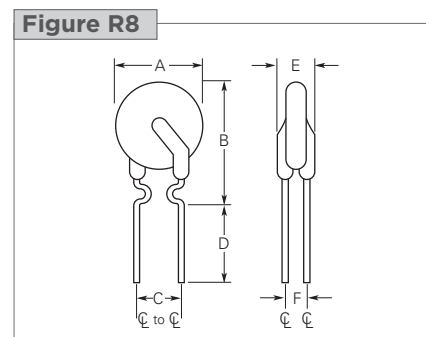
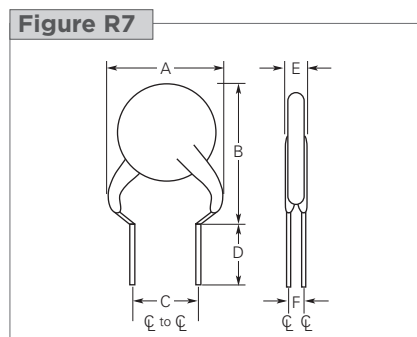
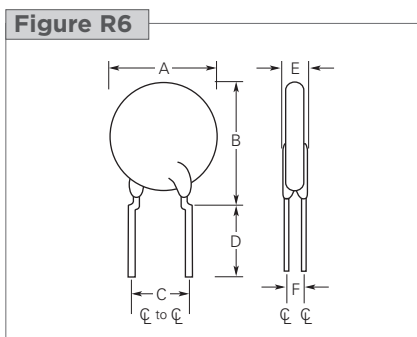


Figure R12

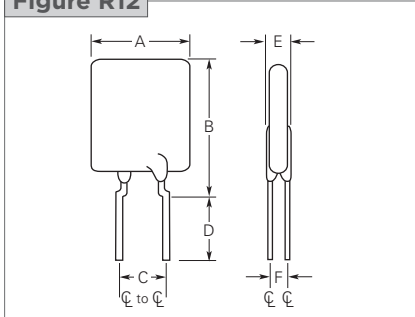


Figure R13

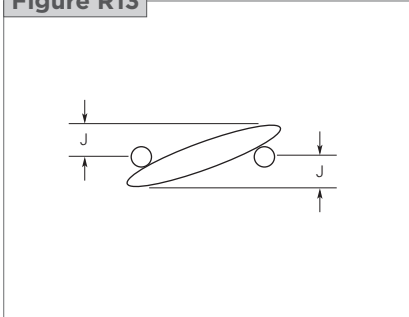


Figure R14

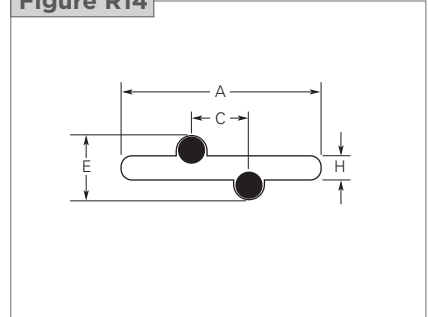


Table R4 Dimensions for Radial-leaded Devices in Millimeters (Inches)

| Part Number | A    |                | B    |                | C             |                | D             |      | E    |               | F    | H               | J             | Figure          |
|-------------|------|----------------|------|----------------|---------------|----------------|---------------|------|------|---------------|------|-----------------|---------------|-----------------|
|             | Min. | Max.           | Min. | Max.           | Min.          | Max.           | Min.          | Max. | Min. | Max.          | Typ. | Typ.            | Typ.          |                 |
| <b>BBRF</b> |      |                |      |                |               |                |               |      |      |               |      |                 |               |                 |
| <b>99V</b>  |      |                |      |                |               |                |               |      |      |               |      |                 |               |                 |
| BBRF550     | —    | 10.9<br>(0.43) | —    | 14.0<br>(0.55) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.3)  | —    | —    | 3.6<br>(0.14) | —    | 1.37<br>(0.054) | 1.2<br>(0.05) | R6, R13,<br>R14 |
| <b>RXEF</b> |      |                |      |                |               |                |               |      |      |               |      |                 |               |                 |
| <b>60V</b>  |      |                |      |                |               |                |               |      |      |               |      |                 |               |                 |
| RXEF005     | —    | 8.0<br>(0.32)  | —    | 8.3<br>(0.33)  | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.07<br>(0.042) | 1.0<br>(0.04) | R7, R13,<br>R14 |
| RXEF010     | —    | 7.4<br>(0.29)  | —    | 11.6<br>(0.46) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.07<br>(0.042) | 1.0<br>(0.04) | R7, R13,<br>R14 |
| RXEF017     | —    | 7.4<br>(0.29)  | —    | 12.7<br>(0.50) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.68<br>(0.066) | 1.7<br>(0.07) | R7, R13,<br>R14 |
| <b>RXEF</b> |      |                |      |                |               |                |               |      |      |               |      |                 |               |                 |
| <b>72V</b>  |      |                |      |                |               |                |               |      |      |               |      |                 |               |                 |
| RXEF020     | —    | 7.4<br>(0.29)  | —    | 11.7<br>(0.46) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.17<br>(0.046) | 1.0<br>(0.04) | R8, R13,<br>R14 |
| RXEF025     | —    | 7.4<br>(0.29)  | —    | 12.7<br>(0.50) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.17<br>(0.046) | 1.0<br>(0.04) | R8, R13,<br>R14 |
| RXEF030     | —    | 7.4<br>(0.29)  | —    | 12.7<br>(0.50) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.17<br>(0.046) | 1.0<br>(0.04) | R8, R13,<br>R14 |
| RXEF040     | —    | 7.6<br>(0.30)  | —    | 13.5<br>(0.53) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.17<br>(0.046) | 1.2<br>(0.05) | R8, R13,<br>R14 |
| RXEF050     | —    | 7.9<br>(0.31)  | —    | 13.7<br>(0.54) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.17<br>(0.046) | 1.2<br>(0.05) | R8, R13,<br>R14 |
| RXEF065     | —    | 9.4<br>(0.37)  | —    | 14.5<br>(0.57) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.17<br>(0.046) | 1.5<br>(0.06) | R8, R13,<br>R14 |
| RXEF075     | —    | 10.2<br>(0.40) | —    | 15.2<br>(0.60) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.17<br>(0.046) | 1.5<br>(0.06) | R8, R13,<br>R14 |
| RXEF090     | —    | 11.2<br>(0.44) | —    | 15.8<br>(0.62) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.17<br>(0.046) | 1.5<br>(0.06) | R8, R13,<br>R14 |
| RXEF110     | —    | 12.8<br>(0.50) | —    | 17.5<br>(0.69) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.37<br>(0.054) | 1.2<br>(0.05) | R9, R13,<br>R14 |
| RXEF135     | —    | 14.5<br>(0.57) | —    | 19.1<br>(0.75) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.37<br>(0.054) | 1.2<br>(0.05) | R9, R13,<br>R14 |
| RXEF160     | —    | 16.3<br>(0.64) | —    | 20.8<br>(0.82) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.37<br>(0.054) | 1.5<br>(0.06) | R9, R13,<br>R14 |
| RXEF185     | —    | 17.5<br>(0.69) | —    | 22.4<br>(0.88) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.37<br>(0.054) | 1.5<br>(0.06) | R9, R13,<br>R14 |
| RXEF250     | —    | 20.8<br>(0.82) | —    | 25.4<br>(1.00) | 9.4<br>(0.37) | 10.9<br>(0.43) | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.37<br>(0.054) | 1.7<br>(0.07) | R9, R13,<br>R14 |
| RXEF300     | —    | 23.9<br>(0.94) | —    | 28.6<br>(1.13) | 9.4<br>(0.37) | 10.9<br>(0.43) | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.37<br>(0.054) | 1.7<br>(0.07) | R9, R13,<br>R14 |
| RXEF375     | —    | 27.2<br>(1.07) | —    | 31.8<br>(1.25) | 9.4<br>(0.37) | 10.9<br>(0.43) | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | —    | 1.37<br>(0.054) | 1.7<br>(0.07) | R9, R13,<br>R14 |

**Table R4 Dimensions for Radial-leaded Devices in Millimeters (Inches)**

Cont'd

| Part Number | A    |                 | B    |                 | C              |                 | D              |      | E    |                | F    | H               | J             | Figure           |
|-------------|------|-----------------|------|-----------------|----------------|-----------------|----------------|------|------|----------------|------|-----------------|---------------|------------------|
|             | Min. | Max.            | Min. | Max.            | Min.           | Max.            | Min.           | Max. | Min. | Max.           | Typ. | Typ.            | Typ.          |                  |
| <b>RKEF</b> |      |                 |      |                 |                |                 |                |      |      |                |      |                 |               |                  |
| <b>60V</b>  |      |                 |      |                 |                |                 |                |      |      |                |      |                 |               |                  |
| RKEF050     | —    | 7.10<br>(0.28)  | —    | 11.43<br>(0.45) | 4.32<br>(0.17) | 5.84<br>(0.23)  | 7.60<br>(0.30) | —    | —    | 3.56<br>(0.14) | —    | —               | —             | R10, R13,<br>R14 |
| RKEF065     | —    | 7.11<br>(0.28)  | —    | 12.20<br>(0.48) | 4.32<br>(0.17) | 5.84<br>(0.23)  | 7.60<br>(0.30) | —    | —    | 3.56<br>(0.14) | —    | —               | —             | R10, R13,<br>R14 |
| RKEF075     | —    | 7.87<br>(0.31)  | —    | 12.20<br>(0.48) | 4.32<br>(0.17) | 5.84<br>(0.23)  | 7.60<br>(0.30) | —    | —    | 3.56<br>(0.14) | —    | —               | —             | R10, R13,<br>R14 |
| RKEF090     | —    | 7.87<br>(0.31)  | —    | 13.97<br>(0.55) | 4.32<br>(0.17) | 5.84<br>(0.23)  | 7.60<br>(0.30) | —    | —    | 3.56<br>(0.14) | —    | —               | —             | R10, R13,<br>R14 |
| RKEF110     | —    | 7.60<br>(0.30)  | —    | 15.00<br>(0.59) | 4.32<br>(0.17) | 5.84<br>(0.23)  | 7.60<br>(0.30) | —    | —    | 4.10<br>(0.16) | —    | —               | —             | R10, R13,<br>R14 |
| RKEF135     | —    | 10.20<br>(0.40) | —    | 17.00<br>(0.67) | 4.32<br>(0.17) | 5.84<br>(0.23)  | 7.60<br>(0.30) | —    | —    | 3.81<br>(0.15) | —    | —               | —             | R11, R13,<br>R14 |
| RKEF160     | —    | 12.20<br>(0.48) | —    | 18.30<br>(0.72) | 4.32<br>(0.17) | 5.84<br>(0.23)  | 7.60<br>(0.30) | —    | —    | 3.81<br>(0.15) | —    | —               | —             | R11, R13,<br>R14 |
| RKEF185     | —    | 13.00<br>(0.51) | —    | 18.80<br>(0.74) | 4.32<br>(0.17) | 5.84<br>(0.23)  | 7.60<br>(0.30) | —    | —    | 3.81<br>(0.15) | —    | —               | —             | R11, R13,<br>R14 |
| RKEF250     | —    | 14.00<br>(0.55) | —    | 20.60<br>(0.81) | 4.32<br>(0.17) | 5.84<br>(0.23)  | 7.60<br>(0.30) | —    | —    | 3.00<br>(0.12) | —    | —               | —             | R11, R13,<br>R14 |
| RKEF300     | —    | 16.50<br>(0.65) | —    | 21.20<br>(0.83) | 4.32<br>(0.17) | 5.84<br>(0.23)  | 7.60<br>(0.30) | —    | —    | 3.00<br>(0.12) | —    | —               | —             | R11, R13,<br>R14 |
| RKEF375     | —    | 16.50<br>(0.65) | —    | 25.20<br>(0.99) | 9.40<br>(0.37) | 10.90<br>(0.43) | 7.60<br>(0.30) | —    | —    | 3.00<br>(0.12) | —    | —               | —             | R11, R13,<br>R14 |
| RKEF400     | —    | 21.00<br>(0.83) | —    | 24.90<br>(0.98) | 9.40<br>(0.37) | 10.90<br>(0.43) | 7.60<br>(0.30) | —    | —    | 3.00<br>(0.12) | —    | —               | —             | R11, R13,<br>R14 |
| RKEF500     | —    | 24.10<br>(0.95) | —    | 29.00<br>(1.14) | 9.40<br>(0.37) | 10.90<br>(0.43) | 7.60<br>(0.30) | —    | —    | 3.00<br>(0.12) | —    | —               | —             | R11, R13,<br>R14 |
| <b>RTEF</b> |      |                 |      |                 |                |                 |                |      |      |                |      |                 |               |                  |
| <b>33V</b>  |      |                 |      |                 |                |                 |                |      |      |                |      |                 |               |                  |
| RTEF120     | —    | 7.4<br>(0.29)   | —    | 12.2<br>(0.48)  | 4.3<br>(0.17)  | 5.8<br>(0.23)   | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 0.89<br>(0.035) | 0.8<br>(0.03) | R10, R13,<br>R14 |
| RTEF135     | —    | 7.4<br>(0.29)   | —    | 14.2<br>(0.56)  | 4.3<br>(0.17)  | 5.8<br>(0.23)   | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 0.89<br>(0.035) | 0.8<br>(0.03) | R10, R13,<br>R14 |
| RTEF190     | —    | 8.9<br>(0.35)   | —    | 13.5<br>(0.53)  | 4.3<br>(0.17)  | 5.8<br>(0.23)   | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 0.89<br>(0.035) | 1.0<br>(0.04) | R10, R13,<br>R14 |
| <b>RUEF</b> |      |                 |      |                 |                |                 |                |      |      |                |      |                 |               |                  |
| <b>30V</b>  |      |                 |      |                 |                |                 |                |      |      |                |      |                 |               |                  |
| RUEF090     | —    | 7.4<br>(0.29)   | —    | 12.2<br>(0.48)  | 4.3<br>(0.17)  | 5.8<br>(0.23)   | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 0.89<br>(0.035) | 0.8<br>(0.03) | R10, R13,<br>R14 |
| RUEF110     | —    | 7.4<br>(0.29)   | —    | 14.2<br>(0.56)  | 4.3<br>(0.17)  | 5.8<br>(0.23)   | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 0.89<br>(0.035) | 0.8<br>(0.03) | R10, R13,<br>R14 |
| RUEF135     | —    | 8.9<br>(0.35)   | —    | 13.5<br>(0.53)  | 4.3<br>(0.17)  | 5.8<br>(0.23)   | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 0.89<br>(0.035) | 1.0<br>(0.04) | R10, R13,<br>R14 |
| RUEF160     | —    | 8.9<br>(0.35)   | —    | 15.2<br>(0.60)  | 4.3<br>(0.17)  | 5.8<br>(0.23)   | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 0.89<br>(0.035) | 1.0<br>(0.04) | R10, R13,<br>R14 |
| RUEF185     | —    | 10.2<br>(0.40)  | —    | 15.7<br>(0.62)  | 4.3<br>(0.17)  | 5.8<br>(0.23)   | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 0.89<br>(0.035) | 1.0<br>(0.04) | R10, R13,<br>R14 |
| RUEF250     | —    | 11.4<br>(0.45)  | —    | 18.3<br>(0.72)  | 4.3<br>(0.17)  | 5.8<br>(0.23)   | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 0.89<br>(0.035) | 1.2<br>(0.05) | R10, R13,<br>R14 |
| RUEF300     | —    | 11.4<br>(0.45)  | —    | 16.5<br>(0.65)  | 4.3<br>(0.17)  | 5.8<br>(0.23)   | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 1.19<br>(0.047) | 1.5<br>(0.06) | R11, R13,<br>R14 |
| RUEF400     | —    | 14.0<br>(0.55)  | —    | 19.3<br>(0.76)  | 4.3<br>(0.17)  | 5.8<br>(0.23)   | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 1.19<br>(0.047) | 1.7<br>(0.07) | R11, R13,<br>R14 |
| RUEF500     | —    | 14.0<br>(0.55)  | —    | 24.1<br>(0.95)  | 9.4<br>(0.37)  | 10.9<br>(0.43)  | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 1.19<br>(0.047) | 1.0<br>(0.04) | R11, R13,<br>R14 |
| RUEF600     | —    | 16.5<br>(0.65)  | —    | 24.1<br>(0.95)  | 9.4<br>(0.37)  | 10.9<br>(0.43)  | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 1.19<br>(0.047) | 1.0<br>(0.04) | R11, R13,<br>R14 |
| RUEF700     | —    | 19.1<br>(0.75)  | —    | 25.9<br>(1.02)  | 9.4<br>(0.37)  | 10.9<br>(0.43)  | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 1.19<br>(0.047) | 1.2<br>(0.05) | R11, R13,<br>R14 |
| RUEF800     | —    | 21.6<br>(0.85)  | —    | 28.4<br>(1.12)  | 9.4<br>(0.37)  | 10.9<br>(0.43)  | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 1.19<br>(0.047) | 1.5<br>(0.06) | R11, R13,<br>R14 |
| RUEF900     | —    | 24.1<br>(0.95)  | —    | 29.0<br>(1.14)  | 9.4<br>(0.37)  | 10.9<br>(0.43)  | 7.6<br>(0.30)  | —    | —    | 3.0<br>(0.12)  | —    | 1.19<br>(0.047) | 1.5<br>(0.06) | R11, R13,<br>R14 |

