TVS 15KPA Series — 15000W

R-6

Features

- Available in uni-directional and bi-directional
- 15000 W peak pulse power capability with a 10/1000 μs waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 260 °C, 40 seconds

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10x1000μs test waveform (Fig.1) (Note 1)	P_{PPM}	15000	W
Steady State Power Dissipation on inifinite heat sink at T_L=75°C (Fig. 5)	P_D	8.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional only (Note 2)	I_{FSM}	400	A
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 175	°C
Typical Thermal Resistance Junction to Lead	R_{uJL}	8.0	°C/W
Typical Thermal Resistance Junction to Ambient	R_{uJA}	40	°C/W

Notes:

1. Non-repetitive current pulse , per Fig. 3 and derated above T_A = 25°C per Fig. 2.
2. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.

MECHANICAL DATA

Case: R-6
Epoxy meets UL 94V-0 flammability rating

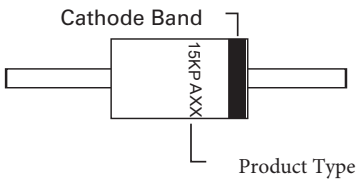
Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

Polarity: For uni-directional types the color band denotes cathode end, no marking on bi-directional types

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive and telecommunication.

Part Marking System



ELECTRICAL CHARACTERISTICS (TA = 25 °C unless otherwise noted)

15KPA PART NUMBER		REVERSE STAND- OFF VOLTAGE V_{RWM}(V)	BREAKDOWN VOLTAGE V_{BR}(V) MIN. @I_T	BREAKDOWN VOLTAGE V_{BR}(V) MAX. @I_T	TEST CURRENT I_T (mA)	PEAK PULSE CURRENT Ipp (A)	REVERSE LEAKAGE @ V_{RWM} I_R(μA)	MAXIMUN CLAMPING VOLTAGE @I_{PP} V_C (V)
UNI-POLAR	BI-POLAR							
15KPA17A	15KPA17CA	17	18.88	20.80	50	515.4	5000	29.3
15KPA18A	15KPA18CA	18	20.00	22.20	50	488.7	5000	30.9
15KPA20A	15KPA20CA	20	22.20	24.60	20	440.2	1500	34.3
15KPA22A	15KPA22CA	22	24.40	27.00	10	407.0	500	37.1
15KPA24A	15KPA24CA	24	26.60	29.40	5	371.0	150	40.7
15KPA26A	15KPA26CA	26	28.80	31.80	5	343.2	50	44.0
15KPA28A	15KPA28CA	28	31.10	34.40	5	317.9	25	47.5
15KPA30A	15KPA30CA	30	33.30	36.90	5	297.8	15	50.7
15KPA33A	15KPA33CA	33	36.60	40.50	5	276.1	2	54.7
15KPA36A	15KPA36CA	36	39.90	44.10	5	252.5	2	59.8
15KPA40A	15KPA40CA	40	44.40	49.10	5	229.5	2	65.8
15KPA43A	15KPA43CA	43	47.80	52.80	5	216.3	2	69.8
15KPA45A	15KPA45CA	45	50.10	55.50	5	207.4	2	72.8
15KPA48A	15KPA48CA	48	53.40	59.10	5	194.3	2	77.7
15KPA51A	15KPA51CA	51	56.70	62.70	5	182.1	2	82.9
15KPA54A	15KPA54CA	54	60.00	66.30	5	172.2	2	87.7
15KPA58A	15KPA58CA	58	64.40	71.20	5	161.0	2	93.8
15KPA60A	15KPA60CA	60	66.60	73.50	5	155.0	2	97.4
15KPA64A	15KPA64CA	64	71.10	78.60	5	144.9	2	104.2
15KPA70A	15KPA70CA	70	77.80	86.00	5	132.9	2	113.6
15KPA75A	15KPA75CA	75	83.30	92.10	5	123.8	2	122.0
15KPA78A	15KPA78CA	78	86.70	95.70	5	119.7	2	126.1
15KPA85A	15KPA85CA	85	94.40	104.00	5	109.7	2	137.6
15KPA90A	15KPA90CA	90	99.90	110.40	5	103.7	2	145.6
15KPA100A	15KPA100CA	100	110.00	123.00	5	93.6	2	161.3
15KPA110A	15KPA110CA	110	122.00	135.00	5	84.5	2	178.6
15KPA120A	15KPA120CA	120	133.20	147.30	5	78.5	2	192.3
15KPA130A	15KPA130CA	130	144.00	159.00	5	72.5	2	208.3
15KPA150A	15KPA150CA	150	167.00	185.00	5	62.4	2	241.9
15KPA160A	15KPA160CA	160	178.00	197.00	5	58.4	2	258.6
15KPA170A	15KPA170CA	170	189.00	209.00	5	55.4	2	272.7
15KPA180A	15KPA180CA	180	200.10	221.10	5	52.3	2	288.5
15KPA200A	15KPA200CA	200	222.00	247.00	5	47.3	2	319.1
15KPA220A	15KPA220CA	220	244.00	272.00	5	35.2	2	428.6
15KPA240A	15KPA240CA	240	267.40	293.90	5	39.3	2	384.6
15KPA260A	15KPA260CA	260	289.60	318.20	5	36.2	2	416.7
15KPA280A	15KPA280CA	280	312.10	342.50	5	33.2	2	454.5

