

## Transient Voltage Suppressors (TVS) Data Sheet

### Features

- Glass passivated junction
- Low inductance
- Excellent clamping capability
- 30000W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.05%
- Fast response time
- Typical  $I_R$  less than 2μA above 40V.
- High Temperature soldering guaranteed: 265°C/10 seconds/.375", (9.5mm) lead length, 5lbs (2.3kg) tension
- Plastic package has underwriters laboratory flammability 94V-0
- Meets MSL level 1, per J-STD-020
- Safety certification: UL: E244458



### Mechanical Data

- Case: Moulded plastic over glass passivated junction
- Terminal: Plated Axial leads, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Mounting Position: Any
- Weight: 2.46g

### Applications

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

### Maximum Ratings and Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000μs waveform (Note1, Fig.1)	$P_{PPM}$	Minimum 30000	Watts
Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3)	$I_{PPM}$	See Table	Amps
Steady state power dissipation at $T_L=75^\circ\text{C}$ (Fig.5)	$P_{M(AV)}$	8.0	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note2, Fig.6)	$I_{FSM}$	400	Amps
Operating junction and Storage Temperature Range.	$T_J, T_{STG}$	-55 to +150	°C
Typical thermal resistance junction to lead	$R_{\theta JL}$	8	°C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	40	°C/W

Notes: 1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ\text{C}$  per Fig.2.

2. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

**Dimensions (P600)**

Symbol	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
s	1.19	1.32	0.047	0.052

**Electrical Characteristics (T<sub>A</sub>=25°C)**

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @I <sub>T</sub>	Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>RWM</sub>
Unidirectional	Bidirectional	V <sub>RWM</sub> (V)	V <sub>BR</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (μA)
30KPA28A	30KPA28CA	28.0	31.28~34.57	50	50.0	606.0	5000
30KPA30A	30KPA30CA	30.0	33.51~37.04	50	55.2	548.9	5000
30KPA33A	30KPA33CA	33.0	36.90~40.78	50	58.5	517.9	5000
30KPA36A	30KPA36CA	36.0	40.20~44.43	50	61.8	490.3	5000
30KPA39A	30KPA39CA	39.0	43.60~48.19	20	67.2	450.9	2000
30KPA42A	30KPA42CA	42.0	46.90~51.84	10	72.0	420.8	1000
30KPA43A	30KPA43CA	43.0	48.00~53.05	10	73.0	415.1	1000
30KPA45A	30KPA45CA	45.0	50.30~55.59	5	77.4	391.5	250
30KPA48A	30KPA48CA	48.0	53.60~59.24	5	81.6	371.3	150
30KPA51A	30KPA51CA	51.0	57.00~63.00	5	86.4	350.7	50
30KPA54A	30KPA54CA	54.0	60.30~66.65	5	91.4	331.5	20
30KPA58A	30KPA58CA	58.0	64.80~71.62	5	92.4	327.9	20
30KPA60A	30KPA60CA	60.0	67.00~74.05	5	102.0	297.1	15
30KPA64A	30KPA64CA	64.0	71.50~79.03	5	104.0	291.3	10
30KPA66A	30KPA66CA	66.0	73.70~81.46	5	107.0	283.2	2
30KPA70A	30KPA70CA	70.0	78.20~86.43	5	109.0	278.0	2
30KPA71A	30KPA71CA	71.0	79.30~87.65	5	111.5	271.7	2
30KPA72A	30KPA72CA	72.0	80.40~88.86	5	114.0	265.8	2
30KPA75A	30KPA75CA	75.0	83.80~92.62	5	119.4	253.8	2
30KPA78A	30KPA78CA	78.0	87.10~96.27	5	129.0	234.9	2
30KPA84A	30KPA84CA	84.0	93.80~103.67	5	139.2	217.7	2
30KPA90A	30KPA90CA	90.0	100.50~111.08	5	146.4	207.0	2
30KPA96A	30KPA96CA	96.0	107.20~118.48	5	156.0	194.2	2