**Table R4 Dimensions for Radial-leaded Devices in Millimeters (Inches)**

Cont'd

| Part Number                   | A              |                 | B              |                | C             |                | D              |                | E             |               | F             | H               | J              | Figure           |
|-------------------------------|----------------|-----------------|----------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|---------------|-----------------|----------------|------------------|
|                               | Min.           | Max.            | Min.           | max.           | Min.          | Max.           | Min.           | Max.           | Min.          | Max.          | Typ.          | Typ.            | Typ.           |                  |
| <b>RHEF</b>                   |                |                 |                |                |               |                |                |                |               |               |               |                 |                |                  |
| <b>30V - High Temperature</b> |                |                 |                |                |               |                |                |                |               |               |               |                 |                |                  |
| RHEF050                       | —              | 7.4<br>(0.29)   | —              | 12.7<br>(0.50) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | 1.2<br>(0.05) | —               | —              | R8, R13,<br>R14  |
| RHEF070                       | —              | 6.9<br>(0.27)   | —              | 10.8<br>(0.43) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.2<br>(0.05)  | R10, R13,<br>R14 |
| RHEF100                       | —              | 9.7<br>(0.38)   | —              | 13.6<br>(0.54) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | —             | —               | —              | R8, R13,<br>R14  |
| <b>RUSBF</b>                  |                |                 |                |                |               |                |                |                |               |               |               |                 |                |                  |
| <b>16V</b>                    |                |                 |                |                |               |                |                |                |               |               |               |                 |                |                  |
| RUSBF090                      | —              | 7.4<br>(0.29)   | —              | 12.2<br>(0.48) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.1<br>(0.12) | —             | 0.89<br>(0.035) | 0.8<br>(0.03)  | R10, R13,<br>R14 |
| RUSBF110                      | —              | 7.4<br>(0.29)   | —              | 14.2<br>(0.56) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | —             | 0.89<br>(0.035) | 0.8<br>(0.03)  | R10, R13,<br>R14 |
| RUSBF135                      | —              | 8.9<br>(0.35)   | —              | 13.5<br>(0.53) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | —             | 0.89<br>(0.035) | 1.0<br>(0.04)  | R10, R13,<br>R14 |
| RUSBF160                      | —              | 8.9<br>(0.35)   | —              | 15.2<br>(0.60) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | —             | 0.89<br>(0.035) | 1.0<br>(0.04)  | R10, R13,<br>R14 |
| RUSBF185                      | —              | 10.2<br>(0.40)  | —              | 15.7<br>(0.62) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | —             | 0.89<br>(0.035) | 1.0<br>(0.04)  | R10, R13,<br>R14 |
| RUSBF250                      | —              | 11.4<br>(0.45)  | —              | 18.3<br>(0.72) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | —             | 0.89<br>(0.035) | 1.2<br>(0.05)  | R10, R13,<br>R14 |
| <b>RGEF</b>                   |                |                 |                |                |               |                |                |                |               |               |               |                 |                |                  |
| <b>16V</b>                    |                |                 |                |                |               |                |                |                |               |               |               |                 |                |                  |
| RGEF250                       | —              | 8.9<br>(0.35)   | —              | 12.8<br>(0.50) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 3.18<br>(0.13) | 6.18<br>(0.24) | —             | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.2<br>(0.05)  | R10, R13,<br>R14 |
| RGEF300                       | 6.1<br>(0.24)  | 7.1<br>(0.28)   | 6.1<br>(0.24)  | 11.0<br>(0.43) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | 2.0<br>(0.08) | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.2<br>(0.05)  | R11, R13,<br>R14 |
| RGEF400                       | 7.9<br>(0.31)  | 8.9<br>(0.35)   | 7.9<br>(0.31)  | 12.8<br>(0.50) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | 2.0<br>(0.08) | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.4<br>(0.06)  | R11, R13,<br>R14 |
| RGEF500                       | 9.4<br>(0.37)  | 10.4<br>(0.41)  | 9.4<br>(0.37)  | 14.3<br>(0.56) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | 2.0<br>(0.08) | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.6<br>(0.06)  | R11, R13,<br>R14 |
| RGEF600                       | 9.7<br>(0.38)  | 10.7<br>(0.42)  | 12.2<br>(0.48) | 17.1<br>(0.67) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | 2.0<br>(0.08) | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.6<br>(0.06)  | R11, R13,<br>R14 |
| RGEF700                       | 10.2<br>(0.40) | 11.2<br>(0.44)  | 14.7<br>(0.58) | 19.7<br>(0.78) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | 2.0<br>(0.08) | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.7<br>(0.07)  | R11, R13,<br>R14 |
| RGEF800                       | 11.7<br>(0.46) | 12.7<br>(0.50)  | 16.0<br>(0.63) | 20.9<br>(0.82) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | 2.0<br>(0.08) | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.8<br>(0.07)  | R11, R13,<br>R14 |
| RGEF900                       | 13.0<br>(0.51) | 14.0<br>(0.55)  | 16.8<br>(0.66) | 21.7<br>(0.85) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | 2.0<br>(0.08) | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 2.0<br>(0.08)  | R11, R13,<br>R14 |
| RGEF1000                      | 15.5<br>(0.61) | 16.5<br>(0.65)  | 21.1<br>(0.83) | 25.2<br>(0.99) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | 2.0<br>(0.08) | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 2.0<br>(0.08)  | R11, R13,<br>R14 |
| RGEF1100                      | 16.5<br>(0.65) | 17.5<br>(0.69)  | 21.1<br>(0.83) | 26.0<br>(1.02) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | 2.0<br>(0.08) | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 2.4<br>(0.09)  | R11, R13,<br>R14 |
| RGEF1200                      | 16.4<br>(0.65) | 17.5<br>(0.69)  | 22.6<br>(0.89) | 28.0<br>(1.10) | 9.4<br>(0.37) | 10.9<br>(0.43) | 7.6<br>(0.30)  | —              | 2.3<br>(0.09) | 3.5<br>(0.14) | 1.4<br>(0.06) | 1.45<br>(0.057) | 1.5<br>(0.06)  | R11, R13,<br>R14 |
| RGEF1400                      | 22.4<br>(0.88) | 23.5<br>(0.925) | 22.6<br>(0.89) | 27.9<br>(1.10) | 9.4<br>(0.37) | 10.9<br>(0.43) | 7.6<br>(0.30)  | —              | 2.3<br>(0.09) | 3.5<br>(0.14) | 1.4<br>(0.06) | 1.45<br>(0.057) | 1.9<br>(0.08)  | R11, R13,<br>R14 |
| <b>RHEF</b>                   |                |                 |                |                |               |                |                |                |               |               |               |                 |                |                  |
| <b>16V - High Temperature</b> |                |                 |                |                |               |                |                |                |               |               |               |                 |                |                  |
| RHEF200                       | —              | 9.4<br>(0.37)   | —              | 14.4<br>(0.57) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.1<br>(0.12) | —             | —               | —              | R8, R13,<br>R14  |
| RHEF300                       | —              | 8.8<br>(0.35)   | —              | 13.8<br>(0.55) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | 1.2<br>(0.05) | —               | —              | R12, R13,<br>R14 |
| RHEF400                       | —              | 10.0<br>(0.39)  | —              | 15.0<br>(0.59) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.6<br>(0.06)  | R12, R13,<br>R14 |
| RHEF450                       | —              | 10.4<br>(0.41)  | —              | 15.6<br>(0.61) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.6<br>(0.06)  | R12, R13,<br>R14 |
| RHEF550                       | —              | 11.2<br>(0.44)  | —              | 18.9<br>(0.74) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | 1.2<br>(0.05) | —               | —              | R12, R13,<br>R14 |
| RHEF600                       | —              | 11.2<br>(0.44)  | —              | 21.0<br>(0.83) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.7<br>(0.067) | R12, R13,<br>R14 |
| RHEF650                       | —              | 12.7<br>(0.50)  | —              | 22.2<br>(0.88) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30)  | —              | —             | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.8<br>(0.07)  | R12, R13,<br>R14 |

