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 8/20µs 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 = 8/20µs)
- 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

- Molded DFN-2 Package Configuration
- 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
1. All devices are bidirectional. Electrical characteristics apply in both directions.
2. *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

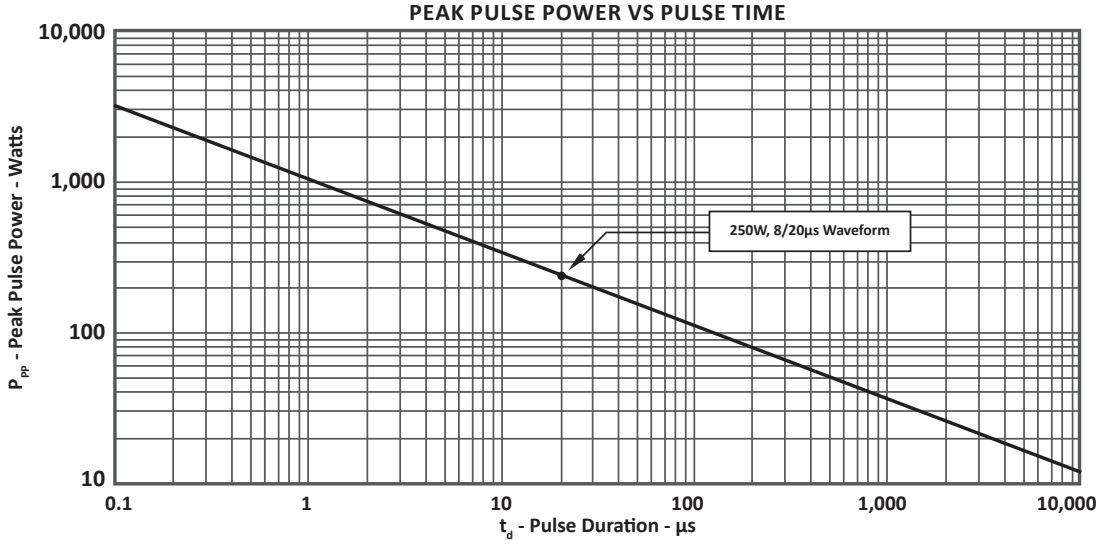


FIGURE 2
PULSE WAVE FORM

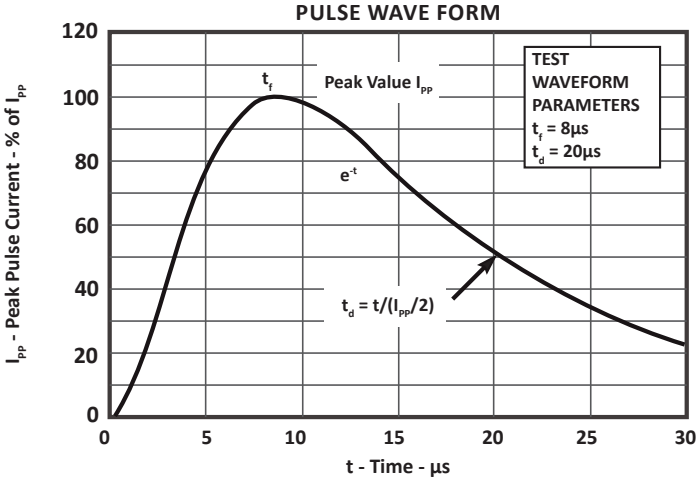
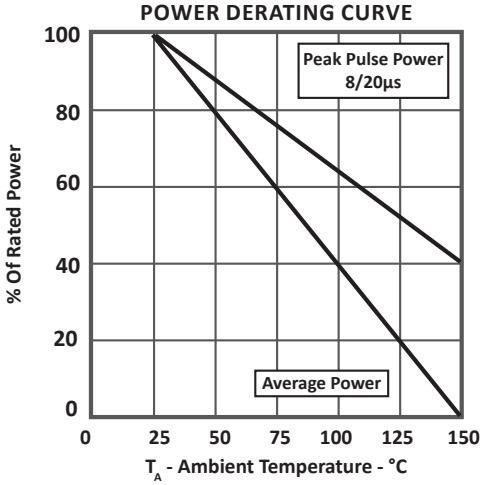
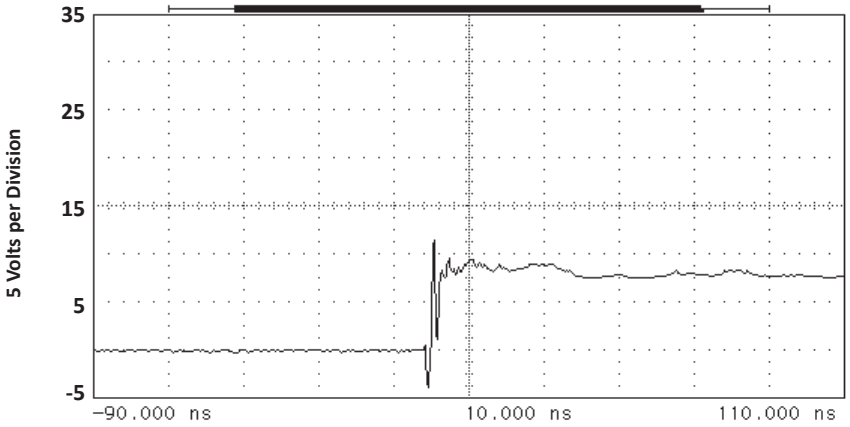


