

Welcome to **E-XFL.COM**

Understanding Embedded - CPLDs (Complex Programmable Logic Devices)

Embedded - CPLDs, or Complex Programmable Logic Devices, are highly versatile digital logic devices used in electronic systems. These programmable components are designed to perform complex logical operations and can be customized for specific applications. Unlike fixed-function ICs, CPLDs offer the flexibility to reprogram their configuration, making them an ideal choice for various embedded systems. They consist of a set of logic gates and programmable interconnects, allowing designers to implement complex logic circuits without needing custom hardware.

Applications of Embedded - CPLDs

Details	
Product Status	Obsolete
Programmable Type	EE PLD
Delay Time tpd(1) Max	15 ns
Voltage Supply - Internal	4.5V ~ 5.5V
Number of Logic Elements/Blocks	-
Number of Macrocells	12
Number of Gates	-
Number of I/O	-
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	28-LCC (J-Lead)
Supplier Device Package	28-PLCC (11.51x11.51)
Purchase URL	https://www.e-xfl.com/product-detail/lattice-semiconductor/gal26cv12b-15lji

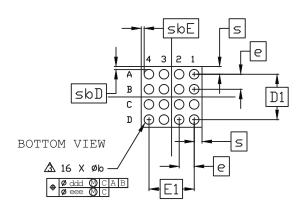
Email: info@E-XFL.COM

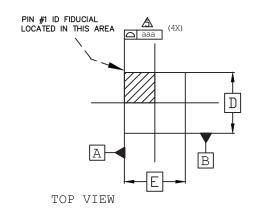
Address: Room A, 16/F, Full Win Commercial Centre, 573 Nathan Road, Mongkok, Hong Kong

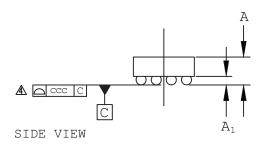


16-Ball WLCS Package Option 2: iCE40 UltraLite™

Dimensions in Millimeters







NOTES:

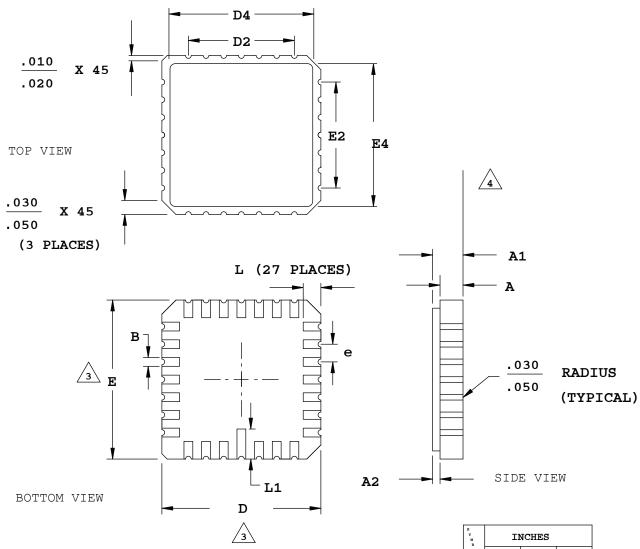
- 1. ALL DIMENSIONS AND TOLERANCE PER ASME Y 14.5M 1994.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.
- △ DIMENSION "b" IS MEASURES AT THE MAXIMUM BUMP DIAMETER PARALLEL TO PRIMARY DATUM C.
- A PRIMARY DATUM C AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BUMPS.
- $\underline{\mathbb{A}}$ BILATERAL TOLERANCE ZONE IS APPLIED TO EACH SIDE OF THE PACKAGE BODY.

REF.	Min.	Nom.	Max.		
Α	0.413	0.452	0.491		
A1	0.122	0.152	0.182		
b	0.188	0.218	0.248		
D	1.	409 BS	С		
Ε	1.	409 BS	С		
D1	1.05 BSC				
E1	1.05 BSC				
е	0.35 BSC				
S	-	0.180	-		
sbD	0.067	0.071	0.072		
sbE	0.067	0.071	0.072		
۵۵۵	0.03				
CCC	0.03				
ddd	0.050				
eee		0.015			



28-Pin LCC Package

Dimensions in Inches



NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5.
- 2. ALL DIMENSIONS ARE IN INCHES.

<u>/3.</u>

DIMENSIONS D AND E MAY HAVE MATERIAL PROTRUSION OF .010 INCHES MAXIMUM ABOVE THE DIMENSION SHOWN NOT TO EXCEED .005 INCHES MAXIMUM PER SIDE.



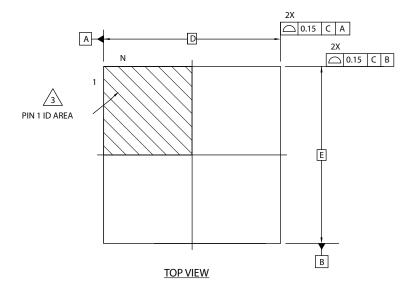
FLATNESS TOLERANCE IS .004 INCHES PER INCH.

