

Surface Mount Silicon Zener Diodes

FEATURES

- Built-in strain relief
- Ideal for automated placement
- Glass passivated junction
- Low inductance
- Typical IR less than 1μA above 11V
- Moisture sensitivity level : level 1, per J-STD-020
- AEC-Q101 qualified (Green compound not involved)
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



MECHANICAL DATA

Case: DO-214AC (SMA)

Molding compound, UL flammability classification rating 94V-0

Base P/N with suffix "G" on packing code - halogen-free

Terminal: Matte tin plated leads, solderable per JESD22-B102

Meet JESD 201 class 1A whisker test

Polarity: Indicated by cathode band

Weight: 0.06 g (approximately)

DO-214AC (SMA)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	Value	UNIT
Power dissipation, RTHJA<30K/W, T _A =60°C	P _D	1	Watts
Power dissipation, RTHJA<100K/W, T _A =25°C	P _D	1.25	Watts
Non repetitive peak power dissipation(Note 1)	P _{ZSM}	60	Watts
Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	60	A
Operating junction temperature range	T _J	- 55 to +150	°C
Storage temperature range	T _{STG}	- 55 to +150	°C

Note 1: Non Repetitive Peak surge PD Test Condition: tp=100μs sq. pulse, T_A=25°C prior to surge

ORDERING INFORMATION

PART NO.	PACKING CODE	GREEN COMPOUND CODE	PACKAGE	PACKING
1SMAxxxx (Note 1)	R3	Suffix "G"	SMA	1,800 / 7" Plastic reel
	R2		SMA	7,500 / 13" Paper reel
	M2		SMA	7,500 / 13" Plastic reel
	F3		Folded SMA	1,800 / 7" Plastic reel
	F2		Folded SMA	7,500 / 13" Paper reel
	F4		Folded SMA	7,500 / 13" Plastic reel

Note 1: "xxxx" defines voltage from 7.5V (1SMA4737) to 200V (1SMA200Z)

EXAMPLE

PREFERRED P/N	PART NO.	PACKING CODE	GREEN COMPOUND CODE	DESCRIPTION
1SMA4737 R3	1SMA4737	R3		
1SMA4737 R3G	1SMA4737	R3	G	Green compound

RATINGS AND CHARACTERISTICS CURVES (TA=25°C unless otherwise noted)

