

## Surface Mount Silicon Zener Diodes

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated junction
- Built-in strain relief
- Low inductance
- Moisture sensitivity level: level 1, per J-STD-020
- 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-214AA (SMB)

### MECHANICAL DATA

**Case:** DO-214AA (SMB)

Molding compound, UL flammability classification rating 94V-0

Base P/N with suffix "G" on packing code - green compound (halogen-free)

Base P/N with prefix "H" on packing code - AEC-Q101 qualified

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

Meet JESD 201 class 1A whisker test,

with prefix "H" on packing code meet JESD 201 class 2 whisker test

**Polarity:** Indicated by cathode band

**Weight:** 0.1 g (approximately)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)			
PARAMETER	SYMBOL	Value	UNIT
DC power dissipation at T <sub>L</sub> =75°C, measure at zero lead length (Note 1) derate above 75°C	P <sub>D</sub>	3	Watts
		40	mW/°C
DC power dissipation at T <sub>A</sub> =25°C Derate above 25°C	P <sub>D</sub>	550	mW
		4.4	mW/°C
Thermal Resistance from Junction to Lead	R <sub>θJL</sub>	25	°C/W
Thermal Resistance from Junction to Ambient	R <sub>θJA</sub>	226	°C/W
Operating junction temperature range	T <sub>J</sub>	- 55 to +150	°C
Storage temperature range	T <sub>STG</sub>	- 55 to +150	°C

Note 1: Mounted on Cu-Pad size 5mm x 5mm x 1.6mm on PCB

ORDERING INFORMATION					
PART NO.	AEC-Q101 QUALIFIED	PACKING CODE	GREEN COMPOUND CODE	PACKAGE	PACKING
1SMBxxxx (Note 1)	Prefix "H"	R5	Suffix "G"	SMB	850 / 7" Plastic reel
		R4		SMB	3,000 / 13" Paper reel
		M4		SMB	3,000 / 13" Plastic reel

Note 1: "xxxx" defines voltage from 11V (1SMB5926) to 200V (1SMB5956)

EXAMPLE					
PREFERRED P/N	PART NO.	AEC-Q101 QUALIFIED	PACKING CODE	GREEN COMPOUND CODE	DESCRIPTION
1SMB5926 R5	1SMB5926		R5		
1SMB5926 R5G	1SMB5926		R5	G	Green compound
1SMB5926HR5	1SMB5926	H	R5		AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**

(TA=25°C unless otherwise noted)

