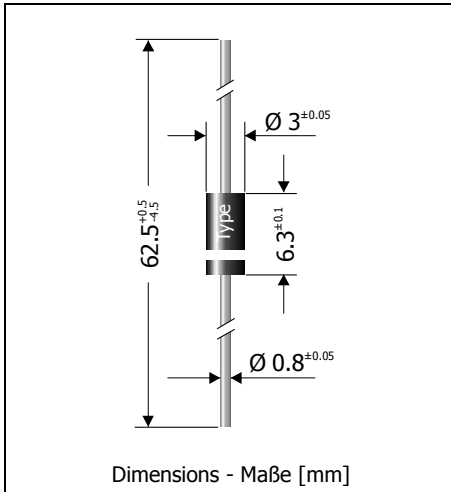


## P4KE6.8 ... P4KE440CA

### Unidirectional and bidirectional Transient Voltage Suppressor Diodes Unidirektionale und bidirektionale Spannungs-Begrenzer-Dioden

Version 2014-10-06



Peak pulse power dissipation Maximale Verlustleistung	400 W
Nominal breakdown voltage Nominale Abbruch-Spannung	6.8...440 V
Plastic case Kunststoffgehäuse	DO-15 (DO-204AC)
Weight approx. Gewicht ca.	0.4 g
Plastic material has UL classification 94V-0 Gehäusematerial UL94V-0 klassifiziert	
Standard packaging taped in ammo pack Standard Lieferform gegurtet in ammo-Pack	



For bidirectional types (add suffix "C" or "CA"), electrical characteristics apply in both directions.  
Für bidirektionale Dioden (ergänze Suffix "C" oder "CA") gelten die elektrischen Werte in beiden Richtungen.

#### Maximum ratings and Characteristics

#### Grenz- und Kennwerte

Peak pulse power dissipation (10/1000 $\mu$ s waveform) Impuls-Verlustleistung (Strom-Impuls 10/1000 $\mu$ s)	$T_A = 25^\circ\text{C}$	$P_{PPM}$	400 W <sup>1)</sup>
Steady state power dissipation Verlustleistung im Dauerbetrieb	$T_A = 75^\circ\text{C}$	$P_{M(AV)}$	1 W <sup>2)</sup>
Peak forward surge current, 60 Hz half sine-wave Stoßstrom für eine 60 Hz Sinus-Halbwelle	$T_A = 25^\circ\text{C}$	$I_{FSM}$	40 A <sup>3)</sup>
Max. instantaneous forward voltage Augenblickswert der Durchlass-Spannung	$I_F = 25\text{ A}$	$V_{BR} \leq 200\text{ V}$ $V_{BR} > 200\text{ V}$	$V_F < 3.0\text{ V}$ <sup>3)</sup> $V_F < 6.5\text{ V}$ <sup>3)</sup>
Junction temperature – Sperrschichttemperatur Storage temperature – Lagerungstemperatur		$T_j$ $T_s$	-50...+175°C -50...+175°C
Thermal resistance junction to ambient air Wärmewiderstand Sperrschicht – umgebende Luft		$R_{thA}$	< 45 K/W <sup>2)</sup>
Thermal resistance junction to leads Wärmewiderstand Sperrschicht – Anschlussdraht		$R_{thL}$	< 15 K/W

1 Non-repetitive pulse see curve  $I_{pp} = f(t) / P_{pp} = f(t)$

Höchstzulässiger Spitzenwert eines einmaligen Impulses, siehe Kurve  $I_{pp} = f(t) / P_{pp} = f(t)$

2 Valid, if leads are kept at ambient temperature at a distance of 10 mm from case

Gültig, wenn die Anschlussdrähte in 10 mm Abstand von Gehäuse auf Umgebungstemperatur gehalten werden