Device (Note 1)	Device Marking code	Nominal Zener Voltage	Test Current	Zener Impedance			Leakage Current		Surge current T _A =25°C
		V _Z @I _{ZT}	I _{ZT}	Z _{ZT} @I _{ZT}	Z _{ZK} @I _{ZK}		I _R @V _R		I _R
		V	mA	Ω	Ω	mA	μA	V	mA
		(Note 2) (Note 3)					Max.		
1SMA4737	737A	7.5	34	4	700	0.50	5	5.0	605
1SMA4738	738A	8.2	31	4.5	700	0.50	5	6.0	550
1SMA4739	739A	9.1	28	5	700	0.50	5	7.0	500
1SMA4740	740A	10	25	7	700	0.25	5	7.6	454
1SMA4741	741A	11	23	8	700	0.25	1	8.4	414
1SMA4742	742A	12	21	9	700	0.25	1	9.1	380
1SMA4743	743A	13	19	10	700	0.25	1	9.9	344
1SMA4744	744A	15	17	14	700	0.25	1	11.4	304
1SMA4745	745A	16	15.5	16	700	0.25	1	12.2	285
1SMA4746	746A	18	14.0	20	750	0.25	1	13.7	250
1SMA4747	747A	20	12.5	22	750	0.25	1	15.2	225
1SMA4748	748A	22	11.5	23	750	0.25	1	16.7	205
1SMA4749	749A	24	10.5	25	750	0.25	1	18.2	190
1SMA4750	750A	27	9.5	35	750	0.25	1	20.6	170
1SMA4751	751A	30	8.5	40	1000	0.25	1	22.8	150
1SMA4752	752A	33	7.5	45	1000	0.25	1	25.1	135
1SMA4753	753A	36	7.0	50	1000	0.25	1	27.4	125
1SMA4754	754A	39	6.5	60	1000	0.25	1	29.7	115
1SMA4755	755A	43	6.0	70	1500	0.25	1	32.7	110
1SMA4756	756A	47	5.5	80	1500	0.25	1	35.8	95
1SMA4757	757A	51	5.0	95	1500	0.25	1	38.8	90
1SMA4758	758A	56	4.5	110	2000	0.25	1	42.6	80
1SMA4759	759A	62	4.0	125	2000	0.25	1	47.1	70
1SMA4760	760A	68	3.7	150	2000	0.25	1	51.7	65
1SMA4761	761A	75	3.3	175	2000	0.25	1	56.0	60
1SMA4762	762A	82	3.0	200	3000	0.25	1	62.2	55
1SMA4763	763A	91	2.8	250	3000	0.25	1	69.2	50
1SMA4764	764A	100	2.5	350	3000	0.25	1	76.0	45
1SMA110Z	110A	110	2.3	450	4000	0.25	1	83.6	-
1SMA120Z	120A	120	2.0	550	4500	0.25	1	91.2	-
1SMA130Z	130A	130	1.9	700	5000	0.25	1	98.8	-
1SMA150Z	150A	150	1.7	1000	6000	0.25	1	114.0	-
1SMA160Z	160A	160	1.6	1100	6500	0.25	1	121.6	-
1SMA180Z	180A	180	1.4	1200	7000	0.25	1	136.8	-
1SMA200Z	200A	200	1.2	1500	8000	0.25	1	152.0	-

Notes:

1. Tolerance and Type Number Designation. The type numbers listed have a standard tolerance on the nominal zener voltage of ±5%.
2. Specials Available Include:
 - A. Nominal zener voltages between the voltages shown and tighter voltage tolerances
 - B. Matched sets
3. Zener Voltage (V_Z) Measurement. Guarantees the zener voltage when measured at 90 seconds while maintaining the lead temperature (T_L) at 30°C ±1°C, from the diode body.
4. Zener Impedance (Z_Z) Derivation. The zener impedance is derived from the 60 cycle AC voltage, which results when an accurate current having an rms value equal to 10% of the DC zener current (I_{ZT} or I_{ZK}) is superimposed on I_{ZT} or I_{ZK}.
5. Surge Current (I_R) Non-Repetitive. The rating listed in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current, I_{ZT} per JEDEC registration; however, actual device capability is as described in Figure 10.

