Features

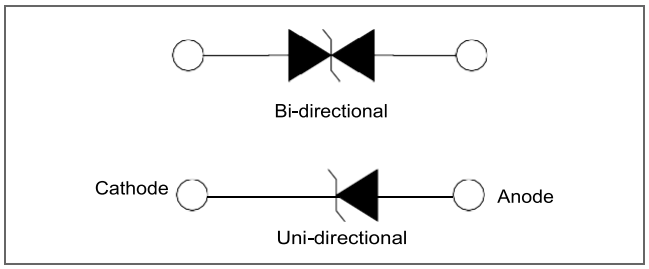
RoHS Compliant

- 1000W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycles):0.01%
- Excellent clamping capability
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- Meet MSL level1, per J-STD-020, lead-frame maximum peak of 260°C

Applications

TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Function Diagram



Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)			
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at T_A=25°C by 10/1000μs Waveform (Fig.3)	P_{PPM}	1000	W
Power Dissipation on Infinite Heat Sink at T_L=50°C	P_D	5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1)	I_{FSM}	120	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only	V_F	3.5	V
Operating Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

AGENCY	AGENCY FILE NUMBER
®	Pending

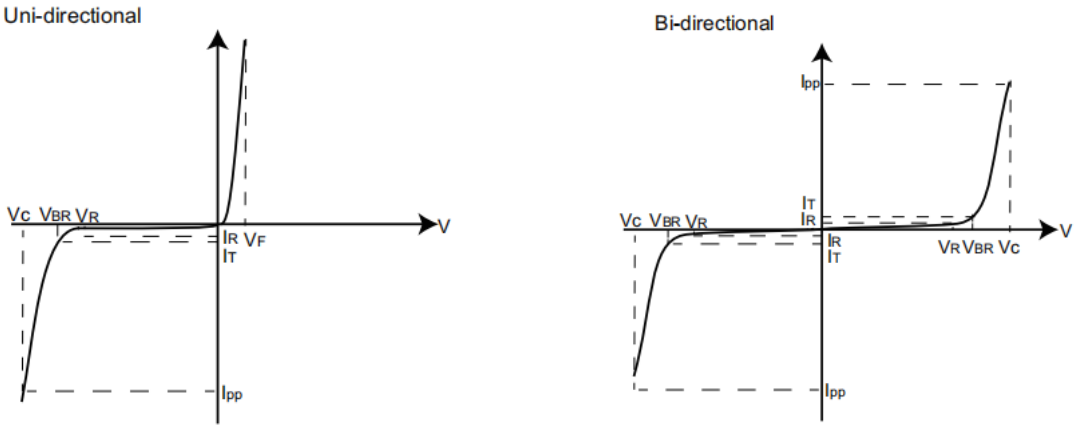
Notes:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Characteristics (T =25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Key Marking UNI	Key Marking BI	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ I_T MIN	Breakdown Voltage V_{BR} (Volts) @ I_T MAX	Test Current I_T (mA)	Maximum Clamping Voltage V_C @ I_{PP} (V)	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R @ V_R (μA)	Agency Approval
1KSMB6.8A	1KSMB6.8CA	1K06E	1K06E	5.80	6.45	7.14	10	10.5	95.2	900	
1KSMB7.5A	1KSMB7.5CA	1K07F	1K07F	6.40	7.13	7.88	10	11.3	88.5	400	
1KSMB8.2A	1KSMB8.2CA	1K08T	1K08T	7.02	7.79	8.61	10	12.1	82.6	180	
1KSMB9.1A	1KSMB9.1CA	1K09O	1K09O	7.78	8.65	9.55	1	13.4	74.6	45	
1KSMB10A	1KSMB10CA	1K010	1K010	8.55	9.50	10.5	1	14.5	69.0	8	
1KSMB11A	1KSMB11CA	1K011	1K011	9.4	10.5	11.6	1	15.6	64.1	4	
1KSMB12A	1KSMB12CA	1K012	1K012	10.2	11.4	12.6	1	16.7	59.9	1	
1KSMB13A	1KSMB13CA	1K013	1K013	11.1	12.4	13.7	1	18.2	54.9	1	
