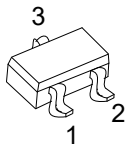
24W AND 40 WATT PEAK POWER ZENER TRANSIENT VOLTAGE SUPPRESSORS



SOT-23
(JEDEC TO-236)

■ DESCRIPTION

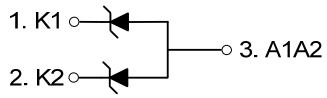
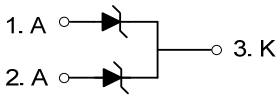
The UTC **UMMBZXXXX** is a dual monolithic silicon zener diodes are designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment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

UMMBZXXXX can be used to protect a single wire communication network form EMI and ESD transient surge voltages.

■ FEATURES

* Either Two Separate Unidirectional Configurations or a Single Bidirectional Configuration
* Standard Zener Breakdown Voltage Range – 5.6 V to 39 V
* Peak Power – 24 or 40 Watts @1.0ms (Unidirectional)
  Peak Power – 40 Watts @1.0ms (Bidirectional)
* ESD Rating of Class N (exceeding 16 kV) per the Human Body Model
* Maximum Clamping Voltage @ Peak Pulse Current
* Low Leakage < 5.0 μA

■ SYMBOL

UMMBZXXXA	UMMBZXXXC
	

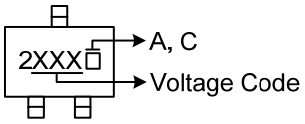
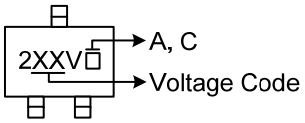
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UMMBZXVXAL-AE3-R	UMMBZXVXAG-AE3-R	SOT-23	K1	K2	A1, A2	Tape Reel
UMMBZXVXCL-AE3-R	UMMBZXVXCG-AE3-R	SOT-23	A	A	K	Tape Reel
UMMBZXXVAL-AE3-R	UMMBZXXVAG-AE3-R	SOT-23	K1	K2	A1, A2	Tape Reel
UMMBZXXVCL-AE3-R	UMMBZXXVCG-AE3-R	SOT-23	A	A	K	Tape Reel

Note: Pin Assignment: A: Anode K: Cathode

UMMBZXXXXG-AE3-R (1)Packing Type (2)Package Type (3)Green Package (4)Diode Configuration (5)Voltage Code	(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free and Lead Free, L: Lead Free (4) X: refer to DIODE CONFIGURATION AND SYMBOL (5) refer to MARKING INFORMATION

■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-23	5V6: 5.6V 6V2: 6.2V 6V8: 6.8V 9V1: 9.1V	
	10: 10V 12: 12V 15: 15V 18: 18V 20: 20V 27: 27V 33:33V 39: 39V	

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Peak Power Dissipation @ 1.0 ms (Note 1) (UMMBZ5V6 thru UMMBZ10)	P_{PK}	24	W
Peak Power Dissipation @ 1.0 ms (Note 1) (UMMBZ12 thru UMMBZ39)	P_{PK}	40	W
Power Dissipation at 75°C (Note 1)	P_D	300	mW
Operating Junction Temperature	T_J	-65 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Mounted on 5.0mm^2 (.013mm thick) land areas.
3. Measured on 8.3ms, single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.

