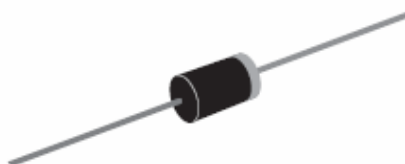


Description

The 1.5KE Series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events

Package: DO-201

Halogen-Free



Features

- RoHS compliant
- Halogen-Free
- Typical maximum temperature coefficient
 $V_{BR}=0.1\% \times V_{BR}@25^{\circ}\text{C}$
- Galss passivated chip junction in Do-201 Package
- 1500w Peak Pulse capability at $10 \times 1000\mu\text{s}$ waveform, repetition rate (duty cycles):0.01%
- Fast response time:
 typically less than 1.0ps from 0 Volts to BV min
- Excellent clamping capability
- Low incremental resistance
- Typical I_R less than $1\mu\text{A}$ above 13V
- High Temperature soldering guaranteed:
 $260^{\circ}\text{C}/40$ seconds $/0.375''(9.5\text{mm})$ lead length,
 5 lbs., (2.3kg) tension
- Plastic package has Underwriters Laboratory Flammability classification 94V-0
- Matte Tin Lead-free plated

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.

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above $T_A=25^{\circ}\text{C}$ per Fig. 2.
2. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.
3. $V_F < 3.5\text{V}$ for devices of $V_{BR} \leq 200\text{V}$ and $V_F < 5.0\text{V}$ for devices of $V_{BR} \geq 201\text{V}$.

