

BIDIRECTIONAL MONOLITHIC TVS DIODE ARRAY

APPLICATIONS

- Multiple I/O Port Protection
- Board Level Interface Connection
- RS-232, RS-422, RS-423 & RS-485

FEATURES

- IEC 1000-4-2, -4 & -5 Industry Requirements
- 500 Watts Peak Pulse Power Dissipation (8/20 μ s)
- 2,500 Watts Peak Pulse Power Dissipation per Package (8/20 μ s)
- ESD Protection > 40 kilovolts
- Bidirectional Monolithic Design
- Available in 5 Voltage Types Ranging from 5.0V to 24V
- UL 94V-0 Flammability Classification

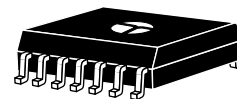
DESCRIPTION

The SM14MxxC family is a series of bidirectional, monolithic, silicon transient voltage suppressor (TVS) arrays designed for use in applications which require multiple line protection where space is at a premium. These devices provide board level ESD and EFT protection to sensitive I/O ports, TTL and MOS bus lines in accordance with IEC 1000-4-2, -4, -5 and European standard EN50082 and EN61000-4 requirements.

The SM14MxxC series has a peak pulse power rating (P_{PP}) of 500 Watts for an 8/20 μ s waveshape and 2,500 Watts P_{PP} rating per package for an 8/20 μ s waveshape. These devices can be used to protect up to eight (8) bidirectional lines.

MAXIMUM RATINGS	
P_{PP} @ 25°C (See Figure 1)	500 Watts, 8/20 μ s Waveshape
Operating & Storage Temperature	-55° to +150°C
Repetition Rate (Duty Cycle)	0.01%
$t_{Clamping}$ (0 Volts to $V_{(BR)}$ Min.)	Bidirectional: < 10 x 10 ⁻⁹ seconds
MECHANICAL CHARACTERISTICS	
Package	Molded SO-14 Surface Mount Package
Packaging	Tube or 16mm Tape per EIA 481
Common Ground Pins	Pin Nos. 1, 7, 8 & 14
Approximate Weight	0.15 grams
Device Markings	Logo & Part Number
Miscellaneous	Pin No. 1 Indicated by Dot on Top of Package

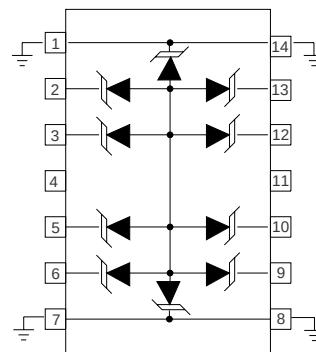
IEC 1000-4 COMPATIBLE



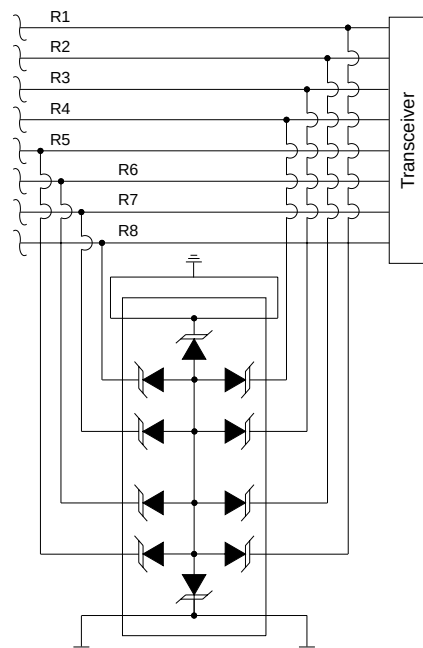
SO-14 PACKAGE

CIRCUIT DIAGRAM

SM14M05C
SM14M08C
SM14M12C
SM14M15C
SM14M24C



TYPICAL APPLICATION



ELECTRICAL CHARACTERISTICS @ 25° C Ambient Temperature

PROTEK PART NUMBER	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1 mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @ $I_P = 1$ A V_C VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @ $I_P = 10$ A V_C VOLTS	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
SM14M05C	5.0	6.0	9.8	12.5	100	500	3
SM14M08C	8.0	8.5	13.4	15.0	10	440	9
SM12M12C	12.0	13.3	19.0	24.0	2	385	16
SM14M15C	15.0	16.7	24.0	30.0	2	300	17
SM14M24C	24.0	26.7	43.0	51.0	2	200	20

