

LOW CAPACITANCE TVS ARRAY

APPLICATIONS

- ✓ T1/E1
- ✓ RS-422, RS-423 & RS-485
- ✓ SDH/SONET, ATM Equipment & Systems
- ✓ Industrial Controls & Monitoring
- ✓ Cable Modem Intra-Building Protection

IEC COMPATIBILITY (EN61000-4)

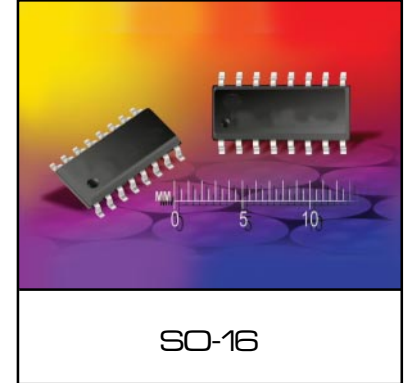
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns
- ✓ 61000-4-5 (Surge): 8/20 μ s - 95A, L4(Line-Gnd) & 48A, L4(Line-Line) & 83A, L2(Power)

FEATURES

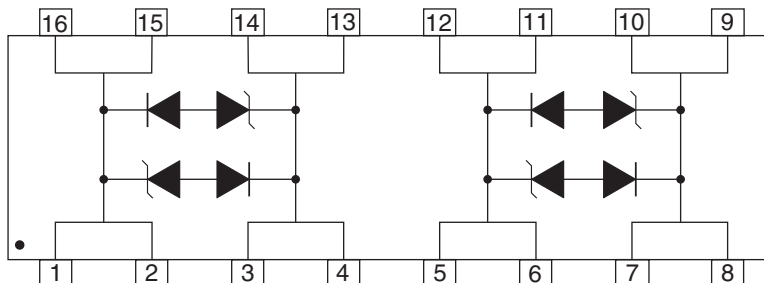
- ✓ 3,600 Watts Peak Pulse Power per Line (tp=8/20 μ s)
- ✓ 600 Watts Peak Pulse Power per Line (tp=10/1000 μ s)
- ✓ 100A (2/10 μ s) per Bellcore GR-1089 (Intra-Building)
- ✓ Bidirectional Configuration
- ✓ High Surge Capability: 80A (10/1000 μ s)
- ✓ Available in 2 Voltages: 6.5V & 12V
- ✓ Protects Two (2) Bidirectional Lines
- ✓ **LOW CAPACITANCE: < 30pF per LINE PAIR**
- ✓ RoHS Compliant in Lead-Free Versions

MECHANICAL CHARACTERISTICS

- ✓ Molded JEDEC SO-16 Package
- ✓ Weight 0.15 grams (Approximate)
- ✓ Available in Tin-Lead or Lead-Free Pure-Tin Plating(Annealed)
- ✓ Solder Reflow Temperature:
 - Tin-Lead - Sn/Pb, 85/15: 240-245°C
 - Pure-Tin - Sn, 100: 260-270°C
- ✓ Flammability rating UL 94V-0
- ✓ 16mm Tape and Reel Per EIA Standard 481
- ✓ Marking: Logo, Part Number, Date Code & Pin One Defined By Dot on Top of Package



PIN CONFIGURATION



DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ($t_p = 8/20\mu s$)	P_{PP}	3,600	Watts
Peak Pulse Power ($t_p = 10/1000\mu s$) - See Figure 1	P_{PP}	600	Watts
Operating Temperature	T_J	-55°C to 150°C	°C
Storage Temperature	T_{STG}	-55°C to 150°C	°C

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified					
PART NUMBER	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @ $I_{PP} = 10A$ V_C VOLTS	TYPICAL CAPACITANCE @ 0V, 1MHz C pF
SMLC6.5C-2	6.5	7.2	300	12.4	30
SMLC12C-2	12.0	13.3	2	19.9	30

