Microsemi
SCOTTSDALE DIVISION

SMDA03 thru SMDA24C, e3
and SMDB03 thru SMDB24C, e3

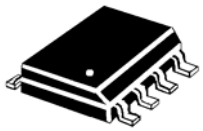
4 LINE TVSarray ™

DESCRIPTION

This TRANSIENT VOLTAGE SUPPRESSOR (TVS) array is packaged in an SO-8 configuration giving protection to 4 unidirectional or bi-directional data or interface lines. It is designed for use in applications where protection is required at the board level from voltage transients caused by electrostatic discharge (ESD) as defined in IEC 61000-4-2, electrical fast transients (EFT) per IEC 61000-4-4 and effects of secondary lightning. These TVS arrays have peak pulse power ratings of 300 watts (SMDA) and 500 watts (SMDB) for an 8/20 µsec pulse. They are suitable for protection of sensitive circuitry consisting of TTL, CMOS, DRAM's, SRAM's, HCMOS, HSIC and low-voltage interfaces from 3.3 volts to 24 volts

IMPORTANT: For the most current data, consult *MICROSEMI's* website: **http://www.microsemi.com**

APPEARANCE



FEATURES

- Protects 3.0/3.3 volt up to 24 volt components
- Protects 4 unidirectional or bidirectional lines
- Provides electrically-isolated protection
- RoHS Compliant devices available by adding "e3" suffix

PACKAGING

- Tape & Reel per EIA Standard 481
- 13 inch reel; 2,500 pieces (STANDARD)
- Carrier tubes; 95 pcs (OPTIONAL)

MAXIMUM RATINGS

- Operating Temperature: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- SMDA Peak Pulse Power: 300 watts (Fig. 1 and 2)
- SMDB Peak Pulse Power: 500 watts (Fig. 1 and 2)
- Pulse Repetition Rate: <.01%

MECHANICAL

- CASE: Void-free transfer molded thermosetting epoxy compound meeting UL 94V-0 flammability classification
- TERMINALS: Tin-Lead or RoHS Compliant annealed matte-Tin plating solderable per MIL-STD-750 method 2026
- WEIGHT: 0.066 grams (approximate)
- MARKING: MSC Logo, device marking code*, date code
- Pin #1 defined by dot on top of package

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless otherwise specified

PART NUMBER	DEVICE MARKING CODE *	STAND OFF VOLTAGE V_{WM} VOLTS	BREAKDOWN VOLTAGE V_{BR} I_{BR} = 1 mA VOLTS	CLAMPING VOLTAGE V_C I_{PP} = 1 A (Figure 2) VOLTS	CLAMPING VOLTAGE V_C I_{PP} = 5 A (Figure 2) VOLTS	STANDBY (LEAKAGE) CURRENT I_D @V_{WM} µA	CAPACITANCE f =1 MHz C @0V pF	TEMPERATURE COEFFICIENT of V_{BR} α_{VBR} mV/°C
		MAX	MIN	MAX	MAX	MAX	TYP	TYP
SMDA03	SDK	3.3	4	7	9	200	600	-3
SMDA03C	SDL	3.3	4	7	9	400	300	-5
SMDB03	PDK	3.3	4	7	9	200	600	-3
SMDB03C	PDL	3.3	4	7	9	400	300	-5
SMDA05	SDA	5.0	6	9.8	11	20	400	3
SMDA05C	SDB	5.0	6	9.8	11	40	200	1
SMDB05	PDA	5.0	6	9.8	11	20	400	3
SMDB05C	PDB	5.0	6	9.8	11	40	200	1
SMDA12	SDC	12.0	13.3	19	24	1	185	10
SMDA12C	SDD	12.0	13.3	19	24	1	95	8
SMDB12	PDC	12.0	13.3	19	24	1	185	10
SMDB12C	PDD	12.0	13.3	19	24	1	95	8
SMDA15	SDE	15.0	16.7	24	30	1	140	13
SMDA15C	SDF	15.0	16.7	24	30	1	70	11
SMDB15	PDE	15.0	16.7	24	30	1	140	13
SMDB15C	PDF	15.0	16.7	24	30	1	70	11
SMDA24	SDG	24.0	26.7	43	55	1	90	30
SMDA24C	SDH	24.0	26.7	43	55	1	45	28
SMDB24	PDG	24.0	26.7	43	55	1	90	30
SMDB24C	PDH	24.0	26.7	43	55	1	45	28

Note: Transient Voltage Suppressor (TVS) product is normally selected based on its stand off voltage V_{WM}. Product selected voltage should be equal to or greater than the continuous peak operating voltage of the circuit to be protected. Part numbers with a C suffix are bi-directional devices.

