

1.Description

The 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 ideal for situations where board space is at a premium.

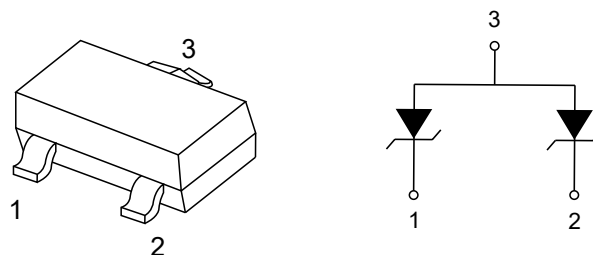
3.Applications

- SOT-23 package allows either two separate unidirectional configurations or a single bidirectional configuration.
- Working peak reverse voltage 3V to 22V
- Standard Zener breakdown voltage 5.6V to 27V
- Peak power 24 or Watts @ 1.0ms (unidirectional) per Figure 6 Waveform

2.Features

- Computers
- Printers
- Business Machines
- Communication systems
- Medical equipment

4.Pinning information



SOT-23

- ESD Rating:
Class 3B(>16kV)per the Human Body Model
Class C(>400V)per Machine Model
- ESD Rating of IEC61000-4-2 level 4, ± 30 kV contact Discharge
- Low leakage < 5.0 μ A



5. Absolute Maximum Ratings $T_A = 25^\circ\text{C}$

Parameter	Symbol	Value	Units
Peak Power Dissipation @1.0ms MMBZ5V6AL thru MMBZ6V8AL MMBZ12VAL thru MMBZ27VAL	P_{PK}	24	W
		40	W
Total Power Dissipation	P_D	200	mW
Junction Temperature	T_{OPT}	-55 to 150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^\circ\text{C}$



6.1 Electrical Characteristic ($T_{amb}=25^{\circ}\text{C}$)

UNIDIRECTIONAL (Circuit tied to Pins 1 and 3 or Pins 2 to 3)

Part Number	Device Marking	V_{RWM}	I_R	V_{BR}				Z_{ZT}	Z_{ZK}		V_C	
		(V)	(μA)	(V)			(mA)	(Ω)	(Ω)	(mA)	(V)	(A)
			@ V_{RWM}	Min	Nom	Max	@ I_T	Max @ I_{ZT}	Max	@ I_{ZK}	Max	@ I_{PP}
MMBZ5V6AL	5A6	3	5	5.32	5.6	5.88	20	11	1600	0.25	8	3
MMBZ6V2AL	6A2	3	0.5	5.89	6.2	6.51	1				8.7	2.76
MMBZ6V8AL	6A8	4.5	0.5	6.46	6.8	7.14	1				9.6	2.5

$V_F=0.9\text{V Max @ } I_F=10\text{mA}$

6.2 Electrical Characteristic ($T_{amb}=25^{\circ}\text{C}$)

UNIDIRECTIONAL (Circuit tied to Pins 1 and 3 or Pins 2 to 3)

