

Description

SMA2.5Z Series Zener Diodes are excellent voltage stabilization devices.

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



SMA (DO-214AC)

Features

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

Mechanical Characteristics

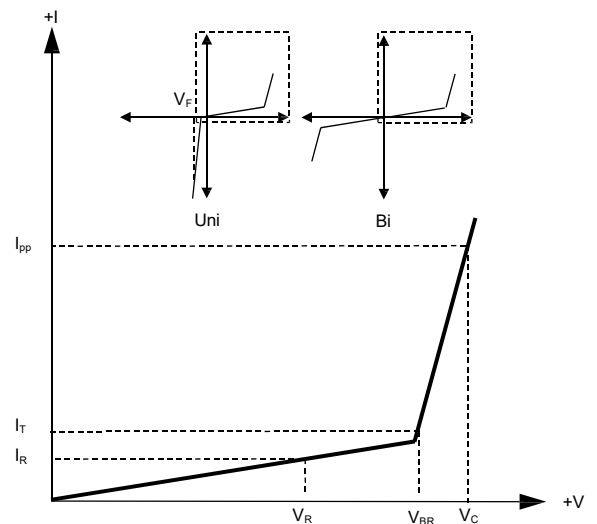
- Package: SMA (DO-214AC) plastic package.
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

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	2.5	W	
Maximum Forward Voltage @ $I_F=200\text{mA}$	V_F	1.5	V	
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	30	$^\circ\text{C/W}$	
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	
		$V_Z @ I_{ZT}$				I_{ZT}	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$		$I_R @ V_R$
		Nom (V)	Min (V)	Max (V)	mA	Ω	Ω	mA	μA	V
SMA2.5Z6.8A	6.8A	6.8	6.46	7.14	92	2.5	200	1.0	20	5.2
SMA2.5Z7.5A	7.5A	7.5	7.13	7.88	83	3.0	400	0.5	10	6.0
SMA2.5Z8.2A	8.2A	8.2	7.79	8.61	76	3.5	400	0.5	10	6.5
SMA2.5Z9.1A	9.1A	9.1	8.65	9.56	68	4.0	500	0.5	10	7.0
SMA2.5Z10A	10A	10	9.5	10.5	62.5	4.5	500	0.25	10	8.0
SMA2.5Z11A	11A	11	10.5	11.6	56.8	5.5	550	0.25	5	8.4
SMA2.5Z12A	12A	12	11.4	12.6	52	6.5	550	0.25	1	9.1
SMA2.5Z13A	13A	13	12.4	13.7	48	7.0	550	0.25	1	9.9
SMA2.5Z15A	15A	15	14.3	15.8	41.6	9.0	600	0.25	1	11.4
SMA2.5Z16A	16A	16	15.2	16.8	39	10	600	0.25	1	12.2
SMA2.5Z18A	18A	18	17.1	18.9	34.7	12	650	0.25	1	13.7
SMA2.5Z20A	20A	20	19	21	31.2	14	650	0.25	1	15.2
SMA2.5Z22A	22A	22	20.9	23.1	28.4	17.5	650	0.25	1	16.7
SMA2.5Z24A	24A	24	22.8	25.2	26	19	700	0.25	1	18.2
SMA2.5Z27A	27A	27	25.7	28.4	23.1	23	700	0.25	1	20.5
SMA2.5Z30A	30A	30	28.5	31.5	20.8	26	750	0.25	1	22.8
SMA2.5Z33A	33A	33	31.4	34.7	19	33	800	0.25	1	25.1
SMA2.5Z36A	36A	36	34.2	37.8	17.4	38	850	0.25	1	27.4
SMA2.5Z39A	39A	39	37.1	41.0	16	45	900	0.25	1	29.7
SMA2.5Z43A	43A	43	40.9	45.2	14.5	53	950	0.25	1	32.7
SMA2.5Z47A	47A	47	44.7	49.4	13.3	67	1000	0.25	1	35.8
SMA2.5Z51A	51A	51	48.5	53.6	12.2	70	1100	0.25	1	38.8
SMA2.5Z56A	56A	56	53.2	58.8	11.4	86	1300	0.25	1	42.6
SMA2.5Z62A	62A	62	58.9	65.1	10.1	100	1500	0.25	1	47.1
SMA2.5Z68A	68A	68	64.6	71.4	9.2	120	1700	0.25	1	51.7
SMA2.5Z75A	75A	75	71.3	78.8	8.3	140	2000	0.25	1	57.0
SMA2.5Z82A	82A	82	77.9	86.1	7.6	160	2200	0.25	1	62.3
SMA2.5Z91A	91A	91	84.5	95.6	6.9	180	2400	0.25	1	69.2
SMA2.5Z100A	100A	100	95	105	6.3	200	2600	0.25	1	76.0
SMA2.5Z110A	110A	110	105	116	5.7	300	4000	0.25	1	83.6
SMA2.5Z120A	120A	120	114	126	5.2	380	4500	0.25	1	91.2
SMA2.5Z130A	130A	130	124	137	4.8	450	5000	0.25	1	98.8

