



SFC05-5

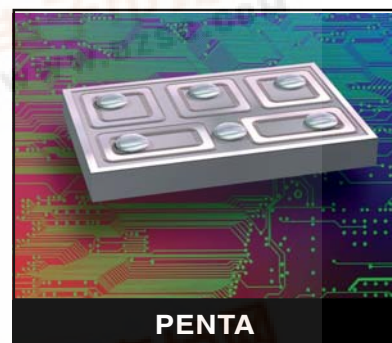
FLIP CHIP ARRAY

APPLICATIONS

- ✓ Cellular Phones
- ✓ Personal Digital Assistant (PDA)
- ✓ Ground Positioning System (GPS)
- ✓ SMART & PCMCIA Cards

IEC COMPATIBILITY (EN61000-4)

- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns
- ✓ 61000-4-5 (Surge): 24A, 8/20µs - Level 2(Line-Gnd) & Level 3(Line-Line)



PENTA

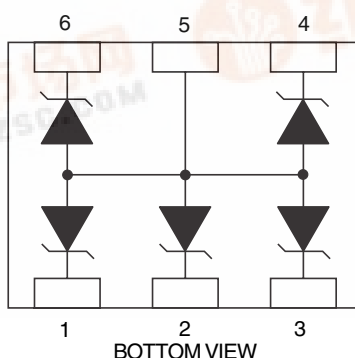
FEATURES

- ✓ ESD Protection > 25 kilovolts
- ✓ 250 Watts Peak Pulse Power per Line ($t_p = 8/20\mu s$)
- ✓ Protects up to Five (5) Unidirectional and Four (4) Bidirectional Lines
- ✓ RoHS Compliant

MECHANICAL CHARACTERISTICS

- ✓ Penta Flip Chip Package
- ✓ Weight 0.73 milligrams (Approximate)
- ✓ Available in Lead-Free Plating
- ✓ Solder Reflow Temperature:
Lead-Free - Sn/Ag/Cu, 96/3.5/0.5: 260-270°C
- ✓ Consult Factory for Leaded Device Availability
- ✓ Flammability Rating UL 94V-0
- ✓ 8mm Plastic & Paper Tape and Reel Per EIA Standard 481
- ✓ Top Contacts: Solder Bump 0.004" in Height (Nominal)

PIN CONFIGURATION



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DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ($t_p = 8/20\mu s$) - 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	RATED STAND-OFF VOLTAGE	MINIMUM BREAKDOWN VOLTAGE	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM LEAKAGE CURRENT	TYPICAL CAPACITANCE
	V_{WM} VOLTS	@ 1mA $V_{(BR)}$ VOLTS	@ $I_P = 5A$ V_C VOLTS	@ 8/20 μs $V_C @ I_{PP}$	@ V_{WM} I_D μA	@ 0V, 1 MHz C_i pF
SFC05-5	5.0	6.0	9.5	11.0V @ 24A	10	150

