

**Description**

- End of life is June 30, 2006. Recommended replacement is 0603FA-R Series
- Small, fast acting surface mount fuse
- Chip fuses utilize thick and thin metal film technologies for superior fusing action and enhanced reliability
- Excellent short-circuit performance and environmental integrity
- End terminations are over-plated with nickel and tin-lead
- Solder-free design provides excellent temperature cycling characteristics
- Heat and shock tolerant

ELECTRICAL CHARACTERISTICS	
% of Amp Rating	Opening Time
100%	4 Hours Minimum
250%	5 Seconds Maximum

**Agency Information**

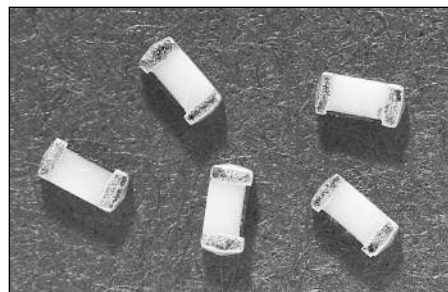
- UL Recognition Guide & File numbers: JDYX2 & E19180.
- CSA Component Acceptance: 053787 C 000 & Class No: 1422 30.

**Environmental Data**

- Thermal Shock: MIL-STD-202, Method 107, Test Condition B (-65° C to +125° C), 1000 cycles, Fuses soldered to FR-4 glass-epoxy circuit board
- Vibration: MIL-STD-202, Method 204 , Test Condition C (55 to 2000 Hz, 10G)
- Moisture Resistance: MIL-STD-202, Method 106, 10 day cycle
- Solder Leach Resistance and Terminal Adhesion: EIA-576 (30 seconds submersion in 260°C tin-lead)
- Solderability: ANSI/J-STD-002, Test B

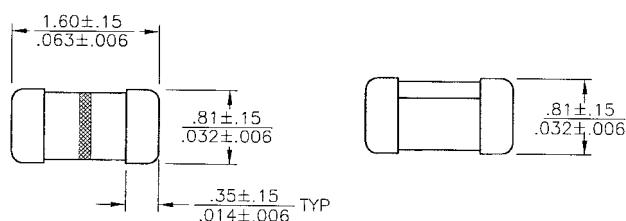
**Ordering**

- Specify product code and packaging code

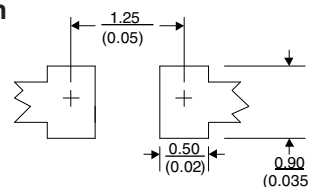


**Dimensions** mm/(inches)

Drawing Not to Scale



**Land Pattern**



**Soldering Method**

- Wave Solder: 260°C, 10 sec max.
- Infrared Reflow: 260°C, 30 sec max.

**SPECIFICATIONS**

Product Code	Voltage Rating (DC)	Interrupting Rating* 24V DC	Resistance (ohms)** Typ.	Typical Melt I <sup>††</sup>	Typical Voltage Drop (V)‡	Color Code Cover / Stripe
1608FF-250mA	24V	35A	3.35	0.000067	0.90	Green
1608FF-375mA	24V	35A	1.75	0.00015	0.80	Green / White
1608FF-500mA	24V	35A	1	0.00055	0.54	Blue
1608FF-750mA	24V	35A	0.51	0.00132	0.45	Blue / White
1608FF-1A	24V	35A	0.14	0.0022	0.18	Brown
1608FF-1.5A	24V	35A	0.068	0.014	0.12	Brown / White
1608FF-2A	24V	35A	0.042	0.037	0.11	Black
1608FF-2.5A	24V	35A	0.027	0.07	0.09	Black / White
1608FF-3A	24V	35A	0.023	0.095	0.087	Violet
1608FF-3.5A	24V	35A	0.016	0.185	0.08	Violet / White
1608FF-4A	24V	35A	0.015	0.270	0.08	Yellow

\* DC Interrupting Rating (Measured at designated voltage, time constant of less than 50 microseconds, battery source)