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**Table R4 Dimensions for Radial-leaded Devices in Millimeters (Inches)** Cont'd

| Part Number                   | A    |                 | B    |                | C             |                | D             |      | E    |               | F             | H               | J              | Figure           |
|-------------------------------|------|-----------------|------|----------------|---------------|----------------|---------------|------|------|---------------|---------------|-----------------|----------------|------------------|
|                               | Min. | Max.            | Min. | Max.           | Min.          | Max.           | Min.          | Max. | Min. | Max.          | Typ.          | Typ.            | Typ.           |                  |
| <b>RHEF</b>                   |      |                 |      |                |               |                |               |      |      |               |               |                 |                |                  |
| <b>16V - High Temperature</b> |      |                 |      |                |               |                |               |      |      |               |               |                 |                |                  |
| RHEF700                       | —    | 14.0<br>(0.55)  | —    | 21.9<br>(0.86) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | 1.2<br>(0.05) | —               | —              | R12, R13,<br>R14 |
| RHEF750                       | —    | 14.0<br>(0.55)  | —    | 23.5<br>(0.93) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 2.0<br>(0.08)  | R12, R13,<br>R14 |
| RHEF800                       | —    | 16.5<br>(0.65)  | —    | 22.5<br>(0.88) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | 1.2<br>(0.05) | —               | —              | R12, R13,<br>R14 |
| RHEF900                       | —    | 16.5<br>(0.65)  | —    | 25.7<br>(1.01) | 4.3<br>(0.17) | 5.8<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | 1.2<br>(0.05) | —               | —              | R12, R13,<br>R14 |
| RHEF1000                      | —    | 17.5<br>(0.69)  | —    | 26.5<br>(1.04) | 9.4<br>(0.37) | 10.9<br>(0.43) | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | 1.2<br>(0.05) | 1.24<br>(0.049) | 1.5<br>(0.06)  | R12, R13,<br>R14 |
| RHEF1100                      | —    | 21.0<br>(0.83)  | —    | 26.1<br>(1.03) | 9.4<br>(0.37) | 10.9<br>(0.43) | 7.6<br>(0.30) | —    | —    | 3.0<br>(0.12) | 1.2<br>(0.05) | —               | —              | R12, R13,<br>R14 |
| RHEF1300                      | —    | 23.5<br>(0.925) | —    | 28.7<br>(1.13) | 9.4<br>(0.37) | 10.9<br>(0.43) | 7.6<br>(0.30) | —    | —    | 3.6<br>(0.14) | 1.4<br>(0.06) | 1.45<br>(0.057) | 1.9<br>(0.084) | R12, R13,<br>R14 |
| RHEF1400                      | —    | 23.5<br>(0.925) | —    | 28.6<br>(1.13) | 9.4<br>(0.37) | 10.9<br>(0.43) | 7.6<br>(0.30) | —    | —    | 3.6<br>(0.14) | 1.4<br>(0.06) | —               | —              | R12, R13,<br>R14 |
| RHEF1500                      | —    | 23.5<br>(0.925) | —    | 28.7<br>(1.13) | 9.4<br>(0.37) | 10.9<br>(0.43) | 7.6<br>(0.30) | —    | —    | 3.6<br>(0.14) | 1.4<br>(0.06) | 1.45<br>(0.057) | 1.9<br>(0.084) | R12, R13,<br>R14 |
| <b>RUSBF</b>                  |      |                 |      |                |               |                |               |      |      |               |               |                 |                |                  |
| <b>6V</b>                     |      |                 |      |                |               |                |               |      |      |               |               |                 |                |                  |
| RUSBF075                      | —    | 6.9<br>(0.27)   | —    | 11.4<br>(0.45) | 4.3<br>(0.17) | 5.9<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.1<br>(0.12) | —             | 0.91<br>(0.036) | 1.0<br>(0.04)  | R8, R13,<br>R14  |
| RUSBF120                      | —    | 6.9<br>(0.27)   | —    | 11.7<br>(0.46) | 4.3<br>(0.17) | 5.9<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.1<br>(0.12) | —             | 0.91<br>(0.036) | 1.0<br>(0.04)  | R8, R13,<br>R14  |
| RUSBF155                      | —    | 6.9<br>(0.27)   | —    | 11.7<br>(0.46) | 4.3<br>(0.17) | 5.9<br>(0.23)  | 7.6<br>(0.30) | —    | —    | 3.1<br>(0.12) | —             | 0.91<br>(0.036) | 1.0<br>(0.04)  | R8, R13,<br>R14  |

**Figure R15-R21 Typical Time-to-trip Curves at 20°C for Radial-leaded Devices**

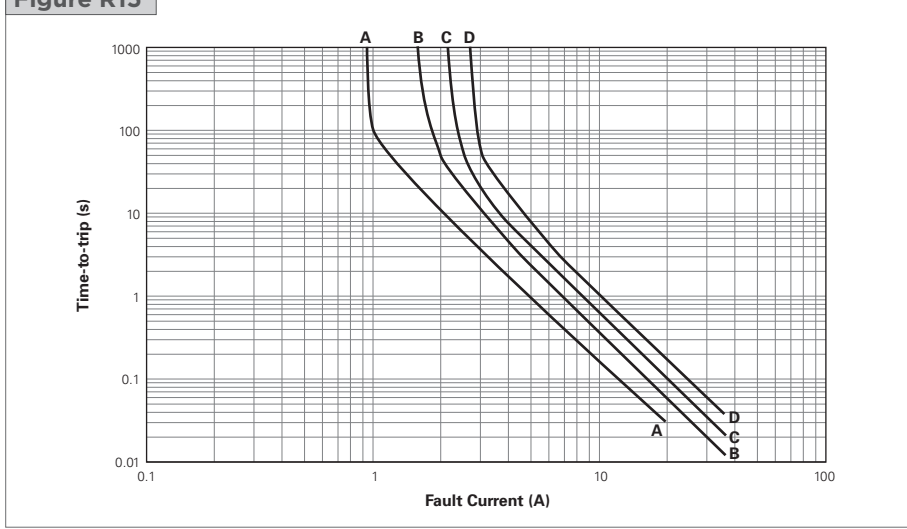
**BBRF**

A = BBRF550

**RTEF**

- B = RTEF120
- C = RTEF135
- D = RTEF190

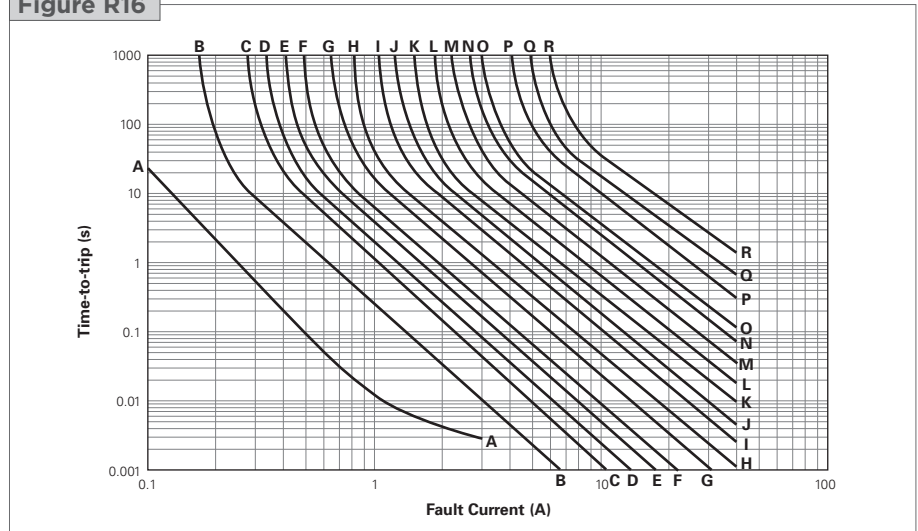
**Figure R15**



**RXEF**

- |             |             |
|-------------|-------------|
| A = RXEF005 | J = RXEF075 |
| B = RXEF010 | K = RXEF090 |
| C = RXEF017 | L = RXEF110 |
| D = RXEF020 | M = RXEF135 |
| E = RXEF025 | N = RXEF160 |
| F = RXEF030 | O = RXEF185 |
| G = RXEF040 | P = RXEF250 |
| H = RXEF050 | Q = RXEF300 |
| I = RXEF065 | R = RXEF375 |

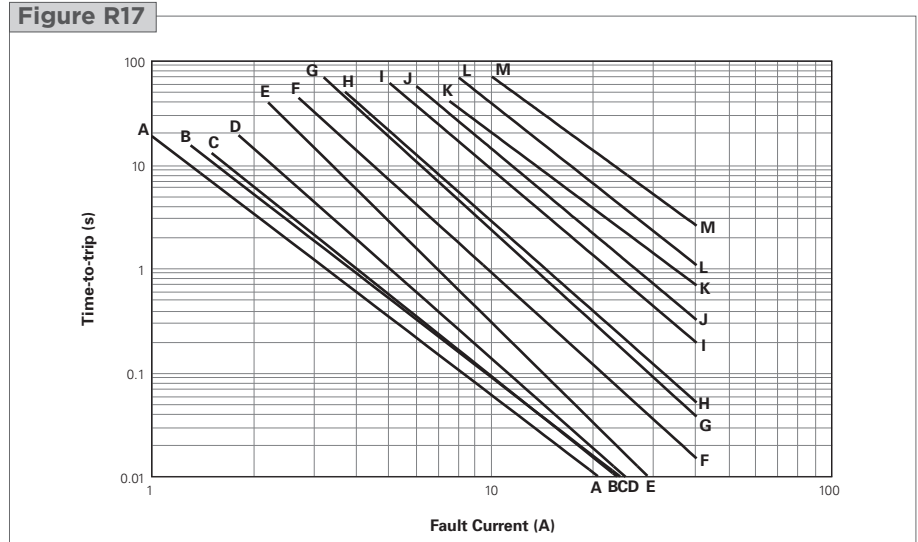
**Figure R16**



**RKEF**

- |             |             |
|-------------|-------------|
| A = RKEF050 | J = RKEF300 |
| B = RKEF065 | K = RKEF375 |
| C = RKEF075 | L = RKEF400 |
| D = RKEF090 | M = RKEF500 |
| E = RKEF110 |             |
| F = RKEF135 |             |
| G = RKEF160 |             |
| H = RKEF185 |             |
| I = RKEF250 |             |

**Figure R17**



**RUEF**

- |             |             |
|-------------|-------------|
| A = RUEF090 | H = RUEF400 |
| B = RUEF110 | I = RUEF500 |
| C = RUEF135 | J = RUEF600 |
| D = RUEF160 | K = RUEF700 |
| E = RUEF185 | L = RUEF800 |
| F = RUEF250 | M = RUEF900 |
| G = RUEF300 |             |

**Figure R18**

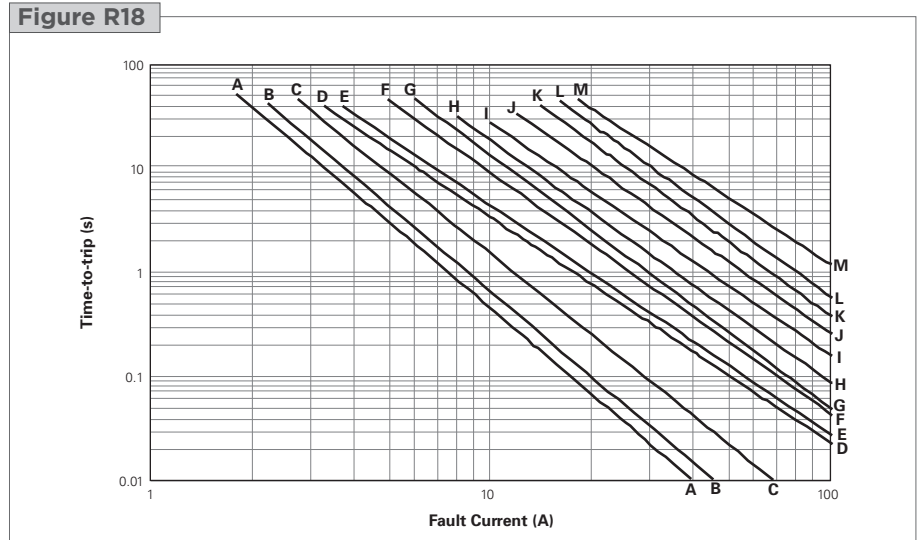


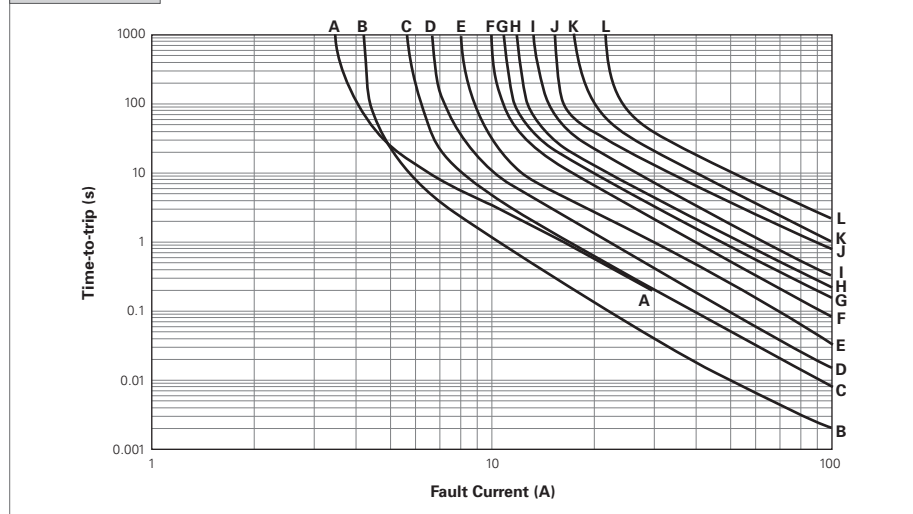
Figure R15-R21 Typical Time-to-trip Curves at 20°C for Radial-leaded Devices

Cont'd

**RGEF (data at 25°C)**

- A = RGEF250
- B = RGEF300
- C = RGEF400
- D = RGEF500
- E = RGEF600
- F = RGEF700
- G = RGEF800
- H = RGEF900
- I = RGEF1000
- J = RGEF1100
- K = RGEF1200
- L = RGEF1400

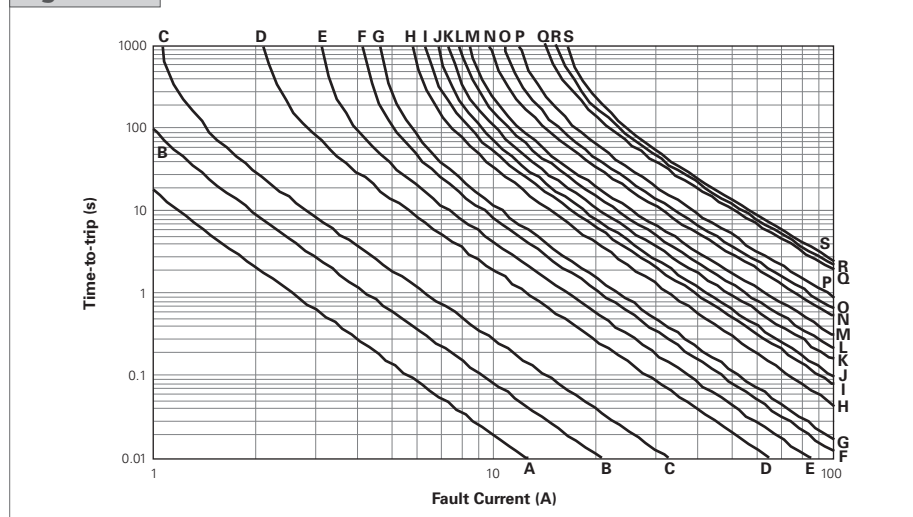
**Figure R19**



**RHEF (data at 25°C)**

- A = RHEF050
- B = RHEF070
- C = RHEF100
- D = RHEF200
- E = RHEF300
- F = RHEF400
- G = RHEF450
- H = RHEF550
- I = RHEF600
- J = RHEF650
- K = RHEF700
- L = RHEF750
- M = RHEF800
- N = RHEF900
- O = RHEF1000
- P = RHEF1100
- Q = RHEF1300
- R = RHEF1400
- S = RHEF1500

