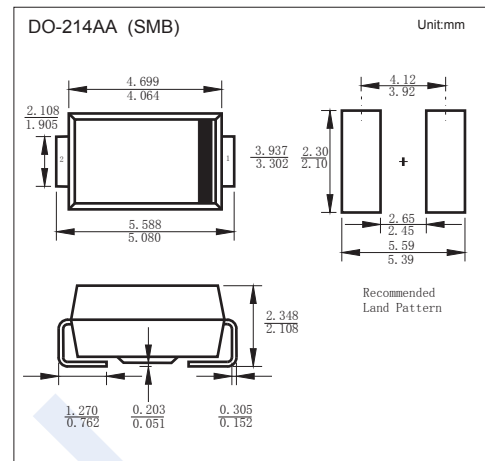


TVS Diodes

1SMB10CA ~ 1SMB78CA

■ Features

- Working Peak Reverse Voltage Range – 10 V to 78 V
- Standard Zener Breakdown Voltage Range – 11.7 V to 91.3 V
- Peak Power – 600 Watts @ 1 ms
- ESD Rating of Class 3 (> 16 KV) per Human Body Model
- Low Leakage < 5uA Above 10 V
- Maximum Clamp Voltage @ Peak Pulse Current
- Response Time is Typically < 1 ns



■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Peak Power Dissipation (Note 1.) @ $T_L = 25^\circ\text{C}$, Pulse Width = 1 ms	P_{PK}	600	W
DC Power Dissipation @ $T_L = 75^\circ\text{C}$ (Note.2)	P_D	3	W
Derate Above 75°C		40	mW/ $^\circ\text{C}$
DC Power Dissipation	P_D	0.55	W
Derate Above 25°C		4.4	mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	226	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Lead	$R_{\theta JL}$	25	
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature range	T_{stg}	-65 to 150	

