P6KE Series

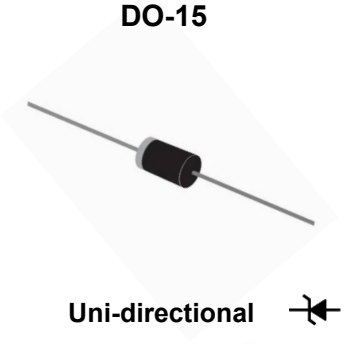
Design Viitor into your FUTURE

600W Transient Voltage suppressor

Features

- AEC-Q101 Qualified
- Glass passivated chip junction
- Available in unidirectional and bidirectional
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 275℃ max.7s, per JESD 22-B106

DO-15



Uni-directional

Bi-directional

Typical Applications

Use in sensitive electronic 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.

Mechanical Data

- Package:DO-15
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- Polarity: Color band denotes cathode end

Maximum Ratings (T_a = 25℃ unless otherwise specified)

Parameter	Symbol	Max	Unit
Peak power dissipation, with a 10/1000us waveform(1)	P_{PPM}	600	W
Peak pulse current, with a 10/1000us waveform(1)	I_{PPM}	See Next Table	A
Power dissipation, on infinite heat sink at T_L=75℃	P_D	5	W
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only(2)	I_{FSM}	100	A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	℃

Thermal Characteristics（Ta=25℃ Unless otherwise specified）

Parameter	Symbol	VALUE	Unit
Maximum instantaneous forward voltage at 25A for unidirectional only(3)	V_F	3.5 / 5.0	V
Thermal Resistance(Typical) junction to ambient	$R_{\theta J\text{-}A}$	75	℃/W
junction to lead	$R_{\theta J\text{-}L}$	20	℃/W

1)Non-repetitive current pulse, per Fig. 3 and derated above TA= 25℃per Fig.2.
2)Measured on 8.3ms single half sine-wave or equivalent square wave,duty cycle=4 pulses per minute maximum.
3)VF=3.5V Max for devices of VBR≤220V，and VF=5.0V Max for devices of VBR＞220V.

Electrical Characteristics (Ta = 25℃ unless otherwise specified)