For bidirectional type having V_R of 30 volts and less, the I_R limit is double.

For parts without A, the V_{BR} is + 0% and Vc is 5% higher than with A parts

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

Figure 1 - Peak Pulse Power Rating Curve

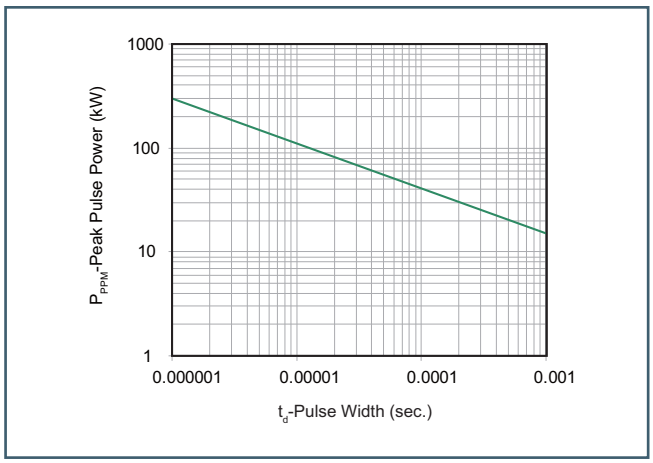


Figure 2 - Pulse Derating Curve

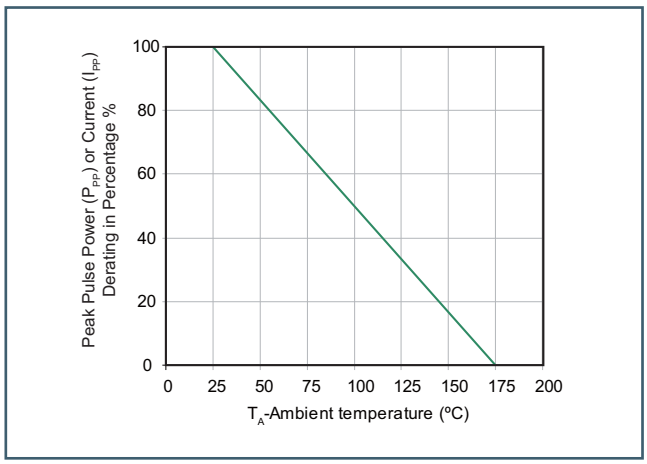


Figure 3 - Pulse Waveform

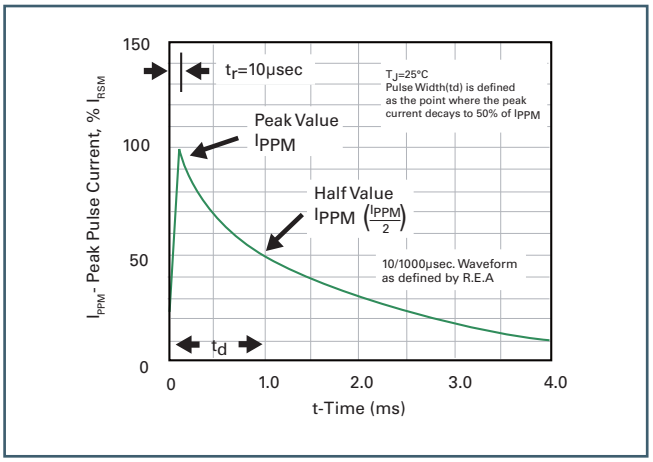


Figure 4 - Typical Junction Capacitance

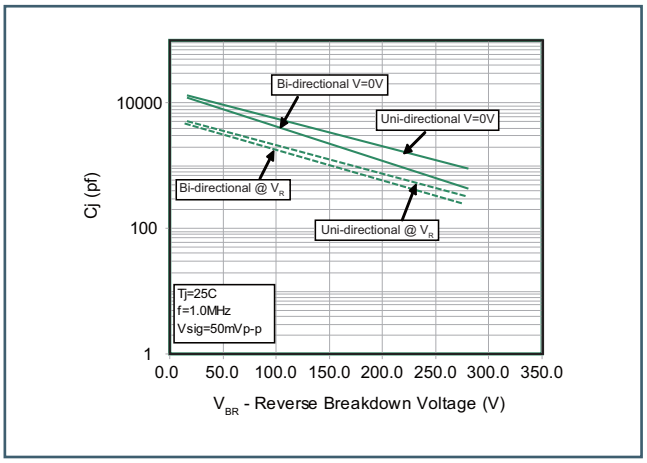


Figure 5 - Steady State Power Dissipation Derating Curve

