

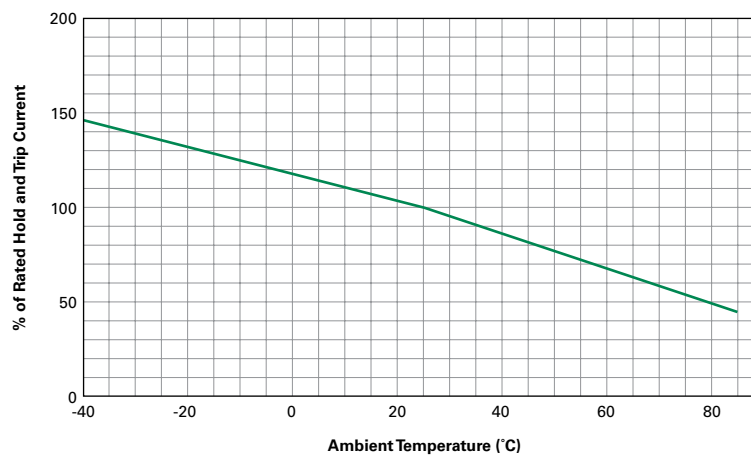
# RGEF Series

## Radial Leaded

### Temperature Derating

| Maximum Ambient Temperature |       |       |      |      |       |      |      |      |      |      |
|-----------------------------|-------|-------|------|------|-------|------|------|------|------|------|
|                             | -40°C | -20°C | 0°C  | 20°C | 25°C  | 40°C | 50°C | 60°C | 70°C | 85°C |
| Hold Current (A)            |       |       |      |      |       |      |      |      |      |      |
| RGEF – 16V                  |       |       |      |      |       |      |      |      |      |      |
| 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  |
| 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  |

### Temperature Derating Curve



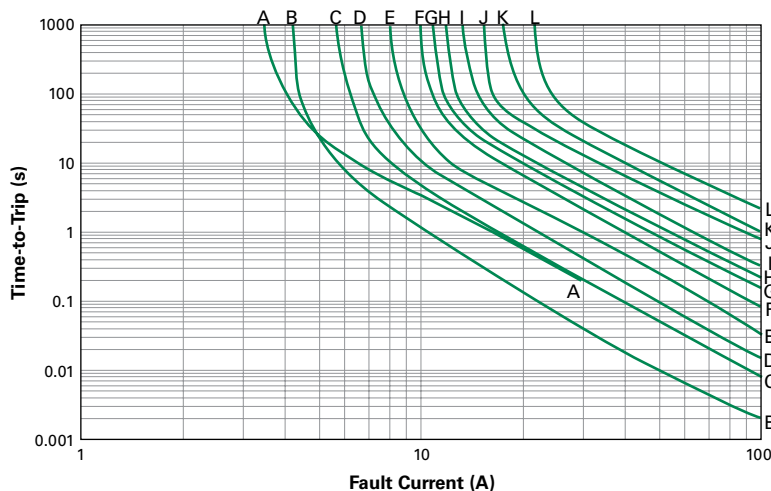
# RGEF Series

## Radial Leaded

Typical Time-to-Trip Curves at 20°C

### RGEF (data at 25°C)

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



### Physical Specifications

|                                  |                                                                                                                                                                                                                                                                        |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lead Material</b>             | RGEF250 : Tin-plated Copper-clad Steel, 0.205mm <sup>2</sup> (24AWG), ø0.51mm/0.020in<br>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 |
| <b>Soldering Characteristics</b> | Solderability per ANSI/J-STD-002 Category 3                                                                                                                                                                                                                            |
| <b>Solder Heat Withstand</b>     | RGEF250 and RGEF400 : per IEC 60068-2-20, Test Tb, Method 1; Can withstand 5s at 260°C ±5°C<br>RGEF500 to RGEF1400 : per IEC 60068-2-20, Test Tb, Method 1; Can withstand 10s at 260°C ±5°C                                                                            |
| <b>Insulating Material</b>       | Cured, Flame-retardant Epoxy Polymer; Meets UL 94V-0                                                                                                                                                                                                                   |
| <b>Operation Temperature</b>     | -40°C~85°C                                                                                                                                                                                                                                                             |

