COOPER Bussmann

# TCP™ Series

## TCP1.25A, Telecom Circuit Protector

### Description

- 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).
- TCP1.25A tested and confirmed compatible with STMicroelectronics Trisil™ Transient Surge Arrestor (list of part numbers below)

| STMicroelectronics Trisil™ P/N's | |
|---|---|
| SMP100LC-XXX | SMP100MC-XXX |

| 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 |

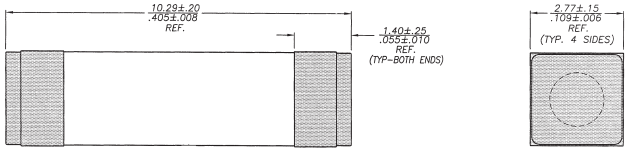
* If the device does not open at 250% within 120 seconds, increase current to 300% of amp rating. Device must open in 10 seconds max.

### Environmental Data

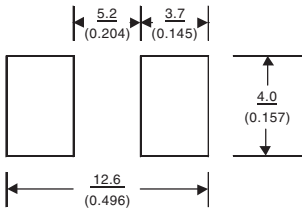
- Life Test: MIL-STD-202, Method 108A, Test Condition D
- Load Humidity: MIL-STD-202, Method 103B
- Moisture Resistance: MIL-STD-202, Method 106E
- Thermal Shock: MIL-STD-202, Method 107D, air-to-air
- Case Resistance: EIA/IS-722
- Resistance to Dissolution of Metallization: ANSI J-STD-002, Test D
- 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

RoHS 2002/95/EC

### Dimensions mm/(inches)




### Land Pattern




### 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/TCP1.25-R)

### Soldering Method

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

| 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 |

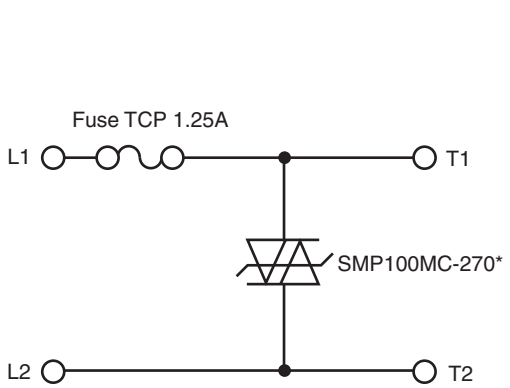
| ELECTRICAL AND POWER CROSS SPECIFICATIONS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Product Code** | **Voltage Rating AC** | **Interrupting Rating*** | | **DC Cold Resistance** (ohms)** | | | **Typical Melting $I^2t$†** | **Maximum Total Clearing** | **Typical Voltage Drop‡** | **Alpha Code Marking** | |
| | | **250VAC** | **600VAC** | **min.** | **typ.** | **max.** | | | | **1st Code** | **2nd Code** |
| **TCP1.25A** | 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)
*** On RoHS Compliant Version (-R option)
† Typical Melting $I^2t$ (Measured with a battery bank at 60V DC, 10x-rated current, time constant of calibrated circuit less than 50 microseconds)
‡ Typical Voltage Drop (Measured at rated current after temperature stabilizes)

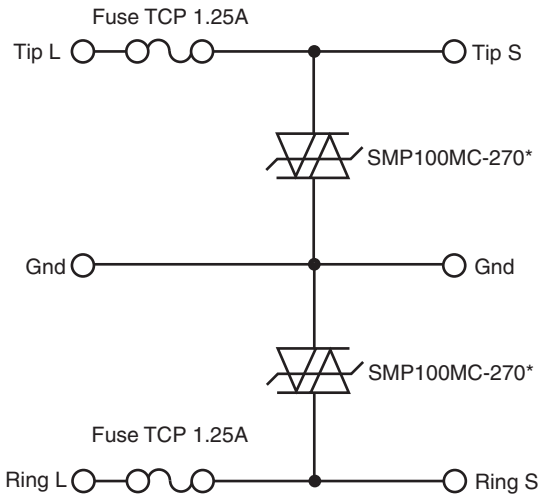
**Special Investigation**

The TCP1.25A 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, Cooper Bussmann and STMicroelectronics have joined together to provide a special test report confirming the coordination between the TCP1.25A and SMP100MC-270 devices.

