

UNBUMPED LOW CAPACITANCE FLIP CHIP ARRAY

APPLICATIONS

- ✓ Cellular Phones
- ✓ Personal Digital Assistant (PDA)
- ✓ Notebook Computers
- ✓ SMART Cards

IEC COMPATIBILITY (EN61000-4)

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

FEATURES

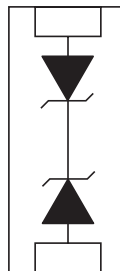
- ✓ ESD Protection > 25 kilovolts
- ✓ Available in Voltages Ranging From 3.3V to 36V
- ✓ 200 Watts Peak Pulse Power per Line ($t_p = 8/20\mu s$)
- ✓ Low Clamping Voltage
- ✓ Bidirectional Configuration & Monolithic Structure
- ✓ Protects 1 Line
- ✓ **LOW CAPACITANCE**
- ✓ **LOW LEAKAGE CURRENT**
- ✓ RoHS Compliant

MECHANICAL CHARACTERISTICS

- ✓ Standard EIA Chip Size: 0402
- ✓ Weight 0.73 milligrams (Approximate)
- ✓ Solder Reflow Temperature:
 - Tin-Lead - Sn/Pb: 240-245°C
 - Lead-Free: 260-270°C
- ✓ Flammability Rating UL 94V-0
- ✓ 8mm Plastic & Paper Tape and Reel Per EIA Standard 481
- ✓ Device Marking On Reel



PIN CONFIGURATION

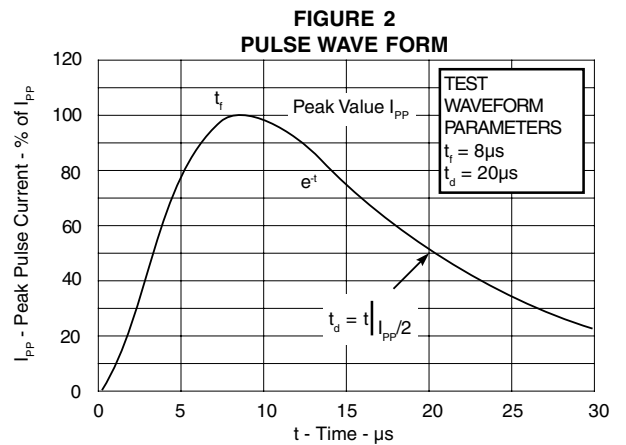
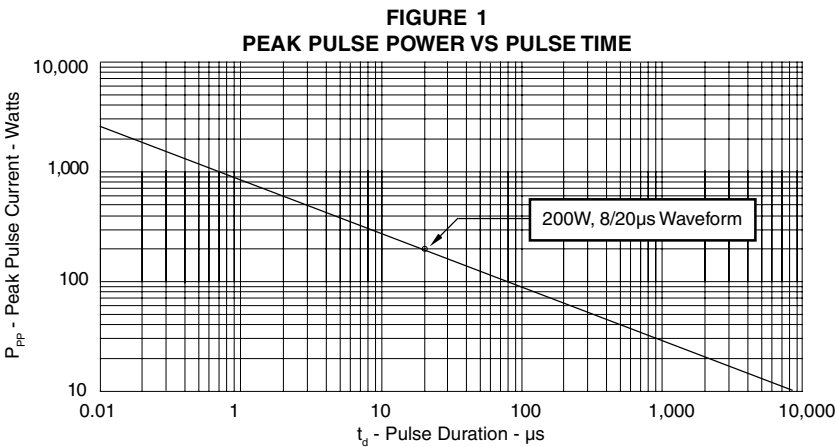


