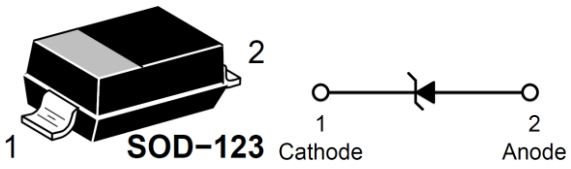
DESCRIPTION

The MMSZ5221B_BQ~MMSZ5272B_BQ are available in SOD-123 Package.

Q-Suffix for Automotive and AEC-Q101 qualified

PIN DESCRIPTION



MECHANICAL DATA

- Case: SOD-123
- 500 mW Rating on FR−4 or FR−5 Board
- Wide Zener Reverse Voltage Range 2.4 V to 110 V
- ESD Rating of Class 3 (>16 kV) per HBM
- Plastic case
- Maximum case temperature for soldering purposes: 260°C for 10 Seconds
- Polarity: Cathode indicated by polarity band
- Flammability rating: UL 94 V−0

ORDERING INFORMATION

Package Type	Part Number	
SOD-123	MMSZ5221B	MMSZ5246B
	MMSZ5222B	MMSZ5247B
	MMSZ5223B	MMSZ5248B
	MMSZ5224B	MMSZ5250B
	MMSZ5225B	MMSZ5251B
	MMSZ5226B	MMSZ5252B
	MMSZ5227B	MMSZ5253B
	MMSZ5228B	MMSZ5254B
	MMSZ5229B	MMSZ5255B
	MMSZ5230B	MMSZ5256B
	MMSZ5231B	MMSZ5257B
	MMSZ5232B	MMSZ5258B
	MMSZ5233B	MMSZ5259B
	MMSZ5234B	MMSZ5260B
	MMSZ5235B	MMSZ5261B
	MMSZ5236B	MMSZ5262B
	MMSZ5237B	MMSZ5263B
	MMSZ5238B	MMSZ5264B
	MMSZ5239B	MMSZ5265B
	MMSZ5240B	MMSZ5266B
	MMSZ5241B	MMSZ5267B
	MMSZ5242B	MMSZ5268B
	MMSZ5243B	MMSZ5269B
	MMSZ5244B	MMSZ5270B
	MMSZ5245B	MMSZ5272B
Note	SPQ: 3,000pcs/Reel	
AiT provides all RoHS Compliant Products		

Package Type	Part Number	
SOD-123 AEC-Q	MMSZ5221BQ	MMSZ5246BQ
	MMSZ5222BQ	MMSZ5247BQ
	MMSZ5223BQ	MMSZ5248BQ
	MMSZ5224BQ	MMSZ5250BQ
	MMSZ5225BQ	MMSZ5251BQ
	MMSZ5226BQ	MMSZ5252BQ
	MMSZ5227BQ	MMSZ5253BQ
	MMSZ5228BQ	MMSZ5254BQ
	MMSZ5229BQ	MMSZ5255BQ
	MMSZ5230BQ	MMSZ5256BQ
	MMSZ5231BQ	MMSZ5257BQ
	MMSZ5232BQ	MMSZ5258BQ
	MMSZ5233BQ	MMSZ5259BQ
	MMSZ5234BQ	MMSZ5260BQ
	MMSZ5235BQ	MMSZ5261BQ
	MMSZ5236BQ	MMSZ5262BQ
	MMSZ5237BQ	MMSZ5263BQ
	MMSZ5238BQ	MMSZ5264BQ
	MMSZ5239BQ	MMSZ5265BQ
	MMSZ5240BQ	MMSZ5266BQ
	MMSZ5241BQ	MMSZ5267BQ
	MMSZ5242BQ	MMSZ5268BQ
	MMSZ5243BQ	MMSZ5269BQ
	MMSZ5244BQ	MMSZ5270BQ
	MMSZ5245BQ	MMSZ5272BQ
Note	SPQ: 3,000pcs/Reel	
AiT provides all RoHS Compliant Products		

ABSOLUTE MAXIMUM RATINGS

T_A = 25℃

P_D, Total Power Dissipation on FR−5 Board, (1)	
@ T_L = 75℃	500mW
Derated above 75℃	6.7mW/℃
$R_{\theta JA}$, Typical Thermal Resistance Junction to Ambient (2)	340℃/W
$R_{\theta JL}$,Thermal Resistance, Junction−to−Lead (2)	150℃/W
T_{STG}, Storage Temperature Range	-55℃ ~ +150℃
T_J, Junction Temperature	150℃

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

(1) FR−5 = 3.5 X 1.5 inches, using the minimum recommended footprint.