Device (Note 1)	Device Marking Code	Nominal Zener Voltage			Test Current	Zener Impedance (Note 3)			Leakage Current		Maximum DC Zener Current
		Vz@Iz				IzT	ZzT@IzT	ZzK@IzK		IR@VR	
		V			mA		Ω	Ω	mA	μA	V
		Min	Nom (Notes 2)	Max							
1SMB5926	926B	10.45	11	11.55	34.1	5.5	550	0.25	1	8.4	136
1SMB5927	927B	11.40	12	12.60	31.2	6.5	550	0.25	1	9.1	125
1SMB5928	928B	12.35	13	13.65	28.8	7.0	550	0.25	1	9.9	115
1SMB5929	929B	14.25	15	15.75	25.0	9.0	600	0.25	1	11.4	100
1SMB5930	930B	15.20	16	16.80	23.4	10.0	600	0.25	1	12.2	94
1SMB5931	931B	17.10	18	18.90	20.8	12.0	650	0.25	1	13.7	83
1SMB5932	932B	19.00	20	21.00	18.7	14.0	650	0.25	1	15.2	75
1SMB5933	933B	20.90	22	23.10	17.0	17.5	650	0.25	1	16.7	68
1SMB5934	934B	22.80	24	25.20	15.6	19	700	0.25	1	18.2	63
1SMB5935	935B	25.65	27	28.35	13.9	23	700	0.25	1	20.6	56
1SMB5936	936B	28.50	30	31.50	12.5	26	750	0.25	1	22.8	50
1SMB5937	937B	31.35	33	34.65	11.4	33	800	0.25	1	25.1	45
1SMB5938	938B	34.20	36	37.80	10.4	38	850	0.25	1	27.4	42
1SMB5939	939B	37.05	39	40.95	9.6	45	900	0.25	1	29.7	38
1SMB5940	940B	40.85	43	45.15	8.7	53	950	0.25	1	32.7	35
1SMB5941	941B	44.65	47	49.35	8.0	67	1000	0.25	1	35.8	32
1SMB5942	942B	48.45	51	53.55	7.3	70	1100	0.25	1	38.8	29
1SMB5943	943B	53.20	56	58.80	6.7	86	1300	0.25	1	42.6	27
1SMB5944	944B	58.90	62	65.10	6.0	100	1500	0.25	1	47.1	24
1SMB5945	945B	64.60	68	71.40	5.5	120	1700	0.25	1	51.7	22
1SMB5946	946B	71.25	75	78.75	5.0	140	2000	0.25	1	56.0	20
1SMB5947	947B	77.90	82	86.10	4.6	160	2500	0.25	1	62.2	18
1SMB5948	948B	86.45	91	95.55	4.1	200	3000	0.25	1	69.2	16
1SMB5949	949B	95.00	100	105.00	3.7	250	3100	0.25	1	76.0	15
1SMB5950	950B	104.50	110	115.50	3.4	300	4000	0.25	1	83.6	13
1SMB5951	951B	114.00	120	126.00	3.1	360	4500	0.25	1	91.2	12
1SMB5952	952B	123.50	130	136.50	2.9	450	5000	0.25	1	98.8	11
1SMB5953	953B	142.50	150	157.50	2.5	600	6000	0.25	1	114.0	10
1SMB5954	954B	152.00	160	168.00	2.3	700	6500	0.25	1	121.6	9
1SMB5955	955B	171.00	180	189.00	2.1	900	7000	0.25	1	136.8	8
1SMB5956	956B	190.00	200	210.00	1.9	1200	8000	0.25	1	152.0	7

**Notes:**

1. Tolerance and type number designation the type numbers listed indicate a tolerance of 5%
2. Zener voltage (Vz) measurement

Nominal Zener voltage is measured with the device junction in thermal equilibrium with ambient temperature 25°C

3. Zener impedance (Zz) derivation : ZzT and ZzK are measured by dividing the AC voltage drop across the device by the AC current applied.