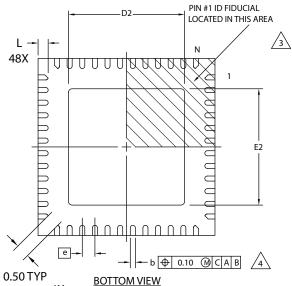
S Y M	INCHES					
0 L	MIN.		MAX.			
A	.054		.074			
A1	.064		.089			
A 2	.007		.015			
В	.022		.028			
D	.440		.460			
D2	.300					
D4	.370		.403			
E	.440		.460			
E2		.300				
E4	.370		.403			
е	.050 BSC					
L	.042		.058			
L1	.075		.095			

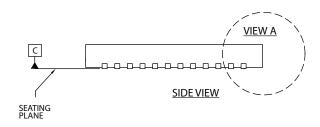


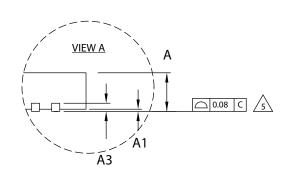
48-Pin QFN Package Option 1

Dimensions in Millimeters









NOTES: UNLESS OTHERWISE SPECIFIED

- 1. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.

EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.

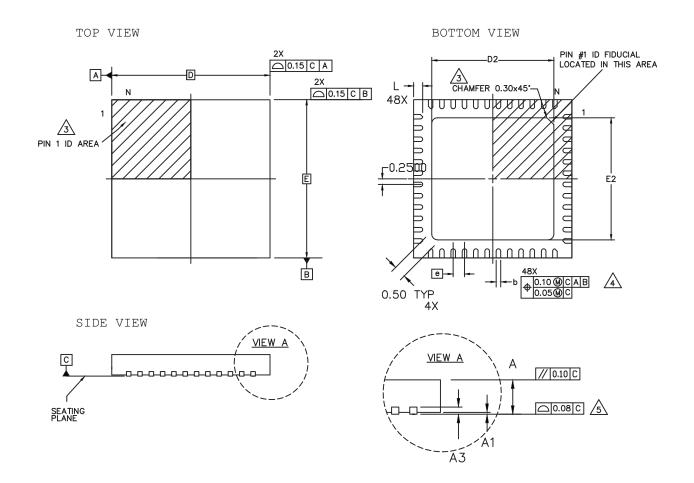
DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 mm FROM TERMINAL TIP.

SYMBOL	MIN.	NOM.	MAX.			
А	0.80	0.90	1.00			
A1	0.00	0.02	0.05			
А3	0.2 REF					
D	7.0 BSC					
D2	3.00	-	5.80			
E	7.0 BSC					
E2	3.00	-	5.80			
b	0.18	0.24	0.30			
е	0.50 BSC					
L	0.30	0.40	0.50			



48-Pin QFN Package Option 2: L-ASC10, iCE40 Ultra, iCE40 UltraPlus, MachXO2

Dimensions in Millimeters



NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.

2. ALL DIMENSIONS ARE IN MILLIMETERS.

<u> 3</u>

EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.

4

DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 mm FROM TERMINAL TIP.

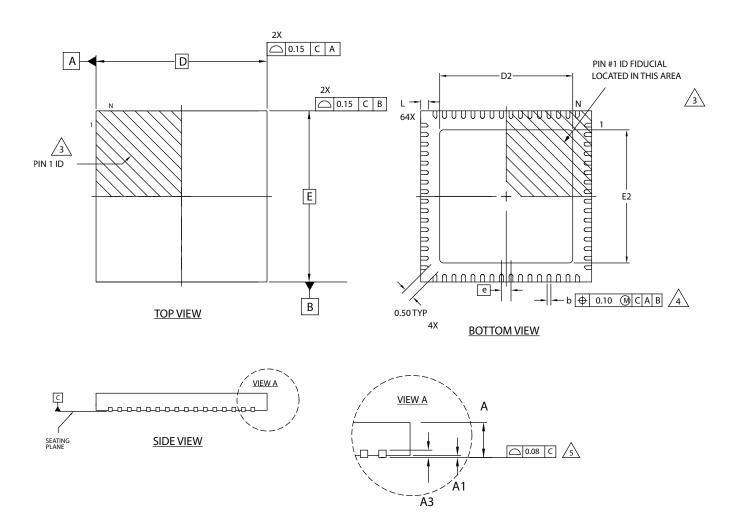
/5\

SYMBOL	MIN.	NOM.	MAX.			
А	0.80	0.90	1.00			
A1	0.00	0.02	0.05			
A3	0.2 REF					
D	7.0 BSC					
D2	5.30	5.40	5.50			
E	7.0 BSC					
E2	5.30	5.40	5.50			
b	0.15	0.20	0.25			
е	0.50 BSC					
L	0.35	0.40	0.45			



64-Pin QFNS Package

Dimensions in Millimeters



NOTES: UNLESS OTHERWISE SPECIFIED

- 1. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.

EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.

DIMENSION b APPLIES TO PLATED
TERMINAL AND IS MEASURED BETWEEN
0.15 AND 0.30 mm FROM TERMINAL TIP.

