

1W, 7.5V - 200V Surface Mount Silicon Zener Diodes

FEATURES

- Built-in strain relief
- Ideal for automated placement
- Glass passivated junction
- Low inductance
- Typical I_R less than 1 μ A above 11V
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



DO-214AC (SMA)

MECHANICAL DATA

Case: DO-214AC (SMA)

Molding compound, UL flammability classification rating 94V-0

Moisture sensitivity level: level 1, per J-STD-020

Part No. with suffix "H" means AEC-Q101 qualified

Packing code with suffix "G" means green compound (halogen-free)

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

Meet JESD 201 class 2 whisker test

Polarity: Indicated by cathode band

Weight: 0.06 g (approximately)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Power dissipation, $R_{\theta JA}<30\text{K/W}$, $T_A=60^\circ\text{C}$	P_D	1	Watts
Power dissipation, $R_{\theta JA}<100\text{K/W}$, $T_A=25^\circ\text{C}$	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 +175	$^\circ\text{C}$
Storage temperature range	T_{STG}	- 55 to +175	$^\circ\text{C}$

Note 1: Non Repetitive Peak surge P_D Test Condition: $t_p=100\mu\text{s}$ sq. pulse, $T_A=25^\circ\text{C}$ prior to surge

ORDERING INFORMATION					
PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX	PACKAGE	PACKING
1SMAxxxx (Note 1)	H	R3	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 PART NO.	PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
1SMA4737HR3G	1SMA4737	H	R3	G	AEC-Q101 qualified Green compound

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

Device (Note 1)	Device Marking code	Nominal Zener Voltage	Test Current	Zener Impedance			Leakage Current		Surge current
		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 ac current having and 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 list 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