The specified limits are for Iz(AC) = 0.1 Iz(DC) with the AC frequency = 60 Hz

FIG. 1 STEADY STATE POWER DERATING

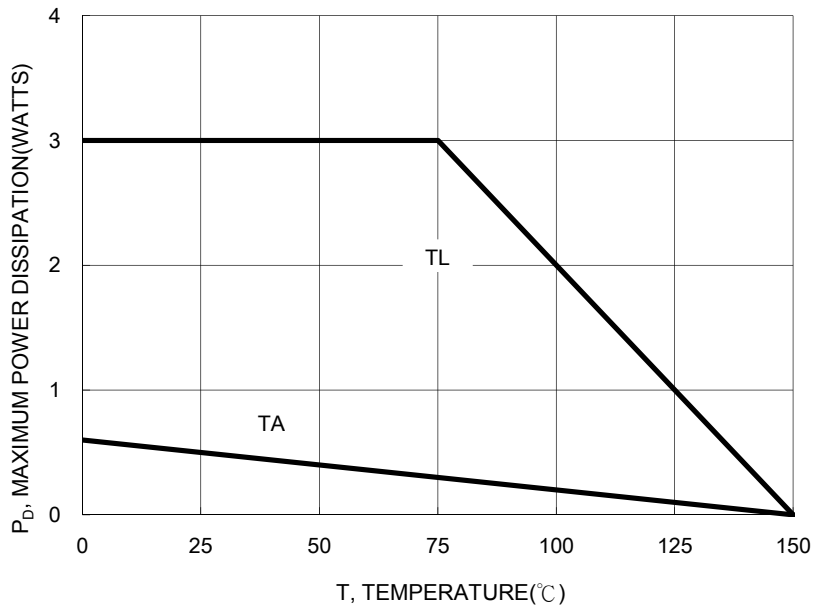


FIG.2 MAXIMUM SURGE POWER

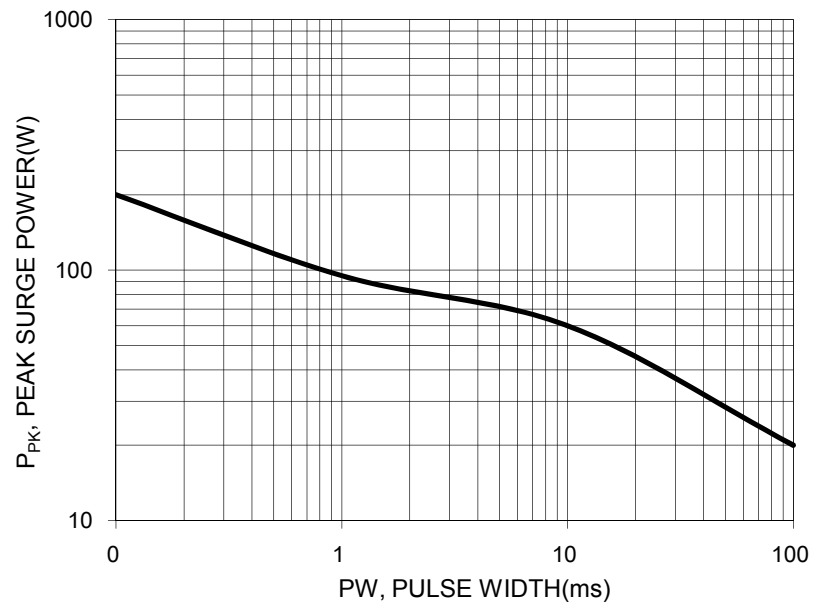


FIG. 3 ZENER VOLTAGE - TO 12 VOLTAGES

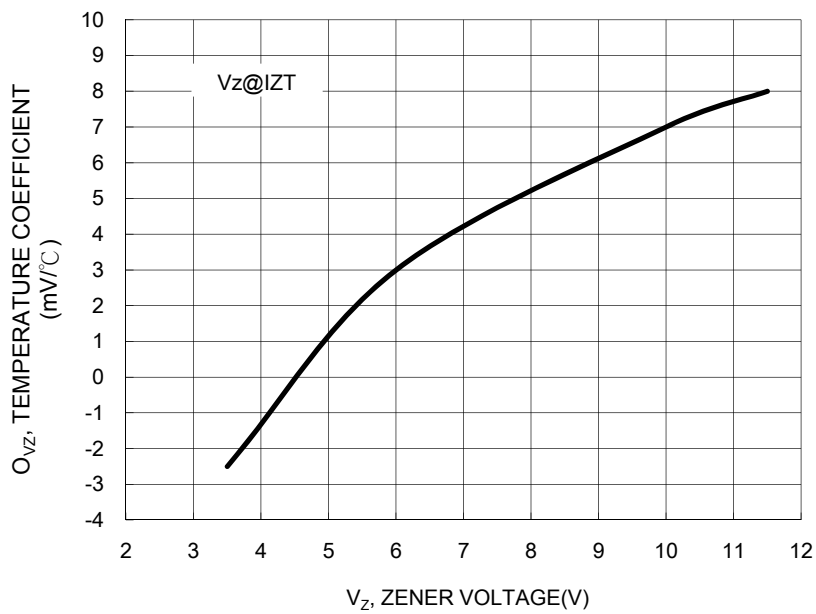