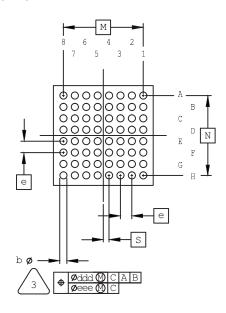
SYMBOL	MIN.	NOM.	MAX.			
A	0.80	0.90	1.00			
A1	0.00	0.02	0.05			
А3	0.2 REF					
D	9.0 BSC					
D2	5.00	_	7.50			
E	9.0 BSC					
E2	5.00	-	7.50			
b	0.18	0.24	0.30			
е	0.50 BSC					
L	0.30	0.50				

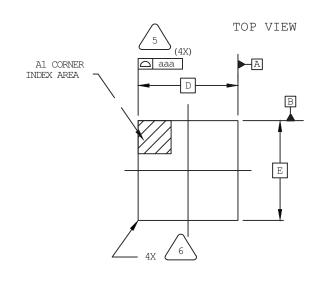


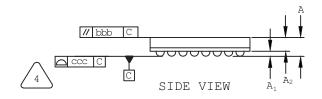
64-Ball ucfBGA Package

Dimensions in Millimeters

BOTTOM VIEW







NOTES: UNLESS OTHERWISE SPECIFIED

- 1. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.



DIMENSION "b" IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM [C].



PRIMARY DATUM [C] AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.



BILATERAL TOLERANCE ZONE IS APPLIED TO EACH SIDE OF THE PACKAGE BODY.

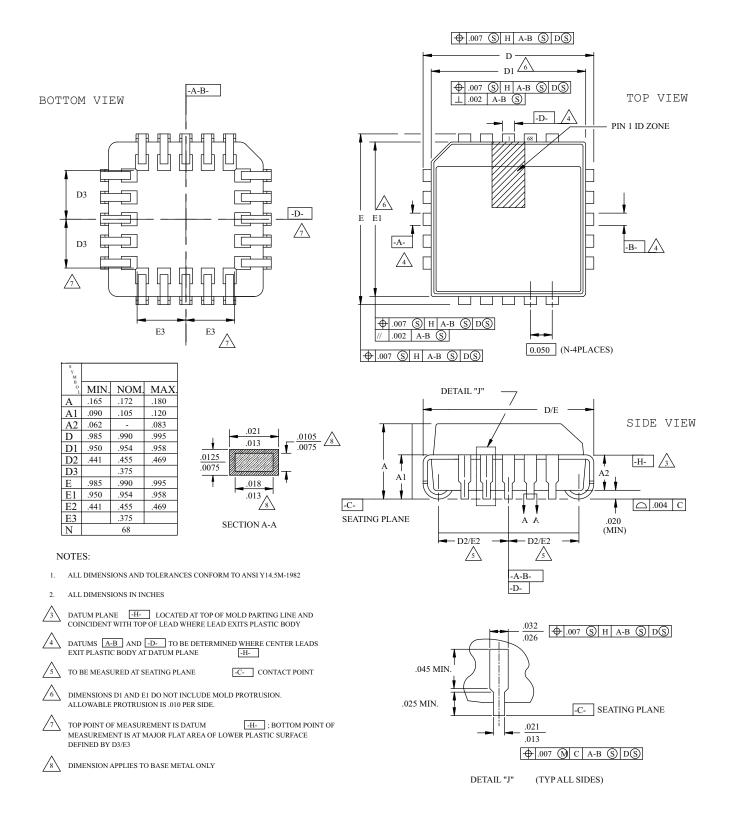


SYMBOL MIN. NOM. MAX. A - - 1.00 A1 0.11 - - A2 0.62 - -					
A1 0.11					
A2 0.62					
D/E 3.50 BSC					
M/N 2.80 BSC	2.80 BSC				
S 0.20 BSC	0.20 BSC				
b 0.20 0.25 0.30					
e 0.40 BSC	0.40 BSC				
aaa 0.10	0.10				
bbb 0.10	0.10				
ccc 0.08	0.08				
ddd 0.15	0.15				
eee 0.08	0.08				



68-Pin PLCC Package

Dimensions in Inches

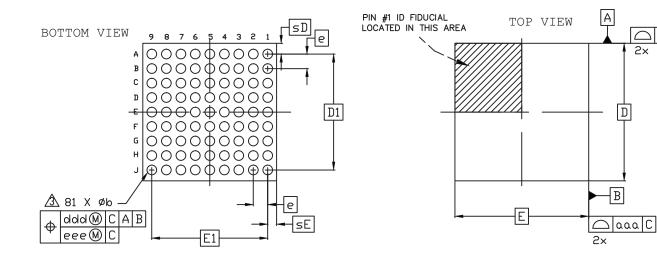


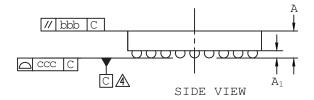
2x



81-Ball WLCS Package

Dimensions in Millimeters





Notes:

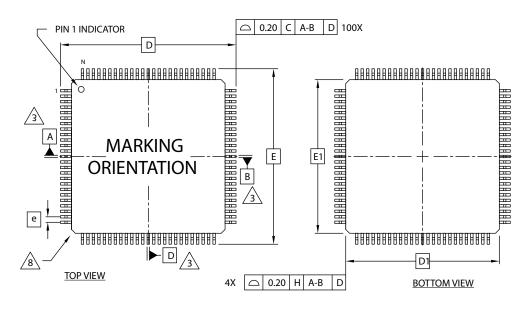
- 1 ALL DIMENSIONS AND TOLERANCE PER ASME Y 14.5M 1994.
- 2 ALL DIMENSIONS ARE IN MILLIMETERS.
- △ DIMENSION "b" IS MEASURED AT THE MAXIMUM BUMP DIAMETER PARALLEL TO PRIMARY DATUM C.
- A PRIMARY DATUM C AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BUMPS.