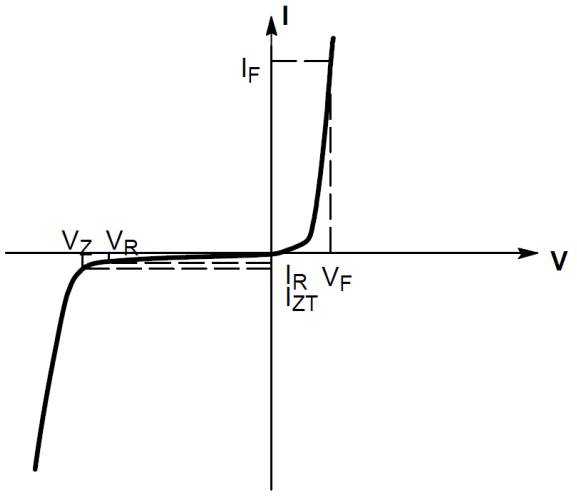
(2) Thermal Resistance measurement obtained via infrared Scan Method.

ELECTRICAL CHARACTERISTICS

T_A = 25℃ unless otherwise specified, V_F = 0.9V Max@ I_F =10mA

Symbol	Parameter
V_Z	Reverse Zener Voltage @ I_{ZT}
I_{ZT}	Reverse Current
Z_{ZT}	Maximum Zener Impedance @ I_{ZT}
I_{ZK}	Reverse Current
Z_{ZK}	Maximum Zener Impedance @ I_{ZK}
I_R	Reverse Leakage Current @ V_R
V_R	Reverse Voltage
I_F	Forward Current
V_F	Forward Voltage @ I_F

Zener Voltage Regulator



ELECTRICAL CHARACTERISTICS

T_A = 25°C unless otherwise specified, V_F = 0.9V Max@ I_F =10mA

Part Number		Zener Voltage Range (1) (2)				Zener Impedance (3)			Leakage Current	
		V_Z@I_{ZT}(V)			@I_{ZT}	Z_{ZT}@I_{ZT}	Z_{ZK} @ I_{ZK}		I_R @ V_R	
		Min	Nom	Max	mA	Ω	Ω	mA	uA	Volts
MMSZ5221B	MMSZ5221BQ	2.28	2.4	2.52	20	30	1200	0.25	100	1
MMSZ5222B	MMSZ5222BQ	2.38	2.5	2.63	20	30	1250	0.25	100	1
MMSZ5223B	MMSZ5223BQ	2.57	2.7	2.84	20	30	1300	0.25	75	1
MMSZ5224B	MMSZ5224BQ	2.66	2.8	2.94	20	30	1400	0.25	75	1
MMSZ5225B	MMSZ5225BQ	2.85	3.0	3.15	20	29	1600	0.25	50	1
MMSZ5226B	MMSZ5226BQ	3.14	3.3	3.47	20	28	1600	0.25	25	1
MMSZ5227B	MMSZ5227BQ	3.42	3.6	3.78	20	24	1700	0.25	15	1
MMSZ5228B	MMSZ5228BQ	3.71	3.9	4.10	20	23	1900	0.25	10	1
MMSZ5229B	MMSZ5229BQ	4.09	4.3	4.52	20	22	2000	0.25	5	1
MMSZ5230B	MMSZ5230BQ	4.47	4.7	4.94	20	19	1900	0.25	5	2
MMSZ5231B	MMSZ5231BQ	4.85	5.1	5.36	20	17	1600	0.25	5	2
MMSZ5232B	MMSZ5232BQ	5.32	5.6	5.88	20	11	1600	0.25	5	3
MMSZ5233B	MMSZ5233BQ	5.70	6.0	6.30	20	7	1600	0.25	5	3.5
MMSZ5234B	MMSZ5234BQ	5.89	6.2	6.51	20	7	1000	0.25	5	4
MMSZ5235B	MMSZ5235BQ	6.46	6.8	7.14	20	5	750	0.25	3	5
MMSZ5236B	MMSZ5236BQ	7.13	7.5	7.88	20	6	500	0.25	3	6
MMSZ5237B	MMSZ5237BQ	7.79	8.2	8.61	20	8	500	0.25	3	6.5
MMSZ5238B	MMSZ5238BQ	8.27	8.7	9.14	20	8	600	0.25	3	6.5
MMSZ5239B	MMSZ5239BQ	8.65	9.1	9.56	20	10	600	0.25	3	7
MMSZ5240B	MMSZ5240BQ	9.50	10	10.50	20	17	600	0.25	3	8
MMSZ5241B	MMSZ5241BQ	10.45	11	11.55	20	22	600	0.25	2	8.4
MMSZ5242B	MMSZ5242BQ	11.40	12	12.60	20	30	600	0.25	1	9.1
MMSZ5243B	MMSZ5243BQ	12.35	13	13.65	9.5	13	600	0.25	0.5	9.9
MMSZ5244B	MMSZ5244BQ	13.30	14	14.70	9.0	15	600	0.25	0.1	10
MMSZ5245B	MMSZ5245BQ	14.25	15	15.75	8.5	16	600	0.25	0.1	11