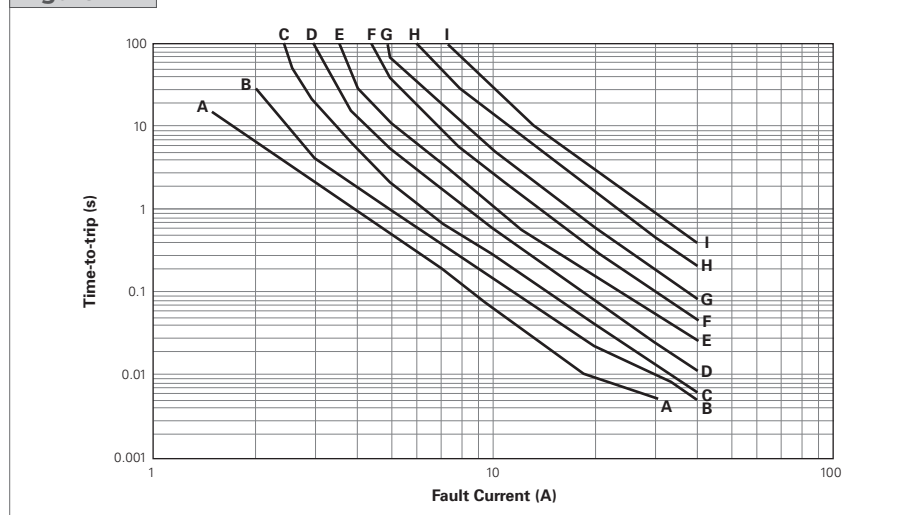
**Figure R20**



**RUSBF**

- A = RUSBF075
- B = RUSBF090
- C = RUSBF110
- D = RUSBF120
- E = RUSBF135
- F = RUSBF155
- G = RUSBF160
- H = RUSBF185
- I = RUSBF250

**Figure R21**



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**Table R5 Physical Characteristics and Environmental Specifications for Radial-leaded Devices**
**BBRF**
**Physical Characteristics**

|                           |  |
|---------------------------|--|
| Lead material             | Tin-plated copper, 0.52mm <sup>2</sup> (20AWG), ø0.81mm (0.032in.)                           |
| Soldering characteristics | Solderability per ANSI/J-STD-002 Category 3  |
| Solder heat withstand     | per IEC-STD 68-2-20, Test Tb, Method 1A, Condition B, can withstand 10 seconds at 260°C ±5°C |
| Insulating material       | Cured, flame-retardant epoxy polymer; meets UL 94V-0   |
| Operation temperature     | -40°C~85°C   |

**Note:** Devices are not designed to be placed through a reflow process.

**Environmental Specifications**

| Test               | Conditions               | Resistance Change |
|--------------------|--------------------------|-------------------|
| Passive aging      | 70°C, 1000 hours         | ±5%               |
|                    | 85°C, 1000 hours         | ±5%               |
| Humidity aging     | 85°C, 85%RH, 1000 hours  | ±5%               |
| Thermal shock      | 85°C, -40°C (10 times)   | ±5%               |
| Solvent resistance | MIL-STD-202, Method 215F | No change         |

**RXEF**
**Physical Characteristics**

|                           |  |
|---------------------------|--|
| Lead material             | RXEF005 : Tin-plated nickel-copper alloy, 0.128mm <sup>2</sup> (26AWG), ø0.40mm (0.016in.)   |
|                           | RXEF010 : Tin-plated nickel-copper alloy, 0.205mm <sup>2</sup> (24AWG), ø0.51mm (0.020in.)   |
|                           | RXEF017 to 040 : Tin-plated copper-clad steel, 0.205mm <sup>2</sup> (24AWG), ø0.51mm (0.020in.)  |
|                           | RXEF050 to 090 : Tin-plated copper, 0.205mm <sup>2</sup> (24AWG), ø0.51mm (0.020in.)   |
|                           | RXEF110 to 375 : Tin-plated copper, 0.52mm <sup>2</sup> (20AWG), ø0.81mm (0.032in.)  |
| Soldering characteristics | Solderability per ANSI/J-STD-002 Category 3  |
|                           | RXEF005, RXEF010 meet ANSI/J-STD-002 Category 1  |
| Solder heat withstand     | RXEF017- RXEF025: per IEC-STD 68-2-20, Test Tb, Method 1a, condition a; can withstand 5 seconds at 260°C ±5°C<br>All other sizes: per IEC-STD 68-2-20, Test Tb, Method 1a, condition b; can withstand 10 seconds at 260°C ±5°C |
| Insulating material       | Cured, flame-retardant epoxy polymer; meets UL 94V-0   |
| Operation temperature     | -40°C~85°C   |

**Note:** Devices are not designed to be placed through a reflow process.

**Environmental Specifications**

| Test               | Conditions               | Resistance Change |
|--------------------|--------------------------|-------------------|
| Passive aging      | -40°C, 1000 hours        | ±5%               |
|                    | 85°C, 1000 hours         | ±5%               |
| Humidity aging     | 85°C, 85%RH, 1000 hours  | ±10%              |
| Thermal shock      | 85°C, -40°C (10 times)   | ±10%              |
| Solvent resistance | MIL-STD-202, Method 215F | No change         |

**RKEF**
**Physical Characteristics**

|                           |   |
|---------------------------|---|
| Lead material             | RKEF050 to 090 : Tin-plated copper, 0.205mm <sup>2</sup> (24AWG), ø0.51mm (0.020in.)  |
|                           | RKEF110 to 500 : Tin-plated copper, 0.52mm <sup>2</sup> (20AWG), ø0.81mm (0.032in.)   |
| Soldering characteristics | Solderability per ANSI/J-STD-002 Category 3   |
| Solder heat withstand     | RKEF050-RKEF185 : per IEC-STD 68-2-20, Test Tb, Method 1a, condition a; can withstand 5 seconds at 260°C ±5°C<br>All other sizes: per IEC-STD 68-2-20, Test Tb, Method 1a, condition b; RKEF can withstand 10 seconds at 260°C ±5°C |
| Insulating material       | Cured, flame-retardant epoxy polymer; meets UL 94V-0  |
| Operation temperature     | -40°C~85°C  |

**Note:** Devices are not designed to be placed through a reflow process.



**Table R5 Physical Characteristics and Environmental Specifications for Radial-leaded Devices**

Cont'd

**RKEF**
**Environmental Specifications**

| Test               | Conditions               | Resistance Change |
|--------------------|--------------------------|-------------------|
| Passive aging      | -40°C, 1000 hours        | ±5%               |
|                    | 85°C, 1000 hours         | ±5%               |
| Humidity aging     | 85°C, 85%RH, 1000 hours  | ±10%              |
| Thermal shock      | 85°C, -40°C (10 times)   | ±10%              |
| Solvent resistance | MIL-STD-202, Method 215F | No change         |

**RTEF**
**Physical Characteristics**

|                           |  |
|---------------------------|--|
| Lead material             | Tin-plated copper-clad steel, 0.205mm <sup>2</sup> (24AWG), ø0.51mm (0.020in.)               |
| Soldering characteristics | Solderability per ANSI/J-STD-002 Category 3  |
| Solder heat withstand     | per IEC-STD 68-2-20, Test Tb, Method 1A, Condition B; can withstand 10 seconds at 260°C ±5°C |
| Insulating material       | Cured, flame-retardant epoxy polymer; meets UL 94V-0   |
| Operation temperature     | -40°C~85°C   |

**Note:** Devices are not designed to be placed through a reflow process.

**Environmental Specifications**

| Test               | Conditions               | Resistance Change |
|--------------------|--------------------------|-------------------|
| Passive aging      | 70°C, 1000 hours         | ±5%               |
|                    | 85°C, 1000 hours         | ±5%               |
| Humidity aging     | 85°C, 85%RH, 1000 hours  | ±5%               |
| Thermal shock      | 85°C, -40°C (10 times)   | ±5%               |
| Solvent resistance | MIL-STD-202, Method 215F | No change         |

**RUEF**
**Physical Characteristics**

|                           |  |
|---------------------------|--|
| Lead material             | RUEF090 to RUEF250: Tin-plated copper-clad steel, 0.205mm <sup>2</sup> (24AWG)<br>RUEF300 to RUEF900: Tin-plated copper, 0.52mm <sup>2</sup> (20AWG), ø0.81mm (0.032in.) |
| Soldering characteristics | Solderability per ANSI/J-STD-002 Category 3  |
| Solder heat withstand     | per IEC-STD 68-2-20, Test Tb, Method 1A, Condition B, can withstand 10 seconds at 260°C ±5°C   |
| Insulating material       | Cured, flame-retardant epoxy polymer; meets UL 94V-0   |
| Operation temperature     | -40°C~85°C   |

**Note:** Devices are not designed to be placed through a reflow process.

**Environmental Specifications**

| Test               | Conditions               | Resistance Change |
|--------------------|--------------------------|-------------------|
| Passive aging      | 70°C, 1000 hours         | ±5%               |
|                    | 85°C, 1000 hours         | ±5%               |
| Humidity aging     | 85°C, 85%RH, 1000 hours  | ±5%               |
| Thermal shock      | 85°C, -40°C (10 times)   | ±5%               |
| Solvent resistance | MIL-STD-202, Method 215F | No change         |

**RUSBF**
**Physical Characteristics**

|                           |   |
|---------------------------|---|
| Lead material             | RUSBF075: Tin-plated nickel-copper alloy, 0.205mm <sup>2</sup> (24AWG), ø0.51mm/0.020in.<br>RUSBF090 to RUSBF250: Tin-plated copper clad-steel, 0.205mm <sup>2</sup> (24AWG), ø0.51mm/0.020in.                    |
| Soldering characteristics | Solderability per ANSI/J-STD-002 Category 3 except<br>RUSBF075 meet ANSI/J-STD-002 Category 1   |
| Solder heat withstand     | RUSBF120: per IEC-STD 68-2-20, Test Tb, Method 1A, Condition A; can withstand 5 seconds at 260°C ±5°C<br>All others: per IEC-STD 68-2-20, Test Tb, Method 1A, Condition B; can withstand 10 seconds at 260°C ±5°C |
| Insulating material       | Cured, flame-retardant epoxy polymer; meets UL 94V-0  |
| Operation temperature     | -40°C~85°C  |

**Note:** Devices are not designed to be placed through a reflow process.

**RUSBF**
**Environmental Specifications**

| Test               | Conditions               | Resistance Change |
|--------------------|--------------------------|-------------------|
| Passive aging      | 70°C, 1000 hours         | ±5%               |
|                    | 85°C, 1000 hours         | ±5%               |
| Humidity aging     | 85°C, 85%RH, 1000 hours  | ±5%               |
| Thermal shock      | 85°C, -40°C (10 times)   | ±5%               |
| Solvent resistance | MIL-STD-202, Method 215F | No change         |

**RGEF**
**Physical Characteristics**

|                           |   |
|---------------------------|---|
| Lead material             | RGEF300 to RGEF1100 : Tin-plated copper, 0.52mm <sup>2</sup> (20AWG), ø0.81mm/0.032in.<br>RGEF1200 to RGEF1400 : Tin-plated copper, 0.82mm <sup>2</sup> (18AWG), ø1.0mm/0.04in.   |
| Soldering characteristics | Solderability per ANSI/J-STD-002 Category 3   |
| Solder heat withstand     | RGEF300 and RGEF400: per IEC 68-2-20, Test Tb, Method 1a, condition a;<br>can withstand 5 seconds at 260°C ±5°C<br>RGEF500 to RGEF1400: per IEC 68-2-20, Test Tb, Method 1a, condition b;<br>can withstand 10 seconds at 260°C ±5°C |
| Insulating material       | Cured, flame-retardant epoxy polymer; meets UL 94V-0  |
| Operation temperature     | -40°C~85°C  |

**Note:** Devices are not designed to be placed through a reflow process.

**Environmental Specifications**

| Test               | Conditions               | Resistance Change |
|--------------------|--------------------------|-------------------|
| Passive aging      | -40°C, 1000 hours        | ±5%               |
|                    | 85°C, 1000 hours         | ±5%               |
| Humidity aging     | 85°C, 85%RH, 1000 hours  | ±5%               |
| Thermal shock      | 85°C, -40°C (10 times)   | ±5%               |
| Solvent resistance | MIL-STD-202, Method 215F | No change         |

