

BIDIRECTIONAL UNBUMPED FLIP CHIP
APPLICATIONS

- ✓ Cellular Phones
- ✓ MCM Boards
- ✓ Wireless Communication Circuits
- ✓ IR LEDs
- ✓ SMART Cards & PCMCIA Cards

IEC COMPATIBILITY (EN61000-4)

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

FEATURES

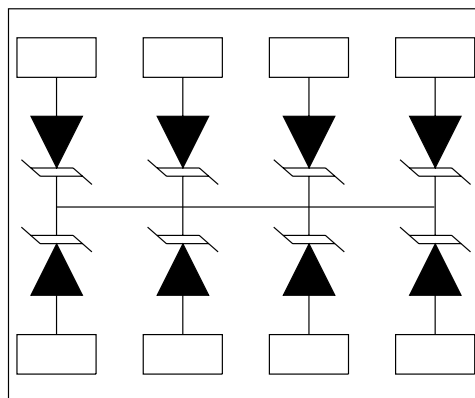
- ✓ ESD Protection > 25 kilovolts
- ✓ Available in Multiple Voltage Types Ranging From 3.3V to 36V
- ✓ 250 Watts Peak Pulse Power Dissipation per Line (8/20 μ s)
- ✓ Monolithic Structure

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 481-1-A
- ✓ Device Marking On Reel

No
Picture Available

U0408

CIRCUIT DIAGRAM


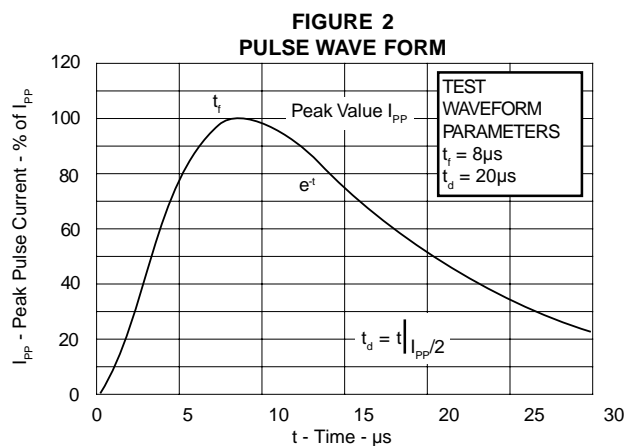
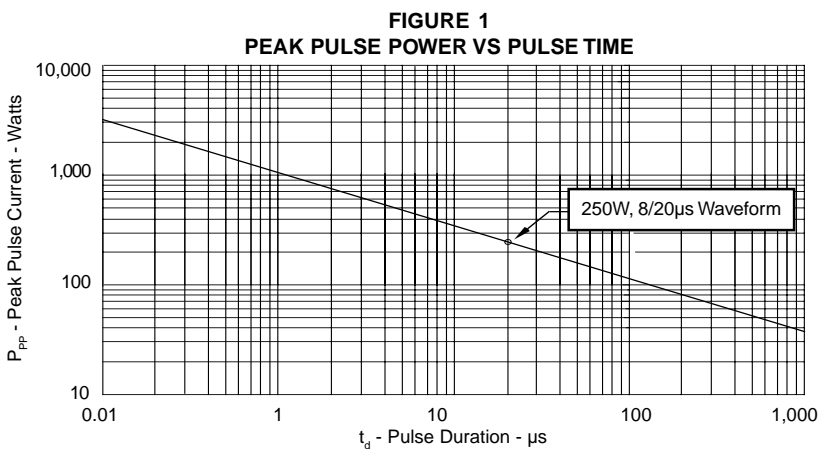
U0408FC3.3C thru U0408FC36C

DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ($t_p = 8/20\mu\text{s}$) - See Figure 1	P_{PP}	250	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
U0408FC3.3C	3.3	4.0	7.0	12.5V @ 20A	75	150
U0408FC05C	5.0	6.0	9.8	14.7V @ 17A	10	100
U0408FC08C	8.0	8.5	13.4	19.2V @ 13A	10	75
U0408FC12C	12.0	13.3	19.0	29.7V @ 9.0A	1	50
U0408FC15C	15.0	16.7	24.0	35.7V @ 7.0A	1	40
U0408FC24C	24.0	26.7	43.0	55.0V @ 5.0A	1	30
U0408FC36C	36.0	40.0	64.0	84.0V @ 3.0A	1	25

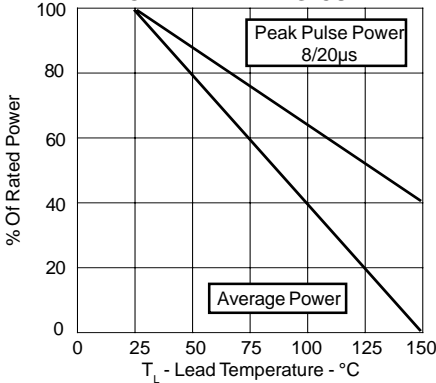
Note 1: All devices are bidirectional. Electrical characteristics apply in both directions.



