

HIGH SPEED TVS DIODE ARRAY

APPLICATIONS

- ✓ Ethernet - 10/100 Base T
- ✓ RS-485
- ✓ xDSL & ATM
- ✓ SCSI & USB
- ✓ Audio/Video I/O Ports

IEC COMPATIBILITY (EN61000-4)

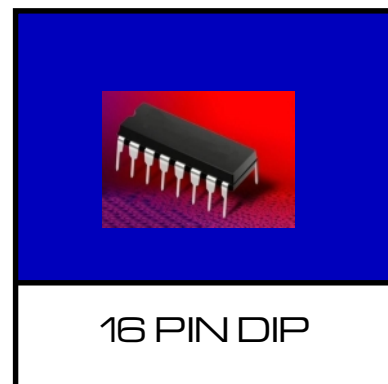
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns
- ✓ 61000-4-5 (Surge): 24A, 8/20 μ s Level 2 (Line to Ground) & Level 3 (Line to Line)

FEATURES

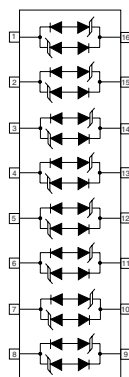
- ✓ 800 Watts Peak Pulse Power per Line ($t_p=8/20\mu$ s)
- ✓ Bidirectional Configuration
- ✓ ESD Protection > 40 kilovolts
- ✓ Available in Five Voltage Types: 5.0V to 24V
- ✓ Standard Dual-In-Line Package
- ✓ **PROTECTS UP TO EIGHT (8) LINES**
- ✓ **LOW CAPACITANCE: 15pF**

MECHANICAL CHARACTERISTICS

- ✓ Molded 16 Pin Dual-in-Line Package
- ✓ Weight 1.2grams (Approximate)
- ✓ Flammability Rating UL 94V-0
- ✓ Packaged in Tubes 25 per
- ✓ Marking: Logo, Part Number, Date Code & Pin 1 Indicated by DOT on Top of Package



CIRCUIT DIAGRAM



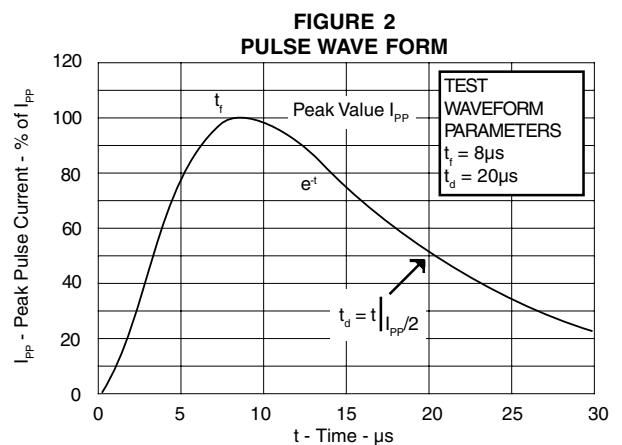
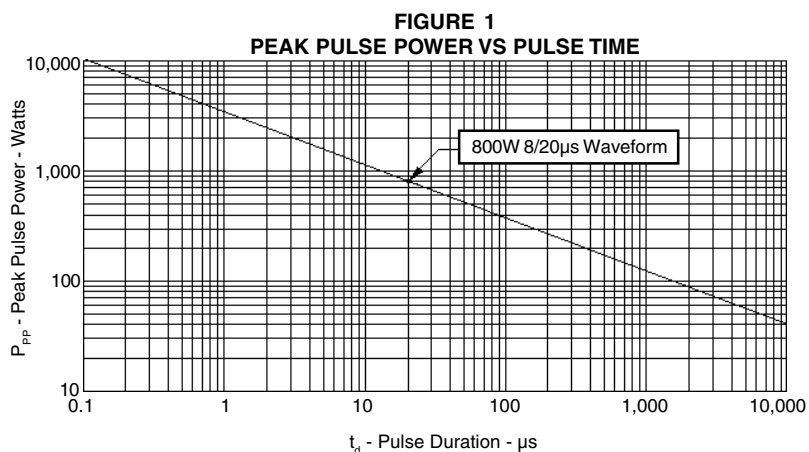
DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1	P_{PP}	800	Watts
Operating Temperature	T_J	-55°C to 150°C	°C
Storage Temperature	T_{STG}	-55°C to 150°C	°C
T Clamping (0 Volts To $V_{(BR)}$ MIN.)	T_C	$< 10 \times 10^{-9}$	Sec

