

250W ENCAPSULATED FLIP CHIP TVS ARRAY

DESCRIPTION

The PKFCxxC series encapsulated flip chips employ advanced silicon P/N junction technology for unmatched board-level transient voltage protection against Electrostatic Discharge (ESD) and Electrical Fast Transients (EFT). Developed specifically for high-density circuit protection, this series meets the IEC 61000-4-2 and 61000-4-4 requirements. These devices are ideally suited for handheld devices, PCMCIA and SMART cards.

This series provides ESD protection greater than 25 kilovolts with a peak pulse power dissipation of 250 Watts per line for an 8/20 μ s waveform. In addition, the PKFCxxC series features superior clamping performance, low leakage current characteristics and a response time of less than a nanosecond. Their low inductance virtually eliminates overshoot voltage due to package inductance.

FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air 15kV, Contact 8kV
- Compatible with IEC 61000-4-4 (EFT): 40A, 5/50ns
- Chip Scale Package 0.050" x 0.030"
- ESD Protection > 25 kilovolts
- Available in Voltages Ranging from 3.3V to 36V
- 250 Watts Peak Pulse Power per Line (tp = 8/20 μ s)
- Bidirectional Configuration & Monolithic Structure
- Protection for 1 Line
- RoHS Compliant
- REACH Compliant

APPLICATIONS

- Cellular Phones
- MCM Boards
- Wireless Communication Circuits
- IR LEDs
- SMART & PCMCIA Cards

MECHANICAL CHARACTERISTICS

- Encapsulated 0503 Flip Chip
- Approximate Weight: 0.73 milligrams
- Lead-Free Plating
- Solder Reflow Temperature:
 - Lead-Free - Sn/Ag/Cu, 96/3.5/0.5: 260-270°C
- Flammability Rating UL 94V-0
- 8mm Tape per EIA Standard 481

CIRCUIT DIAGRAM



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

PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power (tp = 8/20μs) - See Figure 1	P_{PP}	250	Watts
Operating Temperature	T_A	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

PART NUMBER (Note 1)	DEVICE MARKING	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ $I_p = 1A$ V_C VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ 8/20μS $V_C @ I_{PP}$	MAXIMUM LEAKAGE CURRENT (Note 2) @ V_{WM} I_D μA	TYPICAL CAPACITANCE @ 0V, 1MHz C pF
PKFC3.3C	03	3.3	4.0	7.0	12.5V @ 20A	75*	150
PKFC05C	05	5.0	6.0	11.0	14.7V @ 17A	10**	100
PKFC08C	08	8.0	8.5	13.2	19.2V @ 13A	10***	75
PKFC12C	12	12.0	13.3	19.8	29.7V @ 9A	1	50
PKFC15C	15	15.0	16.7	25.4	35.7V @ 7A	1	40
PKFC24C	24	24.0	26.7	37.2	55.0V @ 5A	1	30
PKFC36C	36	36.0	40.0	70.0	84.0V @ 3A	1	25

NOTES

- All devices are bidirectional. Electrical characteristics apply in both directions.
- *Maximum leakage current < 5μA @ 2.8V. **Maximum leakage current < 500nA @ 3.3V. ***Maximum leakage current < 200nA @ 5V.