**RHEF**
**Physical Characteristics**

|                           |  |
|---------------------------|--|
| Lead material             | RHEF050 to RHEF200 : Tin-plated copper clad steel, 0.205mm <sup>2</sup> (24AWG), ø0.51mm/0.020in.<br>RHEF300 to RHEF1100 : Tin-plated copper, 0.52mm <sup>2</sup> (20AWG), ø0.81mm/0.032in.<br>RHEF1300 to RHEF1500 : Tin-plated copper, 0.82mm <sup>2</sup> (18AWG), ø1.0mm/0.04in. |
| Soldering characteristics | Solderability per ANSI/J-STD-002 Category 3  |
| Solder heat withstand     | per IEC 68-2-20, Test Tb, Method 1A, Condition B; can withstand 10 seconds at 260°C ±5°C   |
| Insulating material       | Cured, flame-retardant epoxy polymer; meets UL 94V-0   |
| Operation temperature     | -40°C~125°C  |

**Note:** Devices are not designed to be placed through a reflow process.

**Environmental Specifications**

| Test               | Conditions               | Resistance Change |
|--------------------|--------------------------|-------------------|
| Passive aging      | 70°C, 1000 hours         | ±5%               |
|                    | 85°C, 1000 hours         | ±5%               |
| Humidity aging     | 85°C, 85%RH, 1000 hours  | ±5%               |
| Thermal shock      | 125°C, -40°C (10 times)  | ±5%               |
| Solvent resistance | MIL-STD-202, Method 215F | No change         |

**Storage Conditions for Radial-led Devices**

|                    |  |
|--------------------|--|
| Storage conditions | 40°C max., 70% RH max.; devices should remain in original sealed bags prior to use.<br>Devices may not meet specified values if these storage conditions are exceeded. |
|--------------------|--|

**Note:** For the TR devices series, see the telecommunications and networking devices section.

**Table R6 Packaging and Marking Information for Radial-leaded Devices**

| Part Number | Bag Quantity | Tape & Reel Quantity | Ammo Pack Quantity | Standard Package Quantity | Part Marking | Agency Recognition |
|-------------|--------------|----------------------|--------------------|---------------------------|--------------|--------------------|
| <b>BBRF</b> |              |                      |                    |                           |              |                    |
| <b>99V</b>  |              |                      |                    |                           |              |                    |
| BBRF550     | 500          | —                    | —                  | 10,000                    | BF550        | UL, CSA            |
| BBRF550-2   | —            | 1,500                | —                  | 7,500                     | BF550        | UL, CSA            |
| <b>RXEF</b> |              |                      |                    |                           |              |                    |
| <b>60V</b>  |              |                      |                    |                           |              |                    |
| RXEF005     | 500          | —                    | —                  | 10,000                    | —            | UL, CSA, TÜV       |
| RXEF005-2   | —            | 3,000                | —                  | 15,000                    | —            | UL, CSA, TÜV       |
| RXEF005-AP  | —            | —                    | 2,000              | 10,000                    | —            | UL, CSA, TÜV       |
| RXEF010     | 500          | —                    | —                  | 10,000                    | XF010        | UL, CSA, TÜV       |
| RXEF010-2   | —            | 3,000                | —                  | 15,000                    | XF010        | UL, CSA, TÜV       |
| RXEF010-AP  | —            | —                    | 2,000              | 10,000                    | XF010        | UL, CSA, TÜV       |
| RXEF017     | 500          | —                    | —                  | 10,000                    | XF017        | UL, CSA, TÜV       |
| RXEF017-2   | —            | 2,500                | —                  | 12,500                    | XF017        | UL, CSA, TÜV       |
| RXEF017-AP  | —            | —                    | 2,000              | 10,000                    | XF017        | UL, CSA, TÜV       |
| <b>RXEF</b> |              |                      |                    |                           |              |                    |
| <b>72V</b>  |              |                      |                    |                           |              |                    |
| RXEF020     | 500          | —                    | —                  | 10,000                    | XF020        | UL, CSA, TÜV       |
| RXEF020-2   | —            | 3,000                | —                  | 15,000                    | XF020        | UL, CSA, TÜV       |
| RXEF020-AP  | —            | —                    | 2,000              | 10,000                    | XF020        | UL, CSA, TÜV       |
| RXEF025     | 500          | —                    | —                  | 10,000                    | XF025        | UL, CSA, TÜV       |
| RXEF025-2   | —            | 3,000                | —                  | 15,000                    | XF025        | UL, CSA, TÜV       |
| RXEF025-AP  | —            | —                    | 2,000              | 10,000                    | XF025        | UL, CSA, TÜV       |
| RXEF030     | 500          | —                    | —                  | 10,000                    | XF030        | UL, CSA, TÜV       |
| RXEF030-2   | —            | 3,000                | —                  | 15,000                    | XF030        | UL, CSA, TÜV       |
| RXEF030-AP  | —            | —                    | 2,000              | 10,000                    | XF030        | UL, CSA, TÜV       |
| RXEF040     | 500          | —                    | —                  | 10,000                    | XF040        | UL, CSA, TÜV       |
| RXEF040-2   | —            | 3,000                | —                  | 15,000                    | XF040        | UL, CSA, TÜV       |
| RXEF040-AP  | —            | —                    | 2,000              | 10,000                    | XF040        | UL, CSA, TÜV       |
| RXEF050     | 500          | —                    | —                  | 10,000                    | XF050        | UL, CSA, TÜV       |
| RXEF050-2   | —            | 3,000                | —                  | 15,000                    | XF050        | UL, CSA, TÜV       |
| RXEF050-AP  | —            | —                    | 2,000              | 10,000                    | XF050        | UL, CSA, TÜV       |
| RXEF065     | 500          | —                    | —                  | 10,000                    | XF065        | UL, CSA, TÜV       |
| RXEF065-2   | —            | 3,000                | —                  | 15,000                    | XF065        | UL, CSA, TÜV       |
| RXEF065-AP  | —            | —                    | 2,000              | 10,000                    | XF065        | UL, CSA, TÜV       |
| RXEF075     | 500          | —                    | —                  | 10,000                    | XF075        | UL, CSA, TÜV       |
| RXEF075-2   | —            | 3,000                | —                  | 15,000                    | XF075        | UL, CSA, TÜV       |
| RXEF075-AP  | —            | —                    | 2,000              | 10,000                    | XF075        | UL, CSA, TÜV       |
| RXEF090     | 500          | —                    | —                  | 10,000                    | XF090        | UL, CSA, TÜV       |
| RXEF090-2   | —            | 3,000                | —                  | 15,000                    | XF090        | UL, CSA, TÜV       |
| RXEF090-AP  | —            | —                    | 2,000              | 10,000                    | XF090        | UL, CSA, TÜV       |
| RXEF110     | 500          | —                    | —                  | 10,000                    | XF110        | UL, CSA, TÜV       |
| RXEF110-2   | —            | 1,500                | —                  | 7,500                     | XF110        | UL, CSA, TÜV       |
| RXEF110-AP  | —            | —                    | 1,000              | 5,000                     | XF110        | UL, CSA, TÜV       |
| RXEF135     | 500          | —                    | —                  | 10,000                    | XF135        | UL, CSA, TÜV       |
| RXEF135-2   | —            | 1,500                | —                  | 7,500                     | XF135        | UL, CSA, TÜV       |
| RXEF135-AP  | —            | —                    | 1,000              | 5,000                     | XF135        | UL, CSA, TÜV       |
| RXEF160     | 500          | —                    | —                  | 10,000                    | XF160        | UL, CSA, TÜV       |
| RXEF160-2   | —            | 1,500                | —                  | 7,500                     | XF160        | UL, CSA, TÜV       |
| RXEF160-AP  | —            | —                    | 1,000              | 5,000                     | XF160        | UL, CSA, TÜV       |
| RXEF185     | 500          | —                    | —                  | 10,000                    | XF185        | UL, CSA, TÜV       |
| RXEF185-2   | —            | 1,500                | —                  | 7,500                     | XF185        | UL, CSA, TÜV       |
| RXEF185-AP  | —            | —                    | 1,000              | 5,000                     | XF185        | UL, CSA, TÜV       |

**Table R6 Packaging and Marking Information for Radial-led Devices**

Cont'd

| Part Number | Bag Quantity | Tape & Reel Quantity | Ammo Pack Quantity | Standard Package Quantity | Part Marking | Agency Recognition |
|-------------|--------------|----------------------|--------------------|---------------------------|--------------|--------------------|
| <b>RXEF</b> |              |                      |                    |                           |              |                    |
| <b>72V</b>  |              |                      |                    |                           |              |                    |
| RXEF250     | 250          | —                    | —                  | 5,000                     | XF250        | UL, CSA, TÜV       |
| RXEF250-2   | —            | 1,000                | —                  | 5,000                     | XF250        | UL, CSA, TÜV       |
| RXEF250-AP  | —            | —                    | 1,000              | 5,000                     | XF250        | UL, CSA, TÜV       |
| RXEF300     | 250          | —                    | —                  | 5,000                     | XF300        | UL, CSA, TÜV       |
| RXEF300-2   | —            | 1,000                | —                  | 5,000                     | XF300        | UL, CSA, TÜV       |
| RXEF300-AP  | —            | —                    | 1,000              | 5,000                     | XF300        | UL, CSA, TÜV       |
| RXEF375     | 250          | —                    | —                  | 5,000                     | XF375        | UL, CSA, TÜV       |
| <b>RKEF</b> |              |                      |                    |                           |              |                    |
| <b>60V</b>  |              |                      |                    |                           |              |                    |
| RKEF050     | 500          | —                    | —                  | 10,000                    | KF050        | UL, CSA, TÜV       |
| RKEF065     | 500          | —                    | —                  | 10,000                    | KF065        | UL, CSA, TÜV       |
| RKEF075     | 500          | —                    | —                  | 10,000                    | KF075        | UL, CSA, TÜV       |
| RKEF090     | 500          | —                    | —                  | 10,000                    | KF090        | UL, CSA, TÜV       |
| RKEF110     | 500          | —                    | —                  | 10,000                    | KF110        | UL, CSA, TÜV       |
| RKEF135     | 500          | —                    | —                  | 10,000                    | KF135        | UL, CSA, TÜV       |
| RKEF160     | 500          | —                    | —                  | 10,000                    | KF160        | UL, CSA, TÜV       |
| RKEF185     | 500          | —                    | —                  | 10,000                    | KF185        | UL, CSA, TÜV       |
| RKEF250     | 500          | —                    | —                  | 10,000                    | KF250        | UL, CSA, TÜV       |
| RKEF300     | 250          | —                    | —                  | 5,000                     | KF300        | UL, CSA, TÜV       |
| RKEF375     | 250          | —                    | —                  | 5,000                     | KF375        | UL, CSA, TÜV       |
| RKEF400     | 250          | —                    | —                  | 5,000                     | KF400        | UL, CSA, TÜV       |
| RKEF500     | 250          | —                    | —                  | 5,000                     | KF500        | UL, CSA, TÜV       |
| <b>RTEF</b> |              |                      |                    |                           |              |                    |
| <b>33V</b>  |              |                      |                    |                           |              |                    |
| RTEF120     | 500          | —                    | —                  | 10,000                    | TF120        | UL, CSA, TÜV       |
| RTEF120-2   | —            | 3,000                | —                  | 15,000                    | TF120        | UL, CSA, TÜV       |
| RTEF120-AP  | —            | —                    | 2,000              | 10,000                    | TF120        | UL, CSA, TÜV       |
| RTEF135     | 500          | —                    | —                  | 10,000                    | TF135        | UL, CSA, TÜV       |
| RTEF135-2   | —            | 3,000                | —                  | 15,000                    | TF135        | UL, CSA, TÜV       |
| RTEF135-AP  | —            | —                    | 2,000              | 10,000                    | TF135        | UL, CSA, TÜV       |
| RTEF190     | 500          | —                    | —                  | 10,000                    | TF190        | UL, CSA, TÜV       |
| RTEF190-2   | —            | 3,000                | —                  | 15,000                    | TF190        | UL, CSA, TÜV       |
| RTEF190-AP  | —            | —                    | 2,000              | 10,000                    | TF190        | UL, CSA, TÜV       |
| <b>RUEF</b> |              |                      |                    |                           |              |                    |
| <b>30V</b>  |              |                      |                    |                           |              |                    |
| RUEF090     | 500          | —                    | —                  | 10,000                    | UF090        | UL, CSA, TÜV, CQC  |
| RUEF090-2   | —            | 3,000                | —                  | 15,000                    | UF090        | UL, CSA, TÜV, CQC  |
| RUEF090-AP  | —            | —                    | 2,000              | 10,000                    | UF090        | UL, CSA, TÜV, CQC  |
| RUEF110     | 500          | —                    | —                  | 10,000                    | UF110        | UL, CSA, TÜV, CQC  |
| RUEF110-2   | —            | 3,000                | —                  | 15,000                    | UF110        | UL, CSA, TÜV, CQC  |
| RUEF110-AP  | —            | —                    | 2,000              | 10,000                    | UF110        | UL, CSA, TÜV, CQC  |
| RUEF135     | 500          | —                    | —                  | 10,000                    | UF135        | UL, CSA, TÜV, CQC  |
| RUEF135-2   | —            | 3,000                | —                  | 15,000                    | UF135        | UL, CSA, TÜV, CQC  |
| RUEF135-AP  | —            | —                    | 2,000              | 10,000                    | UF135        | UL, CSA, TÜV, CQC  |
| RUEF160     | 500          | —                    | —                  | 10,000                    | UF160        | UL, CSA, TÜV, CQC  |
| RUEF160-2   | —            | 3,000                | —                  | 15,000                    | UF160        | UL, CSA, TÜV, CQC  |
| RUEF160-AP  | —            | —                    | 2,000              | 10,000                    | UF160        | UL, CSA, TÜV, CQC  |
| RUEF185     | 500          | —                    | —                  | 10,000                    | UF185        | UL, CSA, TÜV, CQC  |
| RUEF185-2   | —            | 3,000                | —                  | 15,000                    | UF185        | UL, CSA, TÜV, CQC  |
| RUEF185-AP  | —            | —                    | 2,000              | 10,000                    | UF185        | UL, CSA, TÜV, CQC  |
| RUEF250     | 500          | —                    | —                  | 10,000                    | UF250        | UL, CSA, TÜV, CQC  |
| RUEF250-2   | —            | 3,000                | —                  | 15,000                    | UF250        | UL, CSA, TÜV, CQC  |
| RUEF250-AP  | —            | —                    | 2,000              | 10,000                    | UF250        | UL, CSA, TÜV, CQC  |

