

## Transient Voltage Suppressors (TVS) Data Sheet

### Features

- Glass passivated junction
- Low zener impedance
- Excellent clamping capability
- 1500W peak pulse power capability at 10/1000 $\mu$ s waveform, repetition rate (duty cycle):0.01%
- Fast response time
- Typical  $I_R$  less than 1 $\mu$ A above 13V.
- Plastic package has underwriters laboratory flammability 94V-0
- Meets MSL level 1, per J-STD-020.

### Mechanical Data

- Case: JEDEC DO-201Moulded plastic
- Terminal: Axial leads, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Mounting Position: Any

### Applications

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

### Maximum Ratings and Characteristics

Ratings at 25 $^{\circ}$ C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse power dissipation at 10/1000 $\mu$ s waveform (Note1, Fig.1)	$P_{PPM}$	Minimum 1500	Watts
Peak pulse current of at 10/1000 $\mu$ s waveform (Note 1, Fig.3)	$I_{PPM}$	See Table	Amps
Steady state power dissipation at $T_L=75^{\circ}$ C (Fig.4)	$P_{M(AV)}$	6.15	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note2)	$I_{FSM}$	100	Amps
Operating junction and Storage Temperature Range.	$T_J, T_{STG}$	-55 to +150	$^{\circ}$ C
Maximum instantaneous forward voltage @ 50A forunidirectional only (Note3)	$V_F$	3.5/5.0	V
Typical thermal resistance junction to lead	$R_{\theta JL}$	20	$^{\circ}$ C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	$^{\circ}$ C/W

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

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

3.  $V_F = 3.5$  V for devices of V (BR) < 220V, and  $V_F = 5.0$  Volt max. for devices of V (BR) >220V

## Dimensions (DO-201)

	Symbol	Millimeters		Inches	
		Min.	Max.	Min.	Max.
	L	25.40	-	1.000	-
	T	7.20	9.50	0.285	0.375
	d	4.80	5.30	0.190	0.1210
s	0.90	1.30	0.035	0.051	

## 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)
1.5KE6.8A	1.5KE6.8CA	5.80	6.45~7.14	10	10.5	143.0	1000
1.5KE7.5A	1.5KE7.5CA	6.40	7.13~7.88	10	11.3	133.0	500
1.5KE8.2A	1.5KE8.2CA	7.02	7.79~8.61	10	12.1	124.0	200
1.5KE9.1A	1.5KE9.1CA	7.78	8.65~9.55	1	13.4	112.0	50
1.5KE10A	1.5KE10CA	8.55	9.5~10.5	1	14.5	103.0	10
1.5KE11A	1.5KE11CA	9.40	10.5~11.6	1	15.6	96.2	5
1.5KE12A	1.5KE12CA	10.2	11.4~12.6	1	16.7	89.8	5
1.5KE13A	1.5KE13CA	11.1	12.4~13.7	1	18.2	82.4	5
1.5KE15A	1.5KE15CA	12.8	14.3~15.8	1	21.2	70.8	1
1.5KE16A	1.5KE16CA	13.6	15.2~16.8	1	22.5	66.7	1
1.5KE18A	1.5KE18CA	15.3	17.1~18.9	1	25.2	59.5	1
1.5KE20A	1.5KE20CA	17.1	19.0~21.0	1	27.7	54.2	1
1.5KE22A	1.5KE22CA	18.8	20.9~23.1	1	30.6	49.0	1
1.5KE24A	1.5KE24CA	20.5	22.8~25.2	1	33.2	45.2	1
1.5KE27A	1.5KE27CA	23.1	25.7~28.4	1	37.5	40.0	1
1.5KE30A	1.5KE30CA	25.6	28.5~31.5	1	41.4	36.2	1
1.5KE33A	1.5KE33CA	28.2	31.4~34.7	1	45.7	32.8	1
1.5KE36A	1.5KE36CA	30.8	34.2~37.8	1	49.9	30.1	1
1.5KE39A	1.5KE39CA	33.3	37.1~41.0	1	53.9	27.8	1
1.5KE43A	1.5KE43CA	36.8	40.9~45.2	1	59.3	25.3	1
1.5KE47A	1.5KE47CA	40.2	44.7~49.4	1	64.8	23.1	1
1.5KE51A	1.5KE51CA	43.6	48.5~53.6	1	70.1	21.4	1
1.5KE56A	1.5KE56CA	47.8	53.2~58.8	1	77.0	19.5	1
1.5KE62A	1.5KE62CA	53.0	58.9~65.1	1	85.0	17.6	1
1.5KE68A	1.5KE68CA	58.1	64.6~71.4	1	92.0	16.3	1
1.5KE75A	1.5KE75CA	64.1	71.3~78.8	1	103.0	14.6	1