Note.1: 10 X 1000us, non-repetitive

Note.2: 1"square copper pad, FR-4 board

TVS Diodes

1SMB10CA ~ 1SMB78CA

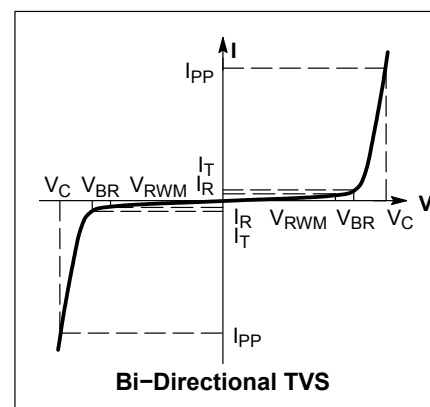
■ Electrical Characteristics Ta = 25°C

Device	Device Marking	V _{RWM} (Note 1) Volts	I _R @ V _{RWM} μA	Breakdown Voltage				V _C @ I _{PP} (Note 3)	
				V _{BR} (Note 2) Volts			@ I _T	V _C	I _{PP}
				Min	Nom	Max	mA	Volts	Amps
1SMB10CA, G*	KXC	10	5.0	11.1	11.69	12.27	1.0	17.0	35.3
1SMB11CA, G*	KZC	11	5.0	12.2	12.84	13.5	1.0	18.2	33.0
1SMB12CA, G*	LEC	12	5.0	13.3	14.00	14.7	1.0	19.9	30.2
1SMB13CA, G*	LGC	13	5.0	14.4	15.16	15.9	1.0	21.5	27.9
1SMB14CA	LKC	14	5.0	15.6	16.42	17.2	1.0	23.2	25.8
1SMB15CA, G*	LMC	15	5.0	16.7	17.58	18.5	1.0	24.4	24.0
1SMB16CA	LPC	16	5.0	17.8	18.74	19.7	1.0	26.0	23.1
1SMB17CA	LRC	17	5.0	18.9	19.90	20.9	1.0	27.6	21.7
1SMB18CA	LTC	18	5.0	20.0	21.06	22.1	1.0	29.2	20.5
1SMB20CA, G*	LVC	20	5.0	22.2	23.37	24.5	1.0	32.4	18.5
1SMB22CA, G*	LXC	22	5.0	24.4	25.69	27.0	1.0	35.5	16.9
1SMB24CA	LZC	24	5.0	26.7	28.11	29.5	1.0	38.9	15.4
1SMB26CA	MEC	26	5.0	28.9	30.42	31.9	1.0	42.1	14.2
1SMB28CA	MGC	28	5.0	31.1	32.74	34.4	1.0	45.4	13.2
1SMB30CA, G*	MKC	30	5.0	33.3	35.06	36.8	1.0	48.4	12.4
1SMB33CA, G*	MMC	33	5.0	36.7	38.63	40.6	1.0	53.3	11.3
1SMB36CA, G*	MPC	36	5.0	40.0	42.11	44.2	1.0	58.1	10.3
1SMB40CA, G*	MRC	40	5.0	44.4	46.74	49.1	1.0	64.5	9.3
1SMB43CA	MTC	43	5.0	47.8	50.32	52.8	1.0	69.4	8.6
1SMB45CA	MVC	45	5.0	50.0	52.63	55.3	1.0	72.2	8.3
1SMB48CA	MXC	48	5.0	53.3	56.11	58.9	1.0	77.4	7.7
1SMB51CA, G*	MZC	51	5.0	56.7	59.69	62.7	1.0	82.4	7.3
1SMB54CA	NEC	54	5.0	60.0	63.16	66.32	1.0	87.1	6.9
1SMB58CA	NGC	58	5.0	64.4	67.79	71.18	1.0	93.6	6.4
1SMB60CA, G*	NKC	60	5.0	66.7	70.21	73.72	1.0	96.8	6.2
1SMB64CA	NMC	64	5.0	71.1	74.84	78.58	1.0	103	5.8
1SMB70CA	NPC	70	5.0	77.8	81.90	85.99	1.0	113	5.3
1SMB75CA	NRC	75	5.0	83.3	91.65	92.07	1.0	121	4.9
1SMB78CA	NTC	78	5.0	86.7	91.26	95.83	1.0	126	4.7

1. A transient suppressor is normally selected according to the working peak reverse voltage (V_{RWM}), which should be equal to or greater than the DC or continuous peak operating voltage level.
 2. V_{BR} measured at pulse test current I_T at an ambient temperature of 25°C.
 3. Surge current waveform per Figure 2 and derate per Figure 3 of the General Data – 600 Watt at the beginning of this group.
- * The "G" suffix indicates Pb-Free package available.

■ Electrical Characteristics Ta = 25°C

Symbol	Parameter
I _{PP}	Maximum Reverse Peak Pulse Current
V _C	Clamping Voltage @ I _{PP}
V _{RWM}	Working Peak Reverse Voltage
I _R	Maximum Reverse Leakage Current @ V _{RWM}
V _{BR}	Breakdown Voltage @ I _T
I _T	Test Current



