

UNBUMPED LOW CAPACITANCE FLIP CHIP ARRAY

**APPLICATIONS**

- ✓ Cellular Phones
- ✓ Personal Digital Assistant (PDA)
- ✓ Notebook Computers
- ✓ SMART Cards

**IEC COMPATIBILITY (EN61000-4)**

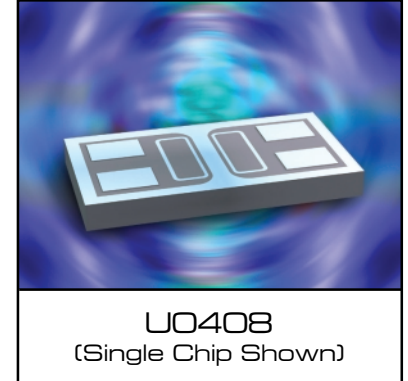
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns

**FEATURES**

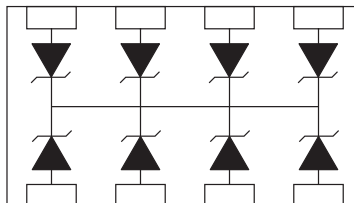
- ✓ ESD Protection > 25 kilovolts
- ✓ Available in Six Voltage Types Ranging From 3.3V to 24V
- ✓ 200 Watts Peak Pulse Power per Line ( $t_p = 8/20\mu s$ )
- ✓ Low Clamping Voltage
- ✓ Bidirectional Configuration & Monolithic Structure
- ✓ Protects 4 to 7 Lines
- ✓ **LOW CAPACITANCE**
- ✓ **LOW LEAKAGE CURRENT**

**MECHANICAL CHARACTERISTICS**

- ✓ Standard EIA Chip Size: 0408
- ✓ Weight 0.73 milligrams (Approximate)
- ✓ Flammability Rating UL 94V-0
- ✓ 8mm Plastic & Paper Tape and Reel Per EIA Standard 481
- ✓ Device Marking On Reel



**PIN CONFIGURATION**



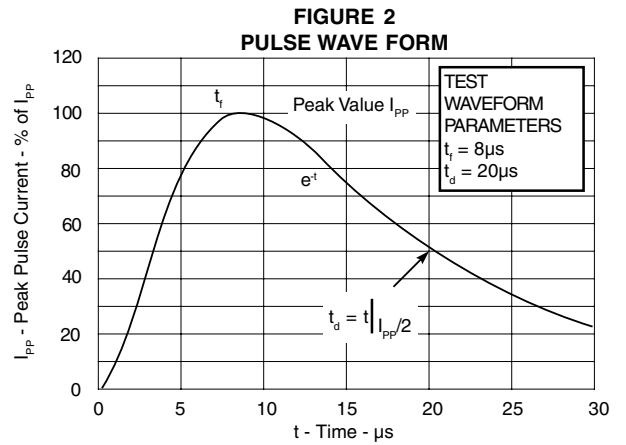
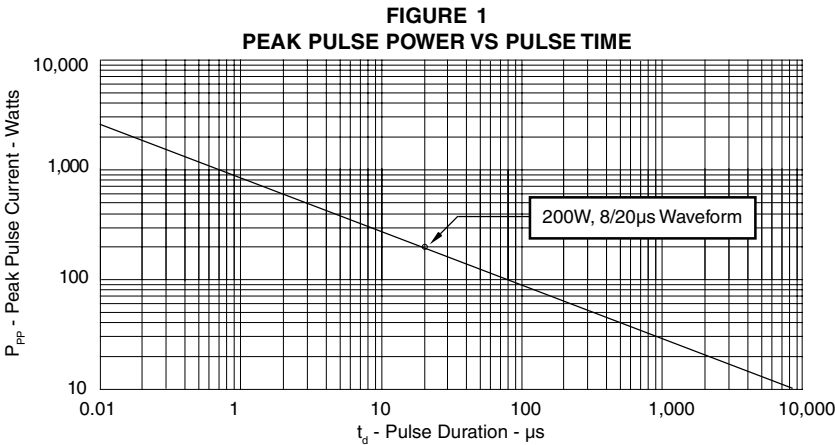
## DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ( $t_p = 8/20\mu s$ ) - See Figure 1	$P_{PP}$	200	Watts
Operating Temperature	$T_J$	-55°C to 150°C	°C
Storage Temperature	$T_{STG}$	-55°C to 150°C	°C

