



**SMP Series Fuse**



**Description**

**SMP** Surface mount Power Cross Protection Fuses are primarily intended for use in telecommunication circuit applications requiring low current protection with high surge tolerance.

These fuses will withstand transient surge currents generated by lightning in accordance with the attached table.



**SMP** fuse guard protected circuitry against sustained overload or short circuit conditions. Such sustained overloads may be generated by accidental contact between utility cables and phone lines (power line cross).

**SMP** fuse are intended for use in circuits which require compliance with the test requirements specified in UL/IEC 1950/60950 and Telcordia GR 1089, Issue 3.

**Features**

- Surface mount power cross protection fuse.
- Designed to allow compliance with Telcordia GR-1089-Core
- Designed to serve the requirements of a wide range of telecommunication and networking equipment.
- Product is RoHS6 Compliant

**Safety Agency Approvals**

SAFETY AGENCY	SAFETY AGENCY CERTIFICATE	AMPERE RANGE / VOLT @ I.R.ABILITY
	E20624	500mA - 2A / 125V @100A DC and 600V @60A AC
		500mA - 2A / 125V @100A DC and 600V @60A AC

Specifications Subject to change without notice.

# Type SMP

## Surface Mount Power Cross Protection Fuse

RoHS 6 Compliant

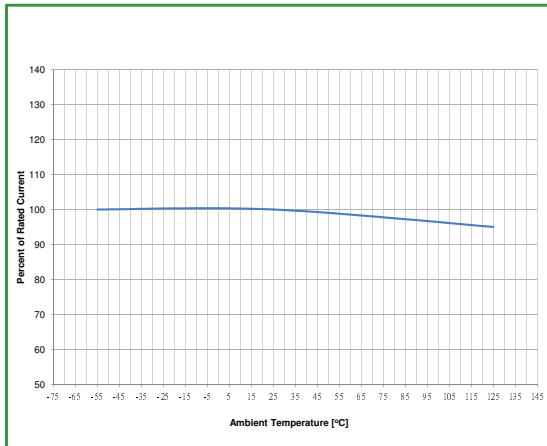


SMP May2012C

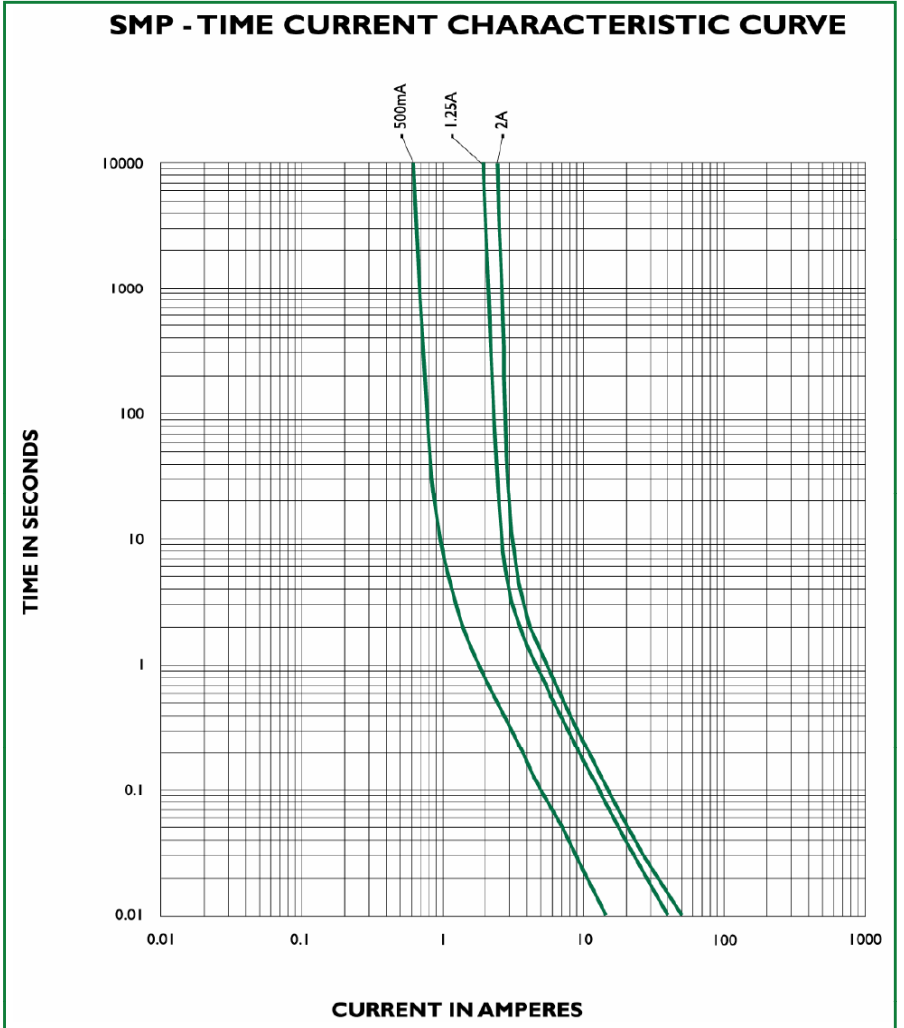
### Electrical Specifications

Catalog Number	Ampere Rating (A)	Typical Cold Resistance (ohm)	Volt-drop @100% In (volt) Max.	Max. Voltage Rating (V)	Interrupting Rating	Melting I <sup>2</sup> T <10 m Sec (A <sup>2</sup> Sec)	Melting I <sup>2</sup> T @ 10 In (A <sup>2</sup> Sec)	Maximum Power Dissipation (W)	Agency Approvals	
									UL	CE
