

**Description**

SMB2Z Series Zener Diodes are excellent voltage stabilization devices.

The Series is designed specifically for Voltage stabilization, Voltage regulation, and so on.



SMB (DO-214AA)

**Features**

- For surface mounted applications
- Low Zener impedance
- Low regulation factor
- Epoxy resin package
- RoHS Compliant

**Mechanical Characteristics**

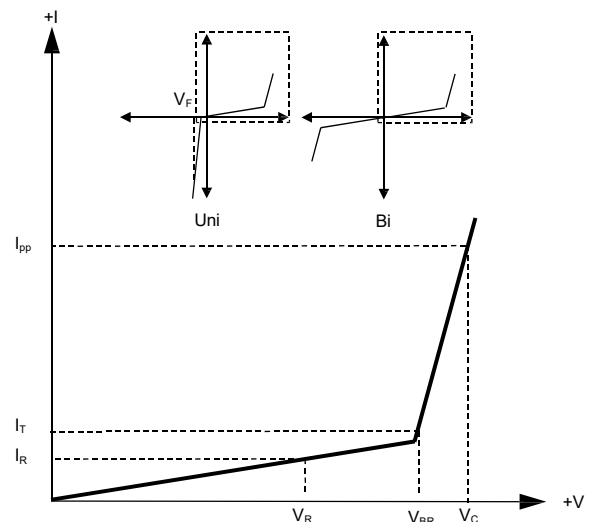
- Package: SMB (DO-214AA) plastic package.
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

**Applications**

- Voltage stabilization
- Voltage regulation

**Electrical Parameters**

Parameter	Definition
$C_J$	Junction Capacitance - typical capacitance measured with 0V or $V_R$ bias
$I_{PP}$	Peak Pulse Current - maximum rated peak impulse current
$V_C$	Clamping Voltage - Peak voltage measured across the suppressor at a specified $I_{ppm}$ (peak impulse current)
$V_{BR}$	Breakdown Voltage - Maximum voltage that flows through the TVS at a specified test current ( $I_T$ )
$I_R$	Leakage Current - maximum peak off-state current measured at $V_R$
$V_R$	Peak Off-state Voltage - maximum voltage that can be applied while maintaining off state



**Absolute Maximum Ratings (TA=25°C unless otherwise noted)**

Parameter	Symbol	Value	Units	Remarks
Power Dissipation @ $T_L=75^\circ\text{C}$	$P_D$	2	W	
Maximum Forward Voltage @ $I_F=200\text{mA}$	$V_F$	1.2	V	
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	20	$^\circ\text{C/W}$	
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	220	$^\circ\text{C/W}$	
Operating Temperature Range	$T_J$	-55 to 150	$^\circ\text{C}$	
Storage Temperature Range	$T_{STG}$	-55 to 150	$^\circ\text{C}$	

