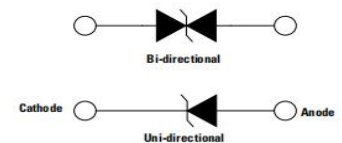
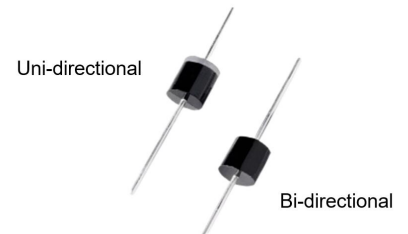


TVS Diodes **5KP series**

Transient Voltage Suppressors

Features

- ◆ 5KW peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- ◆ Low incremental surge impedance
- ◆ Excellent clamping capability.
- ◆ Typical IR less than 2 μA when V_{BR} min>12V
- ◆ High temperature to reflow soldering guaranteed: 260°C/40sec
- ◆ Plastic package has underwriters laboratory flammability 94V-0
- ◆ Meets MSL level 1, per J-STD-020.
- ◆ Meet HF and RoHS compliant

**Part Number Coding System****5KP xxx XX X**

Option Code
Blank Reel Tape
-B Bulk Packaging

Type Code:
A Uni-Directional (5% V_{BR} Voltage Tolerance)
CA Bi-Directional (5% V_{BR} Voltage Tolerance)

 V_R Voltage**Series Code****Applications**

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

Mechanical Data

- ◆ Case: JEDEC P600 Moulded plastic, Axial lead
- ◆ Polarity: Color band denotes positive end
(cathode) except bi-directional models
- ◆ Weight: About 2.1g

Maximum Rating and Characteristics

Parameters at 25°C ambient temperature unless otherwise Noted.

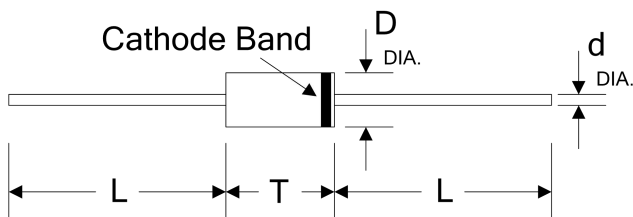
Rating	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10/1000μs Test Waveform (Note 1)	P_{PPM}	Minimum 5000	W
Steady State Power Dissipation on Infinite Heat Sink at $T_L = 75^\circ\text{C}$	P_D	8.0	Watts
Maximum Instantaneous Forward Voltage at 100A for Unidirectional Only (Note 3)	V_F	3.5/5.0	V
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional Only (Note 2)	I_{FSM}	400	Amps
Operating junction and Storage Temperature Range.	T_J, T_{STG}	-55 to +175	°C
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	8.0	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	40	°C/W

Notes:

1. Non-repetitive current pulse, per Fig 2 and derated above $T_A = 25^\circ\text{C}$ per Fig 1.
2. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.
3. $V_F < 3.5\text{V}$ for $V_{BR} \leq 200\text{V}$ and $V_F < 5.0\text{V}$ for stacked-die parts.

Dimensions (P600)

Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
L	25.40	-	1.000	-
T	8.60	9.10	0.340	0.360
D	8.60	9.10	0.340	0.360
d	1.22	1.36	0.048	0.052



Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage MIN.@I _T	Breakdown Voltage MAX.@I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}
Unidirectional	Bidirectional	V _{RWM} (V)	V _{BR MIN} (V)	V _{BR MAX} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
5KP5.0A	5KP5.0CA	5	6.4	7	50	9.2	554.3	5000
5KP6.0A	5KP6.0CA	6	6.67	7.37	50	10.3	495.1	5000
5KP6.5A	5KP6.5CA	6.5	7.22	7.98	50	11.2	455.4	2000
5KP7.0A	5KP7.0CA	7	7.78	8.6	50	12	425	1000
5KP7.5A	5KP7.5CA	7.5	8.33	9.21	5	12.9	395.3	250
5KP8.0A	5KP8.0CA	8	8.89	9.83	5	13.6	375	150
5KP8.5A	5KP8.5CA	8.5	9.44	10.4	5	14.4	354.2	50
5KP9.0A	5KP9.0CA	9	10	11.1	5	15.4	331.2	20
5KP10A	5KP10CA	10	11.1	12.3	5	17	300	15
5KP11A	5KP11CA	11	12.2	13.5	5	18.2	280.2	2
5KP12A	5KP12CA	12	13.3	14.7	5	19.9	256.3	2
5KP13A	5KP13CA	13	14.4	15.9	5	21.5	237.2	2
5KP14A	5KP14CA	14	15.6	17.2	5	23.2	219.8	2
5KP15A	5KP15CA	15	16.7	18.5	5	24.4	209	2
5KP16A	5KP16CA	16	17.8	19.7	5	26	196.2	2
5KP17A	5KP17CA	17	18.9	20.9	5	27.6	184.8	2
5KP18A	5KP18CA	18	20	22.1	5	29.2	174.7	2
5KP20A	5KP20CA	20	22.2	24.5	5	32.4	157.4	2
5KP22A	5KP22CA	22	24	26.9	5	35.5	143.7	2
5KP24A	5KP24CA	24	26.7	29.5	5	38.9	131.1	2
5KP26A	5KP26CA	26	28.9	31.9	5	42.1	121.1	2
5KP28A	5KP28CA	28	31.1	34.4	5	45.4	112.3	2
5KP30A	5KP30CA	30	33.3	36.8	5	48.4	105.4	2
5KP33A	5KP33CA	33	36.7	40.6	5	53.3	95.7	2
5KP36A	5KP36CA	36	40	44.2	5	58.1	87.8	2
5KP40A	5KP40CA	40	44.4	49.1	5	64.5	79.1	2
5KP43A	5KP43CA	43	47.8	52.8	5	69.4	73.5	2
5KP45A	5KP45CA	45	50	55.3	5	72.7	70.2	2