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @ $I_T$	Test Current	Maximum Clamping Voltage @ $I_{PP}$	Peak Pulse Current	Reverse Leakage @ $V_{RWM}$
Unidirectional	Bidirectional	$V_{RWM}(V)$	$V_{BR}(V)$	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
30KPA102A	30KPA102CA	102.0	113.90~125.89	5	165.6	183.0	2
30KPA108A	30KPA108CA	108.0	120.60~133.29	5	175.2	172.9	2
30KPA120A	30KPA120CA	120.0	134.00~148.11	5	194.4	155.9	2
30KPA132A	30KPA132CA	132.0	147.40~162.92	5	213.0	142.3	2
30KPA144A	30KPA144CA	144.0	160.80~177.73	5	223.2	135.8	2
30KPA150A	30KPA150CA	150.0	167.60~185.24	5	233.4	129.8	2
30KPA156A	30KPA156CA	156.0	174.30~192.65	5	245.0	123.7	2
30KPA160A	30KPA160CA	160.0	178.70~197.51	5	252.6	120.0	2
30KPA168A	30KPA168CA	168.0	187.70~207.46	5	272.4	111.2	2
30KPA170A	30KPA170CA	170.0	189.90~209.89	5	275.0	110.2	2
30KPA180A	30KPA180CA	180.0	201.10~222.27	5	290.4	104.3	2
30KPA198A	30KPA198CA	198.0	221.20~244.48	5	319.8	94.7	2
30KPA216A	30KPA216CA	216.0	241.30~266.70	5	348.6	86.9	2
30KPA240A	30KPA240CA	240.0	268.10~296.32	5	387.0	78.3	2
30KPA258A	30KPA258CA	258.0	288.20~318.54	5	416.4	72.8	2
30KPA260A	30KPA260CA	260.0	290.40~320.97	5	416.0	72.8	2
30KPA270A	30KPA270CA	270.0	301.60~333.35	5	436.2	69.5	2
30KPA280A	30KPA280CA	280.0	312.80~345.73	5	464.0	65.3	2
30KPA288A	30KPA288CA	288.0	321.70~355.56	5	469.9	64.5	2

Notes: For bidirectional type having  $V_{RWM}$  of 60V and less, the  $I_R$  limit is double.

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

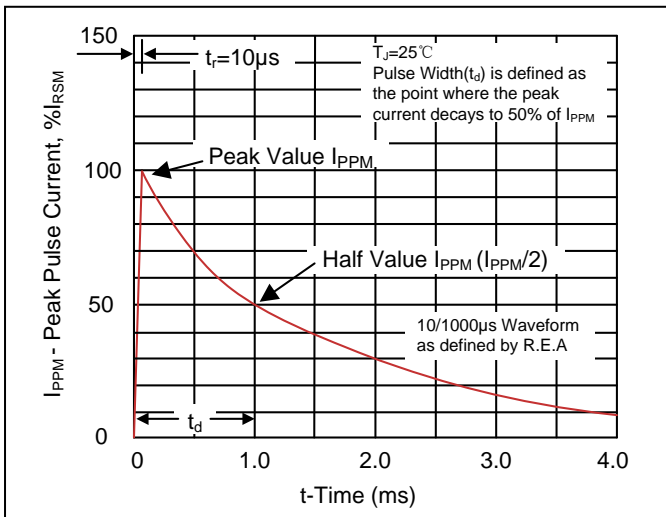
**Figure 1. Peak Pulse Power Rating Curve**



