

# 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 <sup>2</sup> 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 I<sup>2</sup>t 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 $\text{mm}^3$ <350	Volume $\text{mm}^3$ $\geq 350$
<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 $\text{mm}^3$ <350	Volume $\text{mm}^3$ 350 - 2000	Volume $\text{mm}^3$ >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 JDEC J-STD-020

Profile Feature	Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak		
• Temperature min. ( $T_{smin}$ )	100 °C	150 °C
• Temperature max. ( $T_{smax}$ )	150 °C	200 °C
• Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	60-120 Seconds	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
$\Delta$ 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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