SMP 500	500mA	0.320	0.25	600	600V @ 60A AC and 125V @100ADC	2.0	2.3	0.20	Y	Y
SMP 1.25	1.25A	0.079	0.16	600		14.0	17.0	0.40	Y	Y
SMP 2	2A	0.063	0.22	600		33.0	37.0	0.52	Y	Y

### Temperature Derating Curve



### Average Time Current Curve



### Lightning Surge Withstand Capabilities

Max. Rise / Min. Decay (us)	Repetitions		Minimum Peak Voltage (V)	Minimum Withstand Peak Current (A)		
	Total	Each Polarity		SMP 500	SMP 1.25	SMP 2
10/1000	50	25	600	25	115	120
10/360	50	25	1000	30	125	150
10/1000	50	25	1000	25	110	120
2/10	20	10	2500	120	500	600
10/360	10	5	1000	30	125	150
2/10	2	1	5000	120	500	600
8/20	2	1	5000	75	300	350

Specifications Subject to change without notice.

### AC Power fault Tests

GR-1089 1st Level Test	Voltage (Vrms)	Short Circuit Current (A)	Applications	Durations	Time For Fuse To Open		
					SMP 500	SMP 1.25	SMP 2
1	50	0.33	1	15 minutes	Will not open	Will not open	Will not open
2	100	0.17	1	15 minutes	Will not open	Will not open	Will not open
3	200,400,600	1	60	1 Sec	Will not open	Will not open	Will not open
4	1000	1	60	1 Sec	Will not open	Will not open	Will not open
5	Diagram	N/A For Fuses	60	5 Sec	N/A	N/A	N/A
6	600	0.5	1	30 Sec	Will not open	Will not open	Will not open
7	440	2.2	5	2 Sec	Will open	Will not open	Will not open
8	600	3	5	1.1 Sec	Will open	Will not open	Will not open
9	1000	5	5	0.4 Sec	Will open	Will not open	Will not open

**CORPORATE OFFICE**  
**Bel Fuse Inc.**  
 206 Van Vorst Street  
 Jersey City, NJ 07302  
 Tel 201-432-0463  
 Fax 201-432-9542  
 E-Mail: belfuse@belf.com  
 Website: www. belfuse.com

**FAR EAST OFFICE**  
**Bel Fuse Ltd.**  
 8/F Luk Hop Industrial Building  
 8 Luk Hop Street  
 San Po Kong  
 Kowloon, Hong Kong  
 Tel 852-2328-5515  
 Fax 852-2352-3706