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

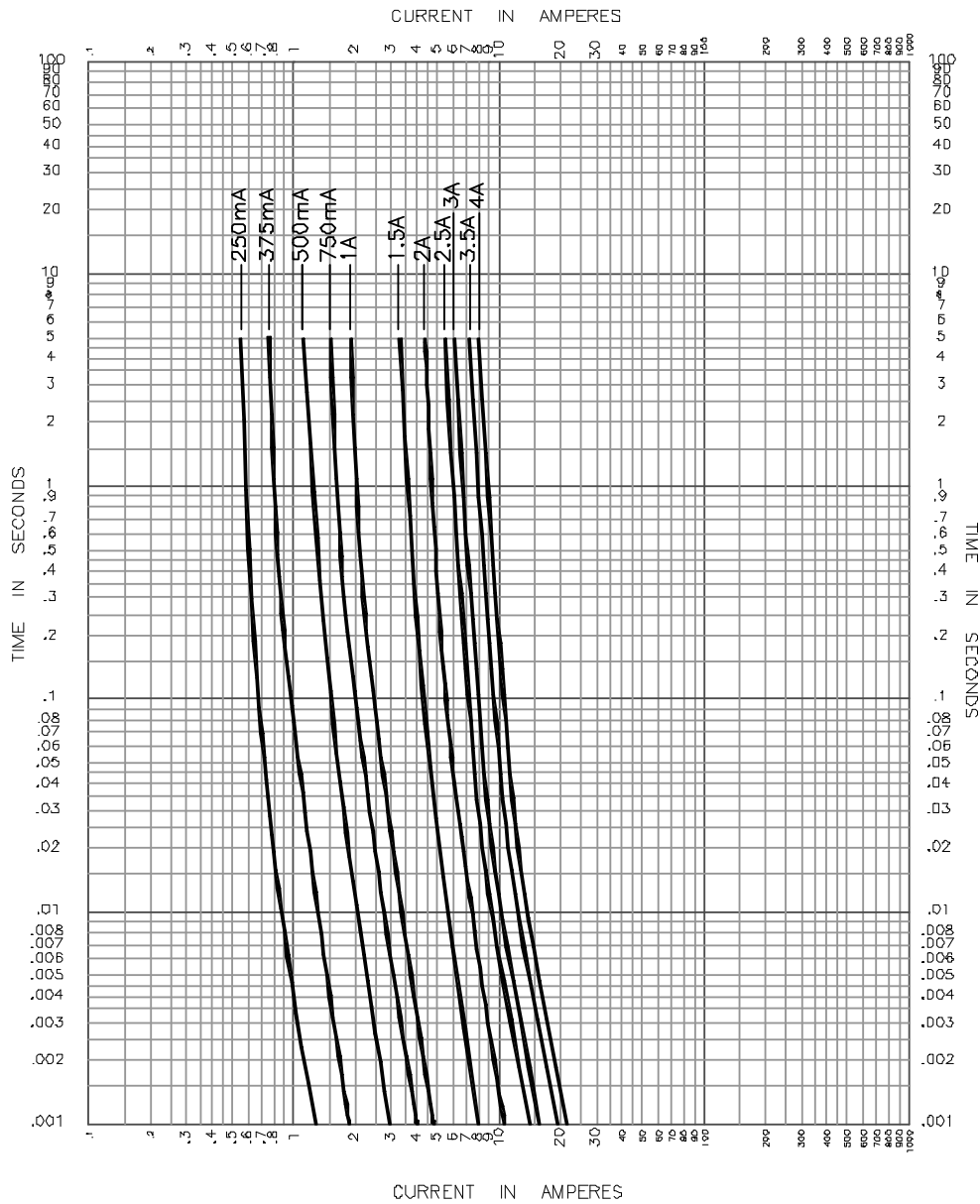
† Typical Melting I<sup>††</sup> (Measured with a battery bank at rated DC voltage, 10x-rated current, time constant of calibrated circuit less than 50 microseconds)

‡ Typical Voltage Drop (Measured at rated current after temperature stabilizes)

The fuses are randomly oriented in the carrier tape. 1608FF series fuses mounted with random orientation on circuit boards does not affect fuse performance.

Device designed to carry rated current for four hours minimum. An operating current of 80% or less of rated current is recommended, with further derating required at elevated ambient temperatures.

**TIME CURRENT CURVE**



PACKAGING CODE	
Packaging Code	Description
TR	3,000 pieces of fuses on 8mm tape-and-reel on a 7 inch (178mm) reel per EIA Standard 481

3601 Quantum Boulevard  
Boynton Beach, Florida 33426-8638  
Phone: (561) 752-5000  
Sales Fax: (561) 742-0134  
General Fax: (561) 742-1178

*Cooper Electronic Technologies,  
a business unit of*

  
**COOPER Bussmann**

November 18, 2005

Subject: **1608FF END OF LIFE NOTICE**

To Whom It May Concern:

Cooper Electronic Technologies' 1608FF Series SMD Fuse is at its end of life as a current product offering.

The 0603FA-R Series CHIP™ Fuse is the recommended replacement for the 1608FF Series fuse. The **0603FA-R series is compliant with the RoHS Directive**, whereas the 1608FF product is not. Functionally, the two devices are interchangeable. The 0603FA-R series delivers additional benefits that we are sure our valued customers will enjoy. Specifically, the 0603FA-R carries a lower profile for use in smaller spaces, alpha coding for easier identification of current rating, higher voltage ratings for some current ratings, higher inrush withstand capability for some current ratings, and is RoHS Compliant. The 0603FA-R is immediately available. The data sheet for the 0603FA-R series may be found on our web site ([www.cooperet.com](http://www.cooperet.com)).

