

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 $1\mu A$ 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 ($T_A=25^\circ C$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Power dissipation, $R_{THJA}<30K/W$, $T_A=60^\circ C$	P_D	1	Watts
Power dissipation, $R_{THJA}<100K/W$, $T_A=25^\circ C$	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	$^\circ C$
Storage temperature range	T_{STG}	- 55 to +175	$^\circ C$

Note 1: Non Repetitive Peak surge P_D Test Condition: $t_p=100\mu s$ sq. pulse, $T_A=25^\circ C$ 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 ($T_A=25^\circ\text{C}$ 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 $\pm 5\%$
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 $30^\circ\text{C} \pm 1^\circ\text{C}$, 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 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 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

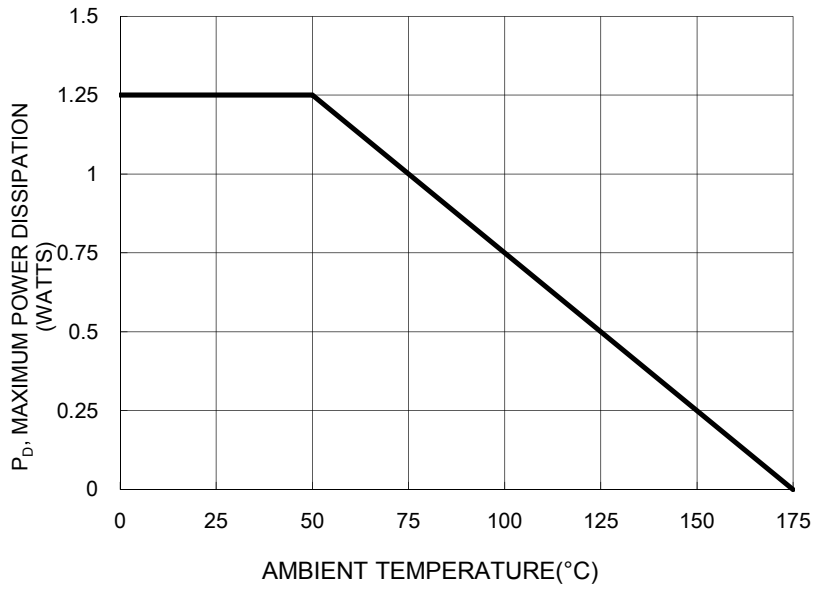


FIG. 2 TYPICAL FORWARD CHARACTERISTICS

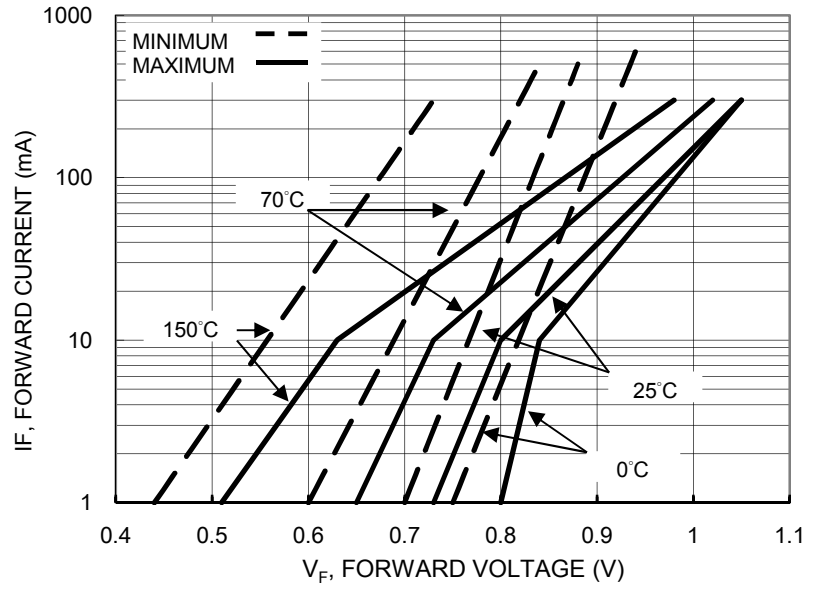


FIG.3 EFFECT OF ZENER CURRENT ON ZENER IMPEDANCE

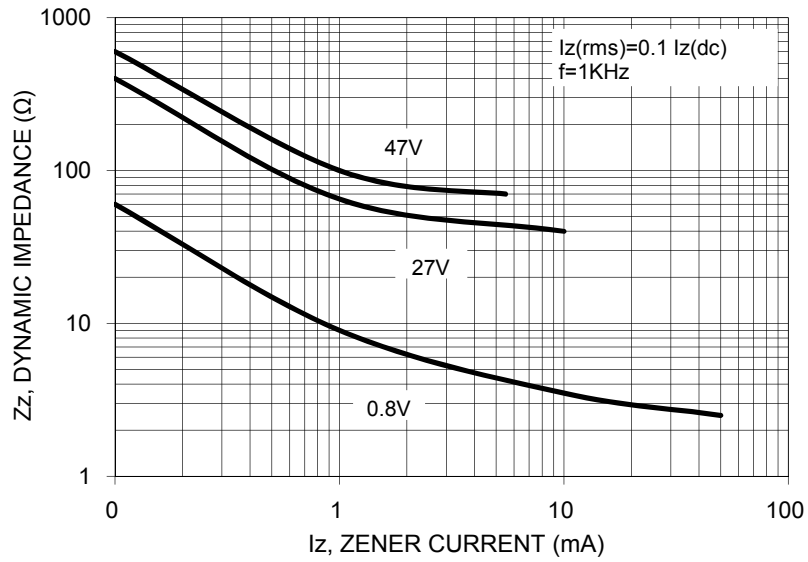


FIG.5 TYPICAL LEAKAGE CURRENT

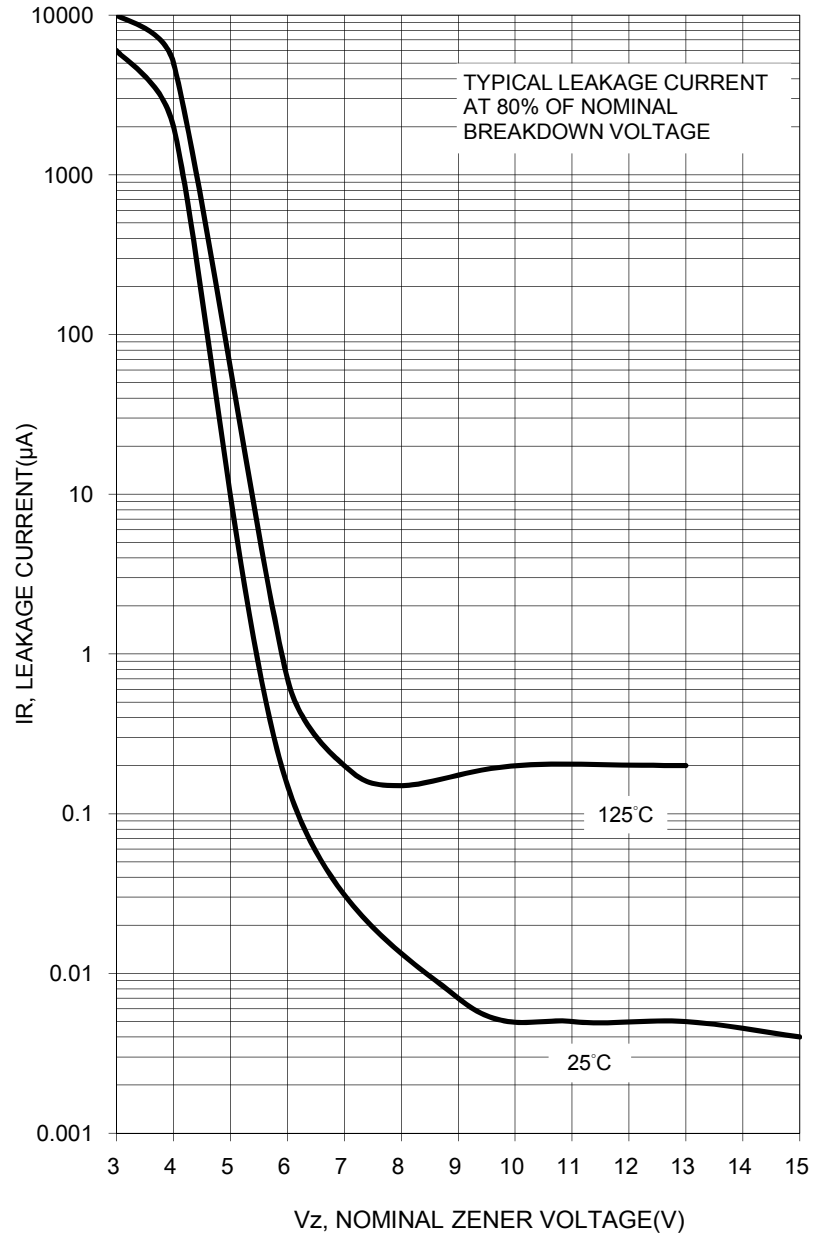


FIG.4 EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

