

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

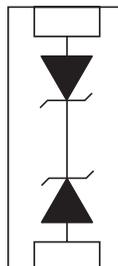
- ✓ ESD Protection > 25 kilovolts
- ✓ Available in Six Voltage Types Ranging From 3.3V to 24V
- ✓ Low ESD Overshoot Voltage
- ✓ Bidirectional Configuration & Monolithic Structure
- ✓ Protects 1 Line
- ✓ **LOW CAPACITANCE: 6pF**
- ✓ **LOW LEAKAGE CURRENT**
- ✓ RoHS Compliant

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



ULLC0402FC3.3C* thru ULLC0402FC24C*

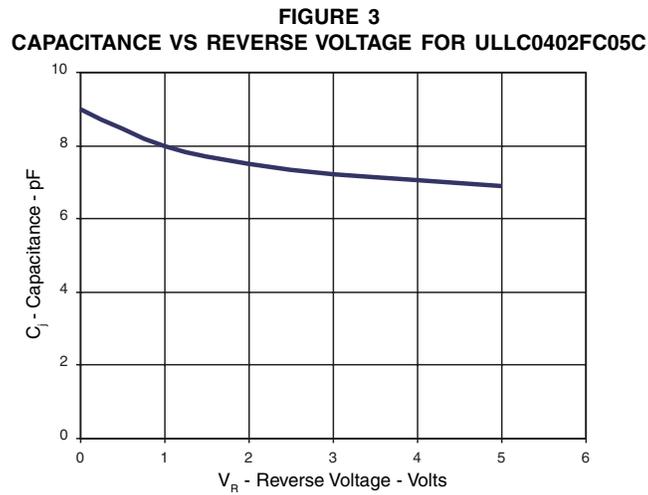
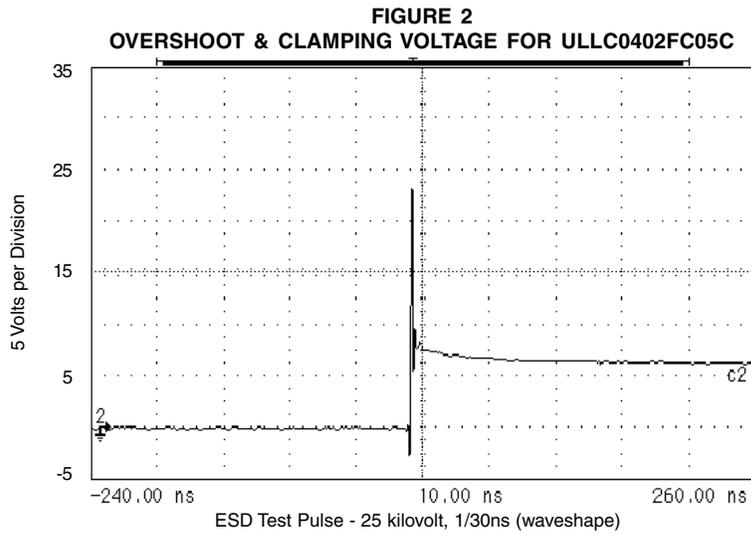
DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
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 LEAKAGE CURRENT @ V_{WM} I_D μA	TYPICAL CAPACITANCE
				@ 0V, 1 MHz C pF
ULLC0402FC3.3C	3.3	4.0	75	6
ULLC0402FC05C	5.0	6.0	1.0	6
ULLC0402FC08C	8.0	8.5	0.1	6
ULLC0402FC12C	12.0	13.3	0.1	6
ULLC0402FC15C	15.0	16.7	0.1	6
ULLC0402FC24C	24.0	26.7	0.1	6

Note 1: All devices are bidirectional.

GRAPHS

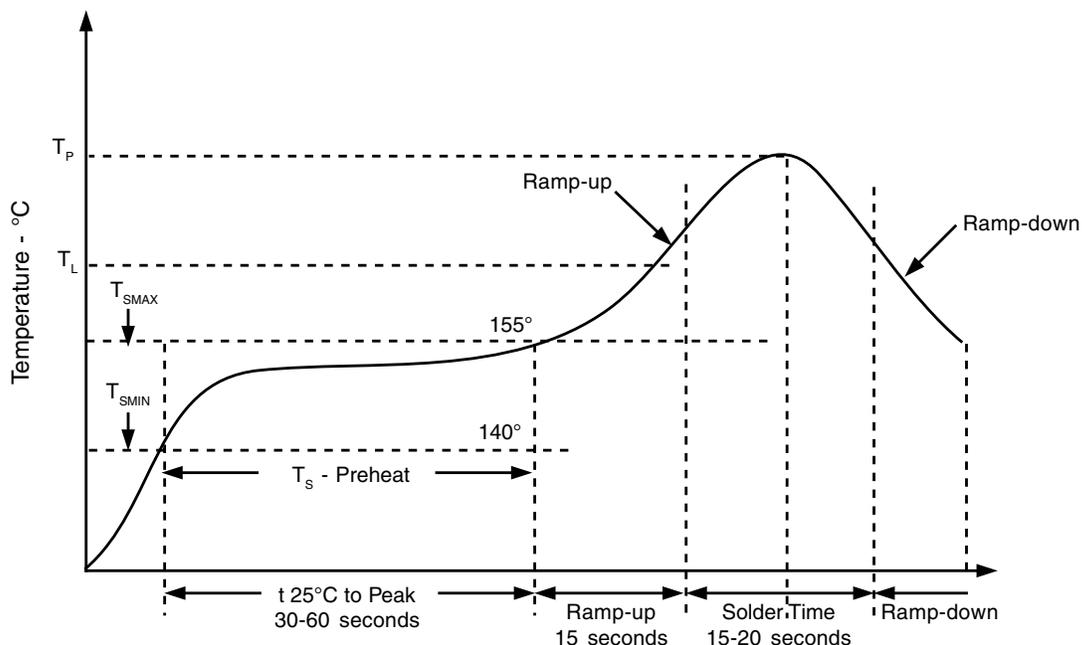
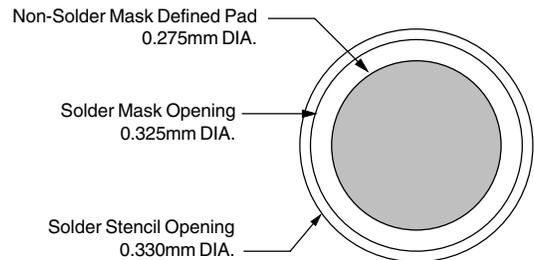