Maximum Ratings and Thermal Characteristics ($T_A = 25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation by $10 \times 1000\mu\text{s}$ test waveform (Fig.1) (Note 1)	P_{PPM}	1500	W
Steady State Power Dissipation on infinite heat sink at $T_L=75^{\circ}\text{C}$ (Fig. 5)	P_D	6.5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional only (Note 2)	I_{FSM}	200	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional only (Note 3)	V_F	3.5/5.0	V
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 175	$^{\circ}\text{C}$
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	15	$^{\circ}\text{C}/\text{W}$
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	75	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics								
Part Number (Uni)	Part Number (Bi)	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage $V_{BR} @ I_T$ (V)		Test Current I_T (mA)	Maximum Clamping Voltage $V_C @ I_{PP}$	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage $I_R @ V_R$ (μA)
			MIN	MAX				
1.5KE6.8A	1.5KE 6.8CA	5.80	6.45	7.14	10	10.5	144.8	1000
1.5KE 7.5A	1.5KE 7.5CA	6.40	7.13	7.88	10	11.3	134.5	500
1.5KE 8.2A	1.5KE 8.2CA	7.02	7.79	8.61	10	12.1	125.6	200
1.5KE 9.1A	1.5KE 9.1CA	7.78	8.65	9.55	1	13.4	113.4	50
1.5KE 10A	1.5KE 10CA	8.55	9.50	10.50	1	14.5	104.8	10
1.5KE 11A	1.5KE 11CA	9.40	10.50	11.60	1	15.6	97.4	5
1.5KE 12A	1.5KE 12CA	10.20	11.40	12.60	1	16.7	91.0	5
1.5KE 13A	1.5KE 13CA	11.10	12.40	13.70	1	18.2	83.5	1
1.5KE 15A	1.5KE 15CA	12.80	14.30	15.80	1	21.2	71.7	1
1.5KE 16A	1.5KE 16CA	13.60	15.20	16.80	1	22.5	67.6	1
1.5KE 18A	1.5KE 18CA	15.30	17.10	18.90	1	25.5	60.3	1
1.5KE 20A	1.5KE 20CA	17.10	19.00	21.00	1	27.7	54.9	1
1.5KE 22A	1.5KE 22CA	18.80	20.90	23.10	1	30.6	49.7	1
1.5KE 24A	1.5KE 24CA	20.50	22.80	25.20	1	33.2	45.8	1
1.5KE 27A	1.5KE 27CA	23.10	25.70	28.40	1	37.5	40.5	1
1.5KE 30A	1.5KE 30CA	25.60	28.50	31.50	1	41.4	36.7	1
1.5KE 33A	1.5KE 33CA	28.20	31.40	34.70	1	45.7	33.3	1
1.5KE 36A	1.5KE 36CA	30.80	34.20	37.80	1	49.9	30.5	1
1.5KE 39A	1.5KE 39CA	33.30	37.10	41.00	1	53.9	28.2	1
1.5KE 43A	1.5KE 43CA	36.80	40.90	45.20	1	59.3	25.6	1
1.5KE 47A	1.5KE 47CA	40.20	44.70	49.40	1	64.8	23.5	1
1.5KE 51A	1.5KE A51CA	43.60	48.50	53.60	1	70.1	21.7	1
1.5KE 56A	1.5KE 56CA	47.80	53.20	58.80	1	77.0	19.7	1
1.5KE 62A	1.5KE 62CA	53.00	58.90	65.10	1	85.0	17.9	1
1.5KE 68A	1.5KE 68CA	58.10	64.60	71.40	1	92.0	16.5	1
1.5KE 75A	1.5KE 75CA	64.10	71.30	78.80	1	103.0	14.8	1
1.5KE 82A	1.5KE 82CA	70.10	77.90	86.10	1	113.0	13.5	1
1.5KE 91A	1.5KE 91CA	77.80	86.50	95.50	1	125.0	12.2	1
1.5KE 100A	1.5KE 100CA	85.50	95.00	105.00	1	137.0	11.1	1
1.5KE 110A	1.5KE 110CA	94.00	105.00	116.00	1	152.0	10.0	1
1.5KE 120A	1.5KE 120CA	102.00	114.00	126.00	1	165.0	9.2	1
1.5KE 130A	1.5KE 130CA	111.00	124.00	137.00	1	179.0	8.5	1
1.5KE 150A	1.5KE 150CA	128.00	143.00	158.00	1	207.0	7.3	1
1.5KE 160A	1.5KE 160CA	136.00	152.00	168.00	1	219.0	6.9	1
1.5KE 170A	1.5KE 70CA	145.00	162.00	179.00	1	234.0	6.5	1
1.5KE 180A	1.5KE 180CA	154.00	171.00	189.00	1	246.0	6.2	1
1.5KE 200A	1.5KE 200CA	171.00	190.00	210.00	1	274.0	5.5	1
1.5KE 220A	1.5KE 20CA	185.00	209.00	231.00	1	328.0	4.6	1
1.5KE 250A	1.5KE 250CA	214.00	237.00	263.00	1	344.0	4.4	1
1.5KE 300A	1.5KE 300CA	256.00	285.00	315.00	1	414.0	3.7	1
1.5KE 350A	1.5KE 350CA	300.00	332.00	368.00	1	482.0	3.2	1
1.5KE 400A	1.5KE 400CA	342.00	380.00	420.00	1	548.0	2.8	1
1.5KE 440A	1.5KE 440CA	376.00	418.00	462.00	1	602.0	2.5	1
1.5KE 480A	1.5KE 480CA	408.00	456.00	504.00	1	658.0	2.3	1
1.5KE 510A	1.5KE 510CA	434.00	485.00	535.00	1	698.0	2.1	1
1.5KE 530A	1.5KE 530CA	477.00	503.50	556.50	1	725.0	2.1	1
1.5KE 540A	1.5KE 540CA	486.00	513.00	567.00	1	740.0	2.0	1
1.5KE550A	1.5KE 550CA	495.00	522.50	577.50	1	760.0	2.0	1

For bidirectional type having V_R of 10 volts and less, the I_R limit is double.