3 Unidirectional diodes only – Nur für unidirektionale Dioden

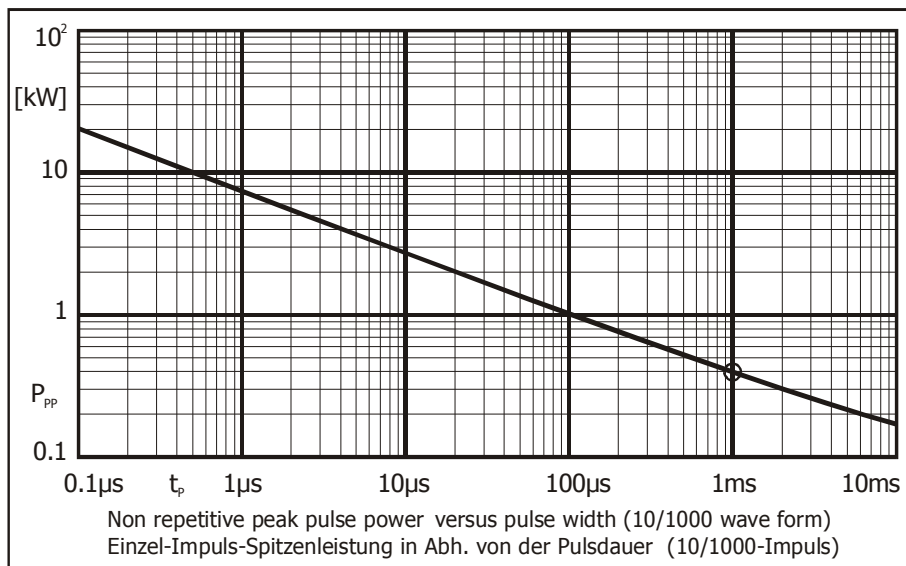
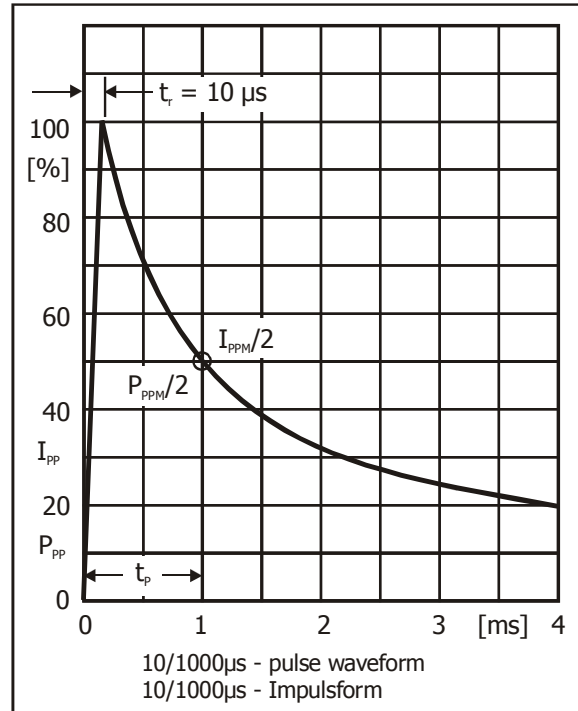
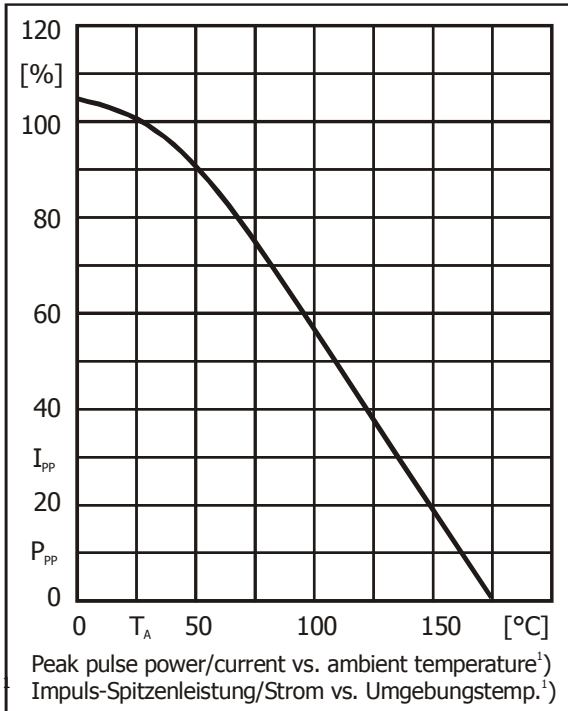
## Maximum ratings