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage MIN.@I _T	Breakdown Voltage MAX.@I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}
Unidirectional	Bidirectional	V _{RWM} (V)	V _{BR} MIN(V)	V _{BR} MAX(V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
5KP48A	5KP48CA	48	53.3	58.9	5	77.4	65.9	2
5KP51A	5KP51CA	51	56.7	62.7	5	82.4	61.9	2
5KP54A	5KP54CA	54	60	66.3	5	87.1	58.6	2
5KP58A	5KP58CA	58	64.4	71.2	5	93.6	54.5	2
5KP60A	5KP60CA	60	66.7	73.7	5	96.8	52.7	2
5KP64A	5KP64CA	64	71.1	78.6	5	103	49.5	2
5KP70A	5KP70CA	70	77.8	86	5	113	45.1	2
5KP75A	5KP75CA	75	83.3	92.1	5	121	42.1	2
5KP78A	5KP78CA	78	86.7	95.8	5	126	40.5	2
5KP85A	5KP85CA	85	94.4	104	5	137	37.2	2
5KP90A	5KP90CA	90	100	111	5	146	34.9	2
5KP100A	5KP100CA	100	110	123	5	162	31.5	2
5KP110A	5KP110CA	110	122	135	5	177	28.8	2
5KP120A	5KP120CA	120	133	147	5	193	26.4	2
5KP130A	5KP130CA	130	144	159	5	209	24.4	2
5KP150A	5KP150CA	150	167	185	5	243	21	2
5KP160A	5KP160CA	160	178	197	5	259	19.7	2
5KP170A	5KP170CA	170	189	209	5	275	18.5	2
5KP180A	5KP180CA	180	200	221	5	292	17.5	2
5KP190A	5KP190A	190	211	233	5	310	16.5	2
5KP200A	5KP200CA	200	222	246	5	329.2	15.5	2
5KP210A	5KP210CA	210	233	258	5	349.5	14.6	2
5KP220A	5KP220CA	220	244	270	5	371.1	13.7	2
5KP250A	5KP250CA	250	277	306	5	425	12	2
5KP300A	5KP300CA	300	335	373	5	503	10.2	2
5KP350A	5KP350CA	350	391	433	5	585	8.7	2

Notes: 1.For bidirectional type having VR of 10 volts and less, the I_R limit is double.

2.For parts without A , the V_{BR} is ± 10% and V_C is 5% higher than with A parts, the parts without A are currently available, but not recommended for new designs. The parts with A are preferred.

Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

Figure 1. Peak Pulse Power Derating Curve

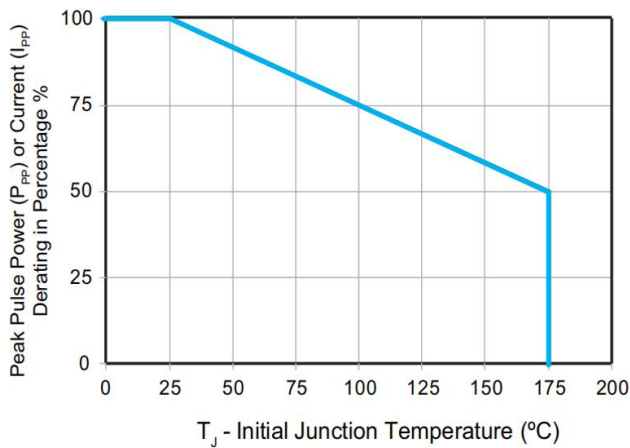


Figure 2. Pulse Waveform

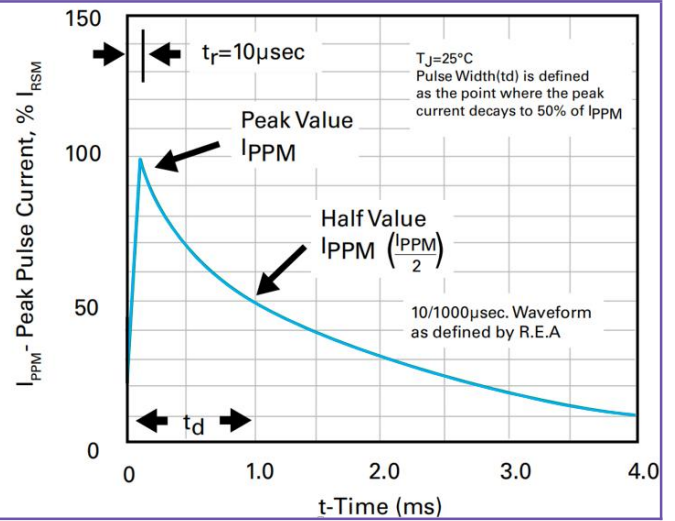


Figure 3. Typical Junction Capacitance

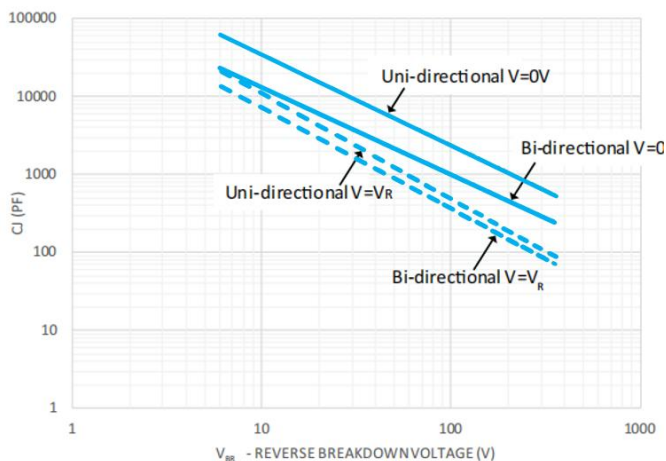


Figure 4. Typical Transient Thermal Impedance

