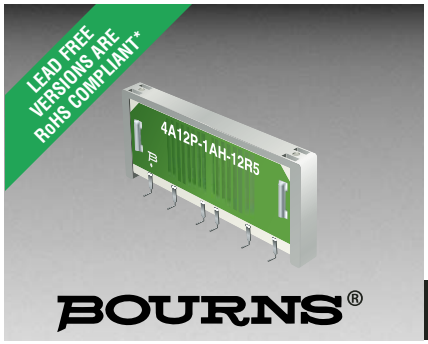
EN: This Datasheet/Document is presented by the manufacturer.

Please visit our website for pricing and availability at www.hestore.hu.



BOURNS®

Features

- Lead free versions available (RoHS compliant*)
- Overcurrent/lightning protection to TELCORDIA GR-1089 Issue 3
- Typical application is secondary protection on telecom line cards
- UL497A recognition
- Thermal fuse links
- Must be used in conjunction with a solid state primary protector, or a GDT primary protector

4A12P-1AH-12R5 - Surge Line Protection Module

Electrical Characteristics

Resistance Value .....12.5 ohms
Resistance Tolerance.....±5 %
TCR .....100 ppm/°C
Ratio Tolerance .....±0.5 %
Temperature Range.....-40 °C to +85 °C

Physical Characteristics

Body Style .....Dual In Line SMD - Twin Pack
Substrate Material .....96 % Alumina
Lead Frame Material.....Copper, solder coated
Flammability .....Conforms to UL94V-0
Processability.....Unit is only suitable for no-clean processing
Convection Reflow.....Unit will withstand 260 °, 20 seconds
Packaging.....16 inch diameter reels, 44 mm tape, 250 pcs./reel

Functional Characteristics @ 25 °C (per Telcordia GR-1089 Issue 3)

First Level Lightning Surge -
Resistors will remain within tolerance after testing.

1000 Volts Peak, 100 Amp Peak Current,
Max. Rise/Min. Decay Time 10x1000 µs,
60 Seconds Between Pulses:
Number of Pulses .....25 each resistor each polarity

2500 Volts Peak, 500 Amp Peak Current,
Max. Rise/Min. Decay Time 2x10 µs,
60 Seconds Between Pulses:
Number of Pulses .....10 simultaneous each polarity

Meets Protection Coordination as defined in Telcordia Section 4.6.7.1, Condition A.

First Level AC Power Fault -
Resistors will remain within tolerance after testing.

50 Vrms, 0.33 Amp Short Circuit Current:
Duration.....15 minutes

100 Vrms, 0.17 Amp Short Circuit Current:
Duration.....15 minutes

600 Vrms, 1.00 Amp Short Circuit Current:
Duration.....Sixty 1-second pulses

440 Vrms, 2.2 Amp Short Circuit Current:
Duration .....Five 2-second pulses, cooling to ambient between pulses

600 Vrms, 3.00 Amp Short Circuit Current:
Duration .....Five 1.1-second pulses, cooling to ambient between pulses

Functional Characteristics @ 25 °C (Continued)

Second Level Lightning Surge -
Resistor package must fail safely causing no fire, electrical, or framentation hazard.

5000 Volts Peak, 500 Amp Peak Current,
Max. Rise/Min. Decay Time 2x10 µs:
Number of Pulses .....1 simultaneous each polarity

Second Level AC Power Fault -
Resistor package must fail safely causing no fire, electrical, or framentation hazard. Device will fail prior to Bussman MDQ 1-6/10 A fuse in series.

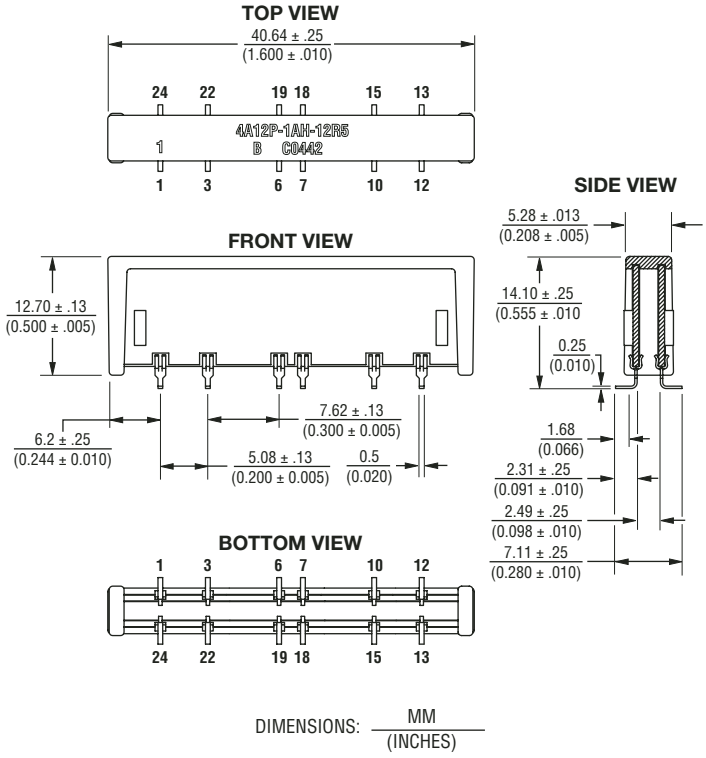
100 Vrms, 2.2 Amp Short Circuit Current:
Duration.....15 minutes

