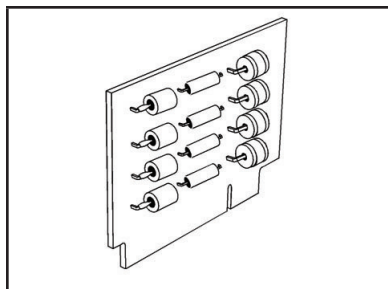
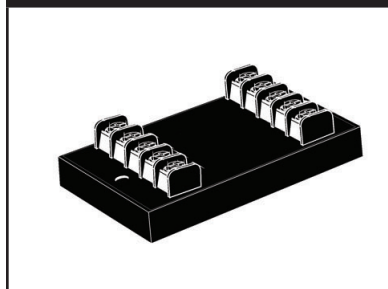


## PBX LOW VOLTAGE TELEPHONE PROTECTOR



TEL50B



TEL50E

### DESCRIPTION

The TEL50B/E is a two-stage transient voltage protector that provides primary and secondary protection against lightning, inductive switching and electrostatic discharge (ESD) transient threats. The first stage diverts the transient current through the ground terminal return path and the second stage clamps the voltage to a safe level without interruption of service.

The TEL50B/E is designed to protect telcom lines from common mode (line-to-ground) transients. There are four (4) independent lines referenced to the ground terminals.

### FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 95A, 8/20 $\mu$ s, Level 4 (Line-Gnd) & 48A, Level 4 (Line-Line)
- Designed for  $\pm$ 50 Volt (Peak) Telephone Lines
- 4 Wire, Line-to-Ground Protection
- Permanent Two-Stage Protection
- Subnanosecond Response Time
- Automatic Reset - Does Not Interrupt Service
- Effective Against Lightning, Inductive Switching and ESD

### APPLICATIONS

- Telcom Terminal Equipment
- Data/Telcom Interfaces
- Dedicated Fax & Modems

### MECHANICAL CHARACTERISTICS

- Approximate Weight: 28 grams (TEL50B) & 142 grams (TEL50E)
- Flammability Rating UL 94V-0

## TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Operating Line Voltage	$V_{OP}$	±50	Volts
Operating Line Current	$I_O$	200	mA
Transient Voltage	-	10	kV/Wire
Transient Current - 8/20μs waveform	-	10	kA/Wire
Transient Current - 8/20μs waveform	-	40	kA/Protector
Operating Temperature	$T_A$	-55 to 100	°C
Storage Temperature	$T_{STG}$	-55 to 100	°C
Response Time	-	< 1	ns

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified				
PART NUMBER	MAXIMUM CLAMPING VOLTAGE (8/20μs)  @ ±500A $V_C$ VOLTS	MAXIMUM LINE THROUGHPUT RESISTANCE  R OHMS	MAXIMUM LEAKAGE CURRENT  @ ±50V <sub>OP</sub> $I_D$ μA	MAXIMUM CAPACITANCE  @ 0V, 1MHz C pF
TEL50B/E	95.0	12	5	800

## INSTALLATION INSTRUCTIONS

There are five (5) terminals on both the line and equipment side of the TEL50E - four telcom line terminals and one ground terminal. The ground terminal, as shown on the label, is connected internally. A single ground connection is sufficient. However, it is recommended that both ground connections be used for a lower impedance path to earth. This connection can be made through the green AC power ground wire or a known earth ground. The ground wire should be #14 stranded wire.

Incoming telcom lines are cut or disconnected from the equipment to insert the TEL50E product. The line side of the terminals are to be connected to outside telephone or telecommunication lines that carry the transient threats into the equipment to be protected. The equipment side of the terminals are to be connected to the equipment to be protected. The location of the product should be such that these wires are as short as possible. A #18 or 20 gauge wire can be used for these connections.

