

**FLIP CHIP ARRAY****APPLICATIONS**

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

**IEC COMPATIBILITY (EN61000-4)**

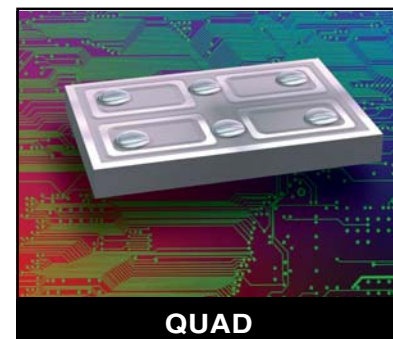
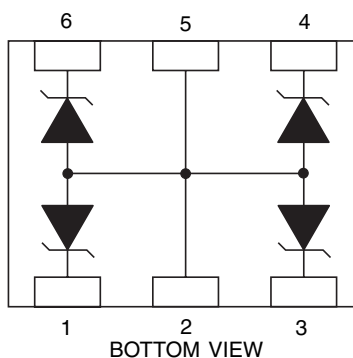
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns
- ✓ 61000-4-5 (Surge): 24A, 8/20µs - Level 2(Line-Gnd) & Level 3(Line-Line)

**FEATURES**

- ✓ ESD Protection > 25 kilovolts
- ✓ 300 Watts Peak Pulse Power per Line (tp = 8/20µs)
- ✓ Protects up to Four (4) Unidirectional Lines
- ✓ RoHS Compliant

**MECHANICAL CHARACTERISTICS**

- ✓ Quad 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

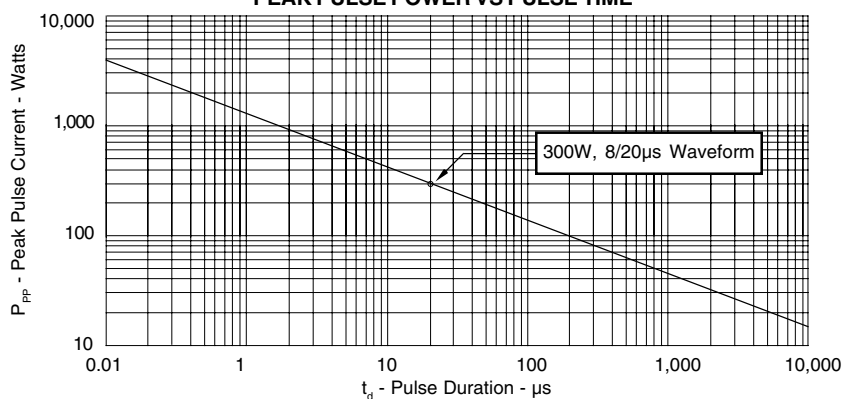
### MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

| PARAMETER                                             | SYMBOL    | VALUE      | UNITS |
|-------------------------------------------------------|-----------|------------|-------|
| Peak Pulse Power ( $t_p = 8/20\mu s$ ) - See Figure 1 | $P_{PP}$  | 300        | Watts |
| Operating Temperature                                 | $T_A$     | -55 to 150 | °C    |
| Storage Temperature                                   | $T_{STG}$ | -55 to 150 | °C    |

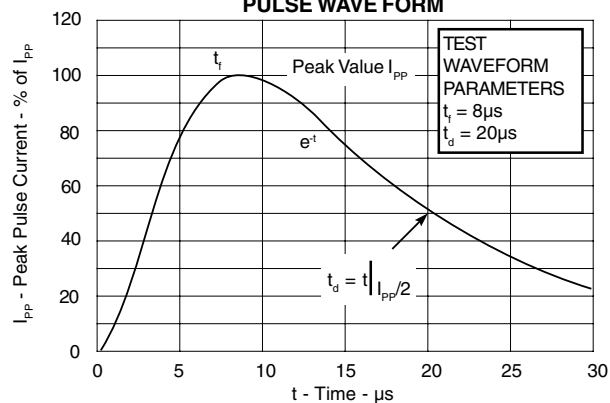
### ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

| 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        |
|-------------|-------------------------|------------------------------|---------------------------------------|---------------------------------------|--------------------------------|----------------------------|
|             | $V_{WM}$<br>VOLTS       | @ 1mA<br>$V_{(BR)}$<br>VOLTS | @ $I_p = 5A$<br>$V_C$<br>VOLTS        | @ $8/20\mu s$<br>$V_C @ I_{PP}$       | @ $V_{WM}$<br>$I_D$<br>$\mu A$ | @ 0V, 1 MHz<br>$C_j$<br>pF |
| SFC05-4     | 5.0                     | 6.0                          | 9.5                                   | 11.0V @ 24A                           | 10                             | 150                        |