**Table R6 Packaging and Marking Information for Radial-leaded Devices**

Cont'd

| Part Number                   | Bag Quantity | Tape & Reel Quantity | Ammo Pack Quantity | Standard Package Quantity | Part Marking | Agency Recognition |
|-------------------------------|--------------|----------------------|--------------------|---------------------------|--------------|--------------------|
| <b>RUEF</b>                   |              |                      |                    |                           |              |                    |
| <b>30V</b>                    |              |                      |                    |                           |              |                    |
| RUEF300                       | 500          | —                    | —                  | 10,000                    | UF300        | UL, CSA, TÜV, CQC  |
| RUEF300-2                     | —            | 2,500                | —                  | 12,500                    | UF300        | UL, CSA, TÜV, CQC  |
| RUEF300-AP                    | —            | —                    | 1,000              | 5,000                     | UF300        | UL, CSA, TÜV, CQC  |
| RUEF400                       | 500          | —                    | —                  | 10,000                    | UF400        | UL, CSA, TÜV, CQC  |
| RUEF400-2                     | —            | 1,500                | —                  | 7,500                     | UF400        | UL, CSA, TÜV, CQC  |
| RUEF400-AP                    | —            | —                    | 1,000              | 5,000                     | UF400        | UL, CSA, TÜV, CQC  |
| RUEF500                       | 250          | —                    | —                  | 5,000                     | UF500        | UL, CSA, TÜV, CQC  |
| RUEF500-2                     | —            | 1,500                | —                  | 7,500                     | UF500        | UL, CSA, TÜV, CQC  |
| RUEF500-AP                    | —            | —                    | 1,000              | 5,000                     | UF500        | UL, CSA, TÜV, CQC  |
| RUEF600                       | 250          | —                    | —                  | 5,000                     | UF600        | UL, CSA, TÜV, CQC  |
| RUEF600-2                     | —            | 1,000                | —                  | 5,000                     | UF600        | UL, CSA, TÜV, CQC  |
| RUEF600-AP                    | —            | —                    | 1,000              | 5,000                     | UF600        | UL, CSA, TÜV, CQC  |
| RUEF700                       | 250          | —                    | —                  | 5,000                     | UF700        | UL, CSA, TÜV, CQC  |
| RUEF700-2                     | —            | 1,000                | —                  | 5,000                     | UF700        | UL, CSA, TÜV, CQC  |
| RUEF700-AP                    | —            | —                    | 1,000              | 5,000                     | UF700        | UL, CSA, TÜV, CQC  |
| RUEF800                       | 250          | —                    | —                  | 5,000                     | UF800        | UL, CSA, TÜV, CQC  |
| RUEF800-2                     | —            | 1,000                | —                  | 5,000                     | UF800        | UL, CSA, TÜV, CQC  |
| RUEF800-AP                    | —            | —                    | 1,000              | 5,000                     | UF800        | UL, CSA, TÜV, CQC  |
| RUEF900                       | 250          | —                    | —                  | 5,000                     | UF900        | UL, CSA, TÜV, CQC  |
| RUEF900-2                     | —            | 1,000                | —                  | 4,000                     | UF900        | UL, CSA, TÜV, CQC  |
| RUEF900-AP                    | —            | —                    | 1,000              | 4,000                     | UF900        | UL, CSA, TÜV, CQC  |
| <b>RHEF</b>                   |              |                      |                    |                           |              |                    |
| <b>30V - High Temperature</b> |              |                      |                    |                           |              |                    |
| RHEF050                       | 500          | —                    | —                  | 10,000                    | HF0.5        | UL, CSA, TÜV       |
| RHEF050-2                     | —            | 2,500                | —                  | 12,500                    | HF0.7        | UL, CSA, TÜV       |
| RHEF070                       | 500          | —                    | —                  | 10,000                    | HF0.7        | UL, CSA, TÜV       |
| RHEF070-2                     | —            | 2,500                | —                  | 12,500                    | HF0.7        | UL, CSA, TÜV       |
| RHEF100                       | 500          | —                    | —                  | 10,000                    | HF1.0        | UL, CSA, TÜV       |
| RHEF100-2                     | —            | 2,500                | —                  | 12,500                    | HF1.0        | UL, CSA, TÜV       |
| <b>RUSBF</b>                  |              |                      |                    |                           |              |                    |
| <b>16V</b>                    |              |                      |                    |                           |              |                    |
| RUSBF090                      | 500          | —                    | —                  | 10,000                    | RF090        | UL, CSA, TÜV       |
| RUSBF090-2                    | —            | 3,000                | —                  | 15,000                    | RF090        | UL, CSA, TÜV       |
| RUSBF090-AP                   | —            | —                    | 2,000              | 10,000                    | RF090        | UL, CSA, TÜV       |
| RUSBF110                      | 500          | —                    | —                  | 10,000                    | RF110        | UL, CSA, TÜV       |
| RUSBF110-2                    | —            | 3,000                | —                  | 15,000                    | RF110        | UL, CSA, TÜV       |
| RUSBF110-AP                   | —            | —                    | 2,000              | 10,000                    | RF110        | UL, CSA, TÜV       |
| RUSBF135                      | 500          | —                    | —                  | 10,000                    | RF135        | UL, CSA, TÜV       |
| RUSBF135-2                    | —            | 3,000                | —                  | 15,000                    | RF135        | UL, CSA, TÜV       |
| RUSBF135-AP                   | —            | —                    | 2,000              | 10,000                    | RF135        | UL, CSA, TÜV       |
| RUSBF160                      | 500          | —                    | —                  | 10,000                    | RF160        | UL, CSA, TÜV       |
| RUSBF160-2                    | —            | 3,000                | —                  | 15,000                    | RF160        | UL, CSA, TÜV       |
| RUSBF160-AP                   | —            | —                    | 2,000              | 10,000                    | RF160        | UL, CSA, TÜV       |
| RUSBF185                      | 500          | —                    | —                  | 10,000                    | RF185        | UL, CSA, TÜV       |
| RUSBF185-2                    | —            | 3,000                | —                  | 15,000                    | RF185        | UL, CSA, TÜV       |
| RUSBF185-AP                   | —            | —                    | 2,000              | 10,000                    | RF185        | UL, CSA, TÜV       |
| RUSBF250                      | 500          | —                    | —                  | 10,000                    | RF250        | UL, CSA, TÜV       |
| RUSBF250-2                    | —            | 3,000                | —                  | 15,000                    | RF250        | UL, CSA, TÜV       |
| RUSBF250-AP                   | —            | —                    | 2,000              | 10,000                    | RF250        | UL, CSA, TÜV       |
| <b>RGEF</b>                   |              |                      |                    |                           |              |                    |
| <b>16V</b>                    |              |                      |                    |                           |              |                    |
| RGEF250                       | 500          | —                    | —                  | 10,000                    | GF250        | UL, CSA, TÜV       |
| RGEF250-2                     | —            | 3,000                | —                  | 15,000                    | GF250        | UL, CSA, TÜV       |
| RGEF250-AP                    | —            | —                    | 2,000              | 10,000                    | GF250        | UL, CSA, TÜV       |

**Table R6 Packaging and Marking Information for Radial-leaded Devices**

Cont'd

| Part Number                   | Bag Quantity | Tape & Reel Quantity | Ammo Pack Quantity | Standard Package Quantity | Part Marking | Agency Recognition |
|-------------------------------|--------------|----------------------|--------------------|---------------------------|--------------|--------------------|
| <b>RGEF</b>                   |              |                      |                    |                           |              |                    |
| <b>16V</b>                    |              |                      |                    |                           |              |                    |
| RGEF300                       | 500          | —                    | —                  | 10,000                    | GF300        | UL, CSA, TÜV       |
| RGEF300-2                     | —            | 2,500                | —                  | 12,500                    | GF300        | UL, CSA, TÜV       |
| RGEF300-AP                    | —            | —                    | 2,000              | 10,000                    | GF300        | UL, CSA, TÜV       |
| RGEF400                       | 500          | —                    | —                  | 10,000                    | GF400        | UL, CSA, TÜV       |
| RGEF400-2                     | —            | 2,500                | —                  | 12,500                    | GF400        | UL, CSA, TÜV       |
| RGEF400-AP                    | —            | —                    | 2,000              | 10,000                    | GF400        | UL, CSA, TÜV       |
| RGEF500                       | 500          | —                    | —                  | 10,000                    | GF500        | UL, CSA, TÜV       |
| RGEF500-2                     | —            | 2,000                | —                  | 10,000                    | GF500        | UL, CSA, TÜV       |
| RGEF500-AP                    | —            | —                    | 2,000              | 10,000                    | GF500        | UL, CSA, TÜV       |
| RGEF600                       | 500          | —                    | —                  | 10,000                    | GF600        | UL, CSA, TÜV       |
| RGEF600-2                     | —            | 2,000                | —                  | 10,000                    | GF600        | UL, CSA, TÜV       |
| RGEF600-AP                    | —            | —                    | 2,000              | 10,000                    | GF600        | UL, CSA, TÜV       |
| RGEF700                       | 500          | —                    | —                  | 10,000                    | GF700        | UL, CSA, TÜV       |
| RGEF700-2                     | —            | 1,500                | —                  | 7,500                     | GF700        | UL, CSA, TÜV       |
| RGEF700-AP                    | —            | —                    | 1,500              | 7,500                     | GF700        | UL, CSA, TÜV       |
| RGEF800                       | 500          | —                    | —                  | 10,000                    | GF800        | UL, CSA, TÜV       |
| RGEF800-2                     | —            | 1,000                | —                  | 5,000                     | GF800        | UL, CSA, TÜV       |
| RGEF800-AP                    | —            | —                    | 1,000              | 5,000                     | GF800        | UL, CSA, TÜV       |
| RGEF900                       | 500          | —                    | —                  | 10,000                    | GF900        | UL, CSA, TÜV       |
| RGEF900-2                     | —            | 1,000                | —                  | 5,000                     | GF900        | UL, CSA, TÜV       |
| RGEF900-AP                    | —            | —                    | 1,000              | 5,000                     | GF900        | UL, CSA, TÜV       |
| RGEF1000                      | 250          | —                    | —                  | 5,000                     | GF1000       | UL, CSA, TÜV       |
| RGEF1000-2                    | —            | 1,000                | —                  | 5,000                     | GF1000       | UL, CSA, TÜV       |
| RGEF1000-AP                   | —            | —                    | 1,000              | 5,000                     | GF1000       | UL, CSA, TÜV       |
| RGEF1100                      | 250          | —                    | —                  | 5,000                     | GF1100       | UL, CSA, TÜV       |
| RGEF1100-2                    | —            | 1,000                | —                  | 5,000                     | GF1100       | UL, CSA, TÜV       |
| RGEF1100-AP                   | —            | —                    | 1,000              | 5,000                     | GF1100       | UL, CSA, TÜV       |
| RGEF1200                      | 250          | —                    | —                  | 5,000                     | GF1200       | UL, CSA, TÜV       |
| RGEF1200-2                    | —            | 1,000                | —                  | 5,000                     | GF1200       | UL, CSA, TÜV       |
| RGEF1200-AP                   | —            | —                    | 1,000              | 5,000                     | GF1200       | UL, CSA, TÜV       |
| RGEF1400                      | 250          | —                    | —                  | 5,000                     | GF1400       | UL, CSA, TÜV       |
| RGEF1400-2                    | —            | 1,000                | —                  | 5,000                     | GF1400       | UL, CSA, TÜV       |
| RGEF1400-AP                   | —            | —                    | 1,000              | 5,000                     | GF1400       | UL, CSA, TÜV       |
| <b>RHEF</b>                   |              |                      |                    |                           |              |                    |
| <b>16V - High Temperature</b> |              |                      |                    |                           |              |                    |
| RHEF200                       | 500          | —                    | —                  | 10,000                    | HF2.0        | UL, CSA, TÜV       |
| RHEF200-2                     | —            | 2,500                | —                  | 12,500                    | HF2.0        | UL, CSA, TÜV       |
| RHEF200-AP                    | —            | —                    | 2,500              | 12,500                    | HF2.0        | UL, CSA, TÜV       |
| RHEF300                       | 500          | —                    | —                  | 10,000                    | HF3          | UL, CSA, TÜV       |
| RHEF300-2                     | —            | 2,000                | —                  | 10,000                    | HF3          | UL, CSA, TÜV       |
| RHEF300-AP                    | —            | —                    | 2,000              | 10,000                    | HF3          | UL, CSA, TÜV       |
| RHEF400                       | 500          | —                    | —                  | 10,000                    | HF4          | UL, CSA, TÜV       |
| RHEF400-2                     | —            | 1,500                | —                  | 7,500                     | HF4          | UL, CSA, TÜV       |
| RHEF400-AP                    | —            | —                    | 1,500              | 7,500                     | HF4          | UL, CSA, TÜV       |
| RHEF450                       | 500          | —                    | —                  | 10,000                    | HF4.5        | UL, CSA, TÜV       |
| RHEF450-2                     | —            | 1,500                | —                  | 7,500                     | HF4.5        | UL, CSA, TÜV       |
| RHEF450-AP                    | —            | —                    | 1,500              | 7,500                     | HF4.5        | UL, CSA, TÜV       |
| RHEF550                       | 500          | —                    | —                  | 10,000                    | HF5.5        | UL, CSA, TÜV       |
| RHEF550-2                     | —            | 2,000                | —                  | 10,000                    | HF5.5        | UL, CSA, TÜV       |
| RHEF550-AP                    | —            | —                    | 2,000              | 10,000                    | HF5.5        | UL, CSA, TÜV       |
| RHEF600                       | 500          | —                    | —                  | 10,000                    | HF6          | UL, CSA, TÜV       |
| RHEF600-2                     | —            | 1,500                | —                  | 7,500                     | HF6          | UL, CSA, TÜV       |
| RHEF600-AP                    | —            | —                    | 1,500              | 7,500                     | HF6          | UL, CSA, TÜV       |