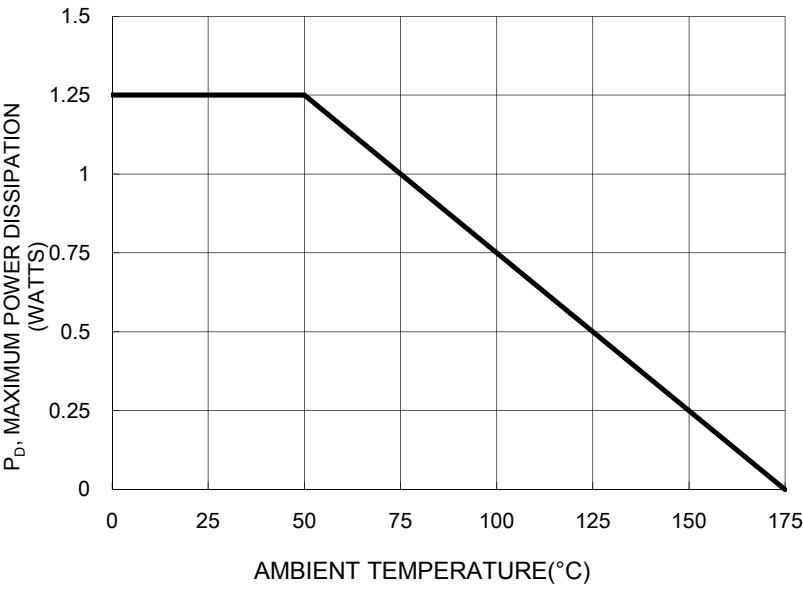


FIG. 2 TYPICAL FORWARD CHARACTERISTICS

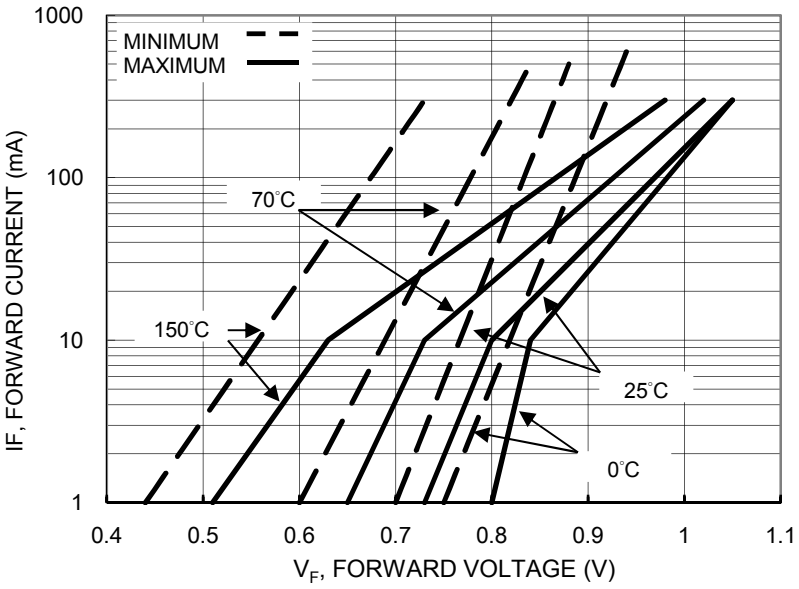


FIG.3 EFFECT OF ZENER CURRENT ON ZENER IMPEDANCE

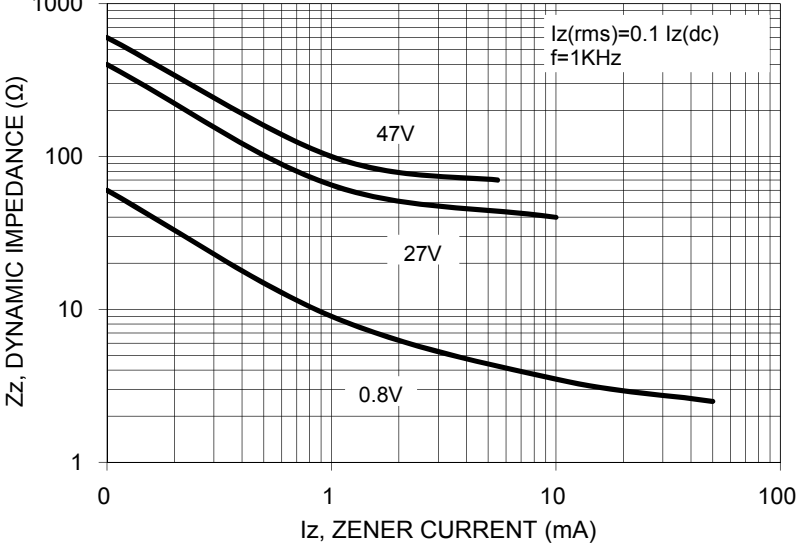


FIG.4 EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

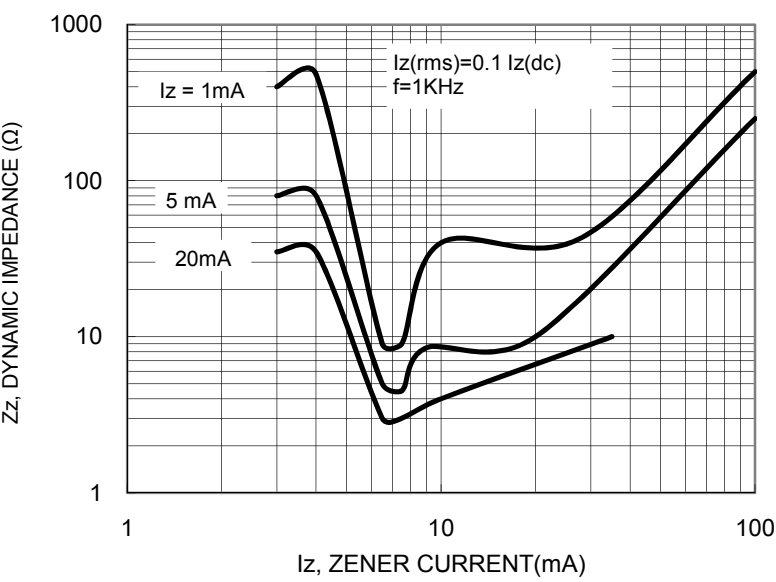


FIG.5 TYPICAL LEAKAGE CURRENT

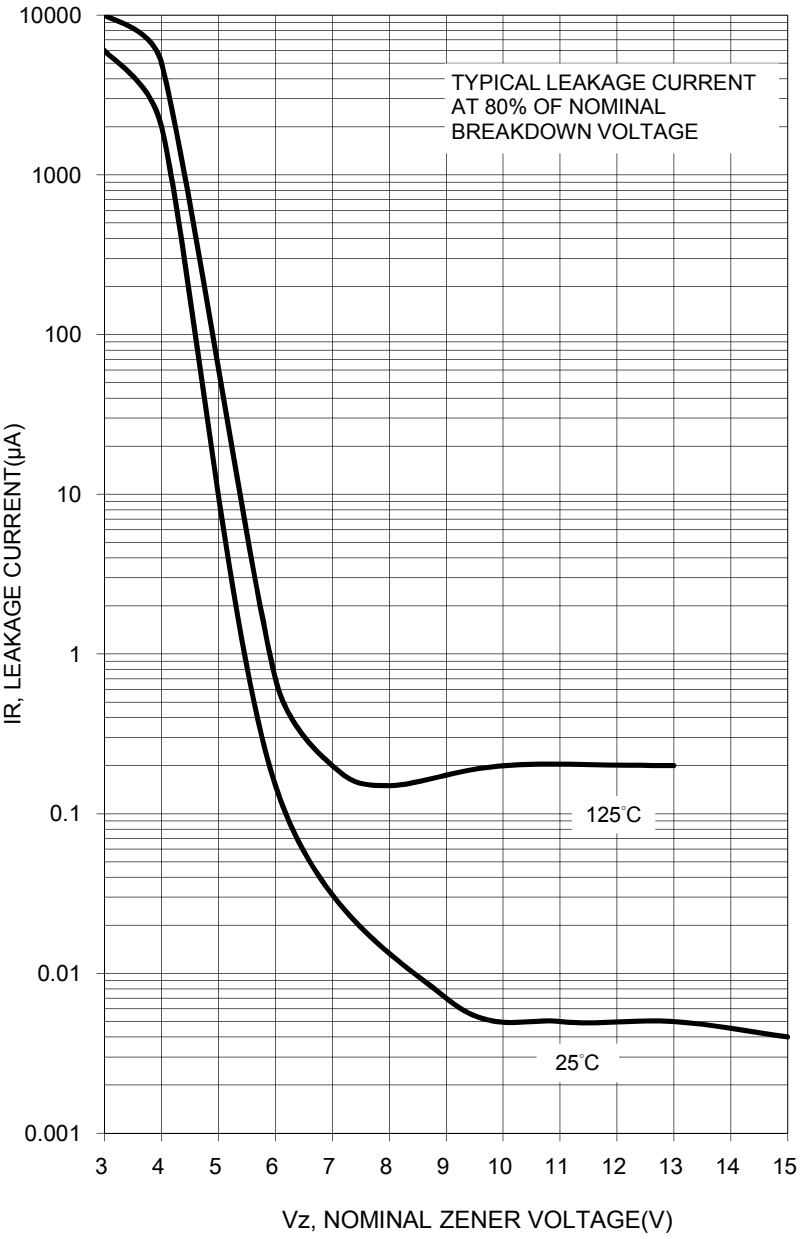


FIG.6 TYPICAL CAPACITANCE versus V_z

