

# MA3075WALT1G, SZMA3075WALT1G

## Zener Transient Voltage Suppressor

### SOT-23 Dual Common Anode Zeners for ESD Protection

These dual monolithic silicon zener diodes are designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment and other applications. Their dual junction common anode design protects two separate lines using only one package. These devices are ideal for situations where board space is at a premium.

#### Features

- SOT-23 Package Allows Two Separate Unidirectional Configurations
- Low Leakage < 1  $\mu$ A @ 5.0 V
- Breakdown Voltage: 7.2–7.9 V @ 5 mA
- Low Capacitance (80 pF typical @ 0 V, 1 MHz)
- ESD Protection Meeting: 16 kV Human Body Model  
30 kV Air and Contact Discharge
- SZ Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

#### Mechanical Characteristics:

- Void Free, Transfer-Molded, Thermosetting Plastic Case
- Corrosion Resistant Finish, Easily Solderable
- Package Designed for Optimal Automated Board Assembly
- Small Package Size for High Density Applications

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Power Dissipation @ 100 $\mu$ s (Note 1)	$P_{pk}$	15	W
Steady State Power Dissipation Derate above 25°C (Note 2)	$P_D$	225 1.8	mW mW/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	°C/W
Maximum Junction Temperature	$R_{\theta JA}$	417	°C/W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to +150	°C
ESD Discharge MIL STD 883C – Method 3015-6 IEC61000-4-2, Air Discharge IEC61000-4-2, Contact Discharge	$V_{PP}$	16 30 30	kV

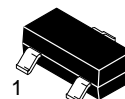
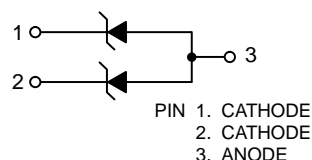
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Non-repetitive 100  $\mu$ s pulse width
2. Mounted on FR-5 Board = 1.0 X 0.75 X 0.062 in.



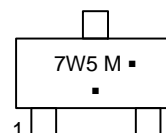
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SOT-23  
CASE 318  
STYLE 12

#### MARKING DIAGRAM



7W5 = Specific Device Code  
M = Date Code\*  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation and/or overbar may vary depending upon manufacturing location.

#### ORDERING INFORMATION

Device	Package	Shipping†
MA3075WALT1G	SOT-23 (Pb-Free)	3000 / Tape & Reel
SZMA3075WALT1G	SOT-23 (Pb-Free)	3000 / Tape & Reel

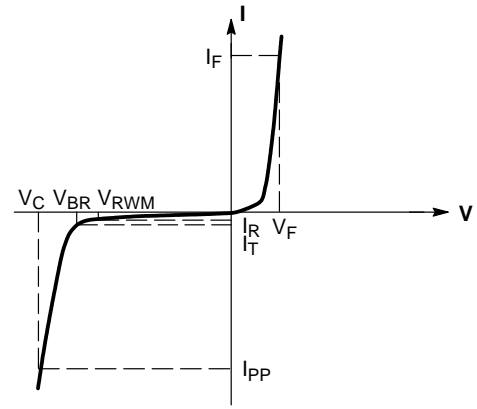
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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## ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Forward Voltage	$V_F$	$I_F = 10 \text{ mA}$		0.8	0.9	V
Zener Voltage <sup>*2</sup>	$V_Z$	$I_Z = 5 \text{ mA}$	7.2	7.5	7.9	V
Operating Resistance	$R_{ZK}$	$I_Z = 0.5 \text{ mA}$			120	$\Omega$
	$R_Z$	$I_Z = 5 \text{ mA}$		6	15	$\Omega$
Reverse Current	$I_{R1}$	$V_R = 5 \text{ V}$			1	$\mu\text{A}$
	$I_{R2}$	$V_R = 6.5 \text{ V}$			60	$\mu\text{A}$
Temperature Coefficient of Zener Voltage <sup>*3</sup>	$S_Z$	$I_Z = 5 \text{ mA}$	2.5	4.0	5.3	$\text{mV}/^\circ\text{C}$
Terminal Capacitance	$C_t$	$V_R = 0 \text{ V}$		80		$\text{pF}$