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

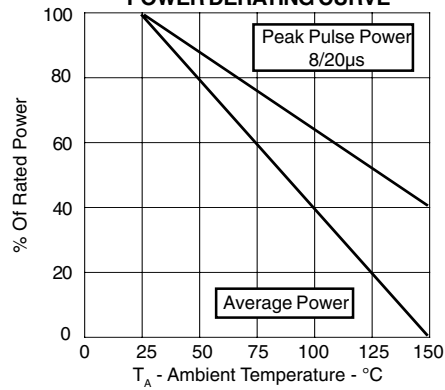


**FIGURE 2**  
**PULSE WAVE FORM**

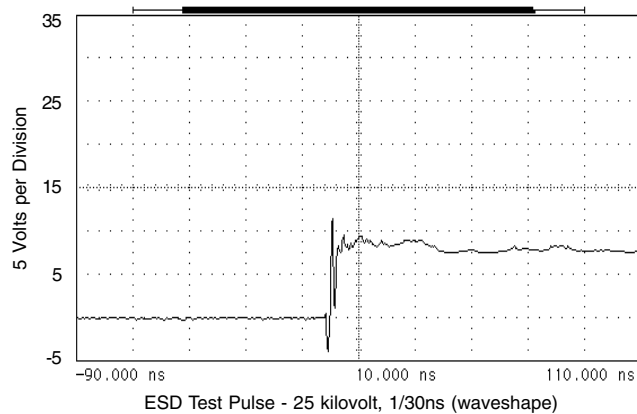


## GRAPHS

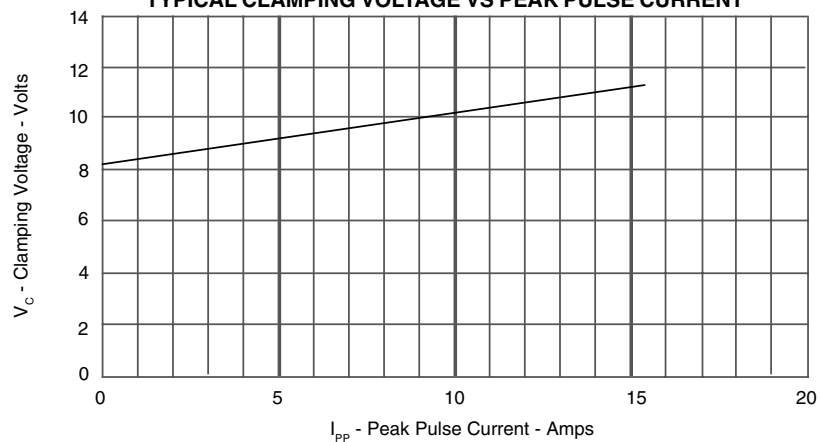
**FIGURE 3  
POWER DERATING CURVE**



**FIGURE 4  
OVERSHOOT & CLAMPING VOLTAGE**



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

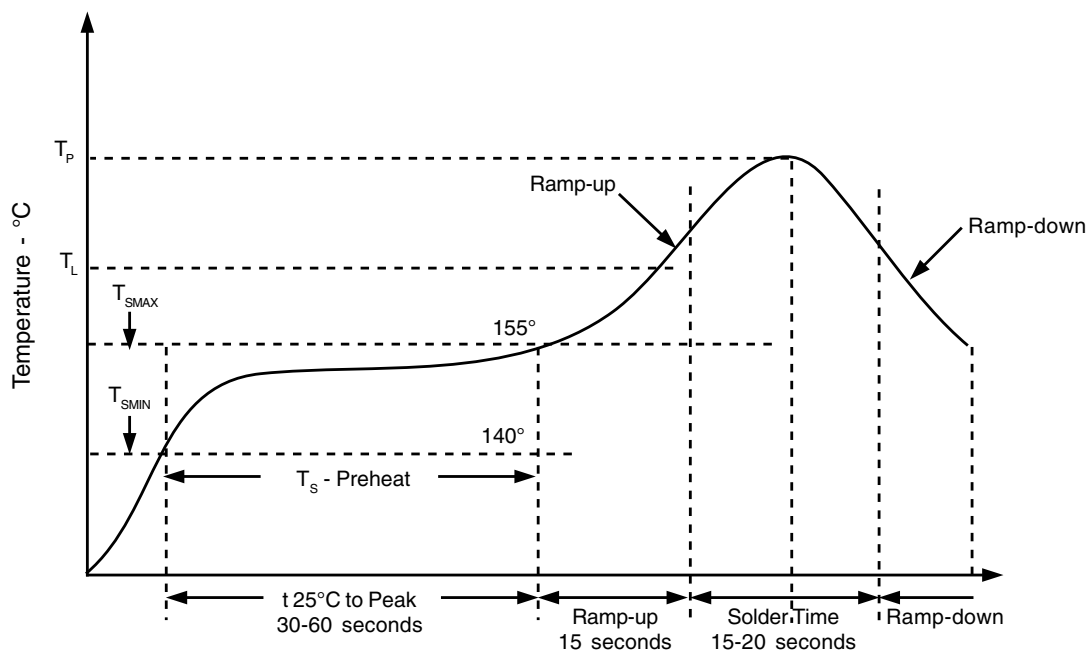
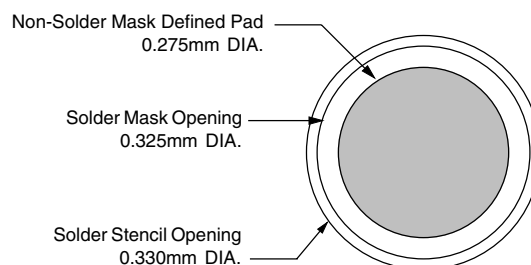