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

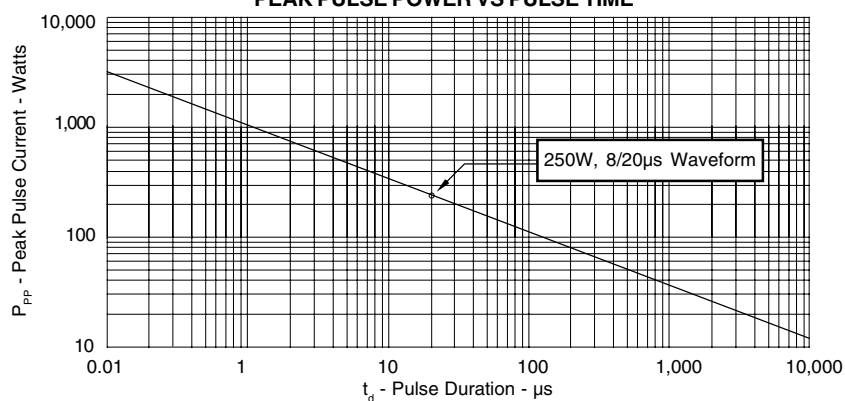
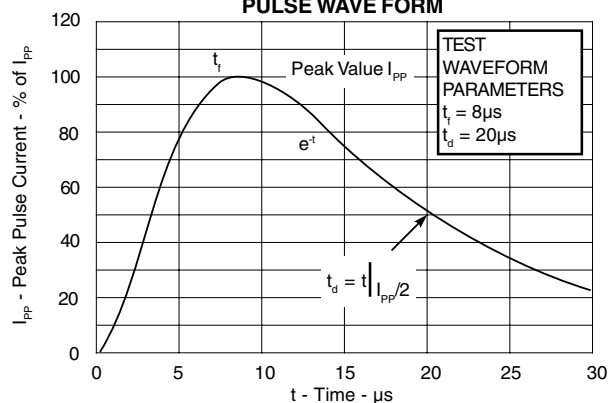
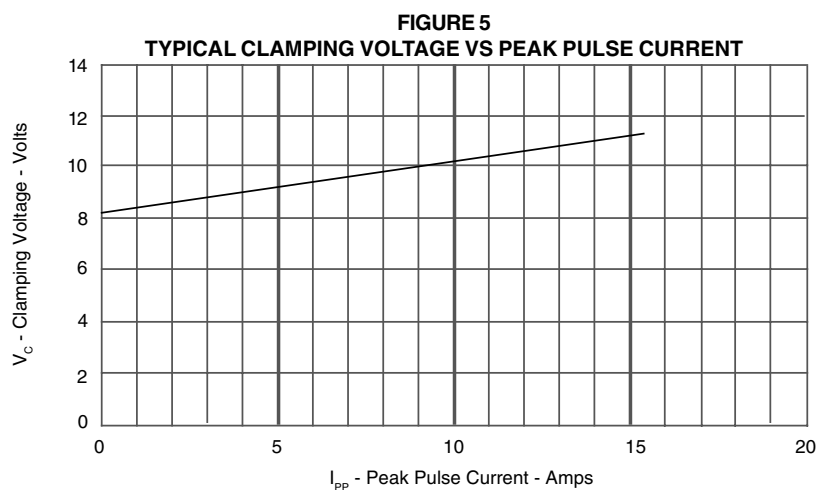
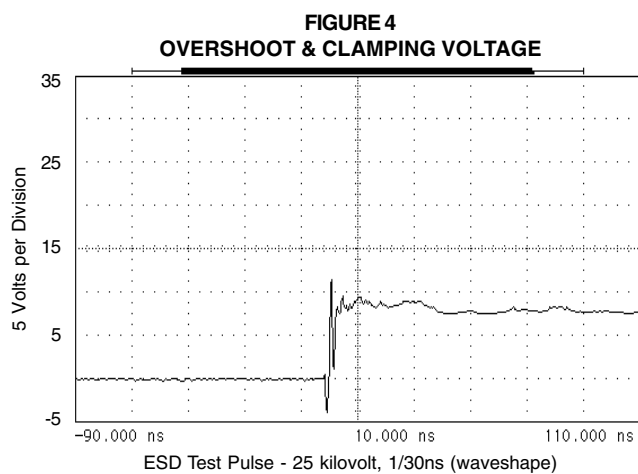
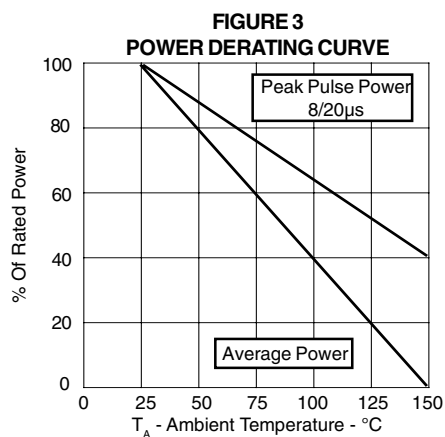