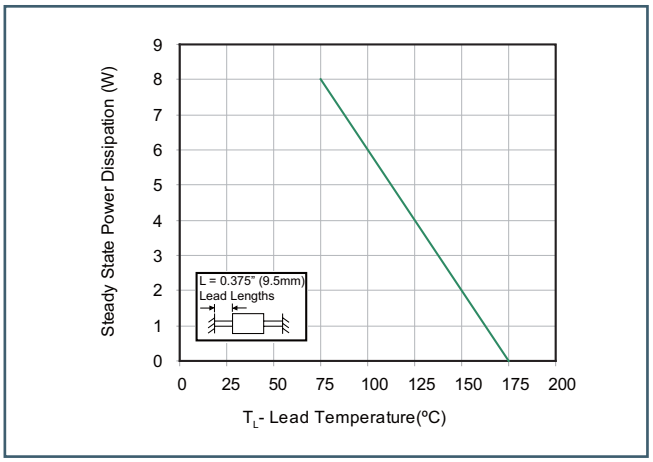
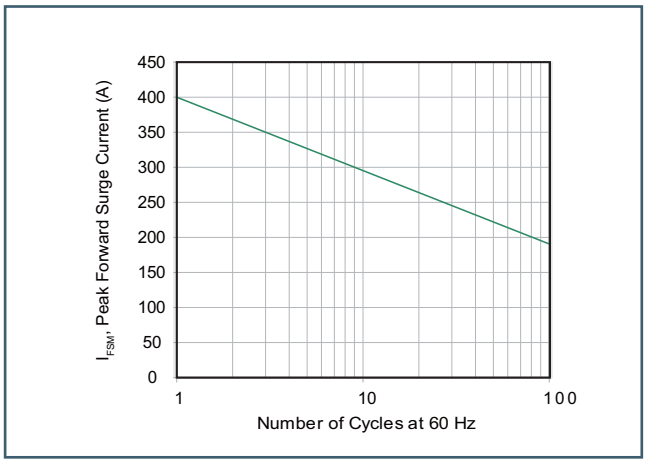
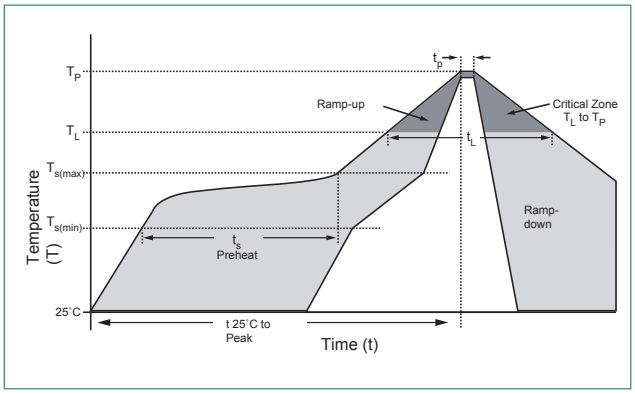


Figure 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



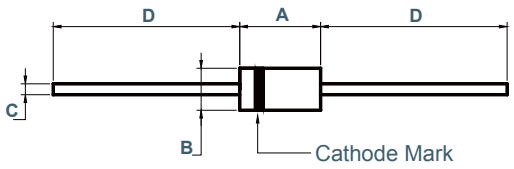
Soldering Parameters

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_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	-Temperature (T_L) (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		280°C



Dimensions

R-6



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.340	0.360	8.60	9.10	
B	0.340	0.360	8.60	9.10	Φ
C	0.048	0.052	1.20	1.30	Φ
D	1.000	—	25.4	—	