FIGURE 3
POWER DERATING CURVE



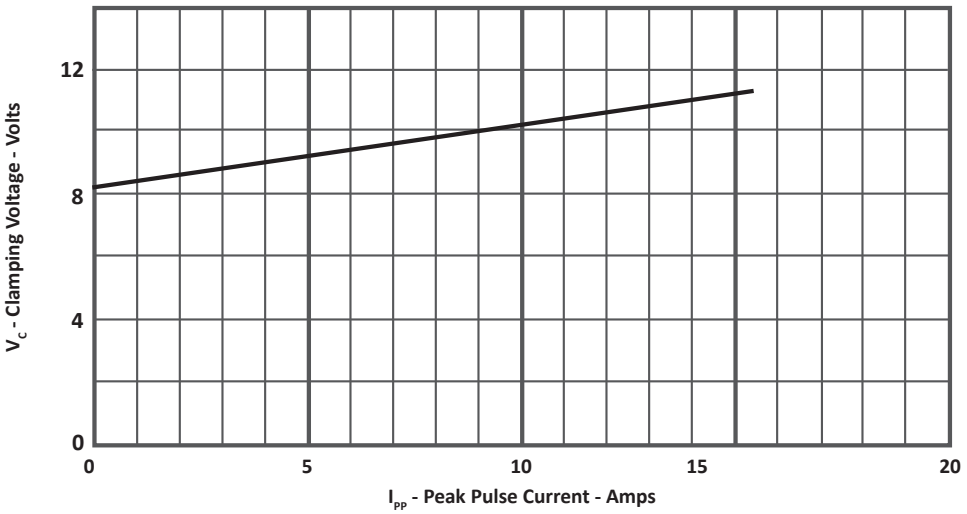
TYPICAL DEVICE CHARACTERISTICS

FIGURE 4
OVERSHOOT & CLAMPING VOLTAGE FOR PKFC05C



ESD Test Pulse - 25 kilovolt, 1/30ns (Waveshape)

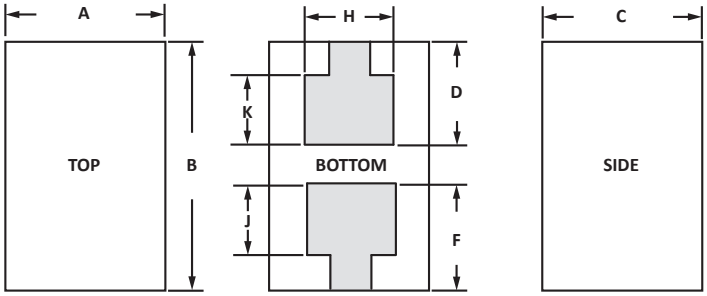
FIGURE 5
TYPICAL CLAMPING VOLTAGE VS PEAK PULSE CURRENT PKFC05C



DFN-2 PACKAGE INFORMATION

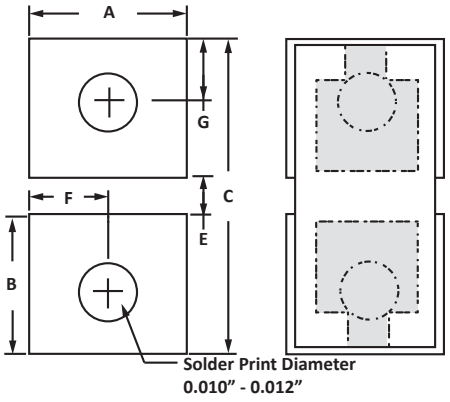
OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.73	0.79	0.029	0.031
B	1.22	1.32	0.048	0.052
C	0.73	0.79	0.029	0.031
D	0.54	0.60	0.021	0.024
F	0.55	0.61	0.022	0.024
G	0.27	0.33	0.11	0.013
H	0.38	0.44	0.015	0.017
J	0.35	0.041	0.014	0.016
K	0.35	0.041	0.014	0.016

NOTES
1. Controlling dimensions in inches.
2. Maximum size 0.052" (1.321mm) by 0.036" (0.914mm)
3. All dimensions ±0.003".

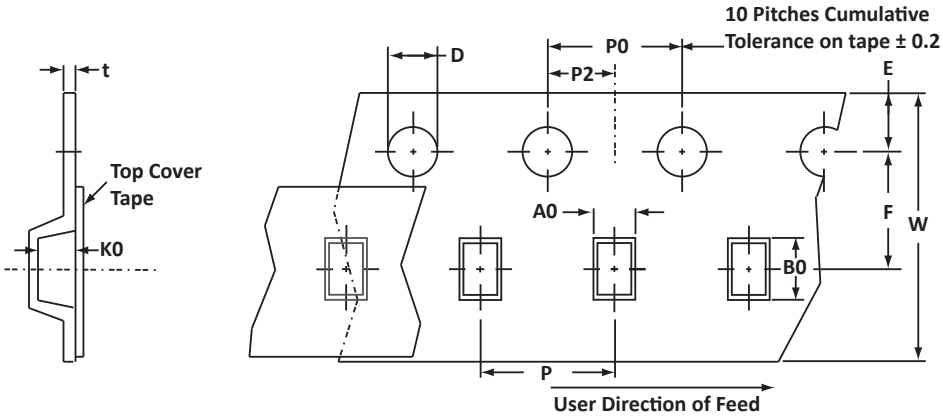


LAYOUT DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.00	1.04	0.039	0.041
B	0.62	0.66	0.024	0.026
C	1.44	1.50	0.056	0.060
E	0.18	0.22	0.007	0.009
F	0.49	0.63	0.019	0.021
G	0.31	0.035	0.012	0.014

NOTES
1. Controlling dimensions in inches.
2. 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.

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

In business more than 20 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 high performance interface and linear products. They include analog switches; multiplexers; LED drivers; LED wafer die for ESD protection; audio control ICs; RF and related high frequency products.

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