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



Uni-Directional TVS

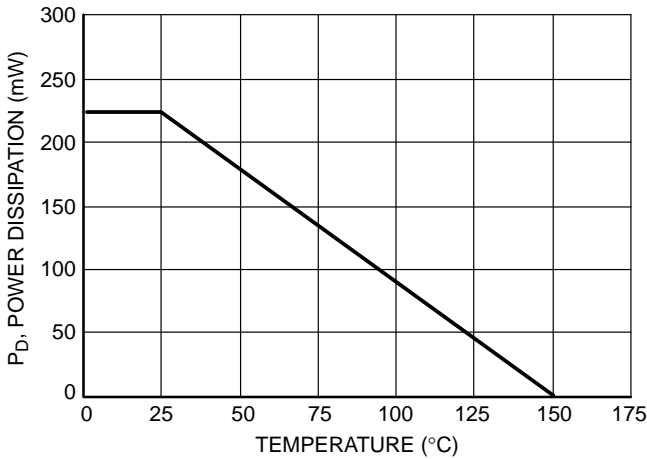


Figure 1. Steady State Power Derating Curve

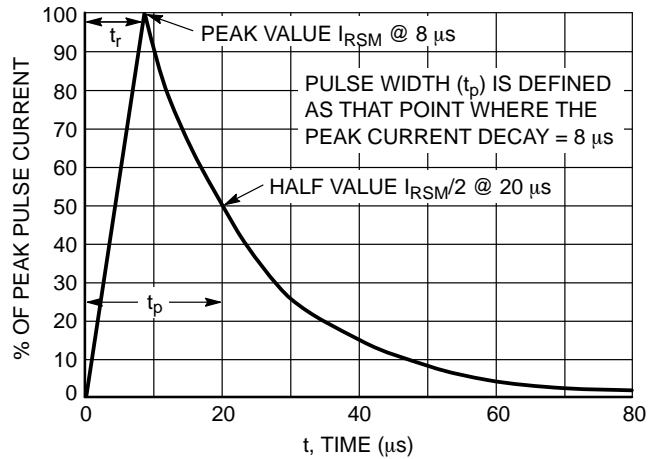


Figure 2. 8 X 20  $\mu\text{s}$  Pulse Waveform

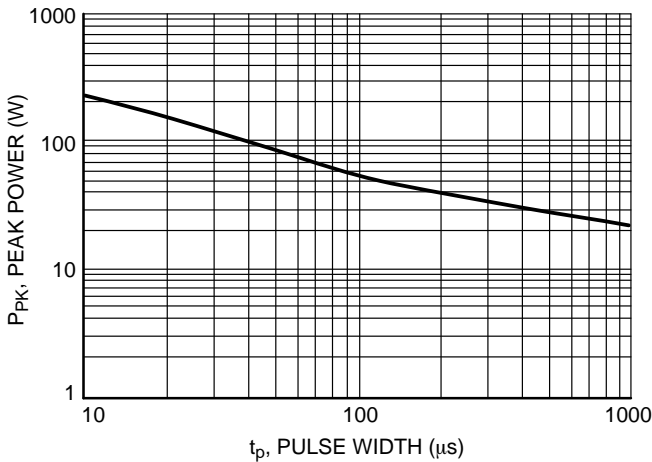


Figure 3. Pulse Rating Curve

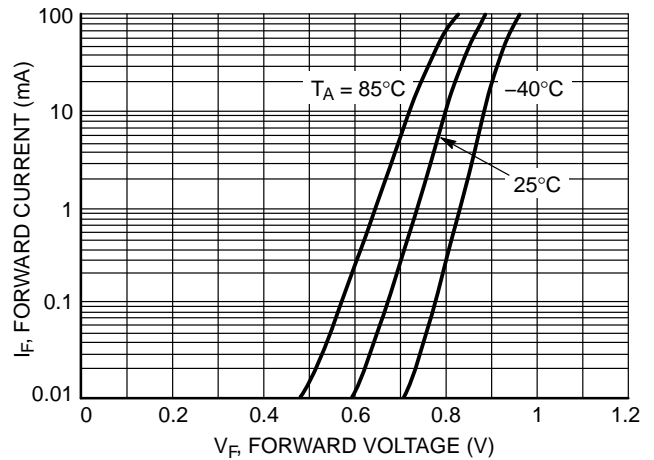


Figure 4. Forward Current versus Forward Voltage

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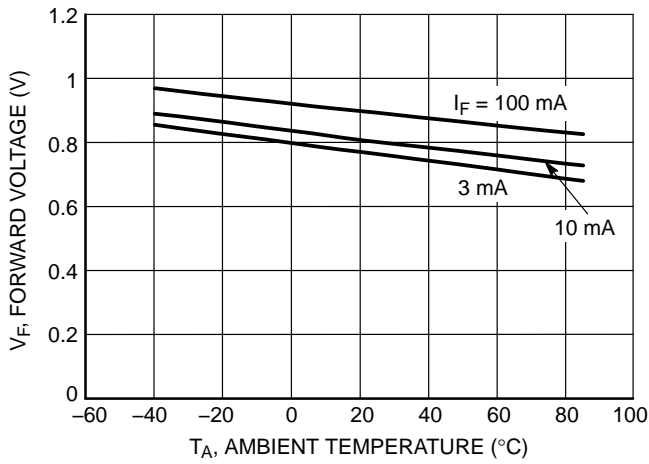