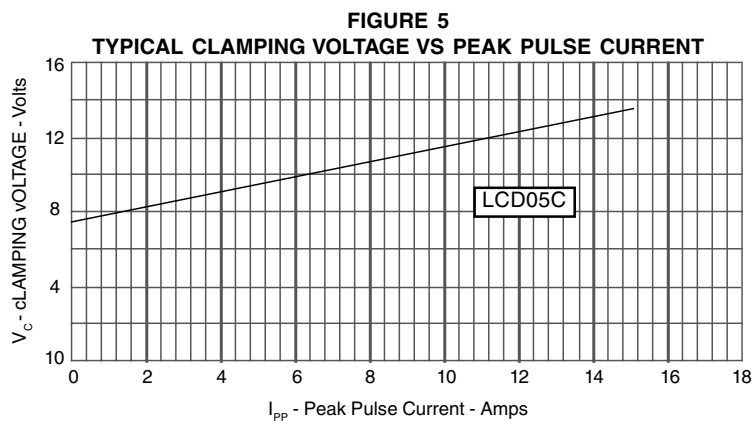
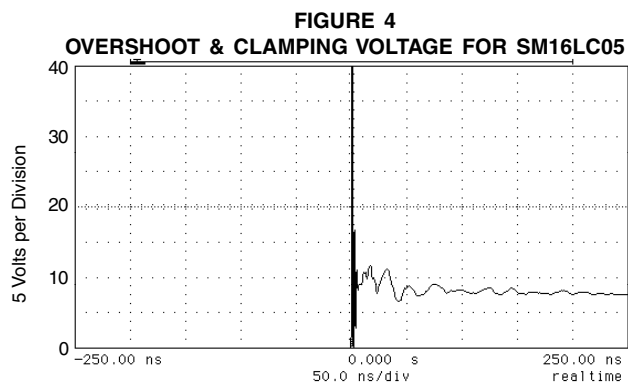
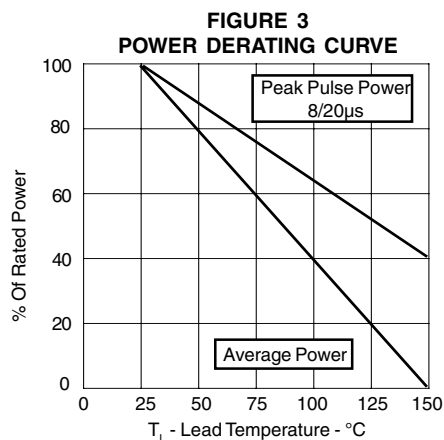
ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Notes 1)	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @ $I_p = 1 A$ V_C VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @ 8/20 μs V_C @ I_{PP}	MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA	MAXIMUM CAPACITANCE @ 0V, 1 MHz C pF	TEMPERATURE COEFFICIENT OF $V_{(BR)}$ $\theta V_{(BR)}$ mV/°C
LCD05C	5.0	6.0	9.8	24V @ 45A	100	15	3
LCD08C	8.0	8.5	12.3	25.5V @ 40A	10	15	9
LCD12C	12.0	13.3	19.0	32V @ 34A	4	15	16
LCD15C	15.0	16.7	25.5	38V @ 27A	4	15	17
LCD24C	24.0	26.7	40.0	48V @ 22A	4	15	26

Note 1: Tested on pin pairs 1 & 16, 2 & 15, 3 & 14, 4 & 13, 5 & 12, 6 & 11, 7 & 10 and 8 & 9.



GRAPHS



DEVICE SPECIFIC APPLICATION NOTE

The LCD Series are low capacitance, bidirectional TVS arrays that are designed to protect I/O or high speed data lines from the damaging effects of ESD or EFT. This product series has a surge capability of 800 Watts P_{pp} per line for an 8/20 μ s waveshape and offers ESD protection > 40kV.

BIDIRECTIONAL COMMON MODE CONFIGURATION (Figure 1)

Ideal for use in USB applications, the LCD Series provides up to eight (8) lines of protection in a common mode configuration as depicted in Figure 1.

Circuit connectivity is as follows:

- ✓ Pins 1, 2, 3, 4, 5, 6, 7, and 8 are connected to ground.
- ✓ Pins 16 and 15 connected to Port #1 D- and D+.
- ✓ Pins 14 and 13 connected to Port #2 D+ and D-.
- ✓ Pins 12 and 11 connected to Port #3 D- and D+.
- ✓ Pins 10 and 9 connected to Port #4 D+ and D-.

Circuit board Layout Recommendations

Circuit board layout is critical for Electromagnetic Compatibility (EMC) protection. The following guidelines are recommended:

- ✓ The protection device should be placed near the input terminals or connectors, the device will divert the transient current immediately before it can be coupled into the nearby traces.
- ✓ The path length between the TVS devices and the protected line should be minimized
- ✓ All conductive loops including power and ground loops should be minimized
- ✓ The transient current return path to ground should be kept as short as possible to reduce parasitic inductance.
- ✓ Ground planes should be used whenever possible. For multilayer PCBs, use ground vias.