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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)
1.5KE82A	1.5KE82CA	70.1	77.9~86.1	1	113.0	13.3	1
1.5KE91A	1.5KE91CA	77.8	86.5~95.5	1	125.0	12.0	1
1.5KE100A	1.5KE100CA	85.5	95~105	1	137.0	10.9	1
1.5KE110A	1.5KE110CA	94.0	105~116	1	152.0	9.9	1
1.5KE120A	1.5KE120CA	102	114~126	1	165.0	9.1	1
1.5KE130A	1.5KE130CA	111	124~137	1	179.0	8.4	1
1.5KE150A	1.5KE150CA	128	143~158	1	207.0	7.2	1
1.5KE160A	1.5KE160CA	136	152~168	1	219.0	6.8	1
1.5KE170A	1.5KE170CA	145	162~179	1	234.0	6.4	1
1.5KE180A	1.5KE180CA	154	171~189	1	246.0	6.1	1
1.5KE200A	1.5KE200CA	171	190~210	1	274.0	5.5	1
1.5KE220A	1.5KE220CA	185	209~231	1	328.0	4.6	1
1.5KE250A	1.5KE250CA	214	237~263	1	344.0	4.4	1
1.5KE300A	1.5KE300CA	256	285~315	1	414.0	3.6	1
1.5KE350A	1.5KE350CA	300	333~368	1	482.0	3.1	1
1.5KE400A	1.5KE400CA	342	380~420	1	548.0	2.7	1
1.5KE440A	1.5KE440CA	376	418~462	1	602.0	2.5	1

Notes: For bidirectional type having VRWM of 10V and less, the IR limit is double.

## Ratings and Characteristic Curves (T<sub>A</sub>=25°C unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

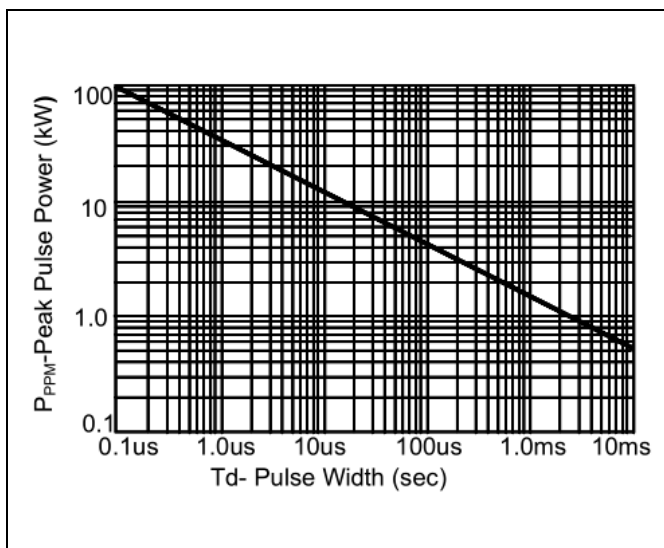
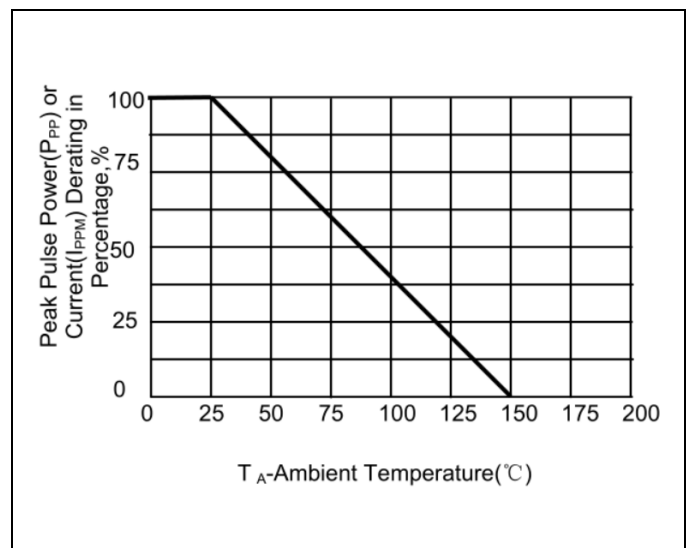