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

### Environmental Specifications

| Test                             | Conditions                                                                                                                                                           | Resistance Change |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>Passive Aging</b>             | -40°C, 1000 hrs                                                                                                                                                      | ±5%               |
|                                  | 85°C, 1000 hrs                                                                                                                                                       | ±5%               |
| <b>Humidity Aging</b>            | 85°C, 85% R.H., 1000 hrs                                                                                                                                             | ±5%               |
| <b>Thermal Shock</b>             | 85°C, -40°C (10 Times)                                                                                                                                               | ±5%               |
| <b>Solvent Resistance</b>        | MIL-STD-202, Method 215F                                                                                                                                             | No change         |
| <b>Moisture Resistance Level</b> | Level 1, J-STD-020                                                                                                                                                   |                   |
| <b>Storage Conditions</b>        | 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. |                   |

# RGEF Series

## Radial Leaded

### Dimension Figures

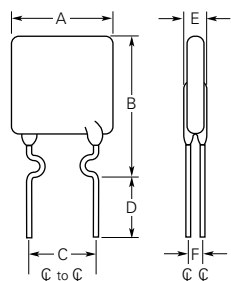


Figure 1

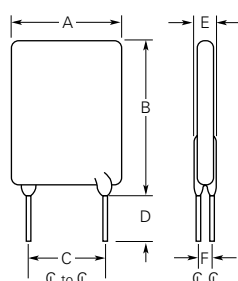


Figure 2

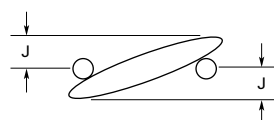


Figure 3

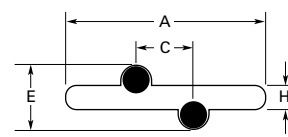


Figure 4

### Dimensions and Weights

| Part Number | Dimensions in Millimeters (Inches) |                 |                |                |               |                |                |                |               |               |               |                 |               | Figure | Device Mass (g)<br>(Only for Reference) |
|-------------|------------------------------------|-----------------|----------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|---------------|-----------------|---------------|--------|-----------------------------------------|
|             | A                                  |                 | B              |                | C             |                | D              |                | E             |               | F             | H               | J             |        |                                         |
|             | Min                                | Max             | Min            | Max            | Min           | Max            | Min            | Max            | Min           | Max           | Typ           | Typ             | Typ           |        |                                         |
| RGEF – 16V  |                                    |                 |                |                |               |                |                |                |               |               |               |                 |               |        |                                         |
| 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) | 1,3,4  | 0.277                                   |
| 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) | 2,3,4  | 0.323                                   |
| 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) | 2,3,4  | 0.417                                   |
| 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) | 2,3,4  | 0.540                                   |
| 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) | 2,3,4  | 0.604                                   |
| 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) | 2,3,4  | 0.701                                   |
| 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) | 2,3,4  | 0.829                                   |
| 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) | 2,3,4  | 0.887                                   |
| RGEF1000    | —                                  | 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) | 2,3,4  | 1.219                                   |
| 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) | 2,3,4  | 1.408                                   |
| 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) | 2,3,4  | 1.650                                   |
| RGEF1400    | —                                  | 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) | 2,3,4  | 2.146                                   |