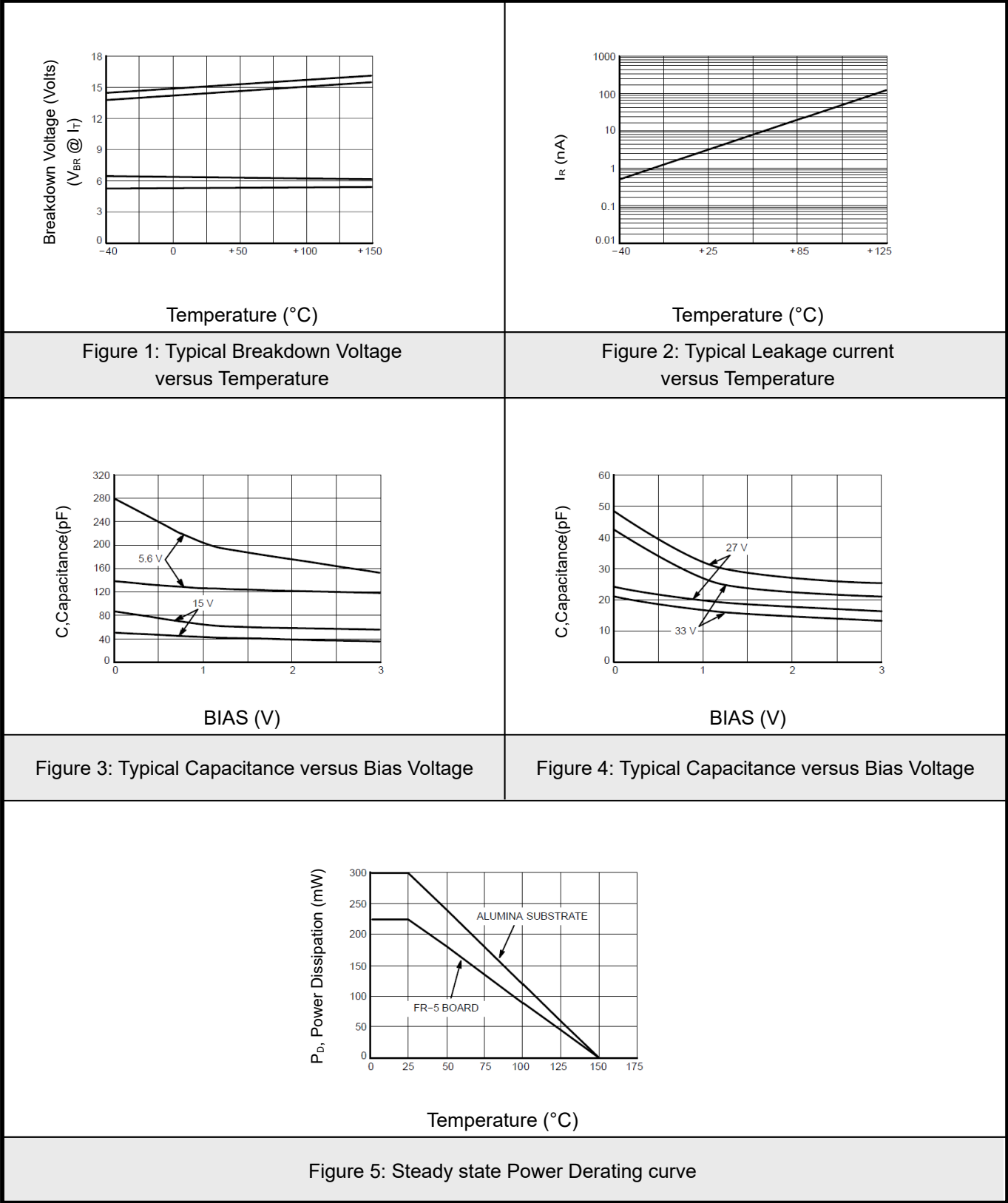
Part Number	Device Marking	V_{RWM}	I_R	V_{BR}				$V_C(\text{note1})$	
		(V)	(nA)	(V)			(mA)	(V)	(A)
			@ V_{RWM}	Min	Nom	Max	@ I_T	Max	@ I_{PP}
MMBZ12VAL	12A	8.5	200	11.4	12	12.6	1	17	2.35
MMBZ15VAL	15A	12	50	14.25	15	15.75	1	21	1.9
MMBZ18VAL	18A	14.5	50	17.1	18	18.9	1	25	1.6
MMBZ27VAL	27A	22	50	26.65	27	28.35	1	40	1

$V_F=0.9\text{V Max @ } I_F=10\text{mA}$

Note 1: Surge Current waveform per Figure 5

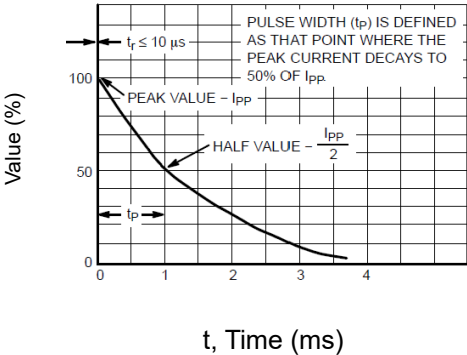
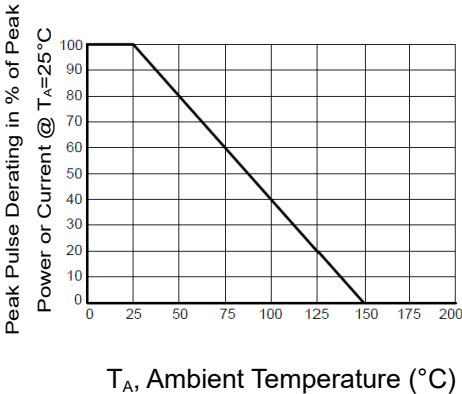
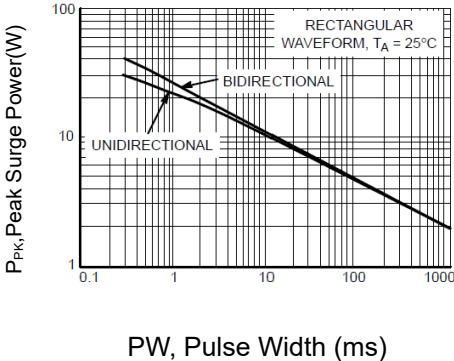
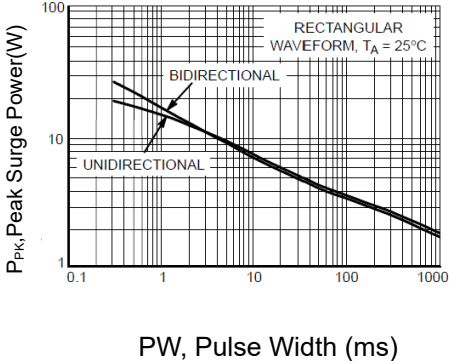


