1SMA5913BT3 through 1SMA5945BT3

1.5 Watt Plastic Surface Mount Silicon Zener Diodes

PLASTIC SURFACE MOUNT ZENER DIODES 1.5 WATTS 3.3–68 VOLTS

This complete new line of 1.5 Watt Zener Diodes offers the following advantages.

Specification Features:

- Voltage Range – 3.3 to 68 V
- ESD Rating of Class 3 (>16 kV) per Human Body Model
- Flat Handling Surface for Accurate Placement
- Package Design for Top Side or Bottom Circuit Board Mounting
- Low Profile Package
- Available in Tape and Reel
- Ideal Replacement for MELF Packages

Mechanical Characteristics:

- Case: Void–free, transfer-molded plastic
- Maximum Case Temperature for Soldering Purposes: 260°C for 10 seconds
- Finish: All external surfaces are corrosion resistant with readily solderable leads
- Polarity: Cathode indicated by molded polarity notch
- Mounted Position: Any

SMA
CASE 403B–01
PLASTIC

MAXIMUM RATINGS AND CHARACTERISTICS

Rating	Symbol	Value	Unit
DC Power Dissipation @ T_L = 75°C (Note 1) Derate above 75°C	P_D	1.5 20	Watts mW/°C
DC Power Dissipation @ T_A = 25°C (Note 1) Derate above 25°C	P_D	900 7.2	mW mW/°C
Thermal Resistance from Junction to Lead	$R_{\theta JL}$	29	°C/W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	111	°C/W
Peak Forward Surge @ T_A = 25°C, (JEDEC Method, Note 3)	I_{FSM}	20	Amps
Typical P_{pk} Dissipation @ T_L < 25°C, (Note 2, PW–10/1000 μs per Figure 8)	P_{pk}	200	Watts
Typical P_{pk} Dissipation @ T_L < 25°C, (Note 2, PW–8/20 μs per Figure 9)	P_{pk}	1000	Watts
Operating and Storage Junction Temperature Range	T_J, T_{stg}	150	°C

1. FR4 Board, using Motorola minimum recommended footprint, as shown in case 403B outline dimensions spec.
2. Non–repetitive current pulse.
3. Measured on 8.3 ms single half sine–wave or equivalent square wave, duty cycle = 4 pulse per minute maximum.

ELECTRICAL CHARACTERISTICS (V_F = 1.5 Volts @ I_F = 200 mA for all types)

Device	Nominal Zener Voltage V_Z @ I_{ZT} Volts	Test Current I_{ZT} mA	Max Zener Impedance			Max Reverse Leakage Current			Devce Marking
			Z_{ZT} @ I_{ZT} Ohms	Z_{ZK} Ohms	I_{ZK} mA	I_R μA	V_R Volts	Max DC Zener Current I_{ZM} mAdc	
1SMA5913BT3	3.3	113.6	10	500	1.0	50	1.0	455	813B
1SMA5914BT3	3.6	104.2	9.0	500	1.0	35.5	1.0	417	814B
1SMA5915BT3	3.9	96.1	7.5	500	1.0	12.5	1.0	385	815B
1SMA5916BT3	4.3	87.2	6.0	500	1.0	2.5	1.0	349	816B
1SMA5917BT3	4.7	79.8	5.0	500	1.0	2.5	1.5	319	817B
1SMA5918BT3	5.1	73.5	4.0	350	1.0	2.5	2.0	294	818B
1SMA5919BT3	5.6	66.9	2.0	250	1.0	2.5	3.0	268	819B
1SMA5920BT3	6.2	60.5	2.0	200	1.0	2.5	4.0	242	820B
1SMA5921BT3	6.8	55.1	2.5	200	1.0	2.5	5.2	221	821B
1SMA5922BT3	7.5	50	3.0	400	0.5	2.5	6.5	200	822B
1SMA5923BT3	8.2	45.7	3.5	400	0.5	2.5	6.8	183	823B
1SMA5924BT3	9.1	41.2	4.0	500	0.5	2.5	7.0	165	824B
1SMA5925BT3	10	37.5	4.5	500	0.25	0.5	8.0	150	825B
1SMA5926BT3	11	34.1	5.5	550	0.25	0.5	8.4	136	826B
1SMA5927BT3	12	31.2	6.5	550	0.25	0.5	9.1	125	827B
1SMA5928BT3	13	28.8	7.0	550	0.25	0.5	9.9	115	828B
1SMA5929BT3	15	25	9.0	600	0.25	0.5	11.4	100	829B
1SMA5930BT3	16	23.4	10	600	0.25	0.5	12.2	94	830B
1SMA5931BT3	18	20.8	12	650	0.25	0.5	13.7	83	831B
1SMA5932BT3	20	18.7	14	650	0.25	0.5	15.2	75	832B
1SMA5933BT3	22	17	17.5	650	0.25	0.5	16.7	68	833B
1SMA5934BT3	24	15.6	19	700	0.25	0.5	18.2	63	834B
1SMA5935BT3	27	13.9	23	700	0.25	0.5	20.6	56	835B
1SMA5936BT3	30	12.5	26	750	0.25	0.5	22.8	50	836B
1SMA5937BT3	33	11.4	33	800	0.25	0.5	25.1	45	837B
1SMA5938BT3	36	10.4	38	850	0.25	0.5	27.4	42	838B
1SMA5939BT3	39	9.6	45	900	0.25	0.5	29.7	38	839B
1SMA5940BT3	43	8.7	53	950	0.25	0.5	32.7	35	840B
1SMA5941BT3	47	8.0	67	1000	0.25	0.5	35.8	32	841B
1SMA5942BT3	51	7.3	70	1100	0.25	0.5	38.8	29	842B
1SMA5943BT3	56	6.7	86	1300	0.25	0.5	42.6	27	843B
1SMA5944BT3	62	6.0	100	1500	0.25	0.5	47.1	24	844B
1SMA5945BT3	68	5.5	120	1700	0.25	0.5	51.7	22	845B