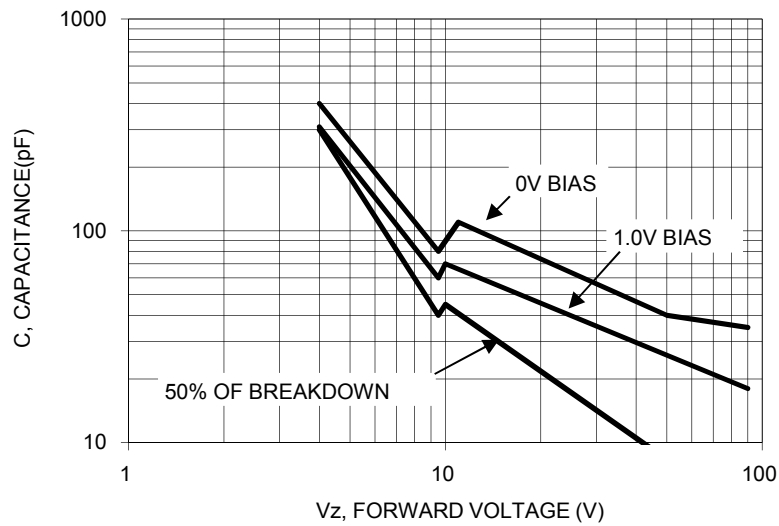


FIG. 7 TEMPERATURE COEFFICIENTS

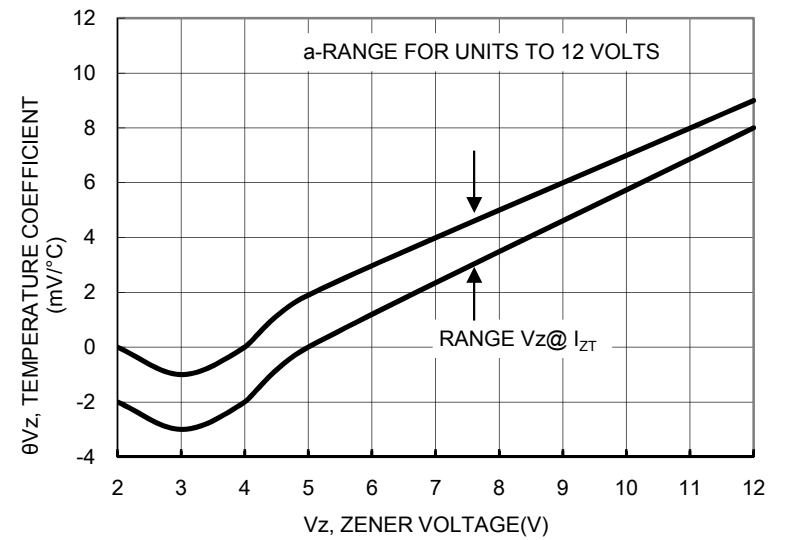


FIG.8 TEMPERATURE COEFFICIENTS

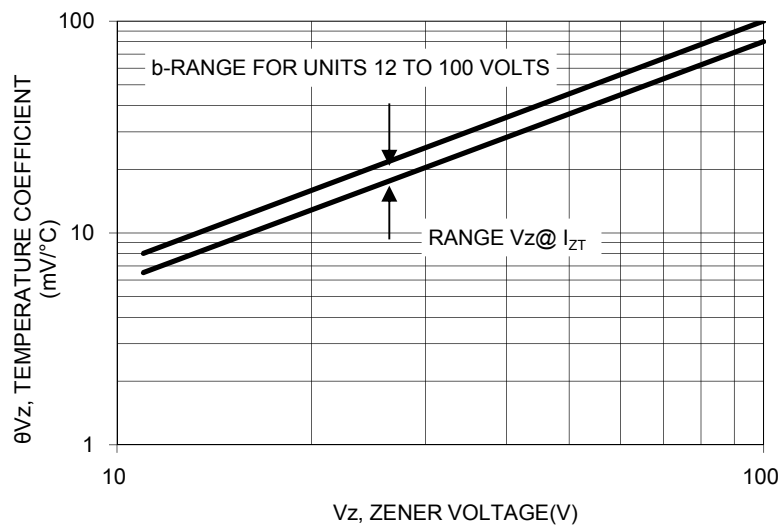


FIG. 9 EFFECT OF ZENER CURRENT

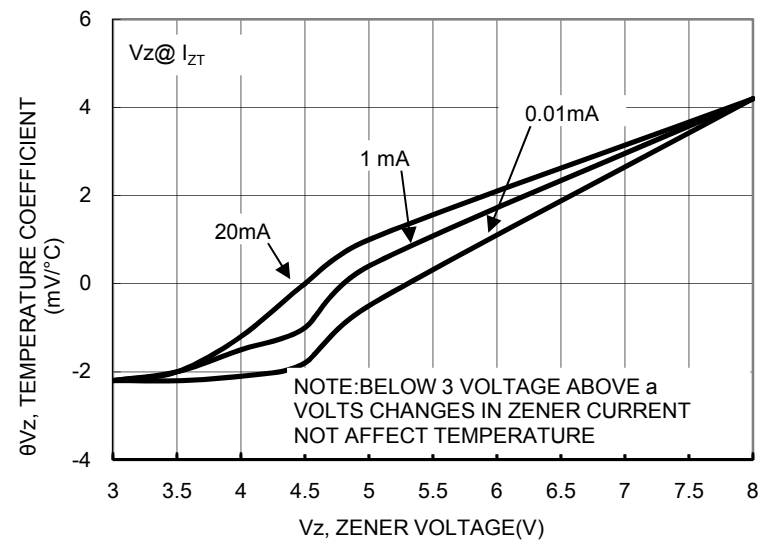
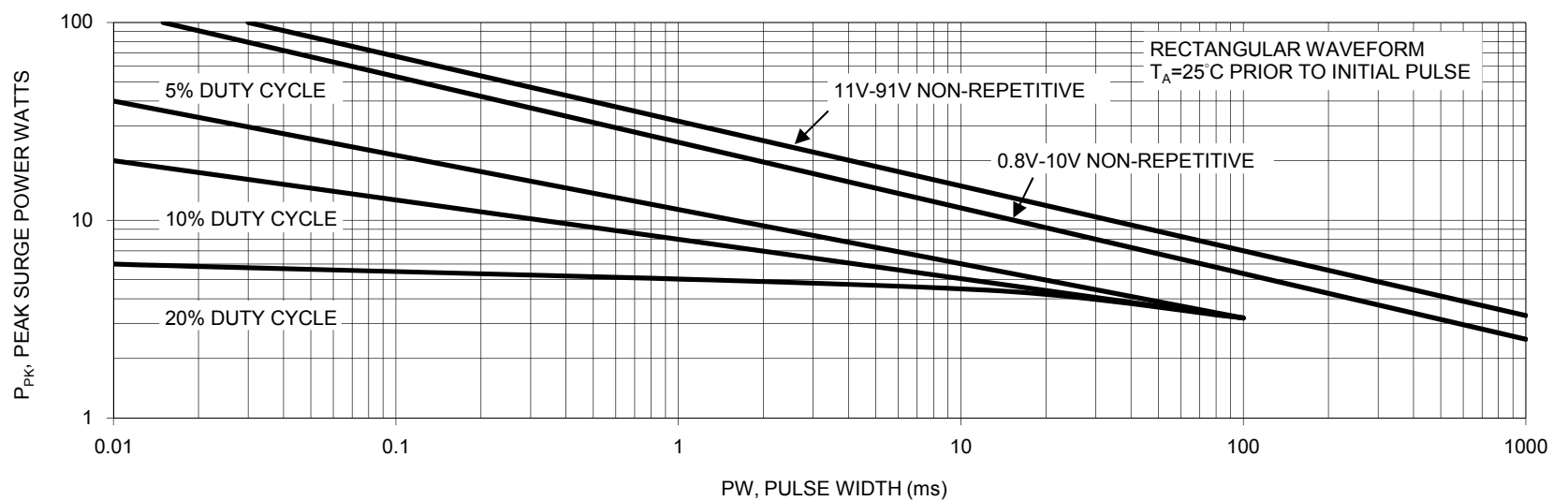
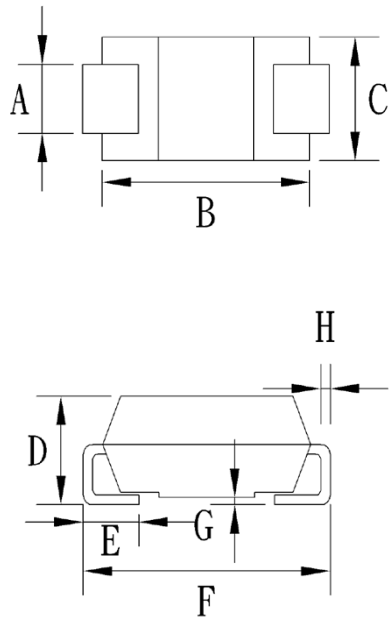


FIG.10 MAXIMUM SURGE POWER

