

BIDIRECTIONAL LOW CAPACITANCE FLIP CHIP
APPLICATIONS

- ✓ Cellular Phones
- ✓ Handheld Electronics
- ✓ Personal Digital Assistants (PDAs)
- ✓ Notebook Computers
- ✓ SMART Cards

IEC COMPATIBILITY (EN61000-4)

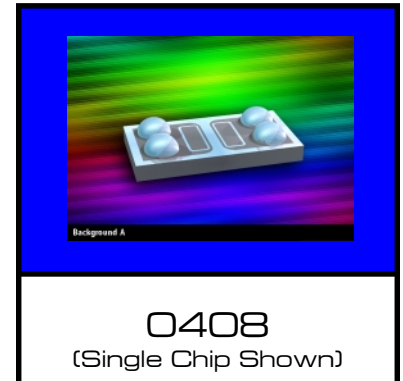
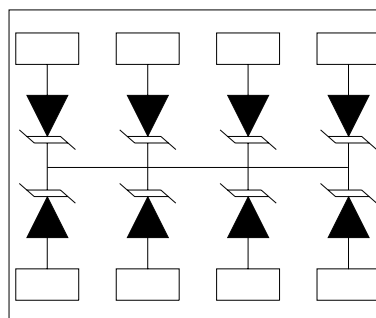
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns

FEATURES

- ✓ ESD Protection > 25 kilovolts
- ✓ Available in Six Voltage Types Ranging From 3.3V to 24V
- ✓ 200 Watts Peak Pulse Power Dissipation per Line (8/20 μ s)
- ✓ Low Clamping Voltage
- ✓ **LOW CAPACITANCE**
- ✓ **LOW STANDBY 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
- ✓ Top Contacts: Solder Bump 0.004" in Height (Nominal)


CIRCUIT DIAGRAM


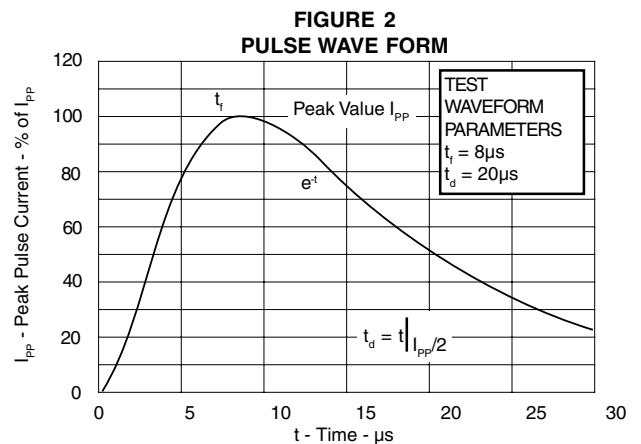
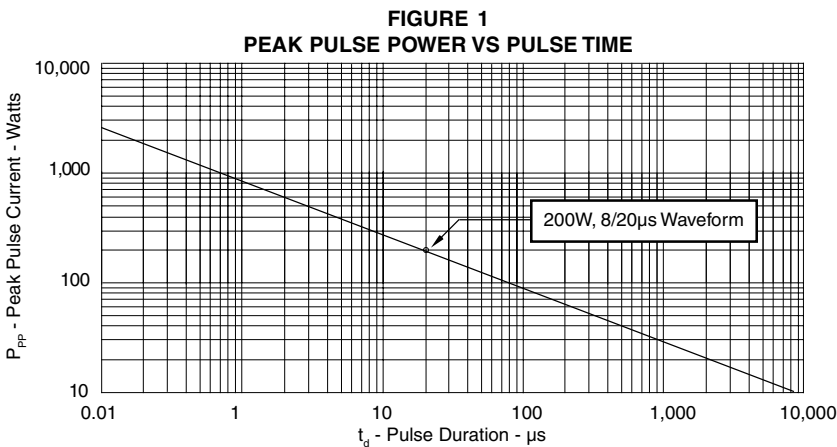
LC0408FC3.3C thru LC0408FC24C

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	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM CLAMPING VOLTAGE (See Fig. 2)	MAXIMUM LEAKAGE CURRENT	TYPICAL CAPACITANCE
		@ 1mA $V_{(BR)}$ VOLTS	@ $I_p = 1A$ V_C VOLTS	@ 8/20 μs $V_C @ I_{PP}$	@ V_{WM} I_D μA	0V @ 1 MHz C pF
LC0408FC3.3C	3.3	4.0	7.0	12.5V @ 16A	75	70
LC0408FC05C	5.9	6.0	11.0	13V @ 15A	10	35
LC0408FC08C	8.0	8.0	13.2	18V @ 11A	1	32
LC0408FC12C	12.0	13.3	19.8	26.9V @ 7.4A	1	30
LC0408FC15C	15.0	16.7	25.4	34.5V @ 5.8A	1	25
LC0408FC24C	24.0	26.7	37.2	50.6V @ 4A	1	20

