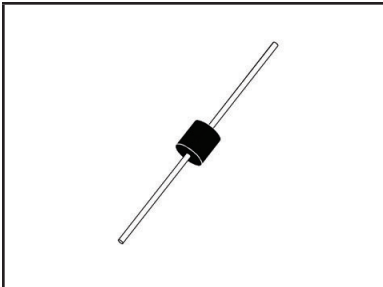


## 400 WATT TVS COMPONENT



**AXIAL LEAD PACKAGE**

### DESCRIPTION

The P4KE Series, are discrete 400 Watt, silicon transient voltage suppressors (TVS) designed for use in applications where large voltage transients can permanently damage voltage sensitive components and equipment.

The P4KE series is available in voltages ranging from 6.8V to 600V and is compatible with IEC 61000-4-5 (Surge) requirements.

### FEATURES

- UL Registered
- IEC 61000-4-2 (ESD): Level 4: Air  $\pm 30\text{kV}$ , Contact  $\pm 30\text{kV}$
- IEC 61000-4-4 (EFT): 40A 5/50ns
- IEC 61000-4-5 (Surge)
- 400 Watts Peak Pulse Power per Line ( $t_p = 10/1000\mu\text{s}$ )
- Glass Passivated Chip
- Very Fast Response Time
- Excellent Clamping Capability
- Whisker Test Per JEDEC JESD201 - Table 4A and 4C
- Low Incremental Surge Resistance
- Low Leakage Current:  $< 1\mu\text{A}$  Typical (Min.  $V_{BR} > 12\text{V}$ )
- Unidirectional and Bidirectional Configurations
- RoHS Complaint (Exemption #7)

### APPLICATIONS

- DC & AC Applications
- Remote Transmission Lines
- Industrial Wiring

### MECHANICAL CHARACTERISTICS

- Molded Case
- Approximate Weight: 0.38 grams
- Lead-Free Pure-Tin Plating (Annealed)
- Solder Reflow Temperature:  
Pure-Tin - Sn, 100: 260-270°C
- Flammability Rating UL 94V-0

### CIRCUIT DIAGRAMS



**UNIDIRECTIONAL**



**BIDIRECTIONAL**

**TYPICAL DEVICE CHARACTERISTICS**
**MAXIMUM RATINGS @ 25°C Unless Otherwise Specified**

PARAMETER	SYMBOL	VALUE	UNITS
Operating Temperature	$T_A$	-55 to 170	°C
Storage Temperature	$T_{STG}$	-55 to 175	°C
Peak Pulse Power (tp =10/1000µs) - See Figure 1 and Note 1 and 4	$P_{PP}$	400	Watts
Power Dissipation on Infinite Heatsink at $T_L = 75^\circ\text{C}$	$P_D$	1.5	Watts
Peak Forward Surge Current, 8.3ms single half sinewave - Unidirectional Only (Note 3)	$I_{FSM}$	60	Amps
Maximum Instantaneous Forward Voltage at 25A - Unidirectional Only (Note 4)	$V_F$	3.5/5.0	V
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	60	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	100	°C/W

**NOTES**

1. Non-repetitive current pulse per Figure 2 and derated above  $T_A = 25^\circ\text{C}$  per Figure 3.
2. Measured on 8.3ms single half sinewave or equivalent square wave - unidirectional device only.
3.  $V_F < 3.5\text{V}$  for single die parts and  $V_F < 5.0\text{V}$  for stacked die parts .
4. The  $P_{PPM}$  of stacked die parts is 600W. Please contact factory for more information.

**ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified**

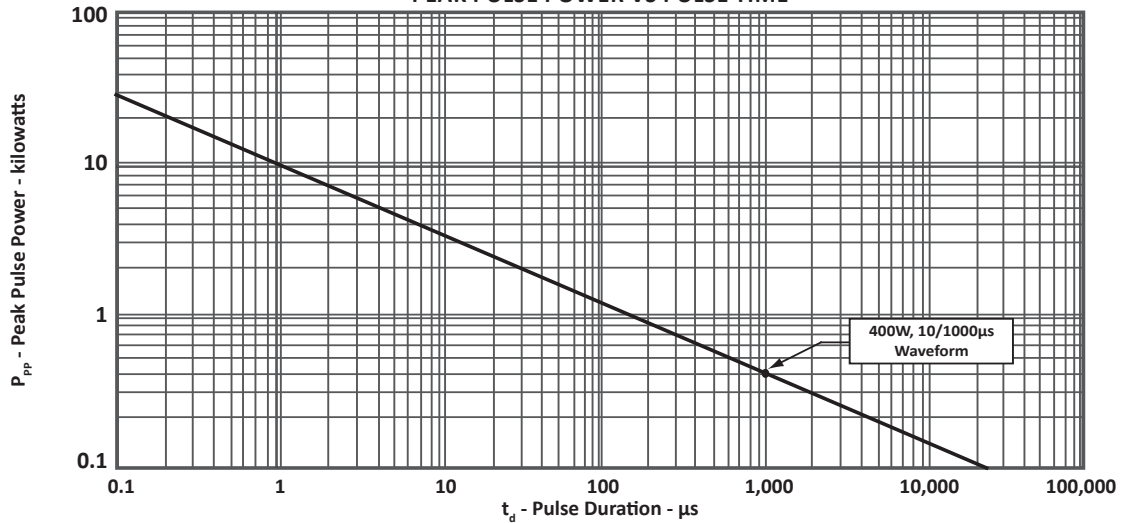
PART NUMBER (Notes 1-2)	REVERSE STAND-OFF VOLTAGE  $V_{RWM}$ VOLTS	BREAKDOWN VOLTAGE  $V_{(BR)} @ I_T$ VOLTS		TEST CURRENT  $@ I_T$ mA	MAXIMUM CLAMPING VOLTAGE (Fig. 2)  $@ I_p$ $V_C$ VOLTS	MAXIMUM REVERSE SURGE CURRENT  $@ I_{PP}$ AMPS	MAXIMUM REVERSE LEAKAGE CURRENT  $@ V_{RWM}$ $I_R$ µA
		MIN	MAX				
P4KE36A	30.80	34.20	37.80	1	49.9	8.20	1

**NOTES**

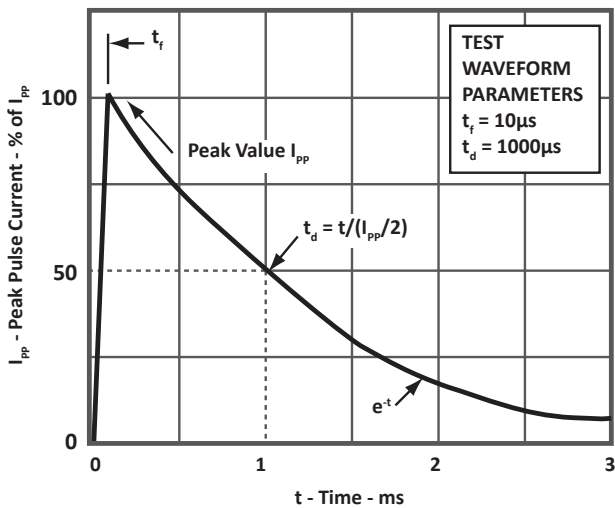
1. 5% tolerance.
2. Add suffix 'CA' after part number to specify a bidirectional device.

**TYPICAL DEVICE CHARACTERISTICS**

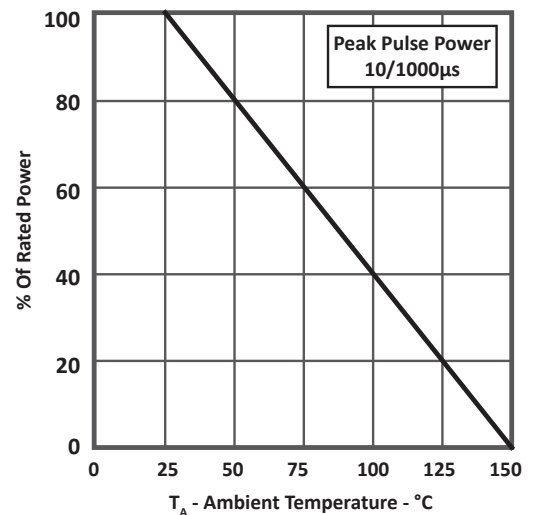
**FIGURE 1**  
**PEAK PULSE POWER VS PULSE TIME**



