PROTEK DEVICES

ESD4-LFC

LOW CAPACITANCE FLIP CHIP ARRAY

5 BUMP FLIP CHIP

APPLICATIONS

- ✔ Cellular Phones
- ✔ I/O Ports
- ✔ Notebooks & Pocket PCs
- ✔ Personal Digital Assistant (PDA)
- ✔ Ground Positioning System (GPS)
- ✔ SMART Cards

IEC COMPATIBILITY (EN61000-4)

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

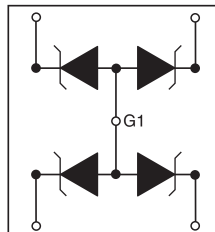
FEATURES

- ✔ ESD Protection > 25 kilovolts
- ✔ Unidirectional Configuration
- ✔ Low Capacitance: 15pF
- ✔ Protects Up to Four(4) Data Lines
- ✔ RoHS Compliant

MECHANICAL CHARACTERISTICS

- ✔ 5 Bump Flip Chip Package
- ✔ Weight 0.73 milligrams (Approximate)
- ✔ Available in Lead-Free Plating
- ✔ Solder Reflow Temperature:
  Lead-Free - Sn/Ag/Cu, 96/3.5/0.5: 260-270°C
- ✔ Consult Factory for Leaded Device Availability
- ✔ Flammability Rating UL 94V-0
- ✔ 8mm Tape and Reel Per EIA Standard 481

PIN CONFIGURATION



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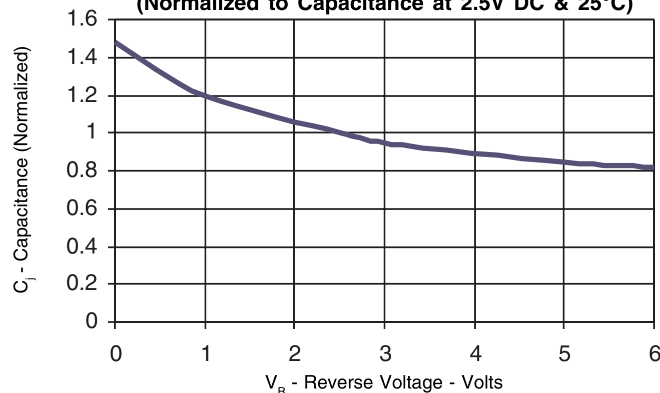
DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	**SYMBOL**	**VALUE**	**UNITS**
Operating Temperature	T_A	-40 to 85	°C
Storage Temperature	T_{STG}	-55 to 150	°C
DC Power Rating	P	200	mW

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified						
PART NUMBER	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM LEAKAGE CURRENT @3.3V I_D μA	TYPICAL FORWARD VOLTAGE @ 10mA V_F VOLTS	MAXIMUM CLAMPING VOLTAGE @ I_P = 10mA V_C VOLTS	TYPICAL CAPACITANCE PER LINE (See Note 1) @2.5V, 1 MHz C pF
ESD4-LFC	5.0	6.0	0.1	0.8	8	15

Note 1: ±20% tolerance.

FIGURE 1
CAPACITANCE VS REVERSE VOLTAGE
(Normalized to Capacitance at 2.5V DC & 25°C)

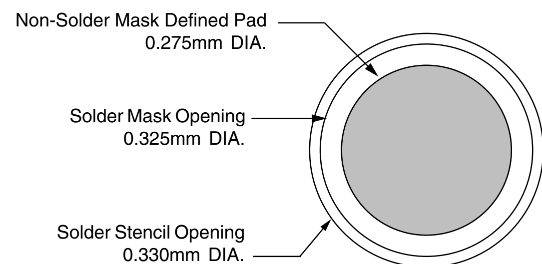


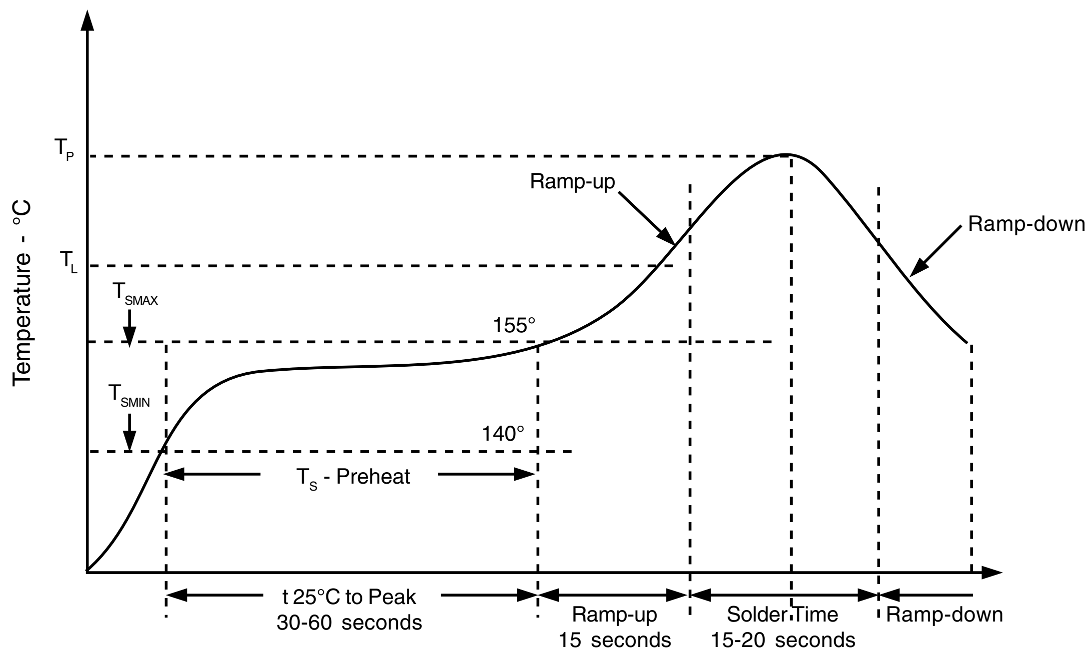
APPLICATION INFORMATION

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.