(1) The type numbers shown have a standard tolerance of ±5% on the nominal Zener voltage.

(2) Nominal Zener voltage is measured with the device junction in thermal equilibrium at T_L = 30°C ±1°C.

(3) Z_{ZT} and Z_{ZK} are measured by dividing the AC voltage drop across the device by the ac current applied. The specified limits are for $I_{Z(AC)}$ = 0.1 $I_{Z(dc)}$ with the AC frequency = 1 KHz.

Part Number		Zener Voltage Range (1) (2)				Zener Impedance (3)			Leakage Current	
		V_Z@I_{ZT}(V)			@I_{ZT}	Z_{ZT}@I_{ZT}	Z_{ZK} @ I_{ZK}		I_R @ V_R	
		Min	Nom	Max	mA	Ω	Ω	mA	uA	Volts
MMSZ5246B	MMSZ5246BQ	15.20	16	16.80	7.8	17	600	0.25	0.1	12
MMSZ5247B	MMSZ5247BQ	16.15	17	17.85	7.4	19	600	0.25	0.1	13
MMSZ5248B	MMSZ5248BQ	17.10	18	18.90	7.0	21	600	0.25	0.1	14
MMSZ5250B	MMSZ5250BQ	19.00	20	21.00	6.2	25	600	0.25	0.1	15
MMSZ5251B	MMSZ5251BQ	20.90	22	23.10	5.6	29	600	0.25	0.1	17
MMSZ5252B	MMSZ5252BQ	22.80	24	25.20	5.2	33	600	0.25	0.1	18
MMSZ5253B	MMSZ5253BQ	23.75	25	26.25	5.0	35	600	0.25	0.1	19
MMSZ5254B	MMSZ5254BQ	25.65	27	28.35	4.6	41	600	0.25	0.1	21
MMSZ5255B	MMSZ5255BQ	26.60	28	29.40	4.5	44	600	0.25	0.1	21
MMSZ5256B	MMSZ5256BQ	28.50	30	31.50	4.2	49	600	0.25	0.1	23
MMSZ5257B	MMSZ5257BQ	31.35	33	34.65	3.8	58	700	0.25	0.1	25
MMSZ5258B	MMSZ5258BQ	34.20	36	37.80	3.4	70	700	0.25	0.1	27
MMSZ5259B	MMSZ5259BQ	37.05	39	40.95	3.2	80	800	0.25	0.1	30
MMSZ5260B	MMSZ5260BQ	40.85	43	45.15	3.0	93	900	0.25	0.1	33
MMSZ5261B	MMSZ5261BQ	44.65	47	49.35	2.7	105	1000	0.25	0.1	36
MMSZ5262B	MMSZ5262BQ	48.45	51	53.55	2.5	125	1100	0.25	0.1	39
MMSZ5263B	MMSZ5263BQ	53.20	56	58.80	2.2	150	1300	0.25	0.1	43
MMSZ5264B	MMSZ5264BQ	57.00	60	63.00	2.1	170	1400	0.25	0.1	46
MMSZ5265B	MMSZ5265BQ	58.90	62	65.10	2.0	185	1400	0.25	0.1	47
MMSZ5266B	MMSZ5266BQ	64.60	68	71.40	1.8	230	1600	0.25	0.1	52
MMSZ5267B	MMSZ5267BQ	71.25	75	78.75	1.7	270	1700	0.25	0.1	56
MMSZ5268B	MMSZ5268BQ	77.90	82	86.10	1.5	330	2000	0.25	0.1	62
MMSZ5269B	MMSZ5269BQ	82.65	87	91.35	1.4	370	2200	0.25	0.1	68
MMSZ5270B	MMSZ5270BQ	86.45	91	95.55	1.4	400	2300	0.25	0.1	69
MMSZ5272B	MMSZ5272BQ	104.5	110	115.5	1.1	750	3000	0.25	0.1	84

