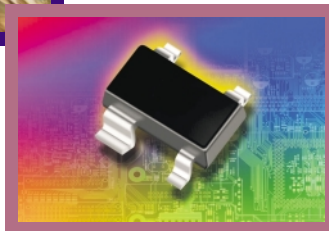


TVS Solutions For  
**Network Systems**



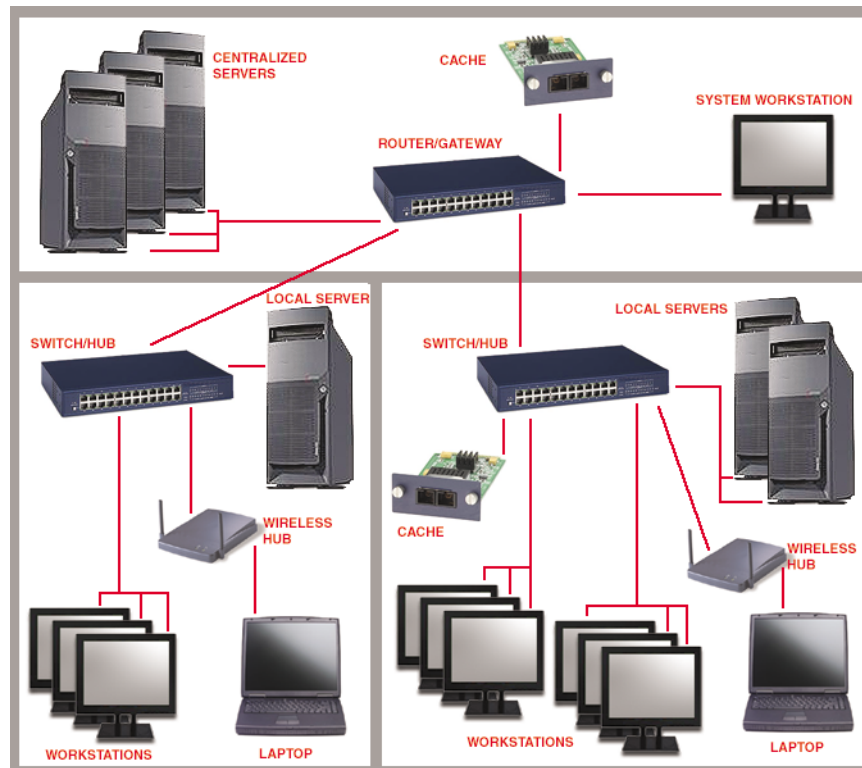
## TRANSIENT VOLTAGE SUPPRESSION

### Networking

The following depicts a typical WAN configuration consisting of centralized servers, workstations, hubs and inter-building connections. This configuration is susceptible to damage caused by ESD, EFT and secondary lightning threats.

Protection from the above threats, lies in individual discrete protection for I/O ports at all equipment levels. Protection can also be provided at the system interconnecting ports. The protection schemes outlined are recommended for low insertion loss, high signal integrity and low noise/crosstalk with increasing bandwidth.

