



CHENMKO ENTERPRISE CO.,LTD

LOW CAPACITANCE SURFACE MOUNT TVS DIODES

LTVSQ5V5ESGP

Halogens free devices

APPLICATION

- *PC/Notebook USB2.0/IEEE1394 ports.
- * Cellular phone and PCS mobile handsets.
- *DVI interfaces.
- * Cordless telephones
- *Wireless data (WAN/LAN) ayatems.
- *PDAs

FEATURES

- *Four ultra-low input capacitance (1 pF typ.)
- *ESD rail-to rail protection diodes.
- *Low voltage clampant due integrated Zener diode.
- * ESD IEC 61000-4-2 level 4,+/-8KV contact.
- *Discharge compliant protection.

MECHANICAL DATA

Case: JEDEC SC-74/SOT-457 molded plastic

Polarity: See connection diagram

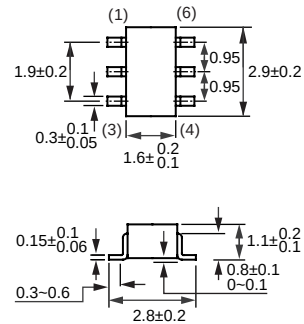
Mounting Position: Anym

MARKING

- * C96

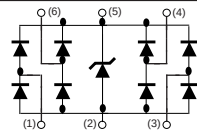


SC-74/SOT-457/SOT-23-6L



Dimensions in millimeters SC-74/SOT-457/SOT-23-6L

CIRCUIT



MAXIMUM RATINGS (At TA = 25°C unless otherwise noted)

RATINGS	SYMBOL	VALUE	UNITS
Maximum.DC Input Voltage Range	V _{I/O}	5.5	Volt
Electrotatic Discharge,all Pins(IEC 61000-4-2,Level 4, Contact)	ESD	+/-8	KVolt
Device Storage Temperature Range	T _{STG}	-55 to +125	°C

ELECTRICAL CHARACTERISTICS (At TA = 25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP	MAX	UNITS
Pin capacitance to ground Pins 1,3,4,6	C _{I/O}	V _{dc} =0V, f=1MHz, Pin 5=3.0V		1.0		pF
Diade reverse leakage current Pins 1,3,4,6 to ground	I _{lkg}	V=3.0V			100	nA
Zener diode capacitance to ground Pin 5 to 2	C _{Zener}	V _{dc} =0V, f=1MHz, Pin 5=3.0V		40		pF
Zener diode breakdown voltage Pin 5 to 2	B _{BR/I/O}	I=1mA	6		9	Volt
Forward voltage	V _F			0.7		Volt

RATING CHARACTERISTIC CURVES (LTVSQ5V5ESGP)

