P6KE Transient Voltage Suppressor Diode Series

General Information

The P6KE 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 P6KE 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.

DO-204AC (DO-15)

Features

- DO-15 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 BV 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 (@ TA = 25° C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000 μs waveform	P_{PK}	600	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 °C	P_D	5	Watts
Peak forward surge current 8.3 ms single half sine-wave	I_{FSM}	100	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	°C

Notes :

(1) Non-repetitive current pulse, per fig. 6 and derated above T_A = 25 °C per fig. 2

(2) Measured 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

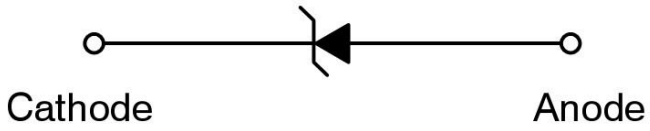
(3) V_F<3.5V for devices of V_{BR}< 200V and V_F < 5.0V for devices of V_{BR}> 201V.

Electrical Characteristics

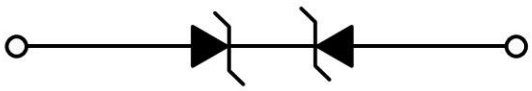
Part Number (Bi)	Part Number (Uni)	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@I_T		Test Current I_T(mA)	Maximum Reverse Leakage I_R @ V_R(μA)	Maximum Peak Pulse Current I pp (A)	Maximum Clamping Voltage V_C @ I_{pp}(V)
			Min .V	Max .V				
P6KE6.8CA	P6KE6.8A	5.80	6.45	7.14	10	600	58.1	10.5
P6KE7.5CA	P6KE7.5A	6.40	7.13	7.88	10	400	54.0	11.3
P6KE8.2CA	P6KE8.2A	7.02	7.79	8.61	10	200	50.4	12.1
P6KE9.1CA	P6KE9.1A	7.78	8.65	9.55	1	50	45.5	13.4
P6KE10CA	P6KE10A	8.55	9.50	10.50	1	10	42.1	14.5
P6KE11CA	P6KE11A	9.40	10.50	11.60	1	5	39.1	15.6
P6KE12CA	P6KE12A	10.20	11.40	12.60	1	5	36.5	16.7
P6KE13CA	P6KE13A	11.10	12.40	13.70	1	1	33.5	18.2
P6KE15CA	P6KE15A	12.80	14.30	15.80	1	1	28.8	21.2
P6KE16CA	P6KE16A	13.60	15.20	16.80	1	1	27.1	22.5
P6KE18CA	P6KE18A	15.30	17.10	18.90	1	1	24.2	25.2
P6KE20CA	P6KE20A	17.10	19.00	21.00	1	1	22.0	27.7
P6KE22CA	P6KE22A	18.80	20.90	23.10	1	1	19.9	30.6
P6KE24CA	P6KE24A	20.50	22.80	25.20	1	1	18.4	33.2
P6KE27CA	P6KE27A	23.10	25.70	28.40	1	1	16.3	37.5
P6KE30CA	P6KE30A	25.60	28.50	31.50	1	1	14.7	41.4
P6KE33CA	P6KE33A	28.20	31.40	34.70	1	1	13.3	45.7
P6KE36CA	P6KE36A	30.80	34.20	37.80	1	1	12.2	49.9
P6KE39CA	P6KE39A	33.30	37.10	41.00	1	1	11.3	53.9
P6KE43CA	P6KE43A	36.80	40.90	45.20	1	1	10.3	59.3
P6KE47CA	P6KE47A	40.20	44.70	49.40	1	1	9.4	64.8
P6KE51CA	P6KE51A	43.60	48.5	53.60	1	1	8.7	70.1
P6KE56CA	P6KE56A	47.80	53.20	58.80	1	1	7.9	77.0
P6KE62CA	P6KE62A	53.00	58.90	65.10	1	1	7.2	85.0
P6KE68CA	P6KE68A	58.10	64.60	71.40	1	1	6.6	92.0
P6KE75CA	P6KE75A	64.10	71.30	78.80	1	1	5.9	103.0
P6KE82CA	P6KE82A	70.10	77.90	86.10	1	1	5.4	113.0
P6KE91CA	P6KE91A	77.80	86.50	95.50	1	1	4.9	125.0
P6KE100CA	P6KE100A	85.50	95.00	105.00	1	1	4.5	137.0
P6KE110CA	P6KE110A	94.00	105.00	116.00	1	1	4.0	152.0
P6KE120CA	P6KE120A	102.00	114.00	126.00	1	1	3.7	165.0
P6KE130CA	P6KE130A	111.00	124.00	137.00	1	1	3.4	179.0
P6KE150CA	P6KE150A	128.00	143.00	158.00	1	1	2.9	207.0
P6KE160CA	P6KE160A	136.00	152.00	168.00	1	1	2.8	219.0
P6KE170CA	P6KE170A	145.00	162.00	179.00	1	1	2.6	234.0
P6KE180CA	P6KE180A	154.00	171.00	189.00	1	1	2.5	246.0
P6KE200CA	P6KE200A	171.00	190.00	210.00	1	1	2.2	274.0
P6KE220CA	P6KE220A	185.00	209.00	231.00	1	1	1.9	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(μA)	Maximum Peak Pulse Current I pp (A)	Maximum Clamping Voltage V_C @ I_{pp}(V)
			Min .V	Max .V				
P6KE250CA	P6KE250A	214.00	237.00	263.00	1	1	1.8	344.0
P6KE300CA	P6KE300A	256.00	285.00	315.00	1	1	1.5	414.0
P6KE350CA	P6KE350A	300.00	332.00	368.00	1	1	1.3	482.0
P6KE400CA	P6KE400A	342.00	380.00	420.00	1	1	1.1	548.0
P6KE440CA	P6KE440A	376.00	418.00	462.00	1	1	1.0	602.0
P6KE480CA	P6KE480A	408.00	456.00	504.00	1	1	0.9	658.0
P6KE510CA	P6KE510A	434.00	485.00	535.00	1	1	0.9	698.0
P6KE530CA	P6KE530A	450.00	503.00	556.00	1	1	0.8	725.0
P6KE540CA	P6KE540A	459.00	513.00	567.00	1	1	0.8	740.0
P6KE550CA	P6KE550A	467.00	522.50	577.50	1	1	0.8	760.0
P6KE600CA	P6KE600A	512.00	570.00	630.00	1	1	0.75	828.0