For parts without A, the V_{BR} is $\pm 10\%$ and V_C is 5% higher than with A parts

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

Figure 1 - Peak Pulse Power Rating Curve

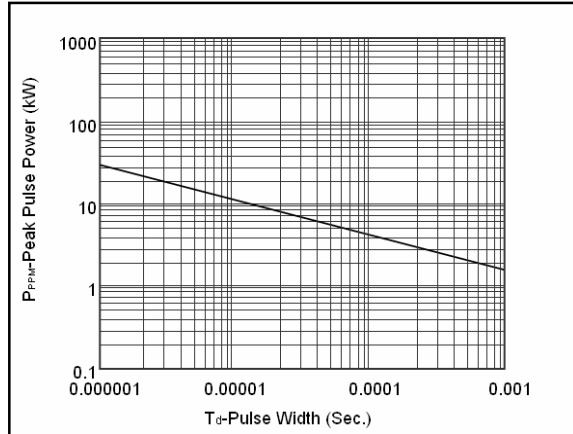


Figure 2 - Pulse Derating Curve

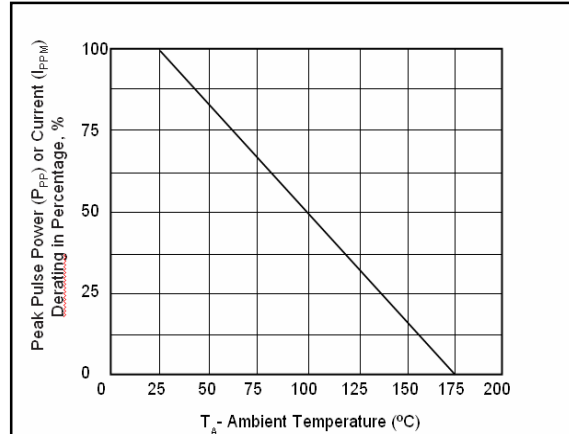


Figure 3 - Pulse Waveform

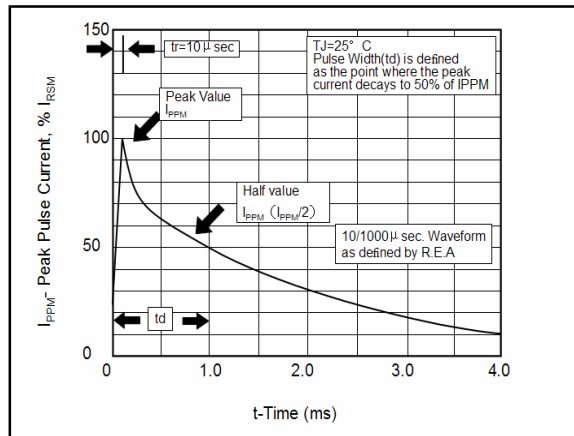


Figure 4 - Typical Junction Capacitance

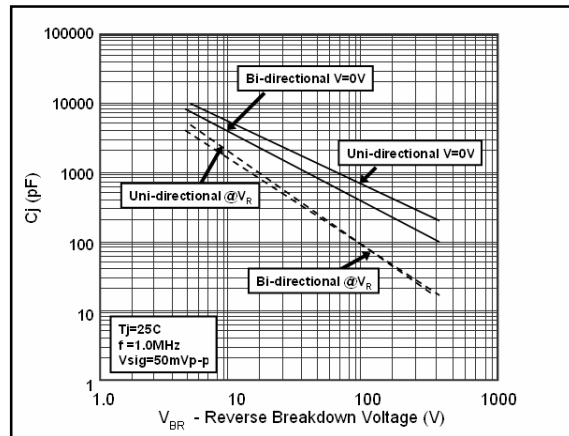


Figure 5 - Steady State Power Derating Curve

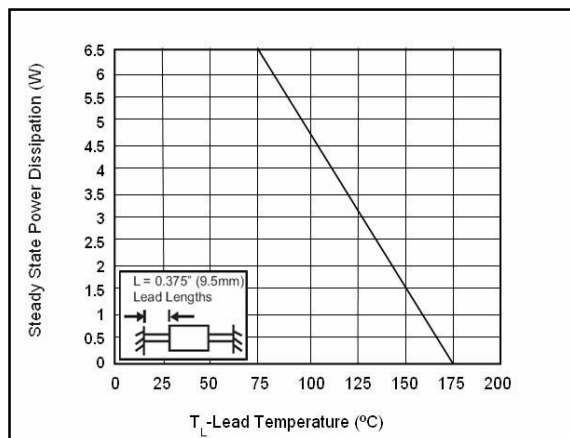
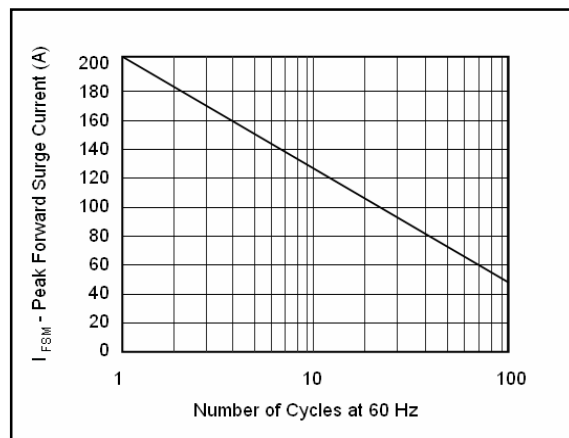
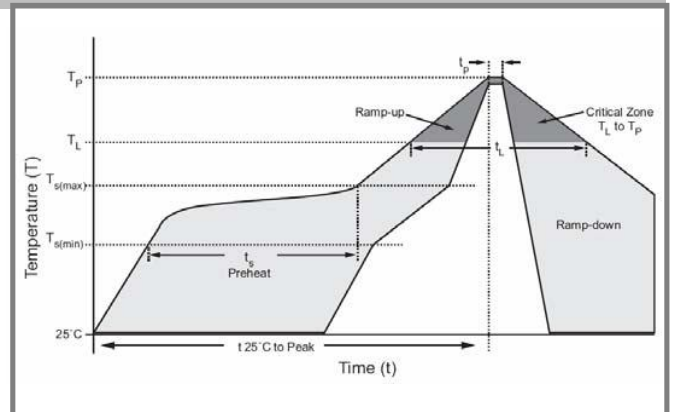


Figure 6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only



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)	80-160 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
TS(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



Flow/Wave Soldering (Solder Dipping)