## Grenzwerte

Type Typ	Breakdown voltage at $I_T = 1$ mA Abbruch-Spannung bei $I_T = 1$ mA ) at / bei $I_T = 10$ mA		Stand-off voltage Sperrspannung	Max. rev. current Max. Sperrstrom at / bei $V_{WM}$	Max. clamping voltage Max. Begrenzer-Spannung at / bei $I_{PPM}$ (10/1000 $\mu$ s)	
	$V_{BR}$ [V]				$V_{WM}$ [V]	$I_D$ [ $\mu$ A]
P4KE6.8	6.8 $\pm$ 10%	6.12...7.48 *)	5.5	1000	10.8	38.0
P4KE6.8A	6.8 $\pm$ 5%	6.45...7.14 *)	5.8	1000	10.5	40.0
P4KE7.5	7.5 $\pm$ 10%	6.75...8.25 *)	6.0	500	11.7	35.0
P4KE7.5A	7.5 $\pm$ 5%	7.13...7.88 *)	6.4	500	11.3	37.0
P4KE8.2	8.2 $\pm$ 10%	7.38...9.02 *)	6.6	200	12.5	33.0
P4KE8.2A	8.2 $\pm$ 5%	7.79...8.61 *)	7.0	200	12.1	34.0
P4KE9.1	9.1 $\pm$ 10%	8.19...10.0	7.3	50	13.8	30.0
P4KE9.1A	9.1 $\pm$ 5%	8.65...9.55	7.7	50	13.4	31.0
P4KE10	10 $\pm$ 10%	9.0...11.0	8.1	10	15.0	28.0
P4KE10A	10 $\pm$ 5%	9.5...10.5	8.5	10	14.5	29.0
P4KE11	11 $\pm$ 10%	9.9...12.1	8.9	5	16.2	26.0
P4KE11A	11 $\pm$ 5%	10.5...11.6	9.4	5	15.6	27.0
P4KE12	12 $\pm$ 10%	10.8...13.2	9.7	5	17.3	24.0
P4KE12A	12 $\pm$ 5%	11.4...12.6	10.2	5	16.7	25.0
P4KE13	13 $\pm$ 10%	11.7...14.3	10.5	5	19.0	22.0
P4KE13A	13 $\pm$ 5%	12.4...13.7	11.1	5	18.2	23.0
P4KE15	15 $\pm$ 10%	13.5...16.5	12.1	5	22.0	19.0
P4KE15A	15 $\pm$ 5%	14.3...15.8	12.8	5	21.2	21.0
P4KE16	16 $\pm$ 10%	14.4...17.6	12.9	5	23.5	17.8
P4KE16A	16 $\pm$ 5%	15.2...16.8	13.6	5	22.5	18.6
P4KE18	18 $\pm$ 10%	16.2...19.8	14.5	5	26.5	16.0
P4KE18A	18 $\pm$ 5%	17.1...18.9	15.3	5	25.2	16.5
P4KE20	20 $\pm$ 10%	18.0...22.0	16.2	5	29.1	14.0
P4KE20A	20 $\pm$ 5%	19.0...21.0	17.1	5	27.7	15.0
P4KE22	22 $\pm$ 10%	19.8...24.2	17.8	5	31.9	13.0
P4KE22A	22 $\pm$ 5%	20.9...23.1	18.8	5	30.6	13.7
P4KE24	24 $\pm$ 10%	21.6...26.4	19.4	5	34.7	12.0
P4KE24A	24 $\pm$ 5%	22.8...25.2	20.5	5	33.2	12.6
P4KE27	27 $\pm$ 10%	24.3...29.7	21.8	5	39.1	10.7
P4KE27A	27 $\pm$ 5%	25.7...28.4	23.1	5	37.5	11.0
P4KE30	30 $\pm$ 10%	27.0...33.0	24.3	5	43.5	9.6
P4KE30A	30 $\pm$ 5%	28.5...31.5	25.6	5	41.4	10.0
P4KE33	33 $\pm$ 10%	29.7...36.3	26.8	5	47.7	8.8
P4KE33A	33 $\pm$ 5%	31.4...34.7	28.2	5	45.7	9.0
P4KE36	36 $\pm$ 10%	32.4...39.6	29.1	5	52.0	8.0
P4KE36A	36 $\pm$ 5%	34.2...37.8	30.8	5	49.9	8.4
P4KE39	39 $\pm$ 10%	35.1...42.9	31.6	5	56.4	7.4
P4KE39A	39 $\pm$ 5%	37.1...41.0	33.3	5	53.9	7.7
P4KE43	43 $\pm$ 10%	38.7...47.3	34.8	5	61.9	6.7
P4KE43A	43 $\pm$ 5%	40.9...45.2	36.8	5	59.3	7.0
P4KE47	47 $\pm$ 10%	42.3...51.7	38.1	5	67.8	6.2
P4KE47A	47 $\pm$ 5%	44.7...49.4	40.2	5	64.8	6.4
P4KE51	51 $\pm$ 10%	45.9...56.1	41.3	5	73.5	5.7
P4KE51A	51 $\pm$ 5%	48.5...53.6	43.6	5	70.1	6.0