Uni-directional	Bi-directional	V_{BR}@IT Breakdown Voltage V_{BR}@IT			I_R Maximum Reverse Leakage I_R @ V_{WM}	V_{RWM} Working Peak Reverse Voltage V_{RWM}	I_{PP} Maximum Reverse Surge Current IPP	Maximum Clamping Voltage Vc @ I_{PP}
		Min. (V)	Max. (V)	IT(mA)	(μA)	(V)	(A)	(V)
P6KE6.8	P6KE6.8C	6.12	7.48	10	1000	5.50	55.6	10.8
P6KE6.8A	P6KE6.8CA	6.45	7.14	10	1000	5.80	57.1	10.5
P6KE7.5	P6KE7.5C	6.75	8.25	10	500	6.05	51.3	11.7
P6KE7.5A	P6KE7.5CA	7.13	7.88	10	500	6.40	53.1	11.3
P6KE8.2	P6KE8.2C	7.38	9.02	10	200	6.63	48.0	12.5
P6KE8.2A	P6KE8.2CA	7.79	8.61	10	200	7.02	49.6	12.1
P6KE9.1	P6KE9.1C	8.19	10.0	1.0	50	7.37	43.5	13.8
P6KE9.1A	P6KE9.1CA	8.65	9.55	1.0	50	7.78	44.8	13.4
P6KE10	P6KE10C	9.00	11.0	1.0	10	8.10	40.0	15
P6KE10A	P6KE10CA	9.50	10.5	1.0	10	8.55	41.4	14.5
P6KE11	P6KE11C	9.90	12.1	1.0	5.0	8.92	37.0	16.2
P6KE11A	P6KE11CA	10.5	11.6	1.0	5.0	9.40	38.5	15.6
P6KE12	P6KE12C	10.8	13.2	1.0	5.0	9.72	34.7	17.3
P6KE12A	P6KE12CA	11.4	12.6	1.0	5.0	10.2	35.9	16.7
P6KE13	P6KE13C	11.7	14.3	1.0	5.0	10.5	31.6	19
P6KE13A	P6KE13CA	12.4	13.7	1.0	5.0	11.1	33.0	18.2
P6KE15	P6KE15C	13.5	16.5	1.0	5.0	12.1	27.3	22
P6KE15A	P6KE15CA	14.3	15.8	1.0	5.0	12.8	28.3	21.2
P6KE16	P6KE16C	14.4	17.6	1.0	5.0	12.9	25.5	23.5
P6KE16A	P6KE16CA	15.2	16.8	1.0	5.0	13.6	26.7	22.5
P6KE18	P6KE18C	16.2	19.8	1.0	5.0	14.5	22.6	26.5
P6KE18A	P6KE18CA	17.1	18.9	1.0	5.0	15.3	23.8	25.2
P6KE20	P6KE20C	18.0	22.0	1.0	5.0	16.2	20.6	29.1
P6KE20A	P6KE20CA	19.0	21.0	1.0	5.0	17.1	21.7	27.7
P6KE22	P6KE22C	19.8	24.2	1.0	5.0	17.8	18.8	31.9
P6KE22A	P6KE22CA	20.9	23.1	1.0	5.0	18.8	19.6	30.6
P6KE24	P6KE24C	21.6	26.4	1.0	5.0	19.4	17.3	34.7
P6KE24A	P6KE24CA	22.8	25.2	1.0	5.0	20.5	18.1	33.2
P6KE27	P6KE27C	24.3	29.7	1.0	5.0	21.8	15.3	39.1
P6KE27A	P6KE27CA	25.7	28.4	1.0	5.0	23.1	16.0	37.5
P6KE30	P6KE30C	27.0	33.0	1.0	5.0	24.3	13.8	43.5
P6KE30A	P6KE30CA	28.5	31.5	1.0	5.0	25.6	14.5	41.4
P6KE33	P6KE33C	29.7	36.3	1.0	5.0	26.8	12.6	47.7
P6KE33A	P6KE33CA	31.4	34.7	1.0	5.0	28.2	13.1	45.7
P6KE36	P6KE36C	32.4	39.6	1.0	5.0	29.1	11.5	52
P6KE36A	P6KE36CA	34.2	37.8	1.0	5.0	30.8	12.0	49.9

