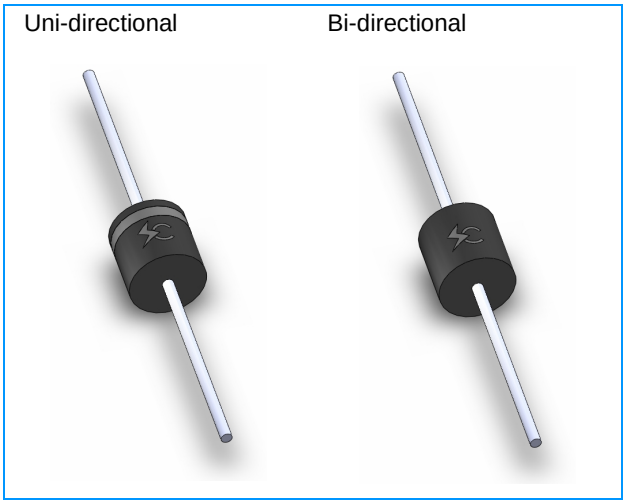
Axial Lead Transient Voltage Suppressors (TVS)

30KPA Series 28 To 288 V 30000W

Description

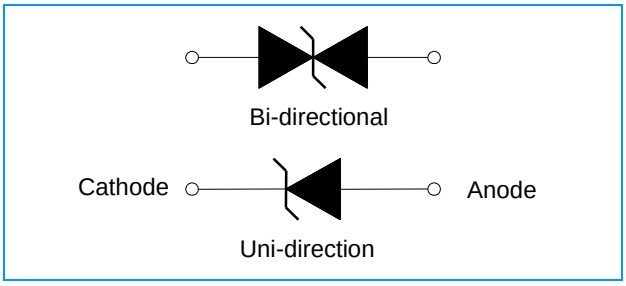
The 30KPA series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.



Features

- Glass passivated chip junction in P600 Package
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- 30000W Peak power capability at 10 × 1000μs waveform Repetition rate (duty cycle):0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to V_{BR} min
- Typical I_R less than 2μA above 73V.
- High Temperature soldering: 260°C/40 seconds at terminals
- Typical maximum temperature coefficient ΔV_{BR} = 0.1% × V_{BR}@25°C× ΔT
- Plastic package has Underwriters Laboratory Flammability 94V-0
- Matte tin lead–free Plated
- Halogen free and RoHS compliant
- Typical failure mode is short from over-specified voltage or current
- Whisker test is conducted based on JEDEC JESD201A per its table 4a and 4c
- IEC-61000-4-2 ESD 15kV(Air), 8kV (Contact)
- ESD protection of data lines in accordance with IEC 61000-4-2 (IEC801-2)
- EFT protection of data lines in accordance with IEC 61000-4-4 (IEC801-4)

Functional Diagram



Applications

TVS devices are ideal for the protection of I/O interfaces, V_{CC} bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Maximum Ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation with a 10/1000μs waveform (Fig.1)(Note 1), (Note 2)	P_{PPM}	20000	Watts
Peak Pulse Current with a 10/1000μs waveform.(Note1,Fig.3)	I_{PP}	See Next Table	Amps
Power Dissipation on Infinite Heat Sink at T_L=75°C	$P_{M(AV)}$	8.0	Watt
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)	I_{FSM}	500	Amps
Operating junction and Storage Temperature Range.	T_J , T_{STG}	-55 to +150	°C

Notes:

1. Non-repetitive current pulse, per Fig. 3 and derated above T_A = 25°C per Fig. 2.
2. Mounted on 5.0mm x 5.0mm (0.03mm thick) Copper Pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.
4. V_F < 3.5V for V_{BR} < 200V and V_F< 6.5V for V_{BR} > 201V.