(1) The type numbers shown have a standard tolerance of ±5% on the nominal Zener voltage.

(2) Nominal Zener voltage is measured with the device junction in thermal equilibrium at T_L = 30°C ±1°C.

(3) Z_{ZT} and Z_{ZK} are measured by dividing the AC voltage drop across the device by the ac current applied. The specified limits are for $I_{Z(AC)}$ = 0.1 $I_{Z(dc)}$ with the AC frequency = 1 KHz.

TYPICAL CHARACTERISTICS

Fig.1 Temperature Coefficients
(Temperature Range -55℃ to 150℃)

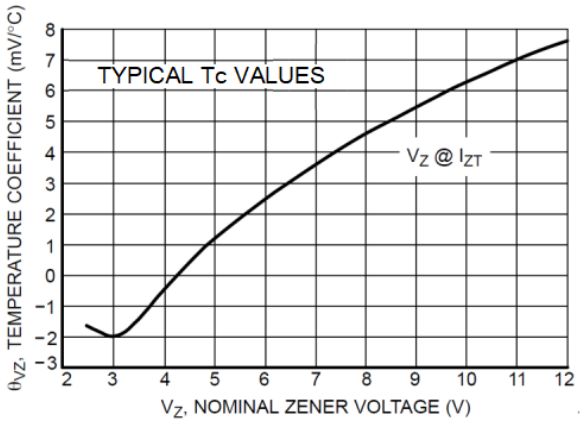


Fig.2 Temperature Coefficients
(Temperature Range -55℃ to 150℃)