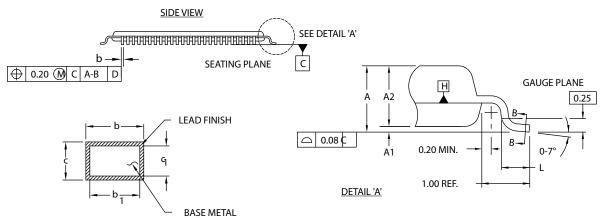
REF.	Min.	Nom.	Max.		
A	0.510	0.543	0.567		
A1	0.167	0.196	0.225		
b	0.239	0.266	0.319		
D	3	.797 BS	С		
E	3	.693 BS	С		
D1	3	.20 BS0	2		
E1	3.20 BSC				
е	0.40 BSC				
sD	-	0.299	_		
sE	-	0.247	-		
aaa	0.025				
bbb	0.060				
ccc	0.030				
ddd	0.015				
eee	0.050				



100-Pin VQFP Package Option 2: iCE40

Dimensions in Millimeters





NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5 - 1982.

SECTION B-B

2. ALL DIMENSIONS ARE IN MILLIMETERS.

 $\sqrt{3}$ DATUMS A, B AND D TO BE DETERMINED AT DATUM PLANE H.

- DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD PROTRUSION.
 ALLOWABLE MOLD PROTRUSION IS 0.254 MM ON D1 AND E1 DIMENSIONS.
- 5. THE TOP OF PACKAGE MAY BE SMALLER THAN THE BOTTOM OF THE PACKAGE BY 0.15 MM.
- 6. SECTION B-B:
 THESE DIMENSIONS APPLY TO THE FLAT SECTION OF THE
 LEAD BETWEEN 0.10 AND 0.25 MM FROM THE LEAD TIP.
- 7. A1 IS DEFINED AS THE DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT ON THE PACKAGE BODY.

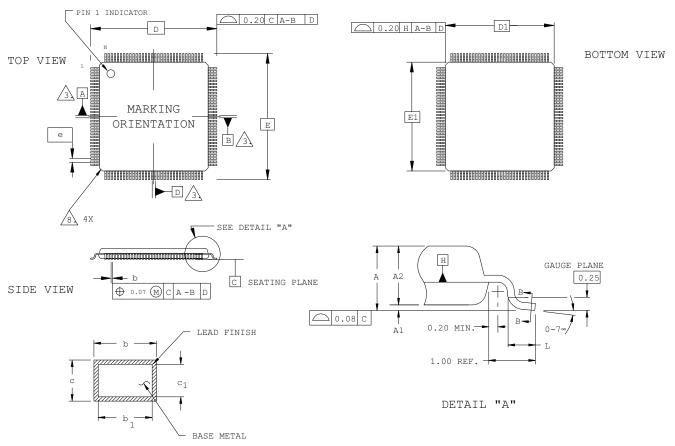
8. EXACT SHAPE OF EACH CORNER IS OPTIONAL.

SYMBOL	MIN.	NOM.	MAX.		
A	-	-	1.20		
A1	0.05	-	0.15		
A2	0.95	1.00	1.05		
D		16.00 BSC			
D1		14.00 BSC			
E	16.00 BSC				
E1	14.00 BSC				
L	0.45 0.60 0.75				
N	100				
е	0.50 BSC				
b	0.17	0.22	0.27		
b1	0.17	0.20	0.23		
С	0.09	0.15	0.20		
c1	0.09	0.13	0.16		



128-Pin TQFP Package

Dimensions in Millimeters



SECTION B - B

NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5 1982.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.

A DATUMS A, B AND D TO BE DETERMINED AT DATUM PLANE H.

- DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD PROTRUSION.
 ALLOWABLE MOLD PROTRUSION IS 0.254 MM ON D1 AND E1 DIMENSIONS.
- 5. THE TOP OF PACKAGE MAY BE SMALLER THAN THE BOTTOM OF THE PACKAGE BY 0.15 MM.
- 6. SECTION B-B:
 THESE DIMENSIONS APPLY TO THE FLAT SECTION OF THE
 LEAD BETWEEN 0.10 AND 0.25 MM FROM THE LEAD TIP.
- 7. A1 IS DEFINED AS THE DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT ON THE PACKAGE BODY.

/8\ EXACT SHAPE OF EACH CORNER IS OPTIONAL.

