

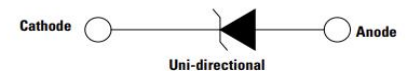
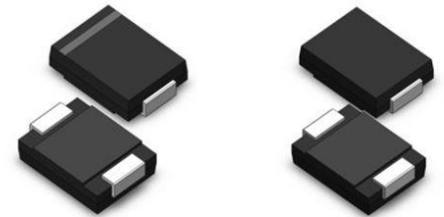


TVS Diodes 1KSMB series

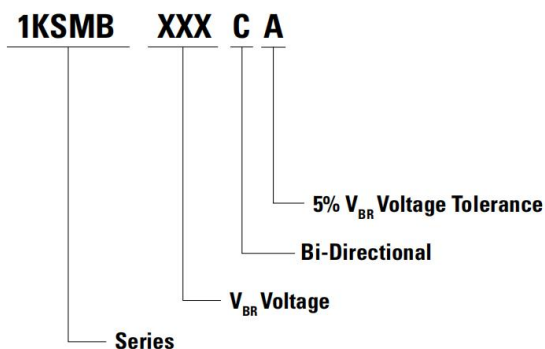
Transient Voltage Suppressors

Features

- ◆ 1000W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- ◆ For surface mounted applications to optimize board space
- ◆ Low incremental surge impedance
- ◆ Excellent clamping capability
- ◆ Typical I_R less than 1μA when V_{BR} min>12V.
- ◆ High Temperature soldering guaranteed: 260°C/40seconds at terminals
- ◆ Plastic package has underwriters laboratory flammability 94V-0
- ◆ Meets MSL level 1, per J-STD-020.
- ◆ Meet Halogen free and RoHS compliant



Part Number Coding System



Applications

- ◆ I/O interface
- ◆ AC/DC power supply
- ◆ Low frequency signal transmission line(RS232,RS485,etc.)

Mechanical Data

- ◆ Case: JEDEC DO-214AA
- ◆ Polarity: Color band denotes positive end (cathode) except bi-directional models
- ◆ Weight: About 0.093g

Maximum Rating and Characteristics

Parameters at 25°C ambient temperature unless otherwise Noted.

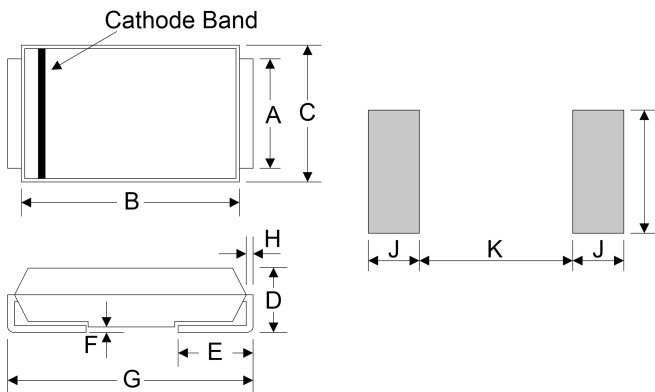
Rating	Symbol	Value	Unit
Peak Pulse Power Dissipation at TA=25°C by 10/1000µs Waveform (Fig.2)(Note 1), (Note 2)	P _{PPM}	1000	Watts
Power Dissipation on Infinite Heat Sink at TL =50°C	P _D	5.0	Watts
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)	I _{FSM}	100	Amps
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only	V _F	3.5	V
Operating Temperature Range	T _J	-65 to +150	°C
Storage Temperature Range	T _{STG}	-65 to +175	°C

Notes:

1. Non-repetitive current pulse , per Fig. 2 and derated above T_J (initial) =25°C per Fig. 1.
2. Mounted on copper pad area of 0.2x0.2" (5.0 x 5.0mm) to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Dimensions (SMB)

Ref.	Millimeters		Inches	
	Min	Max	Min.	Max.
A	1.950	2.200	0.077	0.086
B	4.060	4.570	0.160	0.180
C	3.300	3.940	0.130	0.155
D	2.130	2.440	0.084	0.096
E	0.760	1.520	0.030	0.060
F	-	0.203	-	0.008
G	5.210	5.590	0.205	0.220
H	0.152	0.305	0.006	0.012
I	2.260	-	0.089	-
J	2.160	-	0.085	-
K	-	2.740	-	0.107



Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @ I_T	Test Current	Maximum Clamping Voltage @ I_{PP}	Peak Pulse Current	Reverse Leakage @ V_{RWM}
Unidirectional	Bidirectional	UNI	BI	$V_{RWM}(V)$	$V_{BR}(V)$	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
1KSMB6.8A	1KSMB6.8CA	A10A	N10A	5.8	6.45~7.14	10	10.5	95.2	900
1KSMB7.5A	1KSMB7.5CA	A10B	N10B	6.40	7.13~7.88	10	11.3	88.5	400
1KSMB8.2A	1KSMB8.2CA	A10C	N10C	7.02	7.79~8.61	10	12.1	82.6	180
1KSMB9.1A	1KSMB9.1CA	A10D	N10D	7.78	8.65~9.55	1	13.4	74.6	45
1KSMB10A	1KSMB10CA	A10E	N10E	8.55	9.50~10.50	1	14.5	69	8
1KSMB11A	1KSMB11CA	A10F	N10F	9.40	10.50~11.60	1	15.6	64.1	4
1KSMB12A	1KSMB12CA	A10G	N10G	10.2	11.40~12.60	1	16.7	59.9	1
1KSMB13A	1KSMB13CA	A10H	N10H	11.10	12.40~13.70	1	18.2	54.9	1
1KSMB15A	1KSMB15CA	A10I	N10I	12.8	14.30~15.80	1	21.2	47.2	1
1KSMB16A	1KSMB16CA	C10J	Q10J	13.6	15.20~16.80	1	22.5	44.4	1
1KSMB18A	1KSMB18CA	A10K	N10K	15.3	17.10~18.90	1	25.5	39.2	1
1KSMB20A	1KSMB20CA	A10L	N10L	17.1	19.00~21.00	1	27.7	36.1	1
1KSMB22A	1KSMB22CA	A10M	N10M	18.8	20.90~23.10	1	30.6	32.7	1
1KSMB24A	1KSMB24CA	A10N	N10N	20.5	22.80~25.20	1	33.2	30.1	1
1KSMB27A	1KSMB27CA	A10O	N10O	23.1	25.70~28.40	1	37.5	26.7	1
1KSMB30A	1KSMB30CA	A10P	N10P	25.6	28.50~31.50	1	41.4	24.2	1
1KSMB33A	1KSMB33CA	A10Q	N10Q	28.2	31.40~34.70	1	45.7	21.9	1
1KSMB36A	1KSMB36CA	A10R	N10R	30.80	34.20~37.80	1	49.9	20.0	1
1KSMB39A	1KSMB39CA	A10S	N10S	33.30	37.10~41.00	1	53.9	18.6	1
1KSMB43A	1KSMB43CA	A10T	N10T	36.80	40.90~45.20	1	59.3	16.9	1
1KSMB47A	1KSMB47CA	A10U	N10U	40.20	44.70~49.40	1	64.8	15.4	1
1KSMB51A	1KSMB51CA	A10V	N10V	43.60	48.50~53.60	1	70.1	14.3	1
1KSMB56A	1KSMB56CA	A10W	N10W	47.80	53.20~58.80	1	77.0	13.0	1
1KSMB62A	1KSMB62CA	A10X	N10X	53.00	58.90~65.10	1	85.0	11.8	1
1KSMB68A	1KSMB68CA	A10Y	N10Y	58.10	64.60~71.40	1	92.0	10.9	1
1KSMB75A	1KSMB75CA	A10Z	N10Z	64.10	71.30~78.80	1	103	9.7	1
1KSMB82A	1KSMB82CA	B10A	O10A	70.10	77.90~86.10	1	113	8.8	1
1KSMB91A	1KSMB91CA	B10B	O10B	77.80	86.50~95.50	1	125	8.0	1
1KSMB100A	1KSMB100CA	B10C	O10C	85.50	95.00~105.0	1	137	7.3	1
1KSMB110A	1KSMB110CA	B10D	O10D	94.0	105.0~116.0	1	152	6.6	1
1KSMB120A	1KSMB120CA	B10E	O10E	102.0	114.0~126.0	1	165	6.1	1
1KSMB130A	1KSMB130CA	B10F	O10F	111.0	124.0~137.0	1	179	5.6	1
1KSMB150A	1KSMB150CA	B10G	O10G	128.0	143.0~158.0	1	207	4.8	1
1KSMB160A	1KSMB160CA	B10H	O10H	136.0	152.0~168.0	1	219	4.6	1
1KSMB170A	1KSMB170CA	B10I	O10I	144.5	162.0~179.0	1	234	4.3	1
1KSMB180A	1KSMB180CA	B10J	O10J	153.0	171.0~189.0	1	246	4.1	1