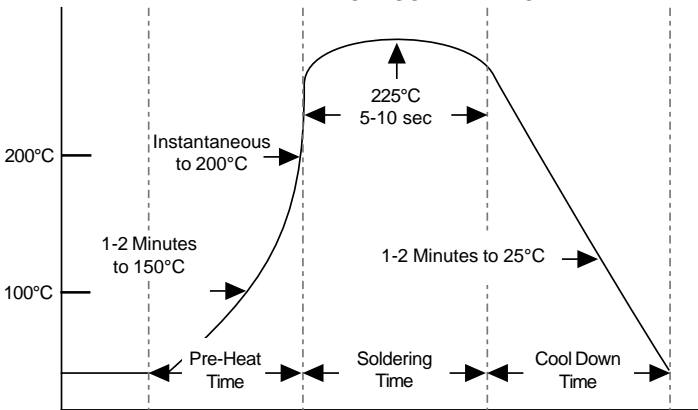
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GRAPHS

**FIGURE 3
POWER DERATING CURVE**

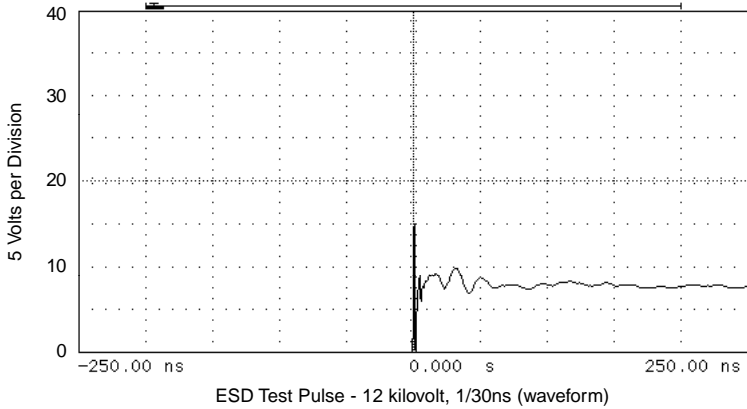


**FIGURE 4
REFLOW SOLDER PROFILE**

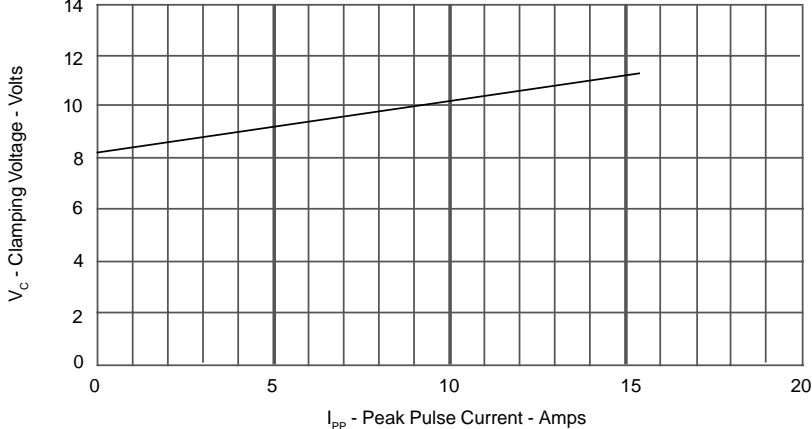


Note: This reflow profile does not take into account the printed circuit board (PCB) material heating time. Additional time may be required for the preheat time and cool down time upon the PCB or board material.