TYPICAL DEVICE CHARACTERISTICS

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

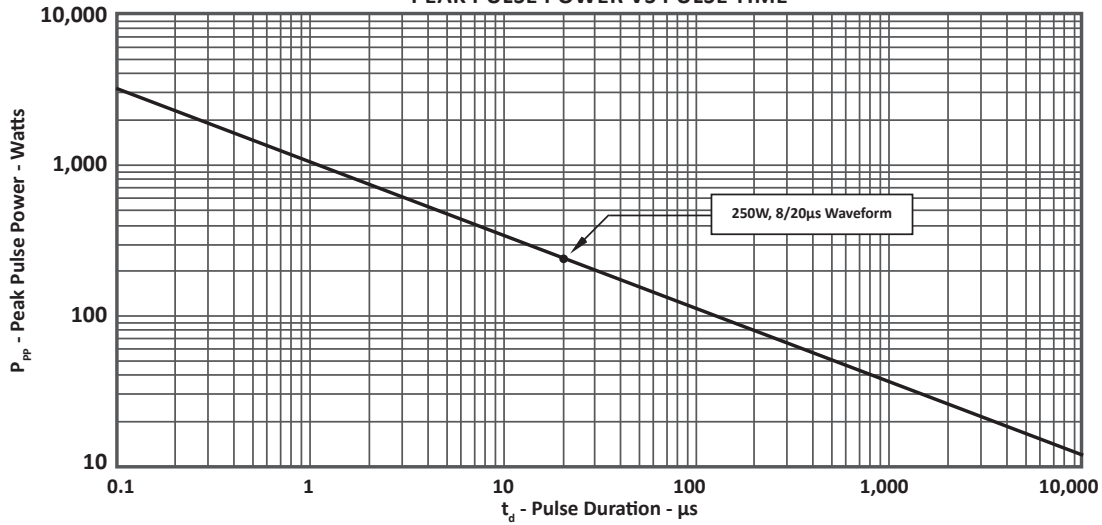


FIGURE 2
PULSE WAVE FORM

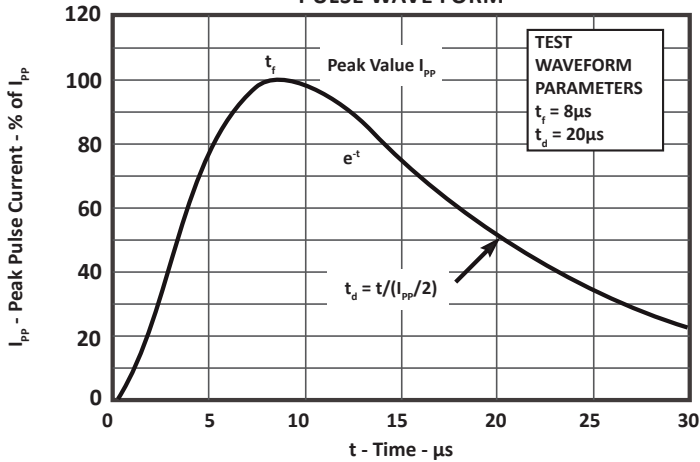
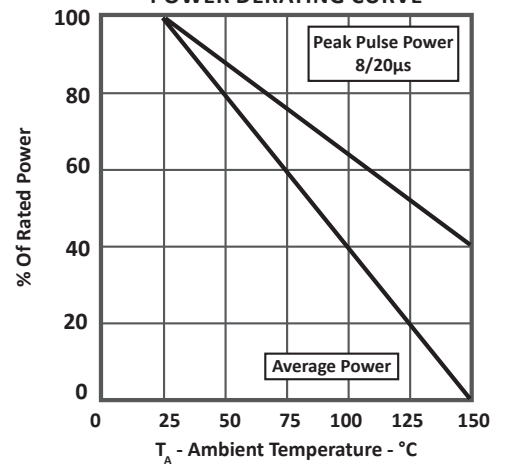


