

BIDIRECTIONAL UNBUMPED FLIP CHIP
APPLICATIONS

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

IEC COMPATIBILITY (EN61000-4)

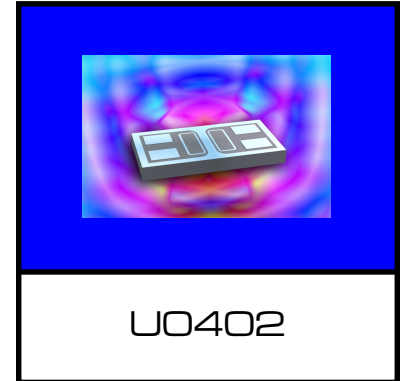
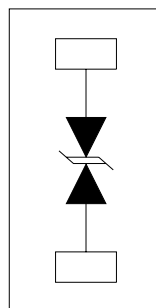
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns

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: 0402
- ✓ 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


CIRCUIT DIAGRAM


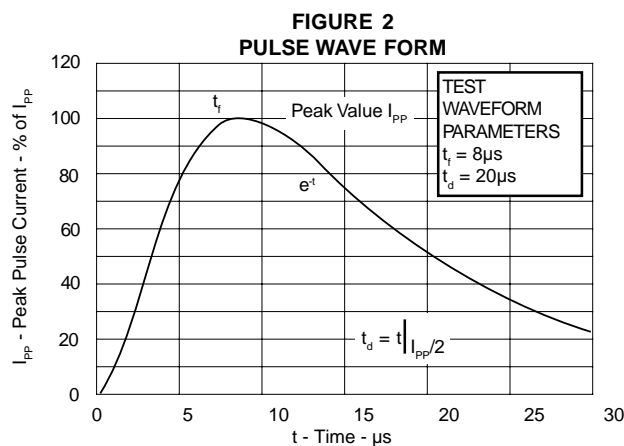
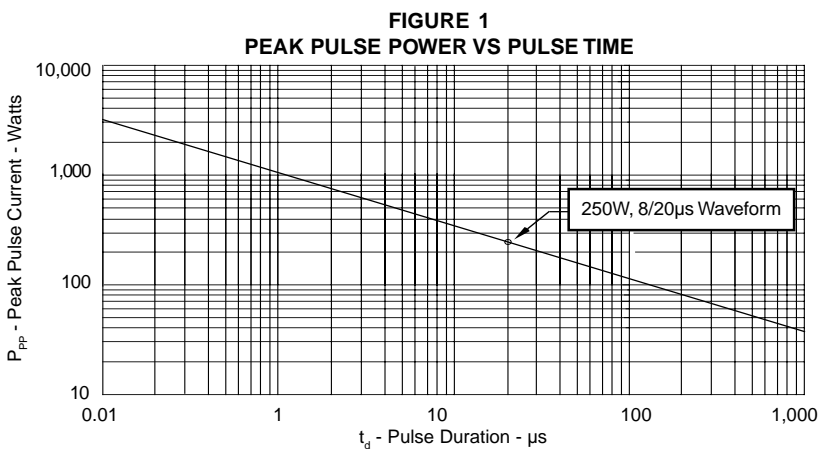
U0402FC3.3C thru U0402FC36C

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 @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @ $I_p = 1A$ V_C VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @ 8/20 μs $V_C @ I_{PP}$	MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA	TYPICAL CAPACITANCE
						0V @ 1 MHz C pF
U0402FC3.3C	3.3	4.0	7.0	12.5V @ 20A	75	150
U0402FC05C	5.0	6.0	9.8	14.7V @ 17A	10	100
U0402FC08C	8.0	8.5	13.4	19.2V @ 13A	10	75
U0402FC12C	12.0	13.3	19.0	29.7V @ 9.0A	1	50
U0402FC15C	15.0	16.7	24.0	35.7V @ 7.0A	1	40
U0402FC24C	24.0	26.7	43.0	55.0V @ 5.0A	1	30
U0402FC36C	36.0	40.0	64.0	84.0V @ 3.0A	1	25

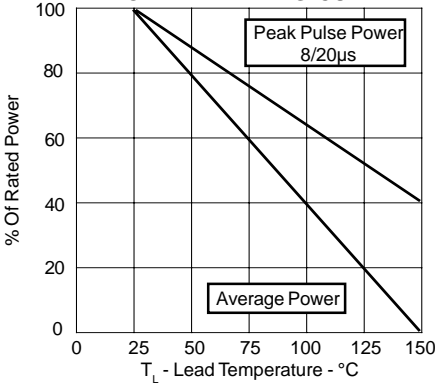
Note 1: All devices are bidirectional. Electrical characteristics apply in both directions.



