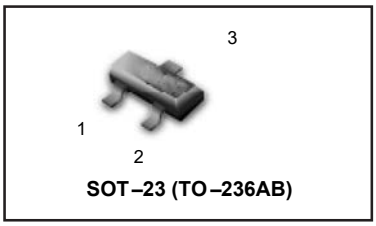
Zener Voltage Regalators

225 mW SOT–23 Surface Mount

MBZ52xxBL Series
S-MBZ52xxBL Series

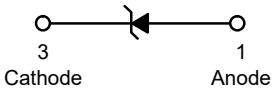
This series of Zener diodes is offered in the convenient, surface mount plastic SOT–23 package. These devices are designed to provide voltage regulation with minimum space requirement. They are well suited for applications such as cellular phones, hand held portables, and high density PC boards.



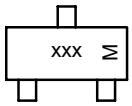
SOT–23 (TO–236AB)

Specification Features:

- 225 mW Rating on FR–4 or FR–5 Board
- Zener Voltage Range – 2.4 V to 91 V
- Small Package Size for High Density Applications
- ESD Rating of Class 3 (>8 KV) per Human Body Model
- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.



MARKING DIAGRAM



xxx = Specific Device Code
M = Date Code

Mechanical Characteristics:
CASE: Void-free, transfer-molded, thermosetting plastic case
FINISH: Corrosion resistant finish, easily solderable
MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES:
260°C for 10 Seconds
POLARITY: Cathode indicated by polarity band
FLAMMABILITY RATING:
UL94 V–0**MAXIMUM RATINGS**

Rating	Symbol	Max	Unit
Total Power Dissipation on FR–5 Board, (Note 1) @ T_A = 25°C Derated above 25°C	P_D	225 1.8	mW mW/°C
Thermal Resistance – Junction–to–Ambient	$R_{\theta JA}$	556	°C/W
Total Power Dissipation on Alumina Substrate, (Note 2) @ T_A = 25°C Derated above 25°C	P_D	300 2.4	mW mW/°C
Thermal Resistance – Junction‘to–Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	–65 to +150	°C

1. FR–5 = 1.0 X 0.75 X 0.62 in.
2. Alumina = 0.4 X 0.3 X 0.024 in., 99.5% alumina

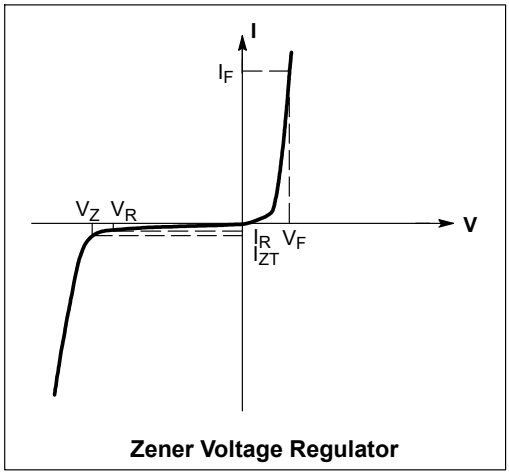
ORDERING INFORMATION

Device	Package	Shipping
MBZ52xxBL Series S-MBZ52xxBL Series	SOT-23	3000/Tape&Reel

ELECTRICAL CHARACTERISTICS

(Pinout: 1-Anode, 2-No Connection, 3-Cathode) (T_A = 25°C unless otherwise noted, V_F = 0.95 V Max. @ I_F = 10 mA)

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

MBZ52xxBL Series , S-MBZ52xxBL Series

ELECTRICAL CHARACTERISTICS (Pinout: 1-Anode, 2-NC, 3-Cathode) (V_F = 0.9 V Max @ I_F = 10 mA for all types.)