NOTE: Tolerance and Voltage Designation Tolerance designation – The type number listed indicates a tolerance of ±5%.

Rating and Typical Characteristic Curves (T_A = 25°C)

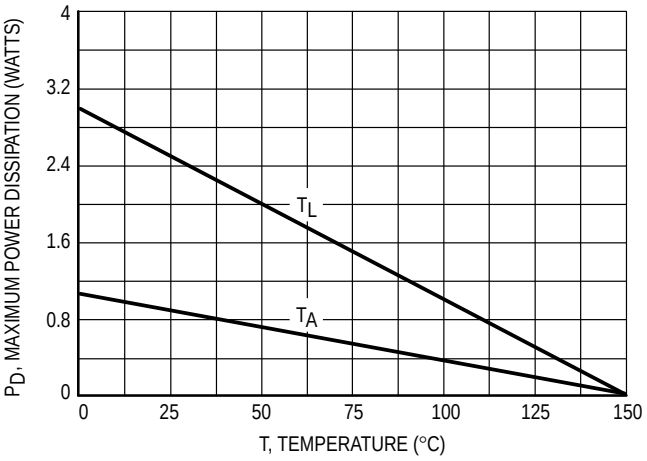


Figure 1. Steady State Power Derating

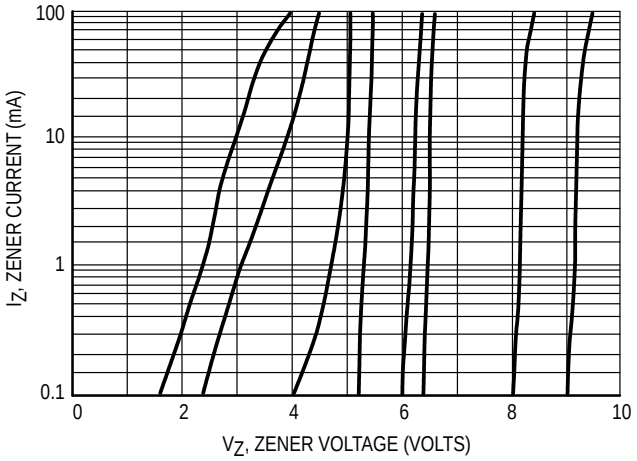


Figure 2. V_Z – 3.3 thru 10 Volts

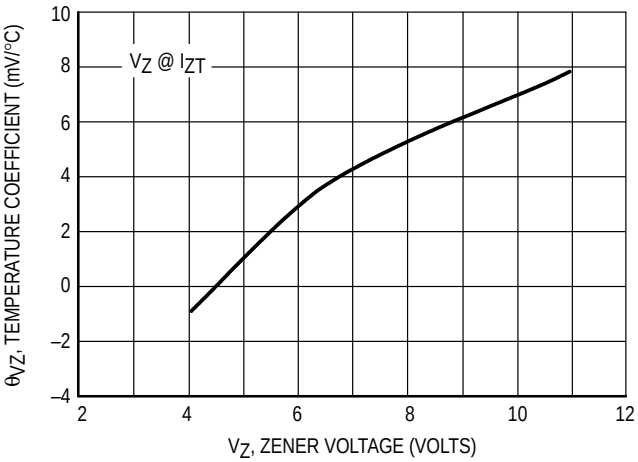


Figure 3. Zener Voltage – 3.3 to 12 Volts

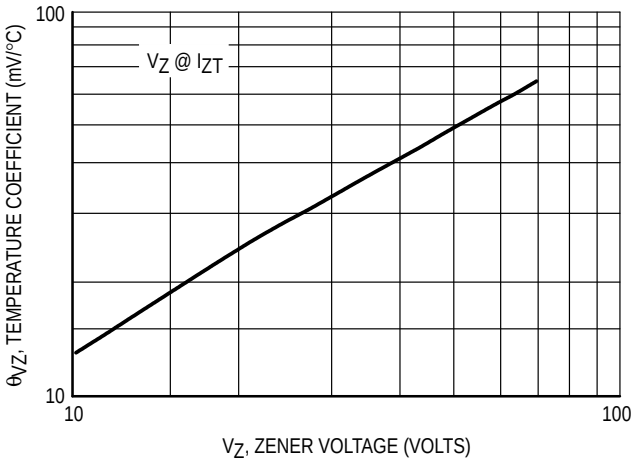


Figure 4. Zener Voltage – 14 to 68 Volts

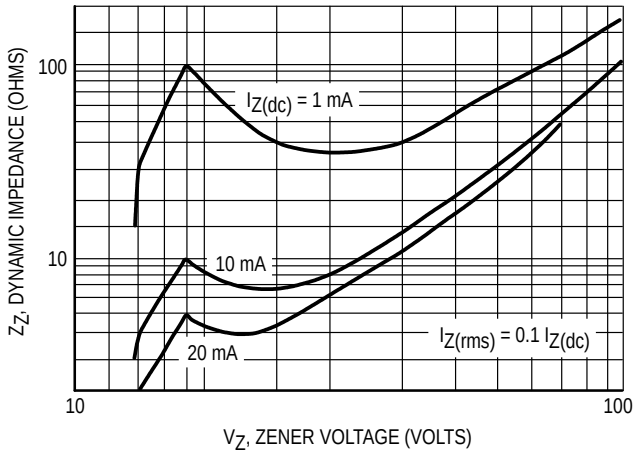


Figure 5. Effect of Zener Voltage

Rating and Typical Characteristic Curves (T_A = 25°C)