**EUROPE OFFICE**  
**Bel Fuse Europe Ltd.**  
 Preston Technology Management Centre  
 Marsh Lane, Suite F15  
 Preston, Lancashire, PR1 8UQ  
 United Kingdom  
 Tel 44-1772-556601  
 Fax 44-1772-561008

**EUROPE**  
**Bel Stewart GmbH**  
 Industriestrasse 20  
 61381 Friedrichsdorf  
 Germany  
 Tel 49-6172-9552-0  
 Fax 49-6172-9552-40

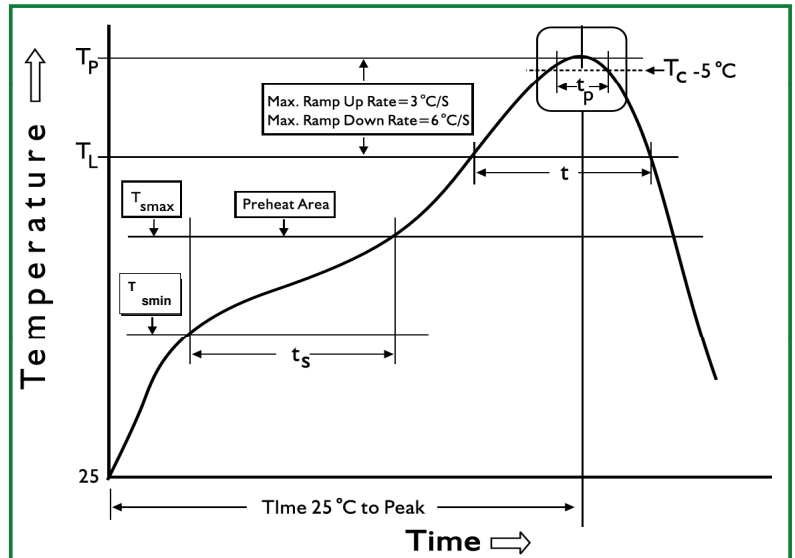
**AC Current Limiting Protector Tests / Fusing Coordination Tests**

Voltage (Vac)	Current (A)	Duration	Time For Fuse To Open		
			SMP 500	SMP 1.25	SMP 2
600V	2.2	Up to 15 minutes	1.0 Sec Max.	900 Sec Max.	Will not open
600V	2.6		0.8 Sec Max.	50 Sec Max.	2000 Sec Max.
600V	3		0.5 Sec Max.	10 Sec Max.	100 Sec Max.
600V	3.75		0.3 Sec Max.	5 Sec Max.	10 Sec Max.
600V	5		0.2 Sec Max.	2 Sec Max.	3 Sec Max.
600V	7		0.08 Sec Max.	1 Sec Max.	2 Sec Max.
600V	10		0.04 Sec Max.	0.5 Sec Max.	0.7 Sec Max.
600V	12.5		0.01 Sec Max.	0.2 Sec Max.	0.3 Sec Max.
600V	20		0.005 Sec Max.	0.07 Sec Max.	0.1 Sec Max.
600V	25		0.004 Sec Max.	0.04 Sec Max.	0.07 Sec Max.
600V	30		0.003 Sec Max.	0.02 Sec Max.	0.05 Sec Max.

Specifications Subject to change without notice.

**Soldering Parameters**

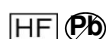
IR Reflow Profile	
Reflow Parameter	
Minimum preheat temperature(TsMIN)	130°C
Maximum preheat temperature(TsMAX)	170°C
Preheat Time	60-180 seconds
TsMAX to TL ramp-up rate	3°C / second max.
Time above temperature TL(tL)	200 °C 60-120 seconds
Peak Temperature (TP)	240 °C max.
Time Within 5σ of Peak TP	20 - 30 seconds.
Ramp-down rate	6°C / second max.



