

Description

SMF59 Series Zener Diodes are excellent voltage stabilization devices.

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



SOD-123FL

Features

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

Mechanical Characteristics

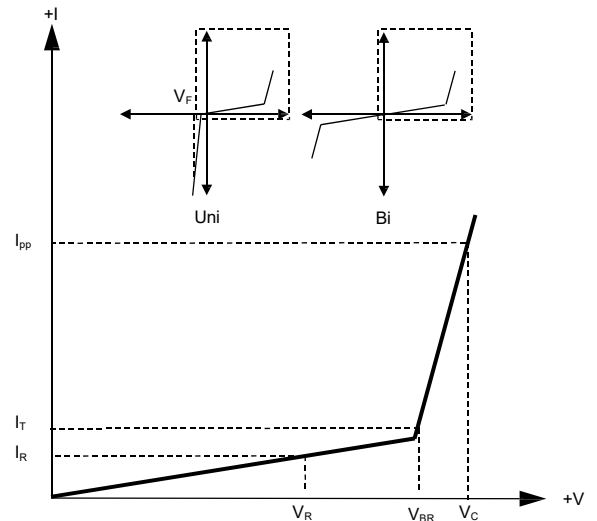
- Package: SOD-123FL plastic package.
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

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	1.5	W	
Maximum Forward Voltage @ $I_F=200\text{mA}$	V_F	1.2	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		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	Ω	Ω	mA	μA	V	mA
SMF5913A	913A	3.3	3.135	3.465	113.6	10	500.0	1.00	100.0	1.0	274.0
SMF5914A	914A	3.6	3.42	3.78	104.2	9.0	500.0	1.00	75.0	1.0	251.0
SMF5915A	915A	3.9	3.71	4.10	96.1	7.5	500.0	1.00	25.0	1.0	232.0
SMF5916A	916A	4.3	4.09	4.52	87.2	6.0	500.0	1.00	5.0	1.0	210.0
SMF5917A	917A	4.7	4.47	4.94	79.8	5.0	500.0	1.00	5.0	1.5	192.0
SMF5918A	918A	5.1	4.85	5.36	73.5	4.0	350.0	1.00	5.0	2.0	177.0
SMF5919A	919A	5.6	5.32	5.88	66.9	2.0	250.0	1.00	5.0	3.0	161.0
SMF5920A	920A	6.2	5.89	6.51	60.5	2.0	200.0	1.00	2.5	4.0	146.0
SMF5921A	921A	6.8	6.46	7.14	55.1	2.5	200.0	1.00	2.5	5.2	133.0
SMF5922A	922A	7.5	7.13	7.88	50.0	3.0	400.0	0.50	2.5	6.0	121.0
SMF5923A	923A	8.2	7.79	8.61	45.7	3.5	400.0	0.50	2.5	6.5	110.0
SMF5924A	924A	9.1	8.65	9.56	41.2	4.0	500.0	0.50	2.5	7.0	100.0
SMF5925A	925A	10.0	9.50	10.50	37.5	4.5	500.0	0.25	2.5	8.0	91.0
SMF5926A	926A	11.0	10.45	11.55	34.1	5.5	550.0	0.25	0.5	8.4	83.0
SMF5927A	927A	12.0	11.40	12.60	31.2	6.5	550.0	0.25	0.5	9.1	76.0
SMF5928A	928A	13.0	12.35	13.65	28.8	7.0	550.0	0.25	0.5	9.9	69.0
SMF5929A	929A	15.0	14.25	15.75	25.0	9.0	600.0	0.25	0.5	11.4	61.0
SMF5930A	930A	16.0	15.20	16.80	23.4	10.0	600.0	0.25	0.5	12.2	57.0
SMF5931A	931A	18.0	17.10	18.90	20.8	12.0	650.0	0.25	0.5	13.7	50.0
SMF5932A	932A	20.0	19.00	21.00	18.7	14.0	650.0	0.25	0.5	15.2	45.0
SMF5933A	933A	22.0	20.90	23.10	17.0	17.5	650.0	0.25	0.5	16.7	41.0
SMF5934A	934A	24.0	22.80	25.20	15.6	19.0	700.0	0.25	0.5	18.2	38.0
SMF5935A	935A	27.0	25.65	28.35	13.9	23.0	700.0	0.25	0.5	20.6	34.0
SMF5936A	936A	30.0	28.50	31.50	12.5	26.0	750.0	0.25	0.5	22.8	30.0
SMF5937A	937A	33.0	31.35	34.65	11.4	33.0	800.0	0.25	0.5	25.1	27.0
SMF5938A	938A	36.0	34.20	37.80	10.4	38.0	850.0	0.25	0.5	27.4	25.0
SMF5939A	939A	39.0	37.05	40.95	9.6	45.0	900.0	0.25	0.5	29.7	23.0
SMF5940A	940A	43.0	40.85	45.15	8.7	53.0	950.0	0.25	0.5	32.7	22.0
SMF5941A	941A	47.0	44.65	49.35	8.0	67.0	1000.0	0.25	0.5	35.8	19.0
SMF5942A	942A	51.0	48.45	53.55	7.3	70.0	1100.0	0.25	0.5	38.8	18.0
SMF5943A	943A	56.0	53.20	58.80	6.7	86.0	1300.0	0.25	0.5	42.6	16.0
SMF5944A	944A	62.0	58.90	65.10	6.0	100.0	1500.0	0.25	0.5	47.1	14.0

