PROTEK DEVICES®
.....Engineered solutions for the transient environment

SM14M05C thru SM14M24C

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

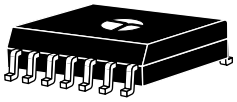
DESCRIPTION

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 μs waveshape and 2,500 Watts P_{PP} rating per package for an 8/20 μs 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 μs 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

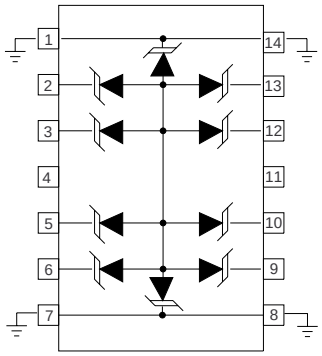
IEC 1000-4 COMPATIBLE



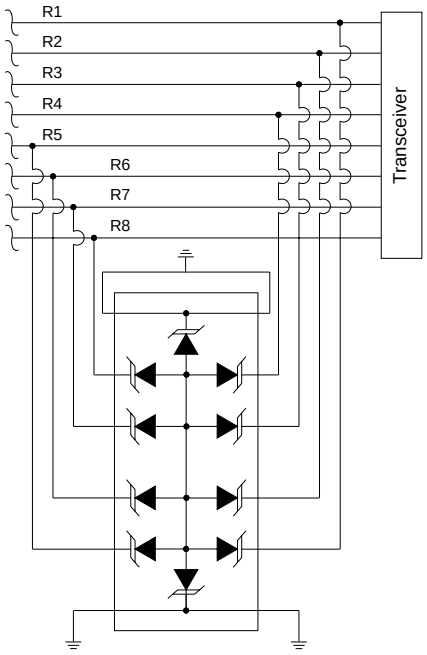
SO-14 PACKAGE

CIRCUIT DIAGRAM

SM14M05C
SM14M08C
SM14M12C
SM14M15C
SM14M24C



TYPICAL APPLICATION



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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

