TCP1.25, TCP500 & TCP2

Telecom circuit protector

RoHS

TCP1.25

Product features

- The first and most reliable surface mount telecom circuit protector designed to protect against power cross faults and comply with all surge requirements.
- Allows compliance with telecom regulatory standards including Bellcore GR 1089, UL 1950/60950, and FCC part 68. Application circuit testing is recommended.
- Eliminates the need for a current limiting resistor.
- Protects against overcurrent conditions found in telecom Subscriber Line Interface Cards (SLICs), xDSL Modem Applications, Set-Top Boxes, and Consumer Premises Equipment (CPE).
- TCP1.25-R tested and confirmed compatible with Eaton's Thyristor surge protector (listed below)

Eaton P/N's
SMCPxxxxSC

General specifications

- Life test: MIL-STD-202, Method 108A, Test Condition D
- Load humidity: MIL-STD-202, Method 103B
- Moisture resistance: MIL-STD-202, Method 106E
- Thermal shock: MIL-STD-202, Method 107D, air-to-air
- Case resistance: EIA/IS-722
- Resistance to dissolution of metallization: ANSI J-STD-002, Test D
- Mechanical shock: MIL-STD-202, Method 213B, Test Condition A
- High frequency vibration: MIL-STD-202, Method 204D, Test Condition D
- Resistance to solvents: MIL-STD-202, Method 215A

Agency information

- UL Recognition card: JDYX2/E19180
- CSA Component certification record and class No.: 053787C000, 1422 30

Ordering code

- Specify packaging, product and option code (i.e., TR2-TCP1-25-R)

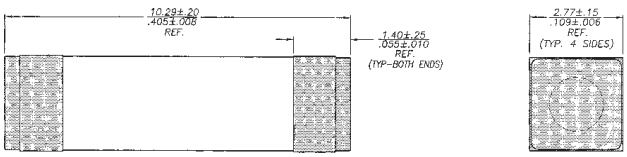
Soldering method

- Wave Immersion: +260 °C, 10 sec max.
- Infrared: +260°C, 30 sec max.

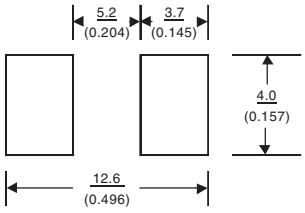
Electrical Characteristics	
% of Amp rating	**Opening time**
100%	4 Hours minimum
250%	1 Second minimum
250%	4-10 Seconds typical
250%*	120 Seconds maximum
300%	10 Seconds maximum

* If the device does not open at 250% within 120 seconds, increase current to 300% of amp rating. Device must open in 10 seconds max.

Dimensions mm/(inches)



Land pattern



Powering Business Worldwide

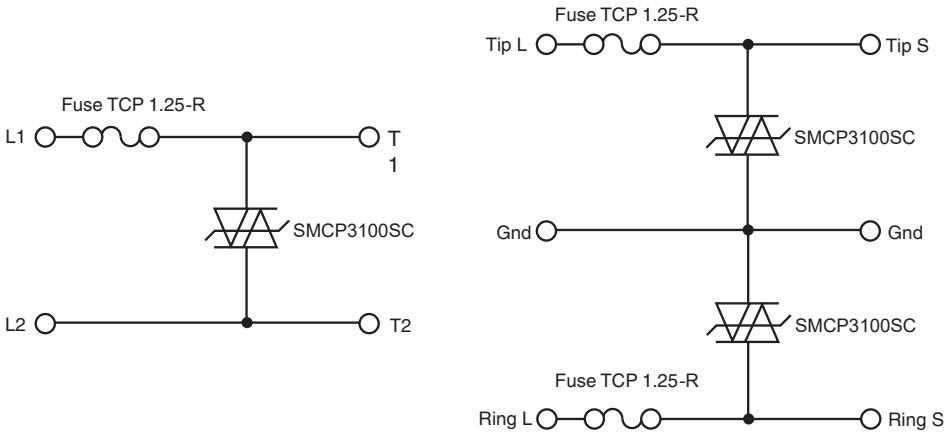
Lightning surge specifications						
Surge specification	**Surge**	**Repetitions**	**Waveform (µsec.)**	**Current (A)**	**Voltage (V)**	**Performance requirement**
FCC 47 Part 68	Longitudinal Type A	2	10x160	100 per fuse	1500	Fuse cannot open
FCC 47 Part 68	Metallic Type B	2	10x560	100	800	Fuse cannot open
Bellcore GR-1089-CORE	First Level Lightning	50	10x1000	100	1000	Fuse cannot open
Bellcore GR-1089-CORE	First Level Lightning	50	2x10	500	2500	Fuse cannot open
Surge out		1	10x160	160	N/A	Fuse cannot open
Surge out		1	10x560	115	N/A	Fuse cannot open

Electrical and power cross specifications											
Part number	**Voltage rating AC**	**Interrupting rating* 250Vac**	**600Vac**	**DC Cold resistance** min.**	**typ.**	**max.**	**Typical melting I²t†**	**Maximum total clearing**	**Typical voltage drop‡**	**Alpha code marking 1st Code**	**2nd Code**
TCP1.25-R	250 V	50 A	60 A	0.070	0.090	0.110	22.2 A^2s	100 A^2s	150mV	J	R