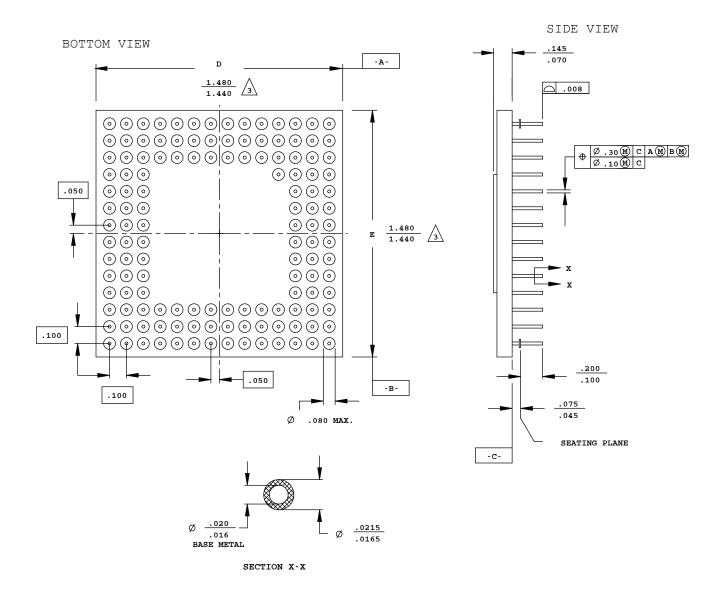
SIDE VIEW

SYMBOL	MIN.	NOM.	MAX.			
A	-	-	1.60			
A1	0.05	-	0.15			
A2	1.35	1.40	1.45			
D		16.00 BSC				
D1	14.00 BSC					
E	16.00 BSC					
E1	14.00 BSC					
L	0.45	0.60	0.75			
N	128					
е	0.40 BSC					
b	0.13	0.18	0.23			
b1	0.13	0.16	0.19			
С	0.09	0.15	0.20			
c1	0.09	0.13	0.16			



133-Pin CPGA Package

Dimensions in Inches



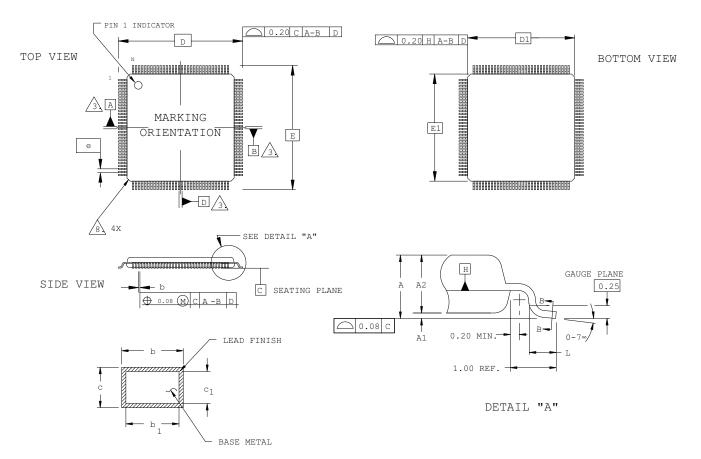
NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M.
- 2. ALL DIMENSIONS ARE IN INCHES.
- DIMENSIONS D AND E MAY HAVE MATERIAL PROTRUSION OF
 .006 INCHES MAXIMUM ABOVE THE DIMENSION SHOWN
 NOT TO EXCEED .003 INCHES MAXIMUM PER SIDE.



144-Pin TQFP Package

Dimensions in Millimeters



SECTION B - B

NOTES:

- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5 1982.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.

 $\sqrt{}_3$ DATUMS A, B AND D TO BE DETERMINED AT DATUM PLANE H.

- DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD PROTRUSION.
 ALLOWABLE MOLD PROTRUSION IS 0.254 MM ON D1 AND E1 DIMENSIONS.
- THE TOP OF PACKAGE MAY BE SMALLER THAN THE BOTTOM OF THE PACKAGE BY 0.15 MM.
- 6. SECTION B-B: THESE DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.10 AND 0.25 MM FROM THE LEAD TIP.
- 7. A1 IS DEFINED AS THE DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT ON THE PACKAGE BODY.

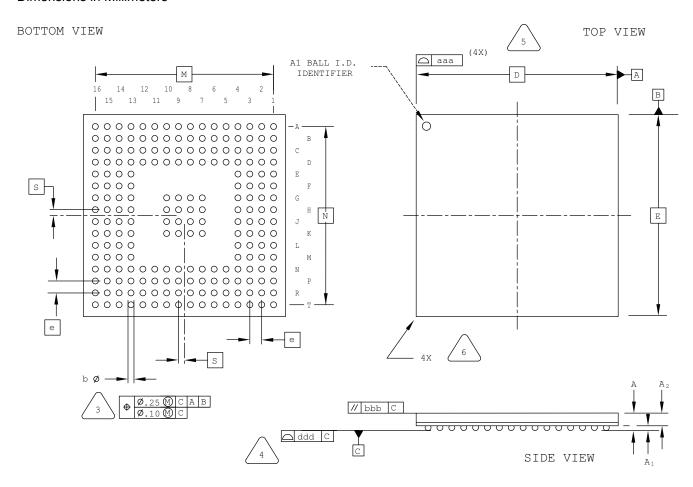
Λ								
/o\	FYACT	SHADE	OF	FACH	CORNER	TS	OPTIONAL.	

SYMBOL	MIN.	NOM.	MAX.			
A	-	-	1.60			
A1	0.05	-	0.15			
A2	1.35	1.40	1.45			
D		22.00 BSC				
D1	20.00 BSC					
Е	22.00 BSC					
E1	20.00 BSC					
L	0.45 0.60		0.75			
N	144					
е	0.50 BSC					
b	0.17	0.22	0.27			
b1	0.17	0.20	0.23			
С	0.09	0.15	0.20			
c1	0.09	0.13	0.16			



208-Ball ftBGA Package

Dimensions in Millimeters



NOTES: UNLESS OTHERWISE SPECIFIED

- 1. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.