## APPLICATION INFORMATION

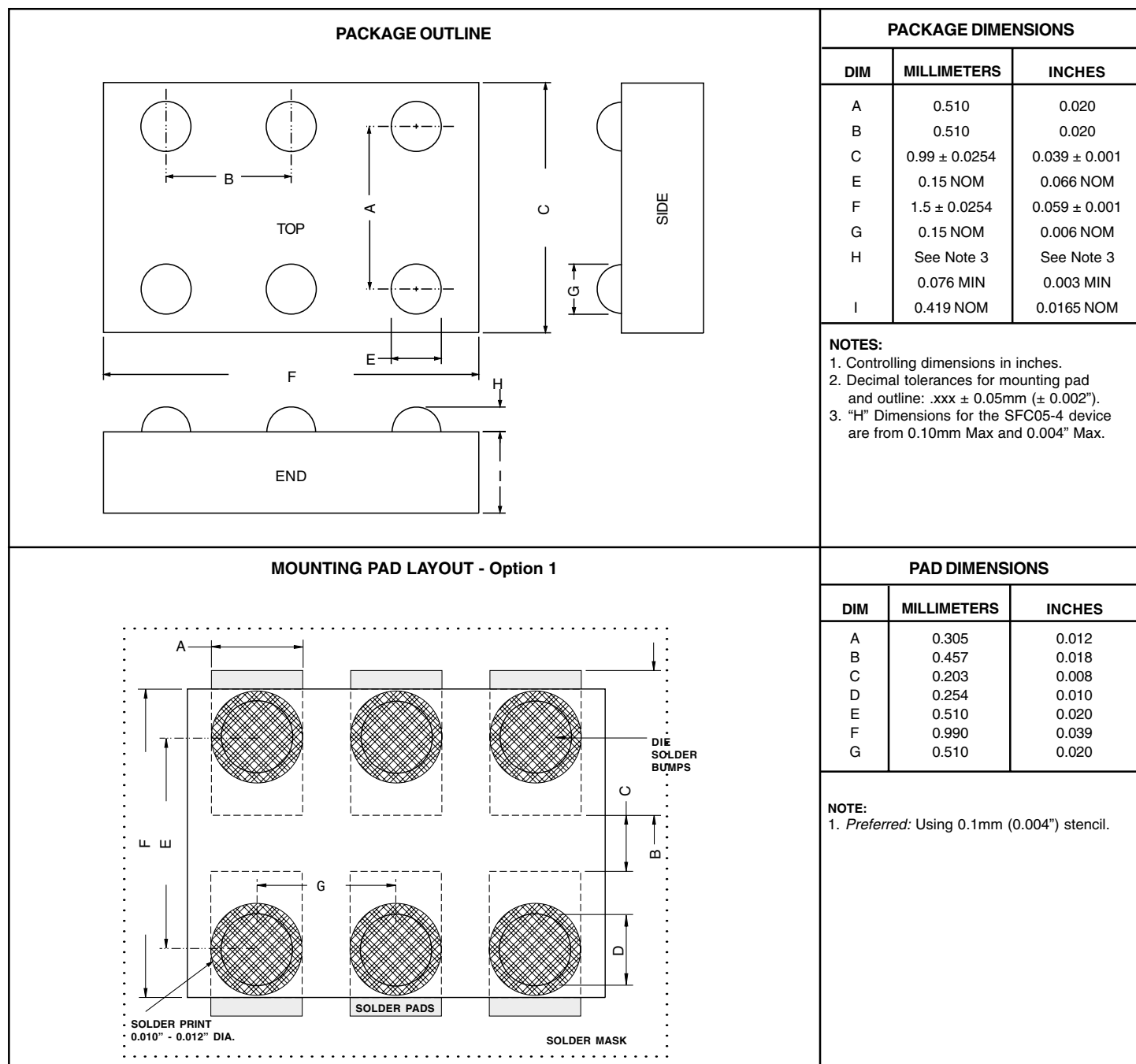
| PRINTED CIRCUIT BOARD RECOMMENDATIONS                         |                              |
|---------------------------------------------------------------|------------------------------|
| PARAMETER                                                     | VALUE                        |
| Pad Size 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                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Temperature:</p> <p><math>T_P</math> for Lead-Free (SnAgCu): 260-270°C</p> <p><math>T_P</math> for Tin-Lead: 240-245°C</p> <p>Preheat time and temperature depends on solder paste and flux activation temperature, component size, weight, surface area &amp; plating.</p> |