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

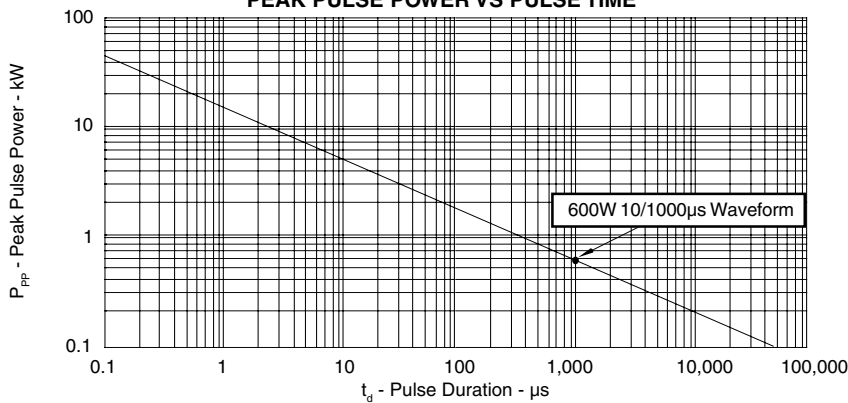
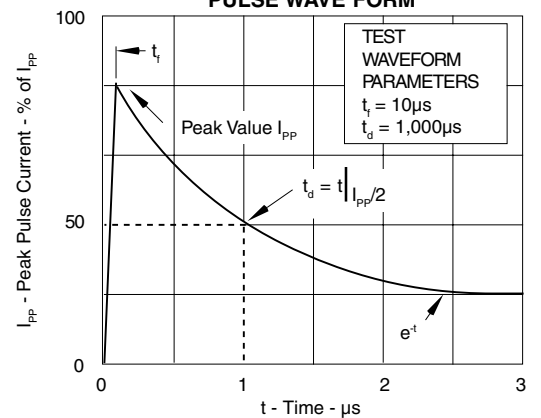
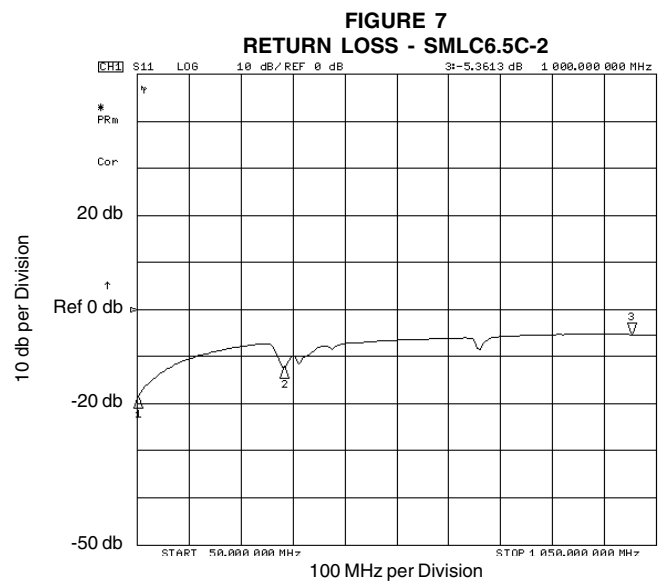
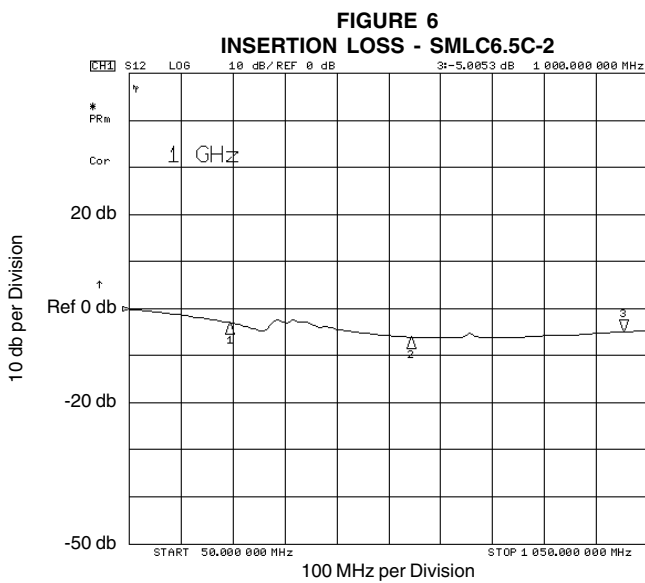
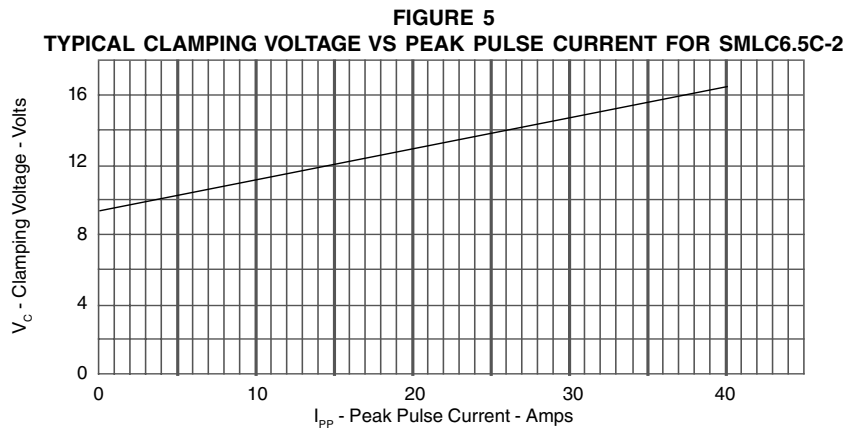
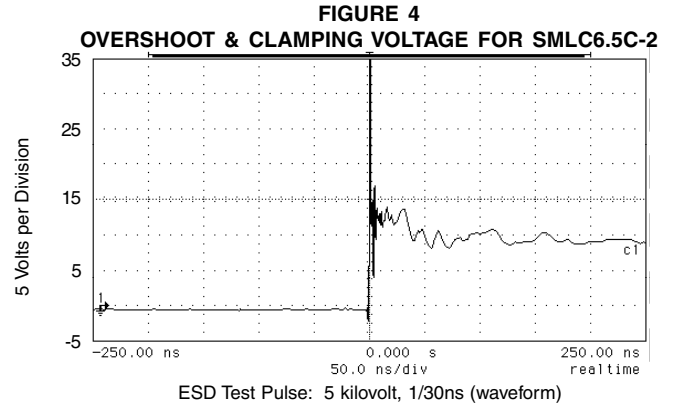
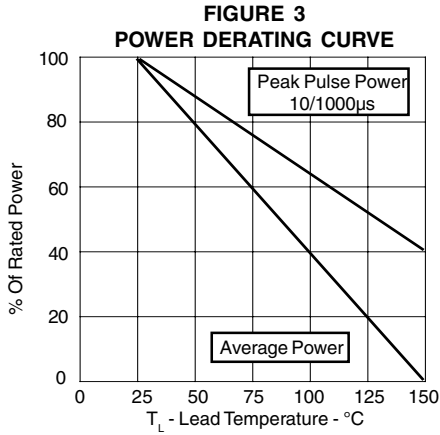


