

# SMT Chip Fuse

## Subminiature Surface Mount Fuses

3216FF



Catalog Symbol: 3216FF

Voltage Rating: 32 Volt AC, 63 Volt DC (250mA-3A)  
32 Volt AC, 32 Volt DC (4-6.5A)

Interrupting Rating: 50 Amp AC/DC

Physical Size:

EIA SOCM-3216AC (Equivalent to 1206)

3.2 × 1.6 × 0.90mm

0.126 × 0.063 × 0.035 in.

Agency Approvals:

UL Recognized, Std. 248-14

All Ratings - File E19180, Guide JDYX2

CSA Certified:

1.5-3A - File 53787, Class 1422-01

CSA Component Acceptance

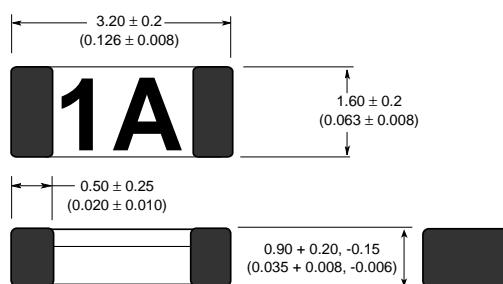
250mA, 1A, 4-6.5A - File 53787, Class 1422-30

EIA-RS481 (equivalent to IEC 286, Part 3).

- Fuses are orientated in embossed pockets with ceramic side facing up to facilitate proper mounting (see "Electrical Characteristics", General Note 4.)

### Dimensional Data

mm (inches)



### General Information:

- Bussmann SMT Chip Fuses utilize metal film and ultrasonic wire bond technologies for superior fusing action and enhanced reliability.
- The fuse element is bonded to a ceramic substrate and encapsulated with green-colored glass, providing excellent short-circuit performance and environmental integrity.
- Substrate and coating thermal expansion coefficients are closely matched to that of FR-4 epoxy-glass circuit board for superior joint reliability.
- The end terminations are over-plated with nickel and tin-lead.

### Time-Current Characteristics

- Fast acting fuse: Will carry 100% of rated current for a minimum of 4 hours, and will open within 5 seconds at 250% of rated current (250mA-3A).
- The 4-6.5A fuses will open within 1 second at 350% of rated current.

### Packaging & Ordering Information:

- Tape and Reel:** Standard 8mm tape, in compliance with

	<b>3216FF</b>	<b>(See Table)</b>
	<b>Product Symbol</b>	<b>Rated Current</b>

#### Package Code

**TR/** 3,000 pcs., on a 178mm reel, 8mm tape width

**SP/** 50 pcs. on tape in a plastic box

**TR1/** 15,000 pcs., on a 330mm reel, 8mm tape width

CE logo denotes compliance with European Union Low Voltage Directive (50-1000 VAC, 75-1500 VDC). Refer to BIF document #8002 or contact Bussmann Application Engineering at 636-527-1270 for more information.

### Electrical Characteristics

Part Number	Current Rating (Ampere)	Mark Appearing On Part	Typical Melting Integral @ 50A (A <sup>2</sup> * sec)		Typical Total Clearing Integral @ 50A (A <sup>2</sup> * sec)		Typ. Resistance @ ≤10% Rated Current (Ohms)	Typ. Voltage Drop @ Rated Current (Volts)
			AC	DC	AC	DC		
<b>(XX=Package Code)</b>								
<b>XX/3216FF-250mA</b>	.250	.25	.00016	.000084	.00017	.0001	4.50	1.4
<b>XX/3216FF-375mA</b>	.375	White Dot	.001	.0002	.0010	.0009	1.80	.73
<b>XX/3216FF-500mA</b>	.500	0.5	.0014	.0019	.0016	.0026	1.15	.66
<b>XX/3216FF-750mA</b>	.750	.75	.0033	.00095	.0033	.0042	.75	.63
<b>XX/3216FF-1A</b>	1	1	.012	.007	.014	.009	.168	.20
<b>XX/3216FF-1.5A</b>	1.5	1.5	.047	.029	.048	.034	.098	.18
<b>XX/3216FF-2A</b>	2	2	.116	.081	.136	.092	.063	.16
<b>XX/3216FF-2.5A</b>	2.5	2.5	.208	.171	.210	.198	.046	.14
<b>XX/3216FF-3A</b>	3	3	.426	.359	.507	.369	.037	.13
<b>XX/3216FF-4A</b>	4	4	.187	.164	.208	.168	.019	.11
<b>XX/3216FF-4.5A</b>	4.5	4.5	.546	.463	.550	.47	.014	.10
<b>XX/3216FF-5A</b>	5	5	.663	.619	.668	.623	.013	.09
<b>XX/3216FF-6.5A</b>	6.5	6.5	2.18	3.21	2.21	3.23	.0085	.076

#### General Notes:

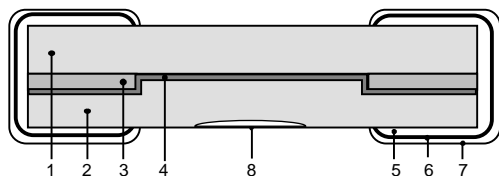
- AC interrupting rating, melting integral and total clearing integral measured at 32V, unity power factor.
- DC interrupting rating, melting integral and total clearing integral measured at 63V (250mA-3A) and 32V (4-6.5A), with a battery source.
- Voltage drop measured at 23 ± 3°C ambient temperature with the device mounted on a suitable circuit board trace.
- It is recommended that fuses be mounted with ceramic (white) side facing up.
- 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.
- Contact Bussmann if higher ampere ratings are needed.

