

BIDIRECTIONAL LOW CAPACITANCE UNBUMPED FLIP CHIP

APPLICATIONS

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

IEC COMPATIBILITY (EN61000-4)

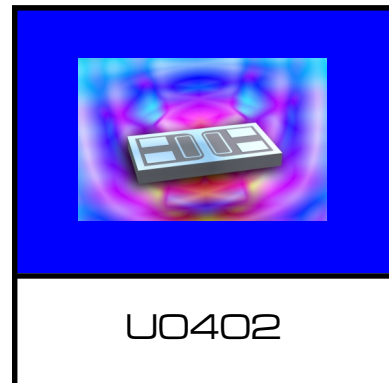
- ✓ 61000-4-2 (ESD): Air - 15kV, Contact - 8kV
- ✓ 61000-4-4 (EFT): 40A - 5/50ns

FEATURES

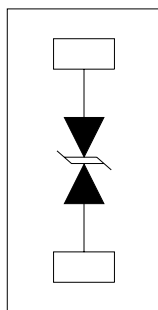
- ✓ ESD Protection > 25 kilovolts
- ✓ Available in Six Voltage Types Ranging From 3.3V to 24V
- ✓ 200 Watts Peak Pulse Power Dissipation per Line (8/20μs)
- ✓ Low Clamping Voltage
- ✓ Monolithic Structure
- ✓ **LOW CAPACITANCE**
- ✓ **LOW STANDBY CURRENT**

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



ULC0402FC3.3C thru ULC0402FC24C

DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified

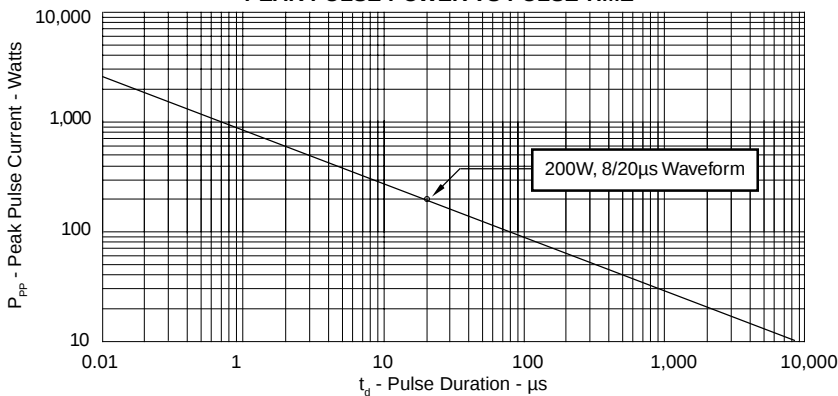
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1	P_{PP}	200	Watts
Operating Temperature	T_J	-55°C to 150°C	°C
Storage Temperature	T_{STG}	-55°C to 150°C	°C

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified

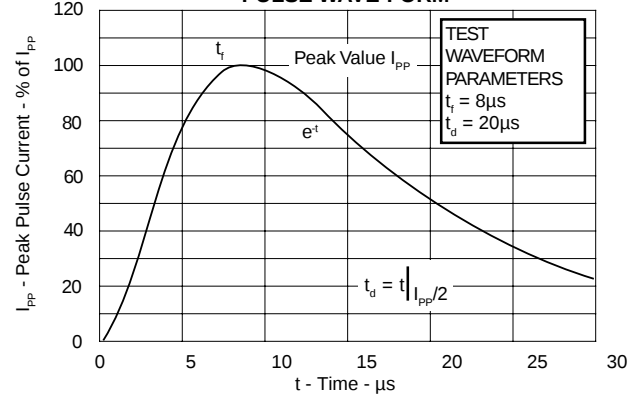
PART NUMBER (See Note 1)	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @ $I_p = 1A$ V_C VOLTS	MAXIMUM CLAMPING VOLTAGE (See Fig. 2) @ 8/20 μs $V_C @ I_{PP}$	MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA	TYPICAL CAPACITANCE 0V @ 1 MHz C pF
ULC0402FC3.3C	3.3	4.0	7.0	12.5V @ 16A	75	70
ULC0402FC05C	5.9	6.0	11.0	13V @ 15A	10	35
ULC0402FC08C	8.0	8.0	13.2	18V @ 11A	1	32
ULC0402FC12C	12.0	13.3	19.8	26.9V @ 7.4A	1	30
ULC0402FC15C	15.0	16.7	25.4	34.5V @ 5.8A	1	25
ULC0402FC24C	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 3V, 8V, 12V, 15V and 24V are preliminary.

