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**BOURNS®**

## Features

- Patented Multi-stage protection (MSP®)
- Balanced TRIGARD®
- Patented Switch-Grade Fail-Short Device
- Quick response and high energy handling
- Ideal for high-speed networks in high exposure environments
-  LISTED per UL 497 (File: 53117)
- Meets test requirements of Telcordia GR 974, GR1361, SBC SR 5165 and RUS PE-80
- Telcordia Analysis report DA-1547
- Solid brass, gold-plated pins
- Test point access option
- Sealed option for harsh environments

## 2410 Series - 5-Pin Multi-Stage Protector (MSP®)

Bourns® 5-Pin Multi-Stage Protector (MSP®) is the latest generation telecommunications protector for high performance and long life in overvoltage protection of copper pair voice-band and high-speed data circuits. Bourns MSP® combines the advantages of gas tube and solid state protection while integrating three advanced technologies: a proprietary high-efficiency gas discharge tube, precision matched metal oxide varistors and a patented Switch-Grade Fail-Short mechanism. The Switch-Grade Fail-Short mechanism ensures superior thermal protection with fast acting, highly reliable response to thermal overload conditions. This combined technology provides lower capacitance, higher reliability and longer life than competitive hybrid technologies.

Bourns® 2410 can be used universally for POTS and high speed data, e.g. ISDN, ADSL, ADSL2+, VDSL, VDSL2, other xDSL protocols and high speed Ethernet. Bourns® MSP® technology provides unparalleled overvoltage protection with low loss on paired copper communications circuits. The 2410 series is the most economical, reliable and effective choice for overvoltage protection of copper pair circuits.

### Characteristics

Test Methods per UL 497, CSA C22.2, Telcordia GR 974, 1361 and SBC SR 5165.

|                                                                                                             |                               |
|-------------------------------------------------------------------------------------------------------------|-------------------------------|
| DC Breakdown .....                                                                                          | 300-400 V                     |
| AC Breakdown @ 60 Hz .....                                                                                  | 300-400 V                     |
| Impulse Breakdown                                                                                           |                               |
| 100 V/μs .....                                                                                              | 600 V                         |
| 1000 V/μs .....                                                                                             | 650 V                         |
| Insulation Resistance @ 100 Vdc .....                                                                       | >1 GΩ                         |
| Insertion Loss @ 100 MHz .....                                                                              | <0.4 dB <sup>1</sup>          |
| Return Loss @ 100 MHz .....                                                                                 | >14 dB <sup>1</sup>           |
| Capacitance Tip to Ring @ 1 MHz .....                                                                       | 10 pF typical                 |
| Capacitance Tip or Ring to Ground @ 1 MHz .....                                                             | 20 pF typical                 |
| Impulse Reset <sup>5</sup>                                                                                  |                               |
| 52 V, 260 mA .....                                                                                          | <10 ms                        |
| 135 V, 200 mA .....                                                                                         | <10 ms                        |
| 150 V, 200 mA .....                                                                                         | <150 ms                       |
| Impulse Life Characteristics (Tip and Ring to Ground Simultaneously)                                        |                               |
| 10 to 100 A, 10/1000 μs .....                                                                               | >3000 operations <sup>2</sup> |
| 300 A, 10/1000 μs .....                                                                                     | >1000 operations <sup>2</sup> |
| 500 A, 10/1000 μs .....                                                                                     | >1000 operations <sup>4</sup> |
| 2,000 A, 10/250 μs .....                                                                                    | >100 operations <sup>2</sup>  |
| 5,000 A, 20/100 μs .....                                                                                    | >10 operations <sup>2</sup>   |
| 20,000 A, 8/20 μs .....                                                                                     | >10 operations <sup>4</sup>   |
| AC Life Characteristics (Tip and Ring to Ground Simultaneously)                                             |                               |
| 0.5 A rms continuous .....                                                                                  | >30 seconds                   |
| 1 A rms, 1 second, 600 ft. cable .....                                                                      | >60 seconds                   |
| 1 A rms, 1 second, 1 mile cable .....                                                                       | >60 operations                |
| 10 A rms, 1 second .....                                                                                    | >5 operations                 |
| 65 A rms, 11 cycles .....                                                                                   | >1 operation <sup>3</sup>     |
| 120 A rms, 0.1 second .....                                                                                 | 1 operation                   |
| High Current Capability and Thermal Operation (Tip and Ring to Ground, Vented or Non-Vented Gas Tube) ..... | >30 A rms, simultaneously     |
| Storage and Operating Temperature .....                                                                     | -55 to +85 °C                 |

Telcordia analyzed for controlled (non-sealed) and uncontrolled, high-exposure (sealed) environments per GR 974 and SBC SR 5165. Telcordia Technical Analysis Report DA-1547.