■ ELECTRICAL CHARACTERISTICS

Part Number		Marking Code	V_{RWM}	I_R @ V_{RWM}	Breakdown Voltage				Zener Impedance			V_C @ I_{PP}		θV_{BR}
					V_{BR} (Note 4) (V)			@ I_T	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}		V_C	I_{PP}	
			V	μA	MIN	TYP	MAX	mA	Ω	Ω	mA	V	A	mV/°C
24 Watts, V_F = 0.9V Max. @ I_F = 10mA														
UMMBZ5V6A	UMMBZ5V6C	5V6	3.0	5.0	5.32	5.6	5.88	20	11	1600	0.25	8.0	3.0	1.26
UMMBZ6V2A	UMMBZ6V2C	6V2	3.0	0.5	5.89	6.2	6.51	1.0	-	-	-	8.7	2.76	2.80
UMMBZ6V8A	UMMBZ6V8C	6V8	4.5	0.5	6.46	6.8	7.14	1.0	-	-	-	9.6	2.5	3.4
UMMBZ9V1A	UMMBZ9V1C	9V1	6.0	0.3	8.65	9.1	9.56	1.0	-	-	-	14	1.7	7.5
UMMBZ10VA	UMMBZ10VC	10	6.5	0.3	9.50	10	10.5	1.0	-	-	-	14.2	1.7	7.5
40 Watts, V_F = 1.1V Max. @ I_F = 200mA														
UMMBZ12VA	UMMBZ12VC	12	8.5	200	11.40	12	12.60	1.0	-	-	-	17	2.35	7.5
UMMBZ15VA	UMMBZ15VC	15	12.8	50	14.25	15	15.75	1.0	-	-	-	21	1.9	12.3
UMMBZ18VA	UMMBZ18VC	18	14.5	50	17.10	18	18.90	1.0	-	-	-	25	1.6	15.3
UMMBZ20VA	UMMBZ20VC	20	17	50	19.00	20	21.00	1.0	-	-	-	28	1.4	17.2
UMMBZ27VA	UMMBZ27VC	27	22	50	25.65	27	28.35	1.0	-	-	-	40	1.0	24.3
UMMBZ33VA	UMMBZ33VC	33	26	50	31.35	33	34.65	1.0	-	-	-	46	0.87	30.4
UMMBZ39VA	UMMBZ39VC	39	31.2	50	37.05	39	40.95	1.0	-	-	-	55	0.76	35.3

Notes: V_{BR} measured at pulse test current IT at an ambient temperature of 25°C.

■ TYPICAL APPLICATION CIRCUIT

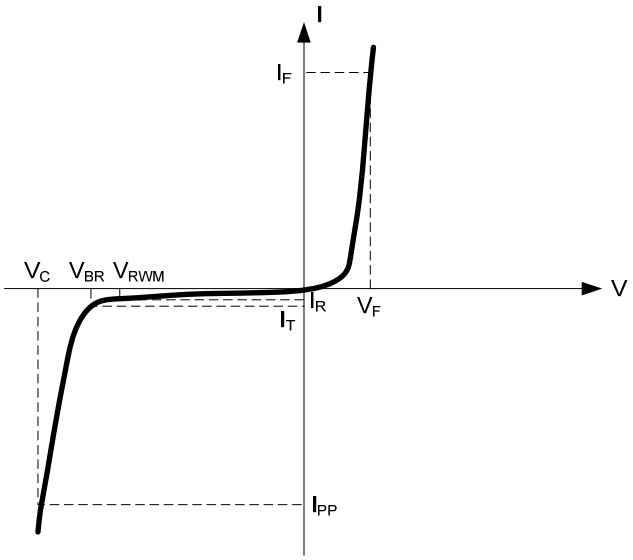


Figure 1. Uni-Directional TVS

■ TYPICAL APPLICATION CIRCUIT (Cont.)

A quad junction common anode design in a SOT–23 package protects four separate lines using only one package. This adds flexibility and creativity to PCB design especially when board space is at a premium. Two simplified examples of TVS applications are illustrated below.