We will do our best to minimize the customer inconvenience and allow the transition to proceed during the next few months. "End of life" quantity purchases are being accepted through May 2006, with shipments continuing into June 2006. The official **end of life date is June 30, 2006**.

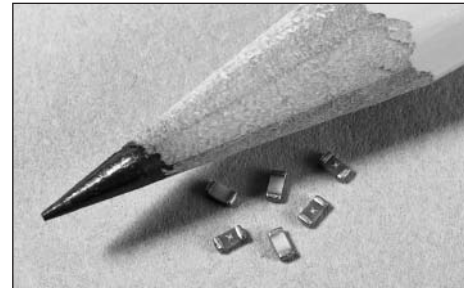
Please plan the transition process. Cooper Electronic Technologies' personnel will assist with the implementation as required.

Thank you,

Matt Joiner  
Product Manager  
**Cooper Electronic Technologies, a business unit of Cooper Bussmann**

**Description**

- RoHS Compliant
- Rapid interruption of excessive current
- Compatible with reflow and wave solder
- Rugged ceramic and glass construction
- Excellent environmental integrity
- One time positive disconnect
- Compatible with lead free solders and higher temperature profiles



ELECTRICAL CHARACTERISTICS	
% of Amp Rating	Opening Time
100%	4 Hours Minimum
200%	60 Seconds Maximum

**Agency Information**

- UL Recognition Card: JDYX2, E19180
- CSA Component Acceptance Card: 053787 C 000, Class Number 1422 30

**Environmental Data**

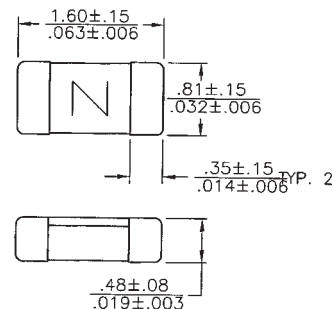
- Life Test: MIL-STD-202, Method 108A
- Load Humidity Test: MIL-STD-202, Method 103B
- Moisture Resistance Test: MIL-STD-202, Method 106E
- Terminal Strength Test: Downward force is applied to cause a 1mm deflection for 1 minute
- Thermal Shock Test: MIL-STD-202, Method 107D
- Solderability: ANSI/J-STD-002
- Mechanical Shock Test: MIL-STD-202, Method 213B
- High Frequency Vibration Test: MIL-STD-202, Method 204D
- Resistance to Solvents Test: MIL-STD-202, Method 215A

**Ordering**

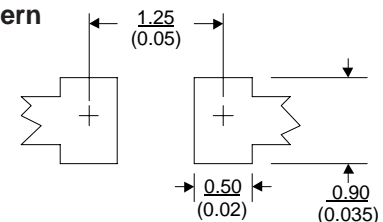
- Specify packaging code and product code (i.e., TR/0603FA250-R)

**Dimensions** mm/(inches)

Drawing Not to Scale



**Land Pattern**



**Soldering Method**

- Wave Solder: 260°C, 10 sec max.
- Infrared Reflow: 260°C, 30 sec max.

**SPECIFICATIONS**

Product Code	Current Rating	Voltage Rating DC	Interrupting Rating at Rated Voltage*	DC Cold Resistance** (ohms) Typical	Typical Melting I <sub>t</sub> ***	Typical Voltage Drop†	Alpha Code Marking‡
0603FA250-R	250mA	32V	50A	3.100	0.0004	0.921	D
0603FA375-R	375mA	32V	50A	1.250	0.0009	0.605	E
0603FA500-R	500mA	32V	50A	1.025	0.00193	0.600	F
0603FA750-R	750mA	32V	50A	0.450	0.0090	0.440	G
0603FA1-R	1A	32V	50A	0.150	0.0025	0.211	H
0603FA1.25-R	1.25A	32V	35A	0.108	0.0130	0.151	J
0603FA1.5-R	1.5A	32V	35A	0.086	0.0319	0.138	K
0603FA2-R	2A	32V	35A	0.051	0.0491	0.116	N
0603FA2.5-R	2.5A	24V	35A	0.037	0.0625	0.113	O
0603FA3-R	3A	24V	35A	0.028	0.0699	0.110	P
0603FA3.5-R	3.5A	24V	35A	0.022	0.1200	0.103	R
0603FA4-R	4A	24V	35A	0.017	0.2430	0.097	S
0603FA5-R	5A	24V	35A	0.011	0.6950	0.090	T