1KSMB15A	1KSMB15CA	1K015	1K015	12.8	14.3	15.8	1	21.2	47.2	1	
1KSMB16A	1KSMB16CA	1K016	1K016	13.6	15.2	16.8	1	22.5	44.4	1	
1KSMB18A	1KSMB18CA	1K018	1K018	15.3	17.1	18.9	1	25.5	39.2	1	
1KSMB20A	1KSMB20CA	1K020	1K020	17.1	19.0	21.0	1	27.7	36.1	1	
1KSMB22A	1KSMB22CA	1K022	1K022	18.8	20.9	23.1	1	30.6	32.7	1	
1KSMB24A	1KSMB24CA	1K024	1K024	20.5	22.8	25.2	1	33.2	30.1	1	
1KSMB27A	1KSMB27CA	1K027	1K027	23.1	25.7	28.4	1	37.5	26.7	1	
1KSMB30A	1KSMB30CA	1K030	1K030	25.6	28.5	31.5	1	41.4	24.2	1	
1KSMB33A	1KSMB33CA	1K033	1K033	28.2	31.4	34.7	1	45.7	21.9	1	
1KSMB36A	1KSMB36CA	1K036	1K036	30.8	34.2	37.8	1	49.9	20.0	1	
1KSMB39A	1KSMB39CA	1K039	1K039	33.3	37.1	41.0	1	53.9	18.6	1	
1KSMB43A	1KSMB43CA	1K043	1K043	36.8	40.9	45.2	1	59.3	16.9	1	
1KSMB47A	1KSMB47CA	1K047	1K047	40.2	44.7	49.4	1	64.8	15.4	1	
1KSMB51A	1KSMB51CA	1K051	1K051	43.6	48.5	53.6	1	70.1	14.3	1	
1KSMB56A	1KSMB56CA	1K056	1K056	47.8	53.2	58.8	1	77.0	13.0	1	
1KSMB62A	1KSMB62CA	1K062	1K062	53.0	58.9	65.1	1	85.0	11.8	1	
1KSMB68A	1KSMB68CA	1K068	1K068	58.1	64.6	71.4	1	92.0	10.9	1	
1KSMB75A	1KSMB75CA	1K075	1K075	64.1	71.3	78.8	1	103.0	9.7	1	
1KSMB82A	1KSMB82CA	1K082	1K082	70.1	77.9	86.1	1	113.0	8.8	1	
1KSMB91A	1KSMB91CA	1K091	1K091	77.8	86.50	95.50	1	125.0	8.0	1	
1KSMB100A	1KSMB100CA	1K100	1K100	85.5	95.0	105.0	1	137.0	7.3	1	
1KSMB110A	1KSMB110CA	1K110	1K110	94.0	105.0	116.0	1	152.0	6.6	1	
1KSMB120A	1KSMB120CA	1K120	1K120	102.0	114.0	126.0	1	165.0	6.1	1	
1KSMB130A	1KSMB130CA	1K130	1K130	111.0	124.0	137.0	1	179.0	5.6	1	
1KSMB150A	1KSMB150CA	1K150	1K150	128.0	143.0	158.0	1	207.0	4.8	1	
1KSMB160A	1KSMB160CA	1K160	1K160	136.0	152.0	168.0	1	219.0	4.6	1	
1KSMB170A	1KSMB170CA	1K170	1K170	144.5	162.0	179.0	1	234.0	4.3	1	
1KSMB180A	1KSMB180CA	1K180	1K180	153.0	171.0	189.0	1	246.0	4.1	1	