Figure 2. Pulse Derating Curve



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

Figure 3. Pulse Waveform

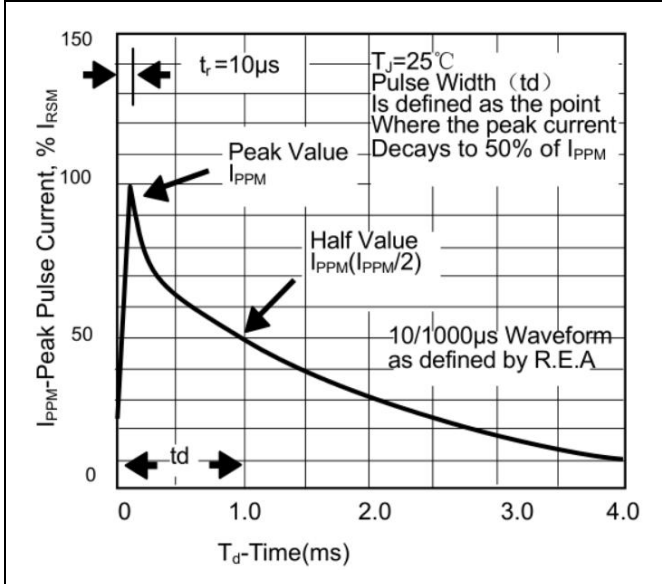
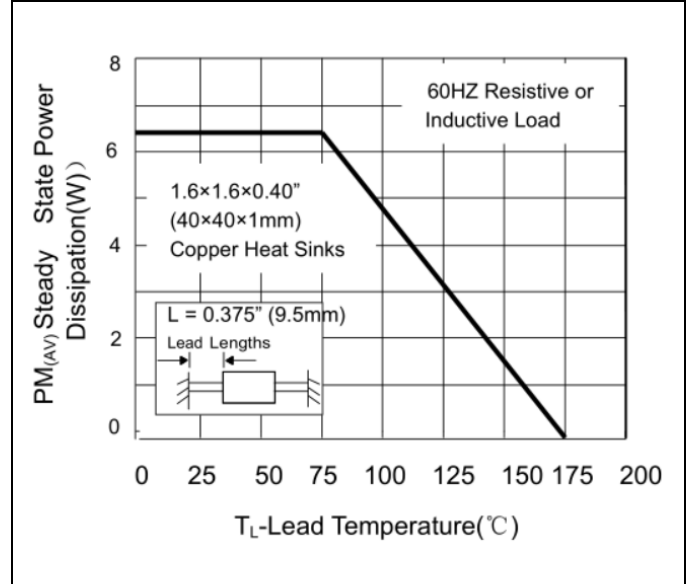
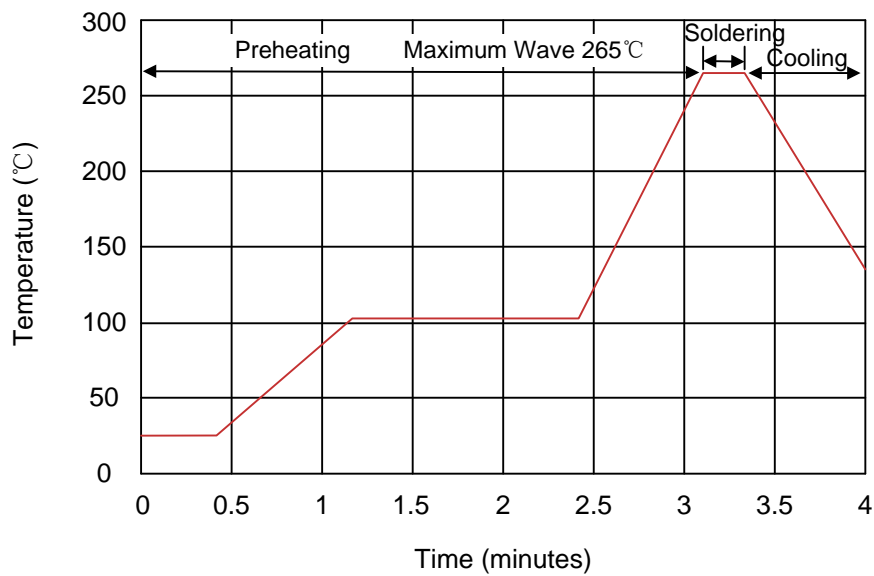


Figure 4. Steady State Power Dissipation Derating Curve



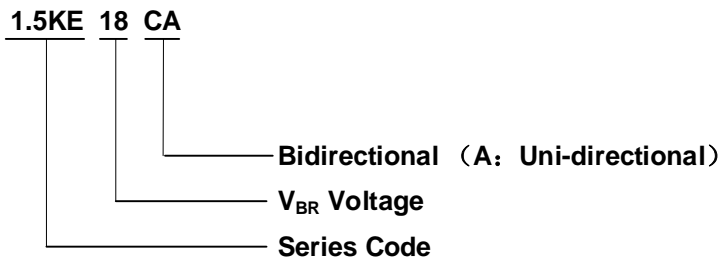
## Recommended Soldering Conditions

### Wave Soldering

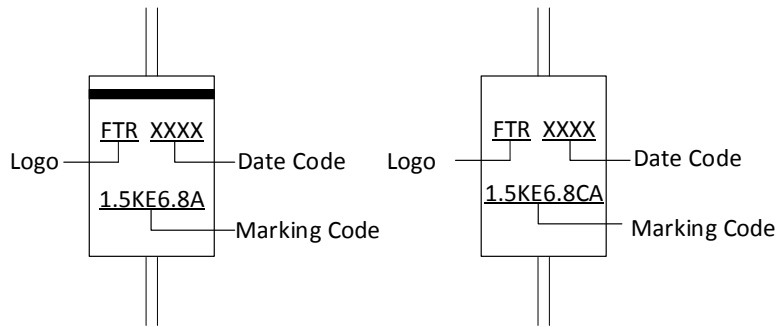


Item	Conditions
Peak Temperature	$265^\circ\text{C}$
Dipping Time	10 seconds
Soldering	1 time

## Partnumber code



## Marking code



## Packaging

Tape		Symbol	Dimension (mm)
		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.
		Box	
		W	75.0±5.0
		H	114.0±5.0
		Quantity: 1000PCS	