Device	Device Marking	Zener Voltage (Note 3)				Zener Impedance			Leakage Current	
		V_Z (Volts)			@ I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}		I_R @ V_R	
		Min	Nom	Max	mA	Ω	Ω	mA	μA	Volts
MBZ5221BL	18A	2.28	2.4	2.52	20	30	1200	0.25	100	1
MBZ5222BL	18B	2.37	2.5	2.63	20	30	1250	0.25	100	1
MBZ5223BL	18C	2.56	2.7	2.84	20	30	1300	0.25	75	1
MBZ5224BL	18D	2.66	2.8	2.94	20	30	1400	0.25	75	1
MBZ5225BL	18E	2.85	3	3.15	20	29	1600	0.25	50	1
MBZ5226BL	8A	3.13	3.3	3.47	20	28	1600	0.25	25	1
MBZ5227BL	8B	3.42	3.6	3.78	20	24	1700	0.25	15	1
MBZ5228BL	8C	3.70	3.9	4.10	20	23	1900	0.25	10	1
MBZ5229BL	8D	4.08	4.3	4.52	20	22	2000	0.25	5	1
MBZ5230BL	8E	4.46	4.7	4.94	20	19	1900	0.25	5	2
MBZ5231BL	***8F***	***4.84***	***5.1***	***5.36***	***20***	***17***	***1600***	***0.25***	***5***	***2***
MBZ5232BL	***8G***	***5.32***	***5.6***	***5.88***	***20***	***11***	***1600***	***0.25***	***5***	***3***
MBZ5233BL	8H	5.70	6	6.30	20	7	1600	0.25	5	3.5
MBZ5234BL	***8J***	***5.89***	***6.2***	***6.51***	***20***	***7***	***1000***	***0.25***	***5***	***4***
MBZ5235BL	***8K***	***6.46***	***6.8***	***7.14***	***20***	***5***	***750***	***0.25***	***3***	***5***
MBZ5236BL	8L	7.12	7.5	7.88	20	6	500	0.25	3	6
MBZ5237BL	8M	7.79	8.2	8.61	20	8	500	0.25	3	6.5
MBZ5238BL	8N	8.26	8.7	9.14	20	8	600	0.25	3	6.5
MBZ5239BL	8P	8.64	9.1	9.56	20	10	600	0.25	3	7
MBZ5240BL	***8Q***	***9.50***	***10***	***10.50***	***20***	***17***	***600***	***0.25***	***3***	***8***
MBZ5241BL	8R	10.4	11	11.55	20	22	600	0.25	2	8.4
MBZ5242BL	***8S***	***11.40***	***12***	***12.60***	***20***	***30***	***600***	***0.25***	***1***	***9.1***
MBZ5243BL	8T	12.35	13	13.65	9.5	13	600	0.25	0.5	9.9
MBZ5244BL	8U	13.30	14	14.70	9	15	600	0.25	0.1	10
MBZ5245BL	***8V***	***14.25***	***15***	***15.75***	***8.5***	***16***	***600***	***0.25***	***0.1***	***11***
MBZ5246BL	8W	15.20	16	16.80	7.8	17	600	0.25	0.1	12
MBZ5247BL	8X	16.15	17	17.85	7.4	19	600	0.25	0.1	13
MBZ5248BL	***8Y***	***17.10***	***18***	***18.90***	***7***	***21***	***600***	***0.25***	***0.1***	***14***
MBZ5249BL	8Z	18.05	19	19.95	6.6	23	600	0.25	0.1	14
MBZ5250BL	***81A***	***19.00***	***20***	***21.00***	***6.2***	***25***	***600***	***0.25***	***0.1***	***15***
MBZ5251BL	81B	20.90	22	23.10	5.6	29	600	0.25	0.1	17
MBZ5252BL	81C	22.80	24	25.20	5.2	33	600	0.25	0.1	18
MBZ5253BL	81D	23.75	25	26.25	5	35	600	0.25	0.1	19
MBZ5254BL	***81E***	***25.65***	***27***	***28.35***	***4.6***	***41***	***600***	***0.25***	***0.1***	***21***
MBZ5255BL	81F	26.60	28	29.40	4.5	44	600	0.25	0.1	21
MBZ5256BL	81G	28.50	30	31.50	4.2	49	600	0.25	0.1	23
MBZ5257BL	***81H***	***31.35***	***33***	***34.65***	***3.8***	***58***	***700***	***0.25***	***0.1***	***25***
MBZ5258BL	81J	34.20	36	37.80	3.4	70	700	0.25	0.1	27
MBZ5259BL	81K	37.05	39	40.95	3.2	80	800	0.25	0.1	30
MBZ5260BL	81L	40.85	43	45.15	3	93	900	0.25	0.1	33
MBZ5261BL	81M	44.65	47	49.35	2.7	105	1000	0.25	0.1	36
MBZ5262BL	81N	48.45	51	53.55	2.5	125	1100	0.25	0.1	39
MBZ5263BL	81P	53.20	56	58.80	2.2	150	1300	0.25	0.1	43
MBZ5264BL	81Q	57.00	60	63.00	2.1	170	1400	0.25	0.1	46
MBZ5265BL	81R	58.90	62	65.10	2	185	1400	0.25	0.1	47
MBZ5266BL	81S	64.60	68	71.40	1.8	230	1600	0.25	0.1	52
MBZ5267BL	81T	71.25	75	78.75	1.7	270	1700	0.25	0.1	56