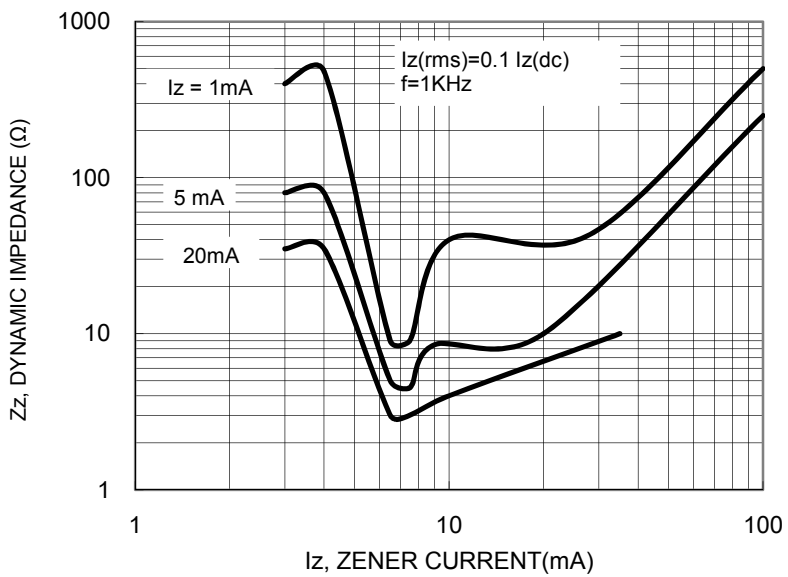


FIG.6 TYPICAL CAPACITANCE versus Vz

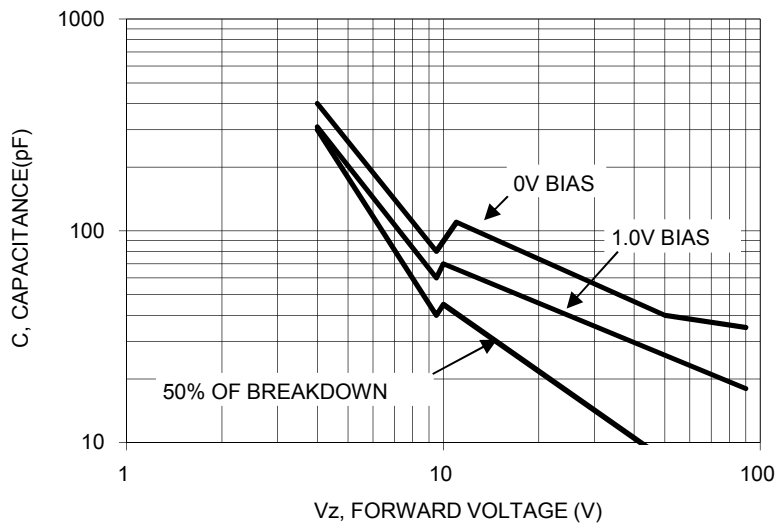


FIG. 7 TEMPERATURE COEFFICIENTS

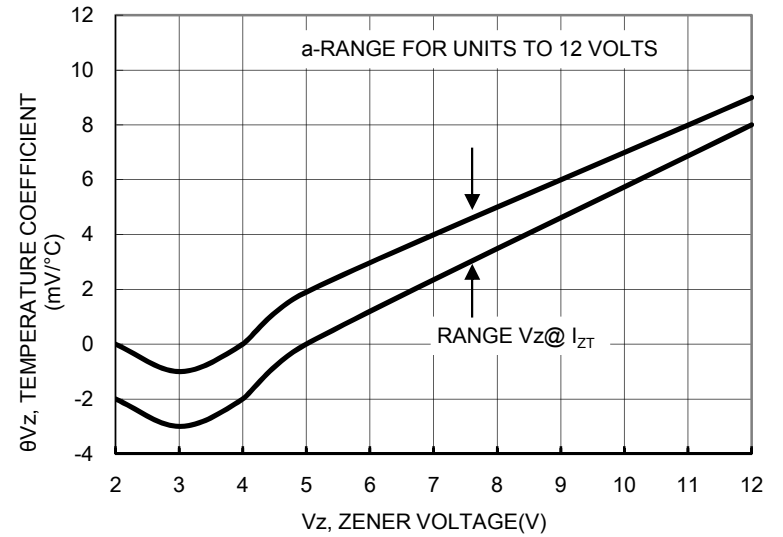


FIG.8 TEMPERATURE COEFFICIENTS

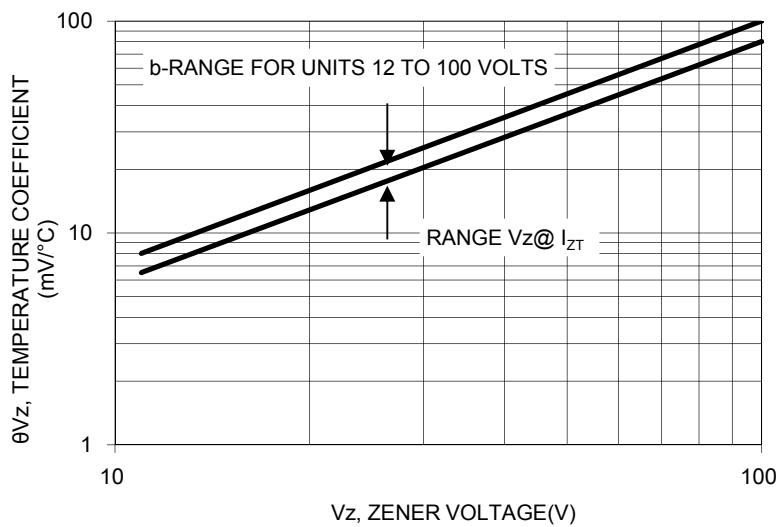


FIG. 9 EFFECT OF ZENER CURRENT

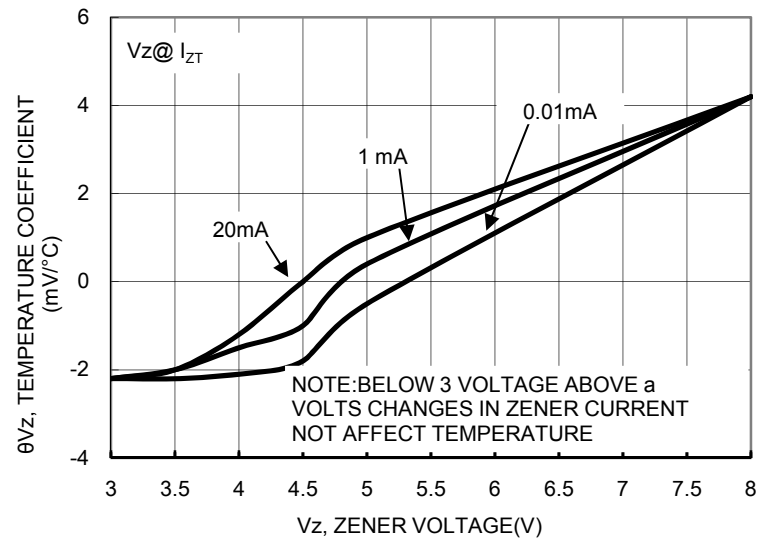
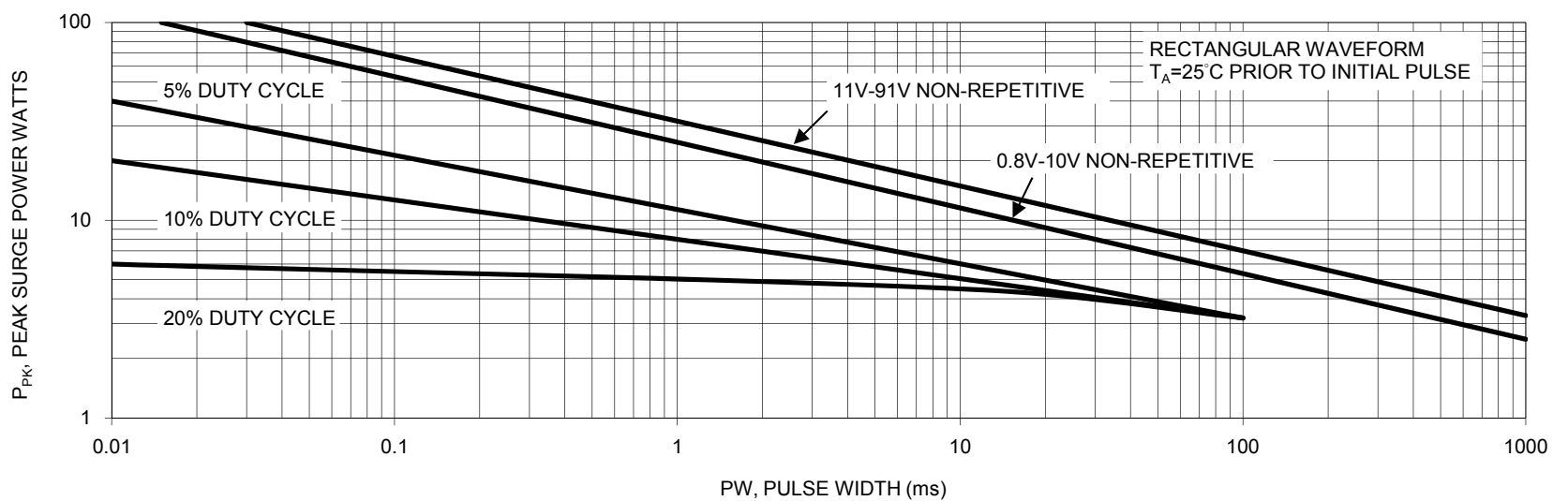
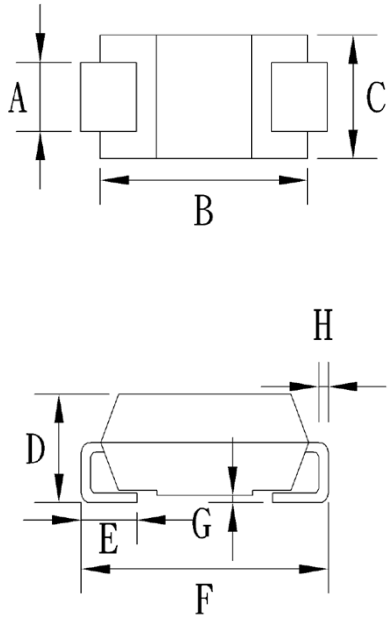