**FIGURE 5
OVERSHOOT & CLAMPING VOLTAGE FOR U0408FC05C**



**FIGURE 6
TYPICAL CLAMPING VOLTAGE VS PEAK PULSE CURRENT FOR U0408FC05C**



U0408FC3.3C thru U0408FC36C

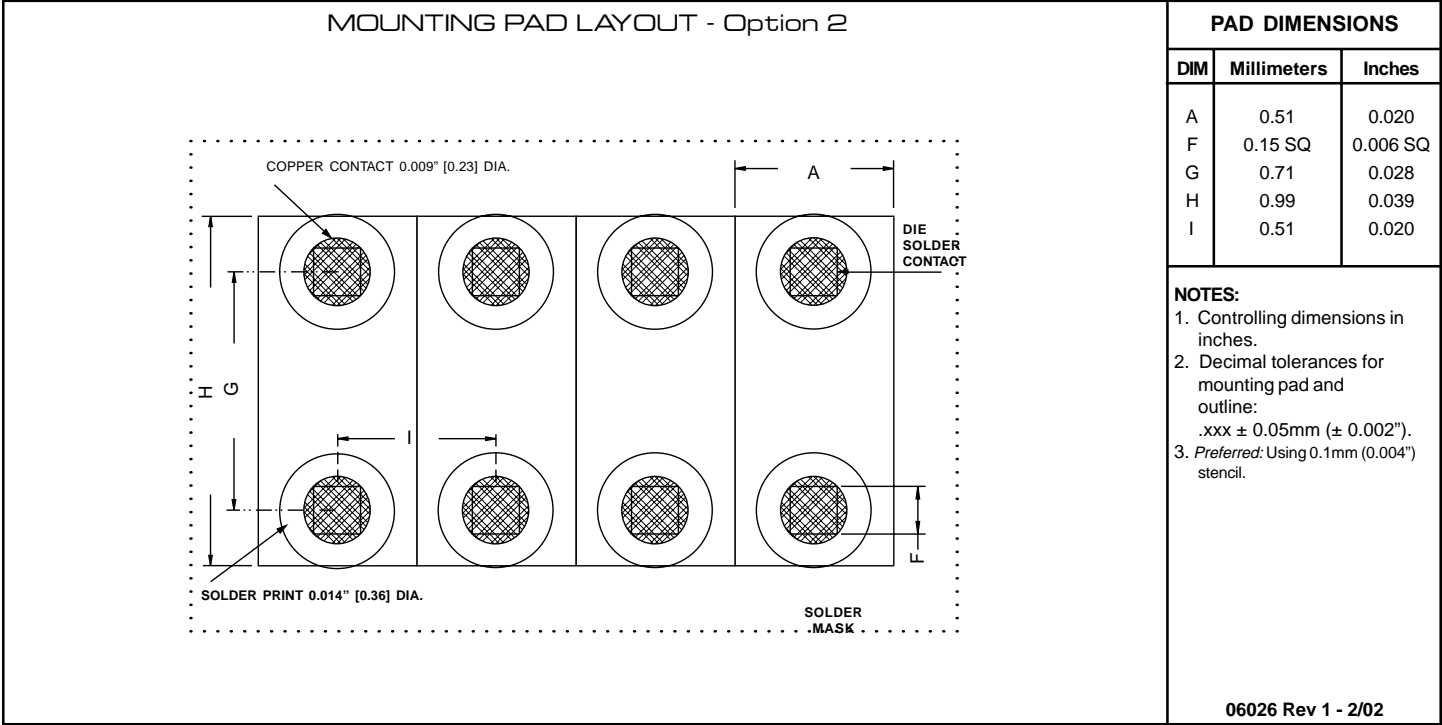
PACKAGE OUTLINE & DIMENSIONS

<p>PACKAGE OUTLINE</p> <p style="text-align: center;">Metalized Die Contact</p> <p style="text-align: center;">END</p>	<p>U0408</p> <p>Picture Not Available</p> <hr/> <p style="text-align: center;">PACKAGE DIMENSIONS</p> <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;">0.56 NOM</td> <td style="text-align: center;">0.022 NOM</td> </tr> <tr> <td style="text-align: center;">B</td> <td style="text-align: center;">0.86 NOM</td> <td style="text-align: center;">0.034 NOM</td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">0.99 ± 0.0254</td> <td style="text-align: center;">0.039 ± 0.001</td> </tr> <tr> <td style="text-align: center;">E</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;">F</td> <td style="text-align: center;">2.0 ± 0.0254</td> <td style="text-align: center;">0.079 ± 0.001</td> </tr> <tr> <td style="text-align: center;">I</td> <td style="text-align: center;">0.42 NOM</td> <td style="text-align: center;">0.0165 NOM</td> </tr> </tbody> </table>	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	I	0.42 NOM	0.0165 NOM									
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<p>MOUNTING PAD - Option 1</p> <p style="text-align: center;">SOLDER PRINT 0.010" - 0.012" DIA.</p> <p style="text-align: center;">SOLDER MASK</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">PAD DIMENSIONS</th> </tr> <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> <p>NOTE: Preferred: Using 0.1mm (0.004") stencil.</p>	PAD DIMENSIONS			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>NOTES:</p> <ol style="list-style-type: none"> Controlling dimensions in inches. Decimal tolerances for mounting pad and outline: .xxx ± 0.05mm (± 0.002"). 																															
<p>TAPE & REEL ORIENTATION</p> <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. 																															
<p>06026 Rev 1 - 2/02</p>																															

TAPE & REEL PACKAGING:
Surface mount product is taped and reeled in accordance with EIA-481, reel quantities and sizes are as follows:
Paper Tape: 7 Inch Reel - 3,000 or 10,000 pieces per reel. Plastic Tape: 7 Inch Reel - 3,000 or 5,000 per reel.

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