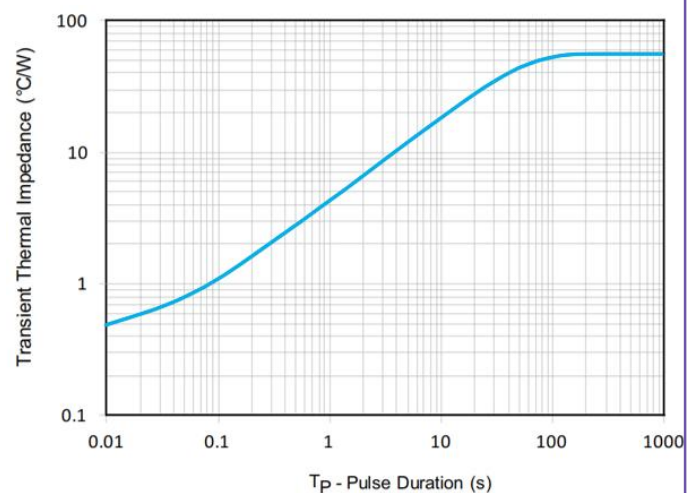


Figure 5. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

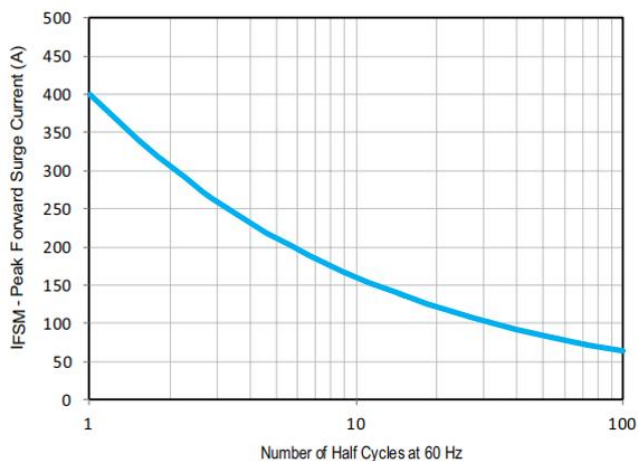
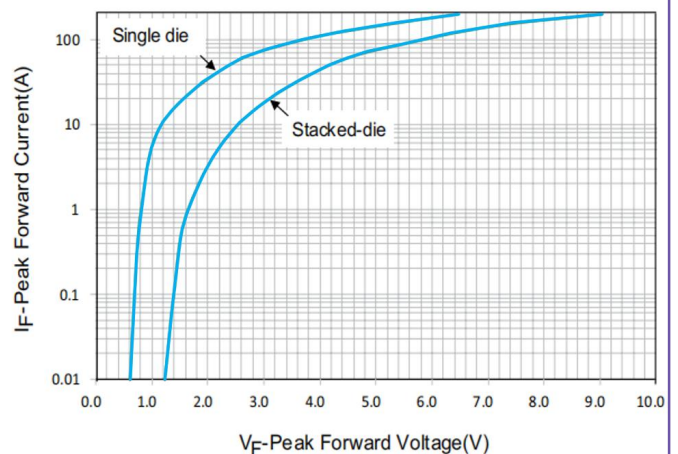
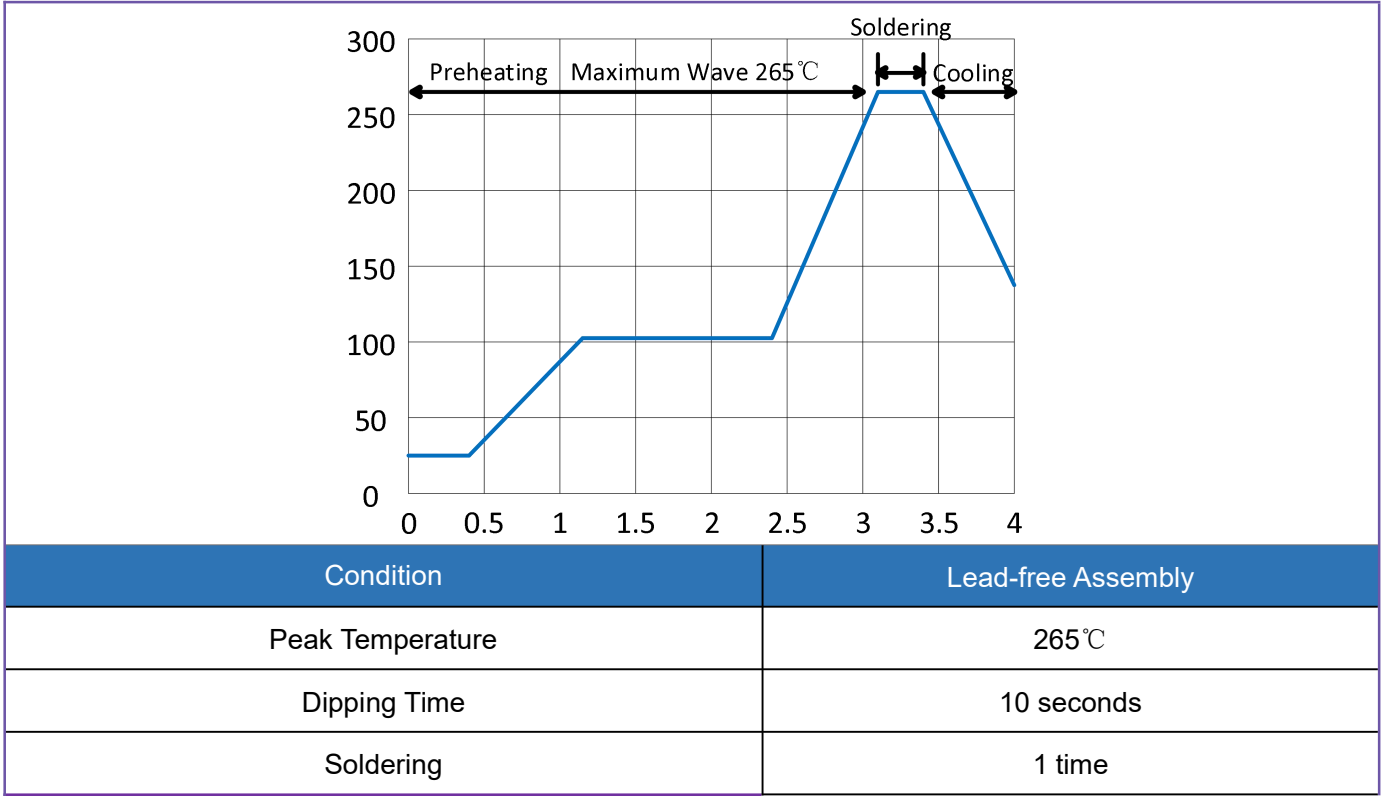


Figure 6. Peak Forward Voltage Drop vs Peak Forward Current (Typical Values)



Wave 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-B106