Electrical Characteristics (Ta = 25℃ unless otherwise specified)

Uni-directional	Bi-directional	V_{BR}@IT Breakdown Voltage V_{BR}@IT			I_R Maximum Reverse Leakage I_R @ V_{WM}	V_{RWM} Working Peak Reverse Voltage V_{RWM}	I_{PP} Maximum Reverse Surge Current IPP	Maximum Clamping Voltage Vc @ I_{PP}
		Min. (V)	Max. (V)	IT(mA)	(μA)	(V)	(A)	(V)
P6KE39	P6KE39C	35.1	42.9	1.0	5.0	31.6	10.6	56.4
P6KE39A	P6KE39CA	37.1	41.0	1.0	5.0	33.3	11.1	53.9
P6KE43	P6KE43C	38.7	47.3	1.0	5.0	34.8	9.7	61.9
P6KE43A	P6KE43CA	40.9	45.2	1.0	5.0	36.8	10.1	59.3
P6KE47	P6KE47C	42.3	51.7	1.0	5.0	38.1	8.8	67.8
P6KE47A	P6KE47CA	44.7	49.4	1.0	5.0	40.2	9.3	64.8
P6KE51	P6KE51C	45.9	56.1	1.0	5.0	41.3	8.2	73.5
P6KE51A	P6KE51CA	48.5	53.6	1.0	5.0	43.6	8.6	70.1
P6KE56	P6KE56C	50.4	61.6	1.0	5.0	45.4	7.5	80.5
P6KE56A	P6KE56CA	53.2	58.8	1.0	5.0	47.8	7.8	77
P6KE62	P6KE62C	55.8	68.2	1.0	5.0	50.2	6.7	89
P6KE62A	P6KE62CA	58.9	65.1	1.0	5.0	53.0	7.1	85
P6KE68	P6KE68C	61.2	74.8	1.0	5.0	55.1	6.1	98
P6KE68A	P6KE68CA	64.6	71.4	1.0	5.0	58.1	6.5	92
P6KE75	P6KE75C	67.5	82.5	1.0	5.0	60.7	5.6	108
P6KE75A	P6KE75CA	71.3	78.8	1.0	5.0	64.1	5.8	103
P6KE82	P6KE82C	73.8	90.2	1.0	5.0	66.4	5.1	118
P6KE82A	P6KE82CA	77.9	86.1	1.0	5.0	70.1	5.3	113
P6KE91	P6KE91C	81.9	100	1.0	5.0	73.7	4.6	131
P6KE91A	P6KE91CA	86.5	95.5	1.0	5.0	77.8	4.8	125
P6KE100	P6KE100C	90.0	110	1.0	5.0	81.0	4.2	144
P6KE100A	P6KE100CA	95.0	105	1.0	5.0	85.5	4.4	137
P6KE110	P6KE110C	99.0	121	1.0	5.0	89.2	3.8	158
P6KE110A	P6KE110CA	105	116	1.0	5.0	94.0	3.9	152
P6KE120	P6KE120C	108	132	1.0	5.0	97.2	3.5	173
P6KE120A	P6KE120CA	114	126	1.0	5.0	102	3.6	165
P6KE130	P6KE130C	117	143	1.0	5.0	105	3.2	187
P6KE130A	P6KE130CA	124	137	1.0	5.0	111	3.4	179
P6KE150	P6KE150C	135	165	1.0	5.0	121	2.8	215
P6KE150A	P6KE150CA	143	158	1.0	5.0	128	2.9	207
P6KE160	P6KE160C	144	176	1.0	5.0	130	2.6	230
P6KE160A	P6KE160CA	152	168	1.0	5.0	136	2.7	219
P6KE170	P6KE170C	153	187	1.0	5.0	138	2.5	244
P6KE170A	P6KE170CA	162	179	1.0	5.0	145	2.6	234
P6KE180	P6KE180C	162	198	1.0	5.0	146	2.3	258
P6KE180A	P6KE180CA	171	189	1.0	5.0	154	2.4	246