The TEL50B requires an edge connector interface for installation. A standard 15 position edge connector can be used. When mounting or wiring the connectors onto a printed circuit board, be sure that the correct terminals are soldered. The line side of the board connections are finger contacts 2 thru 5. The boards are conformal coated for limited protection against moisture.

ProTek's telcom line protector is designed with a short circuit failure mode to give maximum protection. A fuse, PTC, fusible link, or circuit breaker is recommended for each signal line on the input (line) side of the protector for those applications that require an open circuit failure mode.

**Caution:** A low DC resistance ground may not be indicative of a good lightning ground. Lightning contains a broad spectrum of frequencies - up to 1 MHz. A low impedance path to ground at the transient frequencies is necessary. A ground strap is recommended or a #6 AWG stranded wire. For wire lengths over 1.5 meters, there may be some excessive line to earth potential under severe thunderstorm conditions. For these applications, an additional protector may be necessary at the equipment interface.

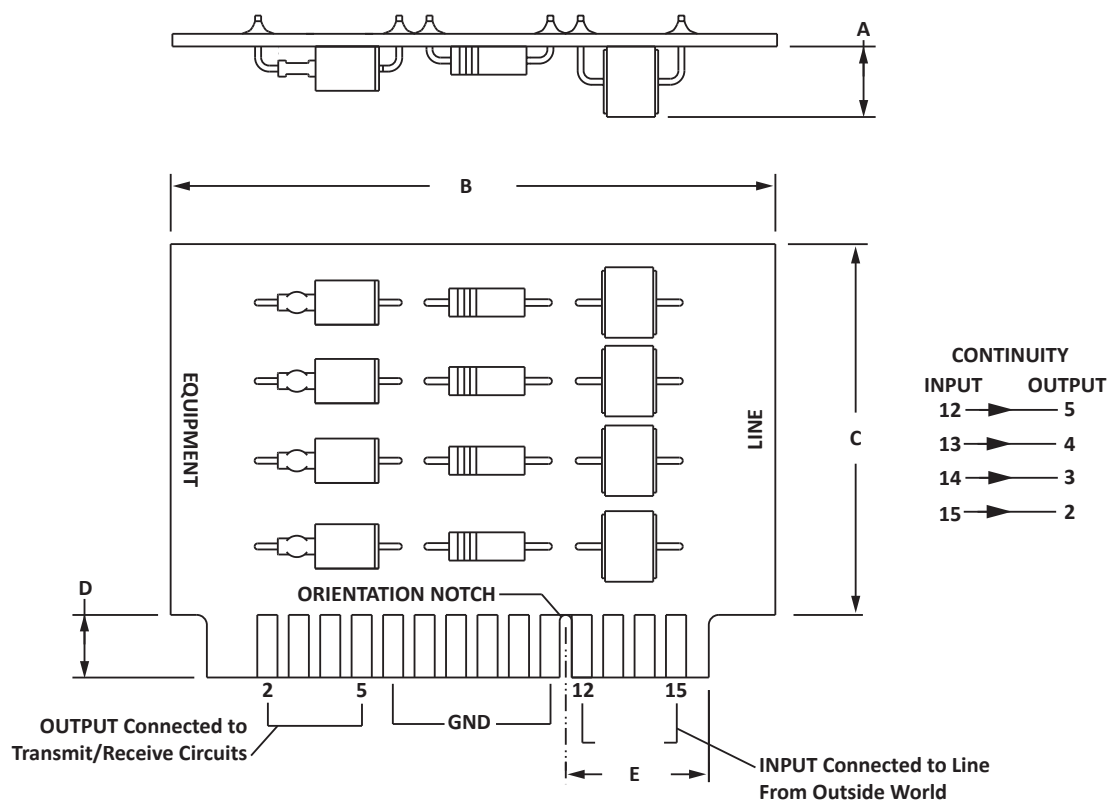
## PACKAGE INFORMATION

**TEL50B OUTLINE DIMENSIONS**

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	-	12.7	-	0.50
B	-	76.2	-	3.0
C	-	48.2	-	1.90
D	-	7.6	-	0.30
E	-	17.8	-	0.7