## TEST CIRCUITS




Test Circuit 1




Test Circuit 2

*** Note:** or other STMicroelectronics Trisil™ part number listed in table on page 1

## TEST PROGRAM

| Test | Standard | Results |
|---|---|---|
| **Lightning Surge Tests** | | |
| 10/1000µs + 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 level) | 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 criteria) | K20 | Passed |
| 230V 23A 15min (A criteria) | K20 | Passed |

For additional information on STMicroelectronic's Trisil™ Product line, please see www.st.com/protection

COOPER Bussmann

# TCP™ Series

## TCP500MA & TCP2A, Telecom Circuit Protector

### Description

- 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.

| 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.

### Agency Information

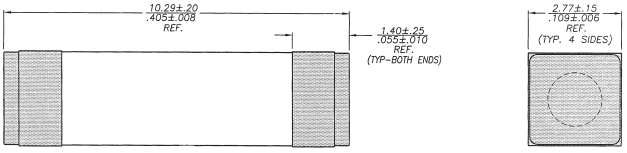
- UL Recognition Card: JDYX2/E19180
- CSA Component Certification Record and Class No.: 053787C000, 1422 30

### Environmental Data

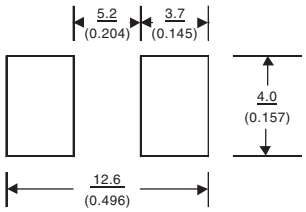
- Life Test: MIL-STD-202, Method 108A, Test Condition D
- Load Humidity: MIL-STD-202, Method 103B
- Moisture Resistance: MIL-STD-202, Method 106E
- Thermal Shock: MIL-STD-202, Method 107D, air-to-air
- Case Resistance: EIA/IS-722
- Resistance to Dissolution of Metallization: ANSI J-STD-002, Test D
- 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

RoHS 2002/95/EC

### Dimensions mm/(inches)




### Land Pattern




### 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.

| 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 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Product Code** | **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** |
| **TCP500mA** | 250 V | 50 A | 40 A | 0.420 | 0.530 | 0.640 | 1.3 A²s | 100 A²s | 471mV | F | R*** |
| **TCP2A** | 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)