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Part Number		Reverse Stand-Off Voltage V_{RWM} (V)	Breakdown Voltage V_{BR} (V) @I_T	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_{RWM} (μA)
Uni	Bi		MIN				
30KPA28A	30KPA28CA	28	31.28	50	50.0	606.0	5000
30KPA30A	30KPA30CA	30	33.51	50	55.2	548.9	5000
30KPA33A	30KPA33CA	33	36.90	50	58.5	517.9	5000
30KPA36A	30KPA36CA	36	40.20	50	61.8	490.3	5000
30KPA39A	30KPA39CA	39	43.60	20	67.2	450.9	2000
30KPA42A	30KPA42CA	42	46.90	10	72.0	420.8	1000
30KPA43A	30KPA43CA	43	48.00	10	73.0	415.1	1000
30KPA45A	30KPA45CA	45	50.30	5	77.4	391.5	250
30KPA48A	30KPA48CA	48	53.60	5	81.6	371.3	150
30KPA51A	30KPA51CA	51	57.00	5	86.4	350.7	50
30KPA54A	30KPA54CA	54	60.30	5	91.4	331.5	20
30KPA58A	30KPA58CA	58	64.80	5	92.4	327.9	20
30KPA60A	30KPA60CA	60	67.00	5	102.0	297.1	15
30KPA64A	30KPA64CA	64	71.50	5	104.0	291.3	10
30KPA66A	30KPA66CA	66	73.70	5	107.0	283.2	2
30KPA70A	30KPA70CA	70	78.20	5	109.0	278.0	2
30KPA71A	30KPA71CA	71	79.30	5	111.5	271.7	2
30KPA72A	30KPA72CA	72	80.40	5	114.0	265.8	2
30KPA75A	30KPA75CA	75	83.80	5	119.4	253.8	2
30KPA78A	30KPA78CA	78	87.10	5	129.0	234.9	2
30KPA84A	30KPA84CA	84	93.80	5	139.2	217.7	2
30KPA90A	30KPA90CA	90	100.50	5	146.4	207.0	2
30KPA96A	30KPA96CA	96	107.20	5	156.0	194.2	2
30KPA102A	30KPA102CA	102	113.90	5	165.6	183.0	2
30KPA108A	30KPA108CA	108	120.60	5	175.2	172.9	2
30KPA120A	30KPA120CA	120	134.00	5	194.4	155.9	2
30KPA132A	30KPA132CA	132	147.40	5	213.0	142.3	2
30KPA144A	30KPA144CA	144	160.80	5	223.2	135.8	2
30KPA150A	30KPA150CA	150	167.60	5	233.4	129.8	2
30KPA156A	30KPA156CA	156	174.30	5	245.0	123.7	2
30KPA160A	30KPA160CA	160	178.70	5	252.6	120.0	2
30KPA168A	30KPA168CA	168	187.70	5	272.4	111.2	2
30KPA170A	30KPA170CA	170	189.90	5	275.0	110.2	2
30KPA180A	30KPA180CA	180	201.10	5	290.4	104.3	2
30KPA198A	30KPA198CA	198	221.20	5	319.8	94.7	2
30KPA216A	30KPA216CA	216	241.30	5	348.6	86.9	2
30KPA240A	30KPA240CA	240	268.10	5	387.0	78.3	2
30KPA258A	30KPA258CA	258	188.20	5	416.4	72.8	2
30KPA260A	30KPA260CA	260	290.40	5	416.0	72.8	2
30KPA270A	30KPA270CA	270	301.60	5	436.2	69.5	2
30KPA280A	30KPA280CA	280	312.80	5	464.0	65.3	2
30KPA288A	30KPA288CA	288	321.70	5	469.9	64.5	2

Note:

1. For Bi-Directional devices having V_R of 60 volts and under, the I_R limit is double

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

Figure 1 - Peak Pulse Power Rating Curve

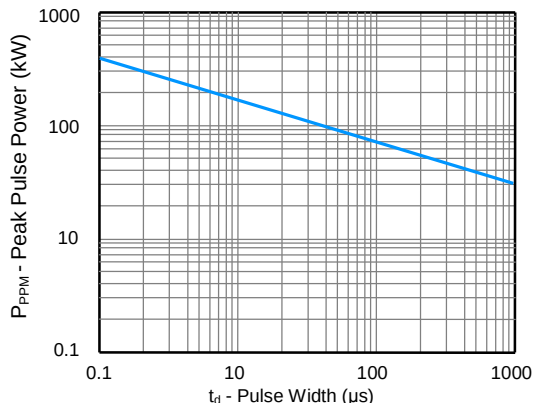


Figure 2 - Pulse Derating Curve

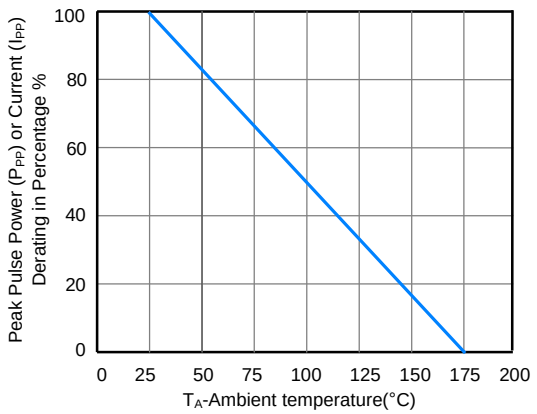


Figure 3 - Pulse Waveform

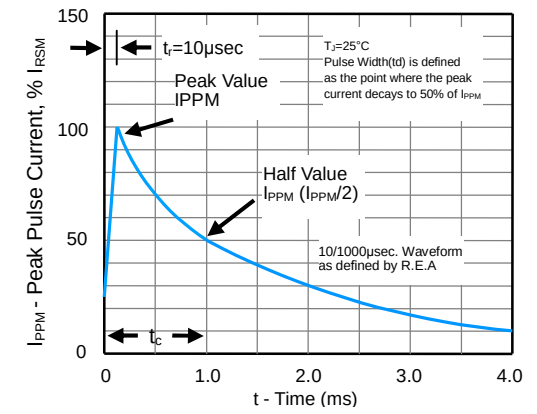


Figure 4 - Typical Junction Capacitance

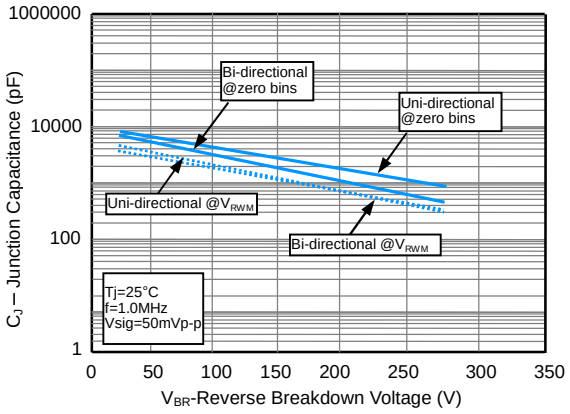


Figure 5 - Steady State Power Derating Curve

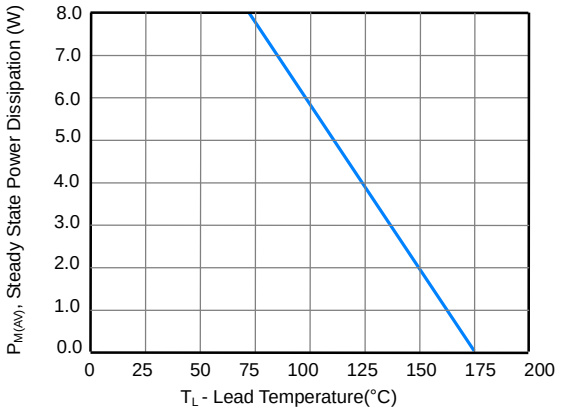
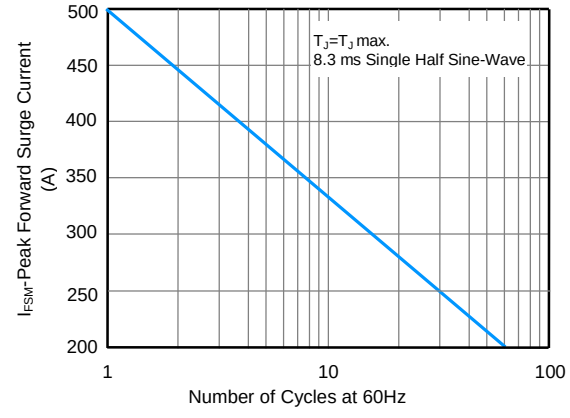


Figure 6 - Maximum Non-Repetitive Surge Current



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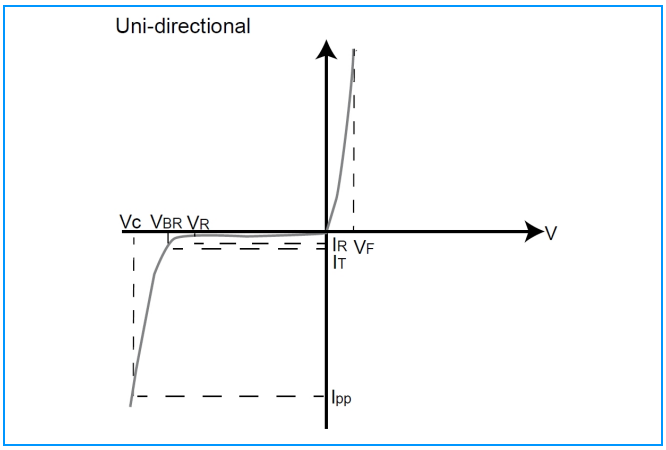
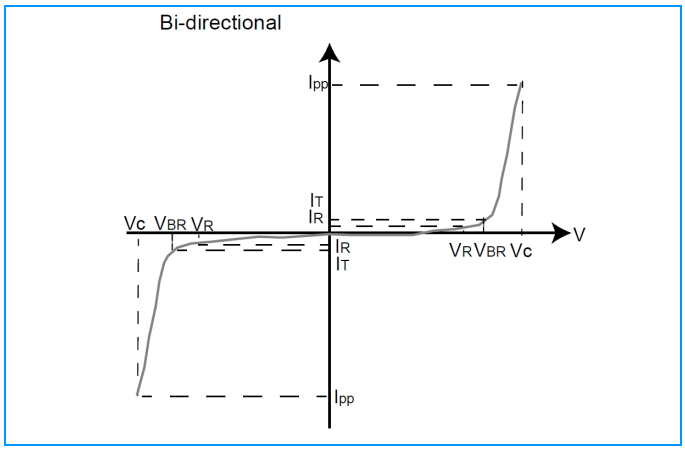
I-V Curve Characteristics