\* DC Interrupting Rating (Measured at designated voltage, time constant of less than 50 microseconds, battery source)

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

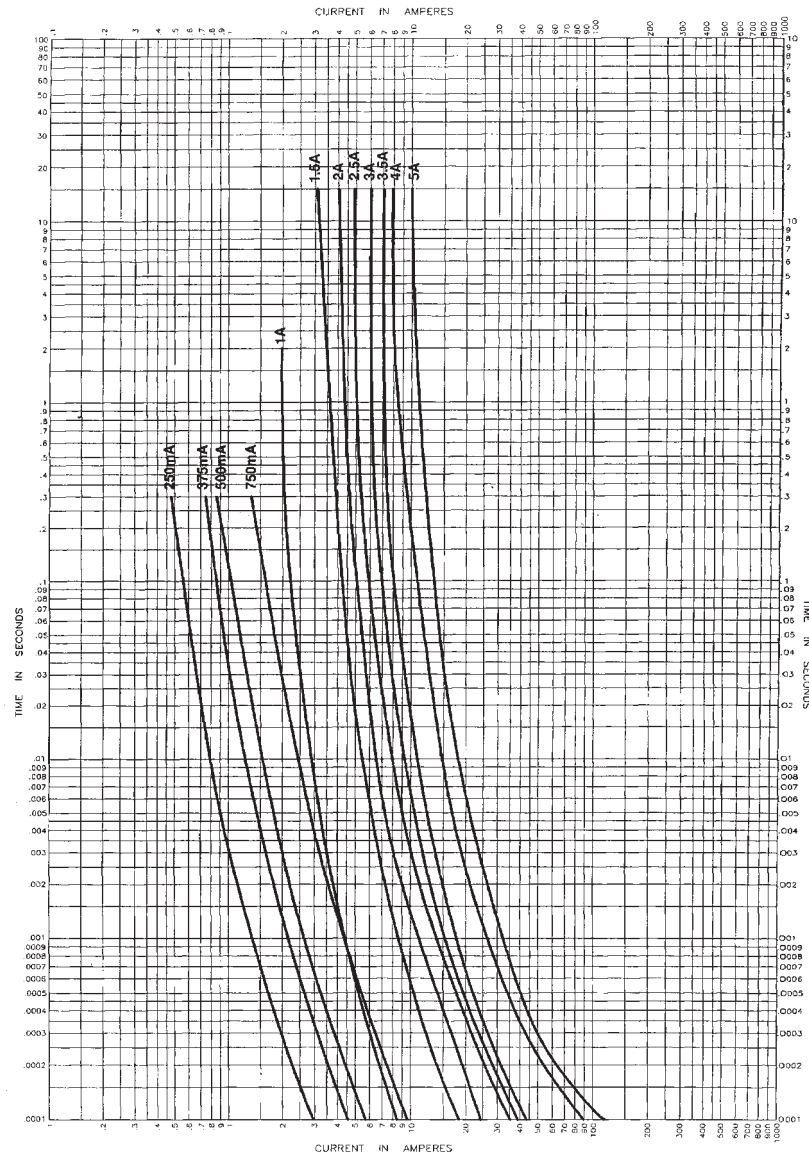
\*\*\* Typical Melting I<sub>t</sub> (Measured with a battery bank at rated DC voltage, 10x-rated current, not to exceed IR, time constant of calibrated circuit less than 50 microseconds) (0603FA4A and 5A measured at interrupting rating)

† Typical Voltage Drop (Measured at rated current after temperature stabilizes)

‡ Alpha code to be marked on the top of fuse body for all ratings

• Device designed to carry rated current for four hours minimum. An operating current of 80% or less of rated current is recommended, with further derating required at elevated ambient temperatures.

**TIME CURRENT CURVE**



PACKAGING CODE	
Packaging Code	Description
TR	5,000 pieces of fuses in paper tape and reeled on a 178mm (7 inch) reel per EIA Standard 481-1

**North America**

Cooper Electronic Technologies  
3601 Quantum Boulevard  
Boynton Beach, FL 33426-8638  
Tel: 1-561-752-5000  
Fax: 1-561-742-0134  
Toll Free: 1-888-414-2645

Cooper Bussmann  
P.O. Box 14460  
St. Louis, MO 63178-4460  
Tel: 1-636-394-2877  
Fax: 1-800-544-2570

**Europe**

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Leicestershire • LE12 5TH UK  
Tel: +44 (0) 1509 882 737  
Fax: +44 (0) 1509 882 786

**Asia Pacific**

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Singapore 159303  
Tel: +65 278 6151  
Fax: +65 270 4160