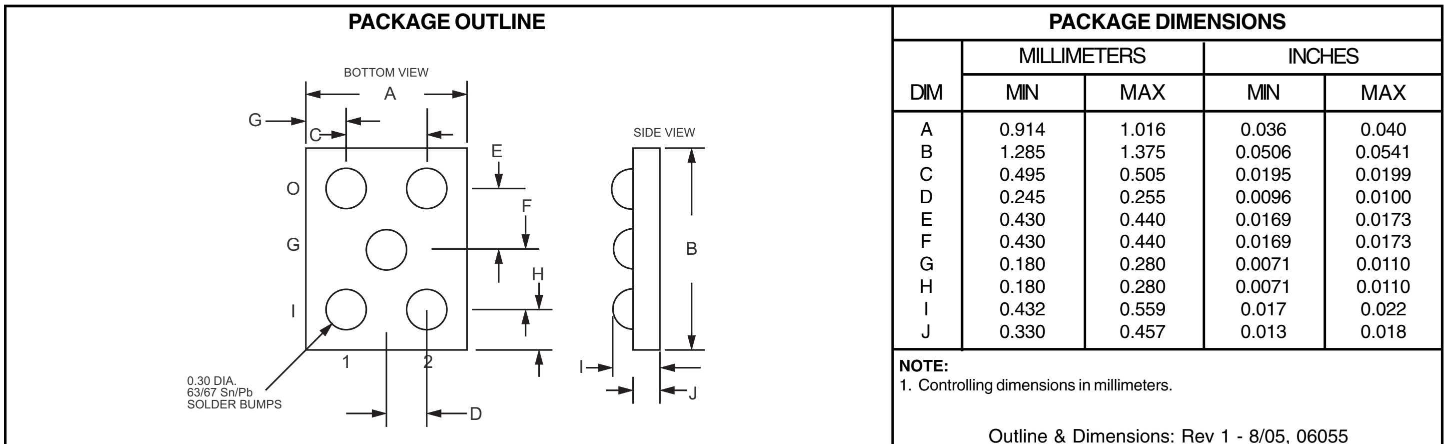
RECOMMENDED NON-SOLDER MASK DEFINED PAD ILLUSTRATION





ESD4-LFC

5 BUMP FLIP CHIP PACKAGE OUTLINE & DIMENSIONS



PACKAGE DIMENSIONS

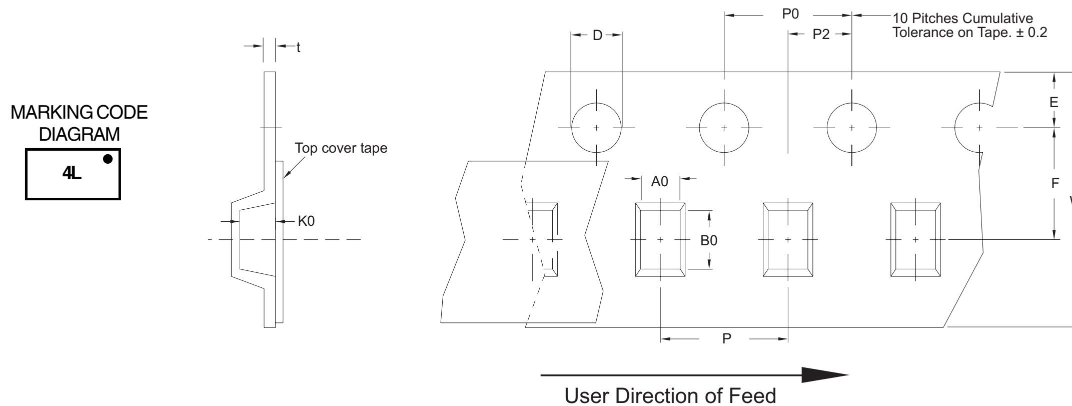
DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	0.914	1.016	0.036	0.040
B	1.285	1.375	0.0506	0.0541
C	0.495	0.505	0.0195	0.0199
D	0.245	0.255	0.0096	0.0100
E	0.430	0.440	0.0169	0.0173
F	0.430	0.440	0.0169	0.0173
G	0.180	0.280	0.0071	0.0110
H	0.180	0.280	0.0071	0.0110
I	0.432	0.559	0.017	0.022
J	0.330	0.457	0.013	0.018

NOTE:
1. Controlling dimensions in millimeters.

Outline & Dimensions: Rev 1 - 8/05, 06055

Tape & Reel Specifications (Dimensions in millimeters)

Reel Dia.	Tape Width	A0	B0	K0	D	E	F	W	P0	P2	P	t
178mm (7")	8mm	1.08 ± 0.05	1.60 ± 0.05	0.72 ± 0.05	1.50 ± 0.10	1.75 ± 0.10	3.50 ± 0.05	8.00 ±0.30	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	0.20±0.025



User Direction of Feed

TAPE & REEL ORDERING NOMENCLATURE

1. Surface mount product is taped and reeled in accordance with EIA-481.
2. Plastic 8mm Tape: Suffix-T73-1 = 7 Inch Reel - 3,000 pieces per reel, i.e., *ESD4-LFC-T73-1.*
3. Suffix - LF - Lead-Free, i.e., *ESD4-LFC-LF-T73-1.*
4. Suffix - C - Coated Version, i.e., *ESD4-LFC-LF-T73C-1.*

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