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified						
PART NUMBER (See Note 1)	RATED STAND-OFF VOLTAGE  $V_{WM}$ VOLTS	MINIMUM BREAKDOWN VOLTAGE  @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)  @ $I_p = 1A$ $V_C$ VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)  @ 8/20 $\mu s$ $V_C @ I_{PP}$	MAXIMUM LEAKAGE CURRENT (See Note 2)  @ $V_{WM}$ $I_D$ $\mu A$	TYPICAL CAPACITANCE
						@ 0V, 1 MHz C pF
ULC0408FC3.3C	3.3	4.0	7.0	12.5V @ 16A	75*	70
ULC0408FC05C	5.9	6.0	11.0	13V @ 15A	10**	35
ULC0408FC08C	8.0	8.5	13.2	18V @ 11A	1	32
ULC0408FC12C	12.0	13.3	19.8	26.9V @ 7.4A	1	30
ULC0408FC15C	15.0	16.7	25.4	34.5V @ 5.8A	1	25
ULC0408FC24C	24.0	26.7	37.2	50.6V @ 4A	1	20

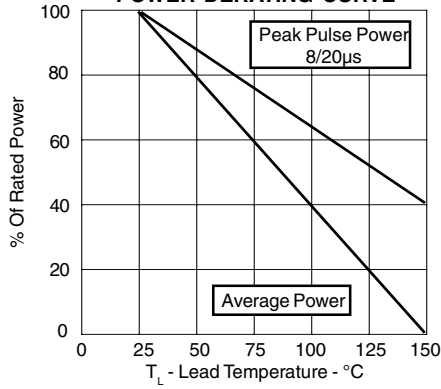
**Note 1:** All devices are bidirectional. Electrical characteristics apply in both directions.

