Effective December 2020 Supersedes December 2017

TCP1.25, TCP500 & TCP2 Telecom circuit protector



BUSSMANN



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	
<u>SMCPxxxxSC</u>	

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)

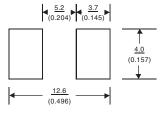




Land pattern

2.77±.15 109±.006 REF. P. 4 SIDES)

(TYP



Surge specification	Surge	tning 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	Voltage	Interro	-	DC Cold T		Typical	Maximum	Typical	Alpha code marking		
number	rating	rati	ng*	resistance** (ohms)		melting	total	voltage	1st Code	2nd Code	
	AC	250Vac	600Vac	min.	typ.	max.	l²t†	clearing	drop‡		
TCP1.25-R	250 V	50 A	60 A	0.070	0.090	0.110	22.2 A ² s	100 A ² s	150mV	J	R

* 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)

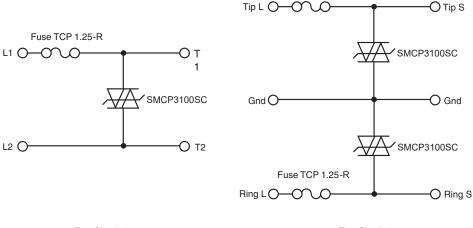
‡ Typical voltage drop (Measured at rated current after temperature stabilizes)

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.

Fuse TCP 1.25-R

TEST CIRCUITS





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

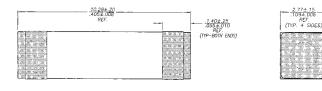
Product features

- 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-toair
- 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

Dimensions mm/(inches)



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)

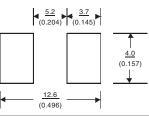
Soldering method

- 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.

Land pattern



Lightning surge specifications									
Surge specification	Surge	Repetitions	Waveform	Current (A)	Voltage (V)	Performance requirement			
			(µsec.)						
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			
		TCI	P2A 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			

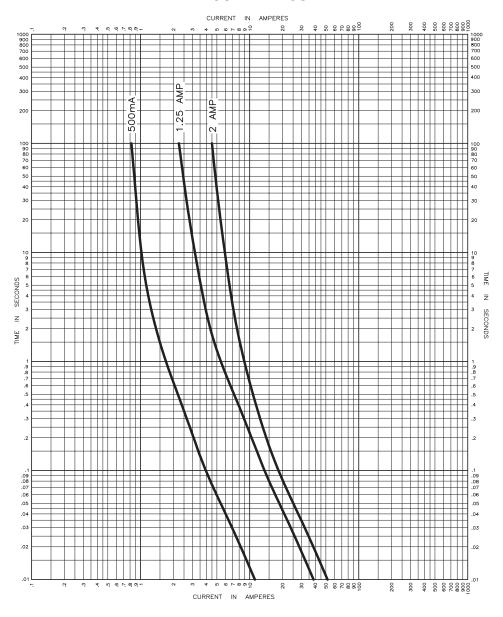
	Electrical and power cross specifications										
Part	Voltage	Interrupting		DC Cold		Typical	Maximum	Typical	Alpha code marking		
number	rating	rati	ng*	resistance** (ohms)		melting	total	voltage	1st Code 2nd Code		
	AC	250Vac	600Vac	min.	typ.	max.	l²t†	clearing	drop‡		
TCP500-R	250 V	50 A	40 A	0.420	0.530	0.640	1.3 A ² s	100 A ² s	471mV	F	R
TCP2-R	250 V	50 A	60 A	0.050	0.075	0.100	30 A ² s	100 A ² s	205mV	N	11

* 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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