FIG. 1 POWER TEMPERATURE DERATING CURVE

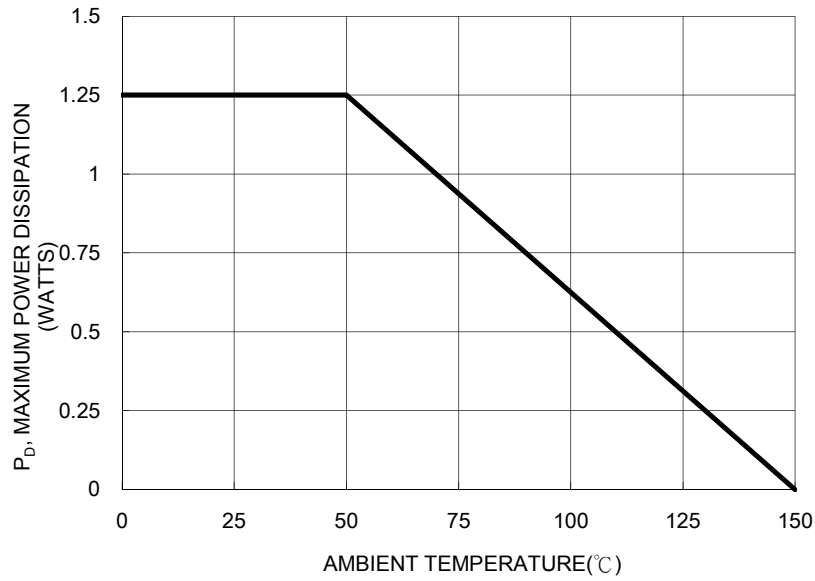


FIG. 2 TYPICAL FORWARD CHARACTERISTICS

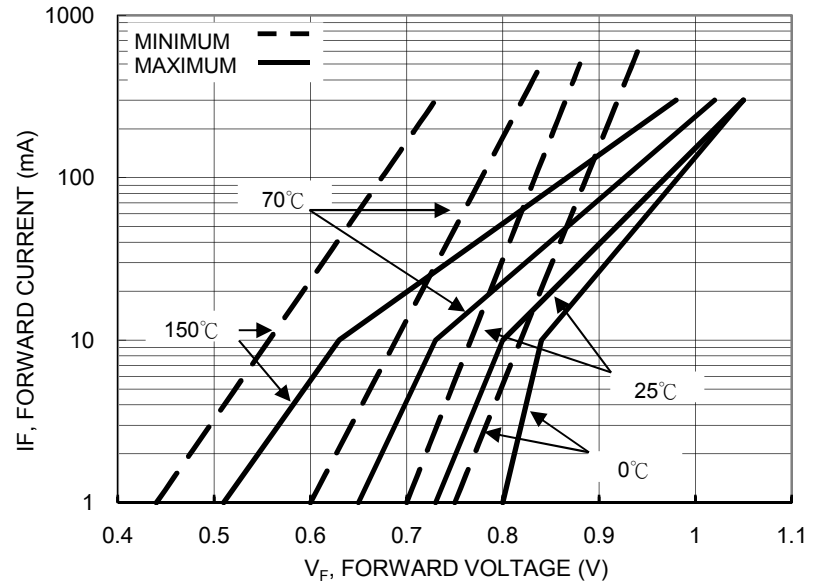


FIG.3 EFFECT OF ZENER CURRENT ON ZENER IMPEDANCE

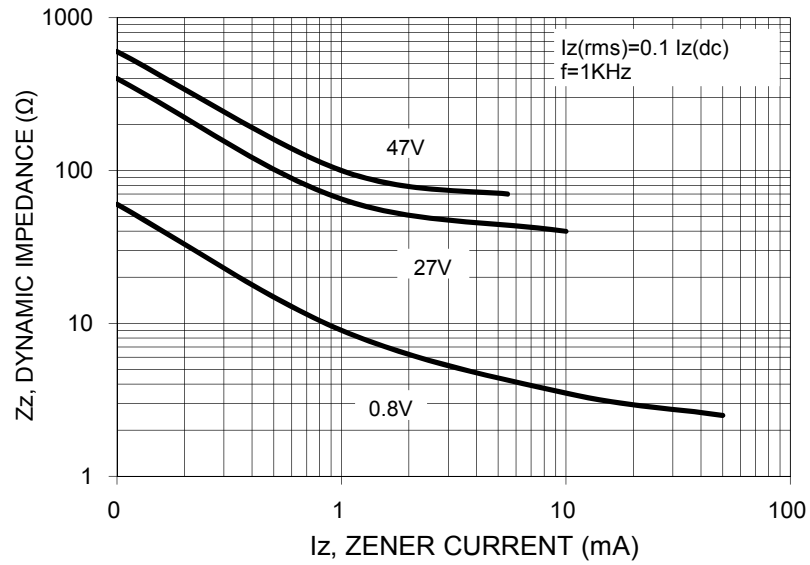