3. Zener voltage is measured with a pulse test current I_Z at an ambient temperature of 25°C

TYPICAL CHARACTERISTICS

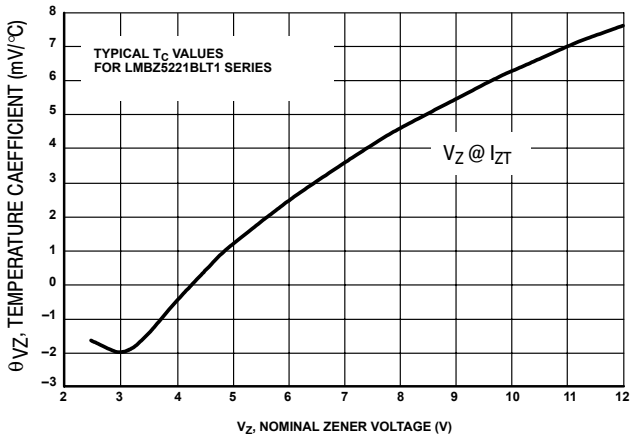


Figure 1. Temperature Coefficients (Temperature Range –55°C to +150°C)

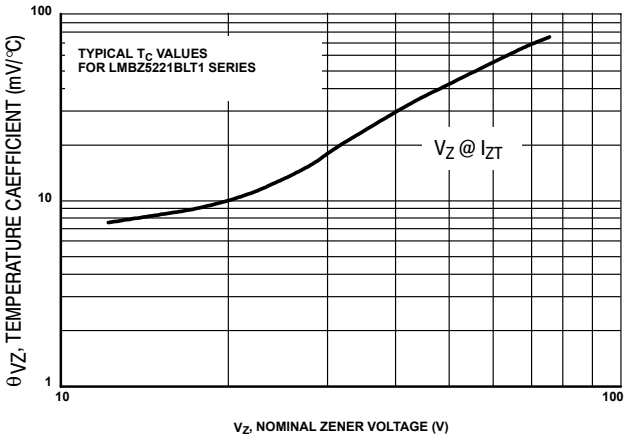


Figure 2. Temperature Coefficients (Temperature Range –55°C to +150°C)

