TVS 10KP Series — 10000W

R-6

Features

- Available in uni-directional and bi-directional
- 10000 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}	10000	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

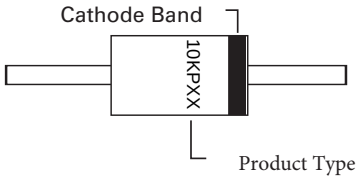
Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

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)

10KP 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							
10KP10A	10KP10CA	10.0	11.10	12.30	5	548.9	5000	18.4
10KP12A	10KP12CA	12.0	13.30	14.70	5	490.3	5000	20.6
10KP13A	10KP13CA	13.0	14.40	15.90	5	450.9	5000	22.4
10KP14A	10KP14CA	14.0	15.60	17.20	5	420.8	1000	24.0
10KP16A	10KP16CA	16.0	17.80	19.70	5	371.3	150	27.2
10KP17A	10KP17CA	17.0	18.90	20.90	5	350.7	20	28.8
10KP18A	10KP18CA	18.0	20.00	22.10	5	327.9	20	30.8
10KP20A	10KP20CA	20.0	22.20	24.50	5	297.1	15	34.0
10KP22A	10KP22CA	22.0	24.40	26.90	5	277.4	2	36.4
10KP24A	10KP24CA	24.0	26.70	29.50	5	253.7	2	39.8
10KP26A	10KP26CA	26.0	28.90	31.90	5	234.9	2	43.0
10KP28A	10KP28CA	28.0	31.10	34.40	5	217.7	2	46.4
10KP30A	10KP30CA	30.0	33.30	36.80	5	207.0	2	48.8
10KP33A	10KP33CA	33.0	36.70	40.60	5	189.5	2	53.3
10KP36A	10KP36CA	36.0	40.00	44.20	5	172.9	2	58.4
10KP40A	10KP40CA	40.0	44.40	49.10	5	155.8	2	64.8
10KP43A	10KP43CA	43.0	47.80	52.80	5	145.5	2	69.4
10KP48A	10KP48CA	48.0	53.30	58.90	5	129.8	2	77.8
10KP51A	10KP51CA	51.0	56.70	62.70	5	122.5	2	82.4
10KP54A	10KP54CA	54.0	60.00	66.30	5	116.0	2	87.1
10KP60A	10KP60CA	60.0	66.70	73.70	5	104.3	2	96.8
10KP64A	10KP64CA	64.0	71.10	78.60	5	98.6	2	103.0
10KP70A	10KP70CA	70.0	77.80	86.00	5	89.4	2	113.0
10KP78A	10KP78CA	78.0	86.70	95.80	5	80.1	2	126.0
10KP85A	10KP85CA	85.0	94.40	104.00	5	73.7	2	137.0
10KP90A	10KP90CA	90.0	100.00	111.00	5	69.2	2	146.0
10KP100A	10KP100CA	100.0	110.00	123.00	5	62.3	2	162.0
10KP110A	10KP110CA	110.0	122.00	135.00	5	57.0	2	177.0
10KP120A	10KP120CA	120.0	133.00	147.00	5	52.3	2	193.0
10KP130A	10KP130CA	130.0	144.00	159.00	5	48.3	2	209.0
10KP150A	10KP150CA	150.0	167.00	185.00	5	41.7	2	242.0
10KP160A	10KP160CA	160.0	178.00	197.00	5	39.0	2	259.0
10KP170A	10KP170CA	170.0	189.00	209.00	5	36.8	2	274.0
10KP180A	10KP180CA	180.0	200.00	222.00	5	34.6	2	292.0
10KP200A	10KP200CA	200.0	222.00	246.00	5	31.2	2	324.0
10KP220A	10KP220CA	220.0	244.00	270.00	5	28.5	2	354.0
10KP240A	10KP240CA	240.0	267.40	293.90	5	26.1	2	386.0