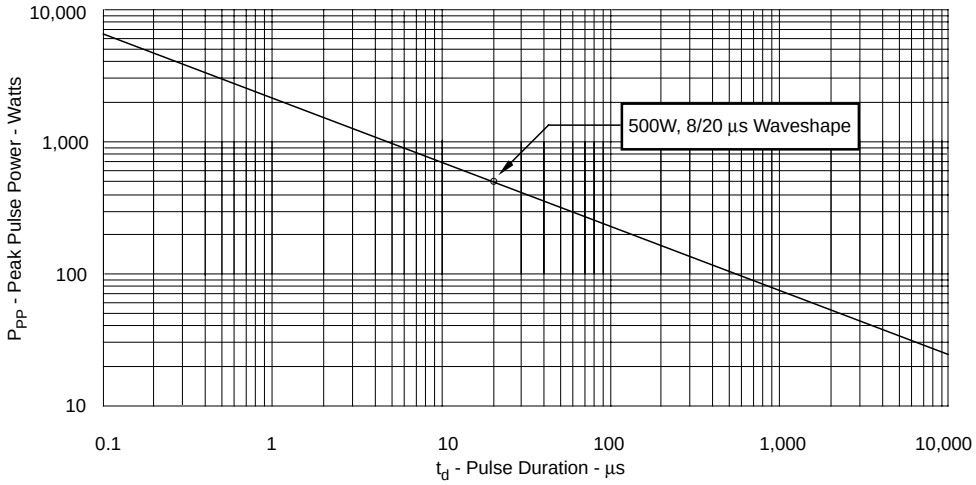


FIGURE 2
PULSE WAVE FORM

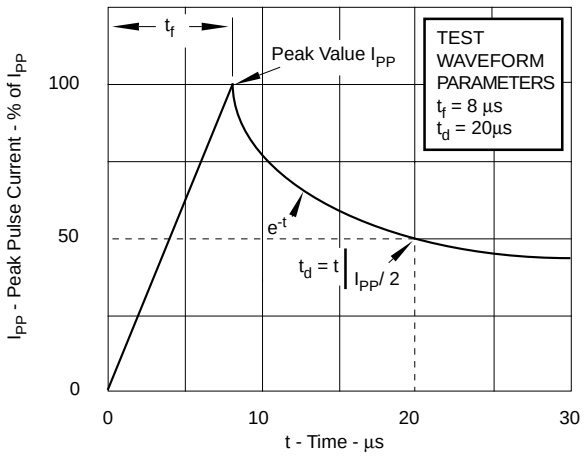
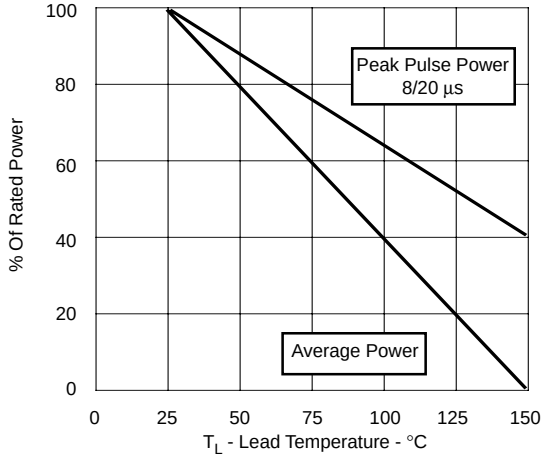
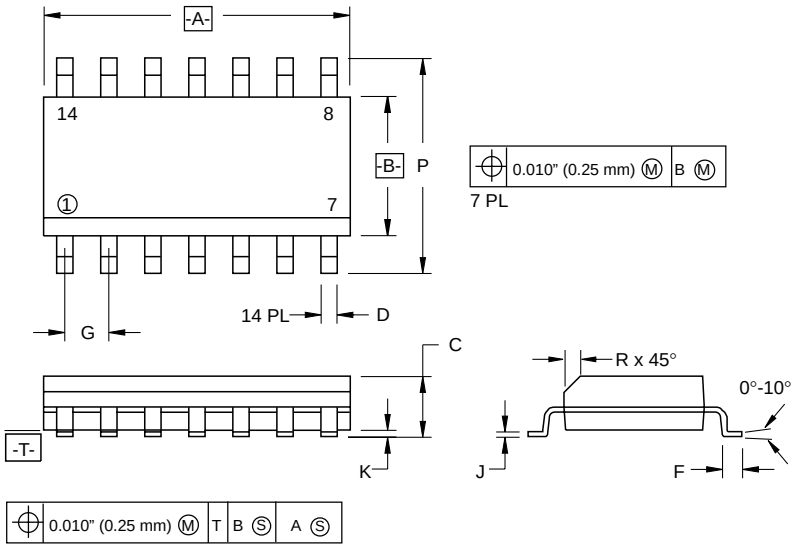
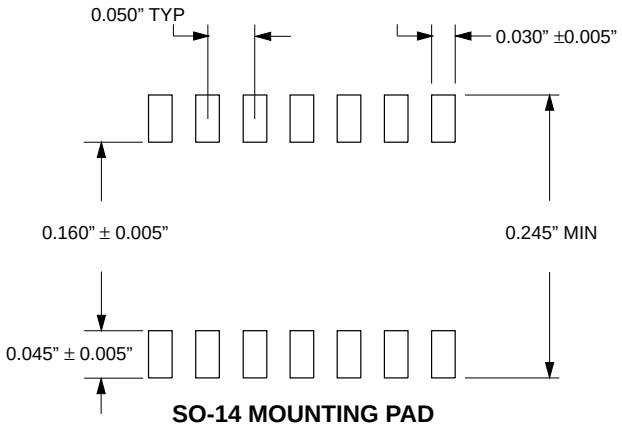


FIGURE 3
POWER DERATING CURVE



SO-14 PACKAGE OUTLINE





SO-14 MOUNTING PAD

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	0.0.10	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.