**Maximum ratings****Grenzwerte**

Type Typ	Breakdown voltage at $I_T = 1$ mA Abbruch-Spannung bei $I_T = 1$ mA *) at / bei $I_T = 10$ mA		Stand-off voltage Sperrspannung	Max. rev. current Max. Sperrstrom at / bei $V_{WM}$	Max. clamping voltage Max. Begrenzer-Spannung at / bei $I_{PPM}$ (10/1000 $\mu$ s)	
	$V_{BR}$ [V]				$V_{WM}$ [V]	$I_D$ [ $\mu$ A]
P4KE56	56 $\pm$ 10%	50.4...61.6	45.4	5	81	5.2
P4KE56A	56 $\pm$ 5%	53.2...58.8	47.8	5	77	5.4
P4KE62	62 $\pm$ 10%	55.8...68.8	50.2	5	89	4.7
P4KE62A	62 $\pm$ 5%	58.9...65.1	53.0	5	85	5.0
P4KE68	68 $\pm$ 10%	61.2...74.8	55.1	5	98	4.2
P4KE68A	68 $\pm$ 5%	64.6...71.4	58.1	5	92	4.5
P4KE75	75 $\pm$ 10%	67.5...82.5	60.7	5	108	3.8
P4KE75A	75 $\pm$ 5%	71.3...78.8	64.1	5	103	4.0
P4KE82	82 $\pm$ 10%	73.8...90.2	66.4	5	118	3.5
P4KE82A	82 $\pm$ 5%	77.9...86.1	70.1	5	113	3.7
P4KE91	91 $\pm$ 10%	81.9...100	73.7	5	131	3.2
P4KE91A	91 $\pm$ 5%	86.5...95.5	77.8	5	125	3.3
P4KE100	100 $\pm$ 10%	90.0...110	81.0	5	144	2.9
P4KE100A	100 $\pm$ 5%	95.0...105	85.5	5	137	3.0
P4KE110	110 $\pm$ 10%	99.0...121	89.2	5	158	2.6
P4KE110A	110 $\pm$ 5%	105...116	94.0	5	152	2.7
P4KE120	120 $\pm$ 10%	108...132	97.2	5	173	2.4
P4KE120A	120 $\pm$ 5%	114...126	102	5	165	2.5
P4KE130	130 $\pm$ 10%	117...143	105	5	187	2.2
P4KE130A	130 $\pm$ 5%	124...137	111	5	179	2.3
P4KE150	150 $\pm$ 10%	135...165	121	5	215	1.9
P4KE150A	150 $\pm$ 5%	143...158	128	5	207	2.0
P4KE160	160 $\pm$ 10%	144...176	130	5	230	1.8
P4KE160A	160 $\pm$ 5%	152...168	136	5	219	1.9
P4KE170	170 $\pm$ 10%	153...187	138	5	244	1.7
P4KE170A	170 $\pm$ 5%	162...179	145	5	234	1.8
P4KE180	180 $\pm$ 10%	162...198	146	5	258	1.6
P4KE180A	180 $\pm$ 5%	171...189	154	5	246	1.7
P4KE200	200 $\pm$ 10%	180...220	162	5	287	1.4
P4KE200A	200 $\pm$ 5%	190...210	171	5	274	1.5
P4KE220	220 $\pm$ 10%	198...242	175	5	344	1.2
P4KE220A	220 $\pm$ 5%	209...231	185	5	328	1.3
P4KE250	250 $\pm$ 10%	225...275	202	5	360	1.1
P4KE250A	250 $\pm$ 5%	237...263	214	5	344	1.2
P4KE300	300 $\pm$ 10%	270...330	243	5	430	0.97
P4KE300A	300 $\pm$ 5%	285...315	256	5	414	1.0
P4KE350	350 $\pm$ 10%	315...385	284	5	504	0.83
P4KE350A	350 $\pm$ 5%	332...368	300	5	482	0.87
P4KE400	400 $\pm$ 10%	360...440	324	5	574	0.73
P4KE400A	400 $\pm$ 5%	380...420	342	5	548	0.76
P4KE440	440 $\pm$ 10%	396...484	356	5	631	0.66
P4KE440A	440 $\pm$ 5%	418...462	376	5	602	0.69



The range of type numbers is graded to the international E 24 standard. The standard tolerance of the breakdown voltage for each type is  $\pm 10\%$ . Suffix "A" denotes a tolerance of  $\pm 5\%$  for the breakdown voltage.

e.g.: P4KE51C = bidirectional diode,  $V_{BR} = 51 \text{ V} (\pm 10\%)$ ,  $V_{WM} \geq 41.3 \text{ V}$  at  $I_D = 5 \mu\text{A}$   
P4KE9.1A = unidirectional diode,  $V_{BR} = 9.1 \text{ V} (\pm 5\%)$ ,  $V_{WM} \geq 7.7 \text{ V}$  at  $I_D = 50 \mu\text{A}$

Die Abstufung der Typen innerhalb der Reihe entspricht dem internationalen E 24-Standard. Die Toleranz der Abbruchspannung jedes einzelnen Typs beträgt in der Standardausführung  $\pm 10\%$ . Suffix "A" kennzeichnet eine Toleranz der Abbruchspannung von  $\pm 5\%$ .

<sup>1</sup> Valid, if leads are kept at ambient temperature at a distance of 10 mm from case  
Gültig, wenn die Anschlussdrähte in 10 mm Abstand von Gehäuse auf Umgebungstemperatur gehalten werden