Solutions For

Wired Communications

Set Top Box

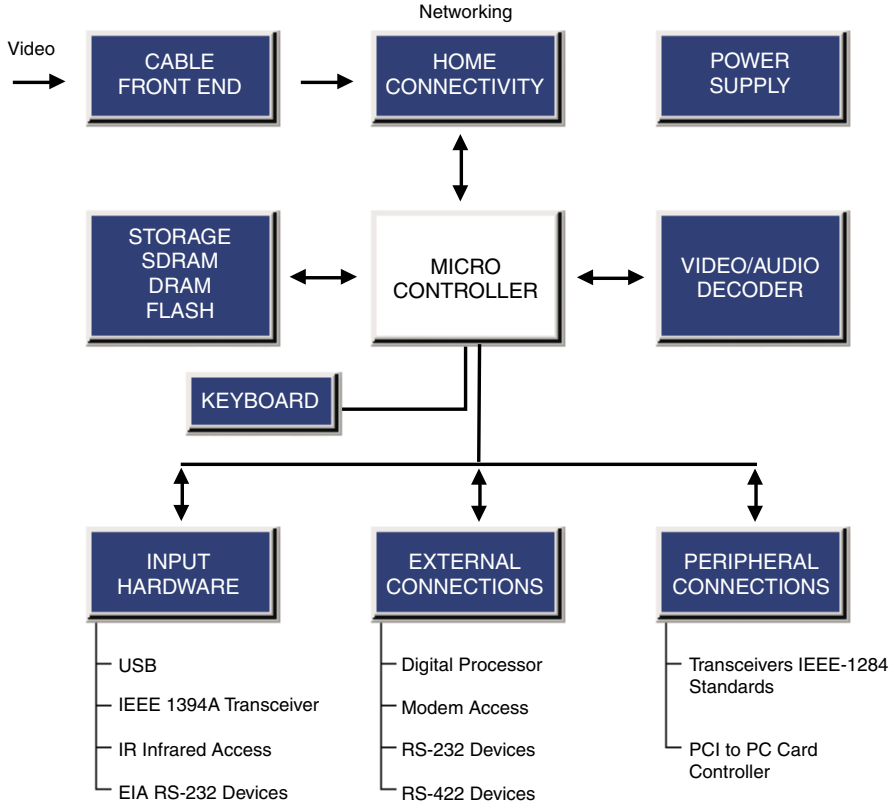
PROTEK DEVICES

ESD PROTECTION & EMI FILTERING

A Set-Top Box is like a specialized computer that allows a TV to “communicate” with the Internet. It provides the user with a multitude of functionality such as ordering movies, Internet surfing, shopping, research and various other services. The communication link between the Set-Top-Box and the Internet is provided through a telephone line or a cable company connection.

A set top box is susceptible to Electrostatic Discharge (ESD) and Electrical Fast Transients (EFT). ESD is generated from sources such as human contact or air discharge. In addition, STB’s are sensitive to EMI/RFI interference because of the high operating frequencies. It is recommended that several areas of the box be protected with Transient Voltage Suppression Devices..

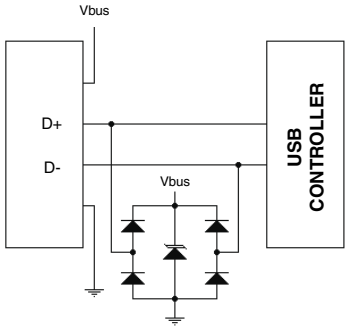
Set-Top Box Functional Diagram



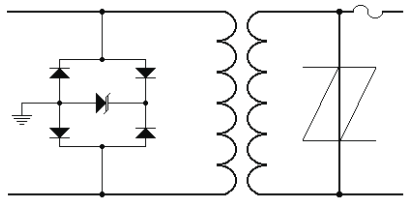
Transient Voltage Suppression (TVS) devices provide protection at board-level from the effects of Electrostatic Discharge (ESD) and Electrical Fast Transients (EFT) as defined by IEC 61000-4-2 and IEC 61000-4-4. A TVS also provides lightning and AC power fault protection that meet requirements such as IEC 61000-4-5 and Bellcore GR1089.

APPLICATION NOTES

The following circuits represent several applications for TVS protection from ESD, EFT and secondary lightning.

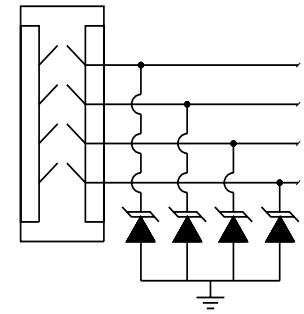


USB Controller *PSR05*

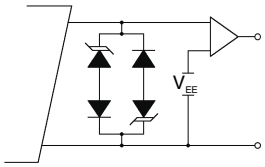


PLC03-6 *PPXXXXSA,B,C*

Modem

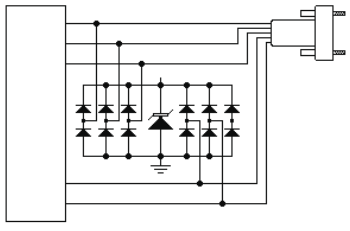


Edge Connector *SFC05-4*



PSLCXXC
GBLCXXC

Keyboard

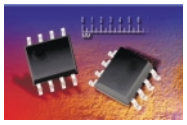


Video Port *PSRDAxx-6 Series*

PREFERRED PROTEK'TION™

GBLC Series

- o ***Ultra Low Capacitance*: 3pF**
- o Available in (7) Voltage Types
- o Low Clamping Voltage
- o ESD > 40 kilovolts
- o Unidirectional & Bidirectional Configurations
- o 350 Watts Peak Pulse Power (8/20µs)
- o SOD-323 Package