Functional Diagram

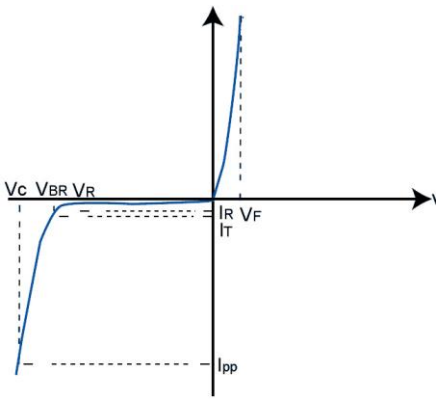


Uni-directional

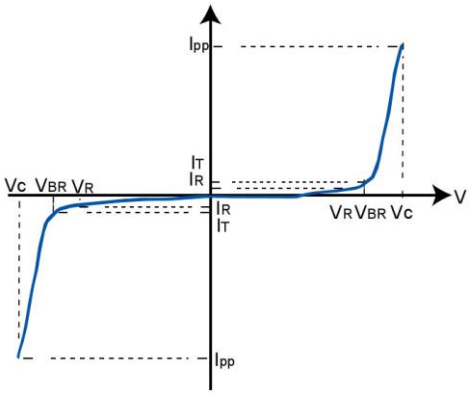


Bi-directional

I-V Curve Characteristics



Uni-directional



Bi-directional

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

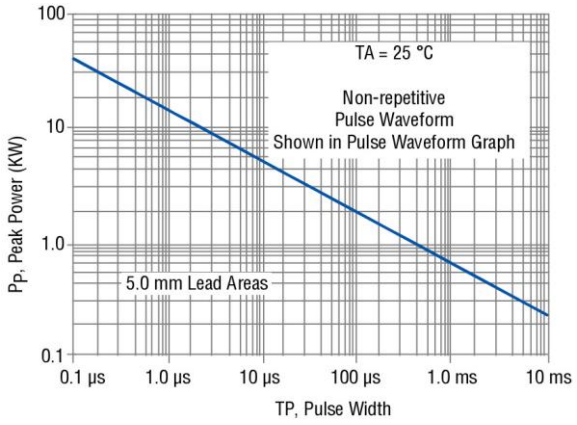


Figure 2 - Pulse Derating Curve

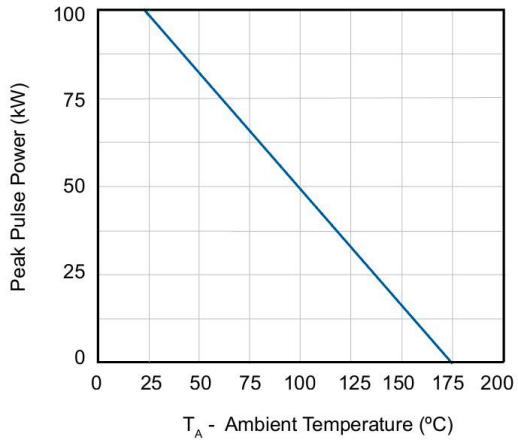


Figure 3 - Pulse Waveform

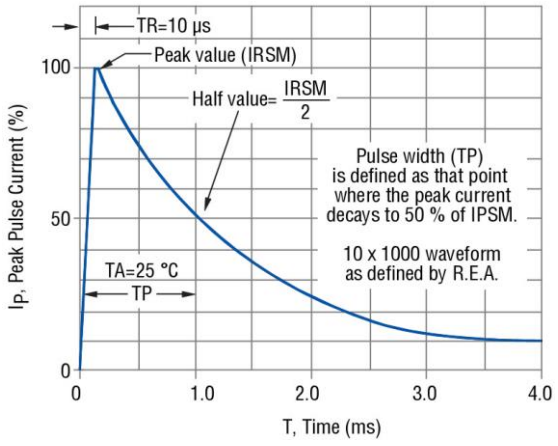