DEVICE CHARACTERISTICS

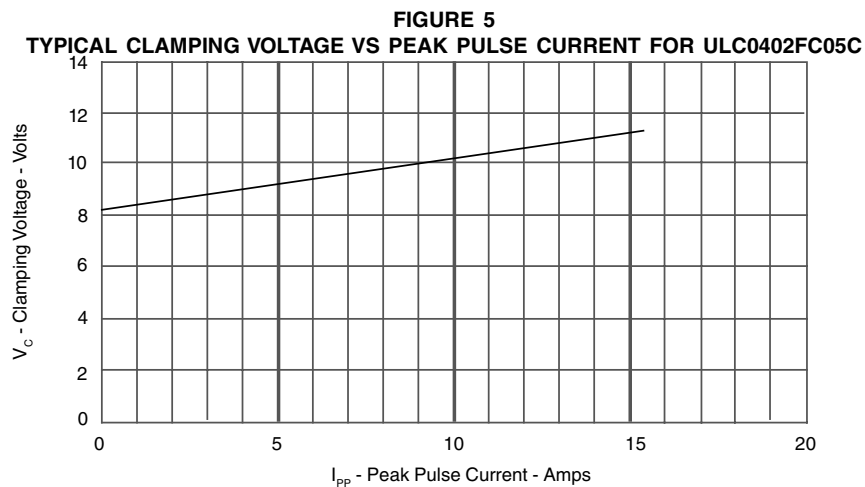
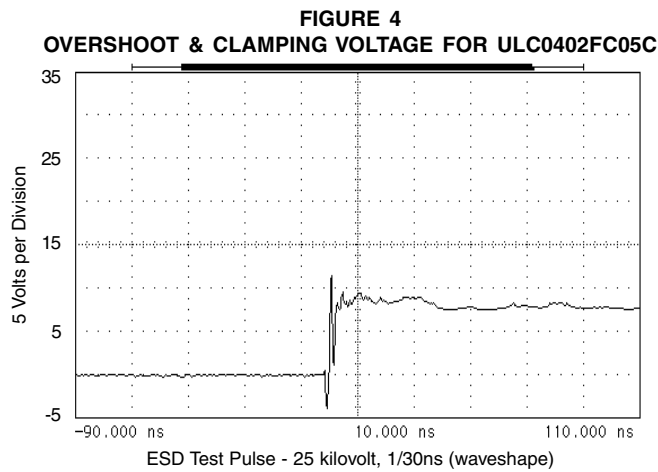
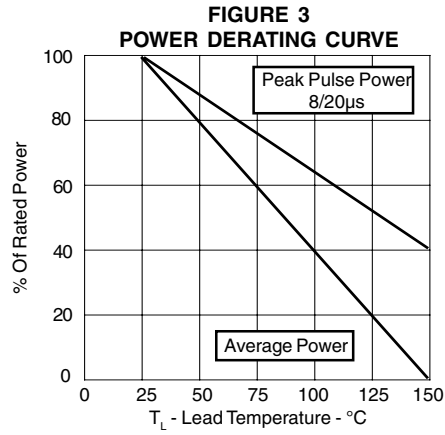
MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1	P_{PP}	200	Watts
Operating Temperature	T_J	-55°C to 150°C	°C
Storage Temperature	T_{STG}	-55°C to 150°C	°C

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 (See Note 2) @ V_{WM} I_D μA	TYPICAL CAPACITANCE @ 0V, 1 MHz C pF
ULC0402FC05C	5.9	6.0	11.0	13V @ 15A	10**	35
ULC0402FC08C	8.0	8.5	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
ULC0402FC36C	36.0	40.0	70.0	80.0V @ 2.5A	1	18

Note 1: All devices are bidirectional. Electrical characteristics apply in both directions.
Note 2: *Maximum leakage current < 5 μA @ 2.8V. **Maximum leakage current < 500nA @ 3.3V.