FIGURE 3
POWER DERATING CURVE



TYPICAL DEVICE CHARACTERISTICS

FIGURE 4
 OVERSHOOT & CLAMPING VOLTAGE FOR PKFC05C

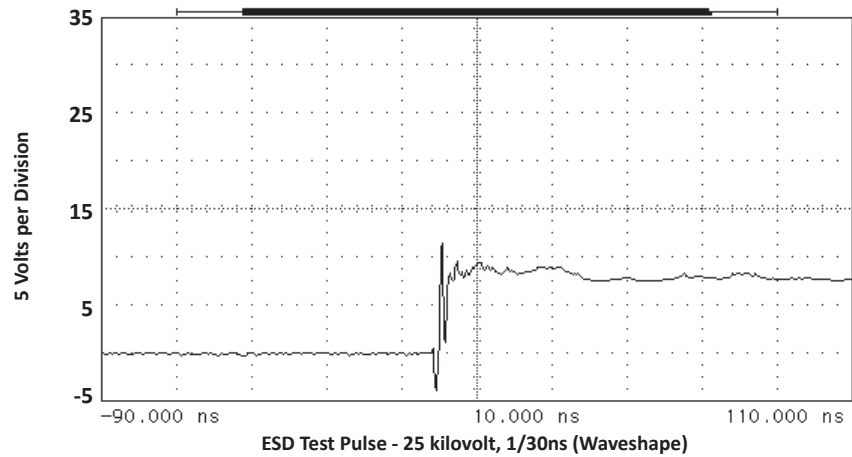
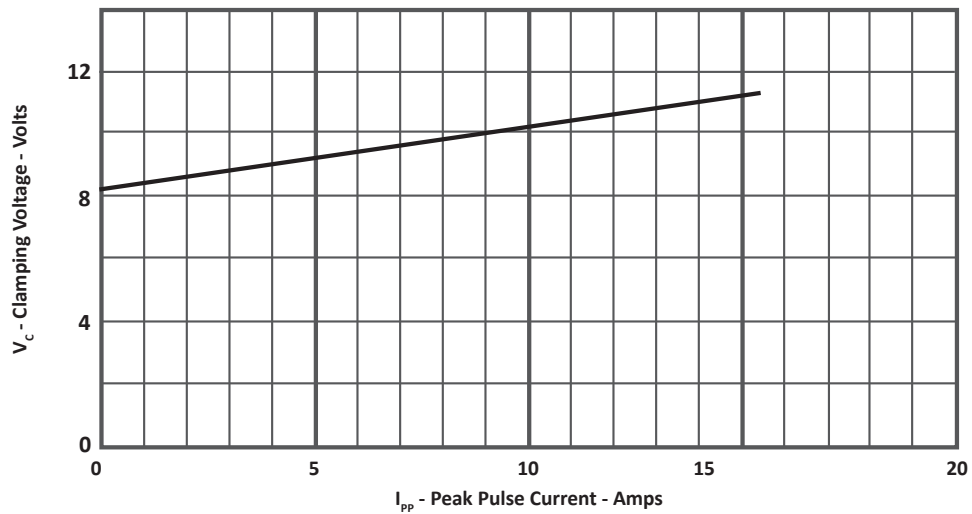


FIGURE 5
 TYPICAL CLAMPING VOLTAGE VS PEAK PULSE CURRENT PKFC05C



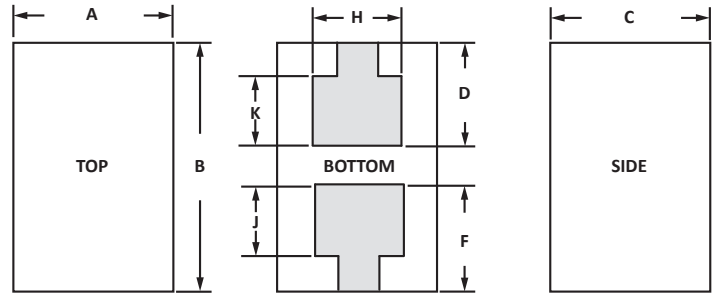
E0503 PACKAGE INFORMATION

OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.73	0.79	0.029	0.031
B	1.22	1.32	0.048	0.052
C	0.73	0.79	0.029	0.031
D	0.54	0.60	0.021	0.024
F	0.55	0.61	0.022	0.024
G	0.27	0.33	0.11	0.013
H	0.38	0.44	0.015	0.017
J	0.35	0.041	0.014	0.016
K	0.35	0.041	0.014	0.016

NOTES

- Controlling dimensions in inches.
- Maximum size 0.052" (1.321mm) by 0.036" (0.914mm)
- All dimensions ± 0.003 ".