FIG.4 ZENER VOLTAGE 14 TO 200 VOLTAGES

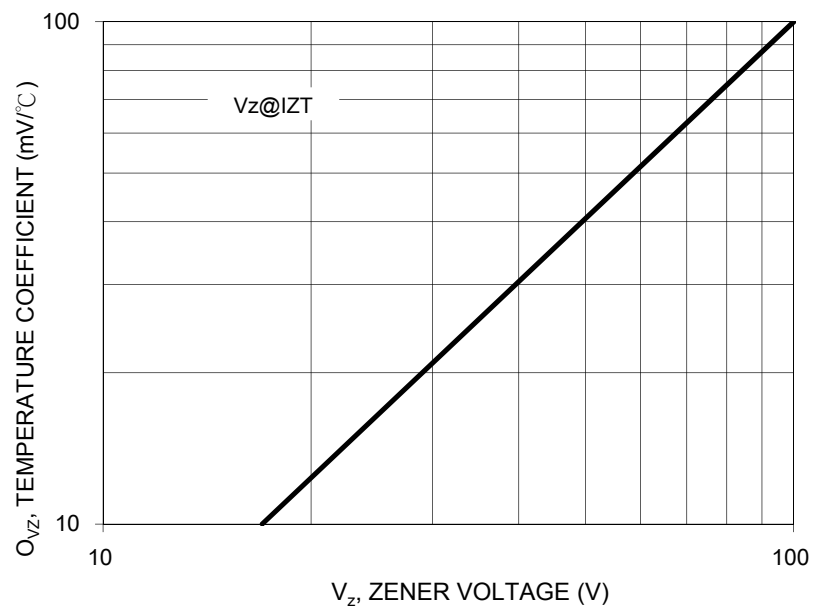


FIG. 5  $V_z = 3.3$  THRU 10 VOLTS

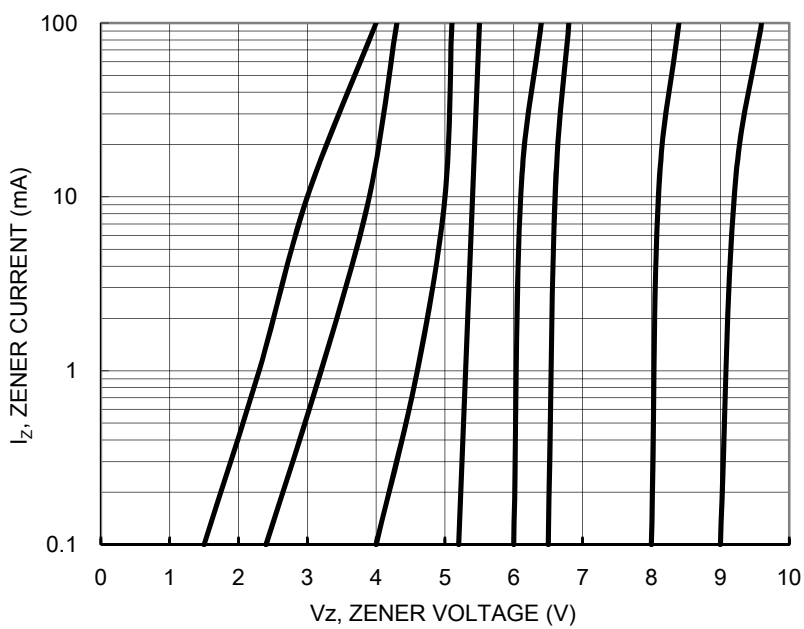


FIG. 6  $V_z = 12$  THRU 82 VOLTS

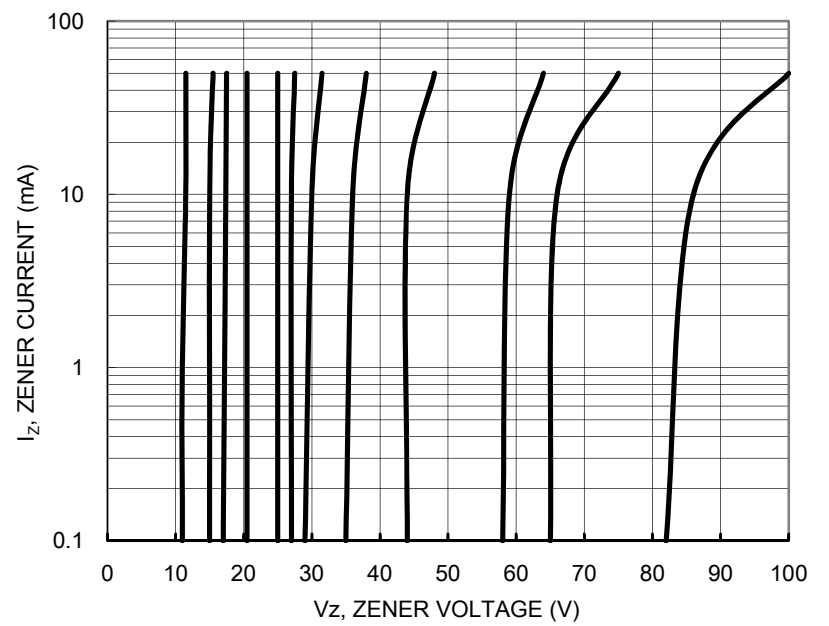


FIG. 7 EFFECT OF ZENER VOLTAGE

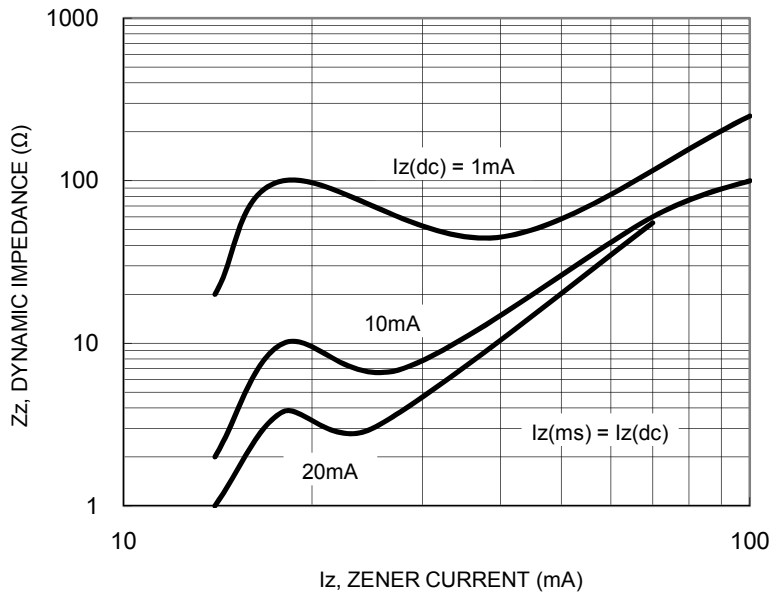