**Note 2:** \*Maximum leakage current < 5 $\mu A$  @ 2.8V. \*\*Maximum leakage current < 500nA @ 3.3V.

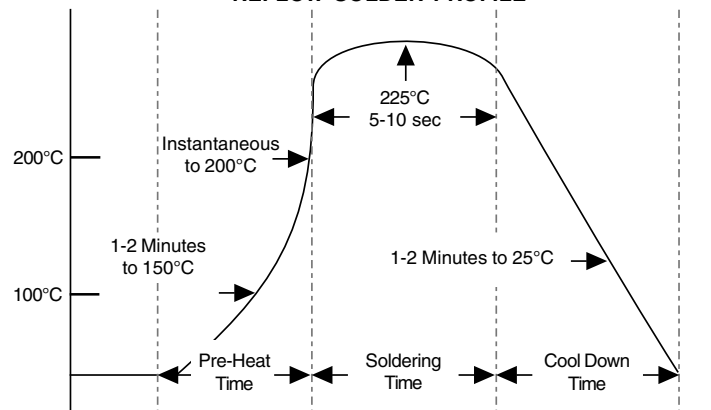


## GRAPHS

**FIGURE 3  
POWER DERATING CURVE**

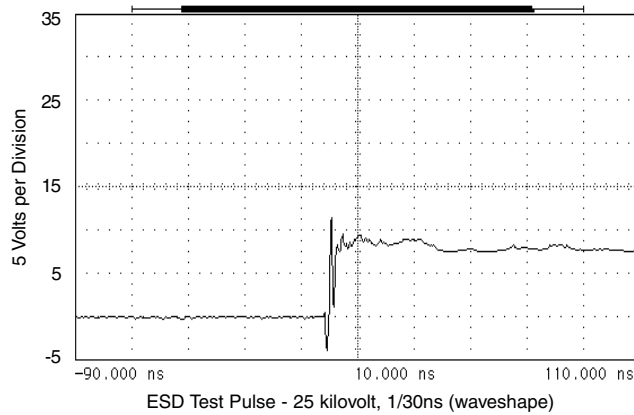


**FIGURE 4  
REFLOW SOLDER PROFILE**

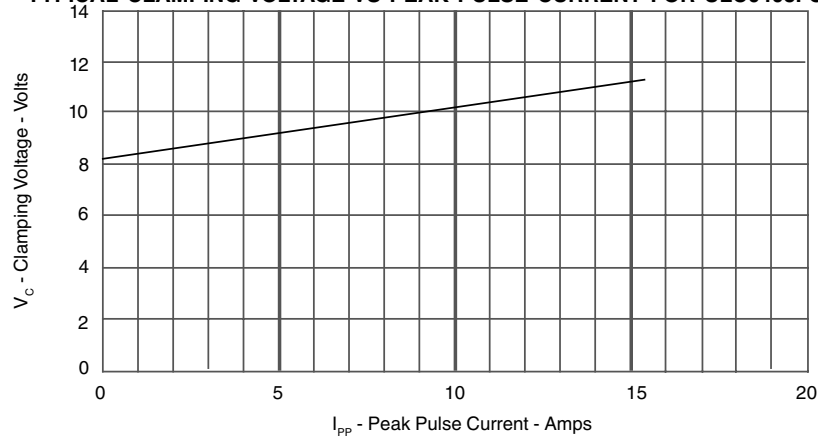


**Note:** This reflow profile does not take into account the printed circuit board (PCB) material heating time. Additional time may be required for the preheat time and cool down time upon the PCB or board material.