**FIGURE 2**  
**PULSE WAVEFORM**

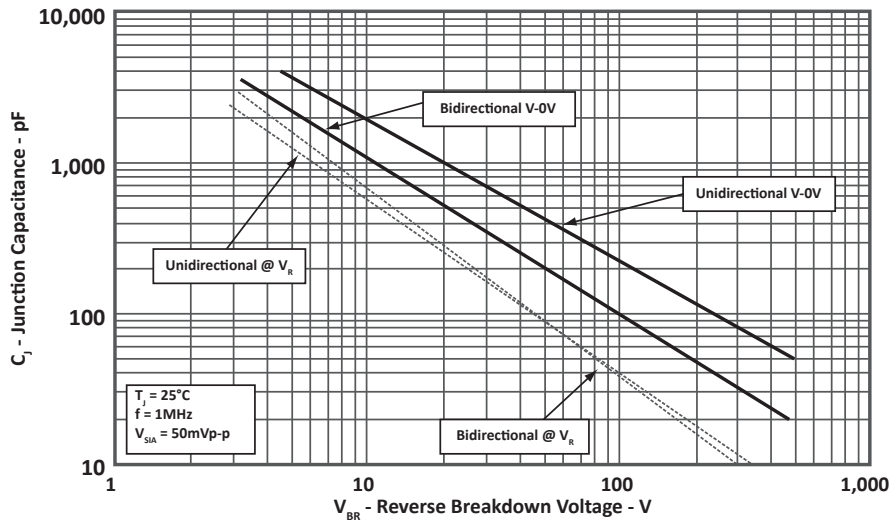


**FIGURE 3**  
**POWER DERATING CURVE**

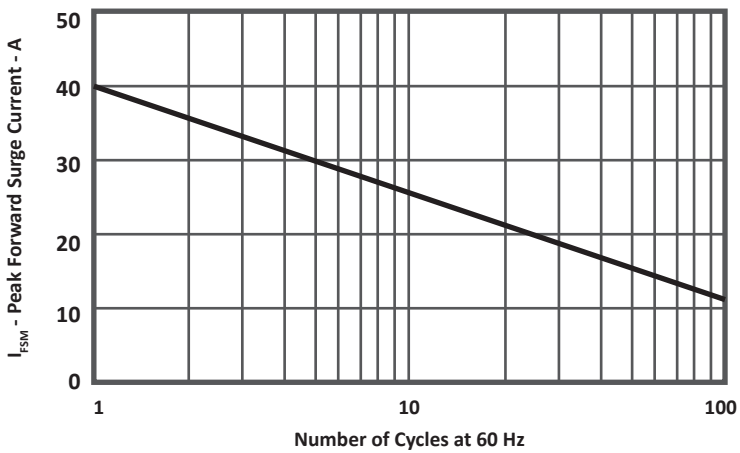


**TYPICAL DEVICE CHARACTERISTICS**

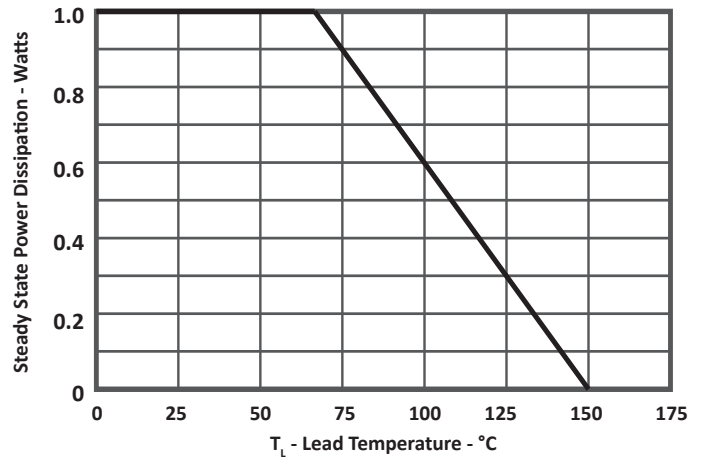
**FIGURE 4**  
**TYPICAL JUNCTION CAPACITANCE**