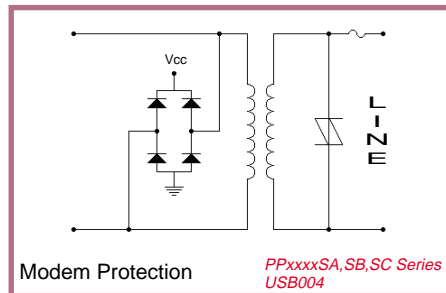
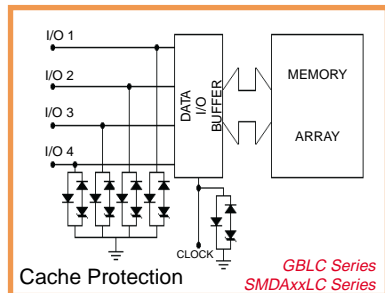
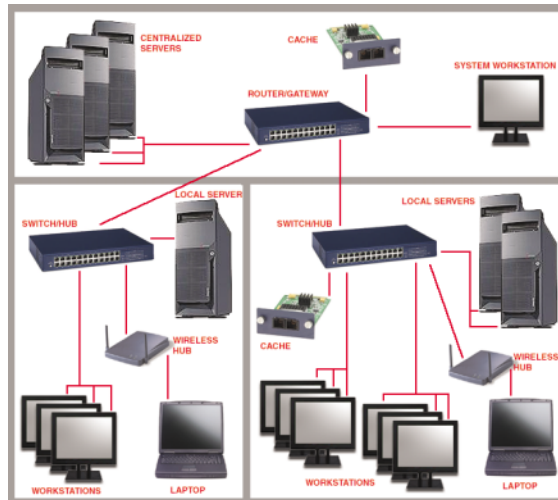
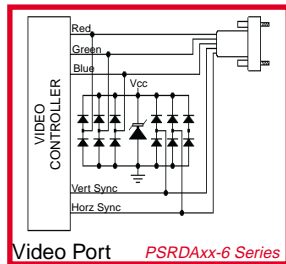
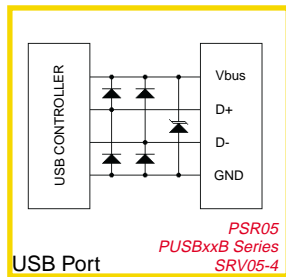
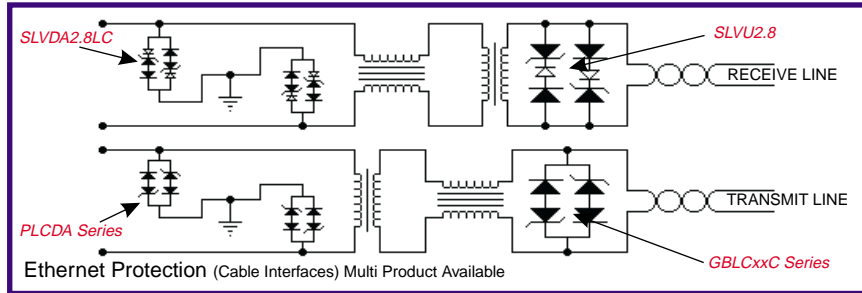
### TYPICAL WAN/LAN



Transient Voltage Suppression (TVS) devices provide protection at board-level ports from the effects of Electrostatic Discharge (ESD) as defined by IEC 61000-4-2. TVS also provides lightning and AC power fault protection meeting standard requirements such as IEC 61000-4-4, 4-5 and Bellcore GR1089.

## APPLICATION NOTES

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



## PREFERRED PROTEK'TION™



### *GBLC & GBLCxxC Series*

- **ULTRA LOW Capacitance: 3pF**
- ESD > 40 kilovolts
- Unidirectional & Bidirectional Configurations
- 350 Watts Peak Pulse Power per Line(td=8/20µs)
- SOD-323 Package



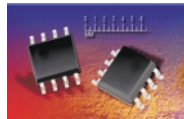
### *SLVU2.8*

- **ULTRA LOW Capacitance: 2.5pF**
- ESD > 40 kilovolts
- Low Leakage Current: 0.1mA
- 600 Watts Peak Pulse Power per Line (td=8/20µs)
- SOT-23 Package



### *SRV05-4*

- **ULTRA LOW Capacitance 3.5pF**
- Protects Four Bidirectional Lines
- ESD > 40 kilovolts
- 500 Watts Peak Pulse Power per Line(td=8/20µs)
- SOT-23-6 Package



### *PUSBxxB Series*

- Combination Steering Diode and TVS Array
- ESD > 40 kilovolts
- Protects 2 Data Lines or I/O Ports
- 500 Watts Peak Pulse Power per Line(td=8/20µs)
- SOIC-8 Package



### *PSR05*

- **LOW Capacitance: 10pF**
- Low Leakage Current < 5.0µA
- ESD > 40 kilovolts
- Protects Two Lines
- SOT-143 Package



### *PSRDAxx-6 Series*

- Capacitance < 15 pF
- ESD > 40 kilovolts
- Protects Up to 6 Six I/O Ports
- 500 Watts Peak Pulse Power per Line(td=8/20µs)
- SOIC-8 Package



### *USB004*

- **ULTRA LOW Capacitance: 3pF**
- Low Leakage Current < 1.0µA
- ESD > 40 kilovolts
- Protects Two Lines
- SOT-143 Package



### *PPxxxxSA, SB & SC*

- **Provides Protection in Accordance with FCC Part 68, UL 1459, Bellcore 1089, ITU-TK.20 & K21 (Compliant)**
- Surge Current Capability (see rating table on succeeding page)
- Low Capacitance for T1/E1 trunk & line card applications
- DO-214AA Package