# SMT Chip Fuse

## Subminiature Surface Mount Fuses



### Construction

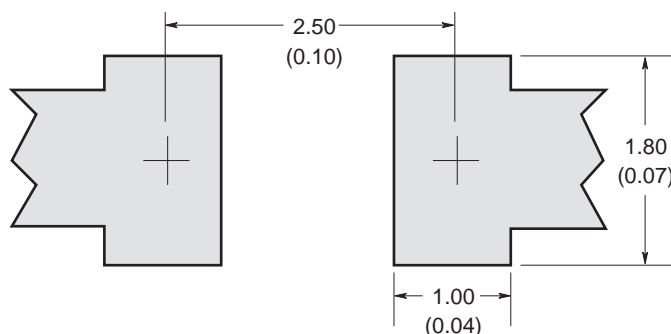


Construction:  
Metal Film Fusible  
Element  
(250mA - 6.5A)

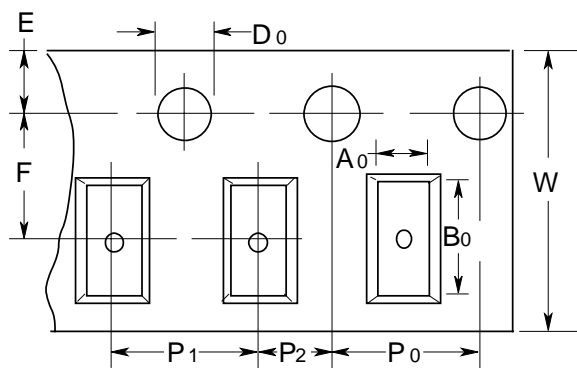
1. Ceramic Substrate
2. Glass Cover (Green)
3. Termination Pad
4. Metal Film Element
5. Silver End Termination
6. Nickel Barrier (3.88 - 4.3  $\mu\text{m}$ )
7. 90/10 Tin-lead Plating (7.6 - 12.7  $\mu\text{m}$ )
8. Marking

Drawing is not to scale.

### Recommended Land Pattern - mm (inches)



NOTE: Trace geometry may affect fuse performance (time-current characteristics  $\leq$  300% of rated current and voltage drop at rated current).

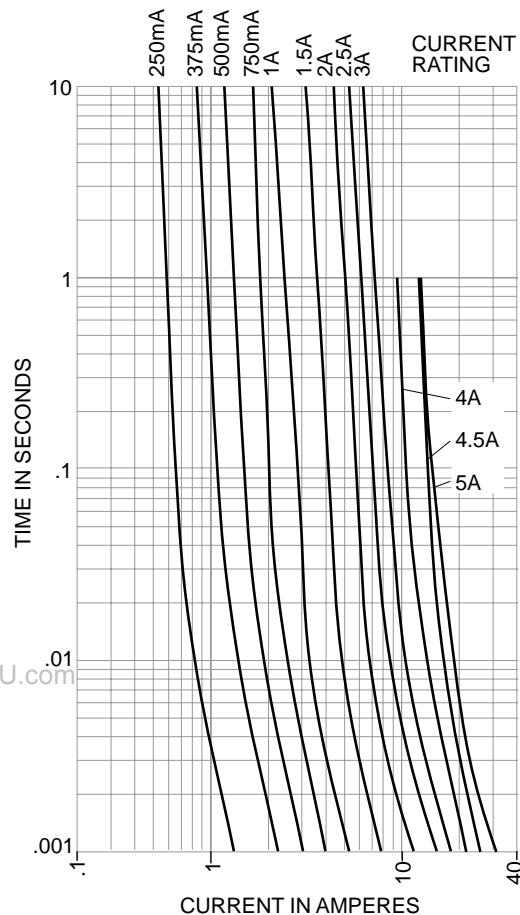


### Carrier Dimensions - mm

W	8.0 + 0.3 / -0.1
F	3.5 $\pm$ 0.05
E	1.75 $\pm$ 0.1
P2	2.0 $\pm$ 0.05
P0	4.0 $\pm$ 0.1
P1	4.0 $\pm$ 0.1
A0	1.73 $\pm$ 0.2
B0	3.56 $\pm$ 0.2
D0	1.5 + 0.1 / -0.0

### Time-Current Characteristic Curve

(Full Size Curves Available)



### Environmental Specifications

Operating Temperature Range:

-55 to +125°C, with proper derating.

Thermal Shock:

MIL-STD-202, Method 107, Test Condition B (-65 to 125°C).

Vibration:

MIL-STD-202, Method 204, Test Condition C (55 to 2000 Hz, 10G).

Solderability:

Withstands 60 seconds above 200°C, 260°C maximum.

Moisture Resistance:

MIL-STD-202, Method 106, 10 day cycle.

Solder Leach Resistance & Terminal Adhesion:

EIA-576.