* AC Interrupting rating (Measured at designated voltage, 100% power factor)
** DC Cold resistance (Measured at 10% of rated current)
† Typical melting I^2t (Measured with a battery bank at 60 Vdc, 10x-rated current, time constant of calibrated circuit less than 50 microseconds)
‡ Typical voltage drop (Measured at rated current after temperature stabilizes)

Special Investigation
The TCP1.25-R is designed to provide overcurrent protection for telecom SLIC, xDSL modem, and set-top box applications regardless of the overvoltage device selected. To provide an easier specification experience, Eaton has tested the TCP1.25A and Eaton SMCP3100SC thyristor devices.

TEST CIRCUITS



Test Circuit 1 Test Circuit 2

Test program

Test	Standard	Results
Lightning Surge Tests		
10/1000 µs + and –1kV 100A (25 pulses of each polarity)	Bellcore GR-1089	Passed
2/10µs + and –2.5 and 5kV 500A (10 pulses of each polarity)	Bellcore GR-1089	Passed
10/560µs + and –800V 100A (1 pulse of each polarity)	FCC Part 68	Passed
10/160µs + and –1.5kV 200A (1 pulse of each polarity)	FCC Part 68	Passed
10/700µs + and –1.5kV 37.5A (5 pulses of each polarity)	K20	Passed
Electrical and Power Cross Tests		
600V 3A 1.1s (first le vel)	Bellcore GR-1089	Passed
277V 25A (second level)	Bellcore GR-1089	Passed
600V 60A 5s(second level)	Bellcore GR-1089	Passed
600V 40A 1.5s	UL 60950	Passed
600V 2.2A 30min	UL 60950	Passed
600V 1A 0.2s (A criteria)	K20	Passed
230V 1.44A/0.77A/0.38A 15min (A cr iteria)	K20	Passed
230V 23A 15min (A cr iteria)	K20	Passed

TCP500 & TCP2

Product features

- Designed to protect Consumer Premises Equipment from harmful overcurrents.
- Allows compliance with telecom regulatory standards including UL 1950/60950, and FCC part 68. Application circuit testing is recommended.
- Eliminates the need for a current limiting resistor.

General specifications

- Life test: MIL-STD-202, Method 108A, Test Condition D
- Load humidity: MIL-STD-202, Method 103B
- Moisture resistance: MIL-STD-202, Method 106E
- Thermal shock: MIL-STD-202, Method 107D, air-to-air
- Case resistance: EIA/IS-722
- Resistance to dissolution of metallization: ANSI J-STD-002, Test D
- Mechanical shock: MIL-STD-202, Method 213B, Test Condition A
- High frequency vibration: MIL-STD-202, Method 204D, Test condition D
- Resistance to solvents: MIL-STD-202, Method 215A

Agency information

- UL Recognition card: JDYX2/E19180
- CSA Component certification record and class No.: 053787C000, 1422 30

Ordering

- Specify packaging, product and option code (i.e., TR2-TCP500-R)

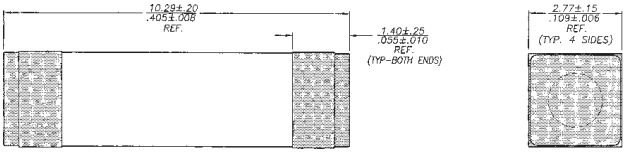
Soldering method

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

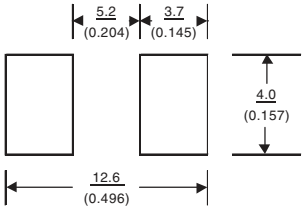
Electrical characteristics	
% of Amp rating	**Opening time**
100%	4 Hours minimum
250%	1 Second minimum
250%	4-10 Seconds typical
250%*	120 Seconds maximum
300%	10 Seconds maximum

* If the device does not open at 250% within 120 seconds, increase current to 300% of amp rating. Device must open in 10 seconds max.

Dimensions mm/(inches)



