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**SPECIFICATION FOR APPROVAL**

CUSTOMER	立創電子
CERTIFIED	
MODEL/TYPE	
PART NO.	P4KE180A
APPLICATION	
CUSTOMER P/N	
ISSUE DATE	Dec.04,2020
REV. NO.	
REV. DATE	

FOR CUSTOMER APPROVAL	CHECKED BY
	<i>Dan Zhang</i>
	APPROVED BY
	<i>Huaifang Zhang</i>





Power TVS Lead Type
Part No. :P4KE180A

REVISED RECORD SHEET

REV. NO	REV. DATE	REVISED CONTENT



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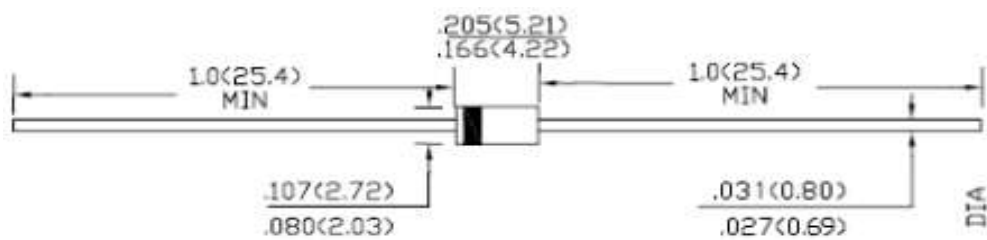
Part Number Code

P4KE 180 A
(1) (2) (3)

No.	Item	Digit	Specification
(1)	Product Type	P4KE	Thinking Power TVS Axial Leded Type
(2)	Central of Breakage Voltage (V _{BR})	180	180=180 V _{BR}
(3)	Type Code	A	Uni-directional 5% VBR Voltage Tolerance

Structure and Dimensions

DO-41 (DO-204AL)



Unit: inch(millimeter)