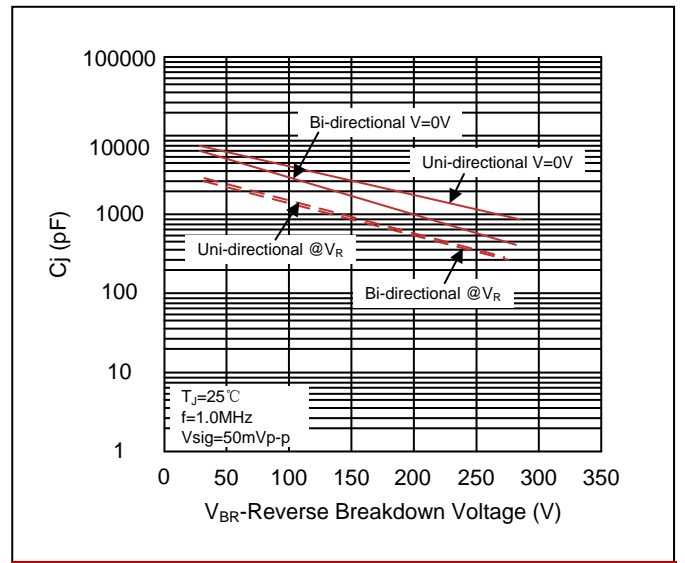
**Figure 2. Pulse Derating Curve**



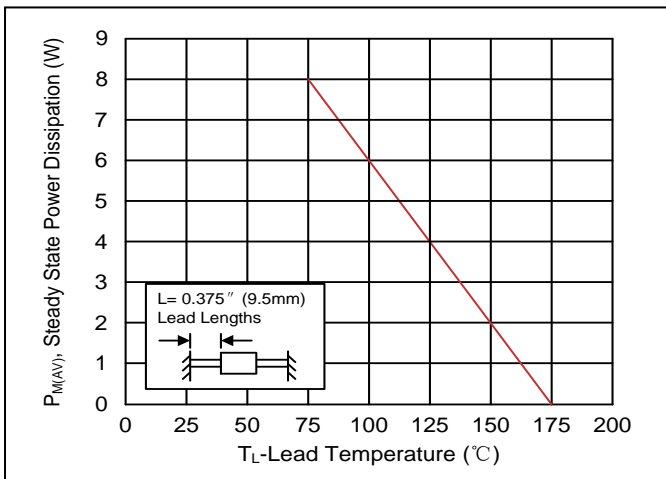
**Figure 3. Pulse Waveform**



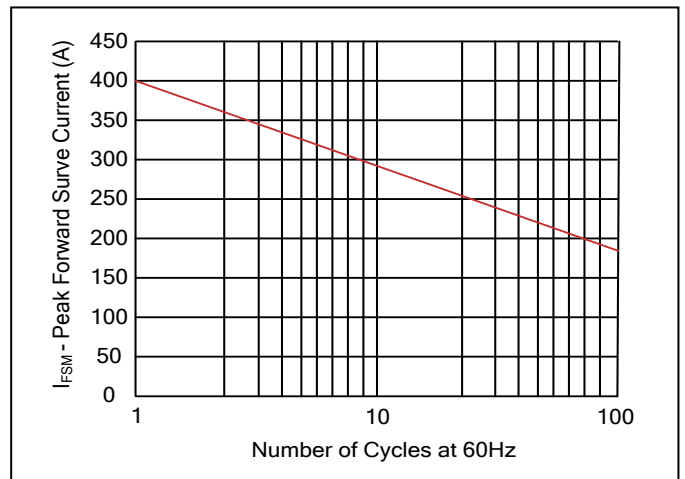
**Figure 4. AC Line Protection Application**