The accuracy of voltage regulator is 5%

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

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		I _{ZM}
		Nom (V)	Min (V)	Max (V)	mA	Ω	Ω	mA	μA	V	mA
SMF5945A	945A	68.0	64.60	71.40	5.5	120.0	1700.0	0.25	0.5	51.7	13.0
SMF5946A	946A	75.0	71.25	78.75	5.0	140.0	2000.0	0.25	0.5	56.0	12.0
SMF5947A	947A	82.0	77.90	86.10	4.6	160.0	2500.0	0.25	0.5	62.2	11.0
SMF5948A	948A	91.0	86.45	95.55	4.1	200.0	3000.0	0.25	0.5	69.2	10.0
SMF5949A	949A	100.0	95.00	105.00	3.7	250.0	3100.0	0.25	0.5	76.0	9.0
SMF5950A	950A	110.0	104.50	115.50	3.4	300.0	4000.0	0.25	0.5	83.6	8.6
SMF5951A	951A	120.0	114.00	126.00	3.1	380.0	4500.0	0.25	0.5	91.2	7.8
SMF5952A	952A	130.0	123.50	136.50	2.9	450.0	5000.0	0.25	0.5	98.8	7.0
SMF5953A	953A	150.0	142.50	157.50	2.5	600.0	6000.0	0.25	0.5	114.0	6.4
SMF5954A	954A	160.0	152.00	168.00	2.3	700.0	6500.0	0.25	0.5	121.6	5.8
SMF5955A	955A	180.0	171.00	189.00	2.1	900.0	7000.0	0.25	0.5	136.8	5.2
SMF5956A	956A	200.0	190.00	210.00	1.9	1200.0	8000.0	0.25	0.5	152.0	4.7

