

1.5KE Transient Voltage Suppressor Diode Series

General Information

The 1.5KE series is designed to protect voltage sensitive components from high voltage, high energy transients. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The 1.5KE series is supplied in YINT Semiconductor's exclusive, cost-effective, highly reliable and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer Applications.



Features

- DO-201 glass passivated chip junction
- Plastic package
- Polarity: Color band denoted positive end (cathode) except Bidirectional.
- Typical failure mode is short from over-specified voltage or current
- Fast response time: typically less than 1.0ps from 0 Volts to V_B min.
- High Temperature soldering: 260°C/10 seconds at terminals.
- Solder dip 275 °C max. 10 s, per JESD 22-B106

Typical Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive, and telecommunication.

Electrical Characteristics (@ $T_A = 25^\circ \text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000 μs waveform	P_{PK}	1500	Watts
Peak pulse current with a 10/1000 μs waveform	I_{FSM}	See next table	Amps
Power dissipation on infinite heat sink at $T_L = 75^\circ \text{C}$	P_D	6.5	Watts
Peak forward surge current 8.3 ms single half sine-wave	I_{FSM}	200	Amps
Instantaneous forward voltage at 100 A for Unidirectional only	V_F	3.5/5.0	V
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	$^\circ \text{C}$

Notes :

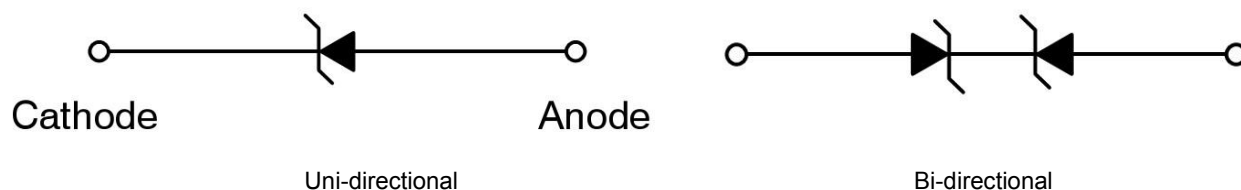
- (1) Non-repetitive current pulse, per fig. 6 and derated above $T_A = 25^\circ \text{C}$ per fig. 2
- (2) Measured 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum
- (3) $V_F < 3.5\text{V}$ for devices of $V_{BR} < 200\text{V}$ and $V_F < 5.0\text{V}$ for devices of $V_{BR} > 201\text{V}$.