FIG. 8 EFFECT OF ZENER CURRENT

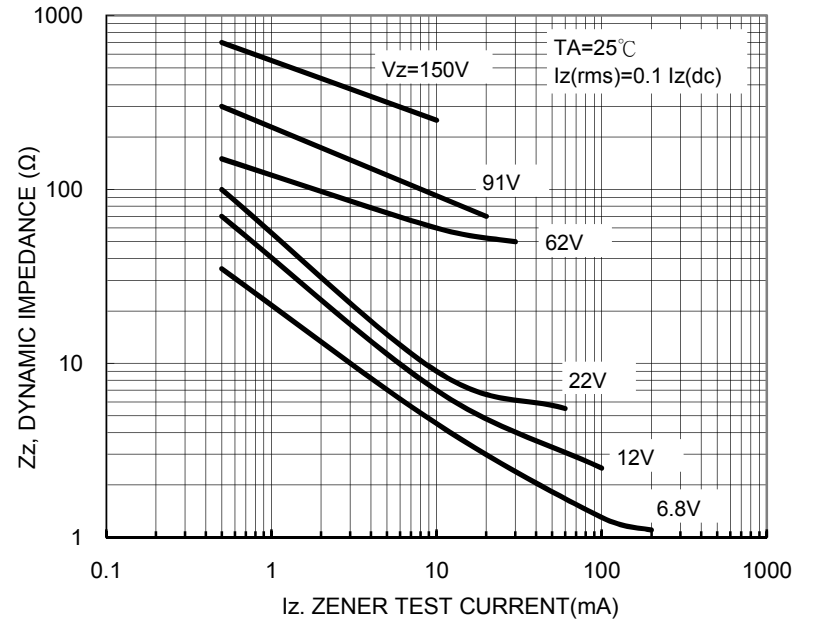


FIG.9 CAPACITANCE CURVE

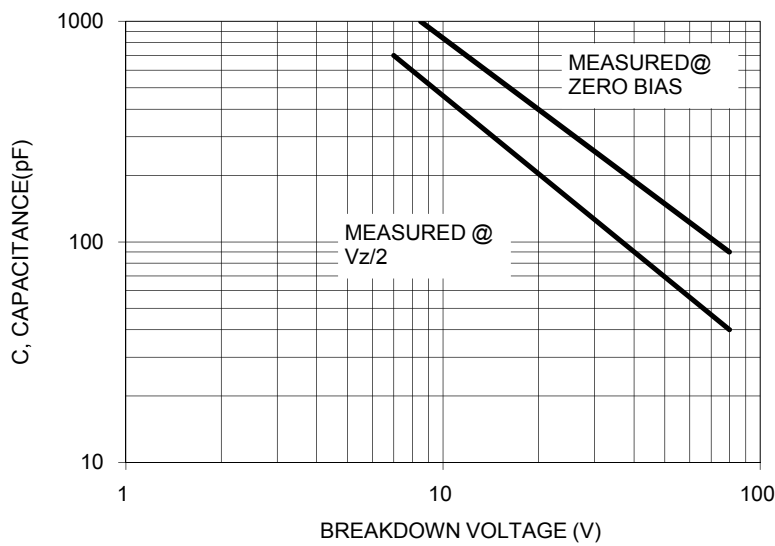


FIG. 10 TYPICAL PULSE RATING CURVE

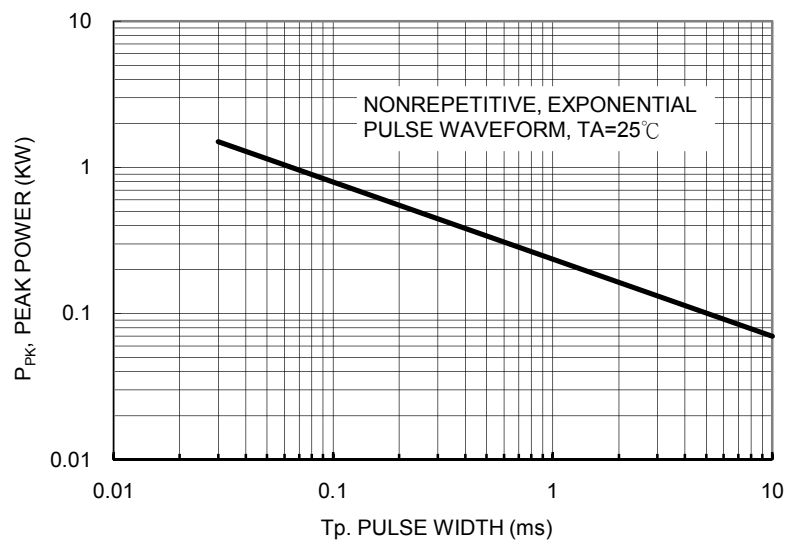


FIG. 11 PULSE WAVEFORM

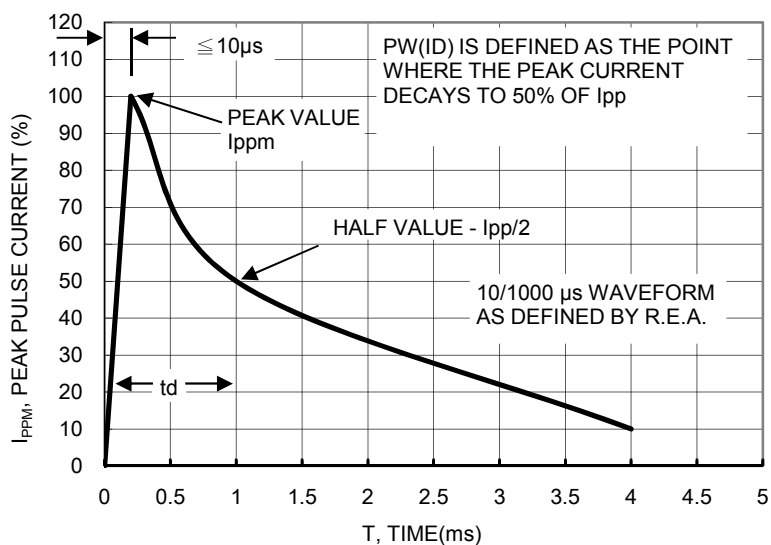