# RGEF Series

## Radial Leaded

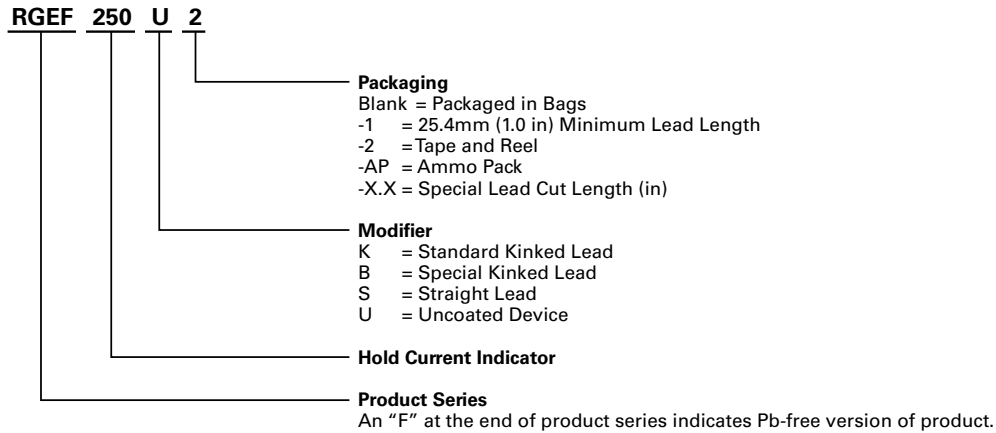
### Packaging and Marking Information

| Part Number       | Bag Quantity | Tape and Reel Quantity | Ammo Pack Quantity | Standard Package Quantity | Part Marking | Agency Recognition |
|-------------------|--------------|------------------------|--------------------|---------------------------|--------------|--------------------|
| <b>RGEF – 16V</b> |              |                        |                    |                           |              |                    |
| RGEF250           | 500          | —                      | —                  | 10,000                    | G2.5         | UL, CSA, TÜV       |
| RGEF250-2         | —            | 3,000                  | —                  | 15,000                    | G2.5         | UL, CSA, TÜV       |
| RGEF250-AP        | —            | —                      | 2,000              | 10,000                    | G2.5         | UL, CSA, TÜV       |
| RGEF300           | 500          | —                      | —                  | 10,000                    | G3           | UL, CSA, TÜV       |
| RGEF300-2         | —            | 2,500                  | —                  | 12,500                    | G3           | UL, CSA, TÜV       |
| RGEF300-AP        | —            | —                      | 2,000              | 10,000                    | G3           | UL, CSA, TÜV       |
| RGEF400           | 500          | —                      | —                  | 10,000                    | G4           | UL, CSA, TÜV       |
| RGEF400-2         | —            | 2,500                  | —                  | 12,500                    | G4           | UL, CSA, TÜV       |
| RGEF400-AP        | —            | —                      | 2,000              | 10,000                    | G4           | UL, CSA, TÜV       |
| RGEF500           | 500          | —                      | —                  | 10,000                    | G5           | UL, CSA, TÜV       |
| RGEF500-2         | —            | 2,000                  | —                  | 10,000                    | G5           | UL, CSA, TÜV       |
| RGEF500-AP        | —            | —                      | 2,000              | 10,000                    | G5           | UL, CSA, TÜV       |
| RGEF600           | 500          | —                      | —                  | 10,000                    | G6           | UL, CSA, TÜV       |
| RGEF600-2         | —            | 2,000                  | —                  | 10,000                    | G6           | UL, CSA, TÜV       |
| RGEF600-AP        | —            | —                      | 2,000              | 10,000                    | G6           | UL, CSA, TÜV       |
| RGEF700           | 500          | —                      | —                  | 10,000                    | G7           | UL, CSA, TÜV       |
| RGEF700-2         | —            | 1,500                  | —                  | 7,500                     | G7           | UL, CSA, TÜV       |
| RGEF700-AP        | —            | —                      | 1,500              | 7,500                     | G7           | UL, CSA, TÜV       |
| RGEF800           | 500          | —                      | —                  | 10,000                    | G8           | UL, CSA, TÜV       |
| RGEF800-2         | —            | 1,500                  | —                  | 7,500                     | G8           | UL, CSA, TÜV       |
| RGEF800-AP        | —            | —                      | 1,500              | 7,500                     | G8           | UL, CSA, TÜV       |
| RGEF900           | 500          | —                      | —                  | 10,000                    | G9           | UL, CSA, TÜV       |
| RGEF900-2         | —            | 1,000                  | —                  | 5,000                     | G9           | UL, CSA, TÜV       |
| RGEF900-AP        | —            | —                      | 1,000              | 5,000                     | G9           | UL, CSA, TÜV       |
| RGEF1000          | 250          | —                      | —                  | 5,000                     | G10          | UL, CSA, TÜV       |
| RGEF1000-2        | —            | 1,000                  | —                  | 5,000                     | G10          | UL, CSA, TÜV       |
| RGEF1000-AP       | —            | —                      | 1,000              | 5,000                     | G10          | UL, CSA, TÜV       |
| RGEF1100          | 250          | —                      | —                  | 5,000                     | G11          | UL, CSA, TÜV       |
| RGEF1100-2        | —            | 1,000                  | —                  | 5,000                     | G11          | UL, CSA, TÜV       |
| RGEF1100-AP       | —            | —                      | 1,000              | 5,000                     | G11          | UL, CSA, TÜV       |
| RGEF1200          | 250          | —                      | —                  | 5,000                     | G12          | UL, CSA, TÜV       |
| RGEF1200-2        | —            | 1,000                  | —                  | 5,000                     | G12          | UL, CSA, TÜV       |
| RGEF1200-AP       | —            | —                      | 1,000              | 5,000                     | G12          | UL, CSA, TÜV       |
| RGEF1400          | 250          | —                      | —                  | 5,000                     | G14          | UL, CSA, TÜV       |
| RGEF1400-2        | —            | 1,000                  | —                  | 5,000                     | G14          | UL, CSA, TÜV       |
| RGEF1400-AP       | —            | —                      | 1,000              | 5,000                     | G14          | UL, CSA, TÜV       |

