05192

PROTEK DEVICES

ULLC0402FC05C*

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

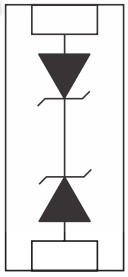
FEATURES

- ✔ ESD Protection > 25 kilovolts
- ✔ 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:
  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



*U.S. Patent No. 6,867,436

DEVICE CHARACTERISTICS

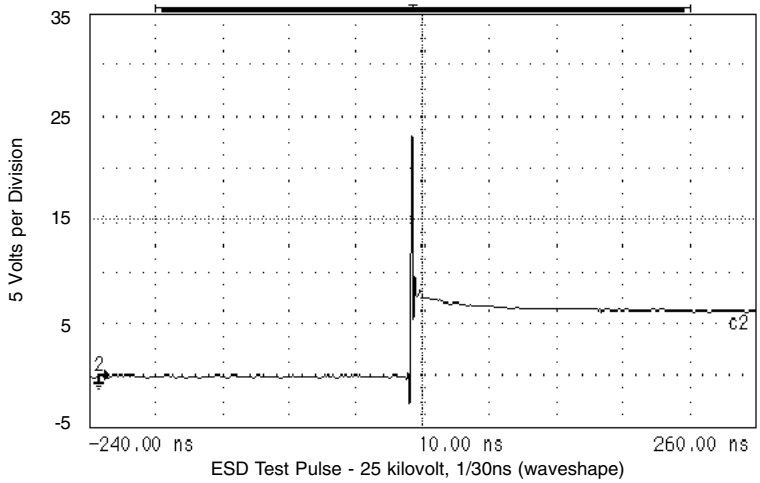
MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	**SYMBOL**	**VALUE**	**UNITS**
Operating Temperature	T_J	-55°C to 150°C	°C
Storage Temperature	T_{STG}	-55°C to 150°C	°C

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified				
PART NUMBER (See Notes 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
ULLC0402FC05C	5.0	6.0	1.0	6

Note 1: Device is bidirectional.

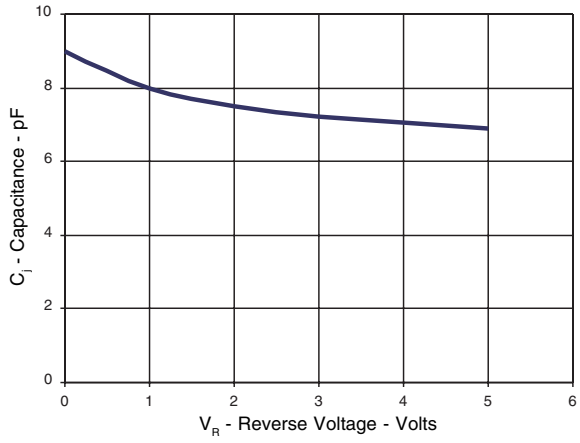
GRAPHS

FIGURE 1
OVERSHOOT & CLAMPING VOLTAGE



ESD Test Pulse - 25 kilovolt, 1/30ns (waveshape)