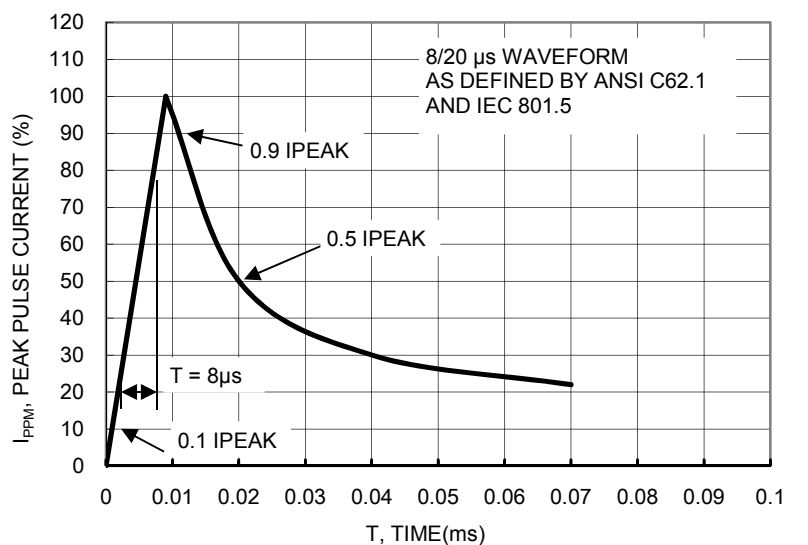
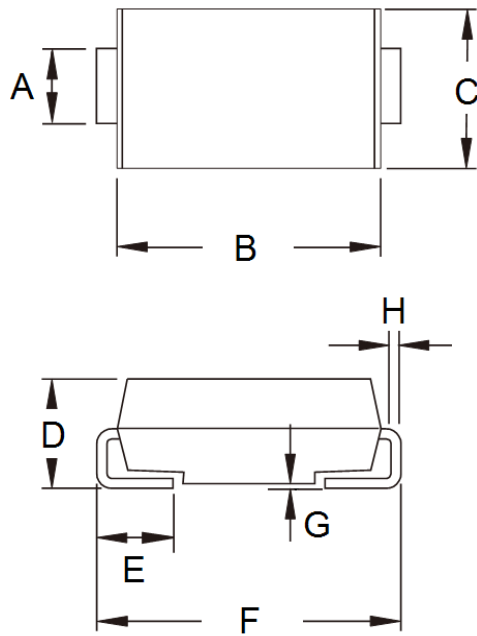


FIG. 12 PULSE WAVEFORM

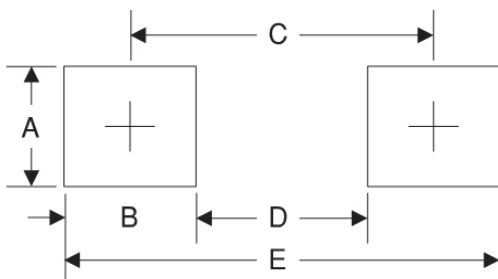


PACKAGE OUTLINE DIMENSIONS  
**DO-214AA (SMB)**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.95	2.10	0.077	0.083
B	4.25	4.75	0.167	0.187
C	3.48	3.73	0.137	0.147
D	1.99	2.61	0.078	0.103
E	0.90	1.41	0.035	0.056
F	5.10	5.30	0.201	0.209
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	2.3	0.091
B	2.5	0.098
C	4.3	0.169
D	1.8	0.071
E	6.8	0.268

MARKING DIAGRAM



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

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