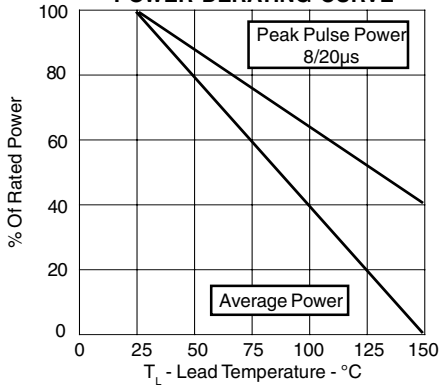
Note 1: All devices are bidirectional. Electrical characteristics apply in both directions. Electrical characteristics for the 3V, 8V, 12V, 15V and 24V devices are preliminary.



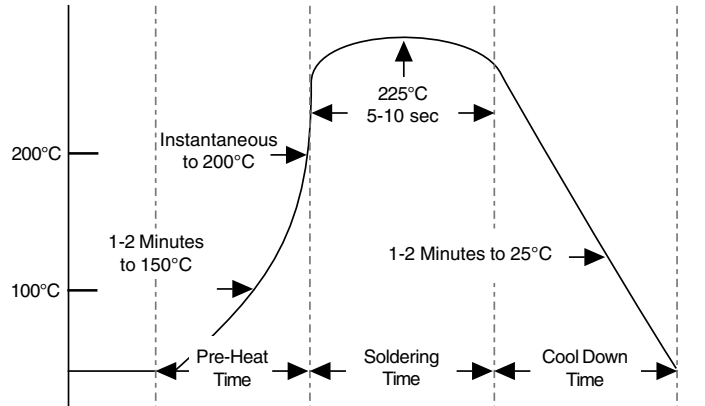
LC0408FC3.3C thru LC0408FC24C

GRAPHS

**FIGURE 3
POWER DERATING CURVE**

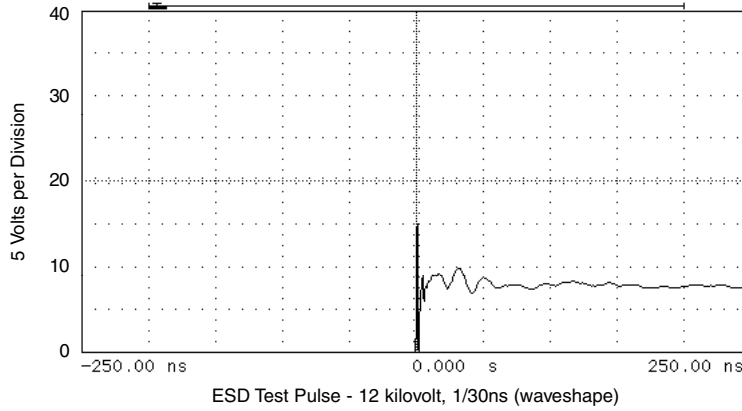


**FIGURE 4
REFLOW SOLDER PROFILE**

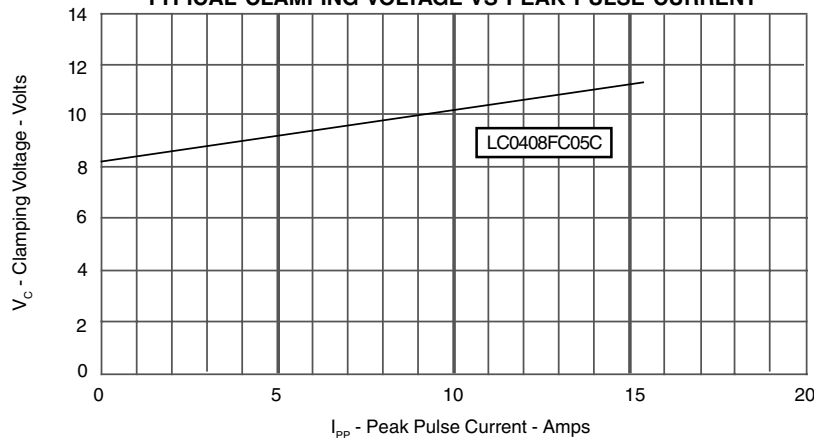


Note: This reflow profile does not take into account the printed circuit board (PCB) material heating time. Additional time may be required for the preheat time and cool down time upon the PCB or board material.