# Type SMP



## Surface Mount Power Cross Protection Fuse

RoHS 6 Compliant



SMP May2012D

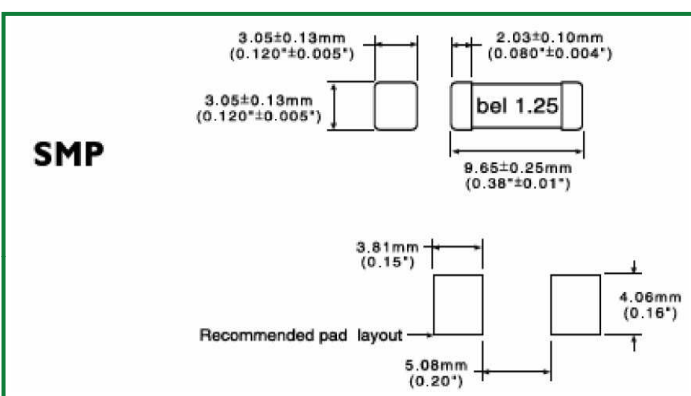
### Physical Specifications

<b>Materials</b>	Body : Ceramic
	Terminations: Matte Tin Plated Brass Caps (100% Lead-free)
<b>Marking</b>	On Fuse:
	" bel ", "Current Rating" in black color
	On label:
	"bel" , "SMP", "Current Rating", "Voltage Rating", "Interrupting Rating", "Appropriate Safety Logos" and "  ", "  " (China RoHS compliant).

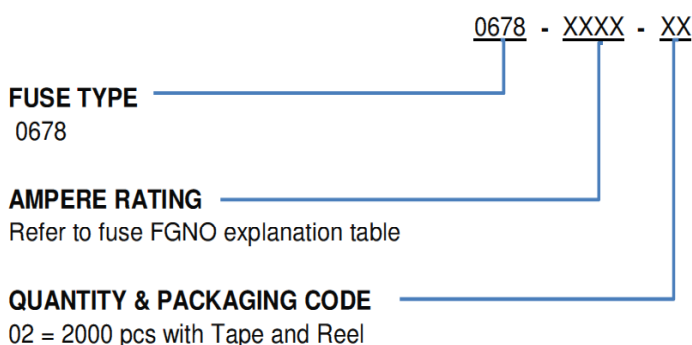
### Environmental Specifications

<b>Shock Resistance</b>	MIL-STD-202G, Method 213B, Test Condition I (100 G's peak for 6 milliseconds; Sawtooth Waveform)
<b>Vibration Resistance</b>	MIL-STD-202G, Method 201A (10-55 Hz, 0.06 inch, total excursion).
<b>Salt Spray Resistance</b>	MIL-STD-202G, Method 101E, Test condition B (48 hrs).
<b>Insulation Resistance</b>	MIL-STD-202G, Method 302, Test Condition A (After Opening) 10,000 ohms minimum.
<b>Solderability</b>	MIL-STD-202G, Method 208H
<b>Resistance to solder Heat</b>	MIL-STD-202G Method 210F, Test Condition J, (235 °C, 30 sec)
<b>Thermal Shock</b>	MIL-STD-202G, Method 107G, Test Condition B (-65 °C to +125 °C).
<b>Operating Temperature</b>	-55 °C to +125 °C

### Mechanical Dimensions



### Ordering Information



### Packaging

Packaging Tape & Reel	Packaging Specification	Quantity	Quantity & Packaging Code
16 mm wide tape with 13 inches Diameter reel	EIA Standard 481-D	2000	0678-XXXX-02

Specifications Subject to change without notice.

#### CORPORATE OFFICE

**Bel Fuse Inc.**

206 Van Vorst Street  
Jersey City, NJ 07302  
Tel 201-432-0463  
Fax 201-432-9542  
E-Mail: belfuse@belf.com  
Website: www. belfuse.com

#### FAR EAST OFFICE

**Bel Fuse Ltd.**

8/F Luk Hop Industrial Building  
8 Luk Hop Street  
San Po Kong  
Kowloon, Hong Kong  
Tel 852-2328-5515  
Fax 852-2352-3706

#### EUROPE OFFICE

**Bel Fuse Europe Ltd.**

Preston Technology Management Centre  
Marsh Lane, Suite F15  
Preston, Lancashire, PR1 8UQ  
United Kingdom  
Tel 44-1772-556601  
Fax 44-1772-561008

#### EUROPE

**Bel Stewart GmbH**

Industriestrasse 20  
61381 Friedrichsdorf  
Germany  
Tel 49-6172-9552-0  
Fax 49-6172-9552-40