FIGURE 2
PULSE WAVE FORM



GRAPHS

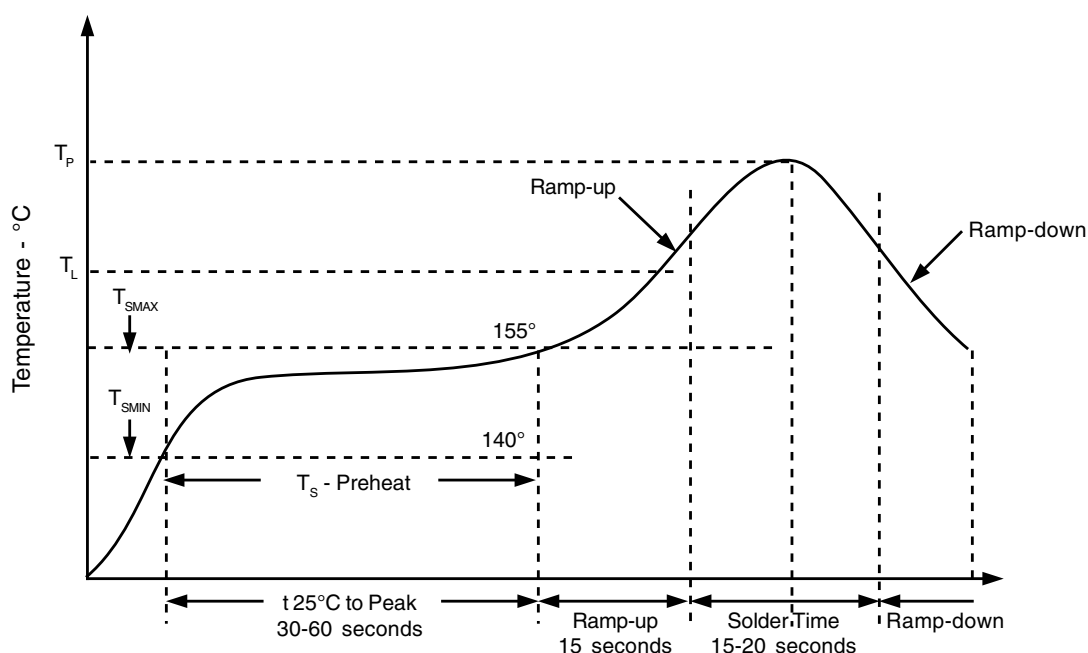
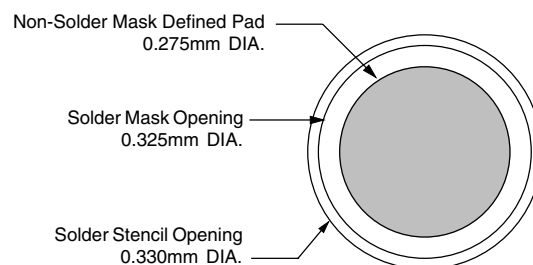


APPLICATION INFORMATION

PRINTED CIRCUIT BOARD RECOMMENDATIONS	
PARAMETER	VALUE
Pad Size on PCB	0.275mm
Pad Shape	Round
Pad Definition	Non-Solder Mask Defined Pads
Solder Mask Opening	0.325mm Round
Solder Stencil Thickness	0.150mm
Solder Stencil Aperture Opening (laser cut, 5% tapered walls)	0.330mm Round
Solder Paste Type	No Clean
Pad Protective Finish	OSP(Entek Cu Plus 106A)
Tolerance - Edge To Corner Ball	$\pm 50\mu\text{m}$
Solder Ball Side Coplanarity	$\pm 20\mu\text{m}$
Maximum Dwell Time Above Liquidous (183°C)	60 Seconds
Soldering Maximum Temperature	270°C

REQUIREMENTS
Temperature: T_p for Lead-Free (SnAgCu): 260-270°C T_p for Tin-Lead: 240-245°C Preheat time and temperature depends on solder paste and flux activation temperature, component size, weight, surface area & plating.

RECOMMENDED NON-SOLDER MASK DEFINED PAD ILLUSTRATION



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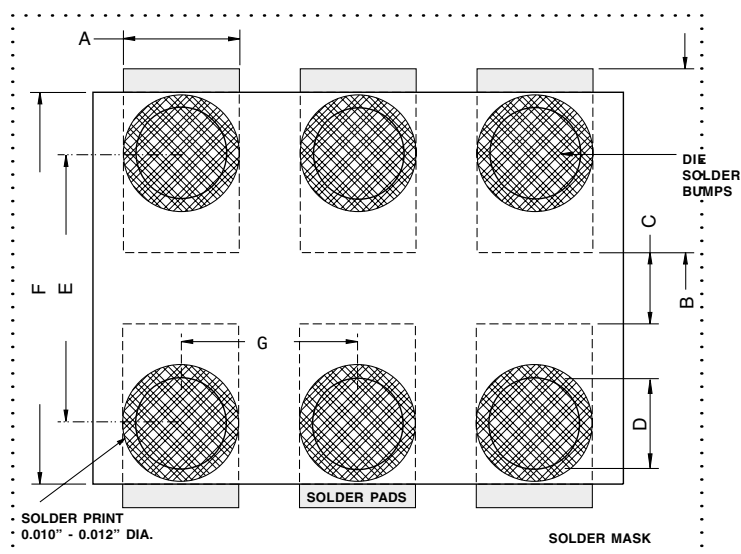
PENTA PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE		PACKAGE DIMENSIONS	
DIM	MILLIMETERS	INCHES	
A	0.510	0.020	
B	0.510	0.020	
C	0.99 ± 0.0254	0.039 ± 0.001	
E	0.15 NOM	0.066 NOM	
F	1.5 ± 0.0254	0.059 ± 0.001	
G	0.15 NOM	0.006 NOM	
H	See Note 3	See Note 3	
I	0.076 MIN	0.003 MIN	
I	0.419 NOM	0.0165 NOM	