**Electrical Characteristics (TA=25°C unless otherwise)**

Part Number	Marking Code	Zener Voltage			Test Current	Maximum Zener Impedance			Maximum Reverse Current		Maximum Zener Current
		$V_Z @ I_{ZT}$				$I_{ZT}$	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$		$I_R @ V_R$	
		Nom (V)	Min (V)	Max (V)	mA	$\Omega$	$\Omega$	mA	$\mu\text{A}$	V	mA
SMB2Z3.3A	2Z3.3	3.3	3.14	3.47	145	8.0	400	1.00	100.0	1.0	548.0
SMB2Z3.6A	2Z3.6	3.6	3.42	3.78	139	5.0	400	1.00	100.0	1.0	502.0
SMB2Z3.9A	2Z3.9	3.9	3.71	4.10	128	5.0	400	1.00	50.0	1.0	464.0
SMB2Z4.3A	2Z4.3	4.3	4.09	4.52	116	4.5	400	1.00	50.0	1.0	421.0
SMB2Z4.7A	2Z4.7	4.7	4.47	4.94	106	4.5	550	1.00	10.0	1.0	385.0
SMB2Z5.1A	2Z5.1	5.1	4.85	5.36	98.0	3.5	600	1.00	10.0	1.0	354.0
SMB2Z5.6A	2Z5.6	5.6	5.32	5.88	89.5	2.5	500	1.00	10.0	2.0	323.0
SMB2Z6.2A	2Z6.2	6.2	5.89	6.51	80.5	1.5	700	1.00	10.0	3.0	292.0
SMB2Z6.8A	2Z6.8	6.8	6.46	7.14	73.5	2.0	700	1.00	10.0	4.0	266.0
SMB2Z7.5A	2Z7.5	7.5	7.13	7.88	66.5	2.0	700	0.50	10.0	5.0	242.0
SMB2Z8.2A	2Z8.2	8.2	7.79	8.61	61.0	2.3	700	0.50	10.0	6.0	220.0
SMB2Z9.1A	2Z9.1	9.1	8.65	9.56	55.0	2.5	700	0.50	10.0	7.0	200.0
SMB2Z10A	2Z10	10.0	9.50	10.50	50.0	3.5	700	0.25	10.0	7.6	182.0
SMB2Z11A	2Z11	11.0	10.45	11.55	45.5	4.0	700	0.25	0.5	8.4	166.0
SMB2Z12A	2Z12	12.0	11.40	12.60	41.5	4.5	700	0.25	0.5	9.1	152.0
SMB2Z13A	2Z13	13.0	12.35	13.65	38.5	5.0	700	0.25	0.5	9.9	138.0
SMB2Z14A	2Z14	14.0	13.30	14.70	35.7	5.5	700	0.25	0.5	10.6	130.0
SMB2Z15A	2Z15	15.0	14.25	15.75	33.4	7.0	700	0.25	0.5	11.4	122.0
SMB2Z16A	2Z16	16.0	15.20	16.80	31.2	8.0	700	0.25	0.5	12.2	114.0
SMB2Z17A	2Z17	17.0	16.15	17.85	29.4	9.0	750	0.25	0.5	13.0	107.0
SMB2Z18A	2Z18	18.0	17.10	18.90	27.8	10.0	750	0.25	0.5	13.7	100.0
SMB2Z19A	2Z19	19.0	18.05	19.95	26.3	11.0	750	0.25	0.5	14.4	95.0
SMB2Z20A	2Z20	20.0	19.00	21.00	25.0	11.0	750	0.25	0.5	15.2	90.0
SMB2Z22A	2Z22	22.0	20.90	23.10	22.8	12.0	750	0.25	0.5	16.7	82.0
SMB2Z24A	2Z24	24.0	22.80	25.20	20.8	13.0	750	0.25	0.5	18.2	76.0
SMB2Z27A	2Z27	27.0	25.65	28.35	18.5	18.0	750	0.25	0.5	20.6	68.0
SMB2Z30A	2Z30	30.0	28.50	31.50	16.6	20.0	1000	0.25	0.5	22.5	60.0
SMB2Z33A	2Z33	33.0	31.35	34.65	15.1	23.0	1000	0.25	0.5	25.1	55.0
SMB2Z36A	2Z36	36.0	34.20	37.80	13.9	25.0	1000	0.25	0.5	27.4	50.0
SMB2Z39A	2Z39	39.0	37.05	40.95	12.8	30.0	1000	0.25	0.5	29.7	47.0
SMB2Z43A	2Z43	43.0	40.85	45.15	11.6	35.0	1500	0.25	0.5	32.7	43.0
SMB2Z47A	2Z47	47.0	44.65	49.35	10.6	40.0	1500	0.25	0.5	35.8	39.0