TVS Diodes

1SMB10CA ~ 1SMB78CA

■ Typical Characteristics

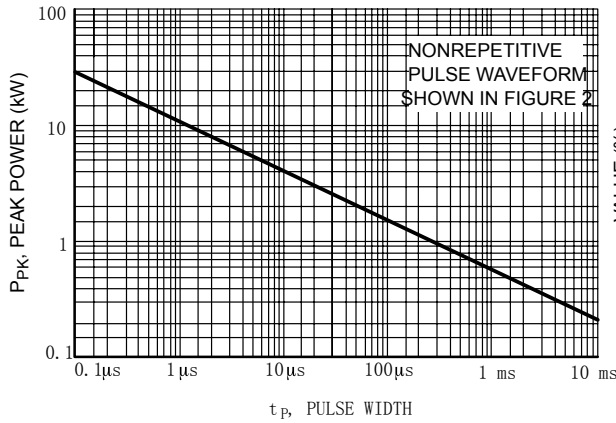


Figure 1. Pulse Rating Curve

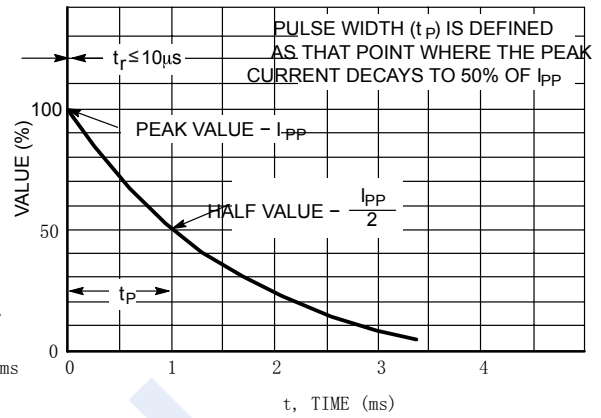


Figure 2. Pulse Waveform

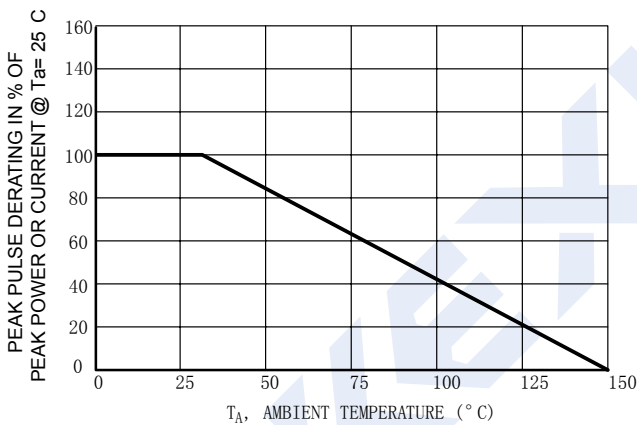


Figure 3. Pulse Derating Curve

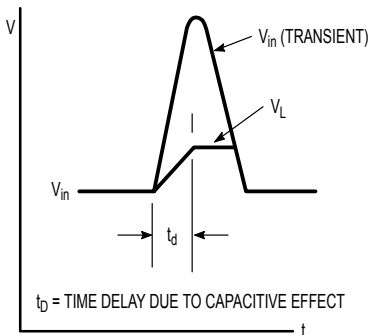
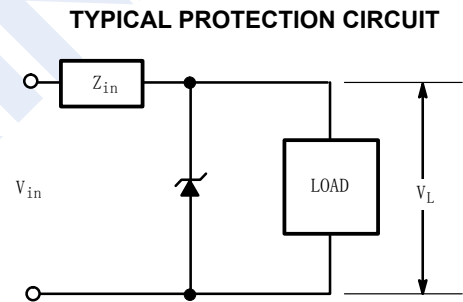


Figure 4.

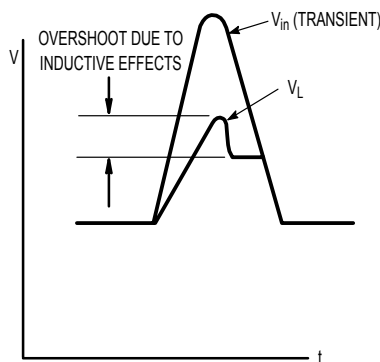


Figure 5.

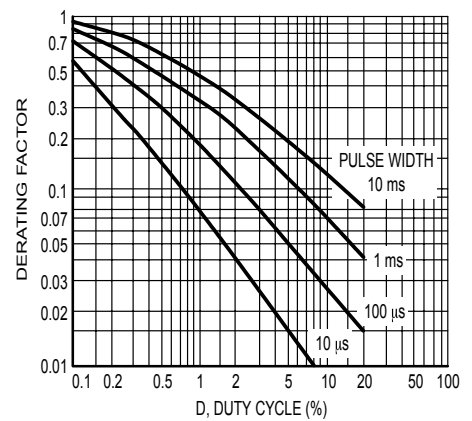


Figure 6. Typical Derating Factor for Duty Cycle