The accuracy of voltage regulator is 5%

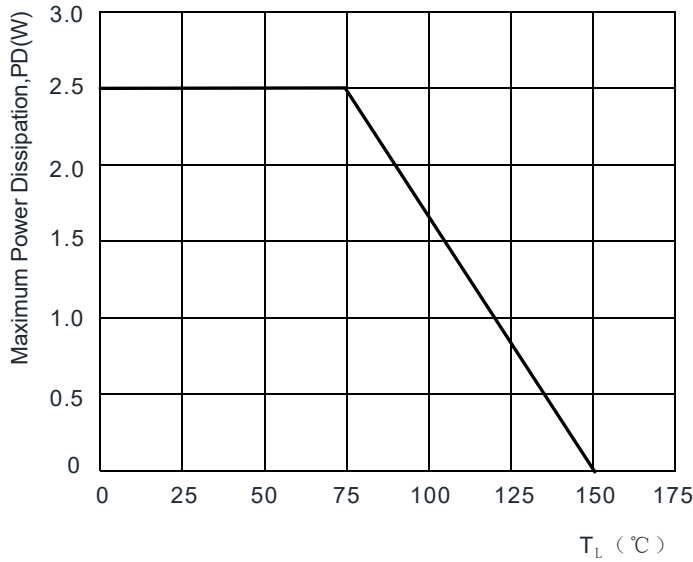
Electrical Characteristics (TA=25°C unless otherwise)

Part Number	Marking Code	Zener Voltage			Test Current	Maximum Zener Impedance			Maximum Reverse Current	
		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	Ω	Ω	mA	μA	V
SMA2.5Z150A	150A	150	143	158	4.2	600	6000	0.25	1	114
SMA2.5Z160A	160A	160	152	168	3.9	700	6500	0.25	1	122
SMA2.5Z180A	180A	180	171	189	3.5	900	7000	0.25	1	137
SMA2.5Z200A	200A	200	190	210	3.1	1200	8000	0.25	1	152