FIGURE 2
PULSE WAVE FORM



GRAPHS



APPLICATION NOTE

The SMLCxxC-2 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 600 Watts P_{pp} per line for an 10/1000 μ s waveform and ESD protection > 40kV.

BIDIRECTIONAL DIFFERENTIAL-MODE CONFIGURATION(Figure 1)

Ideal for use multimode transceiver I/O lines, telecommunications and wireless circuits, the SMLCxxC-2 Series provides up to two (2) line pairs of protection in a differential-mode T1/E1 application as depicted in Figure 1.

Circuit connectivity is as follows:

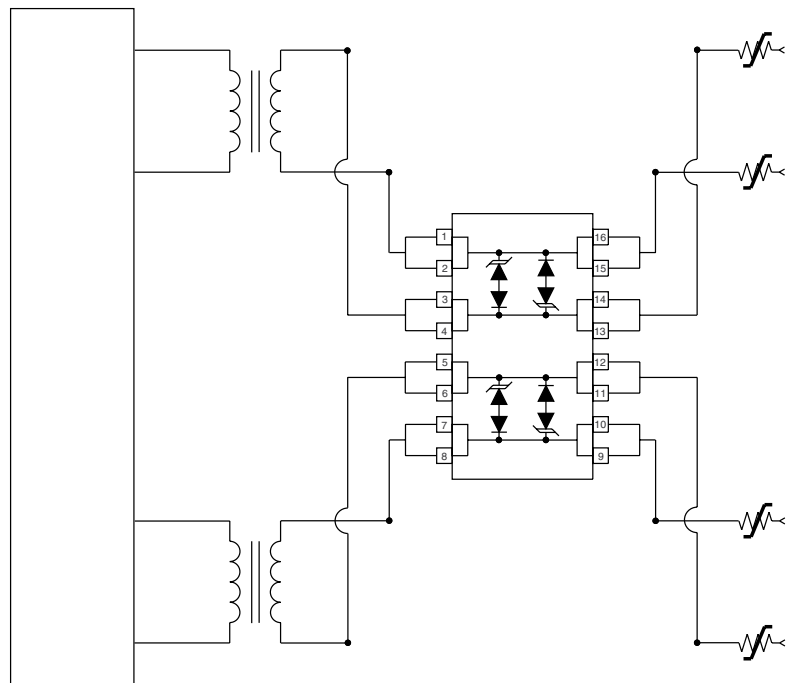
- ✓ Line 1 is connected to Pins 1, 2, 15 & 16.
- ✓ Line 2 is connected to Pins 3, 4, 13 & 14.
- ✓ Line 3 is connected to Pins 5, 6, 11, & 12.
- ✓ Line 4 is connected to Pins 7, 8, 9 & 10.

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 device 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. Differential-Mode Protection For T1/E1 Applications



PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE

SO-16

PACKAGE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.80	10.00	0.386	0.393
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC	1.27 BSC	0.05 BSC	0.05 BSC
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

MOUNTING PAD

NOTES

- T = Seating Plane and Datum Surface.
- Dimensions "A" and "B" are Datum.
- Dimensions "A" and "B" do not include mold protrusions.
- Maximum mold protrusion is 0.015" (0.380 mm) per side.
- Dimensioning and tolerances per ANSI Y14.5M, 1982.
- Dimensions are exclusive of mold flash and metal burrs.

TAPE & REEL/BULK ORDERING NOMENCLATURE

- Surface mount product is taped and reeled in accordance with EIA-481.
- Suffix-T7 = 7 Inch Reel - 1,000 pieces per 16mm tape, i.e., *SMLC6.5C-2-T7*.
- Suffix-T13 = 13 Inch Reel - 2,500 pieces per 16mm tape, i.e., *SMLC6.5C-2-T13*.
- Suffix- LF = Lead-Free, Pure-Tin Plating, i.e., *SMLC6.5C-2-LF-T7*.
- No Suffix = Product Shipped in Tubes of 37 pcs per Tube.

Outline & Dimensions: Rev 1 - 11/01, 06007

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