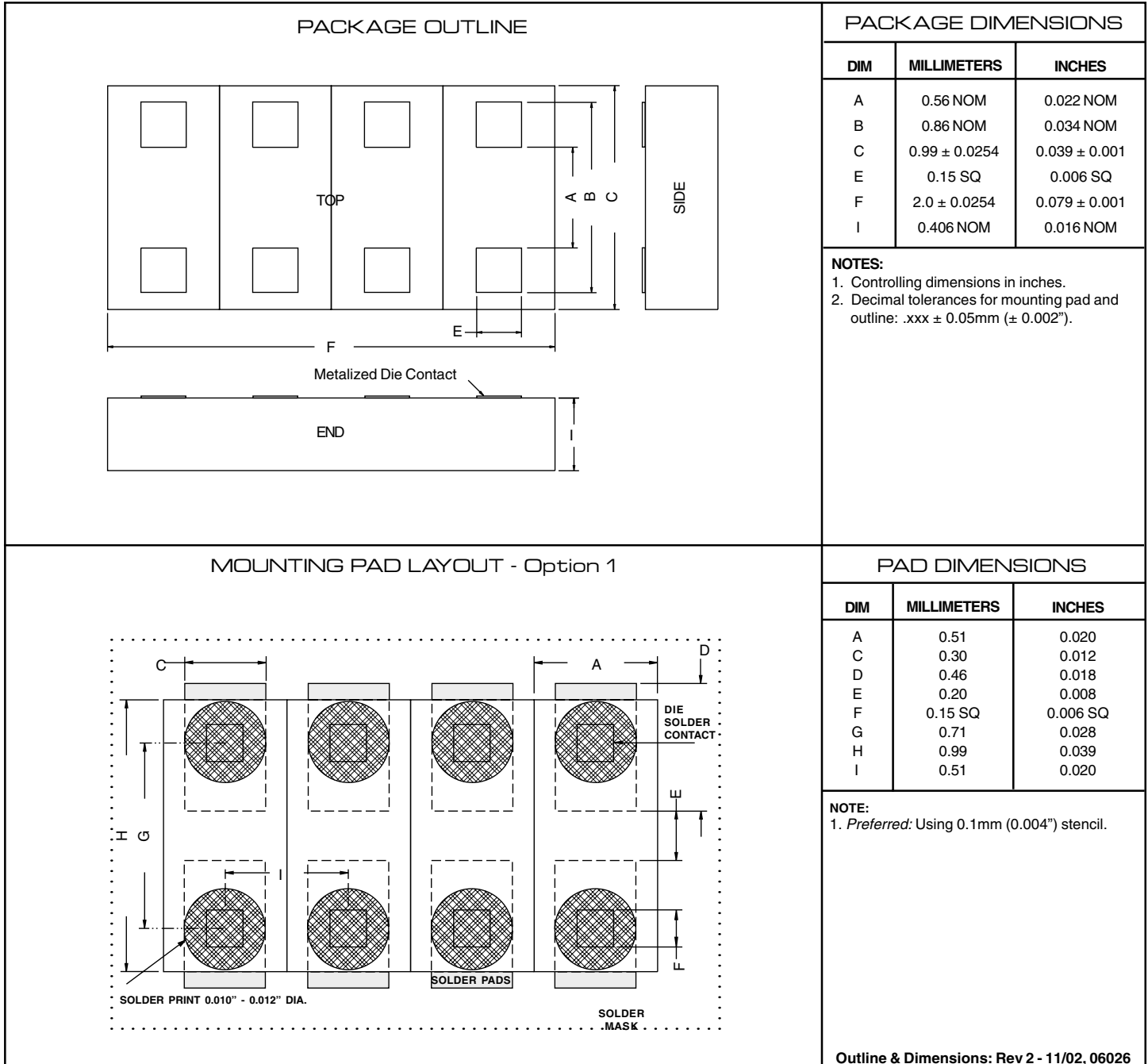
**FIGURE 5  
OVERSHOOT & CLAMPING VOLTAGE FOR ULC0408FC05C**



**FIGURE 6  
TYPICAL CLAMPING VOLTAGE VS PEAK PULSE CURRENT FOR ULC0408FC05C**

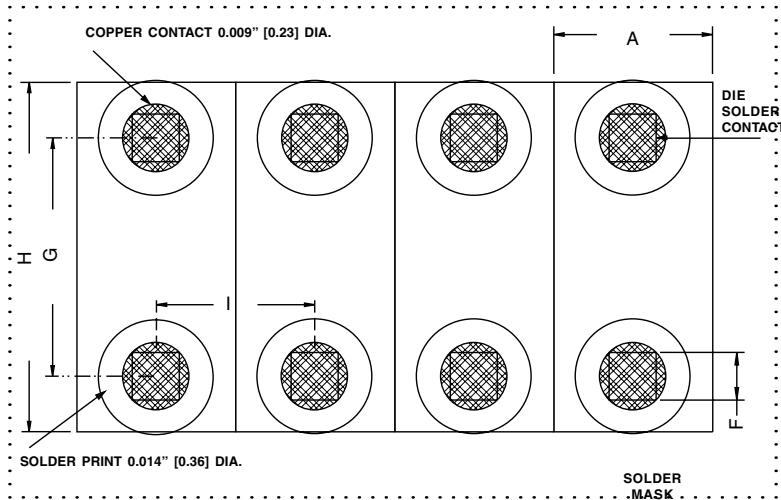


## PACKAGE OUTLINE & DIMENSIONS



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MOUNTING PAD LAYOUT - Option 2



PACKAGE DIMENSIONS

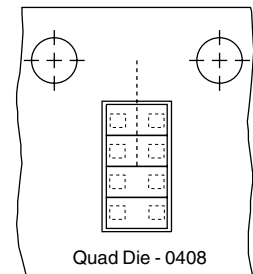
DIM	MILLIMETERS	INCHES
A	0.51	0.020
F	0.15 SQ	0.006 SQ
G	0.71	0.028
H	0.99	0.039
I	0.51	0.020

**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.

Outline & Dimensions: Rev 2 - 11/02, 06026

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: -T75-1 (i.e., ULC0408FC05C-T75-1).
3. 8mm Paper Tape: 7 Inch Reels - 10,000 pieces per reel. Ordering Suffix: -T710-2 (i.e., ULC0408FC05C-T710-2).

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