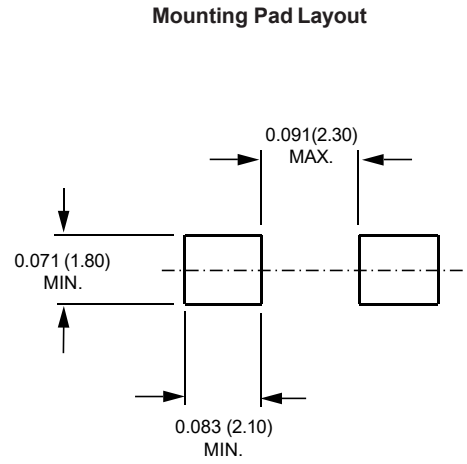
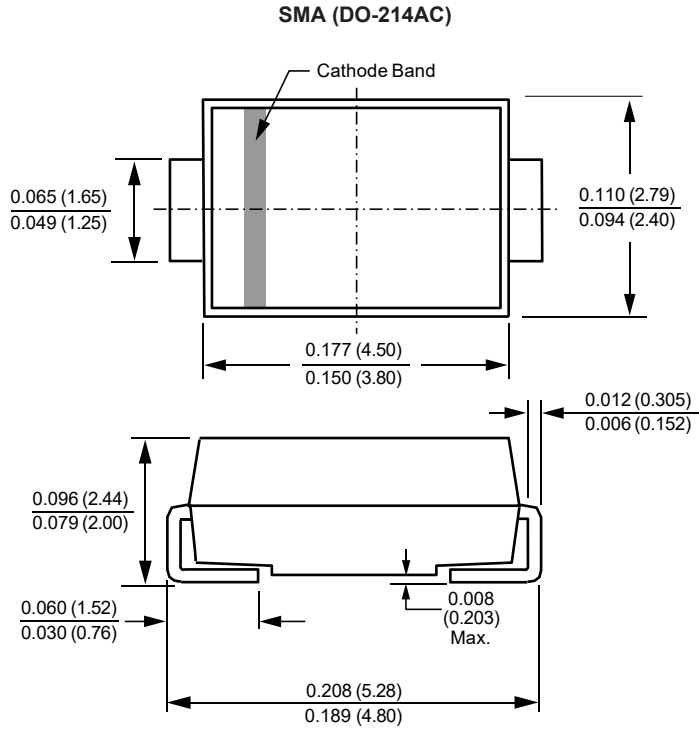
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Rating And Characteristic Curves (TA=25°C unless otherwise noted)

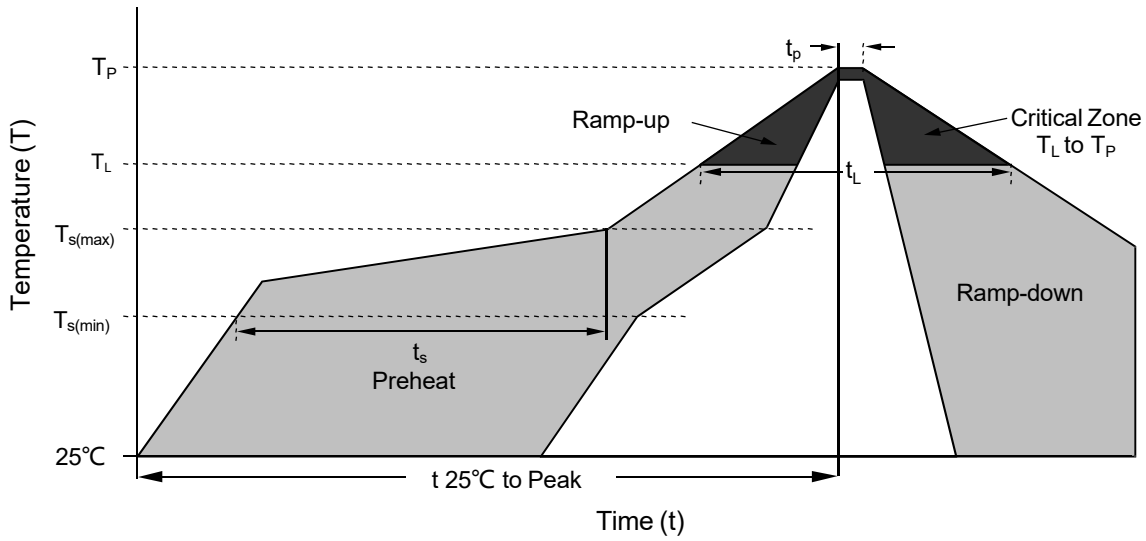
Fig.1 Power dissipation vs lead temperature



Package Outline Dimensions in inches (millimeters)

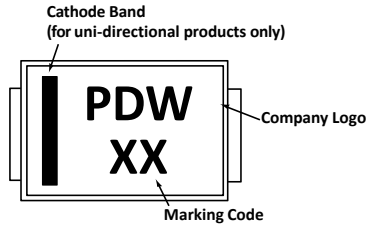


Soldering Parameters



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 ^{+0/-5} °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
SMA	Tape/Reel, 7" reel	1800
	Tape/Reel, 13" reel	7500

Tape and Reel Specification