The accuracy of voltage regulator is 5%

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

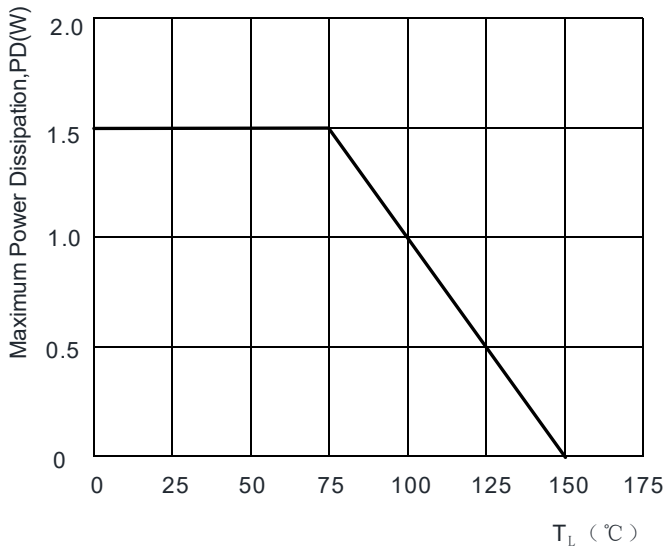


Fig. 1 - Power Temperature Derating Curve

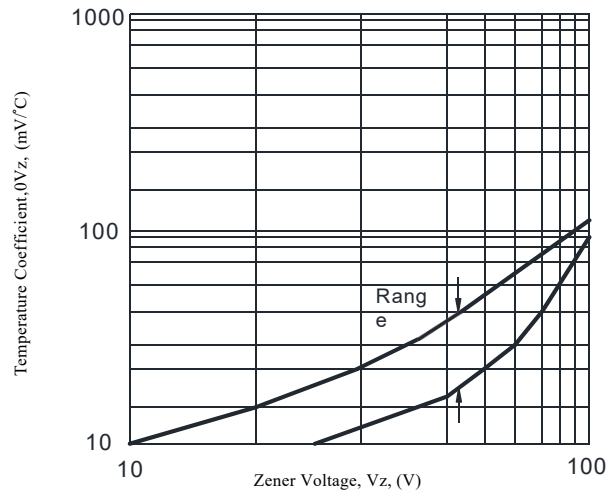
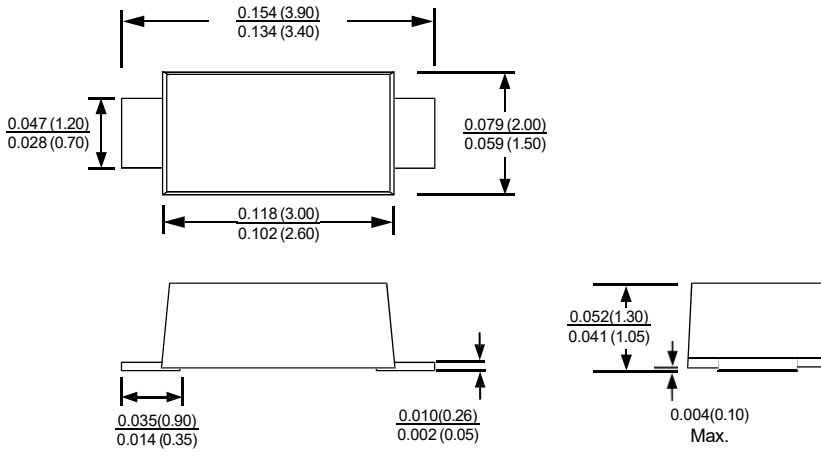


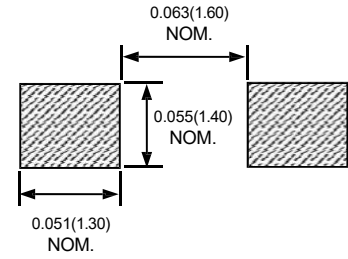
Fig. 2 - Temperature Coefficients v.s. Zener Voltage

Package Outline Dimensions in inches (millimeters)

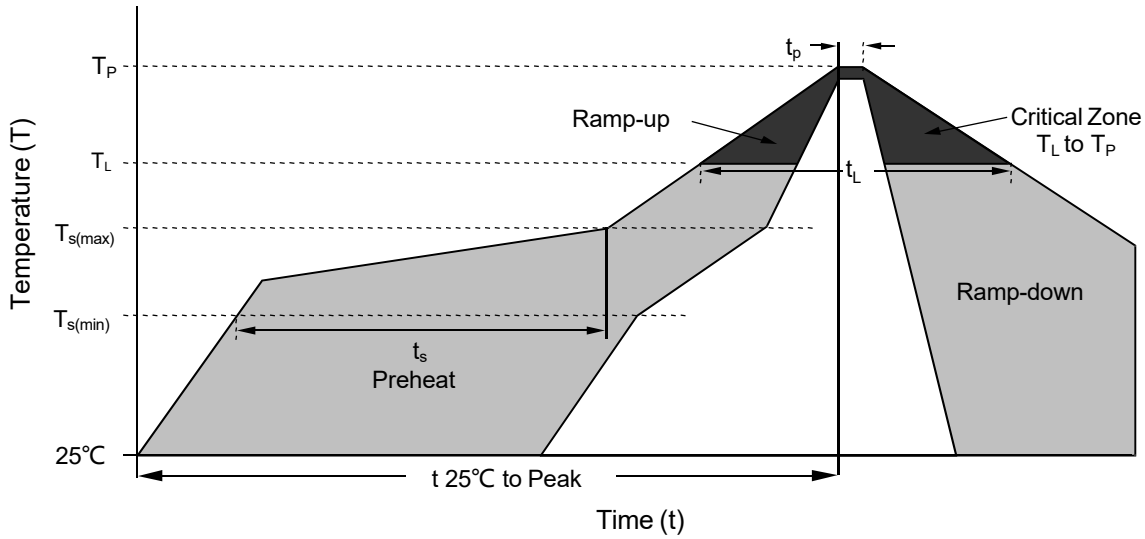
SOD-123FL



Mounting Pad Layout

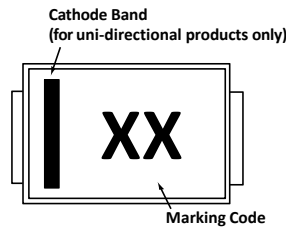


Soldering Parameters



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
SOD-123FL	Tape/Reel, 7" reel	3000
	Tape/Reel, 13" reel	10000

Tape and Reel Specification