# RGEF Series

## Radial Leaded

### Part Ordering Number System



**Note:** Kinked parts are recommended to control the height of the part on the PCB in non-auto PCB applications.

# RGEF Series

## Radial Ledged

### Tape and Reel Specifications

RGEF devices are available in tape and reel packaging per EIA468-B/IEC60286-2 standards. See Figures 1 and 2 for details.

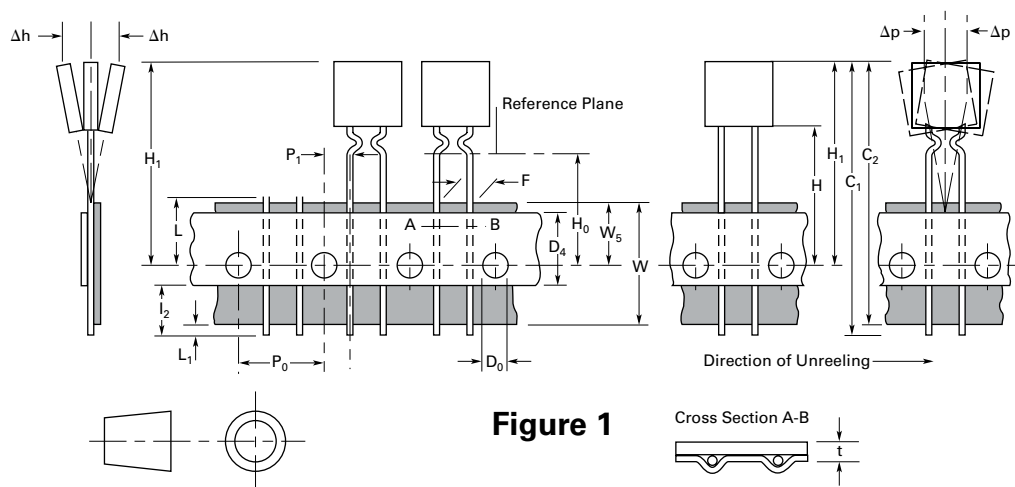
| Description                                                 | EIA Mark       | Dimension (mm) | Tolerance  |
|-------------------------------------------------------------|----------------|----------------|------------|
| Carrier Tape Width                                          | W              | 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)                             | H <sub>0</sub> | 16.0           | ± 0.5      |
| Abscissa to Top (RGEF250 to RGEF500)                        | H <sub>1</sub> | 32.2           | Maximum    |
| Abscissa to Top* (RGEF600 to RGEF1400)                      | H <sub>1</sub> | 45.0           | Maximum    |
| Overall Width with Lead Protrusion (RGEF250 to RGEF600)     | C <sub>1</sub> | 43.2           | Maximum    |
| Overall Width with Lead Protrusion (RGEF700 to RGEF1400)    | C <sub>1</sub> | 55             | Maximum    |
| Overall Width without Lead Protrusion (RGEF250 to RGEF600)  | C <sub>2</sub> | 42.5           | Maximum    |
| Overall Width without Lead Protrusion (RGEF700 to RGEF1400) | 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)                           | —              | 25.4           | ± 0.61     |
| Device Pitch (RGEF800 to RGEF1400)                          | —              | 25.4           | ± 0.6      |
| Pitch Tolerance                                             | —              | 20 Consecutive | ± 1        |
| Tape Thickness                                              | T              | 0.9            | Maximum    |
| Overall Tape and Lead Thickness* (RGEF250 to RGEF1100)      | T <sub>1</sub> | 2.0            | Maximum    |
| Overall Tape and Lead Thickness* (RGEF1200 to RGEF1400)     | 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)   | P <sub>1</sub> | 3.81           | ± 0.7      |
| Ordinate to Adjacent Component Lead (RGEF1200 to RGEF1400)  | P <sub>1</sub> | 7.62           | ± 0.7      |
| Lead Spacing* (RGEF250 to RGEF1100)                         | F              | 5.05           | ± 0.75     |
| Lead Spacing* (RGEF1200 to RGEF1400)                        | F              | 10.15          | ± 0.75     |
| Reel Width (RGEF250 to RGEF600)                             | W <sub>2</sub> | 56.0           | Maximum    |
| Reel Width* (RGEF700 to RGEF1400)                           | W <sub>2</sub> | 63.5           | Maximum    |
| Reel Diameter                                               | A              | 370.0          | Maximum    |
| Space between Flanges* (RGEF250 to RGEF600)                 | W <sub>1</sub> | 48.0           | Maximum    |
| Space between Flanges* (RGEF700 to RGEF400)                 | 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.