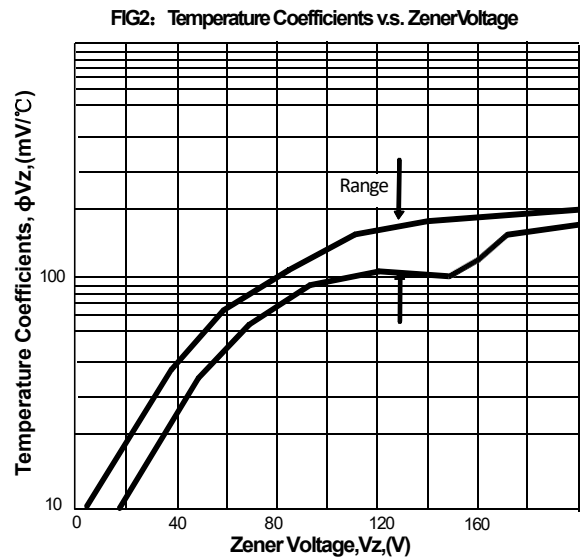
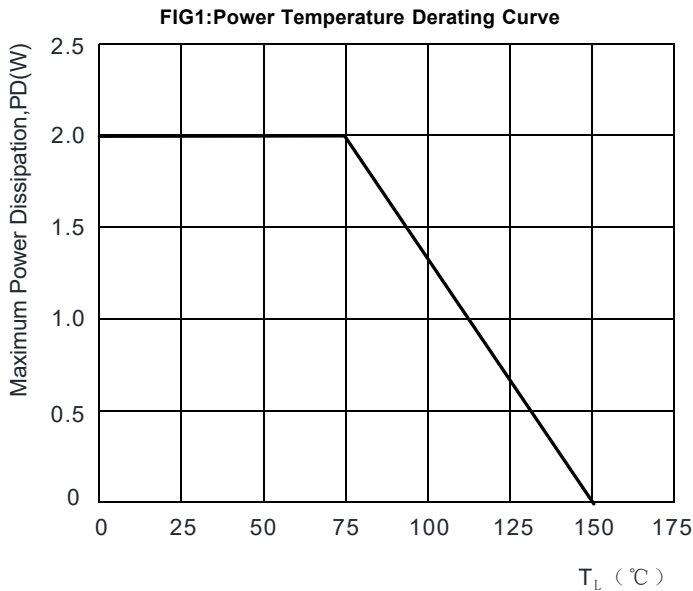
The accuracy of voltage regulator is 5%

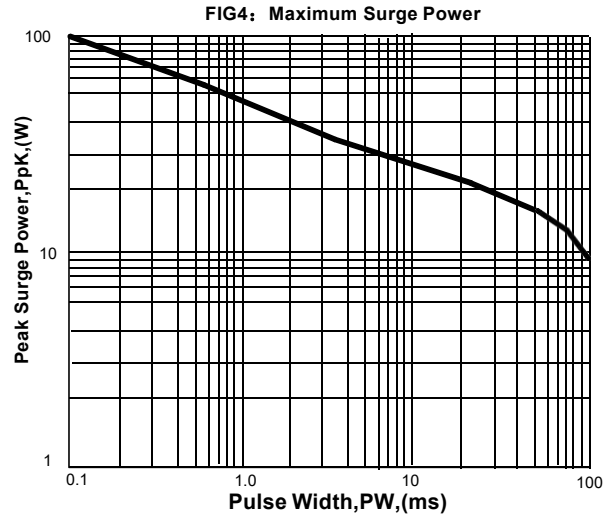
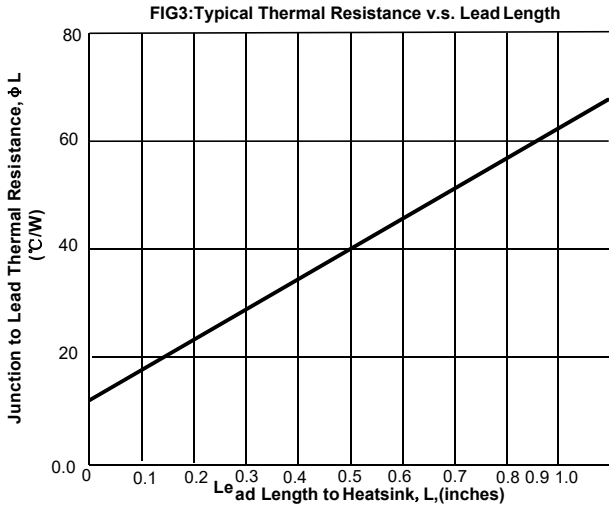
### Electrical Characteristics (TA=25°C unless otherwise)