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

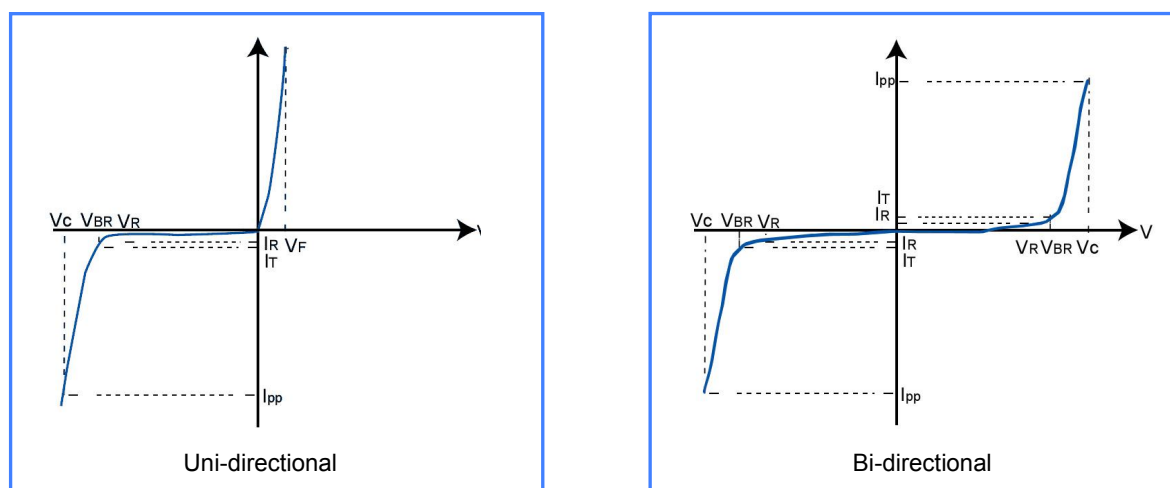
Part Number (Bi)	Part Number (Uni)	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@ I_T		Test Current I_T (mA)	Maximum Reverse Leakage I_R @ V_R (μA)	Maximum Peak Pulse Current I_{pp} (A)	Maximum Clamping Voltage V_C @ I_{pp} (V)
			Min .V	Max .V				
1.5KE6.8CA	1.5KE6.8A	5.80	6.45	7.14	10	600	144.8	10.5
1.5KE7.5CA	1.5KE7.5A	6.40	7.13	7.88	10	400	134.5	11.3
1.5KE8.2CA	1.5KE8.2A	7.02	7.79	8.61	10	200	125.6	12.1
1.5KE9.1CA	1.5KE9.1A	7.78	8.65	9.50	1	50	113.4	13.4
1.5KE10CA	1.5KE10A	8.55	9.50	10.50	1	10	104.8	14.5
1.5KE11CA	1.5KE11A	9.40	10.50	11.60	1	5	97.4	15.6
1.5KE12CA	1.5KE12A	10.20	11.40	12.60	1	5	91.0	16.7
1.5KE13CA	1.5KE13A	11.10	12.40	13.70	1	1	83.5	18.2
1.5KE15CA	1.5KE15A	12.80	14.30	15.80	1	1	71.7	21.2
1.5KE16CA	1.5KE16A	13.60	15.20	16.80	1	1	67.6	22.5
1.5KE18CA	1.5KE18A	15.30	17.10	18.90	1	1	60.3	25.2
1.5KE20CA	1.5KE20A	17.10	19.00	21.00	1	1	54.9	27.7
1.5KE22CA	1.5KE22A	18.80	20.90	23.10	1	1	49.7	30.6
1.5KE24CA	1.5KE24A	20.50	22.80	25.20	1	1	45.8	33.2
1.5KE27CA	1.5KE27A	23.10	25.70	28.40	1	1	40.5	37.5
1.5KE30CA	1.5KE30A	25.60	28.50	31.50	1	1	36.7	41.4
1.5KE33CA	1.5KE33A	28.20	31.40	34.70	1	1	33.3	45.7
1.5KE36CA	1.5KE36A	30.80	34.20	37.80	1	1	30.5	49.9
1.5KE39CA	1.5KE39A	33.30	37.10	41.00	1	1	28.2	53.9
1.5KE43CA	1.5KE43A	36.80	40.90	45.20	1	1	25.6	59.3
1.5KE47CA	1.5KE47A	40.20	44.70	49.40	1	1	23.5	64.8
1.5KE51CA	1.5KE51A	43.60	48.50	53.60	1	1	21.7	70.1
1.5KE56CA	1.5KE56A	47.80	53.20	58.80	1	1	19.7	77.0
1.5KE62CA	1.5KE62A	53.00	58.90	65.10	1	1	17.9	85.0
1.5KE68CA	1.5KE68A	58.10	64.60	71.40	1	1	16.5	92.0
1.5KE75CA	1.5KE75A	64.10	71.30	78.80	1	1	14.8	103.0
1.5KE82CA	1.5KE82A	70.10	77.90	86.10	1	1	13.5	113.0
1.5KE91CA	1.5KE91A	77.80	86.50	95.50	1	1	12.2	125.0
1.5KE100CA	1.5KE100A	85.50	95.00	105.00	1	1	11.1	137.0
1.5KE110CA	1.5KE110A	94.00	105.00	116.00	1	1	10.0	152.0
1.5KE120CA	1.5KE120A	102.00	114.00	126.00	1	1	9.2	165.0
1.5KE130CA	1.5KE130A	111.00	124.00	137.00	1	1	8.5	179.0
1.5KE150CA	1.5KE150A	128.00	143.00	158.00	1	1	7.3	207.0
1.5KE160CA	1.5KE160A	136.00	152.00	168.00	1	1	6.9	219.0
1.5KE170CA	1.5KE170A	145.00	162.00	179.00	1	1	6.5	234.0
1.5KE180CA	1.5KE180A	154.00	171.00	189.00	1	1	6.2	246.0
1.5KE200CA	1.5KE200A	171.00	190.00	210.00	1	1	5.5	274.0
1.5KE220CA	1.5KE220A	185.00	209.00	231.00 ²	1	1	4.6	328.0