DIMENSION "b" IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM C



PRIMARY DATUM C AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.



BILATERAL TOLERANCE ZONE IS APPLIED TO EACH SIDE OF THE PACKAGE BODY.

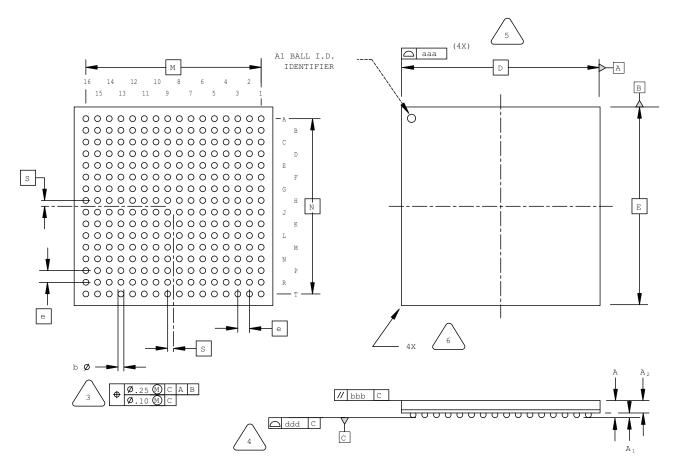


SYMBOL	MIN.	NOM.	MAX.
А	1.25	1.40	1.55
A1	0.30	_	_
A2	-	-	1.25
D/E	17.0 BSC		
M/N	15.0 BSC		
S	0.50 BSC		
b	0.40	0.50	0.60
е	1.0 BSC		
aaa	_	_	0.20
bbb	_	_	0.25
ddd	_	_	0.12



256-Ball ftBGA Package Option 1: ispMACH 4000, MachXO, LatticeXP2

Dimensions in Millimeters



NOTES: UNLESS OTHERWISE SPECIFIED

- 1. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.



DIMENSION "b" IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM C



PRIMARY DATUM C AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.



BILATERAL TOLERANCE ZONE IS APPLIED TO EACH SIDE OF THE PACKAGE BODY.

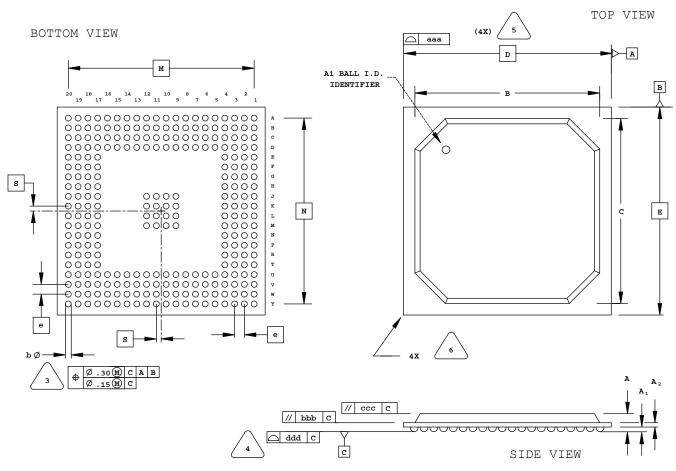


MIN.	NOM.	MAX.
1.25	1.40	1.55
0.30	-	-
_	-	1.25
17.0 BSC		
15.0 BSC		
0.50 BSC		
0.40	0.50	0.60
1.00 BSC		
-	-	0.20
-	-	0.25
		0.12
	1.25 0.30 - 17 15 0.40	1.25 1.40 0.30 17.0 BSC 15.0 BSC 0.50 BSC 0.40 0.50



272-Ball BGA Package

Dimensions in Millimeters



NOTES: UNLESS OTHERWISE SPECIFIED

- DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.



DIMENSION "b" IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM C



PRIMARY DATUM C AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.



BILATERAL TOLERANCE ZONE IS APPLIED TO EACH SIDE OF THE PACKAGE BODY.

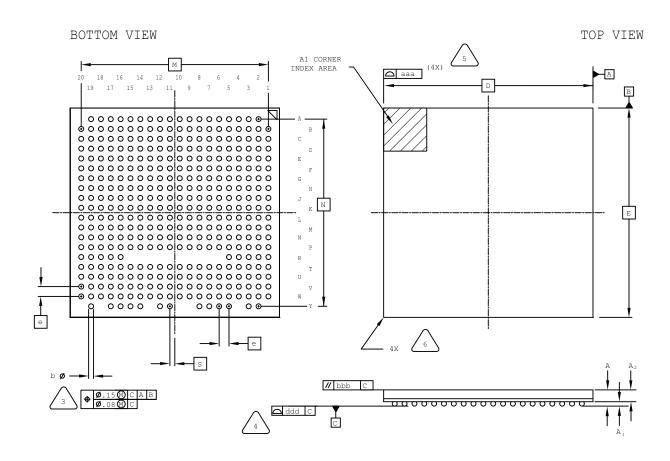


SYMBOL	MIN.	NOM.	MAX.
A	1.90	2.25	2.80
A1	0.50	0.65	0.80
A2	0.28	0.54	0.80
B/C	23.80	24.30	24.80
D/E	27.00 BSC		
M/N	24.13 BSC		
s	0.635 BSC		
b	0.60 0.75 0.9		0.90
е	1.27 BSC		
aaa	-	-	0.20
bbb			0.25
ccc	-	-	0.35
ddd	-	-	0.20



381-Ball caBGA Package

Dimensions in Millimeters



NOTES: UNLESS OTHERWISE SPECIFIED

- DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.



