Microsemi
SCOTTSDALE DIVISION

USB50803C thru USB50824C

Bidirectional TVSarray ™

PRODUCT PREVIEW

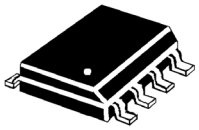
DESCRIPTION

This TRANSIENT VOLTAGE SUPPRESSOR (TVS) array is packaged in an SO-8 configuration giving protection to 2 Bidirectional 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 a peak power rating of 500 watts for an 8/20 µsec pulse. This array is suitable for protection of sensitive circuitry consisting of TTL, CMOS DRAM's, SRAM's, HCMOS, HSIC microprocessors, **UNIVERSAL SERIAL BUS (USB)** and I/O transceivers. The USB508XXC product provides board level protection from static electricity and other induced voltage surges that can damage or upset sensitive circuitry.

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

TVSarray™ SERIES



APPLICATIONS

- EIA-RS485 data rate: 5 Mbs
- 10 Base T Ethernet
- USB date rate: 900 Mbs

FEATURES

- Protects up to 2 bidirectional lines
- Surge protection per IEC 61000-4-2, IEC 61000-4-4
- Provides electrically isolated protection
- UL 94V-0 Flamability Classification
- ***ULTRA LOW CAPACITANCE 3 pF per line pair***
- ***ULTRA LOW LEAKAGE***

PACKAGING

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

MAXIMUM RATINGS

- Operating Temperature: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Peak Pulse Power: 500 watts (8/20 µs, Figure 1)
- Pulse Repetition Rate: < .01%

MECHANICAL

- Molded SO-8 Surface Mount
- Weight 0.066 grams (approximate)
- Marking: 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	STAND OFF VOLTAGE V_{WM} VOLTS	BREAKDOWN VOLTAGE V_{BR} @1 mA VOLTS	CLAMPING VOLTAGE V_C @ 1 Amp (Figure 2) VOLTS	CLAMPING VOLTAGE V_C @ 5 Amp (Figure 2) VOLTS	STANDBY 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	MAX	MAX
USB50803C	3C	3.3	4	8	11	200	3	-5
USB50805C	5C	5.0	6.0	10.8	13	40	3	1
USB50812C	12C	12.0	13.3	19	26	1	3	8
USB50815C	15C	15.0	16.7	24	32	1	3	11
USB50824C	24C	24.0	26.7	43	57	1	3	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.

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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. Vwm must be selected to be equal or be greater than the operating voltage of the line to be protected
V_{BR}	Minimum Breakdown Voltage: The 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

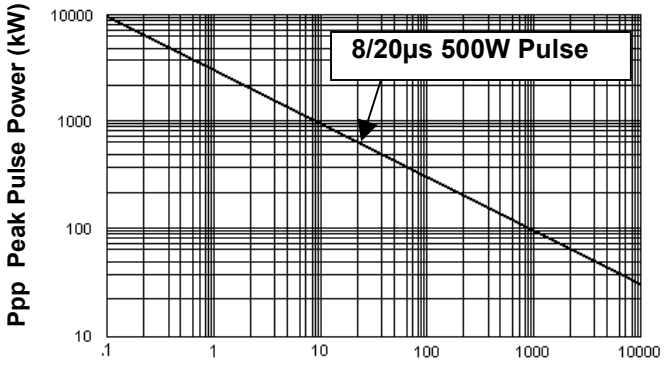


Figure 1
Peak Pulse Power Vs Pulse Time t = µsec

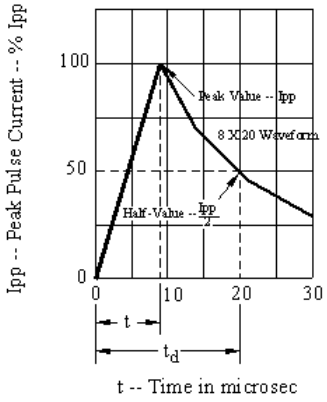
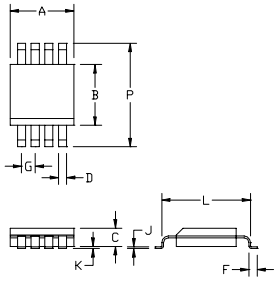


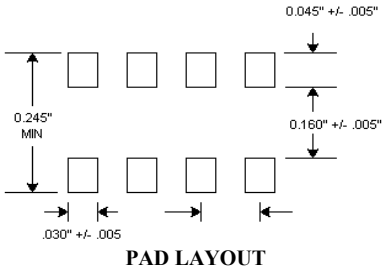
Figure 2
Pulse Wave Form

OUTLINE AND SCHEMATIC

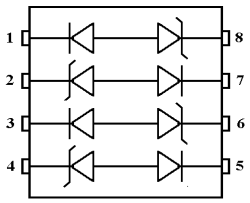


	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.188	0.197	4.77	5.00
B	0.150	0.158	3.81	4.01
C	0.053	0.069	1.35	1.75
D	0.011	0.021	0.28	0.53
F	0.016	0.050	0.41	1.27
G	0.050 BSC		1.27 BSC	
J	0.006	0.010	0.15	0.25
K	0.004	0.008	0.10	0.20
L	0.189	0.206	4.80	5.23
P	0.228	0.244	5.79	6.19

OUTLINE



PAD LAYOUT



SCHEMATIC

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