7. Typical characteristic



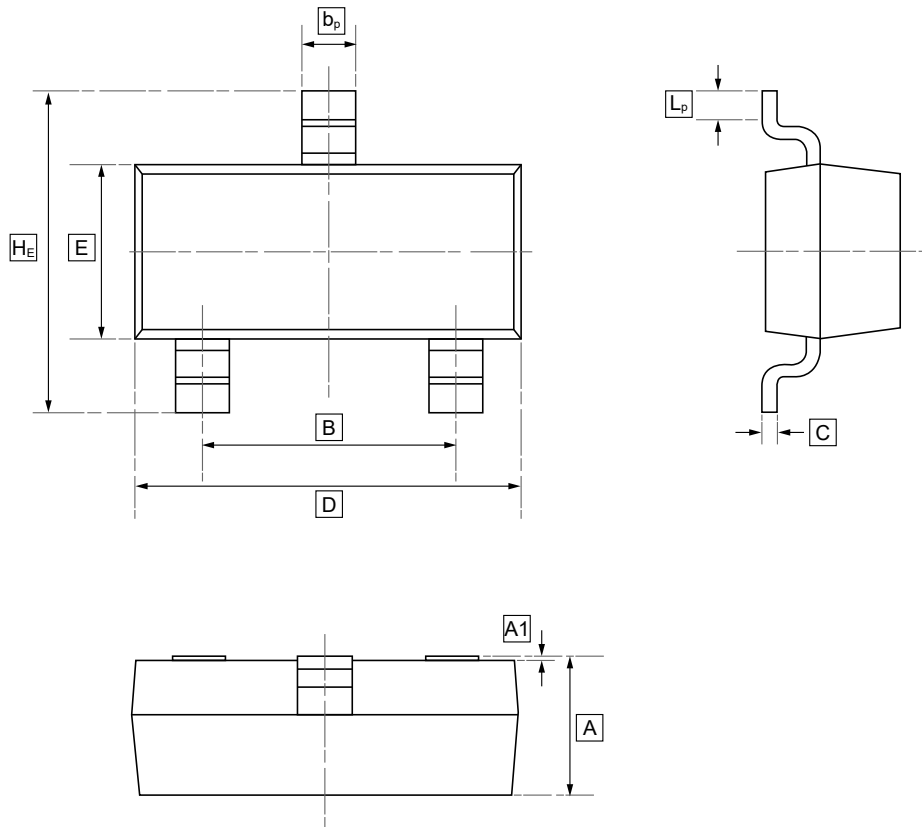


8. Typical characteristic

 Value (%) $t_r \leq 10 \mu s$ PEAK VALUE - I_{pp} HALF VALUE - $\frac{I_{pp}}{2}$ t_p t, Time (ms)	 Peak Pulse Derating in % of Peak Power or Current @ $T_A=25^\circ C$ T_A, Ambient Temperature ($^\circ C$)	Figure 6: Pulse Waveform	Figure 7: Pulse Derating curve
 P_{PK}, Peak Surge Power(W) PW, Pulse Width (ms) RECTANGULAR WAVEFORM, $T_A = 25^\circ C$ BIDIRECTIONAL UNIDIRECTIONAL	 P_{PK}, Peak Surge Power(W) PW, Pulse Width (ms) RECTANGULAR WAVEFORM, $T_A = 25^\circ C$ BIDIRECTIONAL UNIDIRECTIONAL	Figure 8: Maximum Non-repetitive surge Power, Ppk versus PW	Figure 9: Maximum Non-repetitive surge Power, Pk(NOM) versus PW



9.SOT-23 Package Outline Dimensions

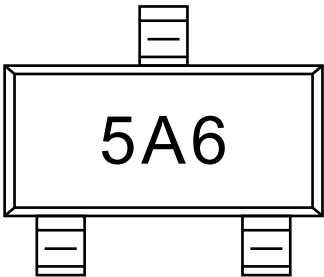


DIMENSIONS (mm are the original dimensions)

Symbol	A	B	b_p	C	D	E	H_E	A1	L_p
Min	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20
Max	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50



10.Ordering information



Order Code	Marking	Package	Base QTY	Delivery Mode
UMW MMBZ15VALT1G	15A	SOT-23	3000	Tape and reel
UMW MMBZ5V6ALT1G	5A6	SOT-23	3000	Tape and reel
UMW MMBZ6V2ALT1G	6A2	SOT-23	3000	Tape and reel
UMW MMBZ6V8ALT1G	6A8	SOT-23	3000	Tape and reel
UMW MMBZ12VALT1G	12A	SOT-23	3000	Tape and reel
UMW MMBZ18VALT1G	18A	SOT-23	3000	Tape and reel
UMW MMBZ27VALT1G	27A	SOT-23	3000	Tape and reel



11.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.