Part Number (Bi)	Part Number (Uni)	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@ I_T		Test Current I_T (mA)	Maximum Reverse Leakage I_R @ V_R (μ A)	Maximum Peak Pulse Current I_{pp} (A)	Maximum Clamping Voltage V_C @ I_{pp} (V)
			Min . V	Max . V				
1.5KE250CA	1.5KE250A	214.00	237.00	263.00	1	1	4.4	344.0
1.5KE300CA	1.5KE300A	256.00	285.00	315.00	1	1	3.7	414.0
1.5KE350CA	1.5KE350A	300.00	332.00	368.00	1	1	3.2	482.0
1.5KE400CA	1.5KE400A	342.00	380.00	420.00	1	1	2.8	548.0
1.5KE440CA	1.5KE440A	376.00	418.00	462.00	1	1	2.5	602.0
1.5KE480CA	1.5KE480A	408.00	456.00	504.00	1	1	2.3	658.0
1.5KE510CA	1.5KE510A	434.00	485.00	535.00	1	1	2.1	698.0
1.5KE530CA	1.5KE530A	450.00	503.00	556.00	1	1	2.1	725
1.5KE540CA	1.5KE540A	459.00	513.00	567.00	1	1	2.0	740.0
1.5KE550CA	1.5KE550A	467.00	522.50	577.50	1	1	2.0	760.0

