

C308F

3 mm x 8.4 mm fast-acting, ceramic tube fuses for hazardous applications



Product features

A compact 3 mm x 8.4 mm fuse provides a space saving alternative to conventional fuse solutions with high interrupting rating for primary and secondary circuit protection up to 250 Vac/dc and 250 mA

- Meets electrical performance specifications for intrinsically safe (EN60079-11) applications
- Fast-acting, high interrupting rating of 4000 A at 250 Vac/dc
- Ceramic tube, silver plated brass end cap construction
- Optional axial leads (tinned copper axial leads construction)
- RoHS compliant

Agency information

- cURus Recognition file number: E19180, Guide JDYX2/JDYX8

Applications

- Hazardous environments
- Petrochemical processing and refining equipment
- Pulp and paper processing equipment
- Intrinsically safe network barriers

Packaging

- Specify part number and packaging suffix.
- Package suffixes:

Ferrule

- -TR (500 fuses on tape and reel)
- -TR1 (1000 fuses on tape and reel)

Axial leaded

- TR1 (axial leaded version, 1500 fuses on tape and reel)

Ordering

- Specify part number and packaging suffix (e.g., C308F-V-160mA-TR1)

Product specifications

| Part number | | Voltage rating Vac/dc | Color coding | Interrupting rating @ 250 Vac/dc (A)* | Typical DC cold resistance (Ω)** | Typical melting I ² T*** | Agency Information cURus |
|-------------|---------------|--------------------------|--------------|--|-------------------------------------|--|-----------------------------|
| Ferrule | Axial lead | | | | | | |
| C308F40mA | C308F-V-40mA | 250 | Grey | 4000 | 14.2 | 0.00006 | X |
| C308F50mA | C308F-V-50mA | | Red | | 9.40 | 0.00010 | X |
| C308F63mA | C308F-V-63mA | | Pink | | 8.80 | 0.00012 | X |
| C308F80mA | C308F-V-80mA | | Green | | 5.10 | 0.00018 | X |
| C308F100mA | C308F-V-100mA | | Yellow | | 2.87 | 0.00087 | X |
| C308F125mA | C308F-V-125mA | | Orange | | 2.20 | 0.00134 | X |
| C308F160mA | C308F-V-160mA | | Violet | | 2.05 | 0.00166 | X |
| C308F200mA | C308F-V-200mA | | Brown | | 1.01 | 0.00237 | X |
| C308F250mA | C308F-V-250mA | | Black | | 0.71 | 0.00530 | X |

* AC Interrupting Rating (4000 A, PF = 0.4); DC Interrupting Rating measured at rated voltage, time constant 4 microseconds, battery source.

** DC Cold Resistance (Measured at ≤10% of rated current).

*** Typical I²t measured at 10In.

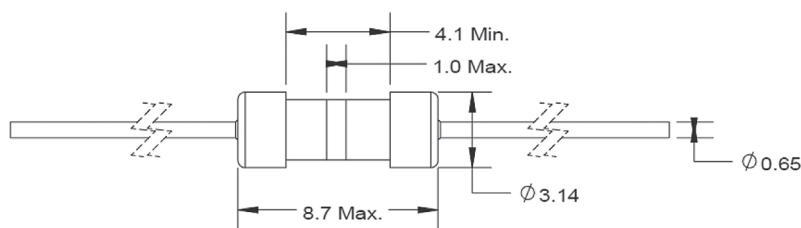
Electrical characteristics

| Amp Rating | % of Amp Rating | Opening Time |
|----------------|-----------------|--------------------|
| 40 mA ~ 250 mA | 110% | 4 hours, min |
| | 300% | 10 seconds, max |
| | 1000% | 0.002 seconds, max |

Environmental data

- Operating temperature: -55 °C to +125 °C (with derating)
- Thermal Shock: MIL-STD-202G, Method 107G (Test Condition 5 cycles -55 °C to 125 °C)
- Resistance to Solder Heat: MIL-STD-202G Method 210F
- Vibration: MIL-STD-202G, Method 201A (10 Hz to 55 Hz) Condition A, “-V” axial leaded version IEC60068-2-6
- Solderability: J-STD-002C, Test Method C1, “-V” axial leaded version IEC60127-2/A3.3
- Component Life Reliability: +125 °C, 500 hours

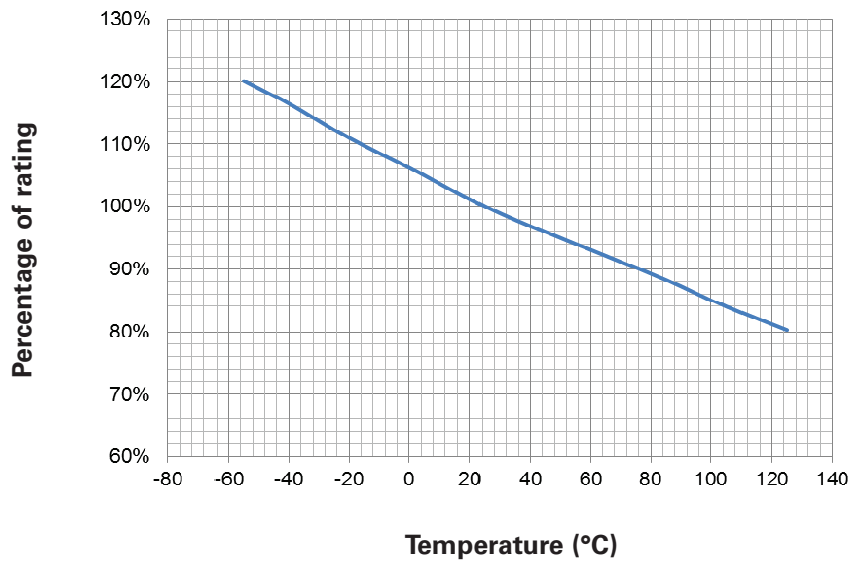
Dimensions—mm



Average time-current curves



Temperature derating curve



Surface mounting soldering parameters (Ferrule)