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

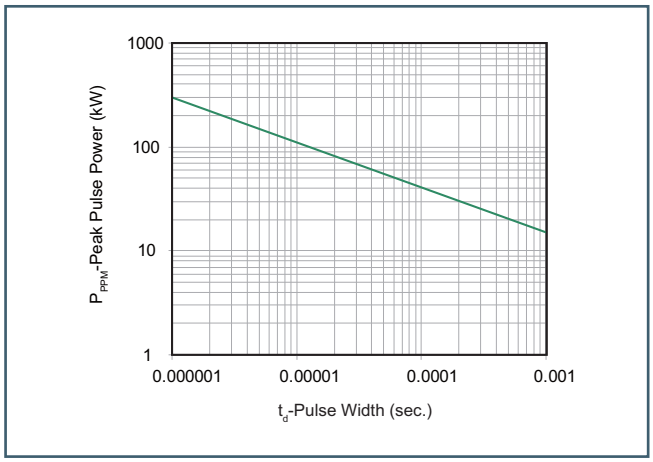


Figure 2 - Pulse Derating Curve

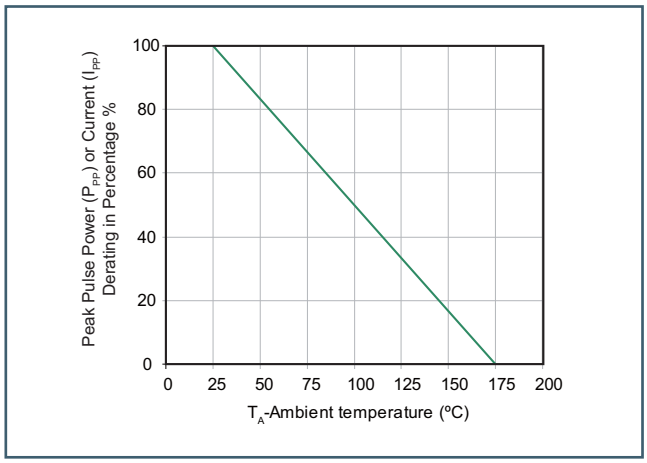


Figure 3 - Pulse Waveform

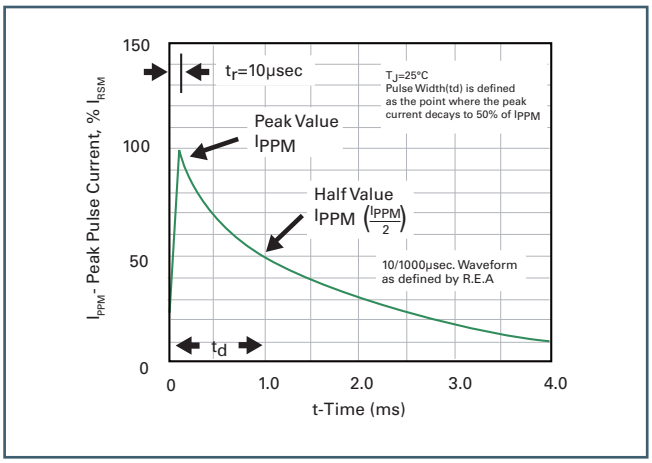


Figure 4 - Typical Junction Capacitance

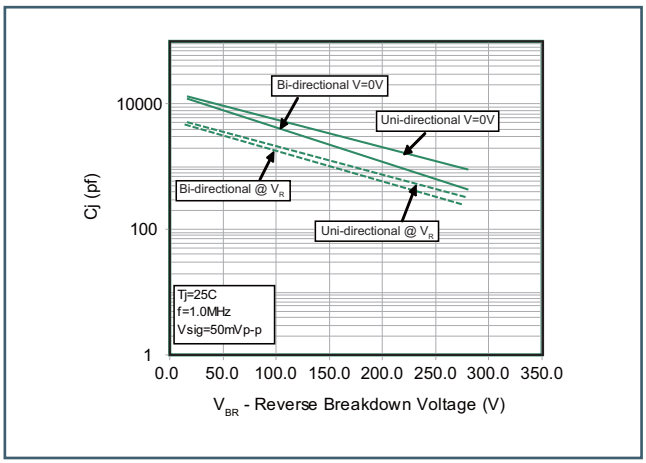


Figure 5 - Steady State Power Dissipation Derating Curve

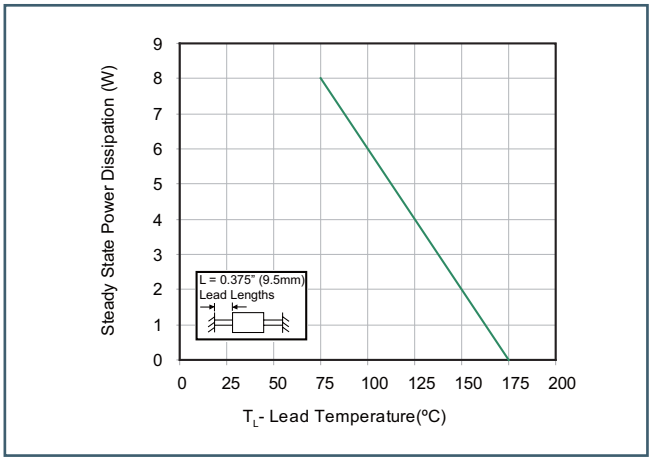
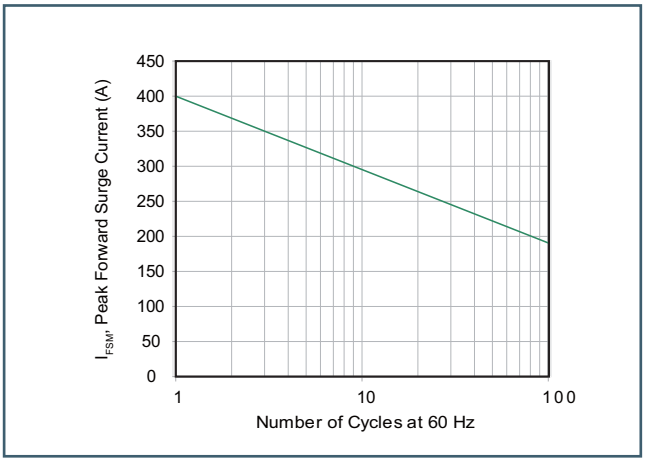
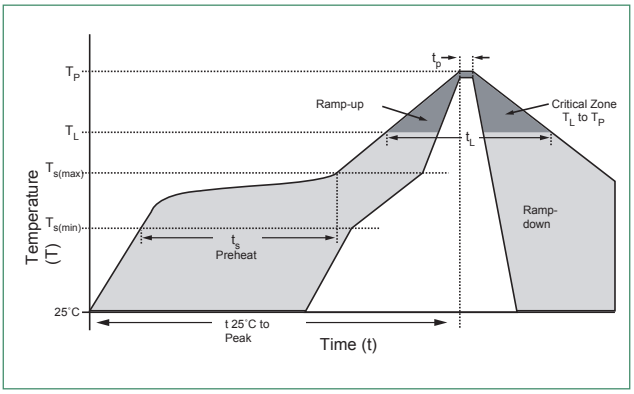


Figure 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



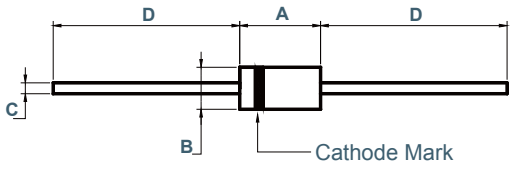
Soldering Parameters

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	—	