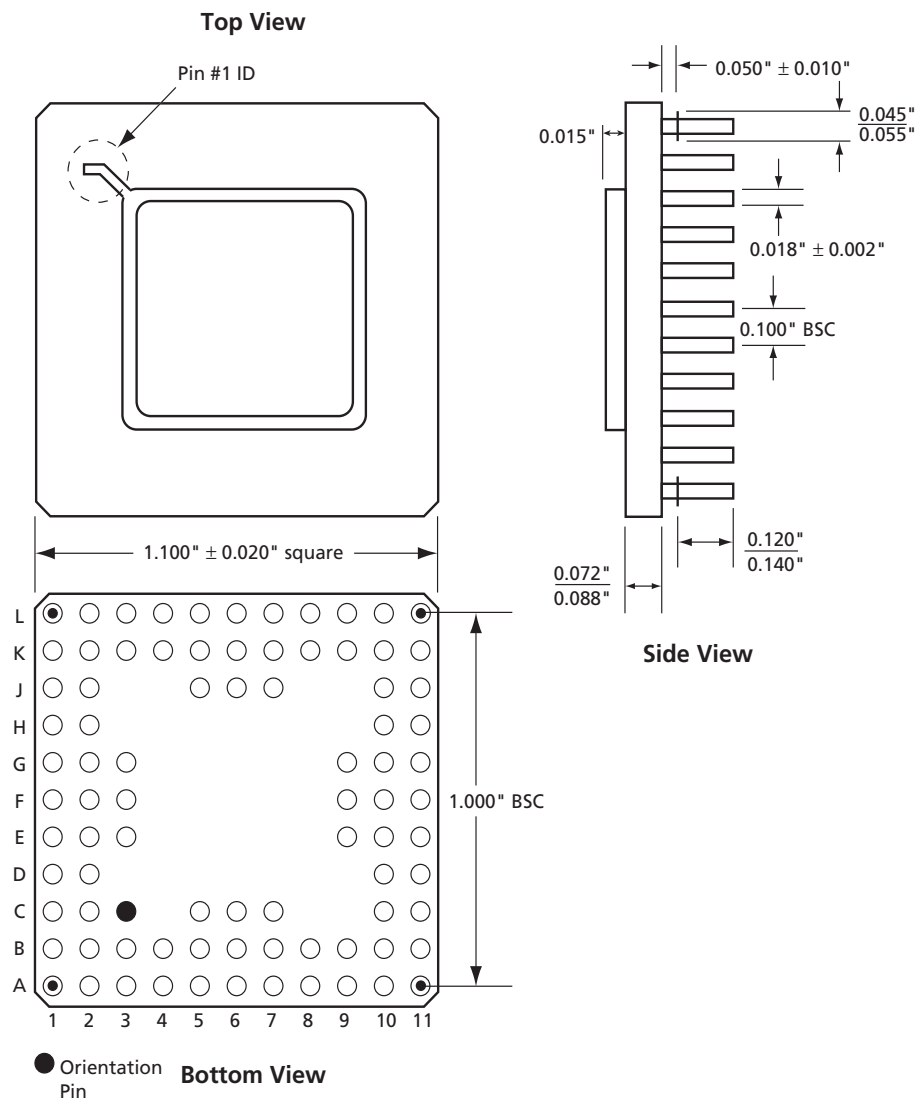


Package Mechanical Drawings

Ceramic Pin Grid Array

84-Pin CPGA



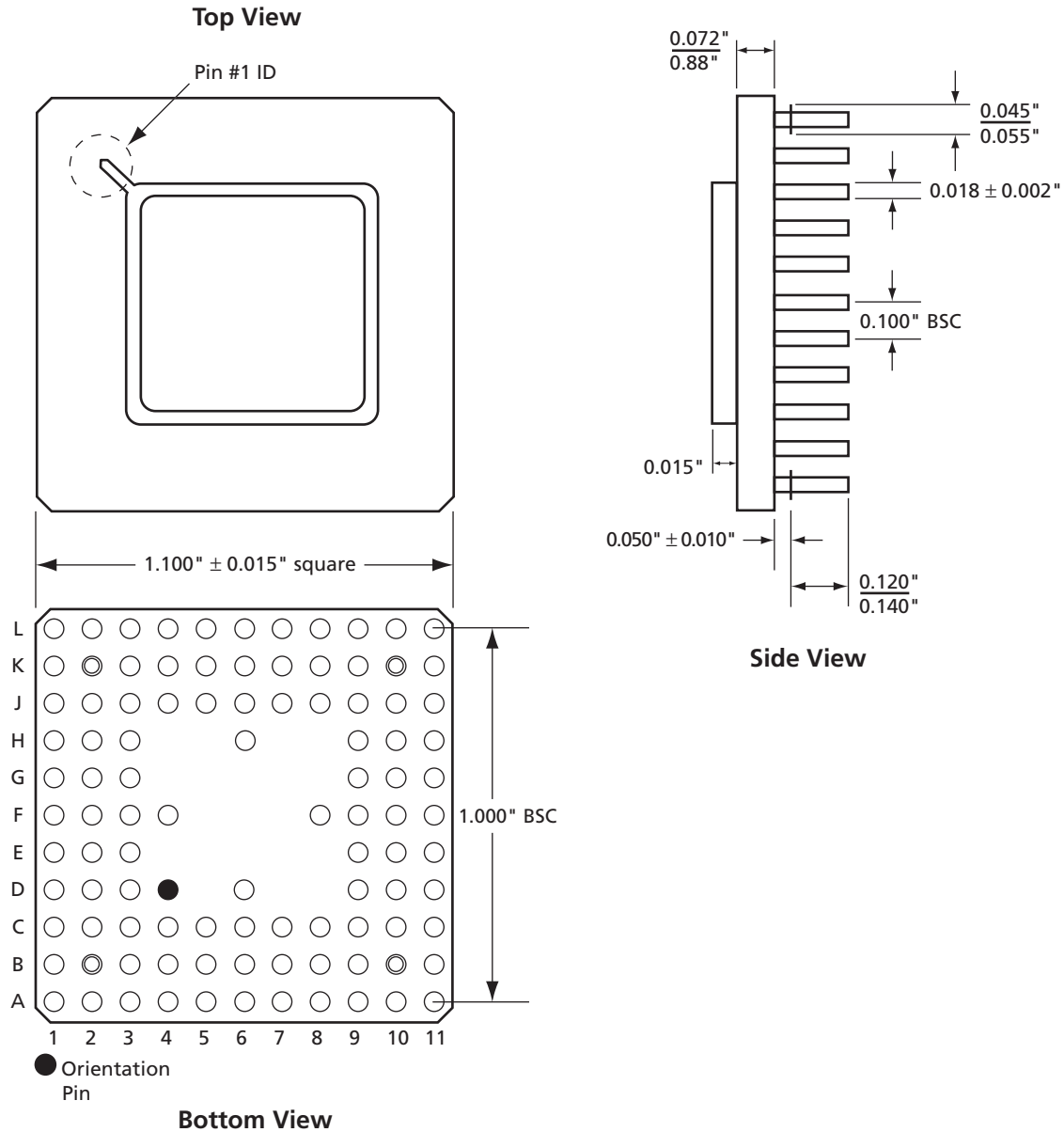
Notes:

1. All dimensions are in inches unless otherwise stated.
2. BSC—Basic Spacing between Centers

Supported Devices	
A1010B	A1020B

Ceramic Pin Grid Array

100-Pin CPGA



Notes:

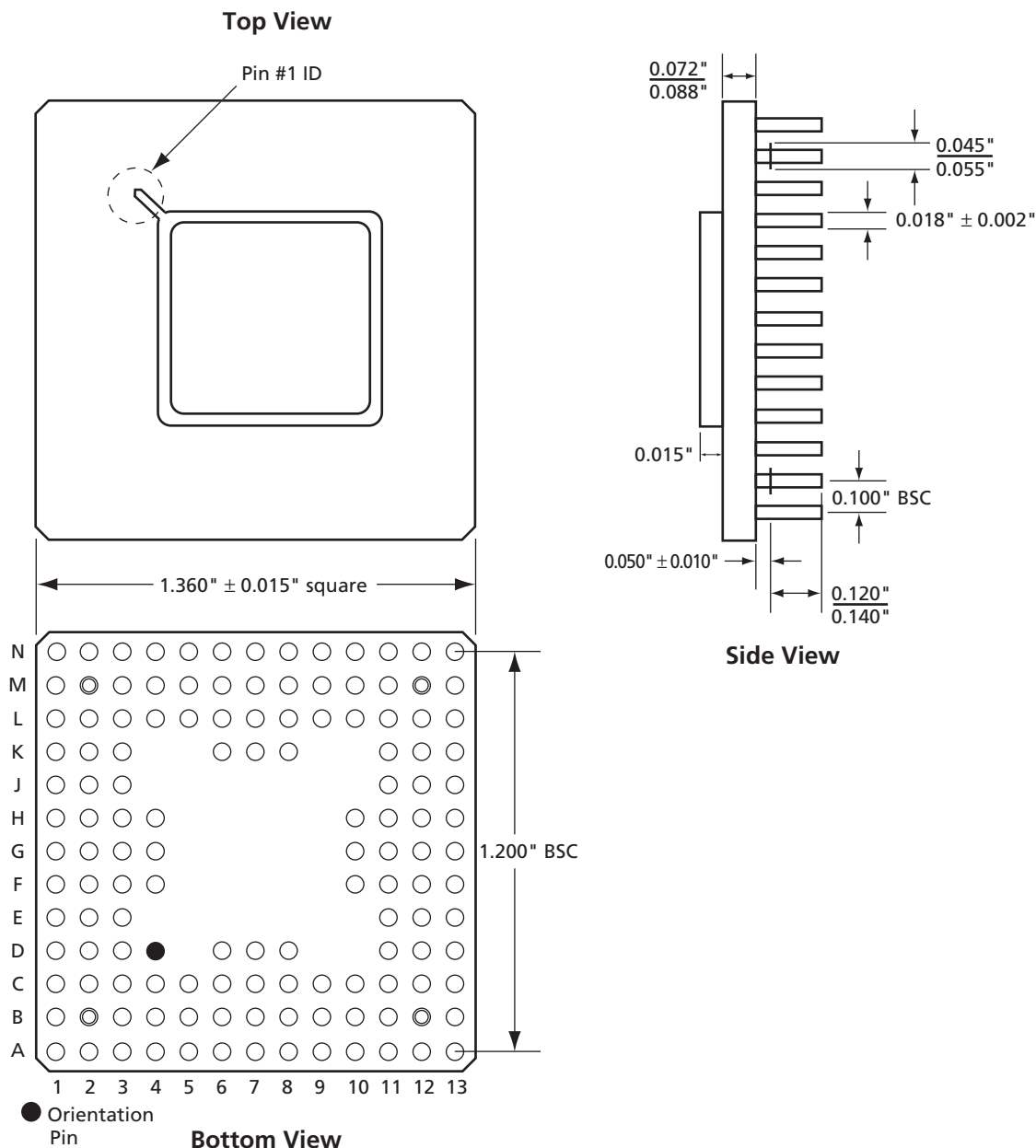
1. All dimensions are in inches unless otherwise stated.
2. BSC—Basic Spacing between Centers

Supported Devices	
A1225XL*	A1415A

Note: *This product is obsolete.