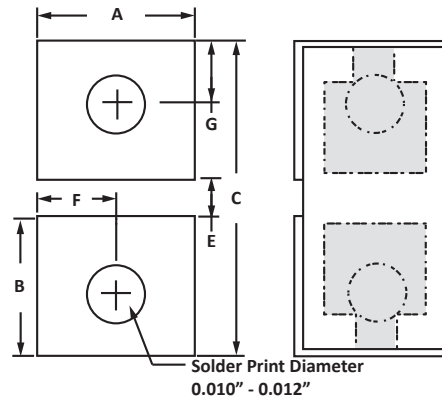


LAYOUT DIMENSIONS

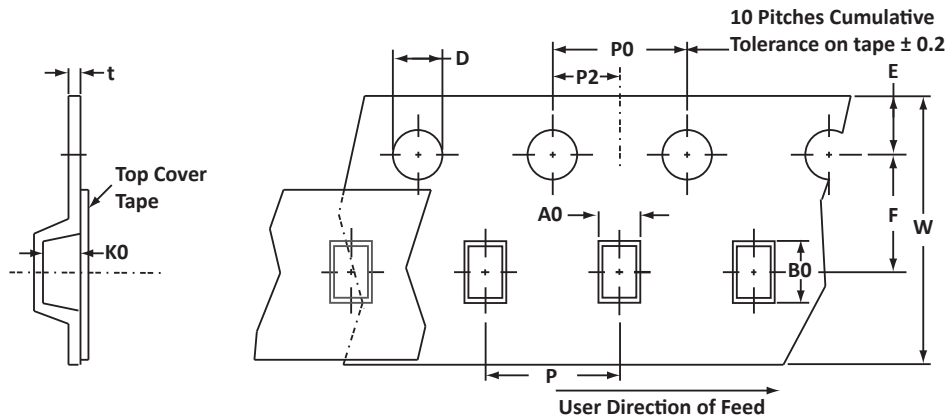
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.00	1.04	0.039	0.041
B	0.62	0.66	0.024	0.026
C	1.44	1.50	0.056	0.060
E	0.18	0.22	0.007	0.009
F	0.49	0.63	0.019	0.021
G	0.31	0.035	0.012	0.014

NOTES

- Controlling dimensions in inches.
- All dimensions ± 0.003 ".



TAPE AND REEL INFORMATION



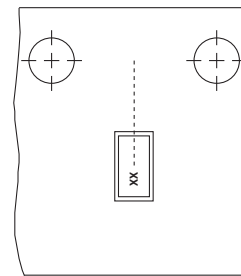
SPECIFICATIONS

REEL DIA.	TAPE WIDTH	A0	B0	K0	D	E	F	W	P0	P2	P	Tmax
178mm(7")	8mm	0.89 ± 0.05	1.47 ± 0.10	0.81 ± 0.05	1.50 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	8.00 ± 0.20	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	0.25

NOTES

1. Dimensions in millimeters.
2. Top view of tape. Solder pads are face down in tape package.
3. Orientation: preferred stencil - 0.1mm (0.004").
4. Surface mount product is taped and reeled in accordance with EIA 481.
5. 8mm plastic tape: 7" Reels - 5,000.
6. Marking on Reel - part number, date code and lot number.

TAPE & REEL ORIENTATION



Package outline, pad layout and tape specifications per document number 06040.R2 6/11.

ORDERING INFORMATION

BASE PART NUMBER (xx = Voltage)	LEADFREE SUFFIX	TAPE SUFFIX	QTY/REEL	REEL SIZE	TUBE QTY
PKFCxxC	-LF	-T75-1	5,000	7"	n/a

This device is only available in a Lead-Free configuration.

COMPANY INFORMATION

COMPANY PROFILE

ProTek Devices, based in Tempe, Arizona USA, is a manufacturer of Transient Voltage Suppression (TVS) products designed specifically for the protection of electronic systems from the effects of lightning, Electrostatic Discharge (ESD), Nuclear Electromagnetic Pulse (NEMP), inductive switching and EMI/RFI. With over 25 years of engineering and manufacturing experience, ProTek designs TVS devices that provide application specific protection solutions for all electronic equipment/systems.

ProTek Devices Analog Products Division, also manufactures analog interface, control, RF and power management products.

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PATENT INFORMATION: Patent Pending