

## APPLICATIONS

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

## IEC COMPATIBILITY (EN61000-4)

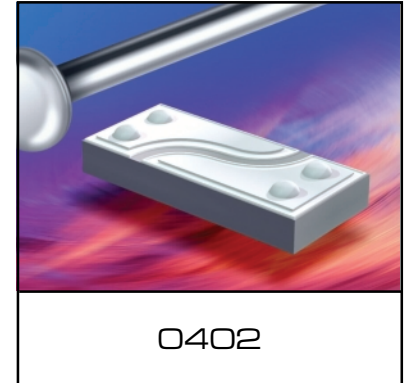
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns

## FEATURES

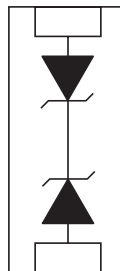
- ✓ ESD Protection > 25 kilovolts
- ✓ Available in Multiple Voltage Types Ranging From 3.3V to 36V
- ✓ 250 Watts Peak Pulse Power per Line ( $t_p = 8/20\mu s$ )
- ✓ Bidirectional Configuration & Monolithic Structure
- ✓ Protects 1 Line

## MECHANICAL CHARACTERISTICS

- ✓ Standard EIA Chip Size: 0402
- ✓ 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)



## PIN CONFIGURATION



**DEVICE CHARACTERISTICS**

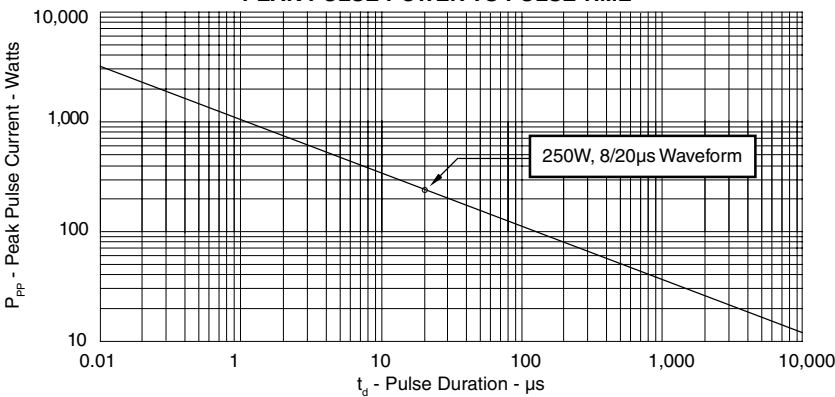
MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ( $t_p = 8/20\mu s$ ) - See Figure 1	$P_{PP}$	250	Watts
Operating Temperature	$T_J$	-55°C to 150°C	°C
Storage Temperature	$T_{STG}$	-55°C to 150°C	°C

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 (See Note 2)	TYPICAL CAPACITANCE  @0V, 1 MHz C pF
		@ 1mA $V_{(BR)}$ VOLTS	@ $I_p = 1A$ $V_C$ VOLTS	@ 8/20 $\mu s$ $V_C @ I_{PP}$	@ $V_{WM}$ $I_D$ $\mu A$	
P0402FC3.3C	3.3	4.0	7.0	12.5V @ 20A	75*	150
P0402FC05C	5.0	6.0	9.8	14.7V @ 17A	10**	100
P0402FC08C	8.0	8.5	13.4	19.2V @ 13A	10***	75
P0402FC12C	12.0	13.3	19.0	29.7V @ 9.0A	1	50
P0402FC15C	15.0	16.7	24.0	35.7V @ 7.0A	1	40
P0402FC24C	24.0	26.7	43.0	55.0V @ 5.0A	1	30
P0402FC36C	36.0	40.0	64.0	84.0V @ 3.0A	1	25

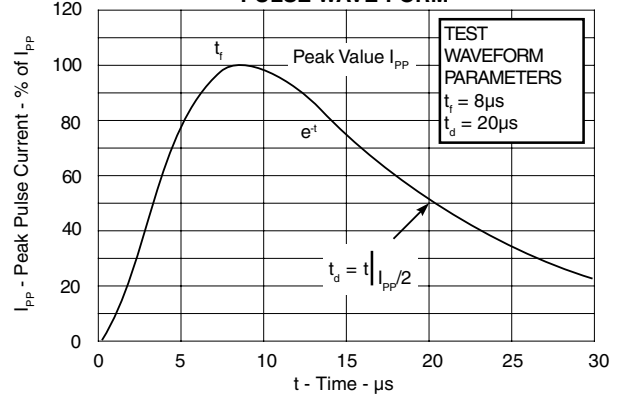
**Note 1:** All devices are bidirectional. Electrical characteristics apply in both directions.