FIG.10 MAXIMUM SURGE POWER

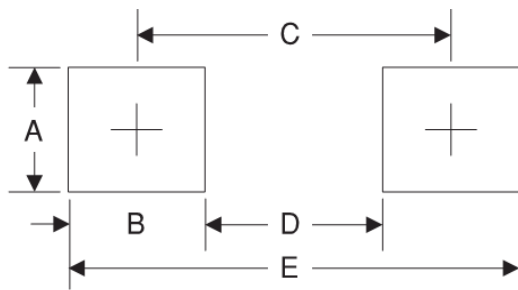


PACKAGE OUTLINE DIMENSIONS
DO-214AC (SMA)



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

Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Taiwan Semiconductor:

[1SMA4739 M2G](#) [1SMA200ZHM2G](#) [1SMA4756 M2G](#) [1SMA4747HM2G](#) [1SMA4759 M2G](#) [1SMA200Z M2G](#)
[1SMA4751 M2G](#) [1SMA4738HM2G](#) [1SMA4750 M2G](#) [1SMA4745HM2G](#) [1SMA4752HM2G](#) [1SMA4761HM2G](#)
[1SMA4754HM2G](#) [1SMA4746HM2G](#) [1SMA4742 M2G](#) [1SMA4741 M2G](#) [1SMA4737HM2G](#) [1SMA4748 M2G](#)
[1SMA150Z M2G](#) [1SMA120ZHM2G](#) [1SMA4740 M2G](#) [1SMA4753HM2G](#) [1SMA4762 M2G](#) [1SMA4739HM2G](#)
[1SMA4759HM2G](#) [1SMA4738 M2G](#) [1SMA4747 M2G](#) [1SMA4762HM2G](#) [1SMA130ZHM2G](#) [1SMA4751HM2G](#)
[1SMA4741HM2G](#) [1SMA150ZHM2G](#) [1SMA180ZHM2G](#) [1SMA4737 M2G](#) [1SMA4763 M2G](#) [1SMA4758HM2G](#)
[1SMA4757 M2G](#) [1SMA4748HM2G](#) [1SMA4763HM2G](#) [1SMA4760 M2G](#) [1SMA110Z M2G](#) [1SMA4744 M2G](#)
[1SMA4755HM2G](#) [1SMA4742HM2G](#) [1SMA4754 M2G](#) [1SMA4761 M2G](#) [1SMA4745 M2G](#) [1SMA4743HM2G](#)
[1SMA4752 M2G](#) [1SMA160ZHM2G](#) [1SMA4749HM2G](#) [1SMA120Z M2G](#) [1SMA4744HM2G](#) [1SMA110ZHM2G](#)
[1SMA4746 M2G](#) [1SMA160Z M2G](#) [1SMA4758 M2G](#) [1SMA4740HM2G](#) [1SMA4756HM2G](#) [1SMA4750HM2G](#)
[1SMA130Z M2G](#) [1SMA4743 M2G](#) [1SMA4764 M2G](#) [1SMA4760HM2G](#) [1SMA4755 M2G](#) [1SMA4757HM2G](#)
[1SMA4753 M2G](#) [1SMA4749 M2G](#) [1SMA4764HM2G](#) [1SMA180Z M2G](#)