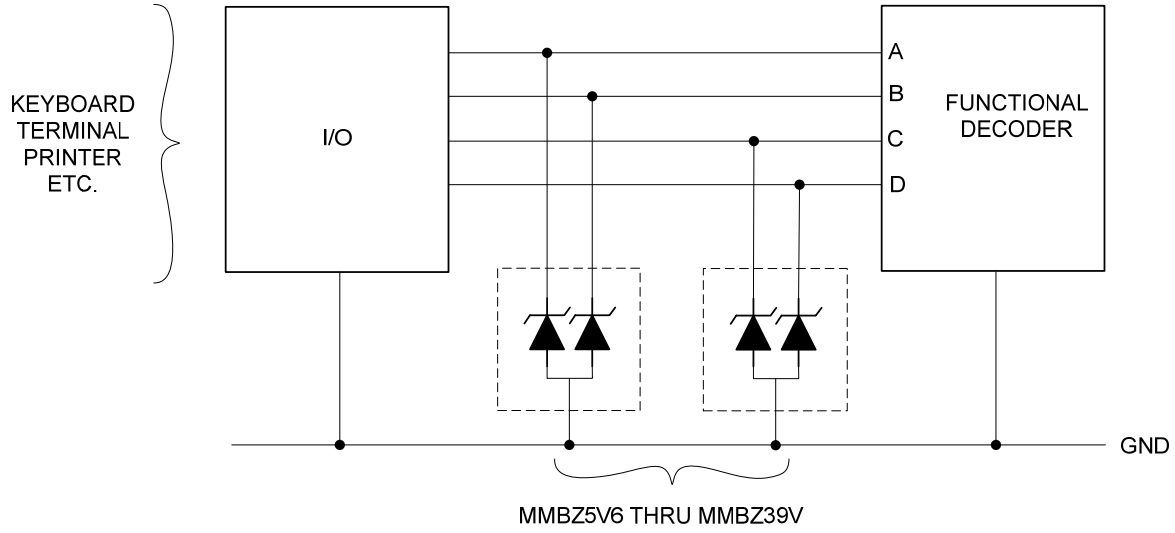


Figure 2. Computer Interface Protection

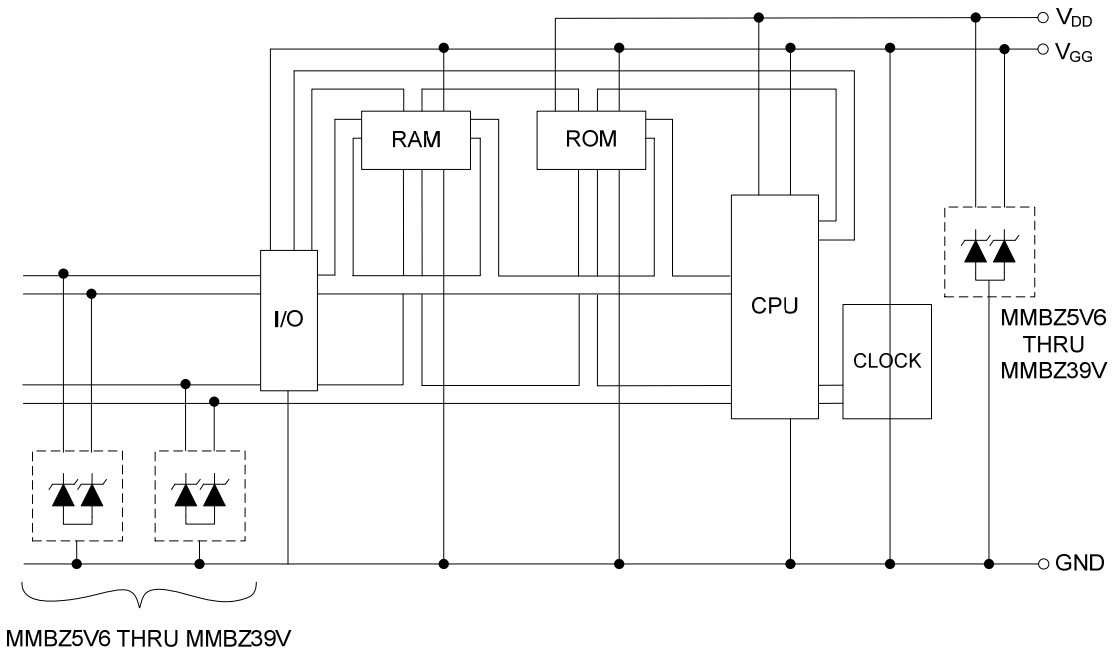


Figure 3. Microprocessor Protection