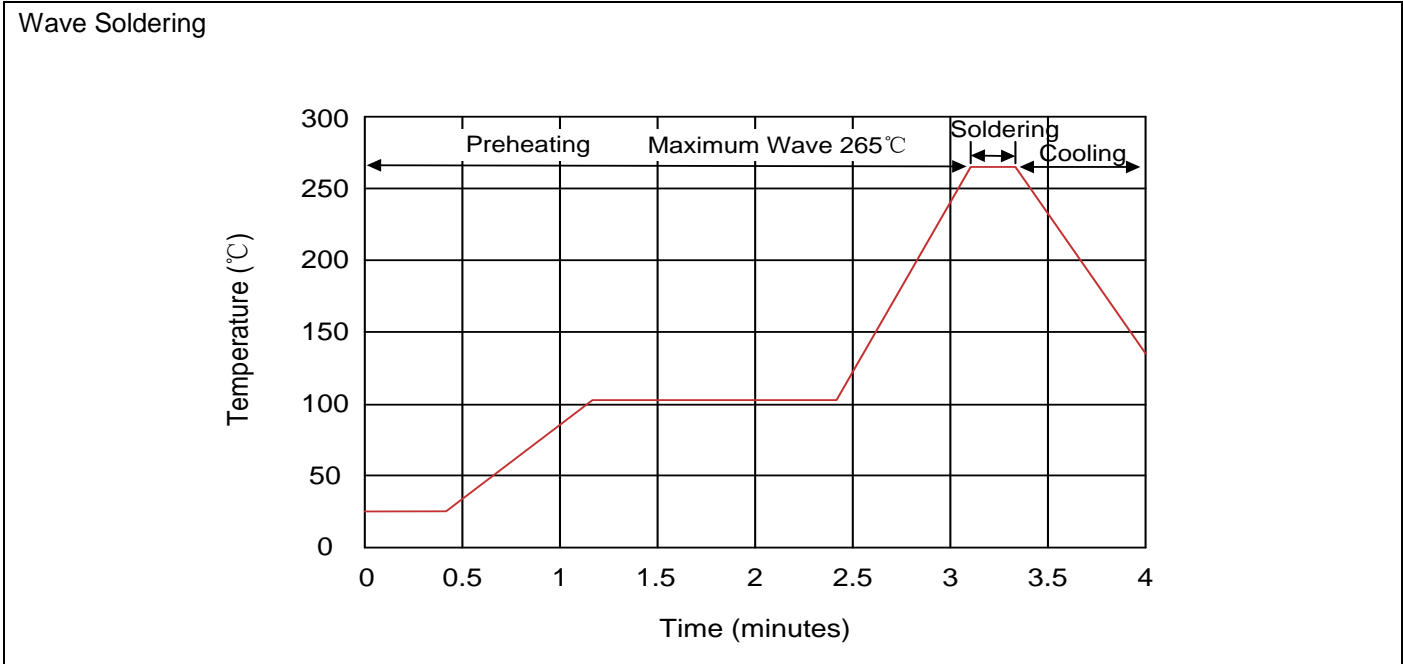
**Figure 5. Steady State Power Dissipation Derating Curve**



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



### Recommended Soldering Conditions



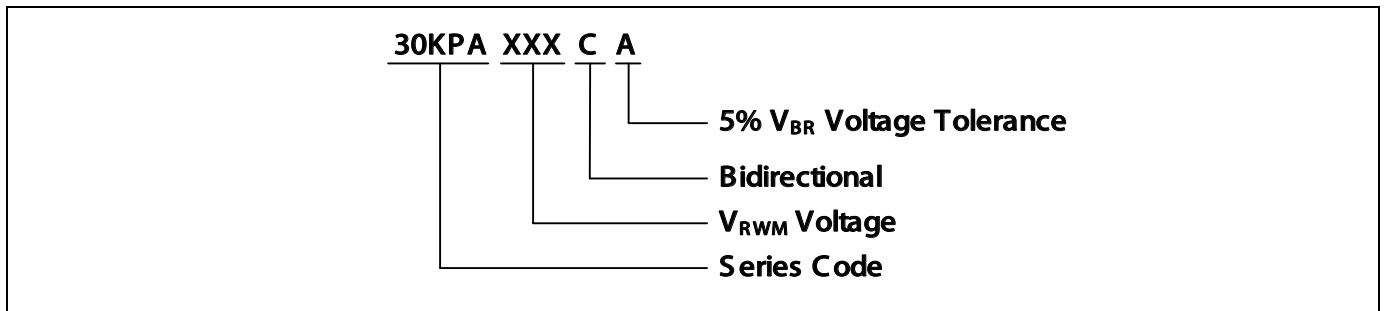
#### Recommended Conditions

Item	Conditions
Peak Temperature	265°C
Dipping Time	10 seconds
Soldering	1 time

### Marking Code



**Part Number Code**



**Ordering Code for Different Package**

Box package: Add suffix “/B” at the end of the part number, such as 30KPA75A/B

Reel package: Add suffix “/TR13” at the end of the part number, such as 30KPA160CA/TR13

**Packaging**

	Symbol	Dimension (mm)	
<p>Tape</p>	A	10.0±0.5	
	B	53.0±1.0	
	Z	1.2Max.	
	T	6.0±0.4	
	E	0.8Max.	
	L1-L2	1.0Max.	
	<p>Box</p>	L	250.0±5.0
		W	75.0±5.0
		H	114.0±5.0
			Quantity: 300PCS
<p>Reel</p>	D	330.0±3.0	
	D0	16.4±2.0	
	D1	86.0±2.0	
	W1	76.0±3.0	
			Quantity: 800PCS

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