I-V Curve Characteristics



P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation

V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation

V_{BR} Breakdown Voltage -- Maximum voltage that flows though the TVS at a specified test current (I_T)

V_C Clamping Voltage -- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)

I_R Reverse Leakage Current -- Current measured at V_R

V_F Forward Voltage Drop for Uni-directional

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

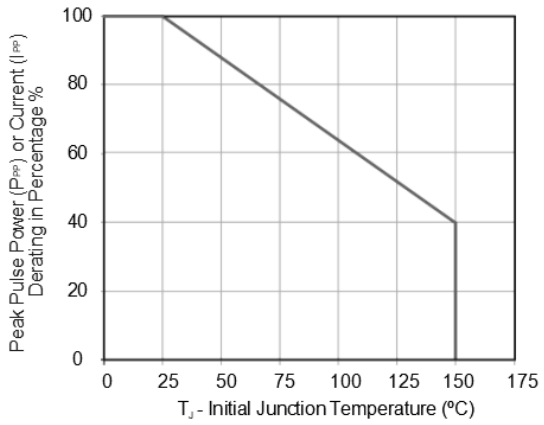


Figure 1. Peak pulse power derating curve

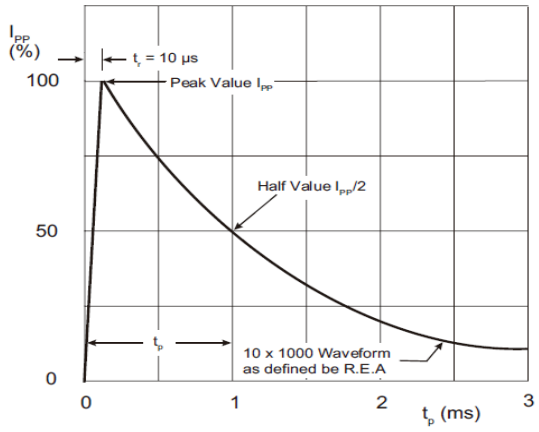


Figure2. Pulse waveform

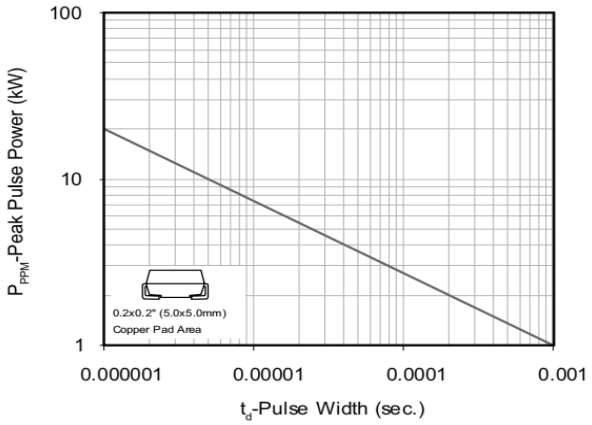


Figure 3. Peak pulse power rating curve

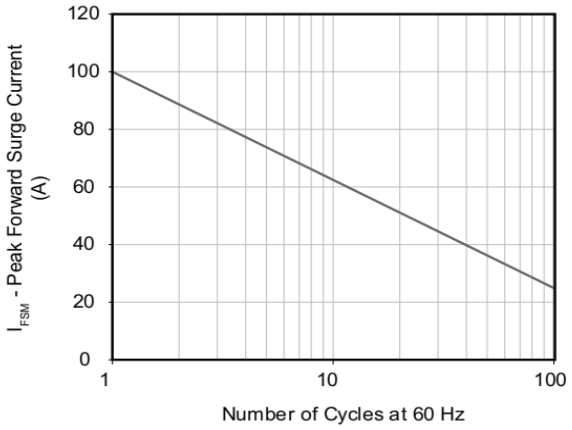
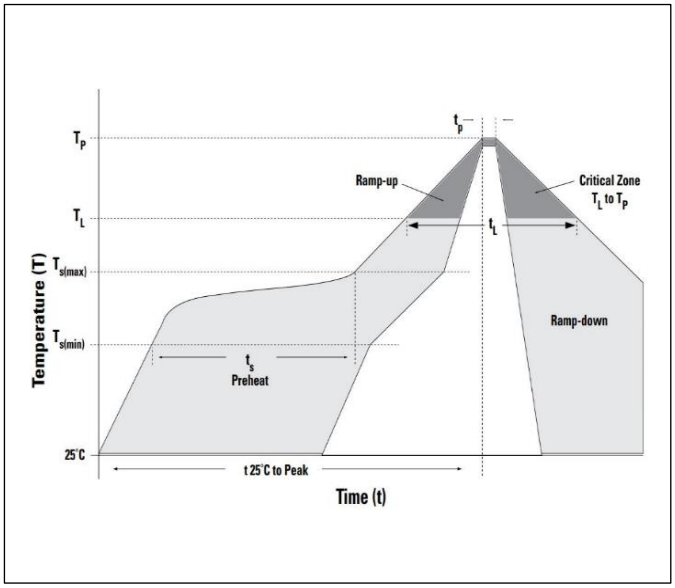