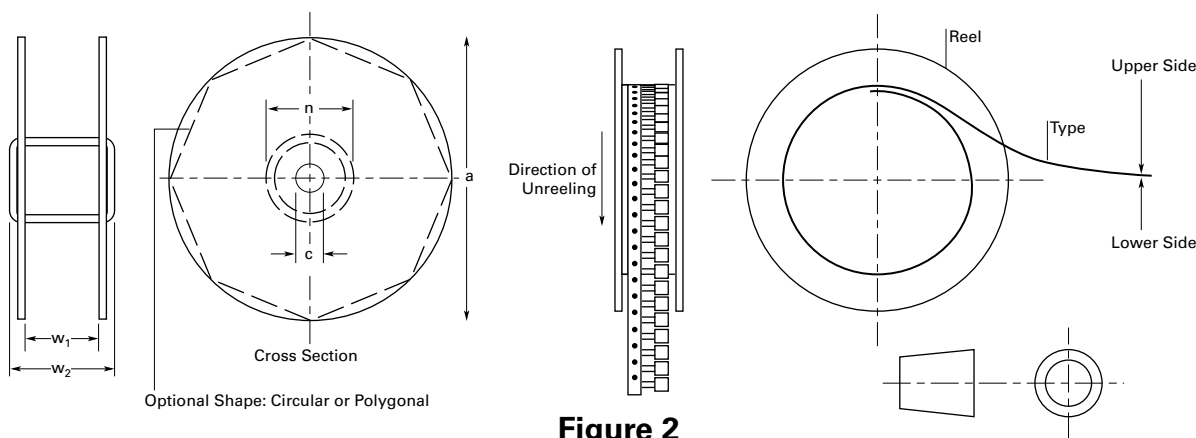
# RGEF Series

## Radial Leaded

### Tape and Reel Diagrams



**Figure 1**



**Figure 2**

#### 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 ( $L di/dt$ ) above the rated voltage of the device.

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