Electrical Characteristics

Peak power dissipation with a 10/1000μs waveform : 400W

Operating junction and storage temperature range : -55~+150 °C

Part No. (Uni)	Part No. (Bi)	Reverse Stand off Voltage	Breakage Voltage VBR @ IT		Test Current	Maximum Clamping Voltage VC @ Ipp	Maximum Peak Pulse Current	Maximum Reverse Leakage IR @VRWM	Marking Code	
		VRWM (V)	Min(V)	Max(V)	IT(mA)	VC(V)	Ipp(A)	IR(μA)	Uni	Bi
P4KE6.8A	P4KE6.8CA	5.8	6.5	7.1	10	10.5	38.1	1000	P4KE6.8A .	P4KE6.8CA .
P4KE7.5A	P4KE7.5CA	6.4	7.1	7.9	10	11.3	35.4	500	P4KE7.5A .	P4KE7.5CA .
P4KE8.2A	P4KE8.2CA	7	7.8	8.6	10	12.1	33.1	200	P4KE8.2A .	P4KE8.2CA .
P4KE9.1A	P4KE9.1CA	7.8	8.7	9.6	1	13.4	29.9	50	P4KE9.1A .	P4KE9.1CA .
P4KE10A	P4KE10CA	8.6	9.5	10.5	1	14.5	27.6	10	P4KE10A .	P4KE10CA .
P4KE11A	P4KE11CA	9.4	10.5	11.6	1	15.6	25.6	5	P4KE11A .	P4KE11CA .
P4KE12A	P4KE12CA	10.2	11.4	12.6	1	16.7	24	5	P4KE12A .	P4KE12CA .
P4KE13A	P4KE13CA	11.1	12.4	13.7	1	18.2	22	5	P4KE13A .	P4KE13CA .
P4KE15A	P4KE15CA	12.8	14.3	15.8	1	21.2	18.9	5	P4KE15A .	P4KE15CA .
P4KE16A	P4KE16CA	13.6	15.2	16.8	1	22.5	17.8	5	P4KE16A .	P4KE16CA .
P4KE18A	P4KE18CA	15.3	17.1	18.9	1	25.2	15.9	5	P4KE18A .	P4KE18CA .
P4KE20A	P4KE20CA	17.1	19	21	1	27.7	14.4	5	P4KE20A .	P4KE20CA .
P4KE22A	P4KE22CA	18.8	20.9	23.1	1	30.6	13.1	5	P4KE22A .	P4KE22CA .
P4KE24A	P4KE24CA	20.5	22.8	25.2	1	33.2	12	5	P4KE24A .	P4KE24CA .
P4KE27A	P4KE27CA	23.1	25.7	28.4	1	37.5	10.7	5	P4KE27A .	P4KE27CA .
P4KE30A	P4KE30CA	25.6	28.5	31.5	1	41.4	9.7	5	P4KE30A .	P4KE30CA .
P4KE33A	P4KE33CA	28.2	31.4	34.7	1	45.7	8.8	5	P4KE33A .	P4KE33CA .
P4KE36A	P4KE36CA	30.8	34.2	37.8	1	49.9	8	5	P4KE36A .	P4KE36CA .
P4KE39A	P4KE39CA	33.3	37.1	41	1	53.9	7.4	5	P4KE39A .	P4KE39CA .
P4KE43A	P4KE43CA	36.8	40.9	45.2	1	59.3	6.7	5	P4KE43A .	P4KE43CA .
P4KE47A	P4KE47CA	40.2	44.7	49.4	1	64.8	6.2	5	P4KE47A .	P4KE47CA .
P4KE51A	P4KE51CA	43.6	48.5	53.6	1	70.1	5.7	5	P4KE51A .	P4KE51CA .
P4KE56A	P4KE56CA	47.8	53.2	58.8	1	77	5.2	5	P4KE56A .	P4KE56CA .
P4KE62A	P4KE62CA	53	58.9	65.1	1	85	4.7	5	P4KE62A .	P4KE62CA .
P4KE68A	P4KE68CA	58.1	64.6	71.4	1	92	4.3	5	P4KE68A .	P4KE68CA .
P4KE75A	P4KE75CA	64.1	71.3	78.8	1	103	3.9	5	P4KE75A .	P4KE75CA .
P4KE82A	P4KE82CA	70.1	77.9	86.1	1	113	3.5	5	P4KE82A .	P4KE82CA .
P4KE91A	P4KE91CA	77.8	86.5	95.5	1	125	3.2	5	P4KE91A .	P4KE91CA .
P4KE100A	P4KE100CA	85.5	95	105	1	137	2.9	5	P4KE100A .	P4KE100CA .
P4KE110A	P4KE110CA	94	105	116	1	152	2.6	5	P4KE110A .	P4KE110CA .
P4KE120A	P4KE120CA	102	114	126	1	165	2.4	5	P4KE120A .	P4KE120CA .
P4KE130A	P4KE130CA	111	124	137	1	179	2.3	5	P4KE130A .	P4KE130CA .
P4KE150A	P4KE150CA	128	143	158	1	207	1.9	5	P4KE150A .	P4KE150CA .