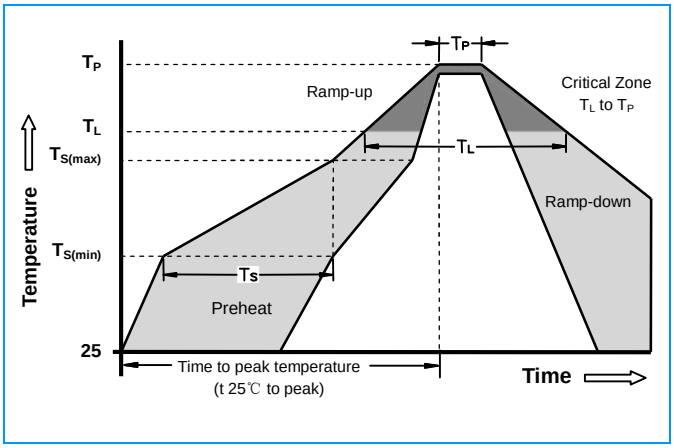
Physical Specifications

Weight	0.07 ounce, 2.1gram
Case	JEDEC R-6/P600 Molded Plastic over glass passivated junction
Polarity	Color band denotes cathode except Bipolar
Terminal	Matte Tin-plated leads, Solderable per JESD22-B102D

Environmental Specifications

Temperature Cycle	JESD22-A104
Pressure Cooker	JESD22-A102
High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Thermal Shock	JESD22-A106

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 Seconds
Average ramp up rate (Liquidus Temp T_L) to peak		3°C/second max
$T_{S(max)}$ to TL - Ramp-up Rate		3°C/second max
Reflow	**- Temperature (T_L) (Liquidus)**	217°C
	- Time (min to max) (T_L)	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

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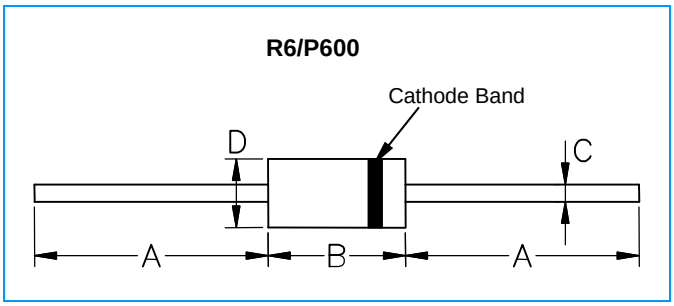
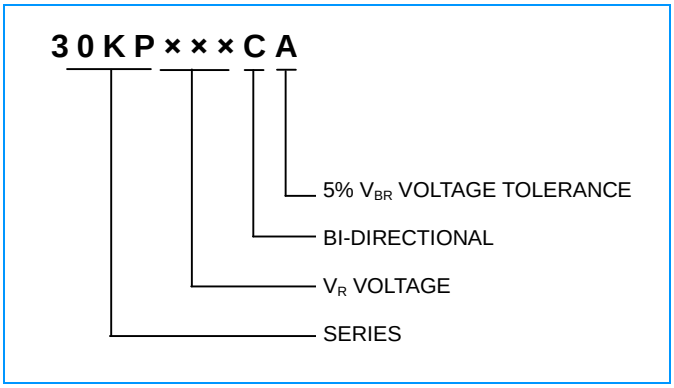
Dimensions

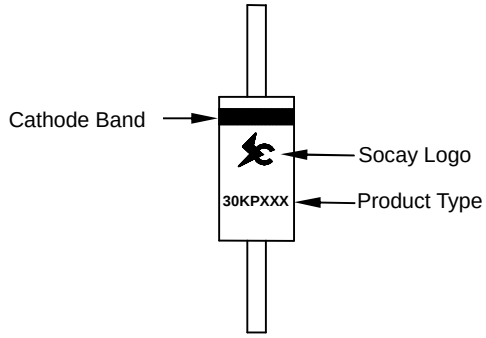


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	1.000	-	25.40	-
B	0.340	0.360	8.64	9.14
C	0.048	0.052	1.22	1.32
D	0.340	0.360	8.64	9.14

Part Numbering



Part Marking



Packaging

Part Number	Component Package	Quantity	Packaging Option
30KPXXXXX	R6/P600	200	Box

Packaging Dimensions Unit: Inches (Millimeters)