Land pattern

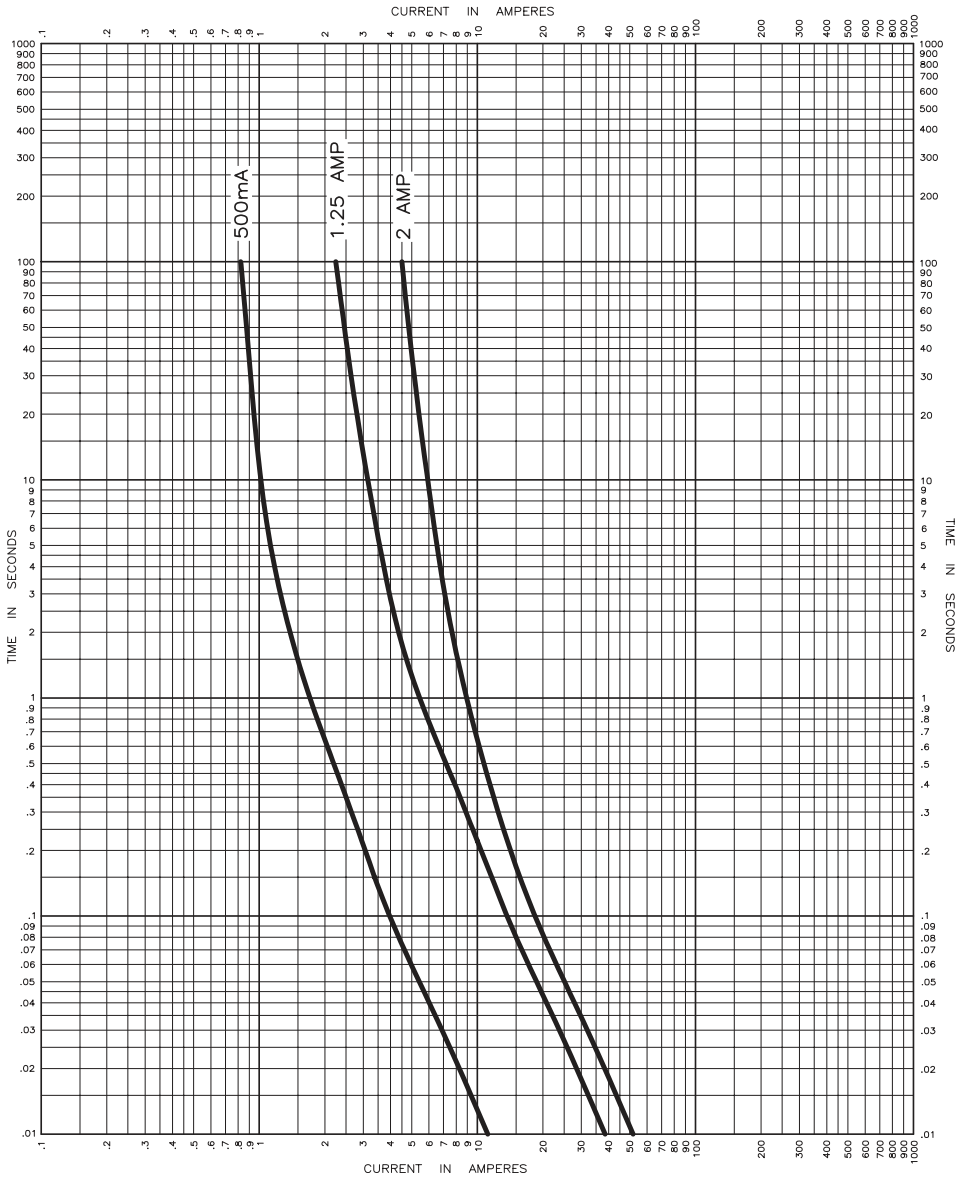


Lightning surge specifications						
Surge specification	**Surge**	**Repetitions**	**Waveform (µsec.)**	**Current (A)**	**Voltage (V)**	**Performance requirement**
TCP 500mA tested						
FCC 47 Part 68	Longitudinal Type B	2	5x320	37.5	N/A	Fuse cannot open
FCC 47 Part 68	Metallic Type A	2	10x560	100	800	Fuse must open safely
Surge out		25	10x160	65	N/A	Fuse cannot open
TCP2A tested						
FCC 47 Part 68	Longitudinal Type A	2	10x160	100 per fuse	1500	Fuse cannot open
FCC 47 Part 68	Metallic Type B	2	10x560	100	800	Fuse cannot open
Bellcore GR-1089-CORE	First Level Lightning	50	10x1000	100	1000	Fuse cannot open
Bellcore GR-1089-CORE	First Level Lightning	50	2x10	500	2500	Fuse cannot open
Surge out		1	10x160	160	N/A	Fuse cannot open
Surge out		1	10x560	115	N/A	Fuse cannot open

Electrical and power cross specifications												
Part number	**Voltage rating AC**	**Interrupting rating* 250Vac**	**600Vac**	**DC Cold resistance** min.**	**typ.**	**max.**	**Typical melting I²t†**	**Maximum total clearing**	**Typical voltage drop‡**	**Alpha code marking 1st Code**	**2nd Code**
TCP500-R	250 V	50 A	40 A	0.420	0.530	0.640	1.3 A²s	100 A²s	471mV	F	R
TCP2-R	250 V	50 A	60 A	0.050	0.075	0.100	30 A²s	100 A²s	205mV	N	

* AC Interrupting rating (Measured at designated voltage, 100% power factor)
** DC Cold resistance (Measured at 10% of rated current)
† Typical melting I²t (Measured with a battery bank at 60 Vdc, 10x-rated current, time constant of calibrated circuit less than 50 microseconds)
‡ Typical voltage drop (Measured at rated current after temperature stabilizes)

TIME CURRENT CURVE



Packaging code	
Packaging code	**Description**
TR2	2,500 pieces of fuses on 24mm tape-and-reel on 13 inch (330mm) reel per EIA Standard 481, 8 mm pitch

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