Figure 4. Maximum non-repetitive surge current

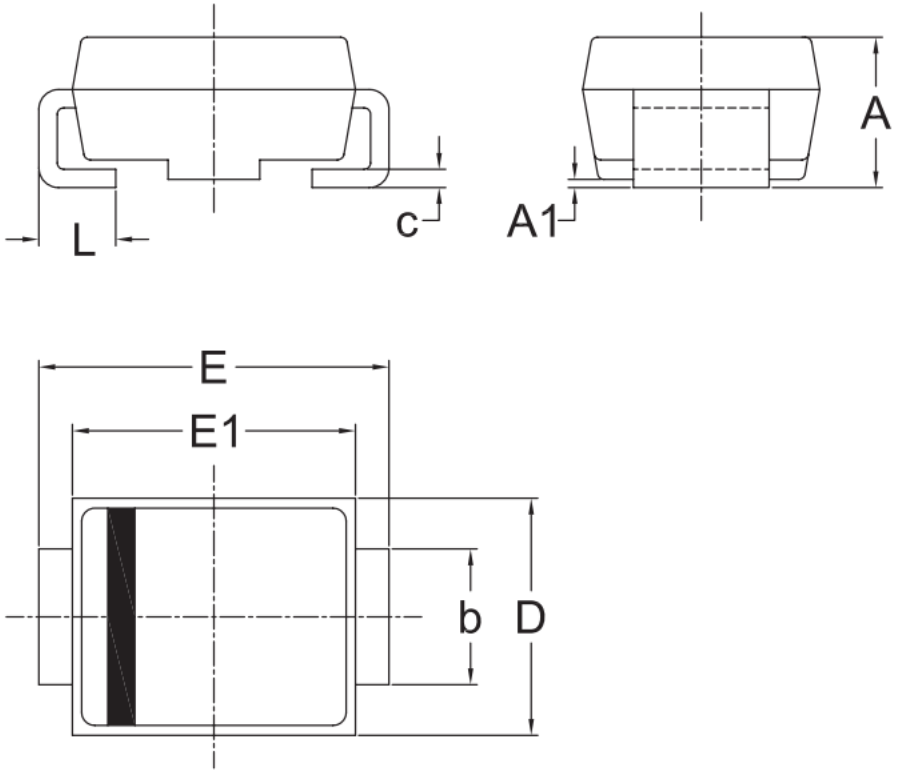
Soldering Parameters

Reflow Condition		Lead–free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_A) to peak		3°C/second max
$T_{S(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A) (Liquidus)	217°C
	- Time (min to max) (t_s)	60 – 150 seconds
Peak Temperature (T_P)		$260^{+0/-5}$ °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		260°C

Soldering profile



Dimensions



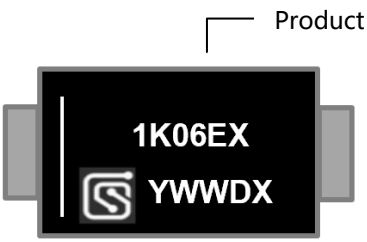
unit		A	A1	b	c	D	E	E1	L
max	mm	2.61	0.30	2.30	0.31	3.94	5.70	4.70	1.52
min		1.99	0	1.70	0.15	3.30	5.05	4.06	0.76

Part Numbering

1KSMB xx xx

- A: Uni-directional
  CA: Bi-directional
- Reverse Standard off Voltage V_R
- Product series

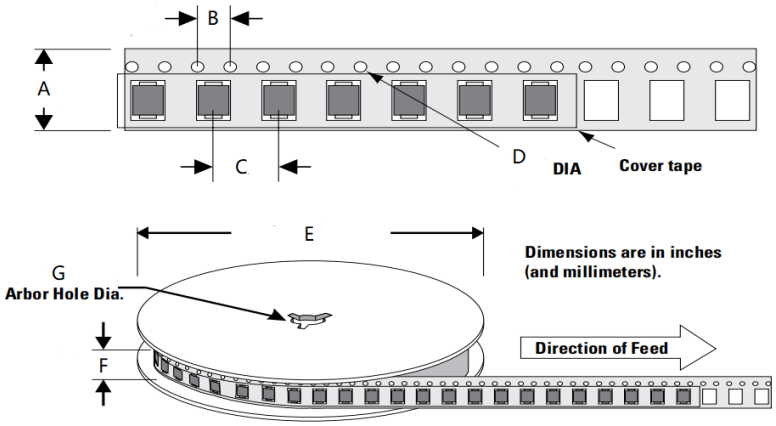
Part Marking

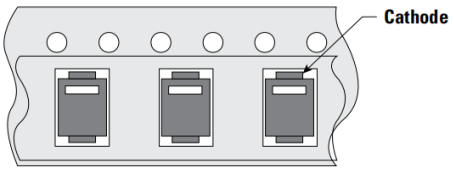


Packing

Part number	Package name	Small packing quantity	Packing method
1KSMBXXXX	DO-214AA	3000	Tape & Reel

Tape and Reel Specification





Symbol	Millimeter
A	12.00±0.10
B	4.00±0.10
C	8.00±0.10
D	1.55±0.05
E	330.20±2.00
F	15.70±2.00
G	13.30±0.30

Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	13-Aug-2021
1.1	Update Marking	24-Jun-2024