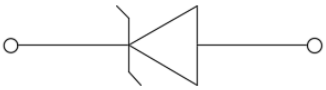
Surface Mount Zener Diodes



Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C

Mechanical Data

- **Package**: DO-214AA (SMB)
  Molding compound meets UL 94 V-0 flammability rating, -compliant, halogen-free
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

■Maximum Ratings (Ta=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	MAX
DC power dissipation at TL = 75 °C	P_D	W	5
Maximum instantaneous forward voltage@ I_F=500mA	V_F	V	1.5
Maximum junction temperature	T_j	℃	-55 to +150
Storage temperature range	T_{stg}	℃	-55 to +150

■Thermal Characteristics (Ta=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Conditions	VALUE
Thermal resistance(Typical)	$R_{\theta J-L}$(1)	℃/W	junction to lead	20
	$R_{\theta J-A}$(1)	℃/W	junction to ambient	80

Note
(1) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

■Electrical Characteristics (Ta=25℃ Unless otherwise specified)

Part Number	Nominal Zener voltage			Test current	Maximum dynamic impedance resistance			Maximum reverse leakage current		Maximum DC Zener Current
	Min V_Z(1) at I_{ZT}	Typ. V_Z(1) at I_{ZT}	Max V_Z(1) at I_{ZT}	I_{ZT}	Z_{ZT} at I_{ZT}	Z_{ZK} at I_{ZK}	I_{ZK}	I_R	Test voltage V_R	I_{ZM}
	V	V	V	mA	Ω	Ω	mA	μA	V	mA
SMB5Z6.8A	6.46	6.8	7.14	175	1	200	1	10	5.2	700
SMB5Z7.5A	7.13	7.5	7.88	175	1.5	200	1	10	5.7	630
SMB5Z8.2A	7.79	8.2	8.61	150	1.5	200	1	10	6.2	580
SMB5Z8.7A	8.27	8.7	9.14	150	2	200	1	10	6.6	545
SMB5Z9.1A	8.65	9.1	9.56	150	2	150	1	7.5	6.9	520

SMB5ZXXA SERIES

Part Number	Nominal Zener voltage			Test current	Maximum dynamic impedance resistance			Maximum reverse leakage current		Maximum DC Zener Current
	Min V_Z[1] at I_{ZT}	Typ. V_Z[1] at I_{ZT}	Max V_Z[1] at I_{ZT}	I_{ZT}	Z_{ZT} at I_{ZT}	Z_{ZK} at I_{ZK}	I_{ZK}	I_R	Test voltage V_R	I_{ZM}
	V	V	V	mA	Ω	Ω	mA	μA	V	mA
SMB5Z10A	9.50	10.0	10.50	125	2	125	1	5	7.6	475
SMB5Z11A	10.45	11.0	11.55	125	2.5	125	1	5	8.4	430
SMB5Z12A	11.40	12.0	12.60	100	2.5	125	1	2	9.1	395
SMB5Z13A	12.35	13.0	13.65	100	2.5	100	1	1	9.9	365
SMB5Z14A	13.30	14.0	14.70	100	2.5	75	1	1	10.6	340
SMB5Z15A	14.25	15.0	15.75	75	2.5	75	1	1	11.5	315
SMB5Z16A	15.20	16.0	16.80	75	2.5	75	1	1	12.2	295
SMB5Z17A	16.15	17.0	17.85	70	2.5	75	1	0.5	12.9	280
SMB5Z18A	17.10	18.0	18.90	65	2.5	75	1	0.5	13.7	264
SMB5Z19A	18.05	19.0	19.95	65	3	75	1	0.5	14.4	250
SMB5Z20A	19.00	20.0	21.00	65	3	75	1	0.5	15.2	237
SMB5Z22A	20.90	22.0	23.10	50	3.5	75	1	0.5	16.7	216
SMB5Z24A	22.80	24.0	25.20	50	3.5	100	1	0.5	18.2	198
SMB5Z25A	23.75	25.0	26.25	50	4	110	1	0.5	19.0	190
SMB5Z27A	25.65	27.0	28.35	50	5	120	1	0.5	20.6	176
SMB5Z28A	26.60	28.0	29.4	50	6	130	1	0.5	21.2	170
SMB5Z30A	28.50	30.0	31.50	40	8	140	1	0.5	22.8	158
SMB5Z33A	31.35	33.0	34.65	40	10	150	1	0.5	25.1	144
SMB5Z36A	34.20	36.0	37.80	30	11	160	1	0.5	27.4	132
SMB5Z39A	37.05	39.0	40.95	30	14	170	1	0.5	29.7	122
SMB5Z43A	40.85	43.0	45.15	30	20	190	1	0.5	32.7	110
SMB5Z47A	44.65	47.0	49.35	25	25	210	1	0.5	35.8	100
SMB5Z51A	48.45	51.0	53.55	25	27	230	1	0.5	38.8	93
SMB5Z56A	53.20	56.0	58.80	20	35	280	1	0.5	42.6	86
SMB5Z60A	57.00	60.0	63.00	20	40	350	1	0.5	45.5	79
SMB5Z62A	58.90	62.0	65.10	20	42	400	1	0.5	47.1	76
SMB5Z68A	64.60	68.0	71.40	20	44	500	1	0.5	51.7	70
SMB5Z75A	71.25	75.0	78.75	20	45	620	1	0.5	56.0	63
SMB5Z82A	77.90	82.0	86.10	15	65	720	1	0.5	62.2	58
SMB5Z87A	82.65	87.0	91.35	15	75	760	1	0.5	66.0	54.5
SMB5Z91A	86.45	91.0	95.55	15	75	760	1	0.5	69.2	52.5
SMB5Z100A	95.00	100.0	105.00	12	90	800	1	0.5	76.0	47.5
SMB5Z110A	104.50	110.0	115.50	12	125	1000	1	0.5	83.6	43
SMB5Z120A	114.00	120.0	126.00	10	170	1150	1	0.5	91.2	39.5
SMB5Z130A	123.50	130.0	136.50	10	190	1250	1	0.5	98.8	36.6
SMB5Z140A	133.00	140.0	147.00	8.0	230	1500	1	0.5	106.0	34