Functional Diagram



I-V Curve Characteristics



Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current

Rating & Characteristic Curves

Figure 1 - Peak Pulse Power Rating Curve

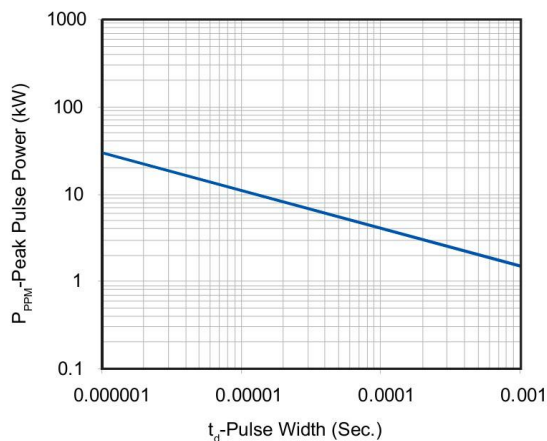


Figure 2 - Pulse Derating Curve

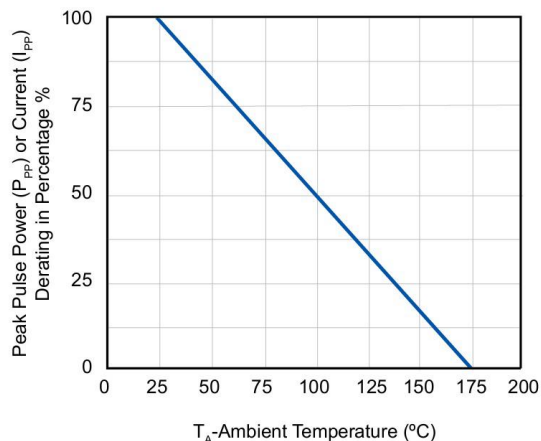


Figure 3 - Pulse Waveform

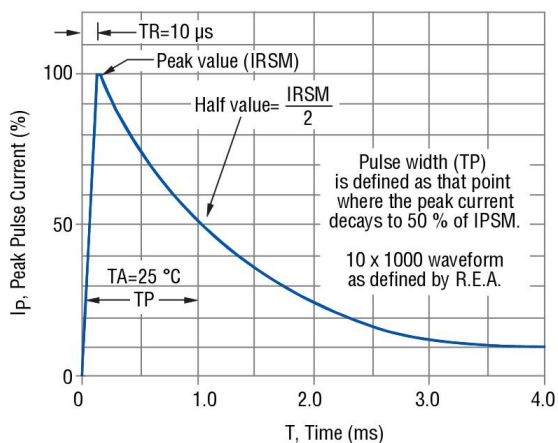


Figure 4 - Typical Junction Capacitance

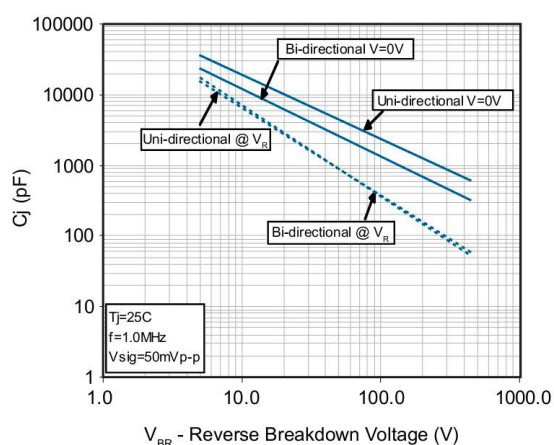


Figure5-Steady State Power Dissipation Derating Curve

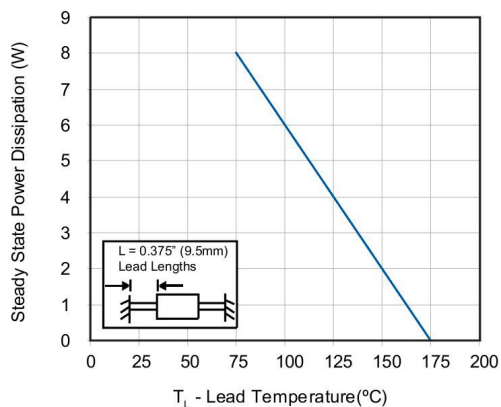
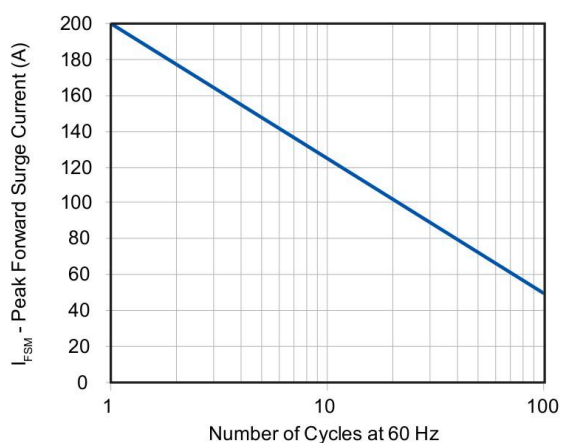
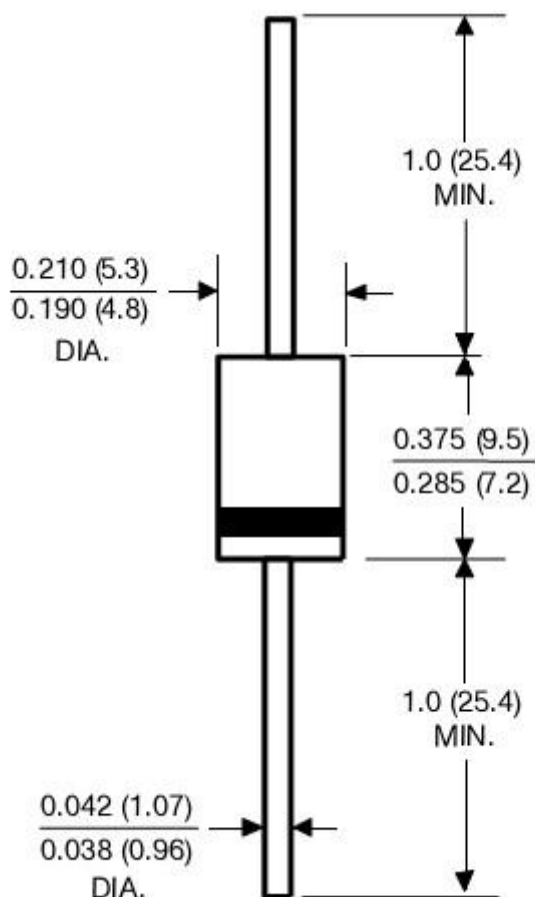


Figure 6-Maximum Non-Repetitive Surge Current



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-201



Disclaimer

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.