FIG. 1 - PULSE WAVE FORM

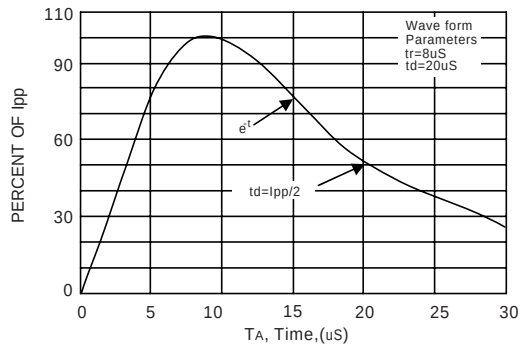


FIG. 2 - NON-REPETITIVE PEAK PULSE POWER vs PULSE TIME

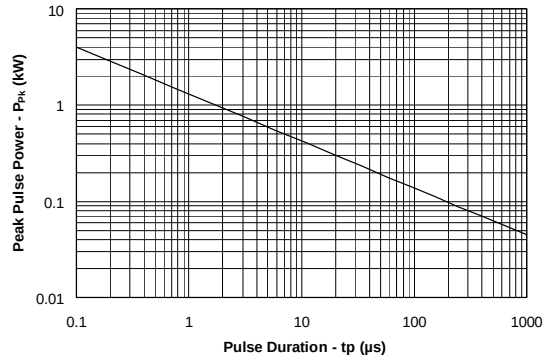


FIG. 3 - CLAMPING Voltage vs PEAK PULSE CURRENT

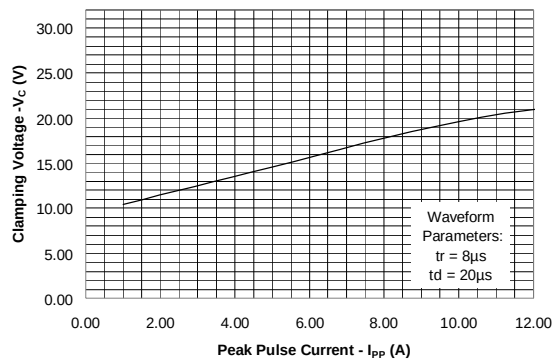


FIG. 4 - FORWARD VOLTAGE vs FORWARD CURRENT

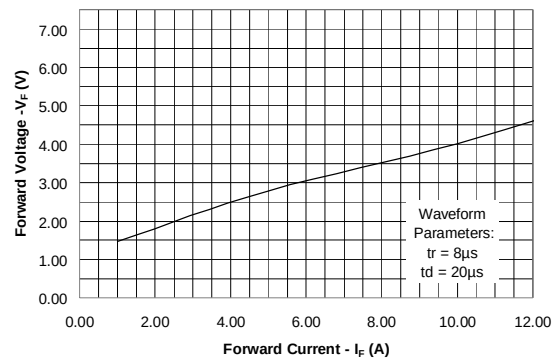


FIG. 5 - CAPACITANCE vs REVERSE VOLTAGE

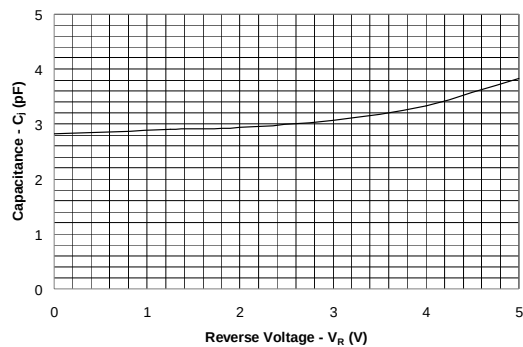
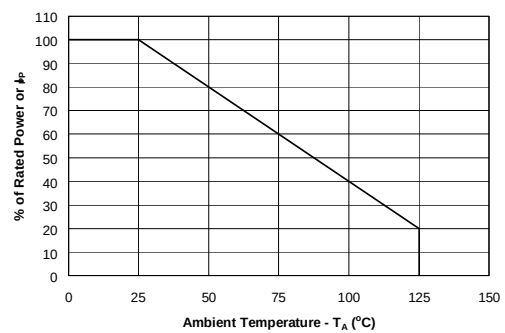


FIG. 6 - POWER DERATING CURVE



RATING CHARACTERISTIC CURVES (LTVSQ5V5ESGP)

APPLICATION INFORMATION

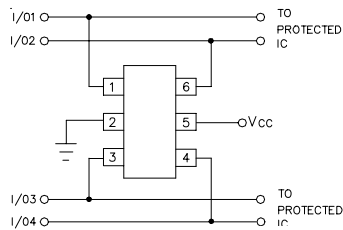
Four High-Speed Data Lines Protection

The LTVSQ5V5ESGP TVS diode is designed to protect up to four data lines from transient over-voltages by clamping them to a fixed reference. When the voltage on the protected line(s) exceeds the reference voltage (plus diode V_F), the steering diodes are forward biased, conducting the transient current away from the protected circuitry. The data lines are connected to pins 1, 2, 4 and 6. The negative reference (REF1) is connected to pin 2 (This pin should be connected directly to the ground plane on the PCB for best results). The path length is kept as short as possible to minimize parasitic inductance. The positive reference (REF2) is connected to pin 5.

The typical options for connecting the positive reference are as follows:

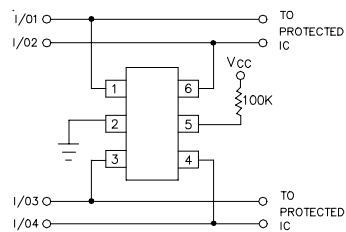
DATA LINE AND POWER SUPPLY PROTECTION USING VCC AS REFERENCE

To protected data lines and the power line, connect pin 5 directly to the positive supply rail (VCC). In this configuration, the data lines are referenced to the supply voltage. The internal TVS diode prevents over-voltage on the supply rail.



DATA LINE PROTECTION WITH BIAS AND POWER SUPPLY ISOLATION RESISTOR

The LTVSQ5V5ESGP can be isolated from the power supply by adding a series resistor between pin 5 and VCC (A resistor value of 100kohm is recommended). The internal TVS and steering diodes remain biased, providing the advantage of even lower capacitance.



RATING CHARACTERISTIC CURVES (LTVSQ5V5ESGP)

DATA LINE PROTECTION USING INTERNAL TVS DIODE AS REFERENCE

In applications where no positive supply reference is available, or complete supply isolation is desired, the internal TVS may be used as the reference. In this case, pin 5 is not used. The steering diodes will begin to conduct when the voltage on the protected line exceeds the working voltage of the TVS (plus one diode drop).