Part Number	Nominal Zener voltage			Test current	Maximum dynamic impedance resistance			Maximum reverse leakage current		Maximum DC Zener Current
	Min V_Z(1) at I_{ZT}	Typ. V_Z(1) at I_{ZT}	Max V_Z(1) at I_{ZT}	I_{ZT}	Z_{ZT} at I_{ZT}	Z_{ZK} at I_{ZK}	I_{ZK}	I_R	Test voltage V_R	I_{ZM}
	V	V	V	mA	Ω	Ω	mA	μA	V	mA
SMB5Z150A	142.50	150.0	157.50	8.0	330	1500	1	0.5	114.0	31.6
SMB5Z160A	152.00	160.0	168.00	8.0	350	1650	1	0.5	122.0	29.4
SMB5Z170A	161.50	170.0	178.50	8.0	380	1750	1	0.5	129.0	28
SMB5Z180A	171.00	180.0	189.00	5.0	430	1750	1	0.5	137.0	26.4
SMB5Z190A	180.50	190.0	199.50A	5.0	450	1850	1	0.5	144.0	25
SMB5Z200A	190.00	200.0	210.00	5.0	480	1850	1	0.5	152.0	23.6

Notes:

（1）Nominal Zener voltage Range：95% Typ.Vz (1)at Izt----105% Typ.Vz (1)at Izt

（2）Surge current is a non-repetitive, 8.3ms pulse width square wave or equivalent sine-wave superimposed on IZT per JEDEC method

■ **Characteristics** (Typical)