PLC03-6

- o Operating Voltage: 6V
- o Capacitance: 18pF
- o ESD > 40 kilovolts
- o Low Leakage Current: 25µA
- o Provides protection in either bidirectional differential mode or unidirectional common mode
- o 2,000 Watts Peak Pulse Power (8/20µs)
- o SO-8 Package

PSR05

- o ***Low Capacitance*: 10pF**
- o Low Leakage Current < 5.0µA
- o ESD > 25 kilovolts
- o Protects Two Lines
- o SOT-143 Package

PSRDA-6 Series

- o Capacitance: 15 pF
- o ESD > 40 kilovolts
- o Protects Up to 6 Six I/O Ports
- o 500 Watts Peak Pulse Power (8/20µs)
- o SO-8 Package

PSLC Series

- o Low Capacitance: 10pF
- o Low Clamping Voltage
- o Available in (6) Voltage Types
- o ESD > 40 kilovolts
- o Unidirectional & Bidirectional Configurations
- o 350 Watts Peak Pulse Power (8/20µs)
- o SOT-143 Package

SFC05-4

- o Chip Scale Packaging
- o ESD > 25 kilovolts
- o Protects Up to 5 Uni or 4 Bidirectional Lines
- o 300 Watts Peak Pulse Power (8/20µs)

PPxxxxSA, SB & SC Series

- o Peak Off-State Voltage from 58 to 300 Volts
- o Bidirectional for Common Mode Protection
- o Low Capacitance for T1/E1 Trunk & Line Card Applications
- o Provides Protection in Accordance with FCC Part 68, UL1459,Bellcore 1089, ITU-TK.20 and K.21 Compliant
- o DO-214AA Packaging

DEVICE CHARACTERISTICS

PART NUMBER	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1 mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE @I_P = 1A V_C VOLTS	MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D µA	MAXIMUM CAPACITANCE @ 0V, 1 MHz C pF
GBLC03*	3.3	4.0	7.0	75	3
GBLC05*	5.0	6.0	9.8	5	3
GBLC08*	8.0	8.5	13.4	2	3
GBLC12*	12.0	13.3	19.0	1	3
GBLC15*	15.0	16.7	24.0	1	3
GBLC18*	18.0	20.0	29.0	1	3
GBLC24*	24.0	26.7	43.0	1	3
PSR05	5.0	6.0	9.8	5	10
PSLC03*	3.3	4.0	9.0	125	10
PSLC05*	5.0	6.0	11.0	20	10
PSLC08*	8.0	8.5	16.6	10	10
PSLC12*	12.0	13.3	24.0	1	10
PSLC15*	15.0	16.6	30.0	1	10
PSLC24*	24.0	26.7	-	1	10
PSRDA3.3-6	3.3	4.0	6.5	125	15
PSRDA05-6	5.0	6.0	8.5	20	15
PLC03-6	6.0	6.8	15.0V @ 50A	25	18
SFC05-4	5.0	6.0	9.5V @ 5A	10	150

**Bidirectional Configuration Offered. Add a "C" suffix when ordering, i.e., GBLCXXC, PSLCXXC*

Surge Ratings	Ipp 2/10µs Amps	Ipp 10/160µs Amps	Ipp 10/560µs Amps	Ipp 10/1000µs Amps	SWITCHING VOLTAGE	HOLDING CURRENT	OFF-STATE CURRENT	TYPICAL CAPACITANCE
PPxxxxSA	125	100	50	50	77-400	150	5µA	30-60
PPxxxxSB	300	150	100	80	77-400	150	5µA	30-60
PPxxxxSC	500	200	160	100	77-400	150	5µA	60-120

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 destructive effects of Lightning, Electrostatic Discharge (ESD), Nuclear Electromagnetic Pulse (NEMP) and Inductive Switching. With over 25 years of engineering and manufacturing experience, ProTek designs TVS devices that provide application specific protection solutions for voice, video and data related systems, industrial controls, military and more.

Contact ProTek for more information about other application specific brochures:

- ✔ *Wireless Communications - Cellular Phones*
- ✔ *Network Systems*
- ✔ *Military Applications (Modules)*
- ✔ *Wireless Communications - PDAs*
- ✔ *Wired Communications - Point of Sale*
- ✔ *Wired Communications - Set-Top Boxes*
- ✔ *Military Applications - COTS*
- ✔ *2002 Short form catalog*
- ✔ *2002 CD Rom*

Only One Name Means ProTek'tion ™

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