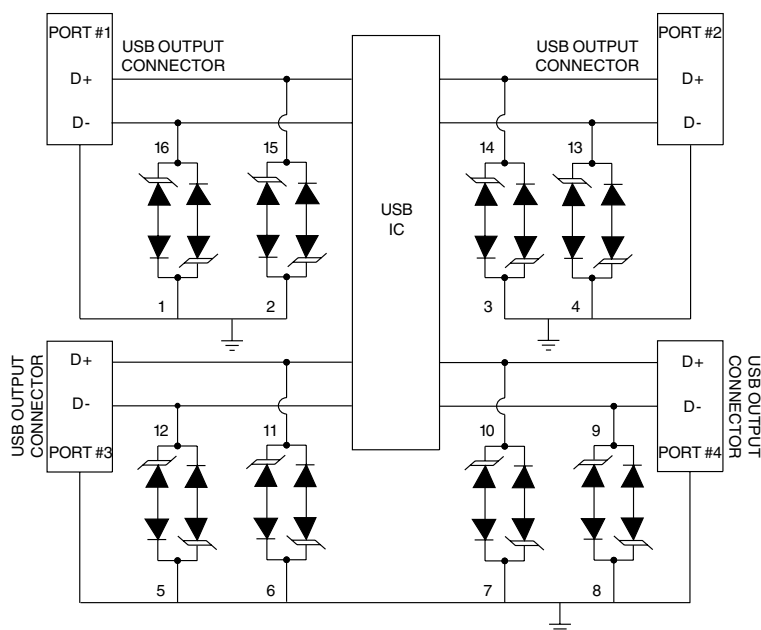
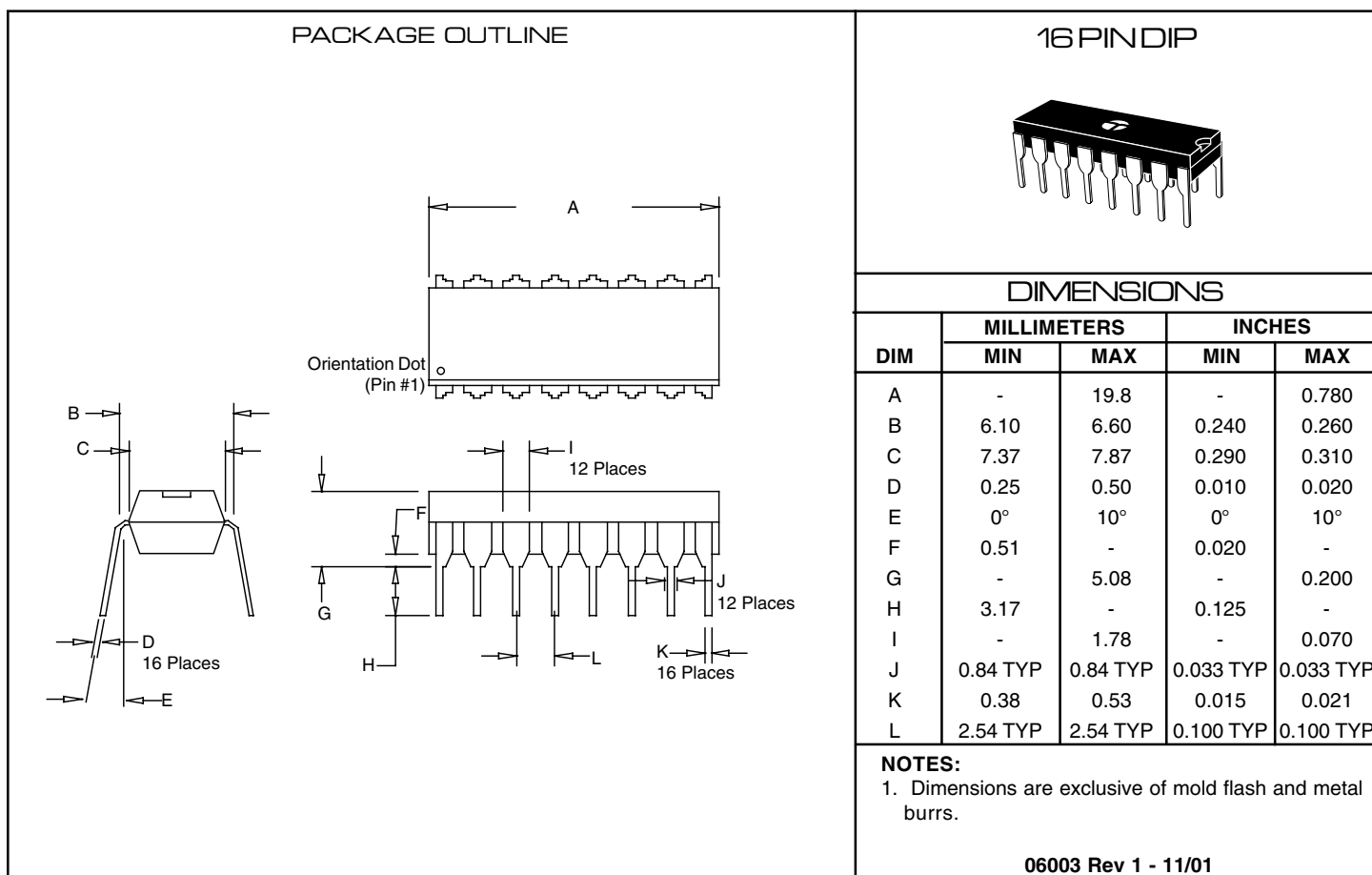


Figure 1. Typical Common- Mode USB Protection Circuit

LCD05C thru LCD24C

PACKAGE OUTLINE & DIMENSIONS



BULK ORDERING INFORMATION:

No Suffix: Bulk Quantities - 25 pieces per tube.

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