### Notes:

- <sup>1</sup> Tested according to Category 5 requirements
- <sup>2</sup> Exceeds Telcordia (Bellcore) GR 1361
- <sup>3</sup> Surpasses Telcordia GR 974
- <sup>4</sup> RUS (REA) PE-80
- <sup>5</sup> Network applied

Line to Line voltage is approximately 1.8 to 2 times the stated Line to Ground breakdown voltage.

Specifications are subject to change without notice.

Customers should verify actual device performance in their specific applications

## 2410 Series - 5-Pin Multi-Stage Protector (MSP®)

**BOURNS®**

## How To Order

2410 - X XX - X - XXX - XX

### Model Number Designator

### Module Length

3 = Standard: 52.37 mm (2.06 in.)    7 = Special Short: 41.19 mm (1.62 in.)

Housing Color/Circuit Type

1 = Black/Standard

3 = Red/Special

6 = Blue/Standard

9 = Orange/Standard Service (non-Bridgelifter)

10 = Yellow/Standard

## Pin Plating

G = Gold Plated

N = Tin Plated

### Protector Type

MSP® = Multi-Stage Protector

BC = Balanced Capacitance\*

### Special Options

S = Sealed Case

ST = Sealed Case and Test Points\*\*

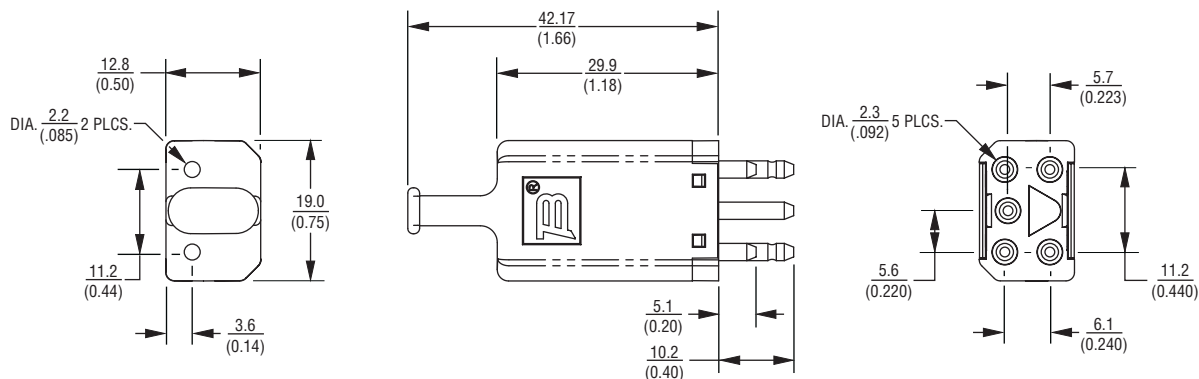
T = Test Points\*\*

\*For use on DSL Systems that require balanced capacitance of  $\leq 1$  pF.

\*\*T and ST options are not available on 2410-7x short module.

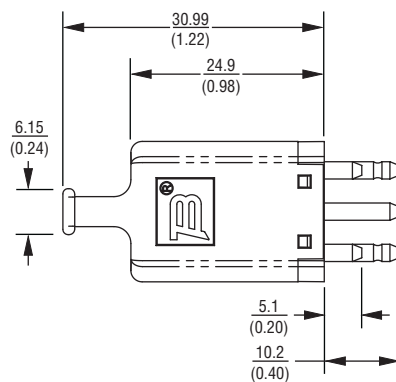
## Product Dimensions

## 2410-3 MODULE



## 2410-7 MODULE

DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$



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