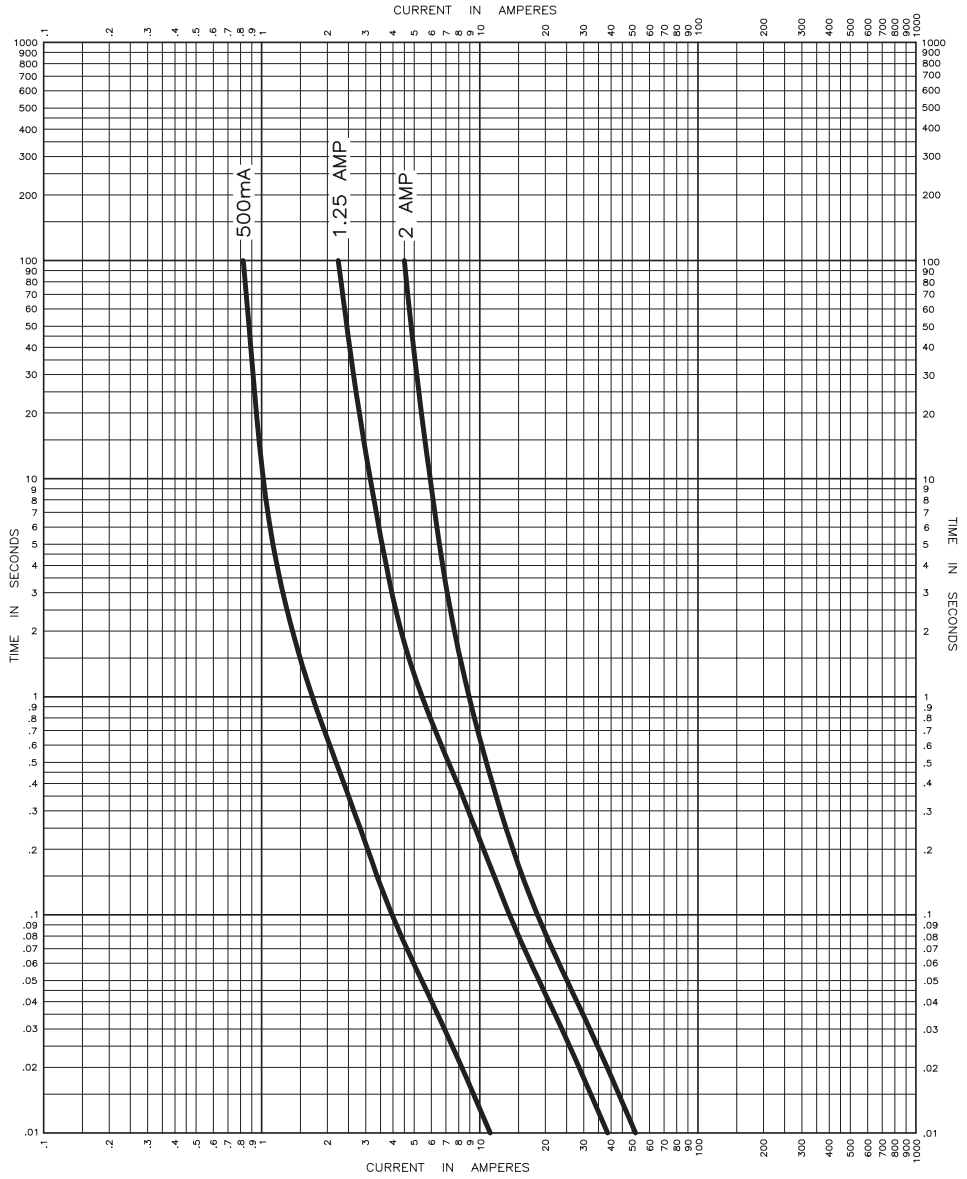
** DC Cold Resistance (Measured at 10% of rated current)

*** On RoHS Compliant Version (-R option)

† Typical Melting I²t (Measured with a battery bank at 60V DC, 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, 8mm pitch |

| OPTION CODE | |
|---|---|
| **Option Code** | **Description** |
| **-R** | RoHS Compliant Version (Sn plating w/ Ni barrier) |

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Visit us on the web at:
**www.cooperbussmann.com**

Datasheet: OC-2609 1/07



**North America**

Cooper Electronic Technologies
1225 Broken Sound Parkway NW
Suite F
Boca Raton, FL 33487-3533
Tel: 1-561-998-4100
Fax: 1-561-241-6640
Toll Free: 1-888-414-2645

Cooper Bussmann
P.O. Box 14460
St. Louis, MO 63178-4460
Tel: 1-636-394-2877
Fax: 1-800-544-2570

**Europe**

Cooper Electronic Technologies
Cooper (UK) Limited
Burton-on-the-Wolds
Leicestershire • LE12 5TH UK
Tel: +44 (0) 1509 882 737
Fax: +44 (0) 1509 882 786

Cooper Electronic Technologies
Avda. Santa Eulalia, 290
08223
Terrassa, (Barcelona), Spain
Tel: +34 937 362 812
+34 937 362 813
Fax: +34 937 362 719

**Asia Pacific**

Cooper Electronic Technologies
1 Jalan Kilang Timor
#06-01 Pacific Tech Centre
Singapore 159303
Tel: +65 278 6151
Fax: +65 270 4160