Electrical Characteristics

Peak power dissipation with a 10/1000μs waveform : 400W

Operating junction and storage temperature range : -55~+150 °C

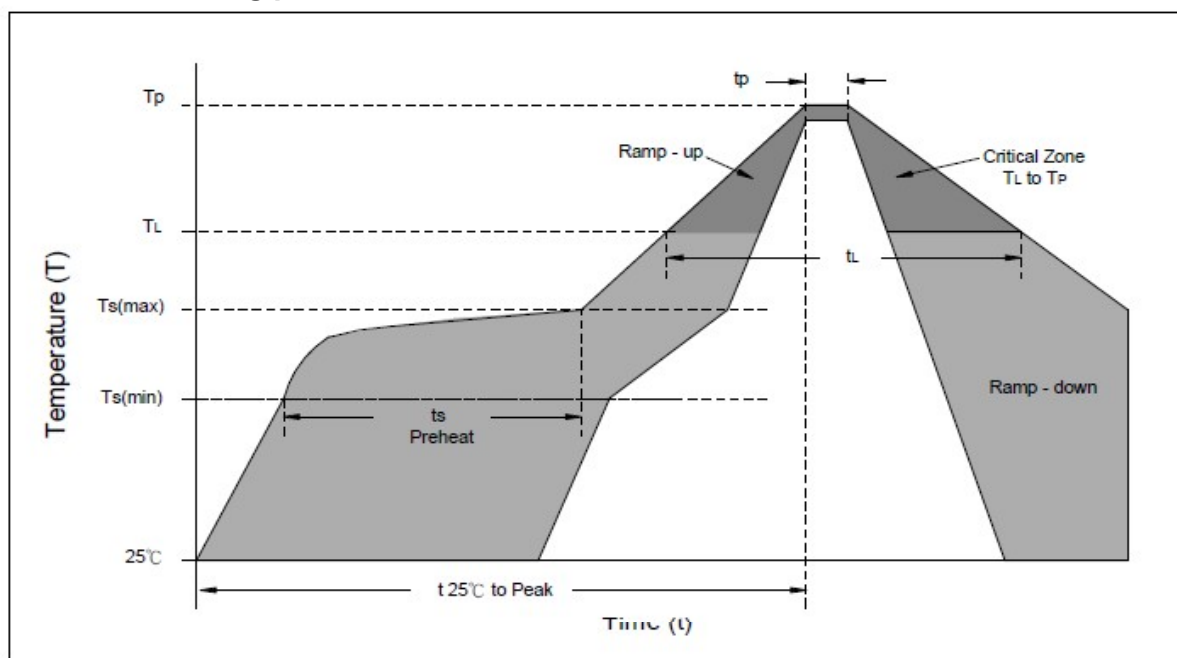
Part No. (Uni)	Part No. (Bi)	Reverse Stand off Voltage	Breakage Voltage VBR @ IT		Test Current	Maximum Clamping Voltage VC @ Ipp	Maximum Peak Pulse Current	Maximum Reverse Leakage IR @VRWM	Marking Code	
		VRWM (V)	Min(V)	Max(V)	IT(mA)	VC(V)	Ipp(A)	IR(μA)	Uni	Bi
P4KE160A	P4KE160CA	136	152	168	1	219	1.8	5	P4KE160A .	P4KE160CA .
P4KE170A	P4KE170CA	145	161.5	179	1	234	1.7	5	P4KE170A .	P4KE170CA .
P4KE180A	P4KE180CA	154	171	189	1	246	1.6	5	P4KE180A .	P4KE180CA .
P4KE200A	P4KE200CA	171	190	210	1	274	1.5	5	P4KE200A .	P4KE200CA .
P4KE220A	P4KE220CA	185	209	231	1	328	1.2	5	P4KE220A .	P4KE220CA .
P4KE250A	P4KE250CA	214	237	263	1	344	1.2	5	P4KE250A .	P4KE250CA .
P4KE300A	P4KE300CA	256	285	315	1	414	1	5	P4KE300A .	P4KE300CA .
P4KE350A	P4KE350CA	300	333	368	1	482	0.83	5	P4KE350A .	P4KE350CA .
P4KE400A	P4KE400CA	342	380	420	1	548	0.73	5	P4KE400A .	P4KE400CA .
P4KE440A	P4KE440CA	376	418	462	1	602	0.66	5	P4KE440A .	P4KE440CA .

**Reliability**

Item	Standard	Test conditions / Methods	Specifications
HTRB (High Temp. Reverse Bias Test)	MIL-STD-750D METHOD 1038.3 Method 103	Test Temp. : 150°C Duration 168 hrs with rated VRWM	Electrical properties meet Specifications
PCT (Pressure Cooker Test)	MIL-STD-19500 EAPPENDIX C	Test Temp. : 121 °C Pressure:1.2Kg Duration: 96 hrs	Electrical properties meet Specifications
TCT	MIL-STD-750D METHOD 1051.5	Test Temp. : -55°C ~+150°C 20 cycles	Electrical properties meet Specifications
Forward Surge	MIL-STD-750D METHOD 4066.3	Sine half wave 8.3mS 1 shot IFSM:20A forSMF 40A for SMA/P4SMA/SMAF/P4KE 100A for SMB/P6SMB/P6KE 200A for SMC/1.5SMC/1.5KE For Uni-directional product only.	Electrical properties meet Specifications
Soldering Heat	MIL-STD-750D METHOD 2031.2	Test Temp. : 260°C Duration:10 sec 1cycle	Electrical properties meet Specifications