**FIGURE 5**  
**MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT**



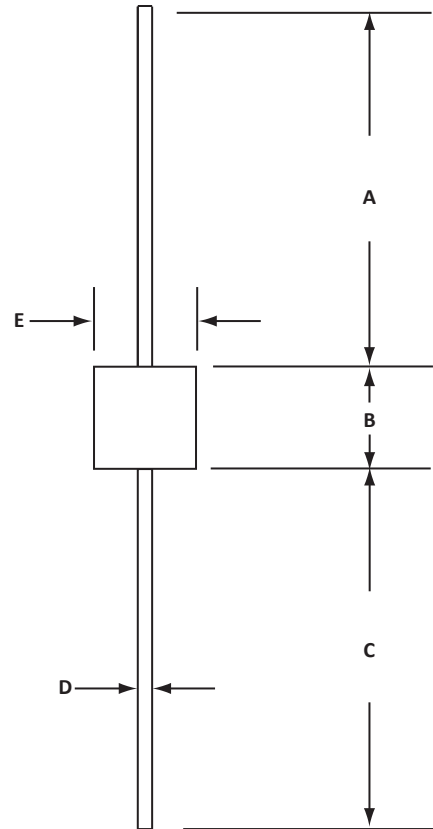
**FIGURE 6**  
**STEADY STATE POWER DERATING CURVE**



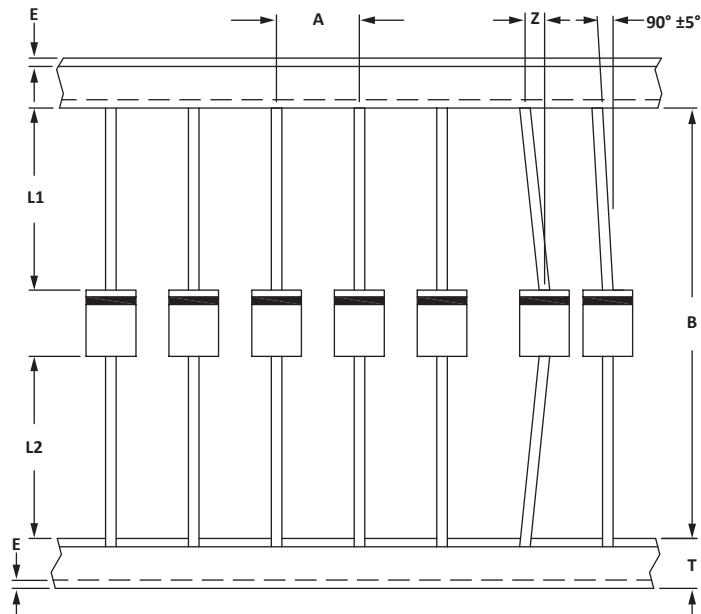
**AXIAL LEAD PACKAGE INFORMATION**

OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	25.4	-	1.00	-
B	5.85	7.63	0.230	0.300
C	25.4	-	1.00	-
D	0.71 DIA.	0.84 DIA.	0.028 DIA.	0.033 DIA.
E	2.60	3.61	0.102	0.142

**NOTES**  
1. Dimensions are exclusive of mold flash and metal burrs.



## TAPE AND REEL



## SPECIFICATIONS

REEL DIA.	A	B	E <sub>MAX</sub>	L1	L2	T	Z <sub>MAX</sub>
330mm (13")	5.0 ± 0.5	52.0 ± 0.5	3.00	22.6 ± 0.5	22.6 ± 0.5	6.0 ± 0.4	1.20

## NOTES

1. Dimensions are in millimeters.
2. Axial lead product is taped and reeled in accordance with RS-296-E.
3. Marking on Part - part number, logo and polarity band (Unidirectional Only).

## ORDERING INFORMATION

BASE PART NUMBER (xx = Voltage)	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
P4KExxxA	N/A	-T13	4,000	13"	n/a
P4KExxxCA	N/A	-T13	4,000	13"	n/a

## COMPANY INFORMATION

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### COMPANY PROFILE

In business more than 25 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

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