NOTES:

- Controlling dimensions in inches.
- Decimal tolerances for mounting pad and outline: .xxx ± 0.05mm (± 0.002").
- "H" Dimensions for the SFC05-4 device are from 0.10mm Max and 0.004" Max.

MOUNTING PAD LAYOUT - Option 1



PAD DIMENSIONS

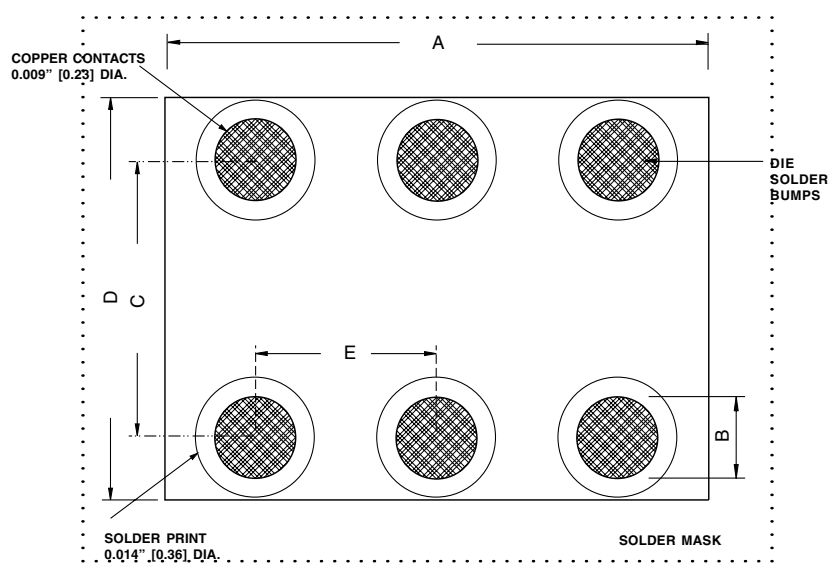
DIM	MILLIMETERS	INCHES
A	0.305	0.012
B	0.457	0.018
C	0.203	0.008
D	0.254	0.010
E	0.510	0.020
F	0.990	0.039
G	0.510	0.020

NOTE:
1. Preferred: Using 0.1mm (0.004") stencil.

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PENTA PACKAGE OUTLINE & DIMENSIONS

MOUNTING PAD LAYOUT - Option 2



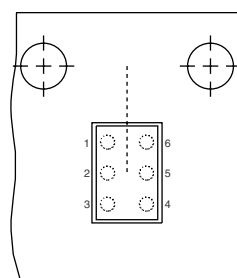
PACKAGE DIMENSIONS

DIM	MILLIMETERS	INCHES
A	1.499	0.059
B	0.152 NOM	0.006 NOM
C	0.510	0.020
D	0.990	0.039
E	0.510	0.020

NOTES:

1. Controlling dimensions in inches.
2. Decimal tolerances for mounting pad and outline: .xxx ± 0.05mm (± 0.002").
3. Preferred: Using 0.1mm (0.004") stencil.

TAPE & REEL ORIENTATION



NOTE:

1. Top view of tape. Solder bumps are face down in tape package.

TAPE & REEL ORDERING NOMENCLATURE

1. Surface mount product is taped and reeled in accordance with EIA 481.
2. 8mm Plastic Tape: 7 Inch Reels - 5,000 pieces per reel. Ordering Suffix: -T75-, i.e., SFC05-5-T75-1.
3. 8mm Paper Tape: 7 Inch Reels - 5,000 pieces per reel. Ordering Suffix: -T75-2, i.e., SFC05-5-T75-2.
4. Suffix - LF = Lead-Free, i.e., SFC05-5-LF-T75-2.

Outline & Dimensions: Rev 1 - 1/03, 06038