Figure 5. Forward Voltage versus Temperature

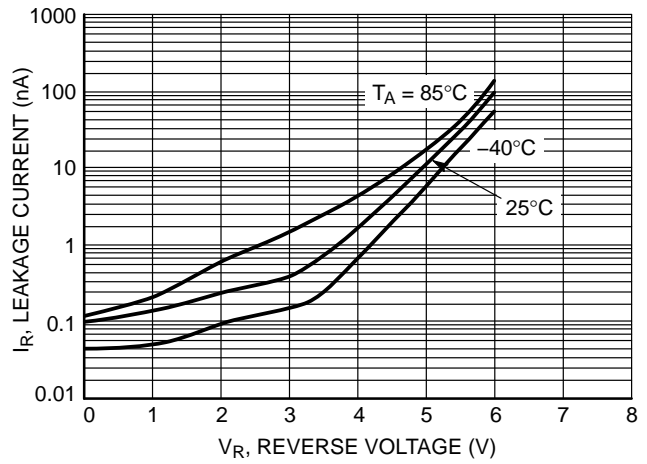


Figure 6. Leakage Current versus Reverse Voltage

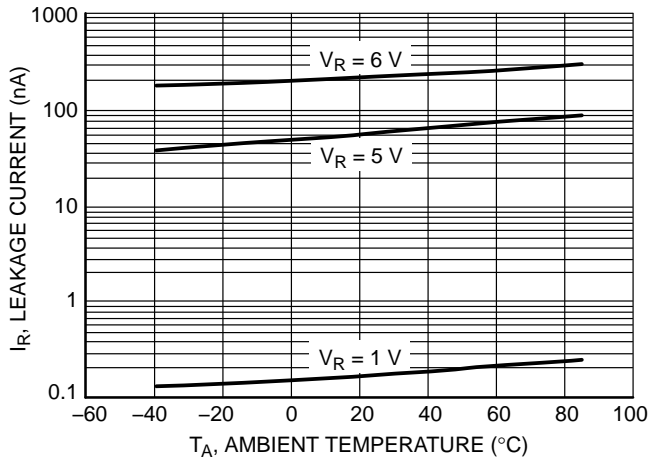


Figure 7. Leakage Current versus Temperature

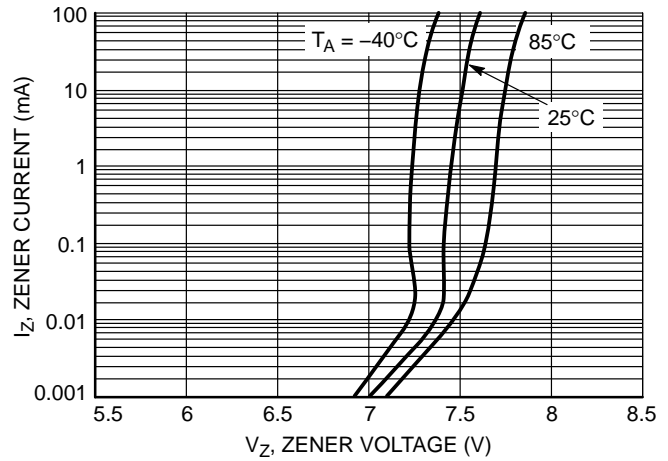


Figure 8. Zener Current versus Zener Voltage

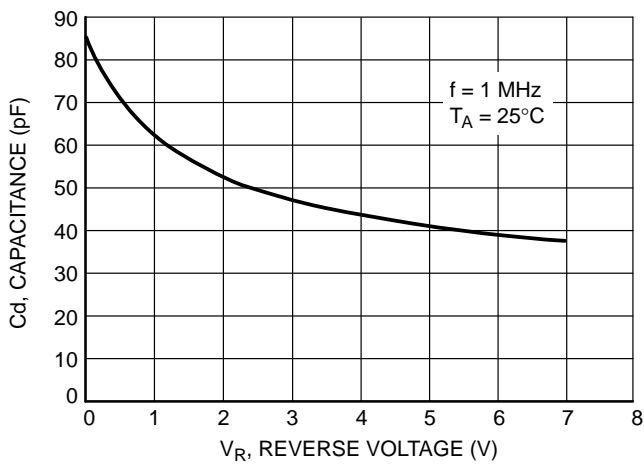


Figure 9. Capacitance

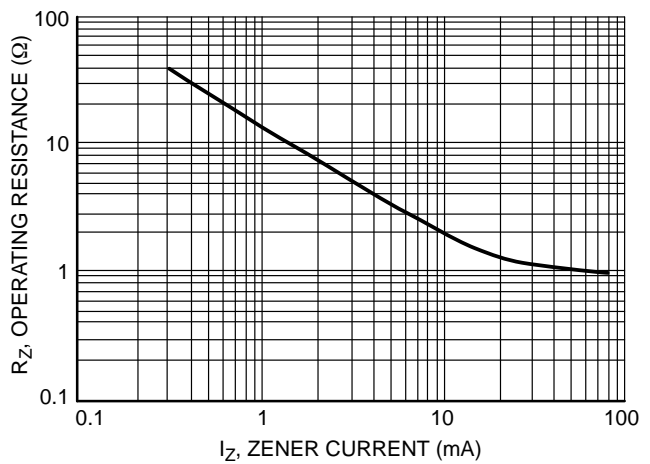
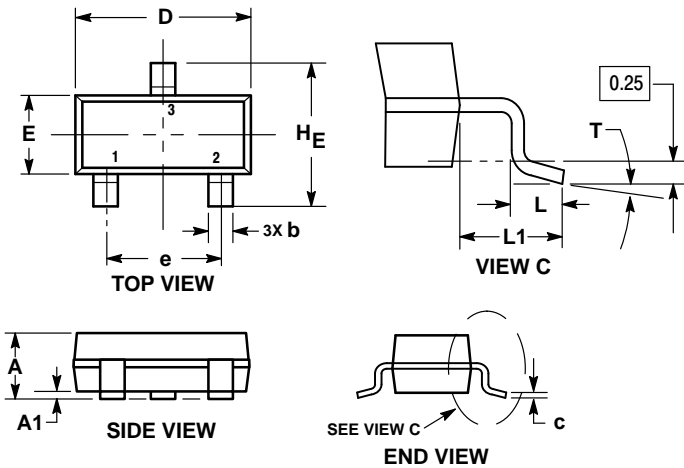


Figure 10. Operating Resistance versus Zener Current

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SOT-23 (TO-236)  
CASE 318-08  
ISSUE AR

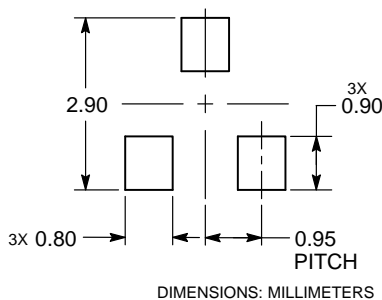


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  2. CONTROLLING DIMENSION: MILLIMETERS.
  3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
  4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.039	0.044
A1	0.01	0.06	0.10	0.000	0.002	0.004
b	0.37	0.44	0.50	0.015	0.017	0.020
c	0.08	0.14	0.20	0.003	0.006	0.008
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.080
L	0.30	0.43	0.55	0.012	0.017	0.022
L1	0.35	0.54	0.69	0.014	0.021	0.027
HE	2.10	2.40	2.64	0.083	0.094	0.104
T	0°	—	10°	0°	—	10°

STYLE 12:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE

## RECOMMENDED SOLDERING FOOTPRINT\*



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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