* Device marking has an e3 suffix added for the RoHS Compliant options, e.g. SDKe3, SDLe3, SDCe3, SDEe3, PDHe3, etc.

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SYMBOLS & DEFINITIONS

Symbol	Definition
V_{WM}	Stand Off Voltage: Maximum dc voltage that can be applied over the operating temperature range. V_{WM} must be selected to be equal or be greater than the operating voltage of the line to be protected.
V_{BR}	Minimum Breakdown Voltage: Minimum voltage the device will exhibit at a specified current
V_C	Clamping Voltage: Maximum clamping voltage across the TVS device when subjected to a given current at a pulse time of 20 µs.
I_D	Standby Current: Leakage current at $V_{WM.}$
C	Capacitance: Capacitance of the TVS as defined @ 0 volts at a frequency of 1 MHz and stated in picofarads.

GRAPHS

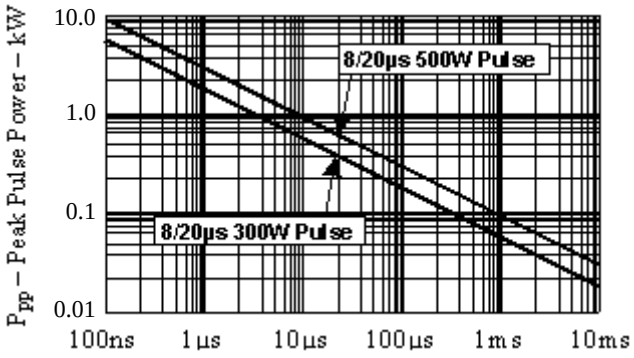


Figure 1
Peak Pulse Power vs Pulse Time

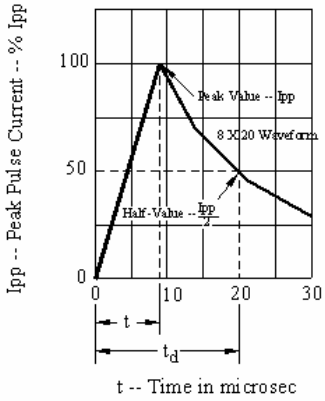
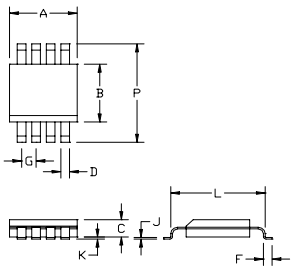


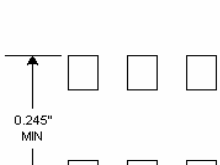
Figure 2
Pulse Wave Form

OUTLINE AND SCHEMATIC

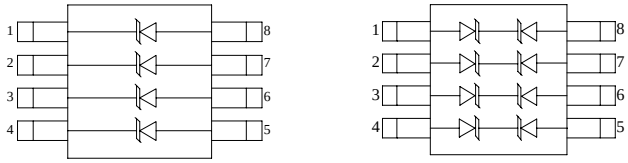


	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.188	0.197	4.77	5.00
B	0.150	0.158	3.381	4.01
C	0.053	0.069	1.35	1.75
D	0.011	0.021	0.28	0.53
F	0.016	0.050	0.41	1.27
G	0.050 BSC		1.27 BSC	
J	0.006	0.010	0.15	0.25
K	0.005	0.008	0.10	0.20
L	0.189	0.206	4.80	5.23
P	0.228	0.244	5.79	6.19

OUTLINE



PAD LAYOUT



Unidirectional Bidirectional

SCHEMATIC

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