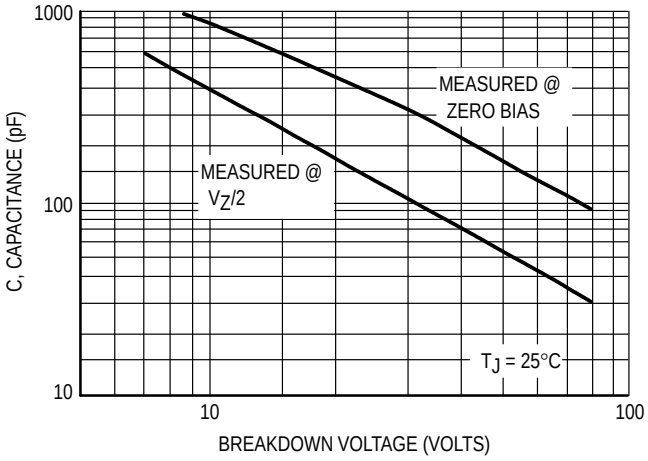


Figure 6. Capacitance Curve

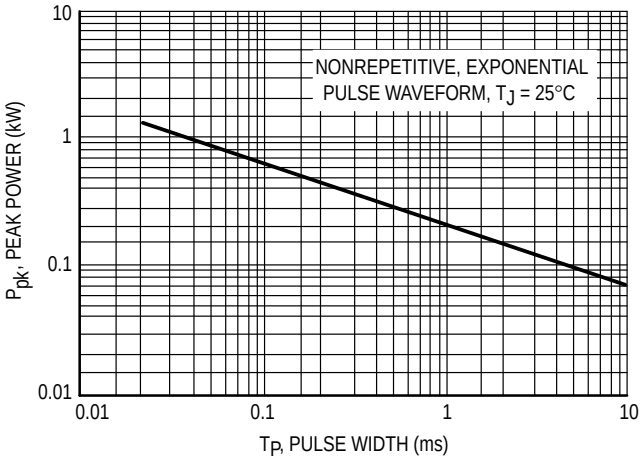


Figure 7. Typical Pulse Rating Curve

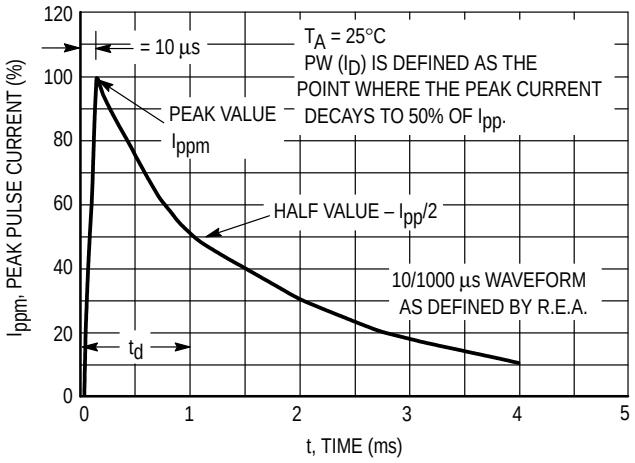


Figure 8. Pulse Waveform

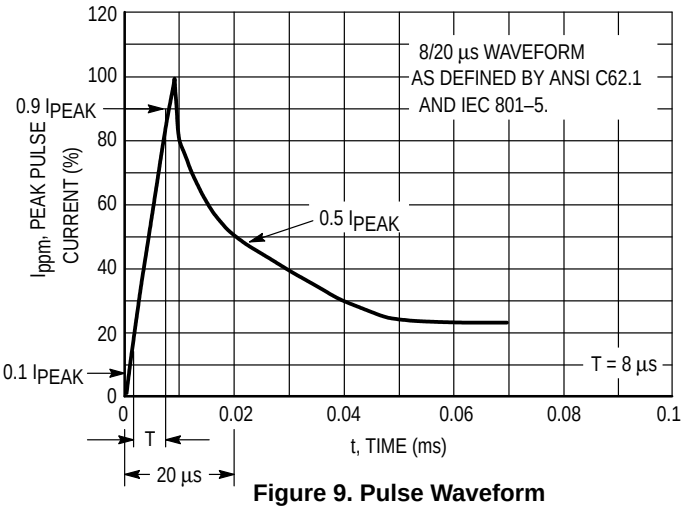
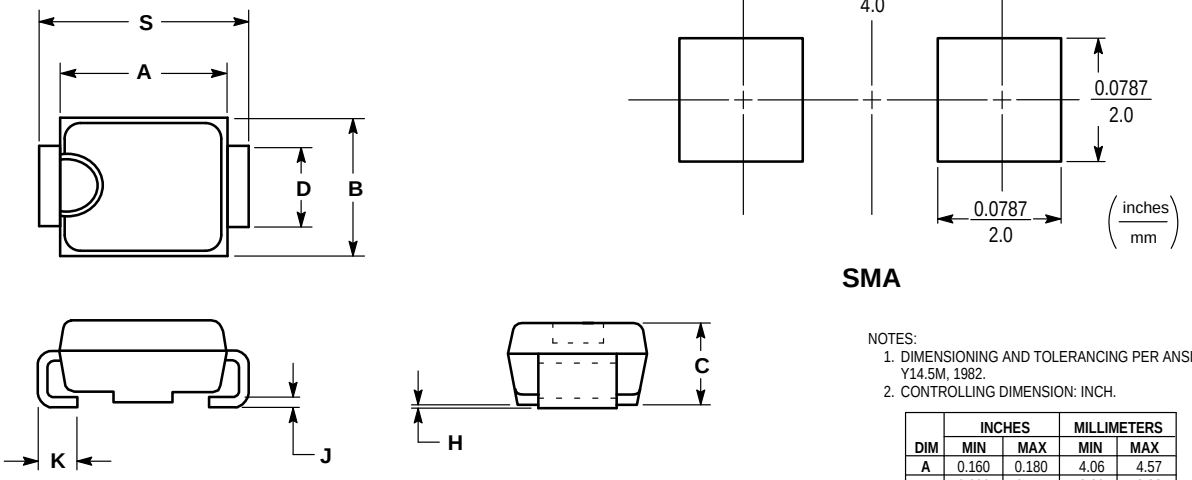


Figure 9. Pulse Waveform

OUTLINE DIMENSIONS



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

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.160	0.180	4.06	4.57
B	0.090	0.115	2.29	2.92
C	0.075	0.105	1.91	2.67
D	0.050	0.064	1.27	1.63
H	0.004	0.008	0.10	0.20
J	0.006	0.016	0.15	0.41
K	0.030	0.060	0.76	1.52
S	0.190	0.220	4.83	5.59

CASE 403B–01
ISSUE O

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