**Note 2:** \*Maximum leakage current < 5 $\mu A$  @ 2.8V. \*\*Maximum leakage current < 500nA @ 3.3V. \*\*\*Maximum leakage current < 200nA @ 5V.

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

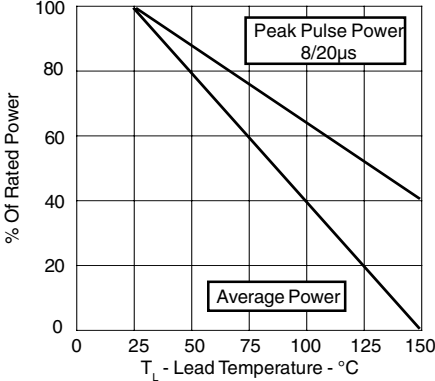


**FIGURE 2**  
**PULSE WAVE FORM**

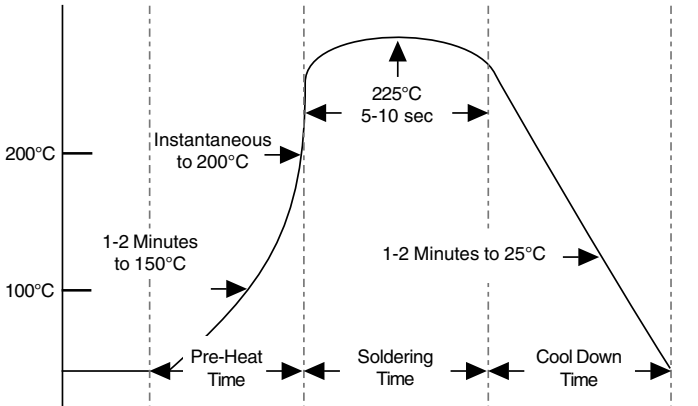


**GRAPHS**

**FIGURE 3  
 POWER DERATING CURVE**

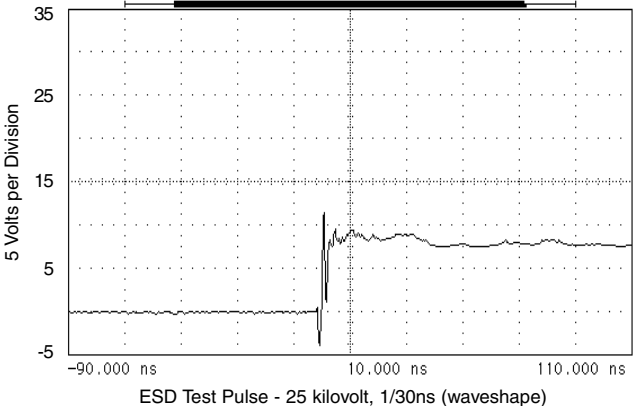


**FIGURE 4  
 REFLOW SOLDER PROFILE**

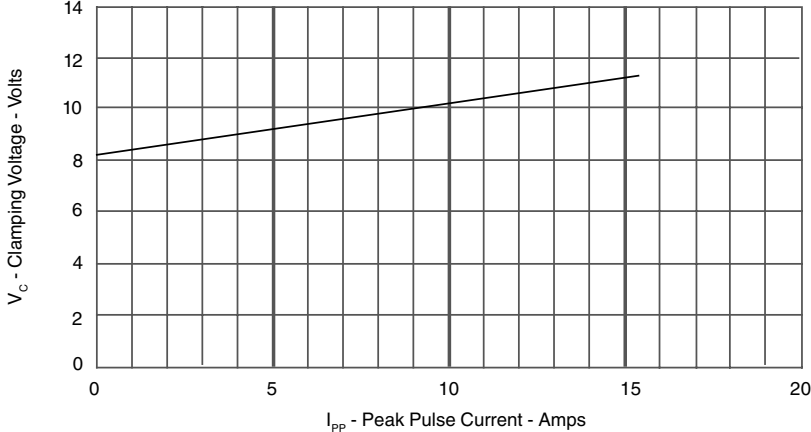


**Note:** This reflow profile does not take into account the printed circuit board (PCB) material heating time. Additional time may be required for the preheat time and cool down time upon the PCB or board material.