Soldering Recommendation

■ IR-reflow soldering profile



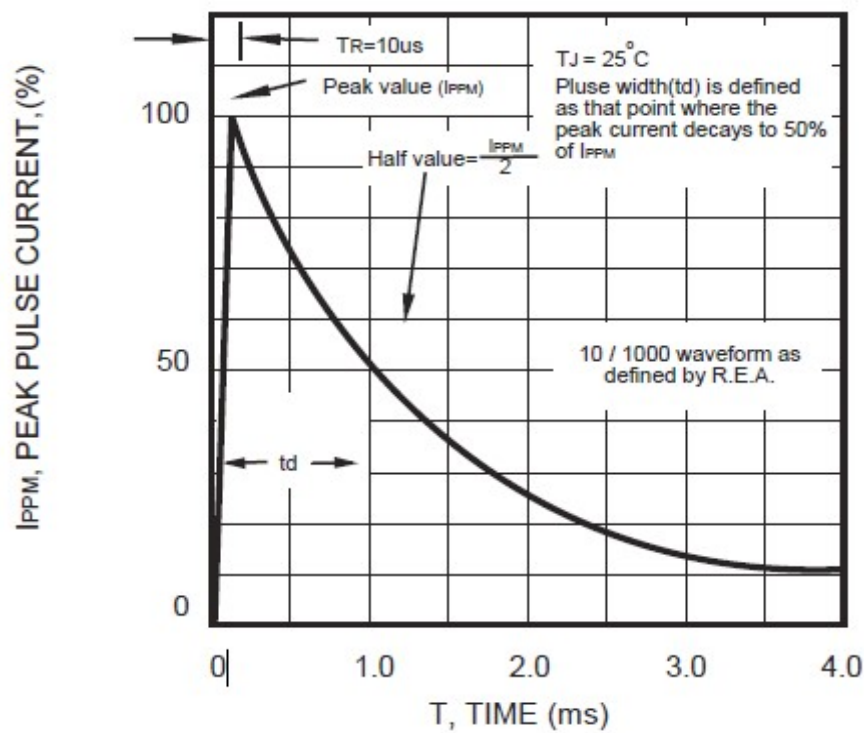
Reflow Condition	Lead-free assembly
Preheat	
-Temperature Min(Ts min)	150°C
-Temperature Min(Ts max)	200°C
-Time (min to max) (ts)	60 – 180 seconds
Average ramp up rate	
-Temperature Liquidus (TL) to peak	3°C/second max
Ts(max) to TL	
-Ramp-up Rate	3°C/second max.
Reflow	
-Temperature Liquidus (TL)	217°C
-Time (tl)	60 – 150 seconds
Peak Temperature (Tp)	260°C
Time within 5°C of actual peak Temperature(tp)	20 – 40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to peak Temperature(Tp)	8 minutes max.
Do not exceed	260°C

