

FLIP CHIP ARRAY**APPLICATIONS**

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

IEC COMPATIBILITY (EN61000-4)

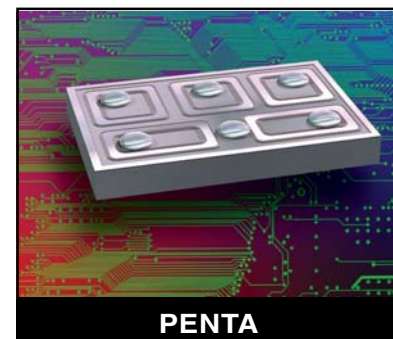
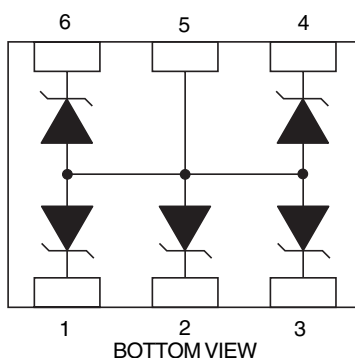
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns
- ✓ 61000-4-5 (Surge): 24A, 8/20 μ s - Level 2(Line-Gnd) & Level 3(Line-Line)

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**

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	@ $8/20\mu s$ $V_C @ I_{PP}$	@ V_{WM} I_D μA	@ 0V, 1 MHz C_j pF
SFC05-5	5.0	6.0	9.5	11.0V @ 24A	10	150

FIGURE 1
PEAK PULSE POWER VS PULSE TIME

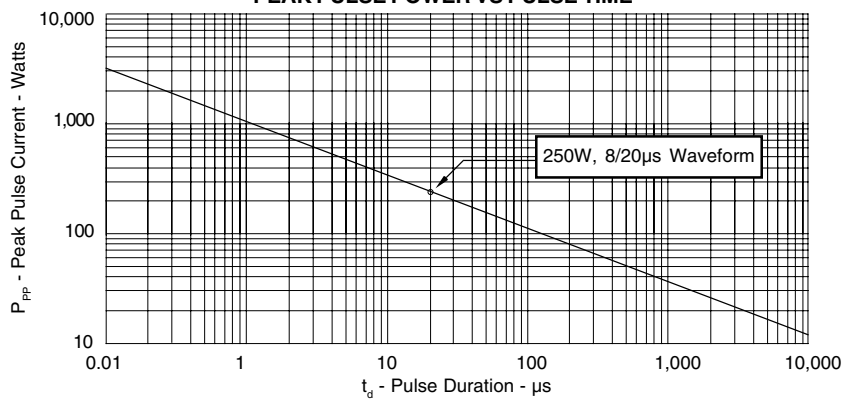
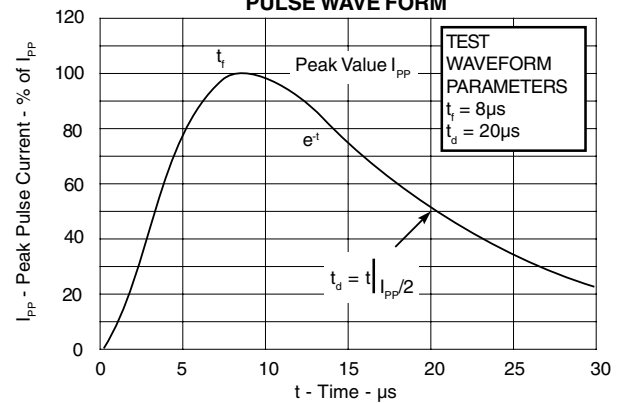
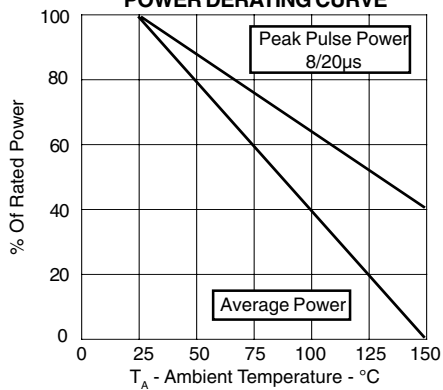