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

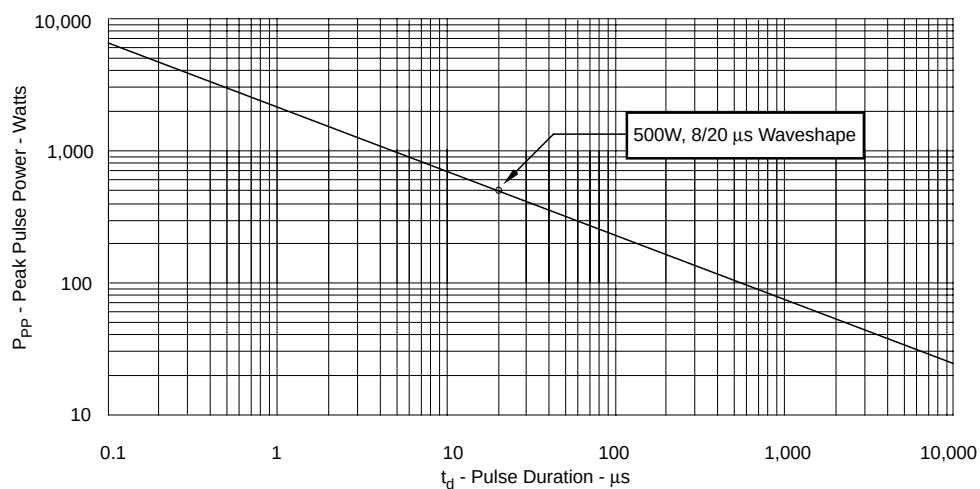


FIGURE 2
PULSE WAVE FORM

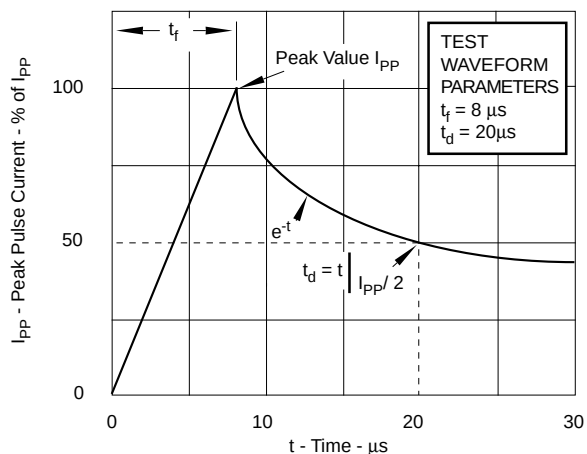
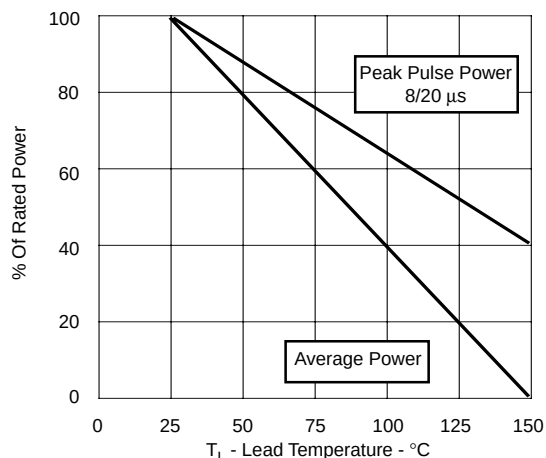
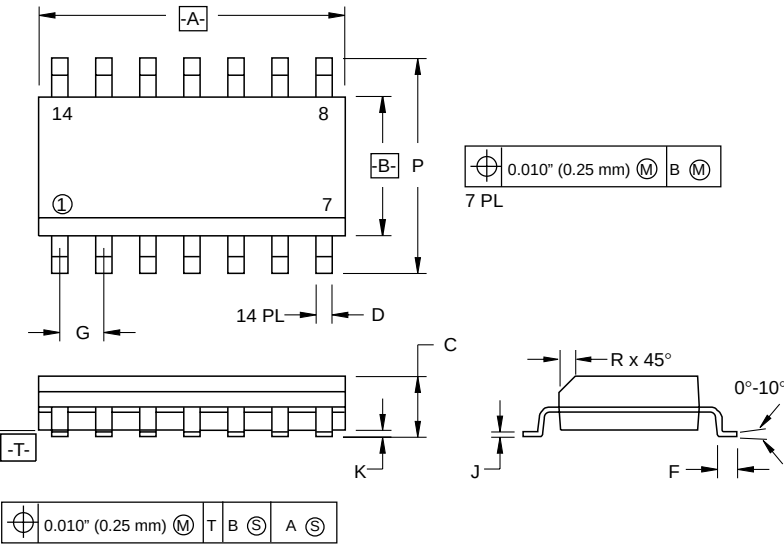


FIGURE 3
POWER DERATING CURVE



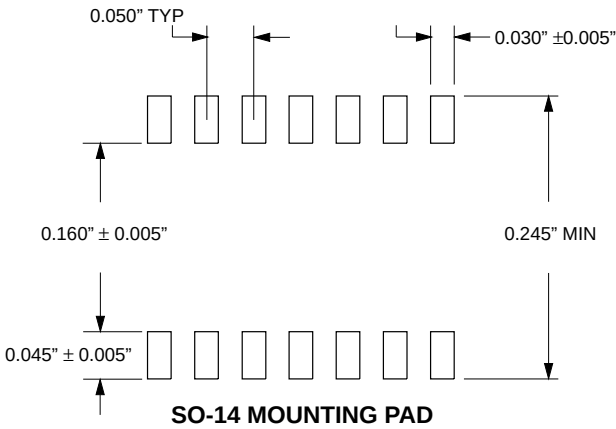
SO-14 PACKAGE OUTLINE



SO-14 PACKAGE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.55	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 BCS	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

- NOTES:
- 1. - T - = Seating Plane
 - 2. Dimension "A" is Datum.
 - 3. Dimension "A" and "B" do not include mold protusion.
 - 4. Maximum mold protusion is 0.15" (0.006 mm) per side.
 - 5. Dimensioning and tolerances per ANSI Y14.5M, 1992.



SO-14 MOUNTING PAD