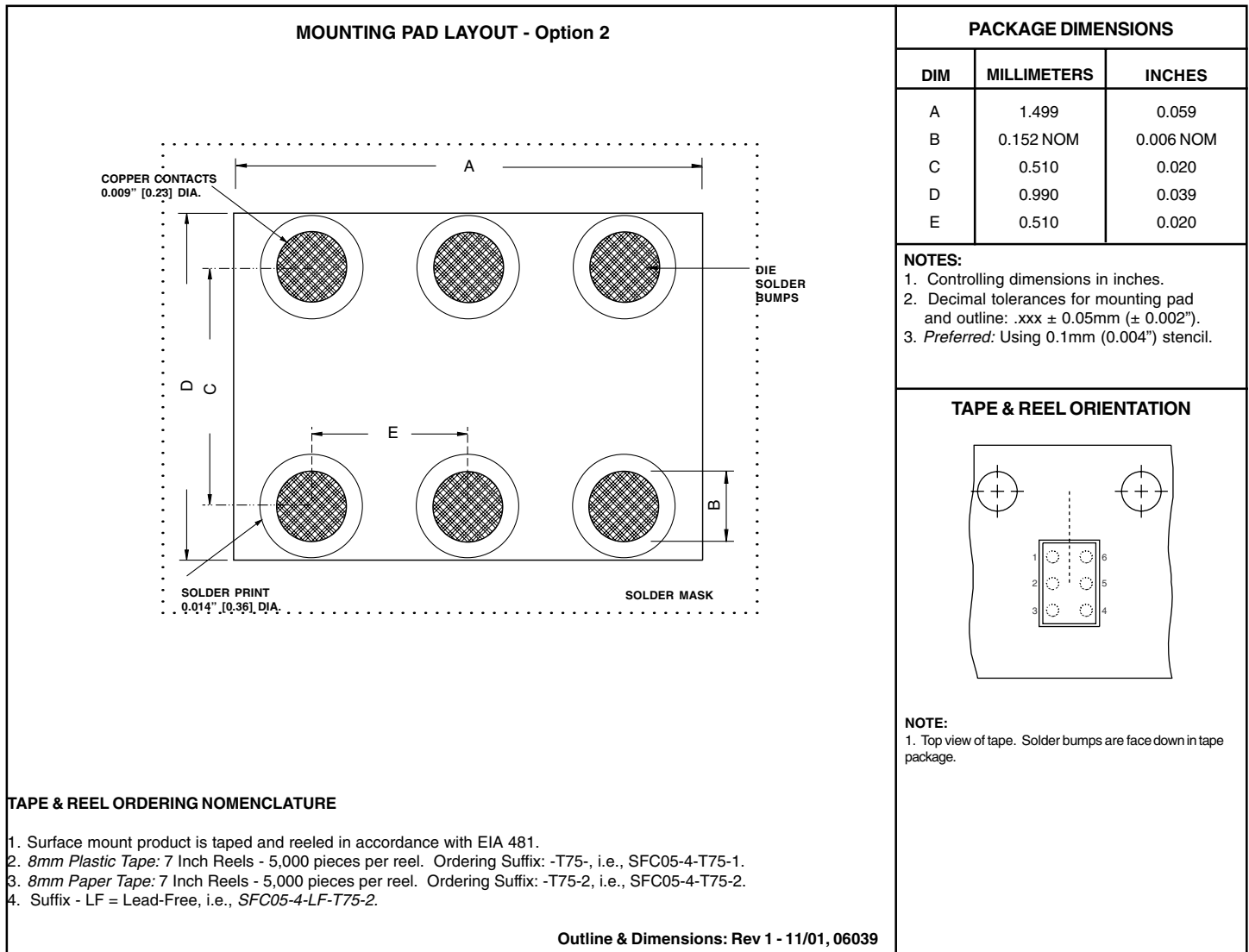
### RECOMMENDED NON-SOLDER MASK DEFINED PAD ILLUSTRATION



## QUAD PACKAGE OUTLINE & DIMENSIONS



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