**FIGURE 5
OVERSHOOT & CLAMPING VOLTAGE FOR LC0408FC05C**

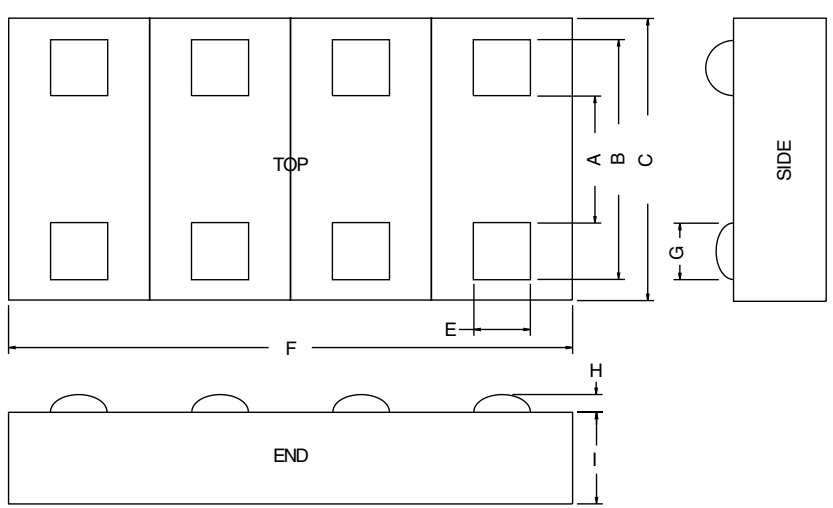


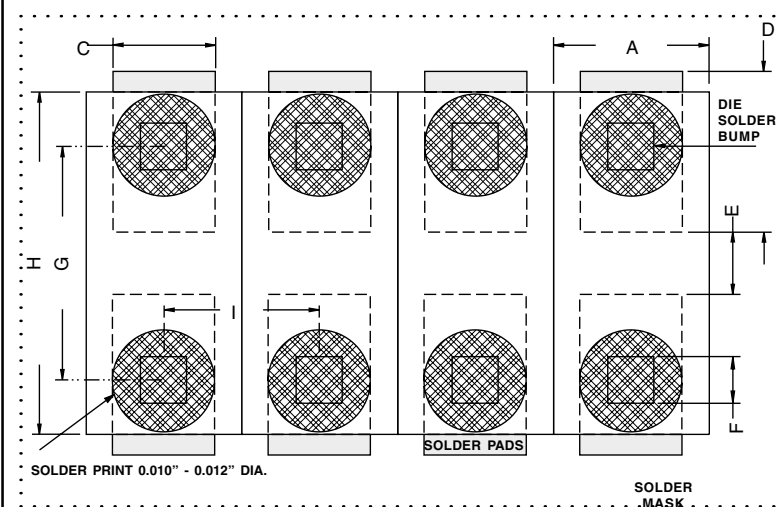
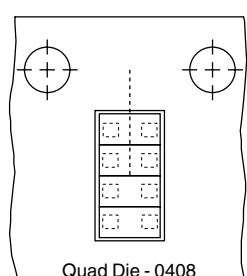
**FIGURE 6
TYPICAL CLAMPING VOLTAGE VS PEAK PULSE CURRENT**



LC0408FC3.3C thru LC0408FC24C

PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE		0408
		Picture Not Available
PACKAGE DIMENSIONS		
DIM	MILLIMETERS	INCHES
A	0.56 NOM	0.022 NOM
B	0.86 NOM	0.034 NOM
C	0.99 ± 0.0254	0.039 ± 0.001
E	0.15 SQ	0.006 SQ
F	2.0 ± 0.0254	0.079 ± 0.001
G	0.15 NOM	0.006 NOM
H	0.127 MAX 0.076 MIN	0.005 MAX 0.003 MIN
I	0.406 NOM	0.016 NOM

MOUNTING PAD - Option 1		PAD DIMENSIONS																											
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">DIM</th> <th style="text-align: center;">Millimeters</th> <th style="text-align: center;">Inches</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">A</td><td style="text-align: center;">0.51</td><td style="text-align: center;">0.020</td></tr> <tr><td style="text-align: center;">C</td><td style="text-align: center;">0.30</td><td style="text-align: center;">0.012</td></tr> <tr><td style="text-align: center;">D</td><td style="text-align: center;">0.46</td><td style="text-align: center;">0.018</td></tr> <tr><td style="text-align: center;">E</td><td style="text-align: center;">0.20</td><td style="text-align: center;">0.008</td></tr> <tr><td style="text-align: center;">F</td><td style="text-align: center;">0.15 SQ</td><td style="text-align: center;">0.006 SQ</td></tr> <tr><td style="text-align: center;">G</td><td style="text-align: center;">0.71</td><td style="text-align: center;">0.028</td></tr> <tr><td style="text-align: center;">H</td><td style="text-align: center;">0.99</td><td style="text-align: center;">0.039</td></tr> <tr><td style="text-align: center;">I</td><td style="text-align: center;">0.5</td><td style="text-align: center;">0.02</td></tr> </tbody> </table>	DIM	Millimeters	Inches	A	0.51	0.020	C	0.30	0.012	D	0.46	0.018	E	0.20	0.008	F	0.15 SQ	0.006 SQ	G	0.71	0.028	H	0.99	0.039	I	0.5	0.02
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<p>NOTE: Preferred: Using 0.1mm (0.004") stencil.</p>		<p>NOTES:</p> <ol style="list-style-type: none"> Controlling dimensions in inches. Decimal tolerances for mounting pad and outline: .xxx ± 0.05mm (± 0.002"). 																											
		TAPE & REEL ORIENTATION																											
		 <p style="text-align: center;">Quad Die - 0408</p>																											
		<p>NOTE:</p> <ol style="list-style-type: none"> Top view of tape. Solder bumps are face down in tape package. 																											