Part Number	Marking Code	Zener Voltage			Test Current	Maximum Zener Impedance			Maximum Reverse Current		Maximum Zener Current
		V <sub>Z</sub> @ I <sub>ZT</sub>				Z <sub>ZT</sub> @ I <sub>ZT</sub>	Z <sub>ZK</sub> @ I <sub>ZK</sub>		I <sub>R</sub> @ V <sub>R</sub>		
		Nom (V)	Min (V)	Max (V)	mA	Ω	Ω	mA	μA	V	mA
SMB2Z51A	2Z51	51.0	48.45	53.55	9.8	48.0	1500	0.25	0.5	38.8	36.0
SMB2Z56A	2Z56	56.0	53.20	58.80	9.0	55.0	2000	0.25	0.5	42.6	32.0
SMB2Z62A	2Z62	62.0	58.90	65.10	8.1	60.0	2000	0.25	0.5	47.1	29.0
SMB2Z68A	2Z68	68.0	64.60	71.40	7.4	75.0	2000	0.25	0.5	51.7	27.0
SMB2Z75A	2Z75	75.0	71.25	78.75	6.7	90.0	2000	0.25	0.5	56.0	24.0
SMB2Z82A	2Z82	82.0	77.90	86.10	6.1	100.0	3000	0.25	0.5	62.2	22.0
SMB2Z91A	2Z91	91.0	86.45	95.55	5.5	125.0	3000	0.25	0.5	69.2	20.0
SMB2Z100A	2Z100	100.0	95.00	105.00	5.0	175.0	3000	0.25	0.5	76.0	18.0
SMB2Z110A	2Z110	110.0	104.50	115.50	4.5	250.0	4000	0.25	0.5	83.6	17.0
SMB2Z120A	2Z120	120.0	114.00	126.00	4.2	325.0	4500	0.25	0.5	91.2	15.0
SMB2Z130A	2Z130	130.0	123.50	136.50	3.8	400.0	5000	0.25	0.5	98.8	14.0
SMB2Z140A	2Z140	140.0	133.00	147.00	3.6	500.0	5500	0.25	0.5	106.4	13.0
SMB2Z150A	2Z150	150.0	142.50	157.50	3.3	575.0	6000	0.25	0.5	114.0	12.0
SMB2Z160A	2Z160	160.0	152.00	168.00	3.1	650.0	6500	0.25	0.5	121.6	11.0
SMB2Z170A	2Z170	170.0	161.50	178.50	2.9	675.0	7000	0.25	0.5	130.4	11.0
SMB2Z180A	2Z180	180.0	171.00	189.00	2.8	725.0	7000	0.25	0.5	136.8	10.0
SMB2Z190A	2Z190	190.0	180.50	199.50	2.6	825.0	8000	0.25	0.5	144.8	10.0
SMB2Z200A	2Z200	200.0	190.00	210.00	2.5	1900.0	9990	0.25	0.5	152.0	9.0