Electrical Characteristics (Ta = 25℃ unless otherwise specified)

Uni-directional	Bi-directional	V_{BR}@IT Breakdown Voltage V_{BR}@IT			I_R Maximum Reverse Leakage I_R @ V_{WM}	V_{RWM} Working Peak Reverse Voltage V_{RWM}	I_{PP} Maximum Reverse Surge Current IPP	Maximum Clamping Voltage Vc @ I_{PP}
		Min. (V)	Max. (V)	IT(mA)	(μA)	(V)	(A)	(V)
P6KE200	P6KE200C	180	220	1.0	5.0	162	2.1	287
P6KE200A	P6KE200CA	190	210	1.0	5.0	171	2.2	274
P6KE220	P6KE220C	198	242	1.0	5.0	175	1.7	344
P6KE220A	P6KE220CA	209	231	1.0	5.0	185	1.8	328
P6KE250	P6KE250C	225	275	1.0	5.0	202	1.7	360
P6KE250A	P6KE250CA	237	263	1.0	5.0	214	1.7	344
P6KE300	P6KE300C	270	330	1.0	5.0	243	1.4	430
P6KE300A	P6KE300CA	285	315	1.0	5.0	256	1.4	414
P6KE350	P6KE350C	315	385	1.0	5.0	284	1.2	505
P6KE350A	P6KE350CA	333	368	1.0	5.0	300	1.2	482
P6KE400	P6KE400C	360	440	1.0	5.0	324	1.0	574
P6KE400A	P6KE400CA	380	420	1.0	5.0	342	1.1	548
P6KE440	P6KE440C	396	484	1.0	5.0	356	0.95	631
P6KE440A	P6KE440CA	418	462	1.0	5.0	376	1.0	602
P6KE500	P6KE500C	450	550	1.0	5.0	406	0.83	723
P6KE500A	P6KE500CA	475	525	1.0	5.0	427.5	0.87	690
P6KE520	P6KE520C	468	572	1.0	5.0	422.2	0.80	750
P6KE520A	P6KE520CA	494	546	1.0	5.0	444.6	0.84	714
P6KE540	P6KE540C	486	594	1.0	5.0	437	0.78	769
P6KE540A	P6KE540CA	513	567	1.0	5.0	459	0.81	741
P6KE550	P6KE550C	495	605	1.0	5.0	446	0.76	789
P6KE550A	P6KE550CA	522.5	577	1.0	5.0	470	0.79	759
P6KE600	P6KE600C	540	660	1.0	5.0	487.2	0.69	870
P6KE600A	P6KE600CA	570	630	1.0	5.0	513	0.72	833