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

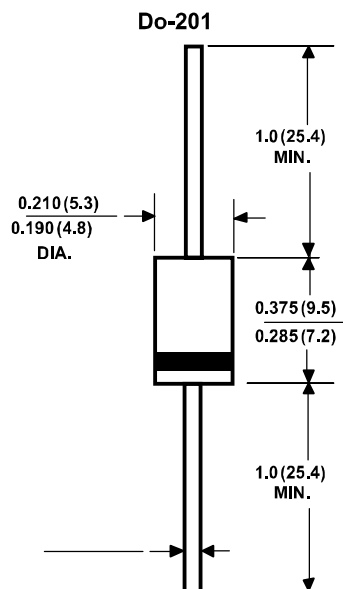
Physical Specifications

Weight	0.045oz., 1.2g
Case	JEDEC DO-201 molded plastic body over passivated junction.
Polarity	Color band denotes the cathode except Bipolar.
Terminal	Matte Tin axial leads, solderable per JESD22-B102D.

Environmental Specifications

Temperature Cycle	JESD22-A104
Pressure Cooker	JESD 22-A102
High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Thermal Shock	JESD22-A106

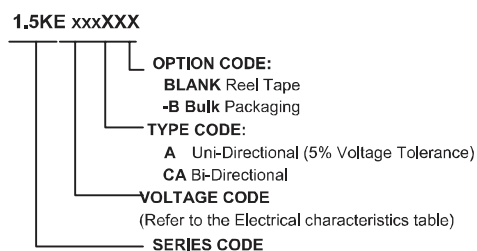
Dimensions Unit: inch (millimeters)



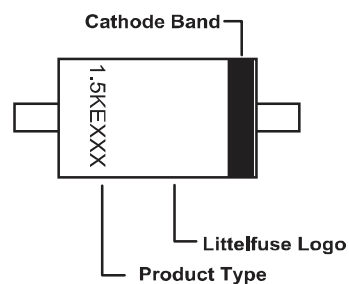
<http://www.sipower-inc.com>

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Part Numbering System



Part Marking System



Packaging

Part Number	Component Package	Quantity	Packaging Option	Package Specification
1.5KExxxXX	Do-201	1200	Tape & Reel	
1.5KExxxXX-B	Do-201	500	BLUCK	