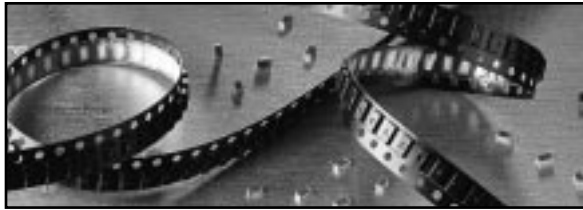


# SMT Chip Fuse

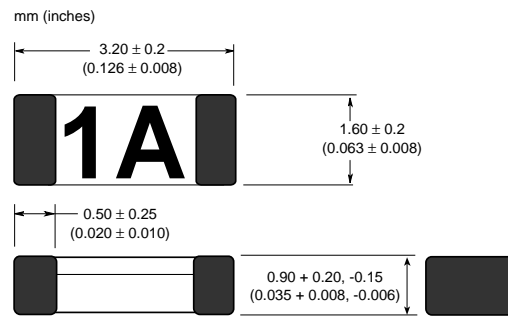
## Subminiature Surface Mount Fuses

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



### 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:

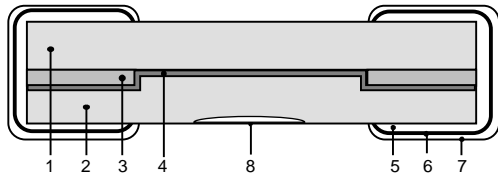
1. AC interrupting rating, melting integral and total clearing integral measured at 32V, unity power factor.
2. DC interrupting rating, melting integral and total clearing integral measured at 63V (250mA-3A) and 32V (4-6.5A), with a battery source.
3. Voltage drop measured at 23 ± 3°C ambient temperature with the device mounted on a suitable circuit board trace.
4. It is recommended that fuses be mounted with ceramic (white) side facing up.
5. 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.
6. Contact Bussmann if higher ampere ratings are needed.

# SMT Chip Fuse

## Subminiature Surface Mount Fuses



### Construction

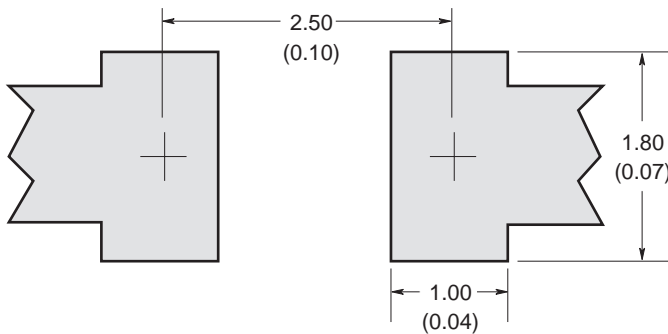


Construction:  
Metal Film Fusible  
Element  
(250mA - 6.5A)

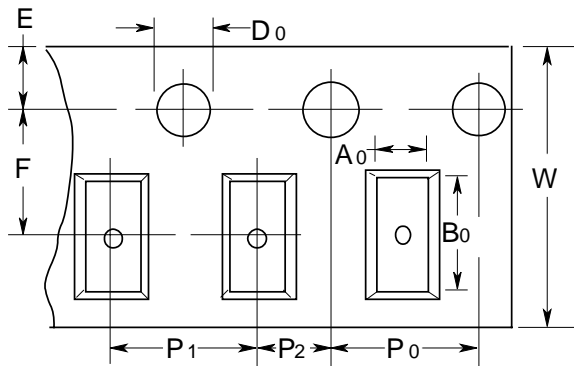
- 1. Ceramic Substrate
- 2. Glass Cover (Green)
- 3. Termination Pad
- 4. Metal Film Element
- 5. Silver End Termination
- 6. Nickel Barrier (3.88 - 4.3 μm)
- 7. 90/10 Tin-lead Plating (7.6 - 12.7 μm)
- 8. Marking

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).

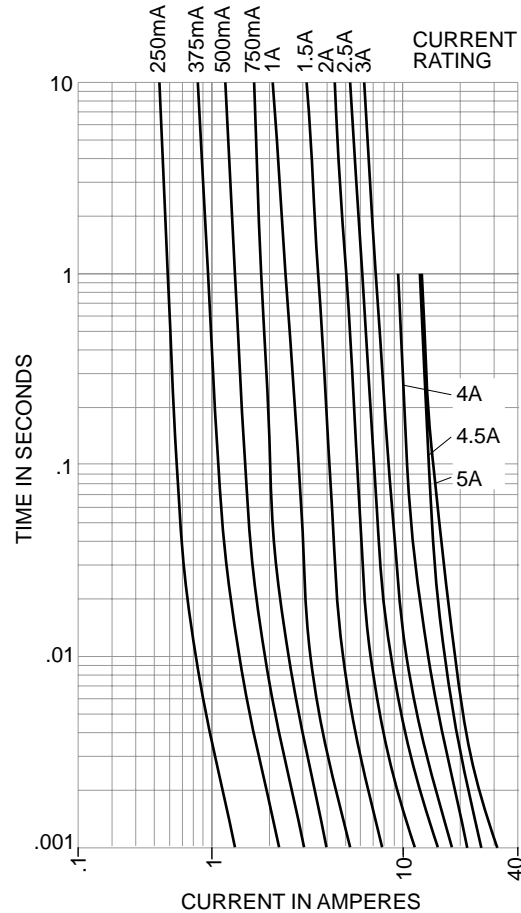


### Carrier Dimensions - mm

W	8.0 + 0.3 / -0.1
F	3.5 ± 0.05
E	1.75 ± 0.1
P2	2.0 ± 0.05
P0	4.0 ± 0.1
P1	4.0 ± 0.1
A0	1.73 ± 0.2
B0	3.56 ± 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.