Notes: For bidirectional type having V_{RWM} of 10V and less, the I_R limit is double.

Ratings and Characteristic Curves (TA=25°C unless otherwise noted)

Figure 1. Peak Pulse Power Derating Curve

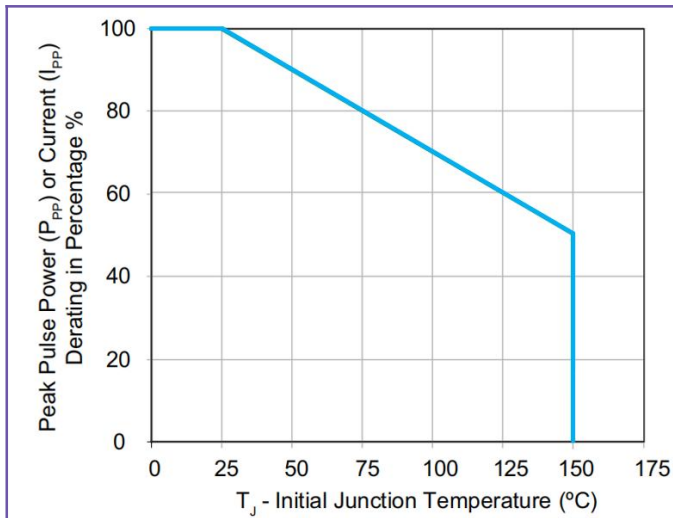


Figure 2. Pulse Waveform

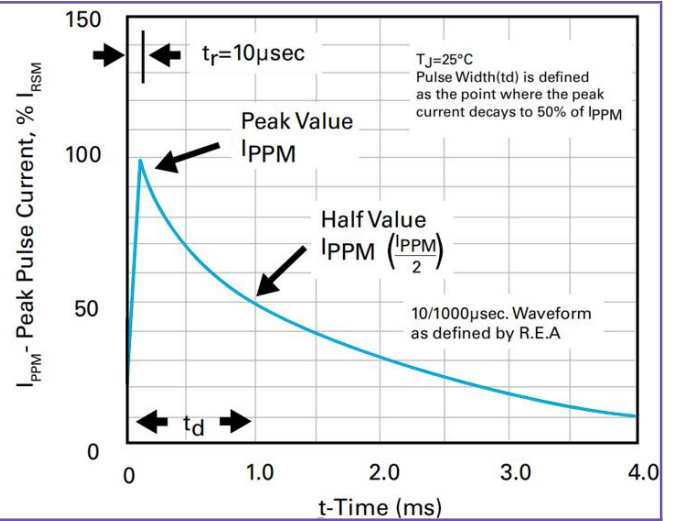


Figure 3. Typical Junction Capacitance