TAPE & REEL ORDERING INFORMATION:

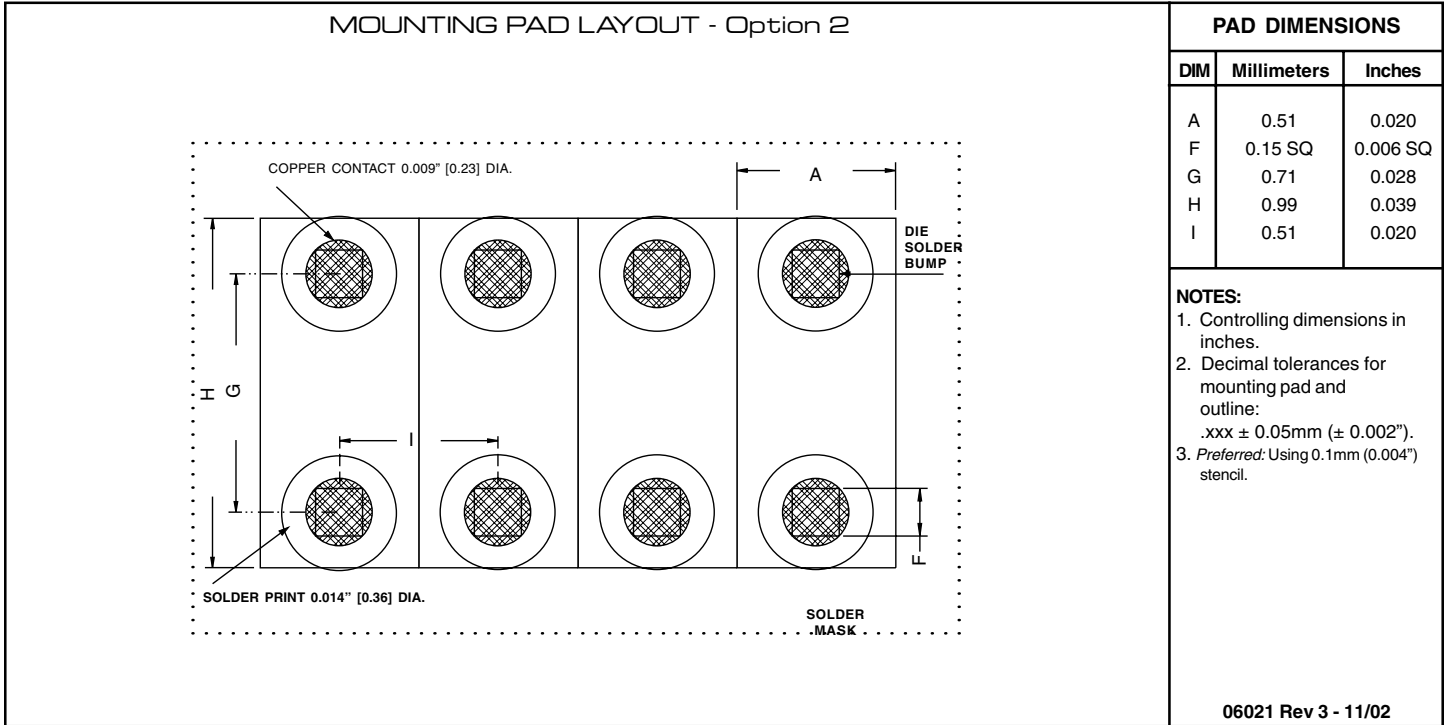
Surface mount product is taped and reeled in accordance with EIA-481.

Plastic Tape: 7 Inch Reels - 5,000 pieces per reel. Ordering Suffix: -T75-1 (i.e., LC0408FC05C-T75-1).

Paper Tape: 7 Inch Reels - 10,000 pieces per reel. Ordering Suffix: -T710-2 (i.e., LC0408FC05C-T710-2).

LC0408FC3.3C thru LC0408FC24C

PACKAGE OUTLINE & DIMENSIONS



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