FIGURE 2
CAPACITANCE VS REVERSE VOLTAGE

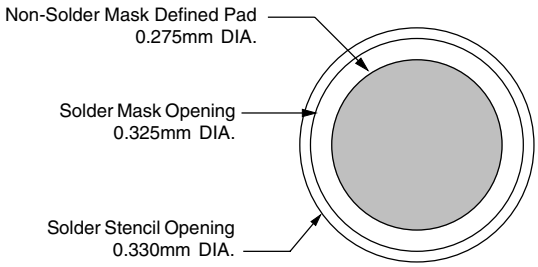


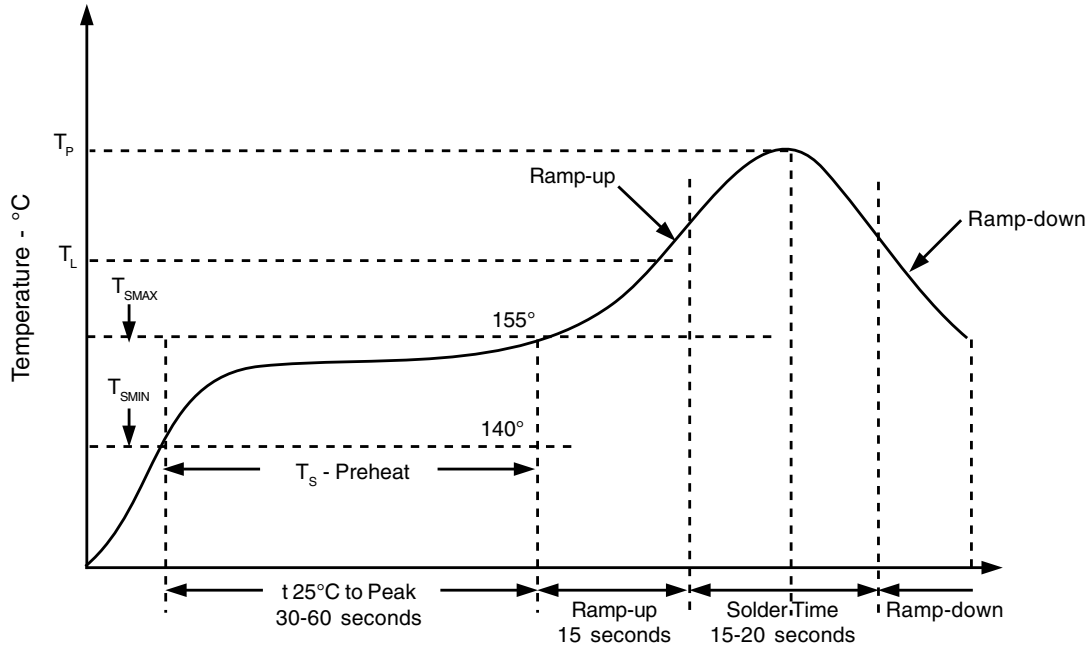
APPLICATION INFORMATION

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
Temperature: T_P for Lead-Free (SnAgCu): 260-270°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.

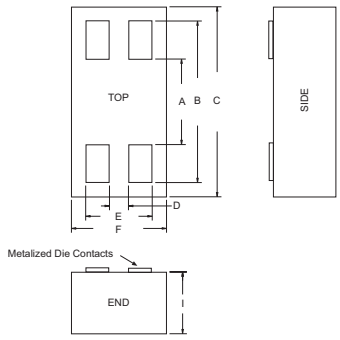
RECOMMENDED NON-SOLDER MASK DEFINED PAD ILLUSTRATION





U0402 PACKAGE OUTLINE & DIMENSIONS

PACKAGE OUTLINE

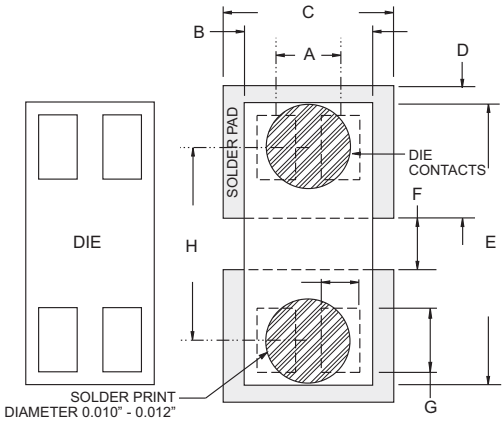


PACKAGE DIMENSIONS

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

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

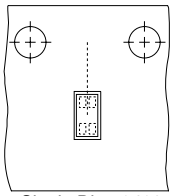


PAD DIMENSIONS

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



Single Die - 0402

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

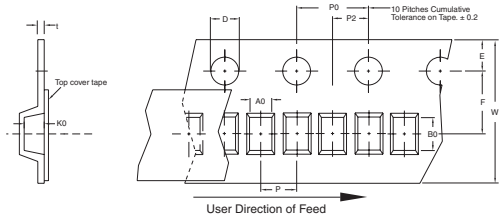
Outline & Dimensions: Rev 4 - 10/05, 6020

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., *ULLC0402FC05C-T75-1.*
3. *8mm Paper Tape:* 7 Inch Reels -10,000 pieces per reel. Ordering suffix : -T710-2, i.e., *ULLC0402FC05C-T710-2.*

Tape & Reel Specifications (Dimensions in millimeters)

Reel Dia.	Tape Width	A0	B0	K0	D	E	F	W	P0	P2	P	tmax
178mm (7")/330mm(13")	8mm	0.80± 0.10	1.20± 0.10	0.70 ± 0.10	1.50 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	8.00 ±0.30	4.00 ±0.10	2.00 ±0.05	2.00 ±0.10	0.25



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