- Reflow solder: JEDEC J-STD-020 $T_c = 250^\circ\text{C}$. $T_p = 30\text{s}$
- Wave and manual solder is not recommended

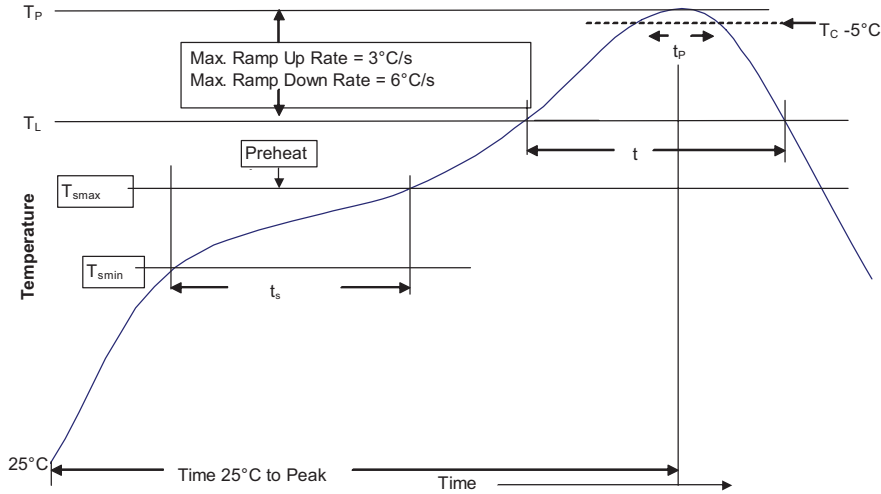


Table 1 - Standard SnPb Solder (T_c)

| Package Thickness | Volume mm^3 <350 | Volume mm^3 ≥ 350 |
|---------------------|---------------------------|---------------------------------|
| <2.5mm | 235°C | 220°C |
| $\geq 2.5\text{mm}$ | 220°C | 220°C |

Table 2 - Lead (Pb) Free Solder (T_c)

| Package Thickness | Volume mm^3 <350 | Volume mm^3 350 - 2000 | Volume mm^3 >2000 |
|-------------------|---------------------------|---------------------------------|----------------------------|
| <1.6mm | 260°C | 260°C | 260°C |
| 1.6 - 2.5mm | 260°C | 250°C | 245°C |
| >2.5mm | 250°C | 245°C | 245°C |

Reference JEDEC J-STD-020

| Profile Feature | Standard SnPb Solder | Lead (Pb) Free Solder |
|--|---|-----------------------|
| Preheat and Soak | • Temperature min. (T_{smin}) | 100 °C |
| | • Temperature max. (T_{smax}) | 150 °C |
| | • Time (T_{smin} to T_{smax}) (t_s) | 60-120 Seconds |
| Average ramp up rate T_{smax} to T_p | 3 °C/ Second Max. | 3 °C/ Second Max. |
| Liquidous temperature (T_L) | 183 °C | 217 °C |
| Time at liquidous (t_L) | 60-150 Seconds | 60-150 Seconds |
| Peak package body temperature (T_p)* | Table 1 | Table 2 |
| Time (t_p)** within 5 °C of the specified classification temperature (T_c) | 20 Seconds** | 30 Seconds** |
| Average ramp-down rate (T_p to T_{smax}) | 6 °C/ Second Max. | 6 °C/ Second Max. |
| Time 25 °C to Peak Temperature | 6 Minutes Max. | 8 Minutes Max. |

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

Through hole wave solder profile (Axial lead)

Reflow soldering not recommended



Reference EN 61760-1:2006

| Profile Feature | Standard SnPb Solder | Lead (Pb) Free Solder |
|---|---|---|
| Preheat | | |
| • Temperature min. (T_{smin}) | 100°C | 100°C |
| • Temperature typ. (T_{styp}) | 120°C | 120°C |
| • Temperature max. (T_{smax}) | 130°C | 130°C |
| • Time (T_{smin} to T_{smax}) (t_s) | 70 seconds | 70 seconds |
| Δ preheat to max Temperature | 150°C max. | 150°C max. |
| Peak temperature (T_p)* | 235°C – 260°C | 250°C – 260°C |
| Time at peak temperature (t_p) | 10 seconds max 5 seconds max each wave | 10 seconds max 5 seconds max each wave |
| Ramp-down rate | ~ 2 K/s min ~3.5 K/s typ ~5 K/s max | ~ 2 K/s min ~3.5 K/s typ ~5 K/s max |
| Time 25°C to 25°C | 4 minutes | 4 minutes |

Manual solder

350 °C, 4-5 seconds. (by soldering iron), generally manual, hand soldering is not recommended.

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