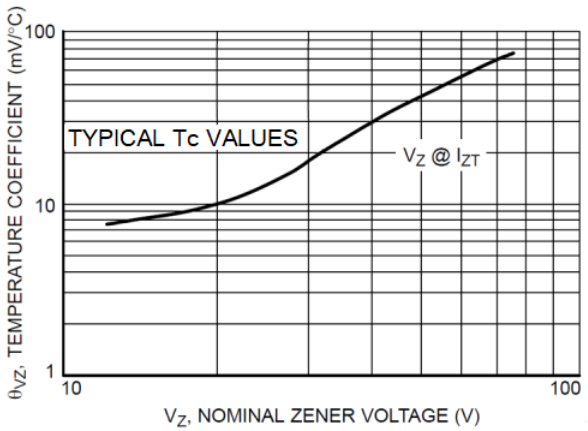


Fig.3 Steady State Power Derating

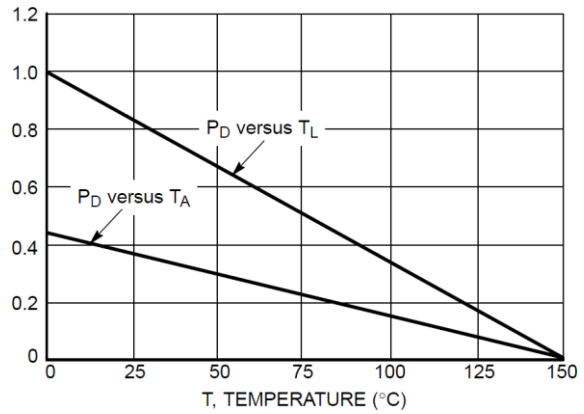


Fig.4 Maximum Nonrepetitive Surge Power

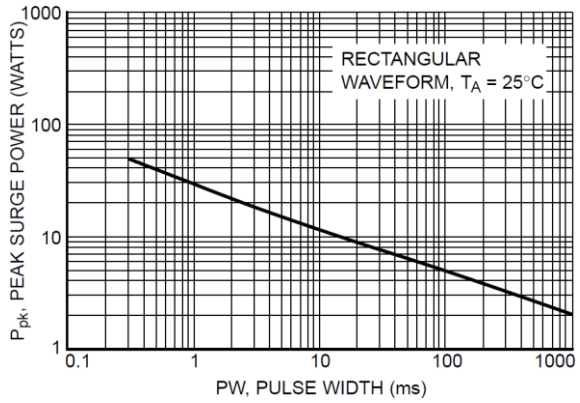


Fig.5 Effect of Zener Voltage on Zener Impedance

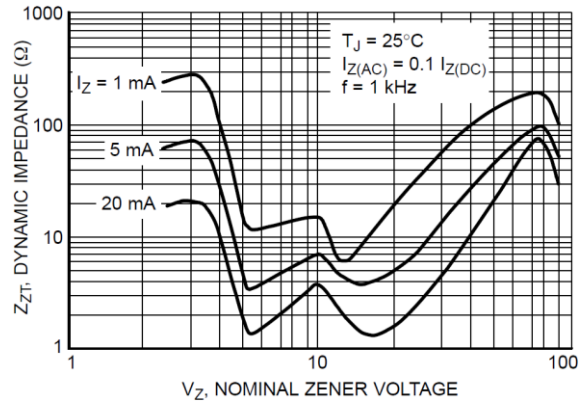


Fig.6 Typical Forward Voltage

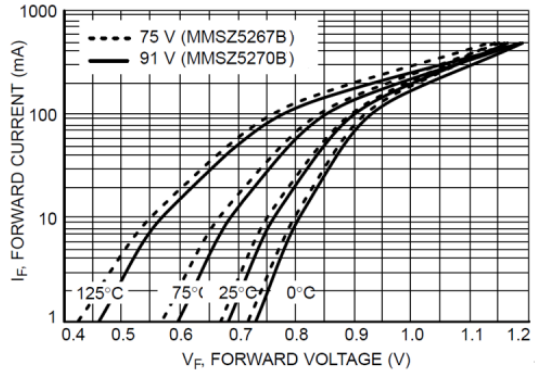


Fig.7 Typical Capacitance

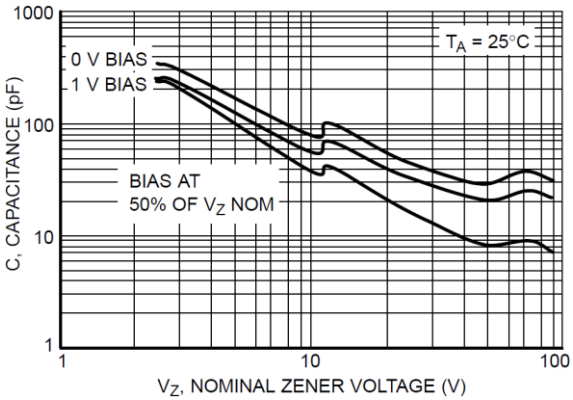


Fig.8 Typical Leakage Current

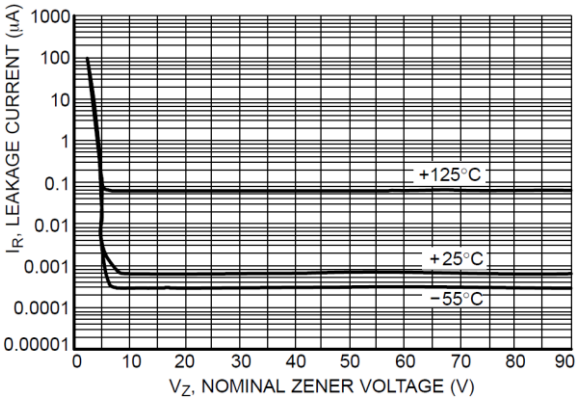


Fig.9 Zener Voltage versus Zener Current
(VZ Up to 12 V)