**NOTES**

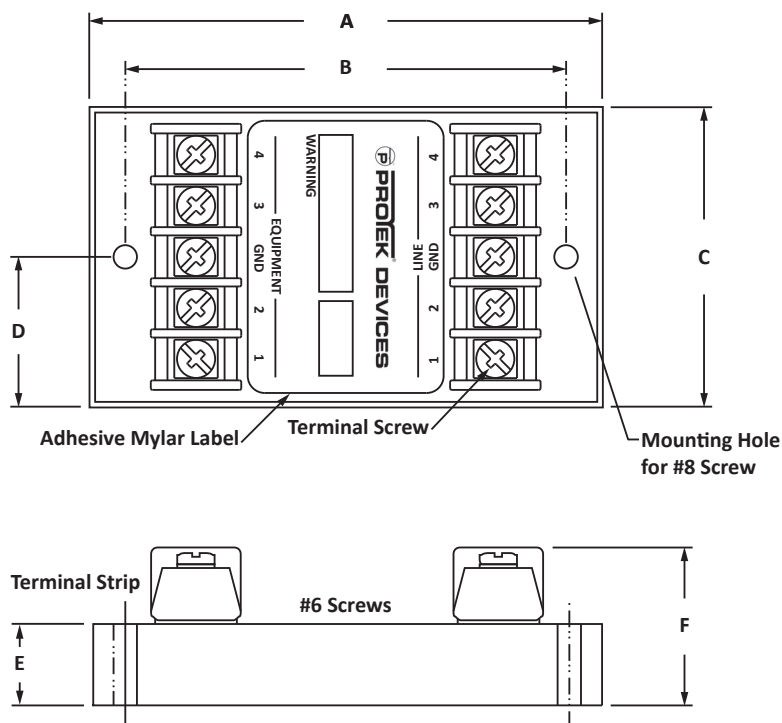
1. I/O contacts spaced at 0.156" (3.96mm) centers.



## PACKAGE INFORMATION

**TEL50E OUTLINE DIMENSIONS**

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	-	95.5	-	3.8
B	82.22	82.98	3.235	3.265
C	-	57.2	-	2.25
D	-	30.2	-	1.125
E	-	15.5	-	0.61
F	-	30.2	-	1.19



## ORDERING INFORMATION

BASE PART NUMBER	MARKING
TEL50B	Logo, Date Code, Terminal Designations and Part Number
TEL50E	Logo, Date Code, Terminal Designations and Part Number

## COMPANY INFORMATION

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### COMPANY PROFILE

In business more than 25 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

### CONTACT US

#### Corporate Headquarters

2929 South Fair Lane  
Tempe, Arizona 85282  
USA

#### By Telephone

General: 602-431-8101  
Sales: & Marketing: 602-414-5109  
Customer Service: 602-414-5114  
Product Technical Support: 602-414-5107

#### By Fax

General: 602-431-2288

#### By E-mail:

Asia Sales: [asiasales@protekdevices.com](mailto:asiasales@protekdevices.com)  
Europe Sales: [europesales@protekdevices.com](mailto:europesales@protekdevices.com)  
U.S. Sales: [ussales@protekdevices.com](mailto:ussales@protekdevices.com)  
Distributor Sales: [distysales@protekdevices.com](mailto:distysales@protekdevices.com)  
Customer Service: [service@protekdevices.com](mailto:service@protekdevices.com)  
Technical Support: [support@protekdevices.com](mailto:support@protekdevices.com)

#### ProTek Devices (Asia Pacific) Pte. Ltd.

8 Ubi Road 2, #06-19  
Zervex  
Singapore - 408538  
Tel: +65-67488312  
Fax: +65-67488313

#### Web

[www.protekdevices.com](http://www.protekdevices.com)

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