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



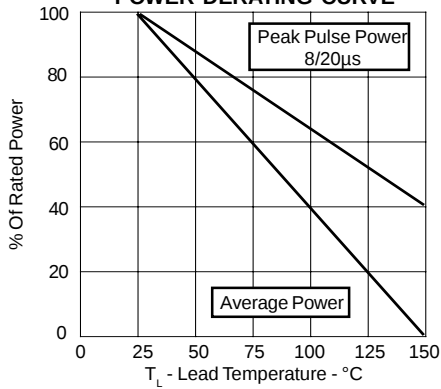
**FIGURE 2
PULSE WAVE FORM**



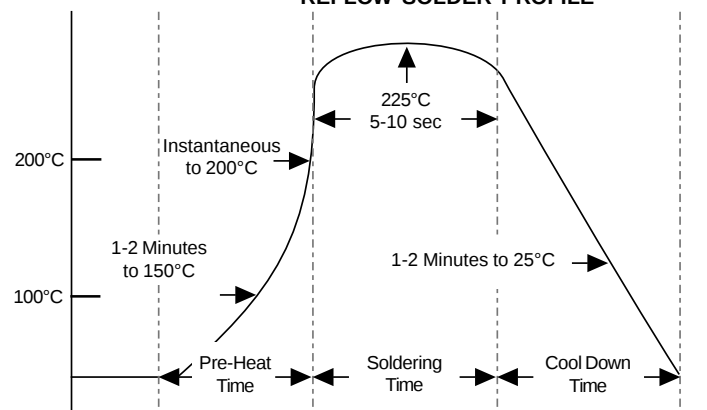
ULC0402FC3.3C thru ULC0402FC24C

GRAPHS

**FIGURE 3
POWER DERATING CURVE**

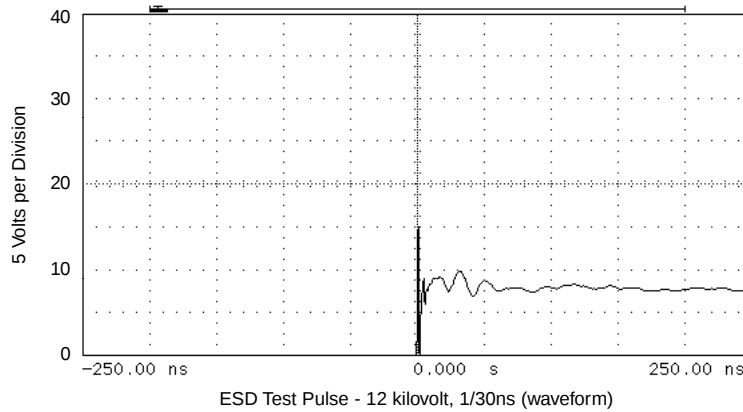


**FIGURE 4
REFLOW SOLDER PROFILE**

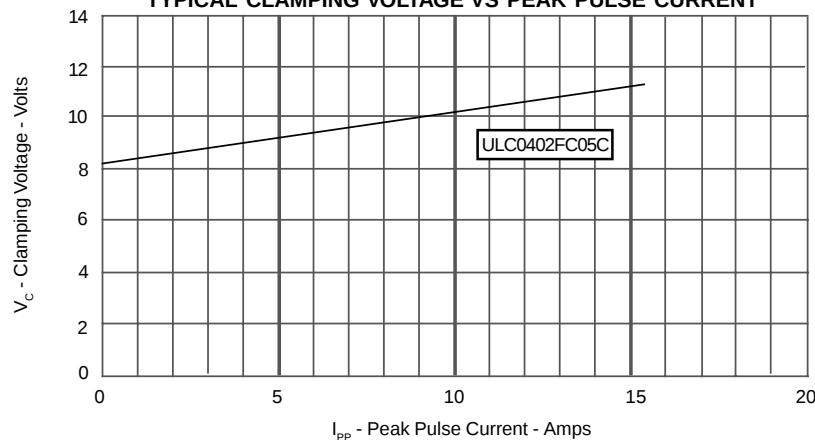


Note: This reflow profile does not take into account the printed circuit board (PCB) material heating time. Additional time may be required for the preheat time and cool down time upon the PCB or board material.