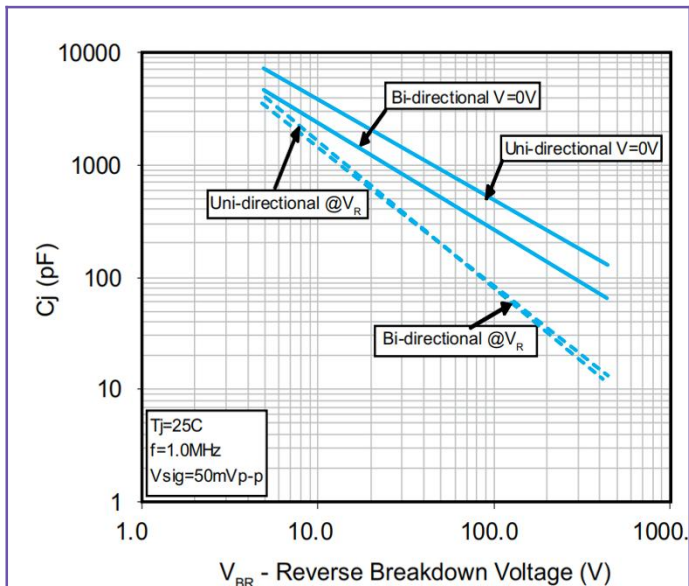


Figure 4. Typical Transient Thermal Impedance

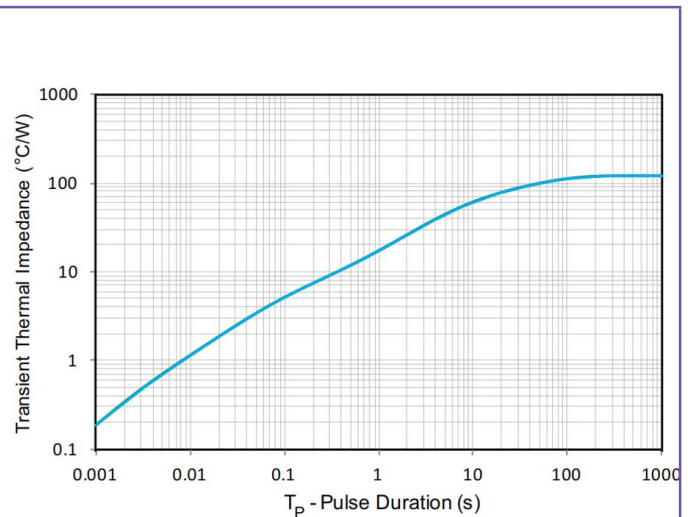


Figure 5. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

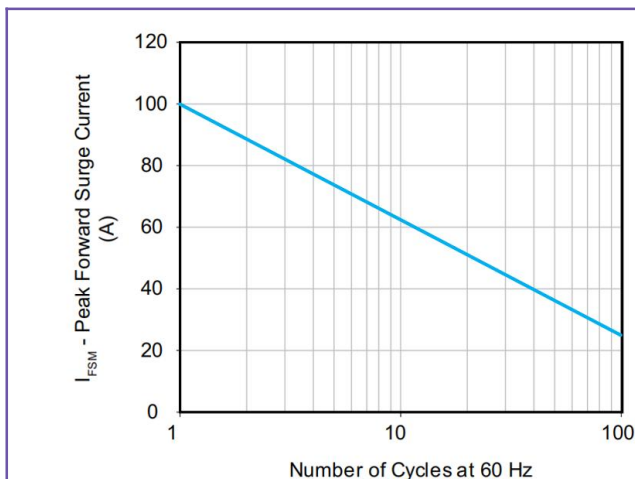
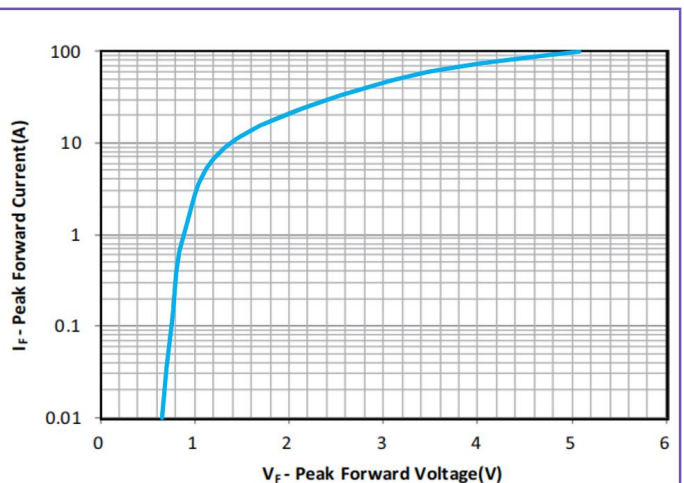
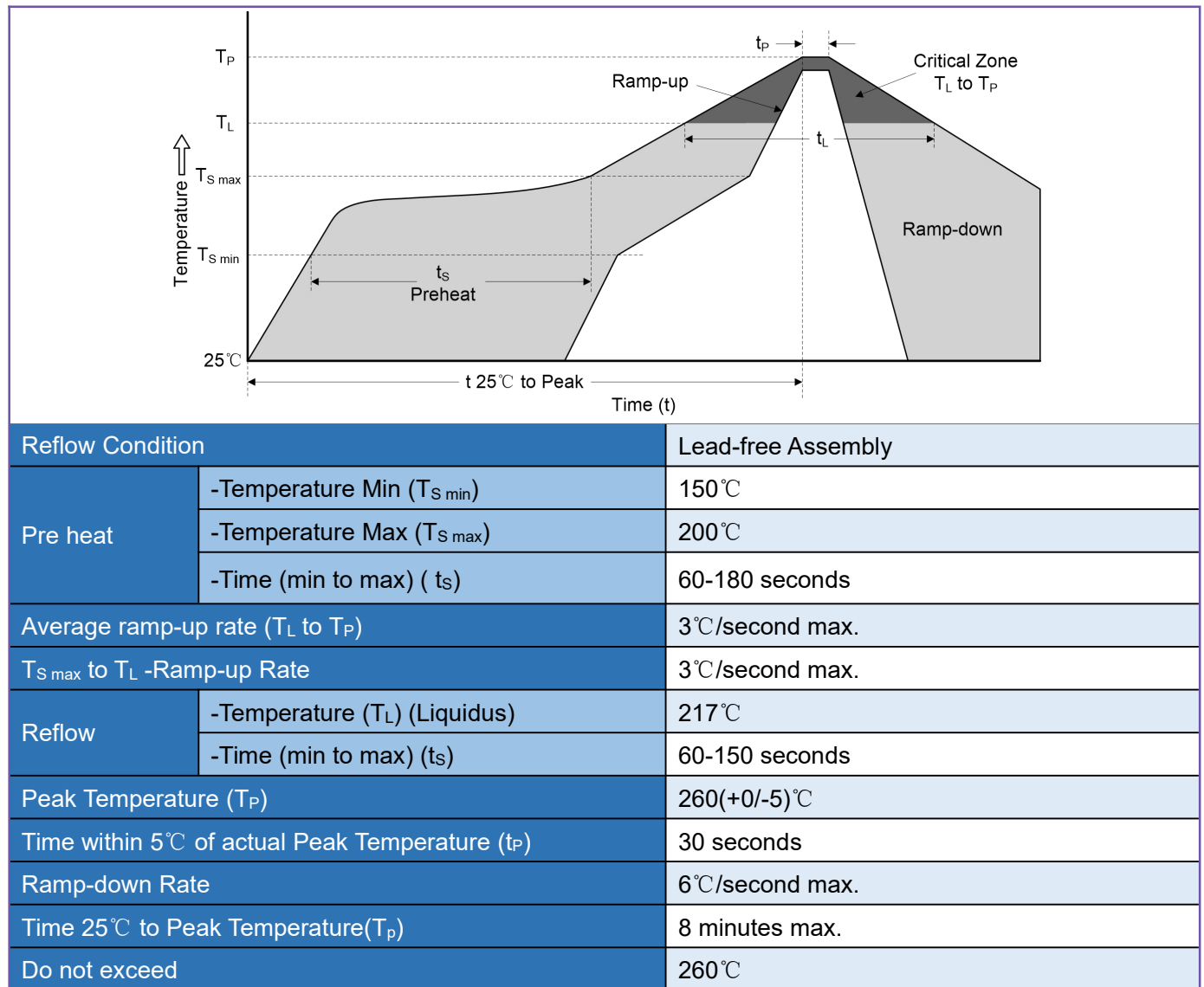


Figure 6. Peak Forward Voltage Drop vs Peak Forward Current (Typical Values)



Reflow Soldering Parameters



Reliability

Items	Standards
Terminal strength	MIL-STD-750 Method 2036
Mechanical shock	JESD22-B104
Vibration	JESD22-B103
High Temp. Storage	JESD22-A103
High Temp Reverse Bias	JESD22-A108
Temperature Cycling	JESD22-A104
High Temp High Humidity Reverse Bias	JESD22-A101
Resistance to solder heat	JESD22-A111(SMD)