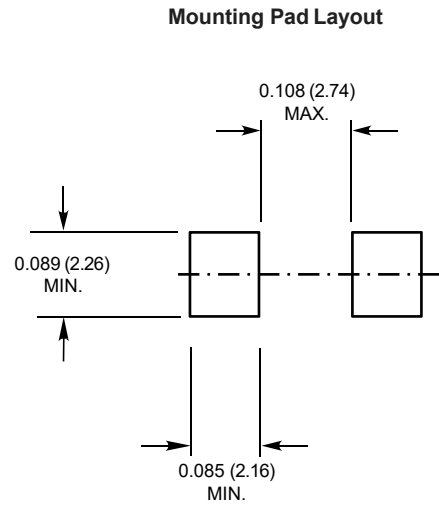
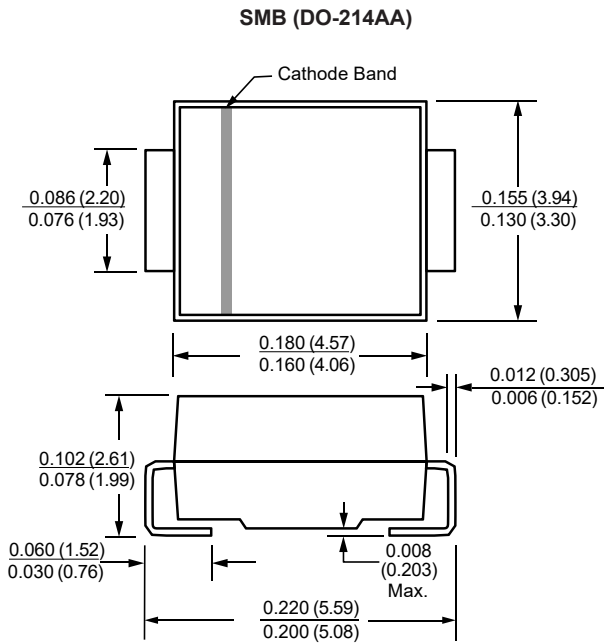
The accuracy of voltage regulator is 5%

### Rating And Characteristic Curves (TA=25°C unless otherwise noted)

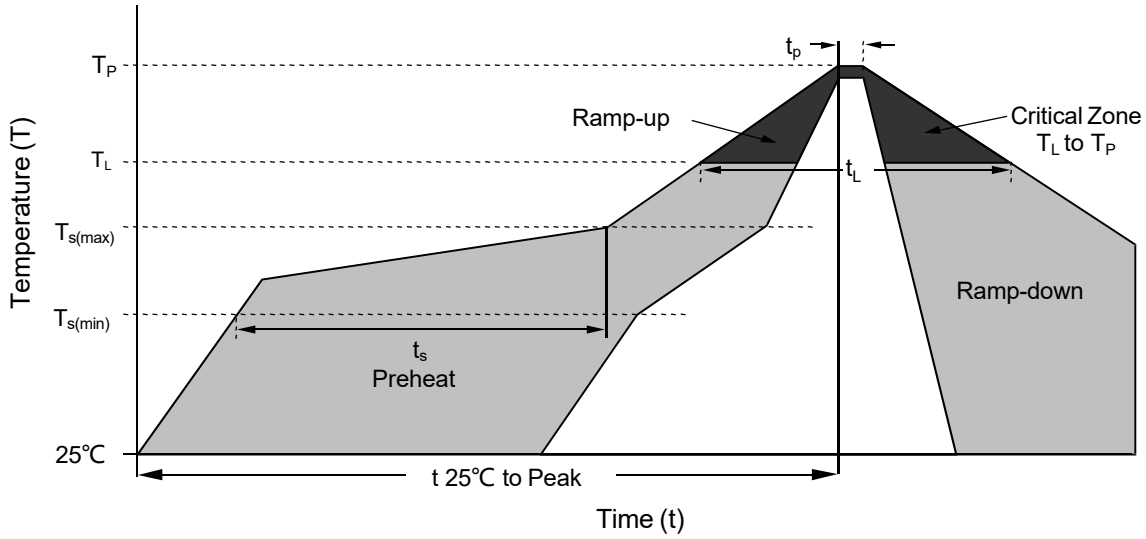




**Package Outline Dimensions in inches (millimeters)**

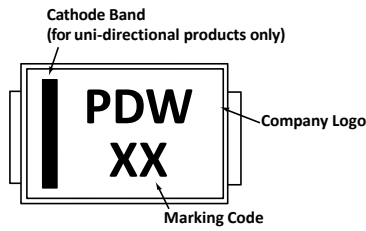


**Soldering Parameters**



Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (min to max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/second max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/second max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Time ( $t_L$ )	60 – 150 secs
Peak Temperature ( $T_P$ )		260 <sup>+0/-5</sup> °C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C

**Part Marking System**



**Summary of Packing Options**

Package	Packing Description	Packing Quantity
SMB	Tape/Reel, 13" reel	3000

**Tape and Reel Specification**