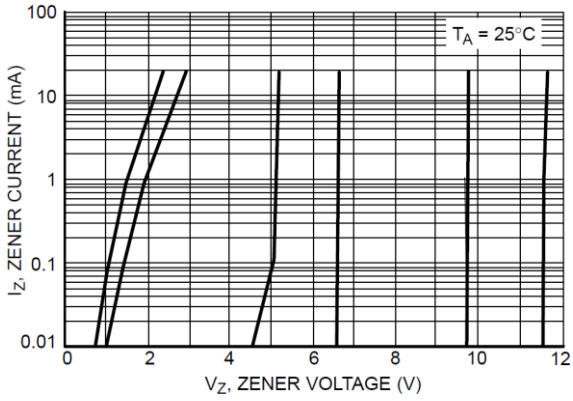
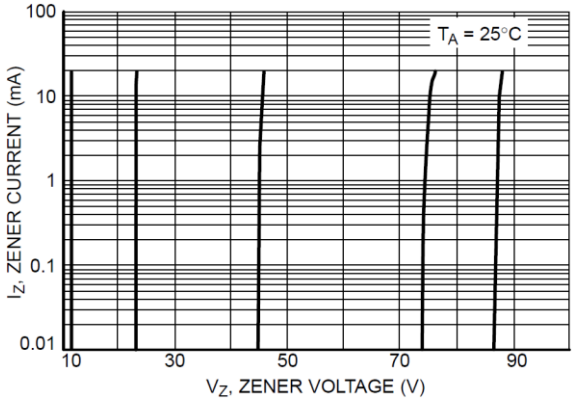
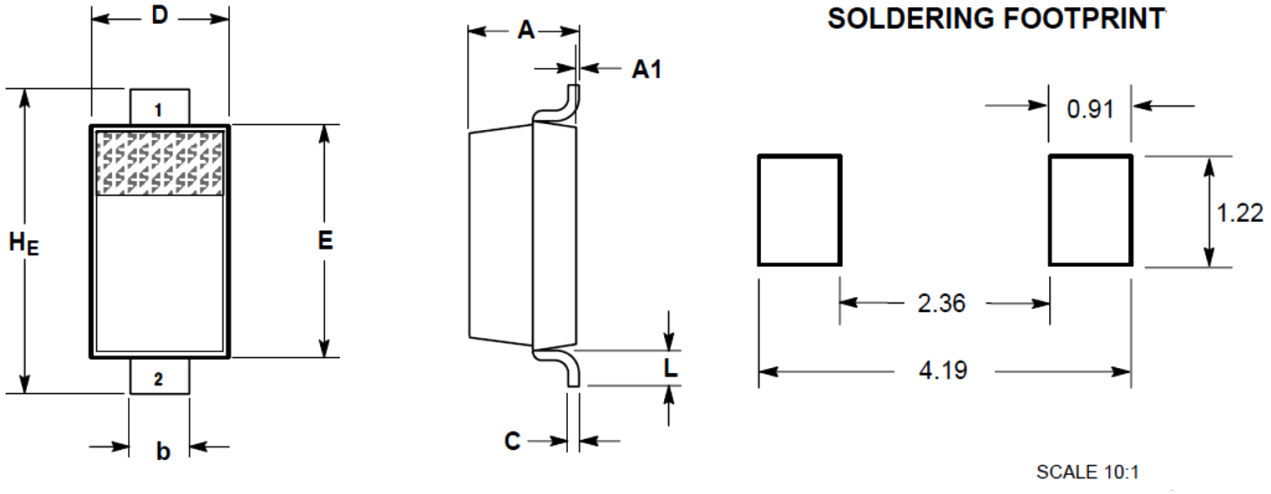


Fig.10 Zener Voltage versus Zener Current
(12V to 91V)



PACKAGE INFORMATION

Dimension in SOD-123 Package (Unit: mm)



Symbol	Min.	Max.
A	0.940	1.350
A1	0.000	0.100
b	0.510	0.710
c	-	0.150
D	1.400	1.800
E	2.540	2.840
H_E	3.560	3.860
L	0.250	-

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