

## USB Protection Solutions - PLR0502

By: Ivan G. Lawson



**SOT-543 PACKAGE**

USB is the preferred choice for connecting electronic devices for the exchange of data. Over one billion USB-enabled products are available to consumers world-wide from SMART phones, digital cameras, laptops to desktop computers. Each one of these connections is susceptible to transient threats that could upset or completely damage the device, making it inoperable.

As circuits shrink in size and data rates increase the more sensitive the device becomes to transient threats such as ESD and EFT. Each time a device is connected or disconnected or handled by the user, the circuit receives voltage transients. An ESD charge buildup associated with cable-discharged events and contact can easily reach 20~40 kilovolts. Without protection, the USB interface circuit will be damaged.

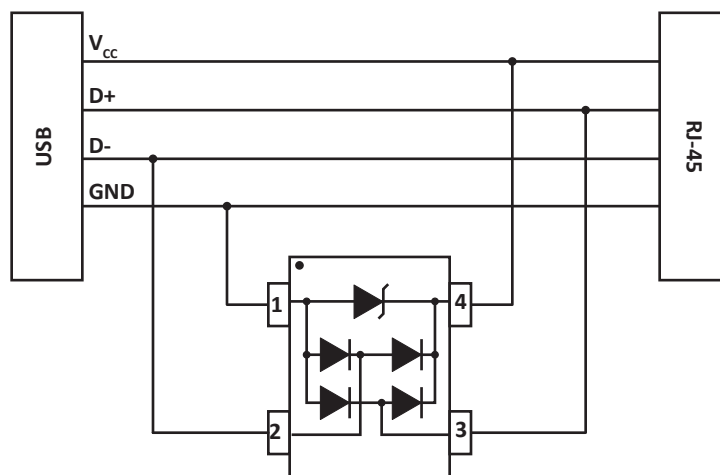
ProTek offers a variety of solutions for portable electronics or equipment that require USB(1.0 & 2.0) protection. For portable devices, where board space is limited the PLR0502 is recommended.

### ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER	DEVICE MARKING	RATED STAND-OFF VOLTAGE $V_{WM}$ VOLTS	MINIMUM BREAKDOWN VOLTAGE @1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 2) @ $I_p = 1A$ $V_C$ VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 2) @ 8/20 $\mu s$ $V_C @ I_{PP}$	MAXIMUM LEAKAGE CURRENT @ $V_{WM}$ $I_D$ $\mu A$	MAXIMUM CAPACITANCE (Per Data Line) (Fig. 5) (Note 1) @0V, 1MHz $C_{J(SD)}$ pF
PLR0502	B5	5.0	6.0	9.8	20.0V @ 10.0A	1	0.6

#### NOTE

- As shown in Figure 5, REF 1 is connected to ground, REF 2 is connected to + $V_{CC}$  and input applies to  $V_{CC} = 5V$ ,  $V_{SIG} = 30mV$ ,  $F = 1MHz$ .
- Measured across pin 1 to pin 4.



## COMPANY INFORMATION

### COMPANY PROFILE

ProTek Devices, based in Tempe, Arizona USA, is a manufacturer of Transient Voltage Suppression (TVS) products designed specifically for the protection of electronic systems from the effects of lightning, Electrostatic Discharge (ESD), Nuclear Electromagnetic Pulse (NEMP), inductive switching and EMI/RFI. With over 25 years of engineering and manufacturing experience, ProTek designs TVS devices that provide application specific protection solutions for all electronic equipment/systems.

ProTek Devices Analog Products Division, also manufactures analog interface, control, RF and power management products.

### CONTACT US

#### Corporate Headquarters

2929 South Fair Lane  
Tempe, Arizona 85282  
USA

#### By Telephone

General: 602-431-8101  
Sales: 602-414-5109  
Customer Service: 602-414-5114

#### By Fax

General: 602-431-2288

#### By E-mail:

Sales: [sales@protekdevices.com](mailto:sales@protekdevices.com)  
Customer Service: [service@protekdevices.com](mailto:service@protekdevices.com)  
Technical Support: [support@protekdevices.com](mailto:support@protekdevices.com)

#### Web

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

COPYRIGHT © ProTek Devices 2011 - This literature is subject to all applicable copyright laws and is not for resale in any manner.

SPECIFICATIONS: ProTek reserves the right to change the electrical and or mechanical characteristics described herein without notice.

DESIGN CHANGES: ProTek reserves the right to discontinue product lines without notice and that the final judgement concerning selection and specifications is the buyer's and that in furnishing engineering and technical assistance. ProTek assumes no responsibility with respect to the selection or specifications of such products. ProTek makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ProTek assume any liability arising out of the application or use of any product or circuit and specifically disclaims any and all liability without limitation special, consequential or incidental damages.

LIFE SUPPORT POLICY: ProTek Devices products are not authorized for use in life support systems without written consent from the factory.