**FIGURE 5  
 OVERSHOOT & CLAMPING VOLTAGE FOR P0402FC05C**

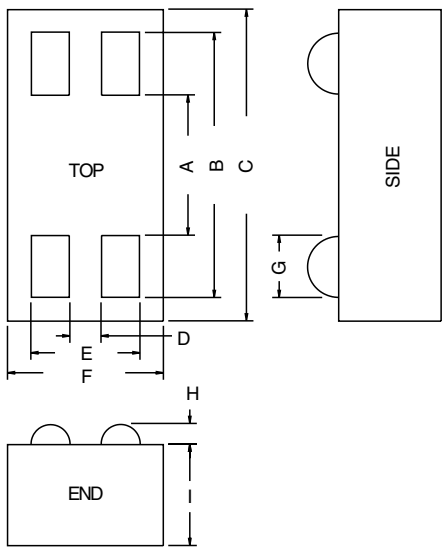

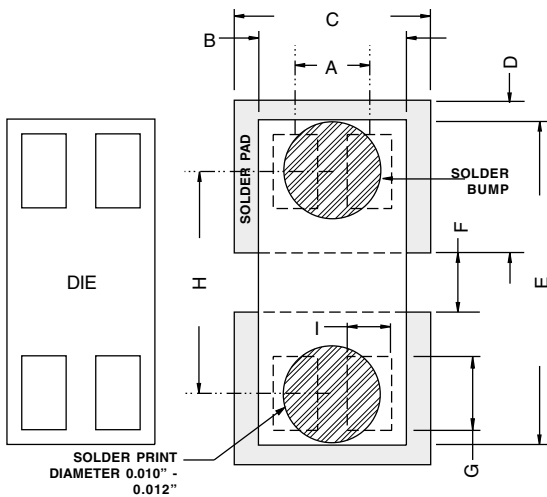
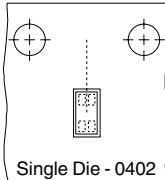


**FIGURE 6  
 TYPICAL CLAMPING VOLTAGE VS PEAK PULSE CURRENT FOR P0402FC05C**



# P0402FC3.3C\* thru P0402FC36C\*

## PACKAGE OUTLINE & DIMENSIONS

<p style="text-align: center;">PACKAGE OUTLINE</p> 	<p style="text-align: center;">0402</p> 																															
<p style="text-align: center;">MOUNTING PAD</p>  <p style="text-align: center;">SOLDER PRINT DIAMETER 0.010" - 0.012"</p>	<p style="text-align: center;">PAD DIMENSIONS</p> <table border="1" data-bbox="976 1102 1516 1354"> <thead> <tr> <th>DIM</th> <th>MILLIMETERS</th> <th>INCHES</th> </tr> </thead> <tbody> <tr><td>A</td><td>0.23</td><td>0.009</td></tr> <tr><td>B</td><td>0.48</td><td>0.019</td></tr> <tr><td>C</td><td>0.69</td><td>0.027</td></tr> <tr><td>D</td><td>0.46</td><td>0.018</td></tr> <tr><td>E</td><td>0.99</td><td>0.039</td></tr> <tr><td>F</td><td>0.20</td><td>0.008</td></tr> <tr><td>G</td><td>0.20</td><td>0.008</td></tr> <tr><td>H</td><td>0.66</td><td>0.026</td></tr> <tr><td>I</td><td>0.13</td><td>0.005</td></tr> </tbody> </table>		DIM	MILLIMETERS	INCHES	A	0.23	0.009	B	0.48	0.019	C	0.69	0.027	D	0.46	0.018	E	0.99	0.039	F	0.20	0.008	G	0.20	0.008	H	0.66	0.026	I	0.13	0.005
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<p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>Controlling dimensions in inches.</li> <li>Decimal tolerances for mounting pad and outline: .xxx ± 0.05mm (± 0.002").</li> <li>Maximum chip size: 1.02 (0.040") by 0.51(0.020").</li> </ol>	<p><b>NOTE:</b></p> <ol style="list-style-type: none"> <li>Top view of tape. Metal contacts are face down in tape package.</li> </ol>																															
<p><b>TAPE &amp; REEL ORDERING NOMENCLATURE</b></p> <ol style="list-style-type: none"> <li>Surface mount product is taped and reeled in accordance with EIA 481.</li> <li>8mm Plastic Tape: 7 Inch Reels - 5,000 pieces per reel. Ordering Suffix: -T75-1 (i.e., P0402FC05C-T75-1).</li> <li>8mm Paper Tape: 7 Inch Reels - 10,000 pieces per reel. Ordering Suffix: -T710-2 (i.e., P0402FC05C-T710-2).</li> </ol>	<p style="text-align: center;">TAPE &amp; REEL ORIENTATION</p>  <p style="text-align: center;">Single Die - 0402</p> <p><b>NOTE:</b></p> <ol style="list-style-type: none"> <li>Preferred: Using 0.1mm (0.004") stencil.</li> </ol> <p style="text-align: center;"><b>Outline &amp; Dimensions: Rev 3 - 11/02, 06001</b></p>																															

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