APPLICATION INFORMATION

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

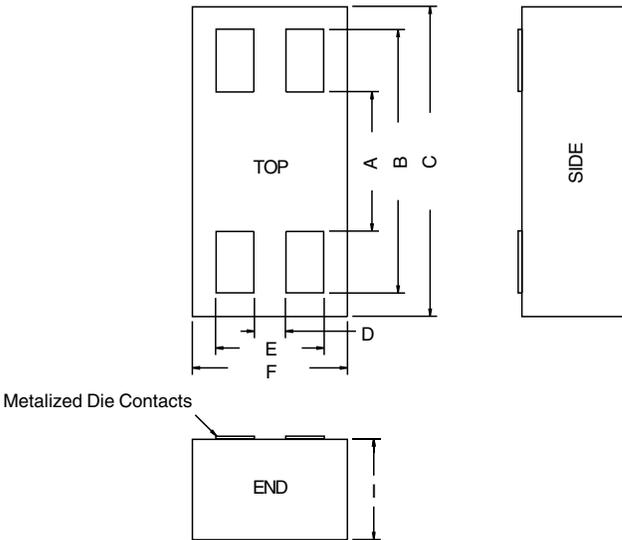
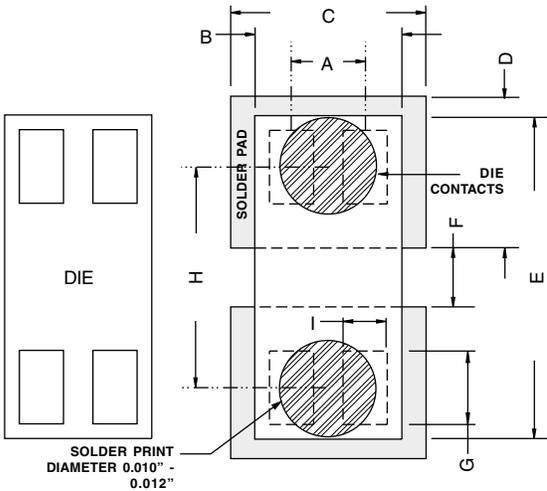
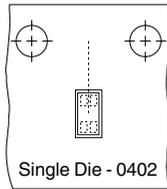
REQUIREMENTS
<p>Temperature: T_p for Lead-Free (SnAgCu): 260-265°C T_p for Tin-Lead: 240-245°C Preheat time and temperature depends on solder paste and flux activation temperature, component size, weight, surface area & plating.</p>

RECOMMENDED NON-SOLDER MASK DEFINED PAD ILLUSTRATION



ULLC0402FC3.3C* thru ULLC0402FC24C*

PACKAGE OUTLINE & DIMENSIONS

<p style="text-align: center;">PACKAGE OUTLINE</p>  <p style="text-align: center;">Metalized Die Contacts</p>	<p style="text-align: center;">U0402</p> 		
	<p style="text-align: center;">PACKAGE DIMENSIONS</p>		
	DIM	MILLIMETERS	INCHES
	A	0.61 NOM	0.024 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
<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"). Maximum chip size: 1.02 (0.040") by 0.51(0.020"). 			
<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>		
	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
<p>TAPE & REEL ORDERING NOMENCLATURE</p> <ol style="list-style-type: none"> Surface mount product is taped and reeled in accordance with EIA 481. 8mm Plastic Tape: 7 Inch Reels - 5,000 pieces per reel. Ordering Suffix: -T75-1 (i.e., ULLC0402FC05C-T75-1). 8mm Paper Tape: 7 Inch Reels - 10,000 pieces per reel. Ordering Suffix: -T710-2 (i.e., ULLC0402FC05C-T710-2). 	<p>NOTE:</p> <ol style="list-style-type: none"> Top view of tape. Metal contacts are face down in tape package. <p style="text-align: center;">TAPE & REEL ORIENTATION</p>  <p style="text-align: center;">Single Die - 0402</p> <p>NOTE:</p> <ol style="list-style-type: none"> Preferred: Using 0.1mm (0.004") stencil. <p style="text-align: center;">Outline & Dimensions: Rev 4 - 10/05, 06020</p>		

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