**Table R6 Packaging and Marking Information for Radial-leaded Devices**

Cont'd

| Part Number                   | Bag Quantity | Tape & Reel Quantity | Ammo Pack Quantity | Standard Package Quantity | Part Marking | Agency Recognition |
|-------------------------------|--------------|----------------------|--------------------|---------------------------|--------------|--------------------|
| <b>RHEF</b>                   |              |                      |                    |                           |              |                    |
| <b>16V - High Temperature</b> |              |                      |                    |                           |              |                    |
| RHEF650                       | 500          | —                    | —                  | 10,000                    | HF6.5        | UL, CSA, TÜV       |
| RHEF650-2                     | —            | 1,500                | —                  | 7,500                     | HF6.5        | UL, CSA, TÜV       |
| RHEF650-AP                    | —            | —                    | 1,500              | 7,500                     | HF6.5        | UL, CSA, TÜV       |
| RHEF700                       | 500          | —                    | —                  | 10,000                    | HF7          | UL, CSA, TÜV       |
| RHEF700-2                     | —            | 1,500                | —                  | 7,500                     | HF7          | UL, CSA, TÜV       |
| RHEF700-AP                    | —            | —                    | 1,500              | 7,500                     | HF7          | UL, CSA, TÜV       |
| RHEF750                       | 500          | —                    | —                  | 10,000                    | HF7.5        | UL, CSA, TÜV       |
| RHEF750-2                     | —            | 1,000                | —                  | 5,000                     | HF7.5        | UL, CSA, TÜV       |
| RHEF750-AP                    | —            | —                    | 1,000              | 5,000                     | HF7.5        | UL, CSA, TÜV       |
| RHEF800                       | 500          | —                    | —                  | 10,000                    | HF8          | UL, CSA, TÜV       |
| RHEF800-2                     | —            | 1,000                | —                  | 5,000                     | HF8          | UL, CSA, TÜV       |
| RHEF800-AP                    | —            | —                    | 1,000              | 5,000                     | HF8          | UL, CSA, TÜV       |
| RHEF900                       | 250          | —                    | —                  | 5,000                     | HF9          | UL, CSA, TÜV       |
| RHEF900-2                     | —            | 1,000                | —                  | 5,000                     | HF9          | UL, CSA, TÜV       |
| RHEF900-AP                    | —            | —                    | 1,000              | 5,000                     | HF9          | UL, CSA, TÜV       |
| RHEF1000                      | 250          | —                    | —                  | 5,000                     | HF10         | UL, CSA, TÜV       |
| RHEF1000-2                    | —            | 1,000                | —                  | 5,000                     | HF10         | UL, CSA, TÜV       |
| RHEF1000-AP                   | —            | —                    | 1,000              | 5,000                     | HF10         | UL, CSA, TÜV       |
| RHEF1100                      | 250          | —                    | —                  | 5,000                     | HF11         | UL, CSA, TÜV       |
| RHEF1100-2                    | —            | 1,000                | —                  | 5,000                     | HF11         | UL, CSA, TÜV       |
| RHEF1100-AP                   | —            | —                    | 1,000              | 5,000                     | HF11         | UL, CSA, TÜV       |
| RHEF1300                      | 250          | —                    | —                  | 5,000                     | HF13         | UL, CSA, TÜV       |
| RHEF1300-2                    | —            | 1,000                | —                  | 5,000                     | HF13         | UL, CSA, TÜV       |
| RHEF1300-AP                   | —            | —                    | 1,000              | 5,000                     | HF13         | UL, CSA, TÜV       |
| RHEF1400                      | 250          | —                    | —                  | 5,000                     | HF14         | UL, CSA, TÜV       |
| RHEF1400-2                    | —            | 1,000                | —                  | 5,000                     | HF14         | UL, CSA, TÜV       |
| RHEF1400-AP                   | —            | —                    | 1,000              | 5,000                     | HF14         | UL, CSA, TÜV       |
| RHEF1500                      | 250          | —                    | —                  | 5,000                     | HF15         | UL, CSA, TÜV       |
| RHEF1500-2                    | —            | 1,000                | —                  | 5,000                     | HF15         | UL, CSA, TÜV       |
| RHEF1500-AP                   | —            | —                    | 1,000              | 5,000                     | HF15         | UL, CSA, TÜV       |
| <b>RUSBF</b>                  |              |                      |                    |                           |              |                    |
| <b>6V</b>                     |              |                      |                    |                           |              |                    |
| RUSBF075                      | 500          | —                    | —                  | 10,000                    | RF075        | UL, CSA, TÜV       |
| RUSBF075-2                    | —            | 3,000                | —                  | 15,000                    | RF075        | UL, CSA, TÜV       |
| RUSBF075-AP                   | —            | —                    | 2,000              | 10,000                    | RF075        | UL, CSA, TÜV       |
| RUSBF120                      | 500          | —                    | —                  | 10,000                    | RF120        | UL, CSA, TÜV       |
| RUSBF120-2                    | —            | 3,000                | —                  | 15,000                    | RF120        | UL, CSA, TÜV       |
| RUSBF120-AP                   | —            | —                    | 2,000              | 10,000                    | RF120        | UL, CSA, TÜV       |
| RUSBF155                      | 500          | —                    | —                  | 10,000                    | RF155        | UL, CSA, TÜV       |
| RUSBF155-2                    | —            | 3,000                | —                  | 15,000                    | RF155        | UL, CSA, TÜV       |
| RUSBF155-AP                   | —            | —                    | 2,000              | 10,000                    | RF155        | UL, CSA, TÜV       |

**Agency Recognitions for Radial-leaded Devices**

|     |  |
|-----|--|
| UL  | File # E74889  |
| CSA | File # CA78165   |
| TÜV | Certificate number available on request (per IEC 60730-1). |

**Table R7 Tape and Reel Specifications for Radial-leaded Devices**

RXEF, BBRF and RKEF devices are available in tape and reel packaging per EIA468-B/IEC60286-2 standards. See Figures R22 and R23 for details.

| Description   | EIA Mark       | Dimension (mm) | Tolerance  |
|---|----------------|----------------|------------|
| Carrier tape width  | W              | 18             | -0.5/+1.0  |
| Hold-down tape width  | W <sub>4</sub> | 11             | Minimum    |
| Top distance between tape edges   | W <sub>6</sub> | 3              | Maximum    |
| Sprocket hole position  | W <sub>5</sub> | 9              | -0.5/+0.75 |
| Sprocket hole diameter  | D <sub>0</sub> | 4              | ± 0.2      |
| Abscissa to plane (straight lead) (RXEF110 to RXEF300, RKEF135 to RKEF500)              | H              | 18.5           | ± 2.5      |
| Abscissa to plane (kinked lead) (RXEF010 to RXEF090, BBRF550, RKEF050 to RKEF110)       | H <sub>0</sub> | 16.0           | ± 0.5      |
| Abscissa to top (RXEF010 to RXEF090, BBRF550, RKEF050 to RKEF185)                       | H <sub>1</sub> | 32.2           | Maximum    |
| Abscissa to top* (RXEF110 to RXEF300, RKEF250 to RKEF500)                               | H <sub>1</sub> | 47.5           | Maximum    |
| Overall width with lead protrusion (RXEF010 to RXEF090, BBRF550, RKEF050 to RKEF185)    | C <sub>1</sub> | 43.2           | Maximum    |
| Overall width with lead protrusion* (RXEF110 to RXEF300, RKEF250 to RKEF500)            | C <sub>1</sub> | 58             | Maximum    |
| Overall width without lead protrusion (RXEF010 to RXEF090, BBRF550, RKEF050 to RKEF185) | C <sub>2</sub> | 42.5           | Maximum    |
| Overall width without lead protrusion* (RXEF110 to RXEF300, RKEF250 to RKEF500)         | C <sub>2</sub> | 57             | Maximum    |
| Lead protrusion   | L <sub>1</sub> | 1.0            | Maximum    |
| Protrusion of cut-out   | L              | 11.0           | Maximum    |
| Protrusion beyond hold-down tape  | I <sub>2</sub> | Not specified  | —          |
| Sprocket hole pitch   | P <sub>0</sub> | 12.7           | ± 0.3      |
| Device pitch (RXEF010 to RXEF090, BBRF550, RKEF050 to RKEF185)                          | —              | 12.7           | ± 0.3      |
| Device pitch (RXEF110 to RXEF300, RKEF250 to RKEF500)                                   | —              | 25.4           | ± 0.61     |
| Pitch tolerance   | —              | 20 consecutive | ± 1        |
| Tape thickness  | t              | 0.9            | Maximum    |
| Overall tape and lead thickness (RXEF010 to RXEF090, RKEF050 to RKEF185)                | t <sub>1</sub> | 1.5            | Maximum    |
| Overall tape and lead thickness (RXEF110 to RXEF300, BBRF550, RKEF250 to RKEF500)       | t <sub>1</sub> | 2.3            | Maximum    |
| Splice sprocket hole alignment  | —              | 0              | ± 0.3      |
| Body lateral deviation  | Δh             | 0              | ± 1.0      |
| Body tape plane deviation   | Δp             | 0              | ± 1.3      |
| Ordinate to adjacent component lead (RXEF010 to RXEF185, BBRF550, RKEF050 to RKEF300)   | P <sub>1</sub> | 3.81           | ± 0.7      |
| Ordinate to adjacent component lead (RXEF250 to RXEF300, RKEF375 to RKEF500)            | P <sub>1</sub> | 7.62           | ± 0.7      |
| Lead spacing* (RXEF010 to RXEF185, BBRF550, RKEF050 to RKEF300)                         | F              | 5.05           | ± 0.75     |
| Lead spacing* (RXEF250 to RXEF300, RKEF375 to RKEF500)                                  | F              | 10.15          | ± 0.75     |
| Reel width (RXEF010 to RXEF090, RKEF050 to RKEF185)                                     | w <sub>2</sub> | 56.0           | Maximum    |
| Reel width* (RXEF110 to RXEF300, RKEF250 to RKEF500)                                    | w <sub>2</sub> | 63.5           | Maximum    |
| Reel diameter   | a              | 370.0          | Maximum    |
| Space between flanges* (RXEF010 to RXEF090, RKEF050 to RKEF185)                         | w <sub>1</sub> | 48.00          | Maximum    |
| Space between flanges* (RXEF110 to RXEF300, RKEF250 to RKEF500)                         | w <sub>1</sub> | 55.00          | Maximum    |
| Arbor hold diameter   | c              | 26.0           | ± 12.0     |
| Core diameter*  | n              | 91.0           | Maximum    |
| Box   | —              | 64/372/362     | Maximum    |
| Consecutive missing places  | —              | None           | —          |
| Empty places per reel   | —              | 0.1%           | Maximum    |

\*Differs from EIA specification.