600 Vrms, 7 Amp Short Circuit Current:
Duration.....5 seconds

250 Vrms, 25 Amp Short Circuit Current:
Duration.....15 minutes

600 Vrms, 60 Amp Short Circuit Current:
Duration.....5 seconds

Product Dimensions



DIMENSIONS: MM / (INCHES)

*RoHS Directive 2002/95/EC Jan 27 2003 including Annex.
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

4A12P-1AH-12R5 - Surge Line Protection Module

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How To Order

4A 12 P - 1AH - 12R5 LF

Model
(4A = Surface Mount)

Number of Pins

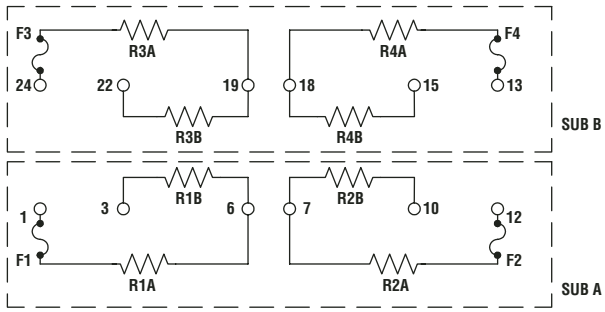
Physical Configuration

Electrical Configuration
1AH = Custom

Resistance Code
12R5 = 12.5 Ohms

Lead Free Option
Blank = Standard Product
LF = Lead Free / RoHS Compliant Product

Electrical Schematic



NOTES:
R1A + R1B + F1 = 12.5 OHMS ±5 %.
R2A + R2B + F2 = 12.5 OHMS ±5 %.
RATIO MATCH: R1 / R2 = 1 ± 2.5 %.
CO-PLANARITY = 0.004 INCHES.
R3A + R3B = 12.5 OHMS ±5 %.
R4A + R4B = 12.5 OHMS ±5 %.
RATIO MATCH: R3 / R4 = 1 ± 2.5 %.

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Telcordia GR-1080-CORE Protection Coordination

Protection coordination (Telcordia Technologies Generic Requirements, GR-1089-CORE, Issue 3, October 2002, section 4.6.7.1 protection coordination, page 4-15) is a new test for GR-1089-CORE issue 3 that will be a requirement on January 1, 2006. The equipment using the 4A12P-1AH-12R5 overcurrent line feed resistor (LFR) must be used with either a solid state primary or a primary GDT (5-pin gas discharge tube) such as the Bourns® 2024-31-MSP Protector.

The equipment communication lines will initially be tested at the specified primary voltage protector type using a 10/1000 μs generator. A solid state primary will start testing at 400 V where a GDT primary will start at 600 V. If condition A or B defined below is not achieved, the 10/1000 generator voltage, V_G is increased (in steps of 200 V or interpolated value) to a maximum of 2000 V or until one of the two following criteria is achieved:

A. The communication lines are stressed to 600 V peak (V_P) across the equipment terminals with the GDT specified as a primary. V_P specification is reduced to 400 A for a solid state primary.

Note: Series resistance of the primary protector such as a heat coil resistance is connected between the generator and equipment. This resistance will be effectively added to R_{SERIES} value when calculating the generator open circuit test voltage.

B. The peak current (I_{PP}) into the equipment terminals exceeds 100 A.

The coordination test requires ten repetitions per polarity. The communication lines will also be tested to metallic and longitudinal procedures to ensure conformance. The equipment fails the coordination requirement if neither A or B is achieved with a maximum generator voltage of 2000 V or the equipment is damaged and does not operate as intended. Figure 1 shows the setup and measurement points for the coordination test.

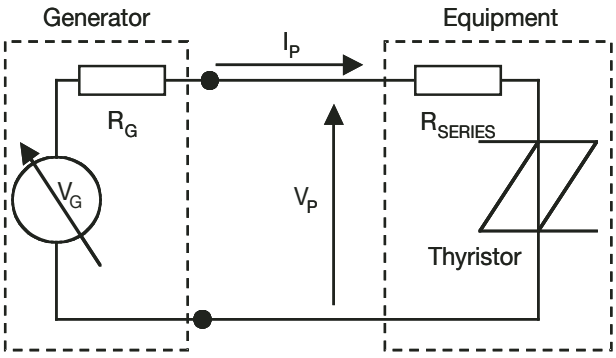


Figure 1 — Coordination Requirements

For example, a GDT is defined as the primary protector. The voltage, V_P will be 600 V and the current through R_{SERIES} (4A12P-1AH-12R5) will be 48 A (600/12.5). With a generator fictive resistance of 10 Ω, the generator V_G should be adjusted to 1080 V to achieve voltage coordination. The resistance of the 4A12P-1AH-12R5 ensures the equipment will voltage coordinate before 100A is achieved.

Note: Tolerances of the impulse generator, LFR, measurement, etc. will provide a variation on the actual impulse generator setting.

Overvoltage Thyristor Selection

The resistance tolerance of the LFR is ±5 % and therefore the expected maximum current from the generator will be 51 A. To ensure reliable operation of the overvoltage protector, the thyristor should be specified to a 10/1000 μs of at least 51 A.

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