Figure 4 - Typical Junction Capacitance

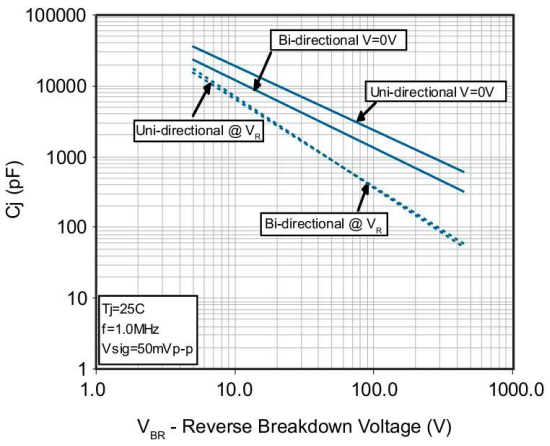


Figure5-Steady State Power Dissipation Derating Curve

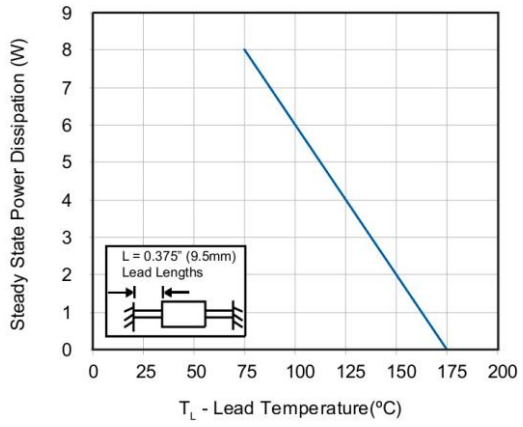
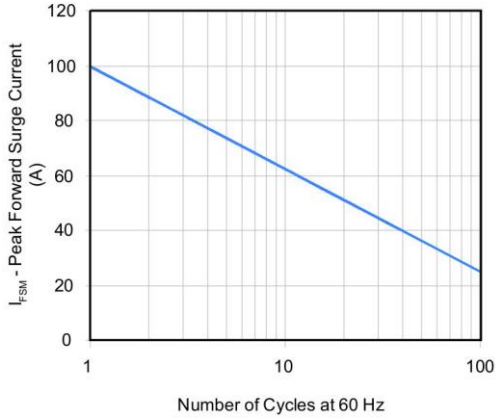
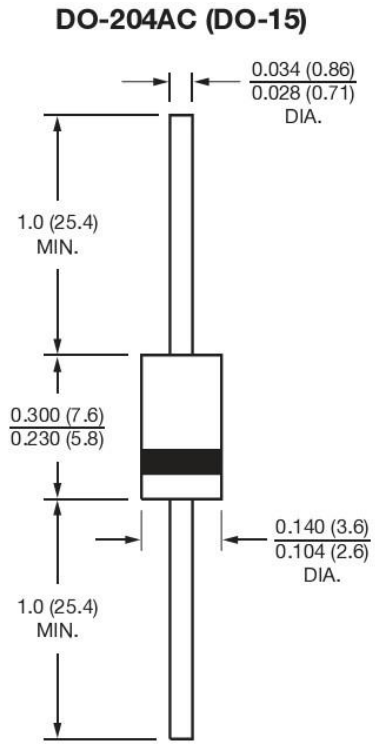


Figure 6 - Maximum Non-Repetitive Surge Current



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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.