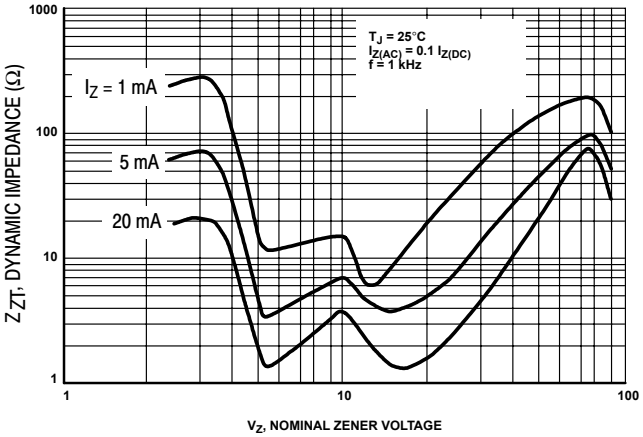


Figure 3. Effect of Zener Voltage on Zener Impedance

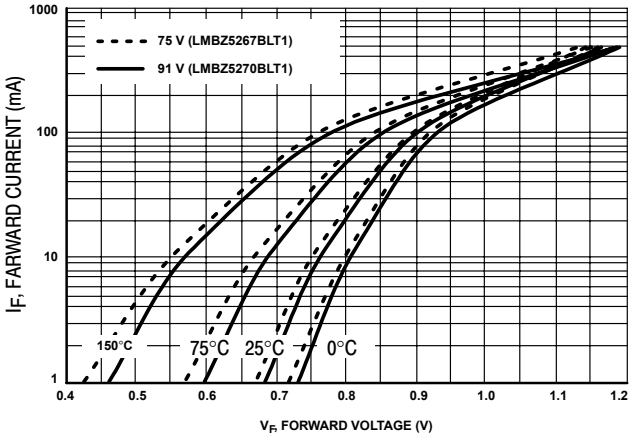


Figure 4. Typical Forward Voltage

TYPICAL CHARACTERISTICS

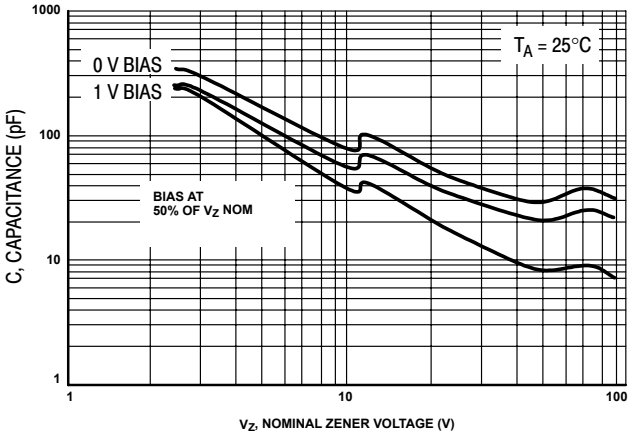


Figure 5. Typical Capacitance

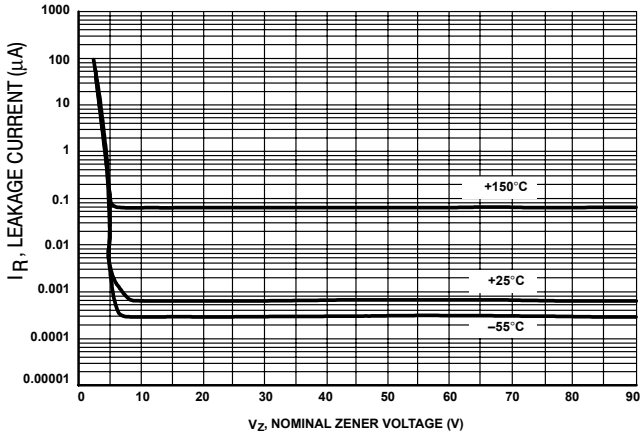


Figure 6. Typical Leakage Current

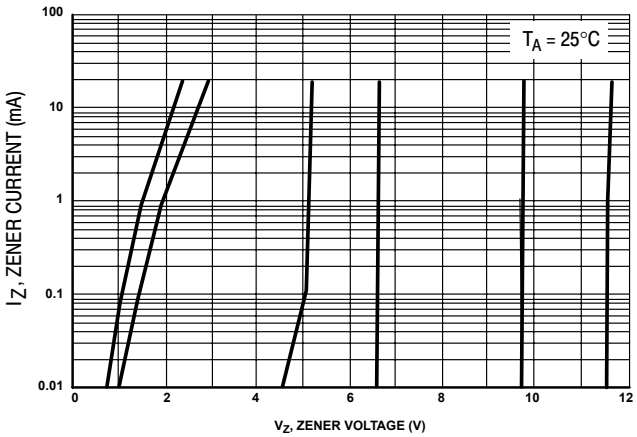


Figure 7. Zener Voltage versus Zener Current (V_Z Up to 12 V)

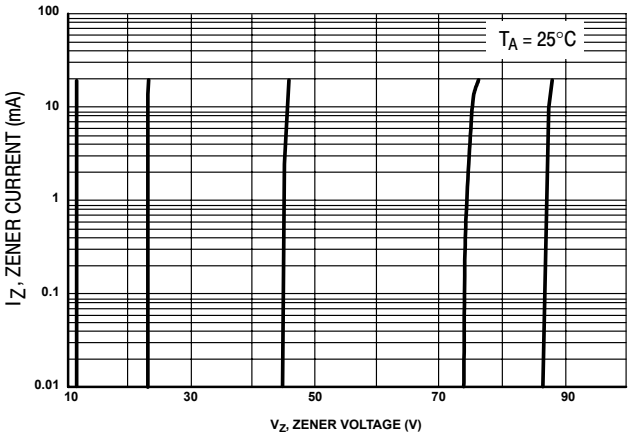
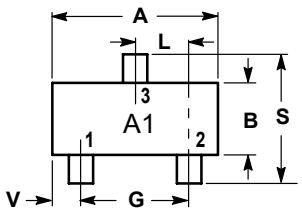
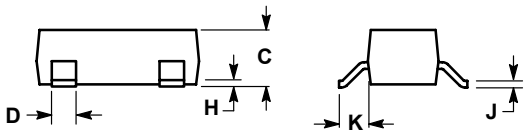


Figure 8. Zener Voltage versus Zener Current (12 V to 91 V)

MBZ52xxBL Series , S-MBZ52xxBL Series

SOT–23





NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60