FIG.4 EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

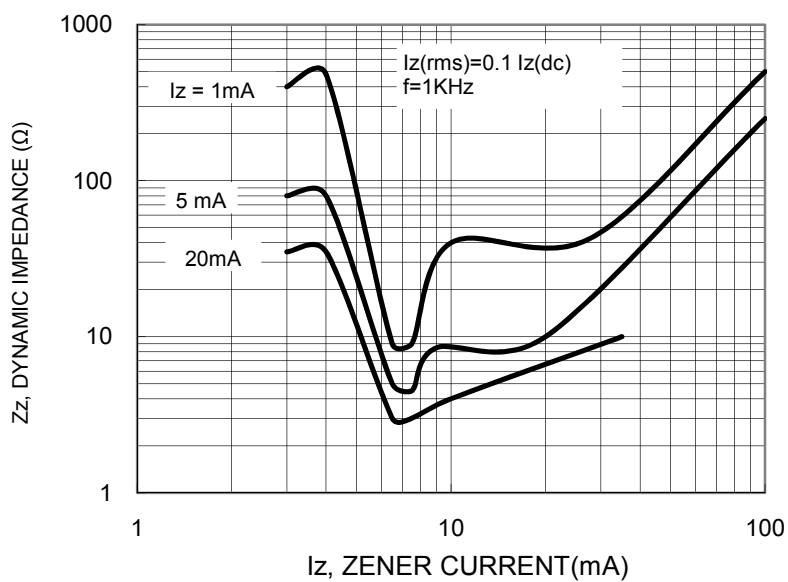


FIG.5 TYPICAL LEAKAGE CURRENT

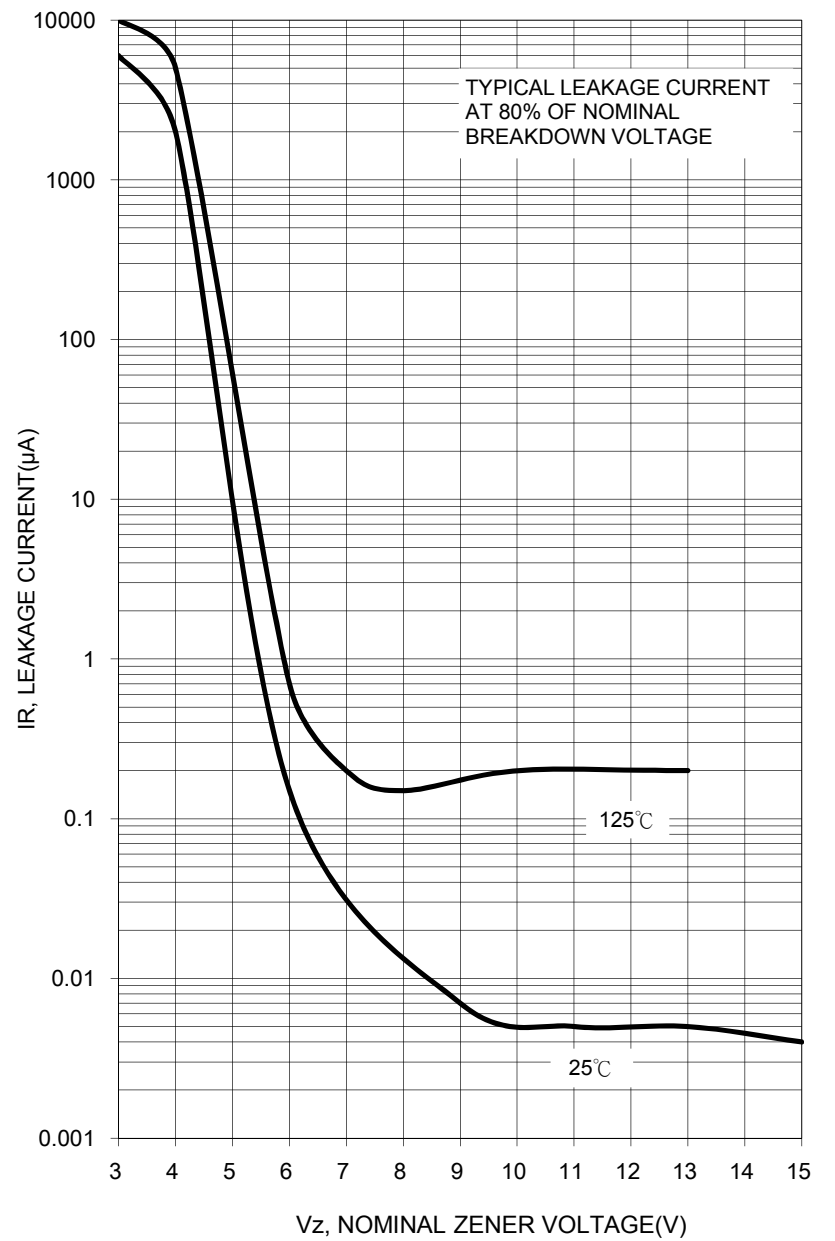


FIG.6 TYPICAL CAPACITANCE versus V_z

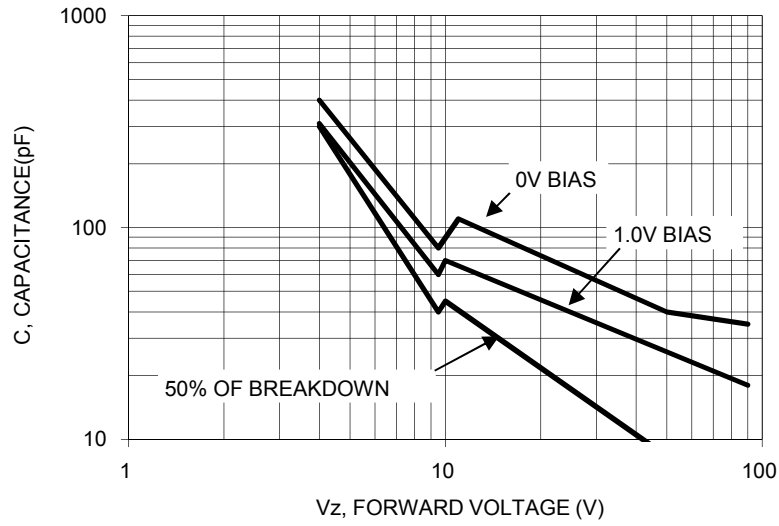


FIG. 7 TEMPERATURE COEFFICIENTS

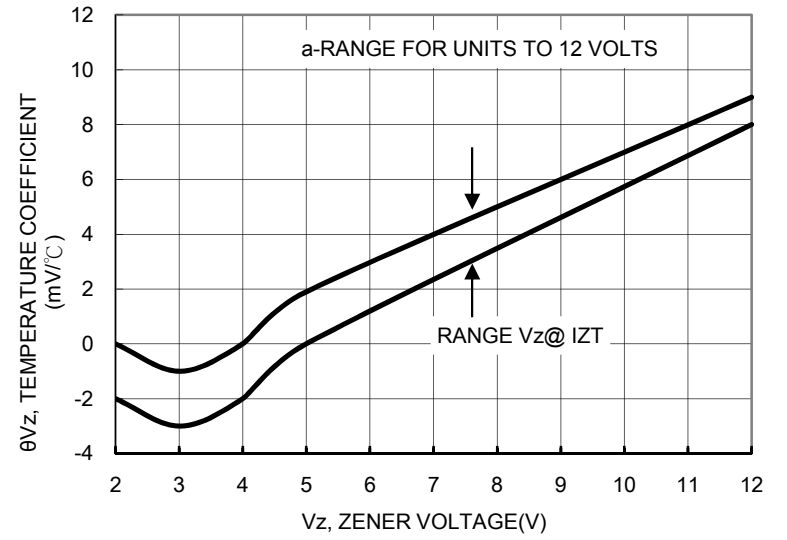