Fig. 1 - Power Derating Curve

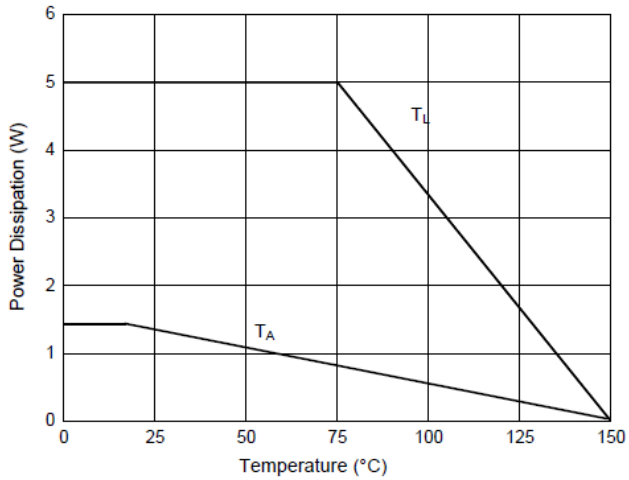


Fig. 2 - Typical Zener Breakdown Characteristics

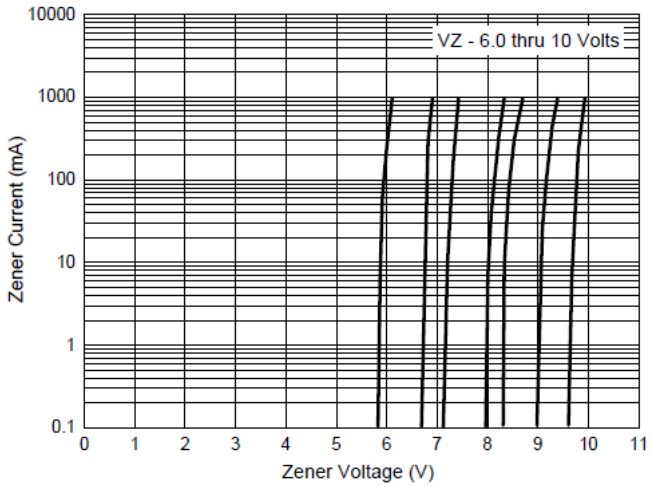


Fig. 3 - Typical Zener Breakdown Characteristics

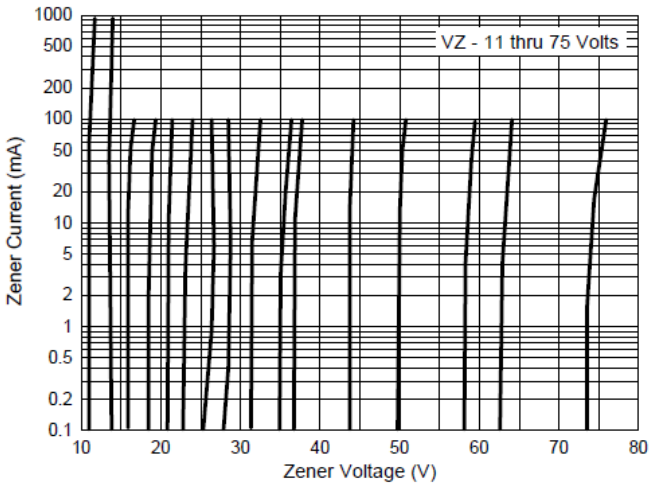
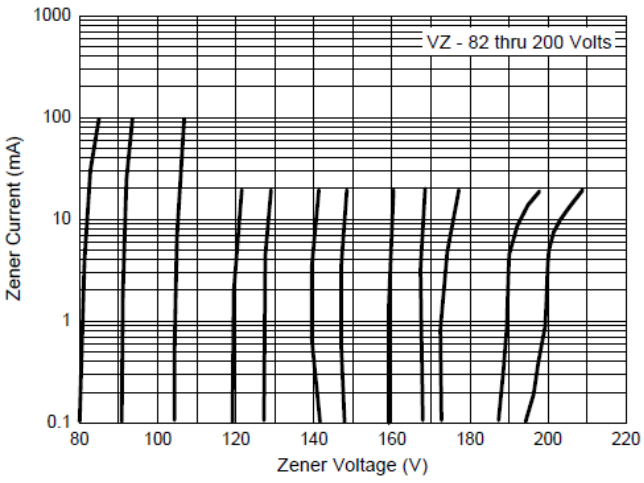


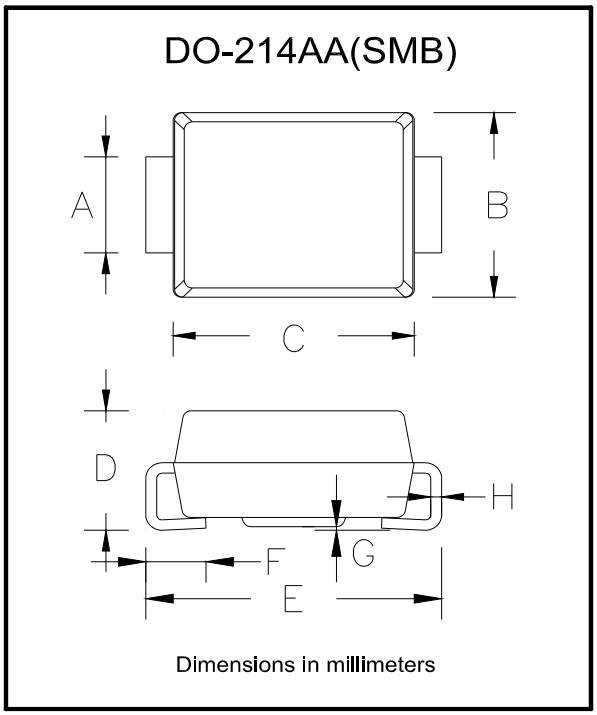
Fig. 4 - Typical Zener Breakdown Characteristics



■Ordering Information (Example)

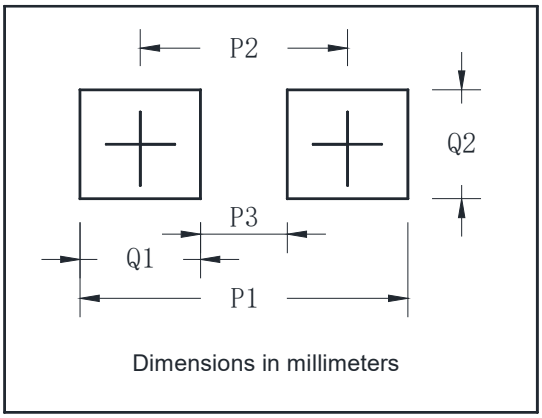
PREFERED P/N	PACKAGE CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMB5ZXXA SERIES	F1	Approximate 0.096	3000	/	48000	13” reel

■ Outline Dimensions



DO-214AA(SMB)		
Dim	Min	Max
A	1.85	2.15
B	3.30	3.94
C	4.05	4.75
D	1.99	2.61
E	5.21	5.59
F	0.90	1.41
G	0.05	0.20
H	0.15	0.31

■Suggested Pad Layout



DO-214AA(SMB)	
Dim	Millimeters
P1	6.8
P2	4.3
P3	1.8
Q1	2.5
Q2	2.3

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