**FIGURE 5
OVERSHOOT & CLAMPING VOLTAGE FOR ULC0402FC05C**

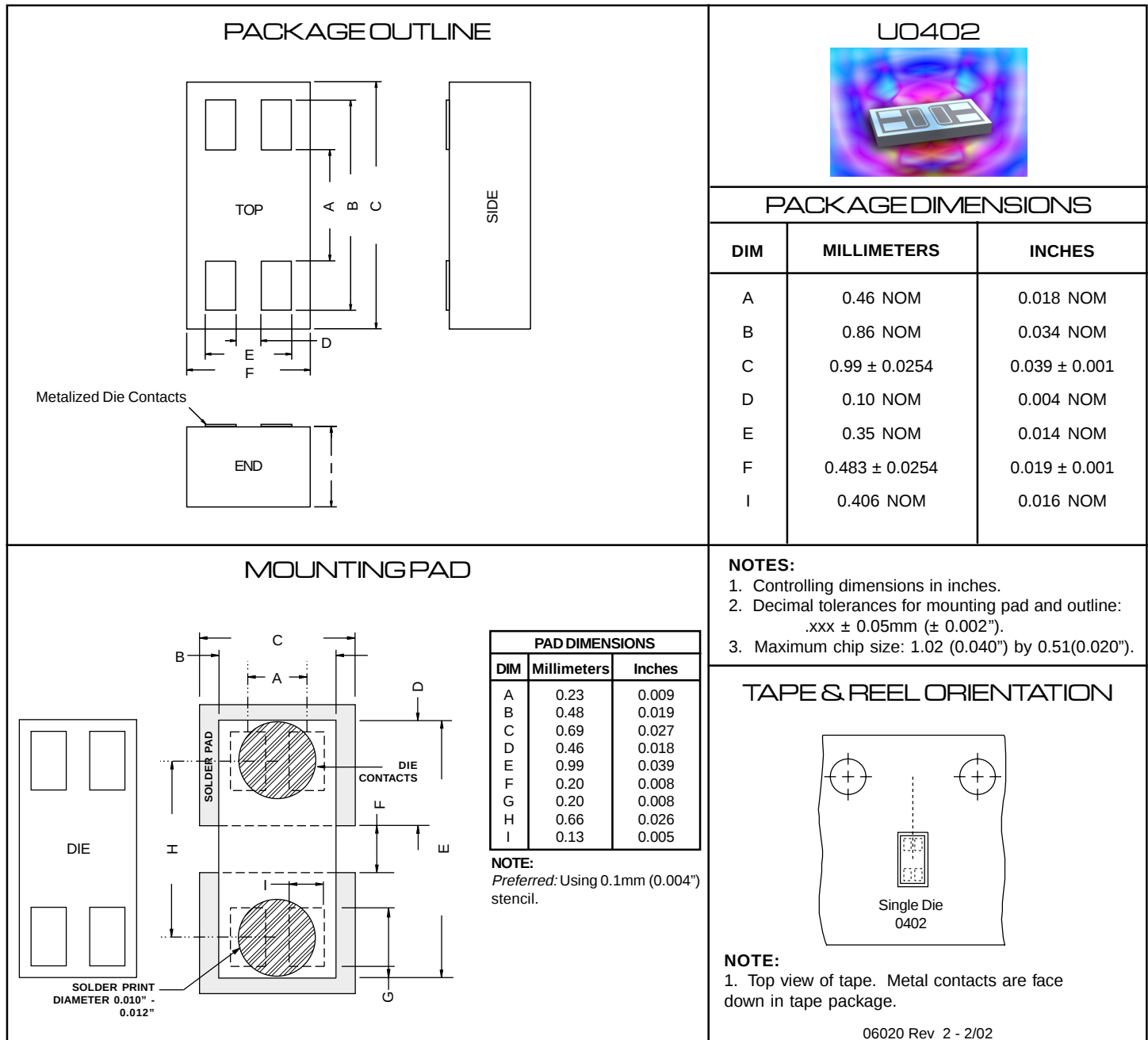


**FIGURE 6
TYPICAL CLAMPING VOLTAGE VS PEAK PULSE CURRENT**



ULC0402FC3.3C thru ULC0402FC24C

PACKAGE OUTLINE & DIMENSIONS



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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