GRAPHS

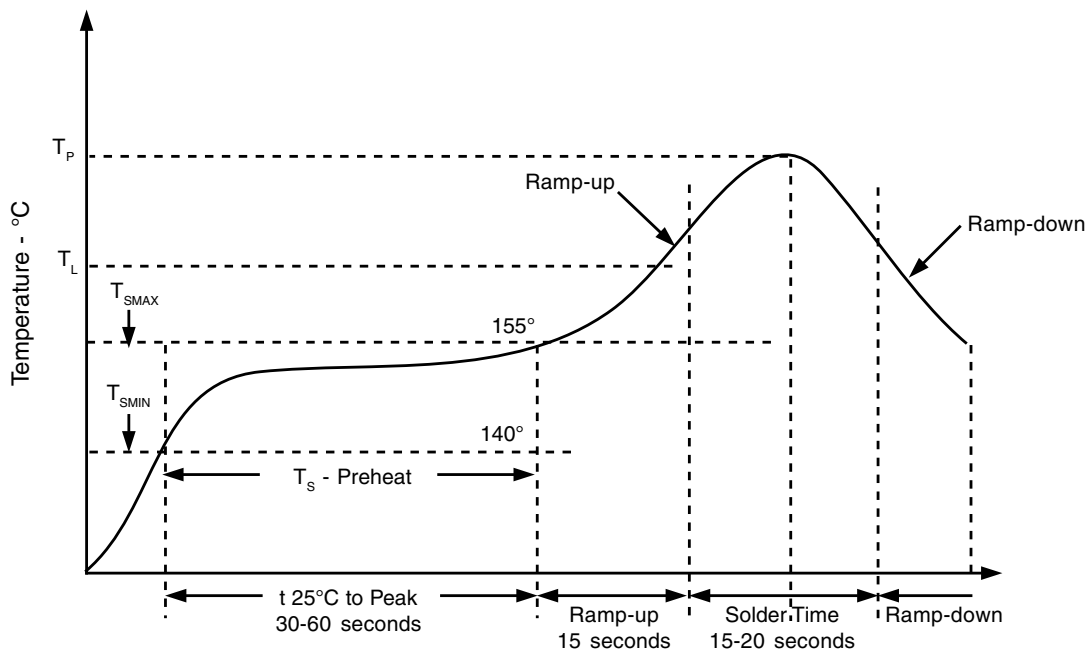
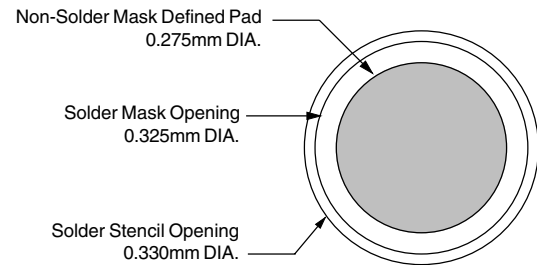


APPLICATION INFORMATION

PRINTED CIRCUIT BOARD RECOMMENDATIONS	
PARAMETER	VALUE
Pad Size on PCB	0.275mm
Pad Shape	Round
Pad Definition	Non-Solder Mask Defined Pads
Solder Mask Opening	0.325mm Round
Solder Stencil Thickness	0.150mm
Solder Stencil Aperture Opening (laser cut, 5% tapered walls)	0.330mm Round
Solder Paste Type	No Clean
Pad Protective Finish	OSP(Entek Cu Plus 106A)
Tolerance - Edge To Corner Ball	±50µm
Solder Ball Side Coplanarity	±20µm
Maximum Dwell Time Above Liquidous (183°C)	60 Seconds
Soldering Maximum Temperature	270°C

REQUIREMENTS
<p>Temperature: T_p for Lead-Free (SnAgCu): 260-265°C T_p for Tin-Lead: 240-245°C Preheat time and temperature depends on solder paste and flux activation temperature, component size, weight, surface area & plating.</p>

RECOMMENDED NON-SOLDER MASK DEFINED PAD ILLUSTRATION



PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE		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																															
NOTES:																																	
1. Controlling dimensions in inches.																																	
2. Decimal tolerances for mounting pad and outline: .xxx ± 0.05mm (± 0.002").																																	
3. Maximum chip size: 1.02 (0.040") by 0.51(0.020").																																	
MOUNTING PAD		PAD DIMENSIONS																															
		<table border="1"> <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
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:																																	
1. Top view of tape. Metal contacts are face down in tape package.																																	
TAPE & REEL ORIENTATION																																	
<p>Single Die - 0402</p>																																	
NOTE:																																	
1. Preferred: Using 0.1mm (0.004") stencil.																																	
Outline & Dimensions: Rev 3 - 11/02, 06020																																	
TAPE & REEL ORDERING NOMENCLATURE																																	
1. Surface mount product is taped and reeled in accordance with EIA 481. 2. 8mm Plastic Tape: 7 Inch Reels - 5,000 pieces per reel. Ordering Suffix: -T75-1 (i.e., ULC0402FC05C-T75-1). 3. 8mm Paper Tape: 7 Inch Reels - 10,000 pieces per reel. Ordering Suffix: -T710-2 (i.e., ULC0402FC05C-T710-2).																																	

COPYRIGHT © ProTek Devices 2005

SPECIFICATIONS: ProTek reserves the right to change the electrical and or mechanical characteristics described herein without notice (except JEDEC).

DESIGN CHANGES: ProTek reserves the right to discontinue product lines without notice, and that the final judgement concerning selection and specifications is the buyer's and that in furnishing engineering and technical assistance, ProTek assumes no responsibility with respect to the selection or specifications of such products.

ProTek Devices

2929 South Fair Lane, Tempe, AZ 85282

Tel: 602-431-8101 Fax: 602-431-2288

E-Mail: sales@protekdevices.com

Web Site: www.protekdevices.com