Packaging

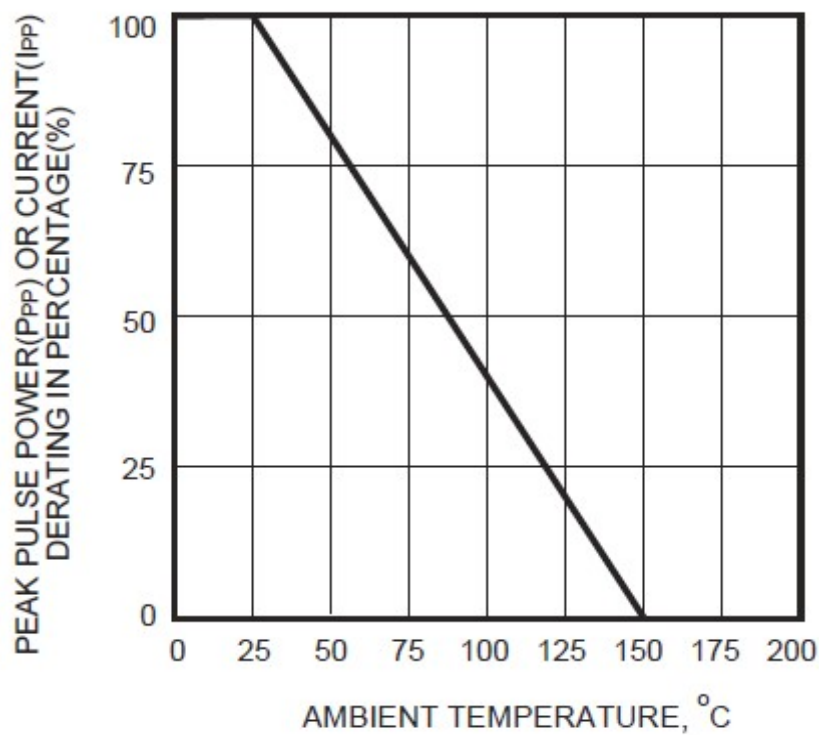
■ Quantity

Series Type	Reel size	Quantity (pcs/reel)
P4KE	13"	5,000

Pulse Waveform

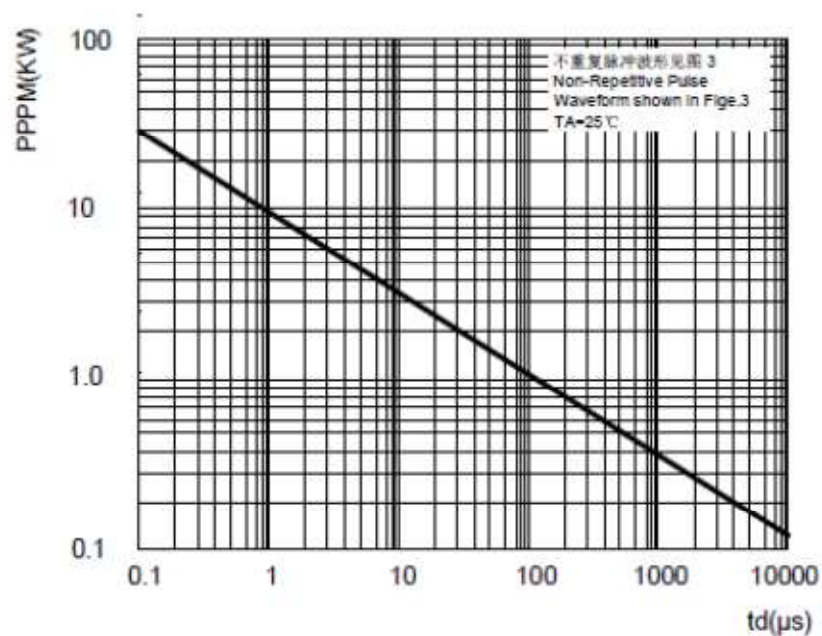


Pulse Derating Curve



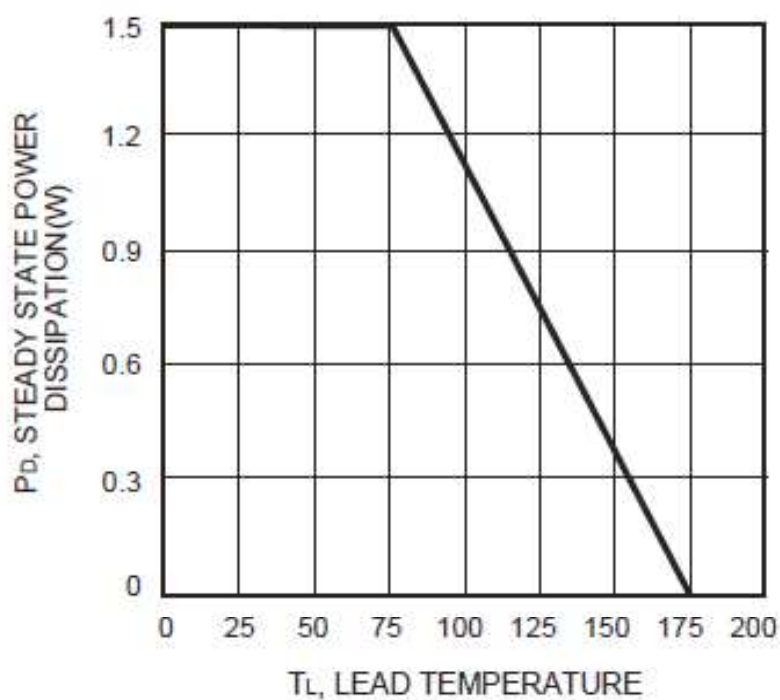
Peak Pulse Power Rating Curve

P4KE series



Steady State Power Derating Curve

P4KE series



Warehouse Storage Conditions of Products

(I) Storage Conditions :

- 1.Storage Temperature : $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
- 2.Relative Humidity : $\leq 75\% \text{RH}$
- 3.Keep away from corrosive atmosphere and sunlight.

(II) Period of Storage : 1 year

Safety Approvals



* UL 497B recognized (File # E229991)

Certificates

- (1) IATF 16949 certificate
- (2) ISO 9001 certificate