Electrical Characteristics Curves

FIG1:Peak Pulse Power Rating Curve

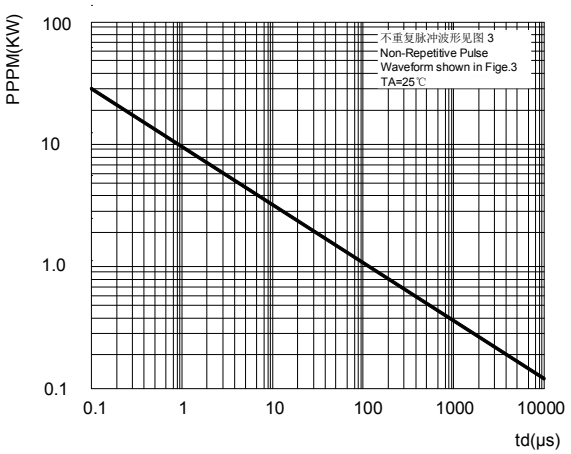


FIG2: Pulse Power or Current vs Initial JunctionTemperature

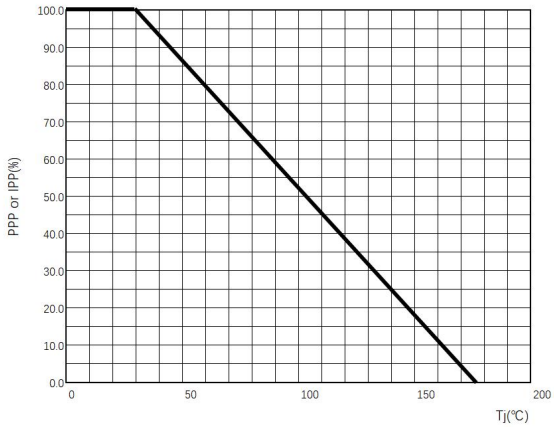


FIG3: Pulse Waveform

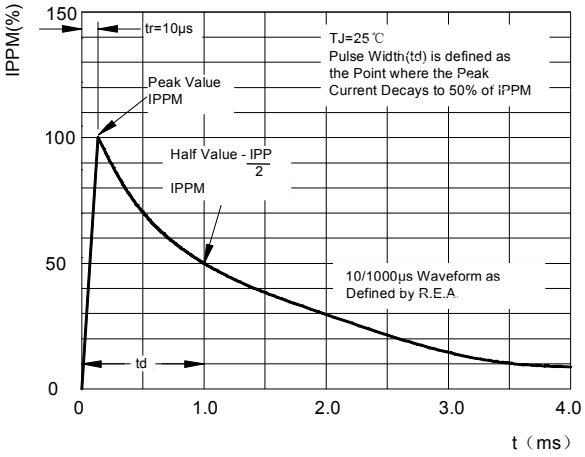


FIG4: Power Derating curve

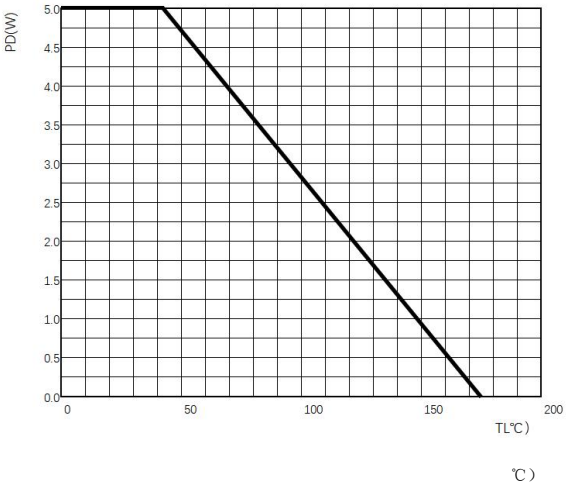


FIG5: Maximum Non-Repetitive Surge Current

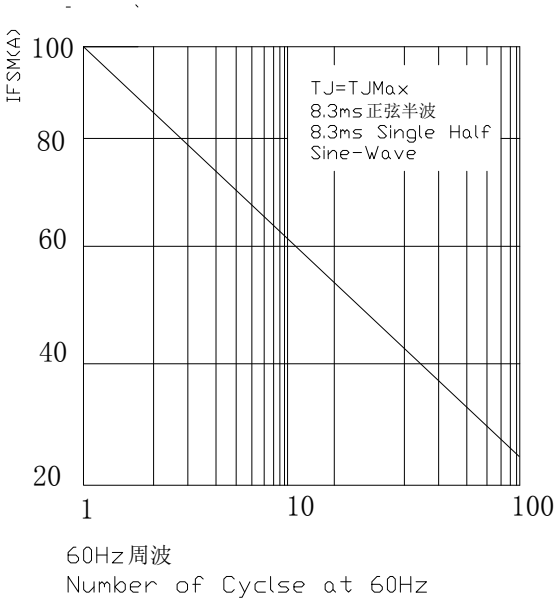
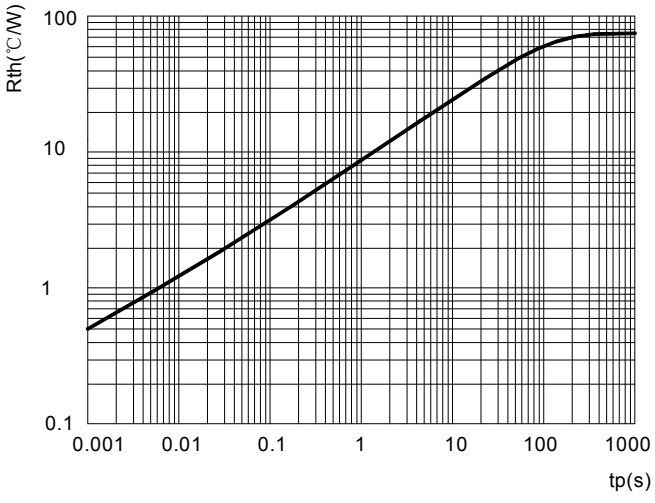
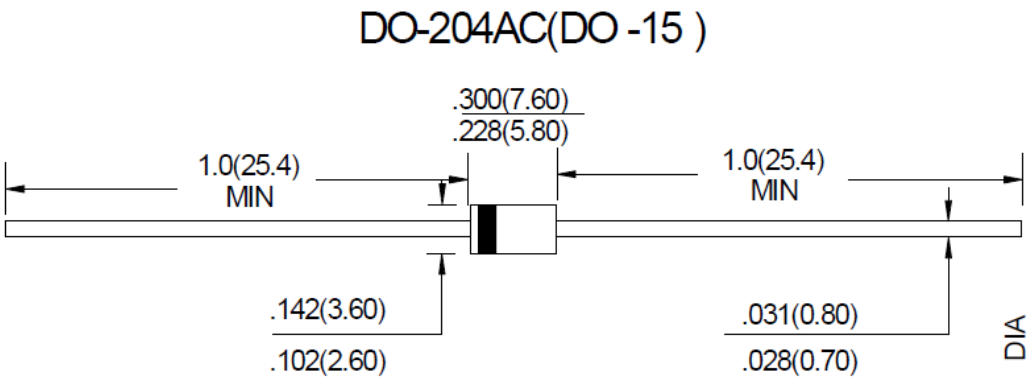


FIG6:Typical Transient Thermal Impedance



Package Outline Dimensions in inches (millimeters) **DO-15 (DO-204AC)**



Packing Information

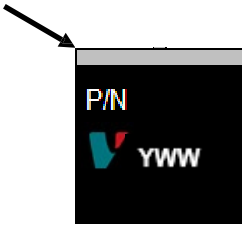
Package	Carton Quantity	Box Quantity	Base Quantity	Delivery Mode
DO-15	30 K / Carton	3 K / Ammo box	3 K / Ammo box	Ammo box

Marking information

" P6KE300A " = Part No.

" YWW " = Date Code Marking)

" Y " = Last digit of year (ex: 2 = 2022

" WW " = Week Code (ex: 24 = the 24th week of the year)

Cathode band for uni-directional products only