## DEVICE CHARACTERISTICS

PART NUMBER	RATED STAND-OFF VOLTAGE $V_{WM}$ VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1 mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE @ $I_p = 5$ A $V_c$ VOLTS	MAXIMUM LEAKAGE CURRENT @ $V_{WM}$ $I_o$ $\mu$ A	MAXIMUM CAPACITANCE @ 0V, 1 MHz C pF
GBLC03*	3.3	4.0	12.0	75	3
GBLC05*	5.0	6.0	12.7	5	3
GBLC08*	8.0	8.5	13.0	2	3
GBLC12*	12.0	13.3	23.0	1	3
GBLC15*	15.0	16.7	29.0	1	3
GBLC24*	24.0	26.7	54.0	1	3
PLCDA03	3.3	4.5	9.0	125	5
PLCDA05	5.0	6.0	11.0	20	5
PLCDA08	8.0	8.5	16.6	10	5
PLCDA12	12.0	13.3	24.0	1	5
PLCDA15	15.0	16.7	30.0	1	5
PLCDA24	24.0	26.7	55.0	1	5
PUSB3B	3.3	4.0	6.2	125	15
PUSB6B	5.25	6.0	8.1	10	15
PSR05	5.0	6.0	8.9	5	10
PSRDA3,3-6	3.3	4.0	6.5	125	15
PSRDA05-6	5.0	6.0	8.5	20	15
SRV05-4	5.0	6.0	7.9	5	3.5
SMDA03LC*	3.3	4.5	9.0	125	15
SMDA08LC*	5.0	6.0	11.0	20	15
SMDA08LC*	8.0	8.5	16.6	10	15
SMDA12LC*	12.0	13.3	24.0	2	15
SMDA15LC*	15.0	16.7	30.0	2	15
SMDA24LC*	24.0	26.7	55.0	1	15

\*Bidirectional Configuration Offered. Add a "C" suffix when ordering, i.e., GBLC05C.

PART NUMBER	REPETITIVE PEAK PULSE VOLTAGE @ 10 $\mu$ A $V_{RRM}$ VOLTS	MAXIMUM REVERSE LEAKAGE CURRENT (PER DIODE) @ 5V $I_r = \mu$ A	MAXIMUM FORWARD VOLTAGE @ 20mA $V_f$ VOLTS	MAXIMUM CAPACITANCE (BETWEEN LINE AND GROUND) pF
USB004	20	1	0.95	6

PART NUMBER	REVERSE STAND-OFF VOLTAGE Pin 3 to 1 or Pin 2 to 1 $V_{WM}$ VOLTS	CLAMPING VOLTAGE @ 5 Amp 8/20 $\mu$ s $V_c$ VOLTS	CLAMPING VOLTAGE 8/20 $\mu$ s $V_c$ VOLTS	STANDBY (LEAKAGE) CURRENT $I_o$ $V_{WM} = 2.8$ v $\mu$ A	CAPACITANCE (F = 1MHz) @ 0V C pF
SLVU2.8	Pin 3 to 1 or Pin 2 to 1 2.8	Pin 2 to 1 8.5	@ 24 Amp Pin 2 to 1 15 VOLTS	Pin 3 to 1 or Pin 2 to 1 0.1	Pin 2 to 1 (3 N.C.) 2.5
SLVDA2.8LC	2.8	6.2	@ 30 Amp 21 VOLTS	1.0	5

Surge Ratings	$I_{pp}$ 2/10 $\mu$ s Amps	$I_{pp}$ 10/160 $\mu$ s Amps	$I_{pp}$ 10/560 $\mu$ s Amps	$I_{pp}$ 10/1000 $\mu$ s Amps	SWITCHING VOLTAGE	HOLDING CURRENT	OFF-STATE CURRENT	TYPICAL CAPACITANCE
PPXXXXSA	N/A	100	50	N/A	77-400	150	5 $\mu$ A	30-60
PPXXXXSB	N/A	150	100	N/A	77-400	150	5 $\mu$ A	30-60
PPXXXXSC	500	200	160	100	77-400	150	5 $\mu$ A	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:*

- ✓ *Computer Equipment/Systems*
- ✓ *Network Systems*
- ✓ *Military Applications (Modules)*
- ✓ *PDA's*
- ✓ *Telecom*
- ✓ *Set-Top Boxes*
- ✓ *xDSL*
- ✓ *2002 Short Form Catalog*
- ✓ *2002 CD-ROM*
- ✓ *Wired Communications - Point of Sale Register*

***Only One Name Means ProTek'tion™***

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