**Table R7 Tape and Reel Specifications for Radial-leaded Devices**

Cont'd

RUEF, RTEF and RUSBF devices are available in tape and reel packaging per EIA468-B/IEC60286-2 standards. See Figures R22 and R23 for details.

| Description  | EIA Mark       | Dimension (mm) | Tolerance  |
|--|----------------|----------------|------------|
| Carrier tape width   | W              | 18             | -0.5/+1.0  |
| Hold-down tape width   | W <sub>4</sub> | 11             | Minimum    |
| Top distance between tape edges  | W <sub>6</sub> | 3              | Maximum    |
| Sprocket hole position   | W <sub>5</sub> | 9              | -0.5/+0.75 |
| Sprocket hole diameter   | D <sub>0</sub> | 4              | ± 0.2      |
| Abscissa to plane (straight lead)* (RUEF300 to RUEF900)  | H              | 18.5           | ± 2.5      |
| Abscissa to plane (kinked lead) (RUSBF075 to RUSBF250, RUEF090 to RUEF250, RTEF120 to RTEF190)       | H <sub>0</sub> | 16.0           | ± 0.5      |
| Abscissa to top (RUSBF075 to RUSBF250, RUEF090 to RUEF300, RTEF120 to RTEF190)                       | H <sub>1</sub> | 32.2           | Maximum    |
| Abscissa to top* (RUEF400 to RUEF900)  | H <sub>1</sub> | 45.0           | Maximum    |
| Overall width with lead protrusion (RUSBF075 to RUSBF250, RUEF090 to RUEF300, RTEF120 to RTEF190)    | C <sub>1</sub> | 43.2           | Maximum    |
| Overall width with lead protrusion (RUEF400 to RUEF900)  | C <sub>1</sub> | 56             | Maximum    |
| Overall width without lead protrusion (RUSBF075 to RUSBF250, RUEF090 to RUEF300, RTEF120 to RTEF190) | C <sub>2</sub> | 42.5           | Maximum    |
| Overall width without lead protrusion (RUEF400 to RUEF900)   | C <sub>2</sub> | 56             | Maximum    |
| Lead protrusion  | L <sub>1</sub> | 1.0            | Maximum    |
| Protrusion of cut-out  | L              | 11             | Maximum    |
| Protrusion beyond hold-down tape   | I <sub>2</sub> | Not specified  | —          |
| Sprocket hole pitch  | P <sub>0</sub> | 12.7           | ± 0.3      |
| Device pitch (RUSBF075 to RUSBF250, RUEF090 to RUEF300, RTEF120 to RTEF190)                          | —              | 12.7           | ± 0.3      |
| Device pitch (RUEF400 to RUEF900)  | —              | 25.4           | ± 0.6      |
| Pitch tolerance  | —              | 20 consecutive | ± 1        |
| Tape thickness   | t              | 0.9            | Maximum    |
| Overall tape and lead thickness (RUSBF075 to RUSBF250, RUEF090 to RUEF250, RTEF120 to RTEF190)       | t <sub>1</sub> | 1.5            | Maximum    |
| Overall tape and lead thickness* (RUEF300 to RUEF900)  | t <sub>1</sub> | 2.3            | Maximum    |
| Splice sprocket hole alignment   | —              | 0              | ± 0.3      |
| Body lateral deviation   | Δh             | 0              | ± 1.0      |
| Body tape plane deviation  | Δp             | 0              | ± 1.3      |
| Ordinate to adjacent component lead (RUSBF075 to RUSBF250, RUEF090 to RUEF300, RTEF120 to RTEF190)   | P <sub>1</sub> | 3.81           | ± 0.7      |
| Ordinate to adjacent component lead (RUEF400 to RUEF900)   | P <sub>1</sub> | 7.62           | ± 0.7      |
| Lead spacing* (RUSBF075 to RUSBF250, RUEF090 to RUEF400, RTEF120 to RTEF190)                         | F              | 5.05           | ± 0.75     |
| Lead spacing* (RUEF500 to RUEF900)   | F              | 10.15          | ± 0.75     |
| Reel width (RUEF090 to RUEF400, RUSBF075 to RUSBF250, RTEF120 to RTEF190)                            | w <sub>2</sub> | 56.0           | Maximum    |
| Reel width (RUEF500* to RUEF900)   | w <sub>2</sub> | 63.5           | Maximum    |
| Reel diameter  | a              | 370.0          | Maximum    |
| Space between flanges* (RUEF090 to RUEF400, RUSBF075 to RUSBF250, RTEF120 to RTEF190)                | w <sub>1</sub> | 48.0           | Maximum    |
| Space between flanges* (RUEF500 to RUEF900)  | w <sub>1</sub> | 55.0           | Maximum    |
| Arbor hold diameter  | c              | 26.0           | ± 12.0     |
| Core diameter*   | n              | 91.0           | Maximum    |
| Box  | —              | 64/372/362     | Maximum    |
| Consecutive missing places   | —              | None           | —          |
| Empty places per reel  | —              | 0.1%           | Maximum    |

\*Differs from EIA specification.

**Table R7 Tape and Reel Specifications for Radial-leaded Devices**

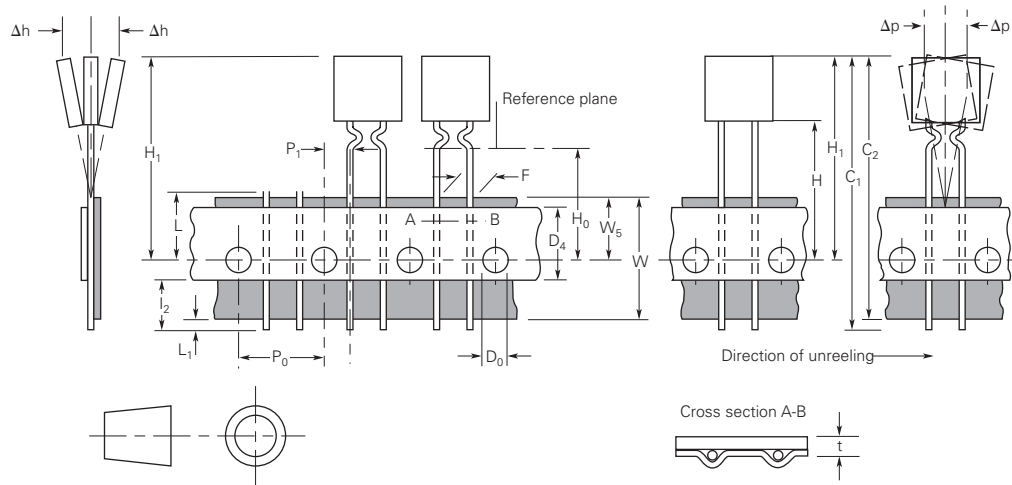
Cont'd

RGEF and RHEF devices are available in tape and reel packaging per EIA468-B/IEC60286-2 standards. See Figures R22 and R23 for details.

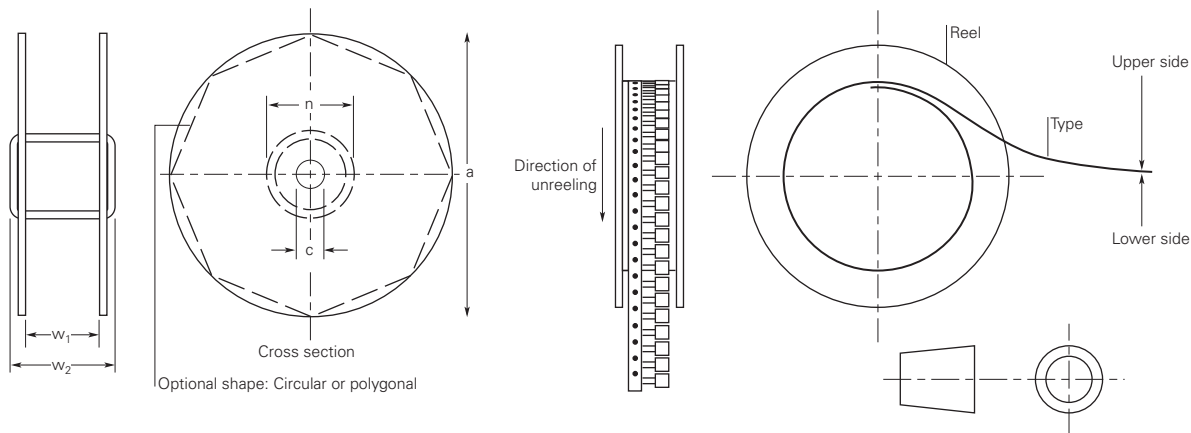
| Description  | EIA Mark       | Dimension (mm) | Tolerance  |
|--|----------------|----------------|------------|
| Carrier tape width   | W              | 18             | -0.5/+1.0  |
| Hold-down tape width   | W <sub>4</sub> | 11             | Minimum    |
| Top distance between tape edges  | W <sub>6</sub> | 3              | Maximum    |
| Sprocket hole position   | W <sub>5</sub> | 9              | -0.5/+0.75 |
| Sprocket hole diameter   | D <sub>0</sub> | 4              | ± 0.2      |
| Abscissa to plane (straight lead) (RGEF250 to RGEF1400)                          | H              | 18.5           | ± 2.5      |
| Abscissa to plane (kinked lead) (RHEF050 to RHEF1500)                            | H <sub>0</sub> | 16.0           | ± 0.5      |
| Abscissa to top (RGEF250 to RGEF500, RHEF050 to RHEF450)                         | H <sub>1</sub> | 32.2           | Maximum    |
| Abscissa to top* (RGEF600 to RGEF1400, RHEF550 to RHEF1500)                      | H <sub>1</sub> | 45.0           | Maximum    |
| Overall width with lead protrusion (RGEF250 to RGEF600, RHEF050 to RHEF450)      | C <sub>1</sub> | 43.2           | Maximum    |
| Overall width with lead protrusion (RGEF700 to RGEF1400, RHEF550 to RHEF1500)    | C <sub>1</sub> | 55             | Maximum    |
| Overall width without lead protrusion (RGEF250 to RGEF600, RHEF050 to RHEF450)   | C <sub>2</sub> | 42.5           | Maximum    |
| Overall width without lead protrusion (RGEF700 to RGEF1400, RHEF550 to RHEF1500) | C <sub>2</sub> | 54             | Maximum    |
| Lead protrusion  | L <sub>1</sub> | 1.0            | Maximum    |
| Protrusion of cut-out  | L              | 11             | Maximum    |
| Protrusion beyond hold-down tape   | I <sub>2</sub> | Not specified  | —          |
| Sprocket hole pitch  | P <sub>0</sub> | 12.7           | ± 0.3      |
| Device pitch (RGEF250 to RGEF700, RHEF050 to RHEF600)                            | —              | 25.4           | ± 0.61     |
| Device pitch (RGEF800 to RGEF1400, RHEF650 to RHEF1500)                          | —              | 25.4           | ± 0.6      |
| Pitch tolerance  | —              | 20 consecutive | ± 1        |
| Tape thickness   | t              | 0.9            | Maximum    |
| Overall tape and lead thickness* (RGEF250 to RGEF1100, RHEF050 to RHEF1100)      | t <sub>1</sub> | 2.0            | Maximum    |
| Overall tape and lead thickness* (RGEF1200 to RGEF1400, RHEF1300 to RHEF1500)    | t <sub>1</sub> | 2.3            | Maximum    |
| Splice sprocket hole alignment   | —              | 0              | ± 0.3      |
| Body lateral deviation   | Δh             | 0              | ± 1.0      |
| Body tape plane deviation  | Δp             | 0              | ± 1.3      |
| Ordinate to adjacent component lead (RGEF250 to RGEF1100, RHEF050 to RHEF900)    | P <sub>1</sub> | 3.81           | ± 0.7      |
| Ordinate to adjacent component lead (RGEF1200 to RGEF1400, RHEF1000 to RHEF1500) | P <sub>1</sub> | 7.62           | ± 0.7      |
| Lead spacing* (RGEF250 to RGEF1100, RHEF050 to RHEF900)                          | F              | 5.05           | ± 0.75     |
| Lead spacing* (RGEF1200 to RGEF1400, RHEF1000 to RHEF1500)                       | F              | 10.15          | ± 0.75     |
| Reel width (RGEF250 to RGEF600, RHEF050 to RHEF450)                              | w <sub>2</sub> | 56.0           | Maximum    |
| Reel width* (RGEF600 to RGEF1400 & RHEF550 to RHEF1500)                          | w <sub>2</sub> | 63.5           | Maximum    |
| Reel diameter  | a              | 370.0          | Maximum    |
| Space between flanges* (RGEF250 to RGEF600, RHEF050 to RHEF450)                  | w <sub>1</sub> | 48.0           | Maximum    |
| Space between flanges* (RGEF600 to RGEF1400, RHEF550 to RHEF1500)                | w <sub>1</sub> | 55.0           | Maximum    |
| Arbor hold diameter  | c              | 26.0           | ± 12.0     |
| Core diameter*   | n              | 91.0           | Maximum    |
| Box  | —              | 64/372/362     | Maximum    |
| Consecutive missing places   | —              | None           | —          |
| Empty places per reel  | —              | 0.1%           | Maximum    |

\*Differs from EIA specification.

**Figure R22 EIA Referenced Taped Component Dimensions for Radial-leaded Devices**

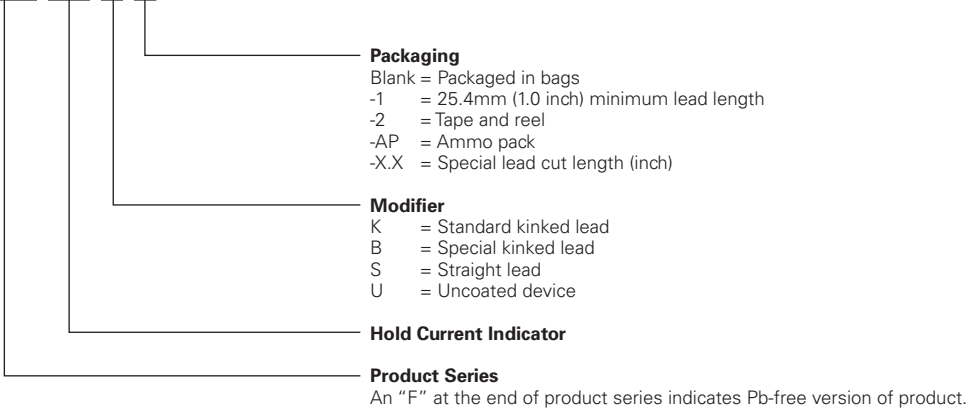


**Figure R23 EIA Referenced Reel Dimensions for Radial-leaded Devices**



**Part Numbering System for Radial-leaded Devices**

**RUEF 250 U 2**



**Note:** Kinked part is recommended to well control the height of part on the PCB in non-auto PCB application.

**Warning :**

- Users should independently evaluate the suitability of and test each product selected for their own application.
- Operation beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
- These devices are intended for protection against damage caused by occasional overcurrent or overtemperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
- Contamination of the PPTC material with certain silicone-based oils or some aggressive solvents can adversely impact the performance of the devices.
- Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal, and mechanical procedures for electronic components.
- PPTC devices are not recommended for installation in applications where the device is constrained such that its PTC properties are inhibited, for example in rigid potting materials or in rigid housings, which lack adequate clearance to accommodate device expansion.
- Operation in circuits with a large inductance can generate a circuit voltage ( $Ldi/dt$ ) above the rated voltage of the device.