DIMENSION "b" IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM C



PRIMARY DATUM C AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.



BILATERAL TOLERANCE ZONE IS APPLIED TO EACH SIDE OF THE PACKAGE BODY.

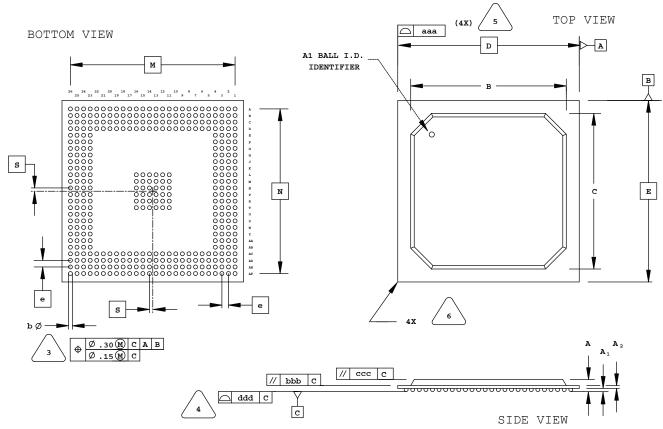


SYMBOL	MIN.	NOM.	MAX.
А	ı	ı	1.76
A1	0.25	0.30	0.35
A2	0.80	ı	ı
D/E	17.00 BSC		
M/N	15.20 BSC		
S	0.40 BSC		
b	0.35	0.40	0.45
е	0.80 BSC		
aaa	_	-	0.15
bbb	-	-	0.20
ddd	_	_	0.12



388-Ball BGA Package

Dimensions in Millimeters



NOTES: UNLESS OTHERWISE SPECIFIED

- 1. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.



DIMENSION "b" IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM C



PRIMARY DATUM C AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.



BILATERAL TOLERANCE ZONE IS APPLIED TO EACH SIDE OF THE PACKAGE BODY.

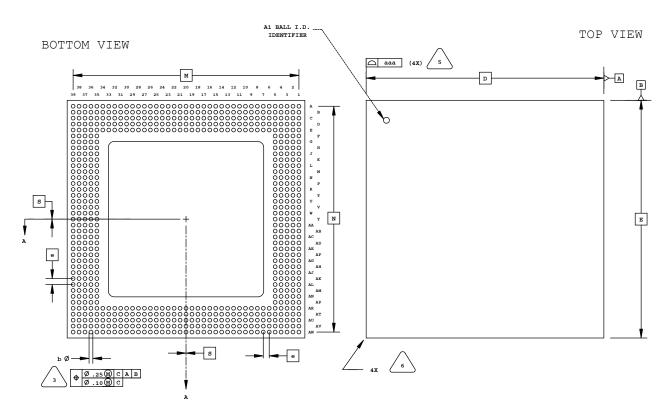


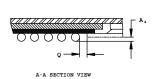
SYMBOL	MIN.	NOM.	MAX.
A	1.90	2.80	3.25
A1	0.50	0.65	0.80
A2	0.28	0.54	0.80
B/C	29.80	31.80	33.80
D/E	35.00 BSC		
M/N	31.75 BSC		
s	0.635 BSC		
b	0.60	0.75	0.90
е	1.27 BSC		
aaa			0.20
bbb			0.25
ccc	-	-	0.35
ddd	-	-	0.20

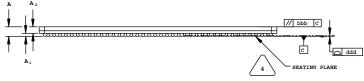


680-Ball fpSBGA Package

Dimensions in Millimeters







SIDE VIEW

NOTES: UNLESS OTHERWISE SPECIFIED

- 1. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.



DIMENSION "b" IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM C



PRIMARY DATUM C AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.



BILATERAL TOLERANCE ZONE IS APPLIED TO EACH SIDE OF THE PACKAGE BODY.



SYMBOL	MIN.	NOM.	MAX.
A	-	-	1.70
A1	0.45	0.53	0.60
A2	0.90	0.98	1.05
D/E	40.00 BSC		
M/N	38.00 BSC		
s	0.00 BSC		
b	0.50	0.65	0.80
е	1.00 BSC		
Q	0.25	-	-
A4	0.10 -		-
aaa	-	-	0.20
bbb	-	-	0.25
ddd	-	-	0.20