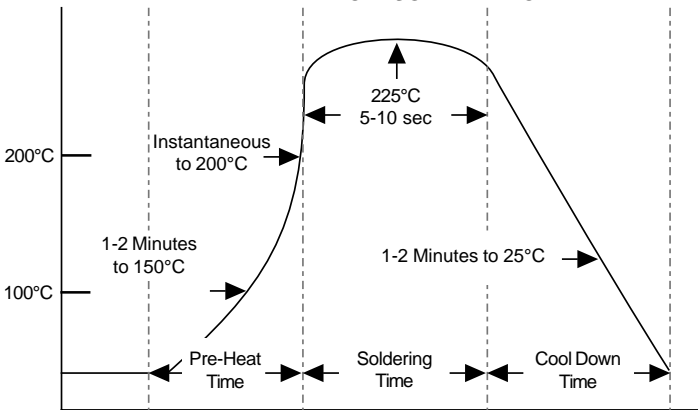
U0402FC3.3C thru U0402FC36C

GRAPHS

**FIGURE 3
POWER DERATING CURVE**

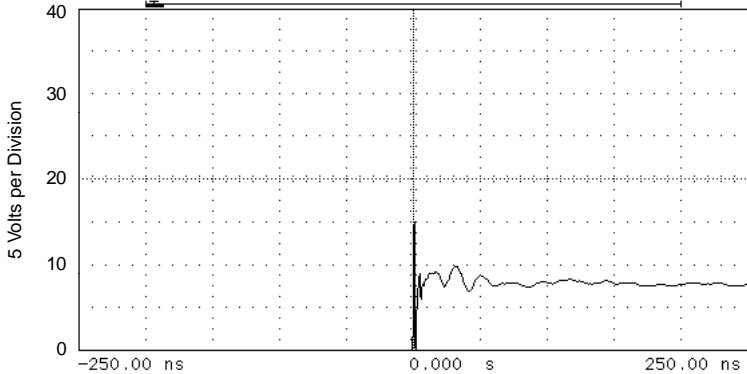


**FIGURE 4
REFLOW SOLDER PROFILE**



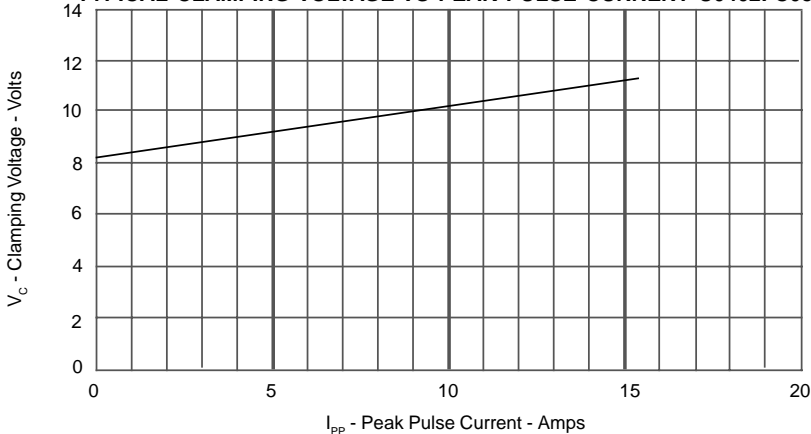
Note: This reflow profile does not take into account the printed circuit board (PCB) material heating time. Additional time may be required for the preheat time and cool down time upon the PCB or board material.

**FIGURE 5
OVERSHOOT & CLAMPING VOLTAGE U0402FC05C**



ESD Test Pulse - 12 kilovolt, 1/30ns (waveshape)

**FIGURE 6
TYPICAL CLAMPING VOLTAGE VS PEAK PULSE CURRENT U0402FC05C**



U0402FC3.3C thru U0402FC36C

PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE

Metalized Die Contacts

U0402

PACKAGE DIMENSIONS

DIM	MILLIMETERS	INCHES
A	0.46 NOM	0.018 NOM
B	0.86 NOM	0.034 NOM
C	0.99 ± 0.0254	0.039 ± 0.001
D	0.10 NOM	0.004 NOM
E	0.35 NOM	0.014 NOM
F	0.483 ± 0.0254	0.019 ± 0.001
I	0.406 NOM	0.016 NOM

MOUNTING PAD

PAD DIMENSIONS		
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

NOTE:
Preferred: Using 0.1mm (0.004") stencil.

NOTES:

- Controlling dimensions in inches.
- Decimal tolerances for mounting pad and outline: $.xxx \pm 0.05\text{mm} (\pm 0.002")$.
- Maximum chip size: 1.02 (0.040") by 0.51(0.020").

TAPE & REEL ORIENTATION

Single Die
0402

NOTE:

- Top view of tape. Metal contacts are face down in tape package.

06020 Rev 2 - 2/02

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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