FIGURE 2
PULSE WAVE FORM

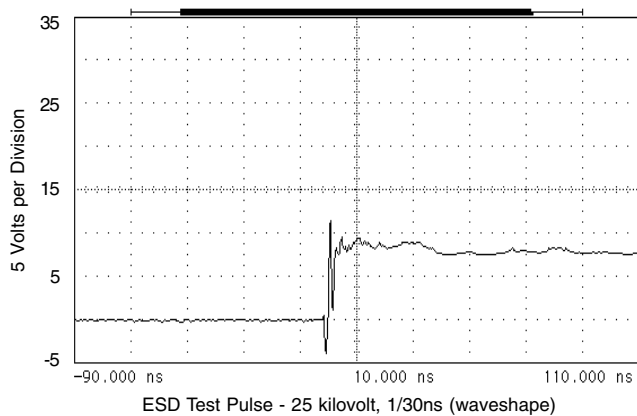


GRAPHS

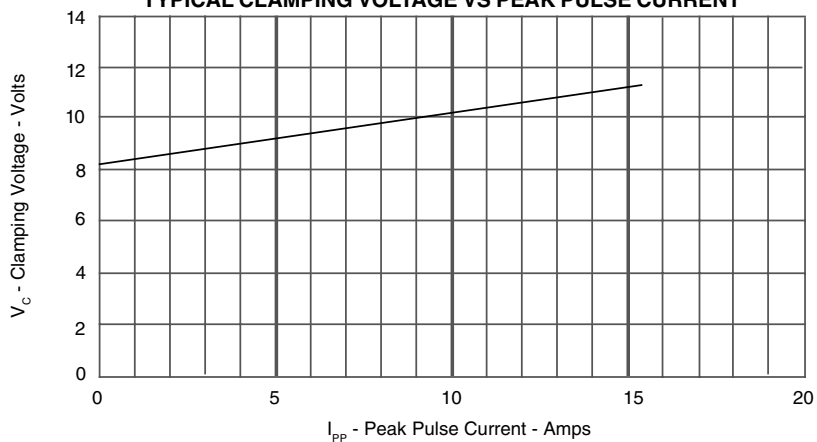
**FIGURE 3
POWER DERATING CURVE**



**FIGURE 4
OVERSHOOT & CLAMPING VOLTAGE**



**FIGURE 5
TYPICAL CLAMPING VOLTAGE VS PEAK PULSE CURRENT**



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

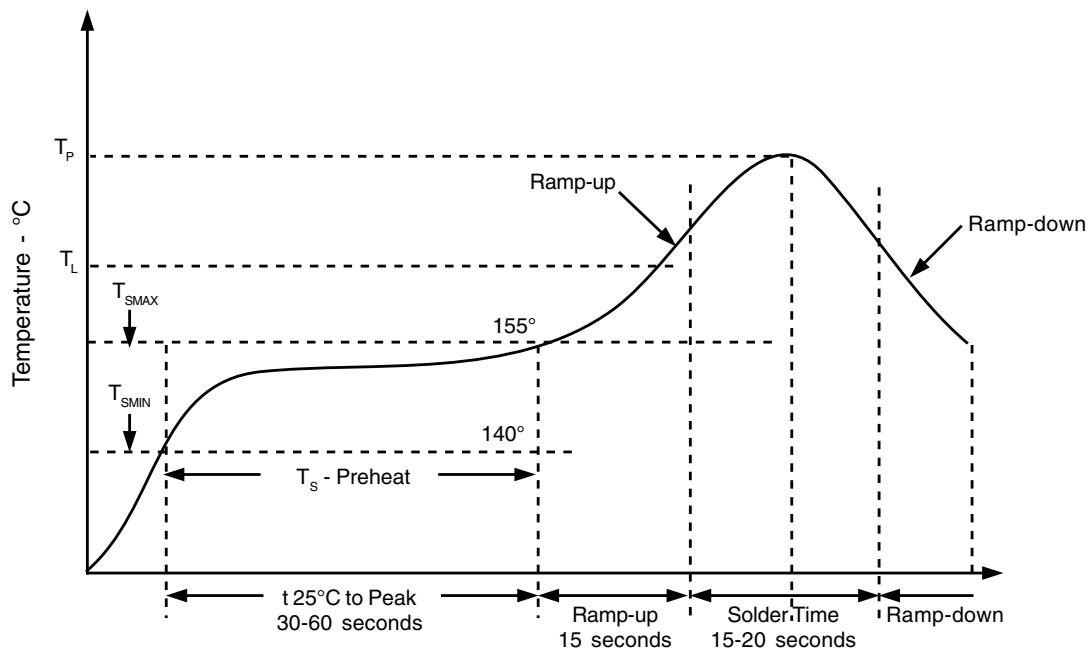
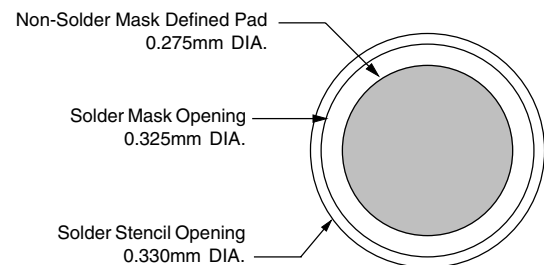
Temperature:

T_P for Lead-Free (SnAgCu): 260-270°C

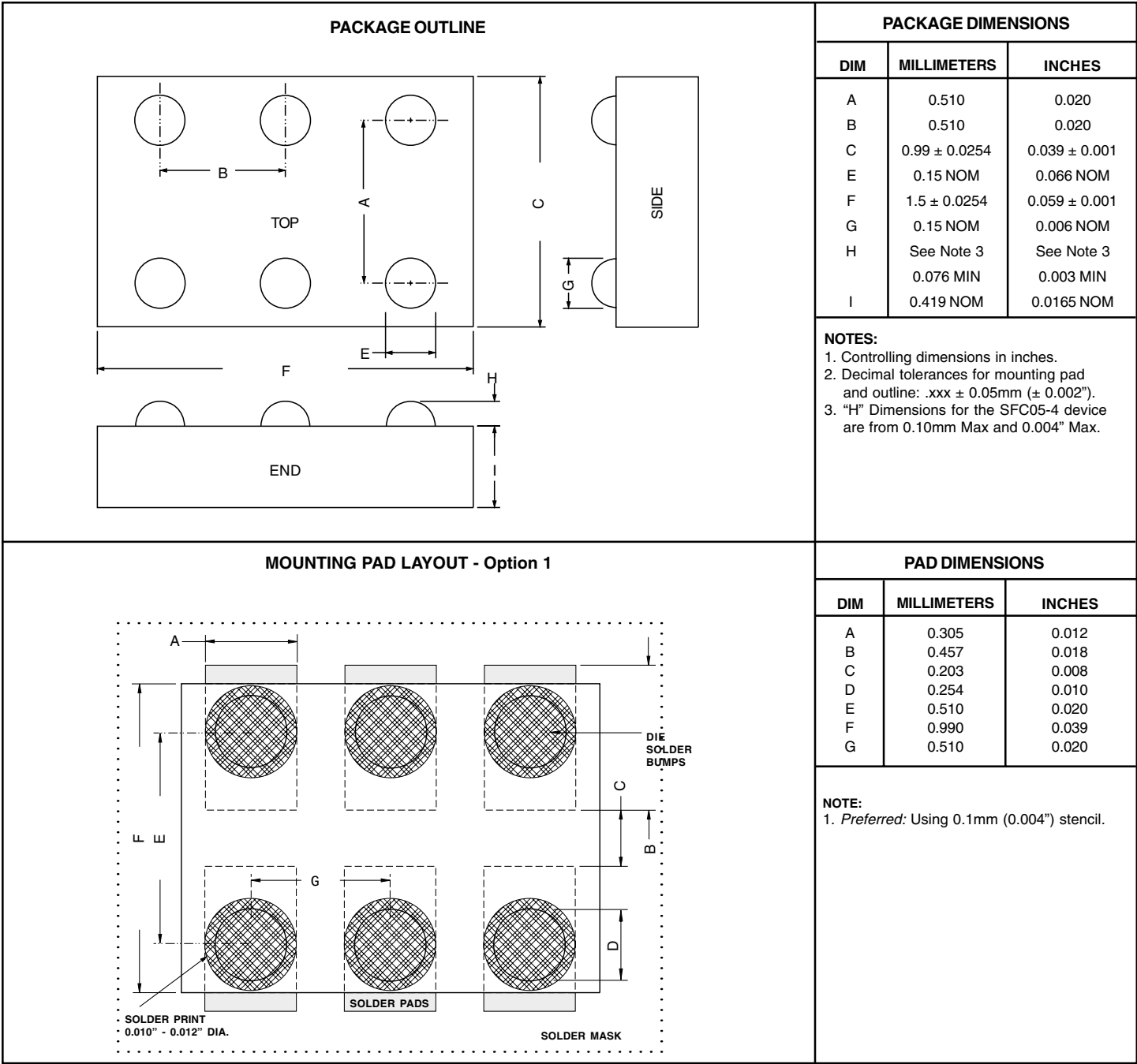
T_P for Tin-Lead: 240-245°C

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



PENTA PACKAGE OUTLINE & DIMENSIONS



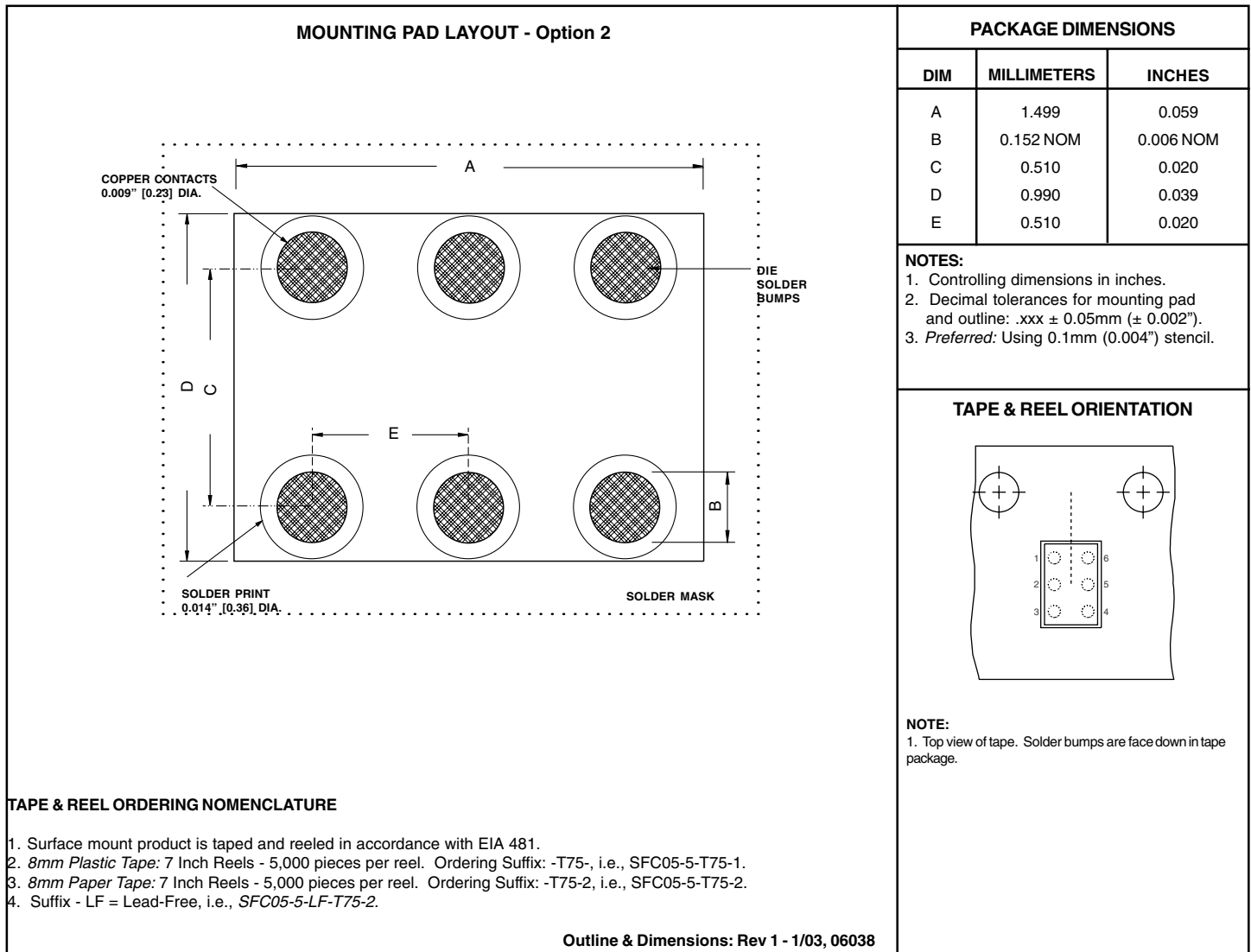
MOUNTING PAD LAYOUT - Option 1

The diagram shows a top-down view of the mounting pad layout. It features six circular solder pads arranged in two rows of three. Dimensions A, B, C, D, E, F, and G are indicated. Labels include 'SOLDER PRINT 0.010" - 0.012" DIA.', 'SOLDER MASK', 'DIE SOLDER BUMPS', and 'SOLDER PADS'.

NOTE:

- Preferred: Using 0.1mm (0.004") stencil.

PENTA PACKAGE OUTLINE & DIMENSIONS



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