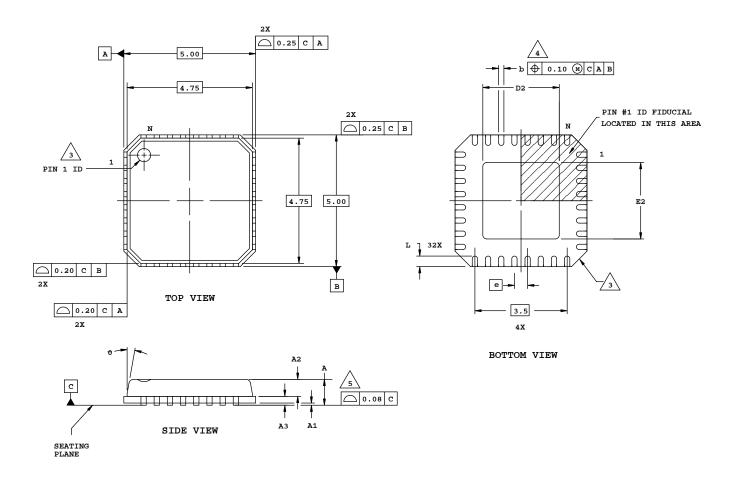
Date	Version	Change Summary		
		Updated 48-Pin QFNS Package to 48-Pin QFN Package.		
		Added 48-Pin QFN Package Option 2.		
		Added 49-Ball WLCS Package.		
June 2014	4.4	Added 237-Ball ftBGA Package.		
		Added 285-Ball csfBGA Package.		
		Added 20-Ball WLCS Package.		
		Added 36-Ball WLCS Package.		
		Restored references to indicate top. bottom, and side views.		
Marrah 0014	04.0	Added 381-Ball caBGA Package.		
March 2014	04.3	Added 554-Ball caBGA Package.		
		Added 756-Ball caBGA Package.		
December 2013	04.2	Added "1" and "N" characters to 100-Pin TQFP Package Option 1: MachXO2, MachXO diagram (Top View).		
		Added 16-ball WLCS package.		
0	04.4	Revised 25-Ball WLCS Package title to 25-Ball WLCS Package (0.40mm Pitch).		
September 2013	04.1	Added 25-Ball WLCS Package (0.35mm Pitch).		
		Added references to indicate top. bottom, and side views.		
August 2013	04.0	Revised 144-pin TQFP package diagram.		
February 2013	03.9	Added 184-ball csBGA package.		
November 2012	03.8	Added iCE40 to the list of applicable products for the 32-pin QFNS Option 1 package.		
October 2012	03.7	Revised 324-ball ftBGA package drawing.		
September 2012	03.6	Nomenclature change – "iCE40 100-Pin TQFP Package Option 2" changed to "iCE40 100-Pin VQFP Package Option 2".		
August 2012	03.5	Added 36-ball ucBGA, 49-ball ucBGA, 81-ball ucBGA, 81-ball csBGA, 84-pin QFN, 100-pin TQFP Option 2, 121-ball csBGA, 121-ball ucBGA, 132-ball csBGA Option 2, 196-ball csBGA, 225-ball ucBGA, 284-ball csBGA packages.		
July 2012	03.4	Added 676-ball fcBGA package.		
March 2012	03.3	Added new 32-Pin QFNS Package Option 2 for MachXO2. Moved 32-pin QFN (punch singulated) package drawing to new Package Archive Appendix.		
February 2012	03.2	Updated document with new corporate logo.		
December 2011	03.1	Updated WLCS package offering.		
October 2011	03.0	Added 49-ball WLCS package and updated 25-ball WLCS package.		
October 2011		Added 328-ball csBGA package.		
July 2011	02.8	Included revised diagrams for the following packages: 56-ball csBGA, 100-ball csBGA and 132-ball csBGA. Added new 256-ball ftBGA Option 3 package.		
May 2011	02.7	Added MachXO2 to the list of applicable products for the 256 ftBGA Option 1 package outline.		
November 2010	02.6	Added 25-ball WLCS and 332-ball caBGA package drawings. Revised 100-pin PQFP, 120-pin PQFP, 128-pin PQFP, 160-pin PQFP and 208-pin PQFP package drawings. Removed obsolete packages including 144-, 240- and 304-pin PQFP packages.		
October 2010	02.5	Added 208-ball ftBGA package.		
September 2010	02.4	Revised maximum coplanarity values on Organic 1152 Flip Chip BGA – Option 2 and on Organic 1704 Flip Chip BGA from 0.20 mm to 0.23 mm.		
March 2010	02.3	Added new 1020-ball Organic fcBGA rev.2, 1152-ball Organic fcBGA, and 1704-ball Organic fcBGA package drawings. Removed obsolete 492-Ball BGA package.		
February 2010	02.2	Revised 256-ball caBGA nominal solder ball diameter from 0.5 mm to 0.45 mm to better match actual dimension.		
December 2009	02.1	Revised 256-ball caBGA package to specify correct JEDEC reference number.		
L	l .			



Appendix A. Package Archive

32-Pin QFN (Punch Singulated) Package

Dimensions in Millimeters



NOTES: UNLESS OTHERWISE SPECIFIED

- DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
- 2. ALL DIMENSIONS ARE IN MILLIMETERS.

<u>3</u> E

EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.

 $\sqrt{4}$

DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.20 AND 0.25 mm FROM TERMINAL TIP.



SYMBOL	MIN.	NOM.	MAX.
A	-	0.85	1.00
A1	0.00	0.01	0.05
A2	0.00	0.65	1.00
A 3	0.20 REF		
D2	1.25	2.70	3.25
E2	1.25	2.70	3.25
е	0.50 BSC		
b	0.18	0.24	0.30
L	0.30	0.40	0.50
Ð	-	-	12