FIG.8 TEMPERATURE COEFFICIENTS

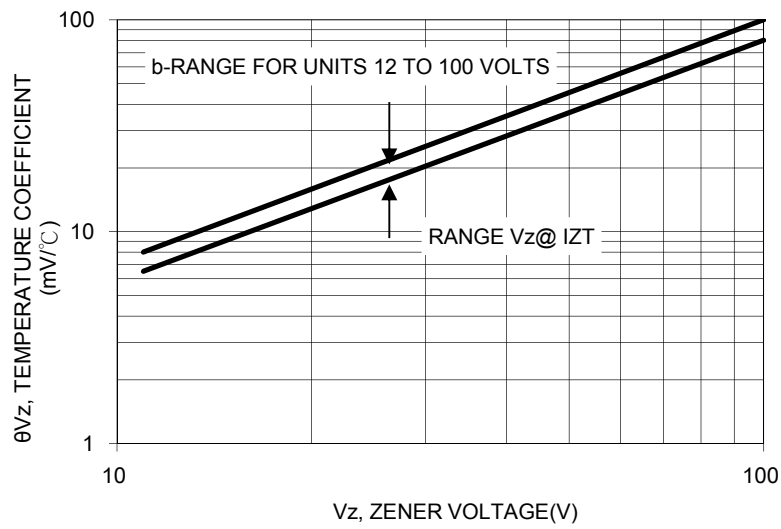


FIG. 9 EFFECT OF ZENER CURRENT

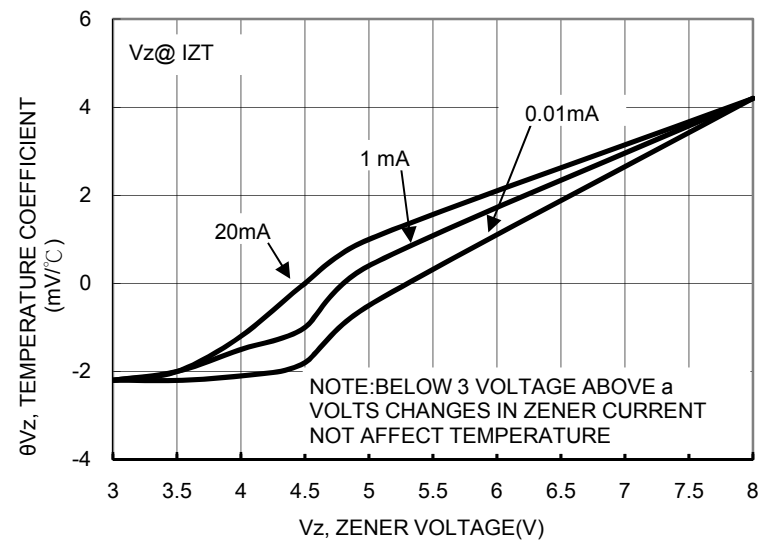
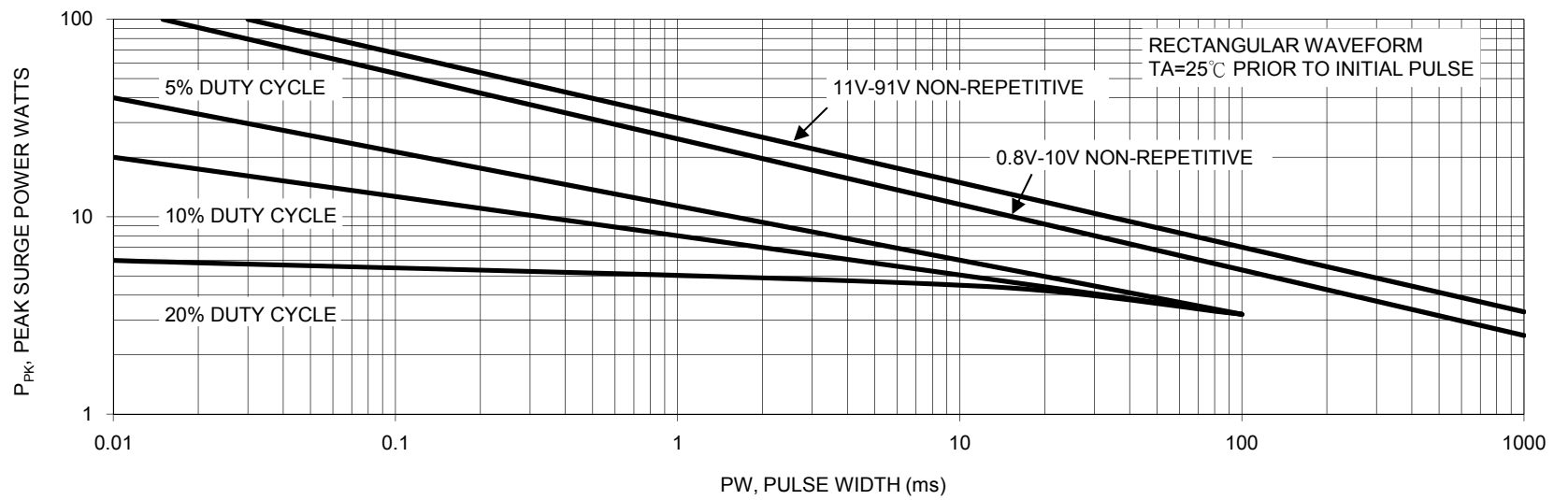
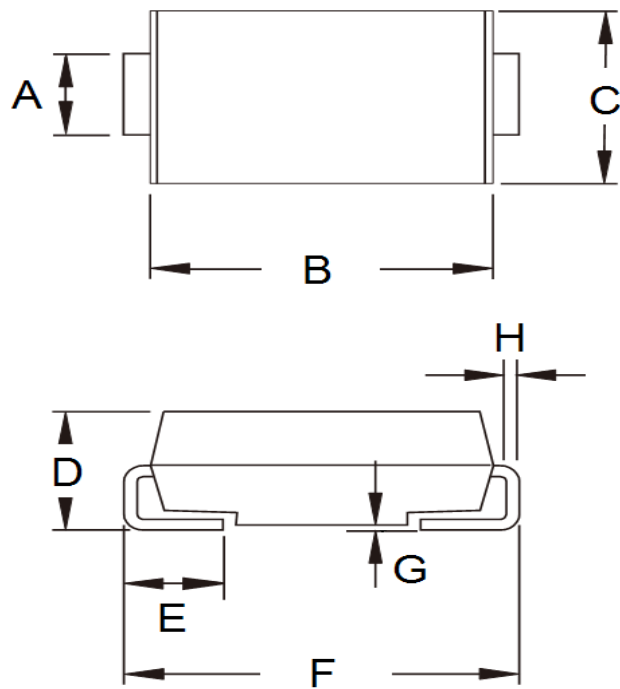


FIG.10 MAXIMUM SURGE POWER

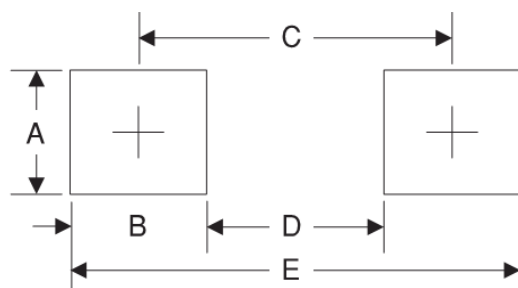


PACKAGE OUTLINE DIMENSIONS



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.27	1.58	0.050	0.062
B	4.06	4.60	0.160	0.181
C	2.29	2.83	0.090	0.111
D	1.99	2.50	0.078	0.098
E	0.90	1.41	0.035	0.056
F	4.95	5.33	0.195	0.210
G	0.10	0.20	0.004	0.008
H	0.15	0.31	0.006	0.012

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	1.68	0.066
B	1.52	0.060
C	3.93	0.155
D	2.41	0.095
E	5.45	0.215

MARKING DIAGRAM



P/N = Device Marking Code
G = Green Compound
YW = Date Code
F = Factory Code

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