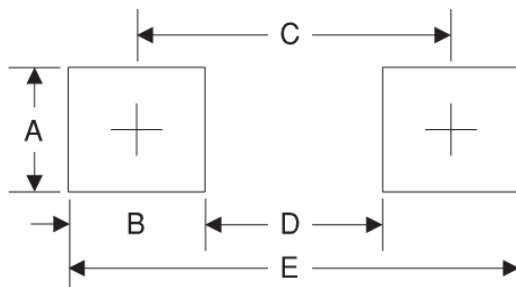


PACKAGE OUTLINE DIMENSIONS
DO-214AC (SMA)



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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<u>1SMA160Z</u>	<u>1SMA4758</u>	<u>1SMA120Z</u>	<u>1SMA4748</u>	<u>1SMA4759</u>	<u>1SMA4738 R3</u>	<u>1SMA4744 R3</u>	<u>1SMA110ZH</u>
<u>1SMA120ZH</u>	<u>1SMA130ZH</u>	<u>1SMA150ZH</u>	<u>1SMA160ZH</u>	<u>1SMA180ZH</u>	<u>1SMA200ZH</u>	<u>1SMA4740H</u>	<u>1SMA4741H</u>
<u>1SMA4742H</u>	<u>1SMA4743H</u>	<u>1SMA4744H</u>	<u>1SMA4745H</u>	<u>1SMA4746H</u>	<u>1SMA4747H</u>	<u>1SMA4748H</u>	<u>1SMA4749H</u>
<u>1SMA4750H</u>	<u>1SMA4751H</u>	<u>1SMA4752H</u>	<u>1SMA4753H</u>	<u>1SMA4754H</u>	<u>1SMA4755H</u>	<u>1SMA4756H</u>	<u>1SMA4757H</u>
<u>1SMA4758H</u>	<u>1SMA4759H</u>	<u>1SMA4760H</u>	<u>1SMA4761H</u>	<u>1SMA4762H</u>	<u>1SMA4763H</u>	<u>1SMA4764H</u>	