Ceramic Pin Grid Array

132-Pin CPGA



Notes:

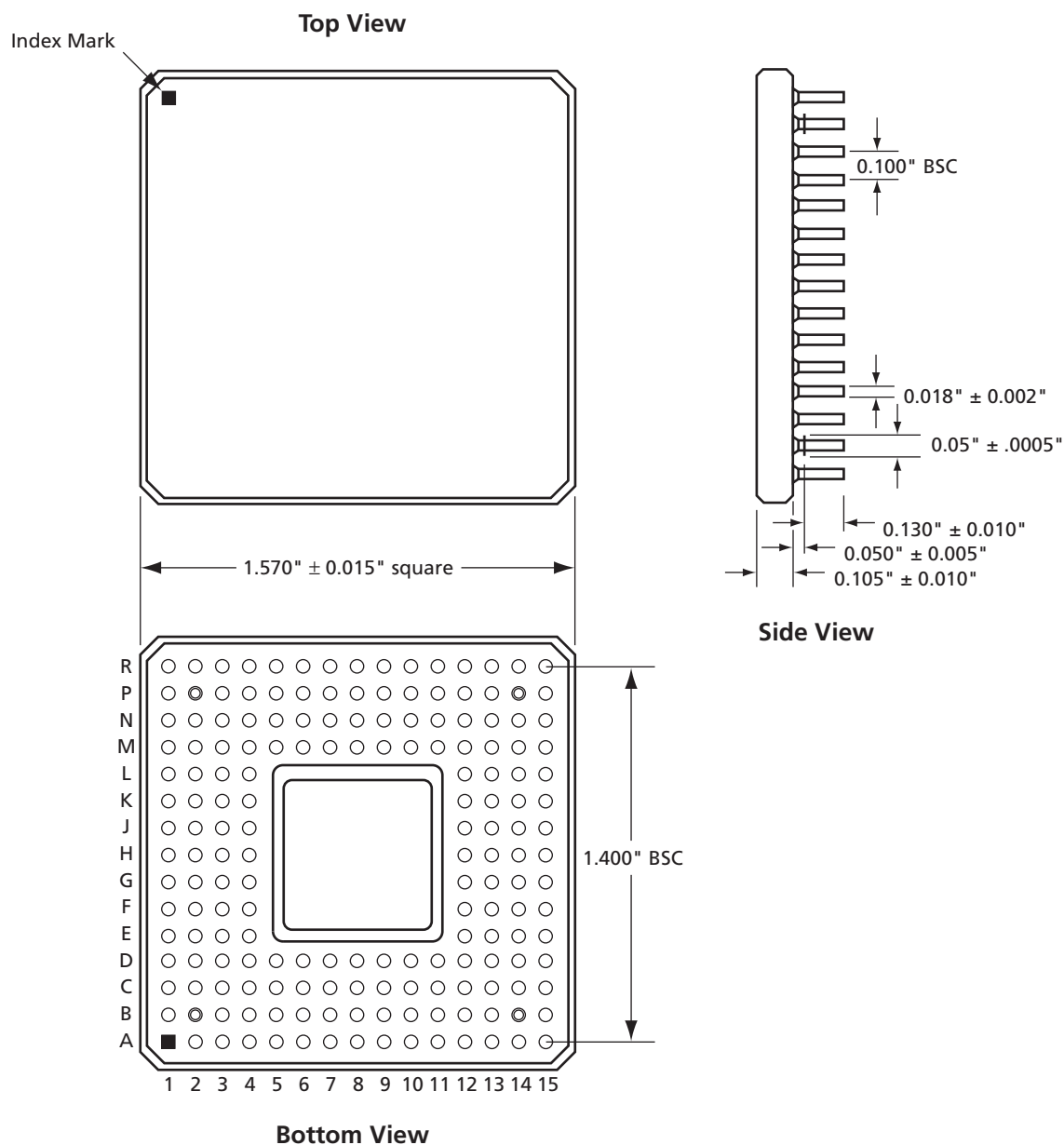
1. All dimensions are in inches unless otherwise stated.
2. BSC—Basic Spacing between Centers

Supported Devices	
A1240A	A1240XL*

Note: *This product is obsolete.

Ceramic Pin Grid Array

175-Pin CPGA



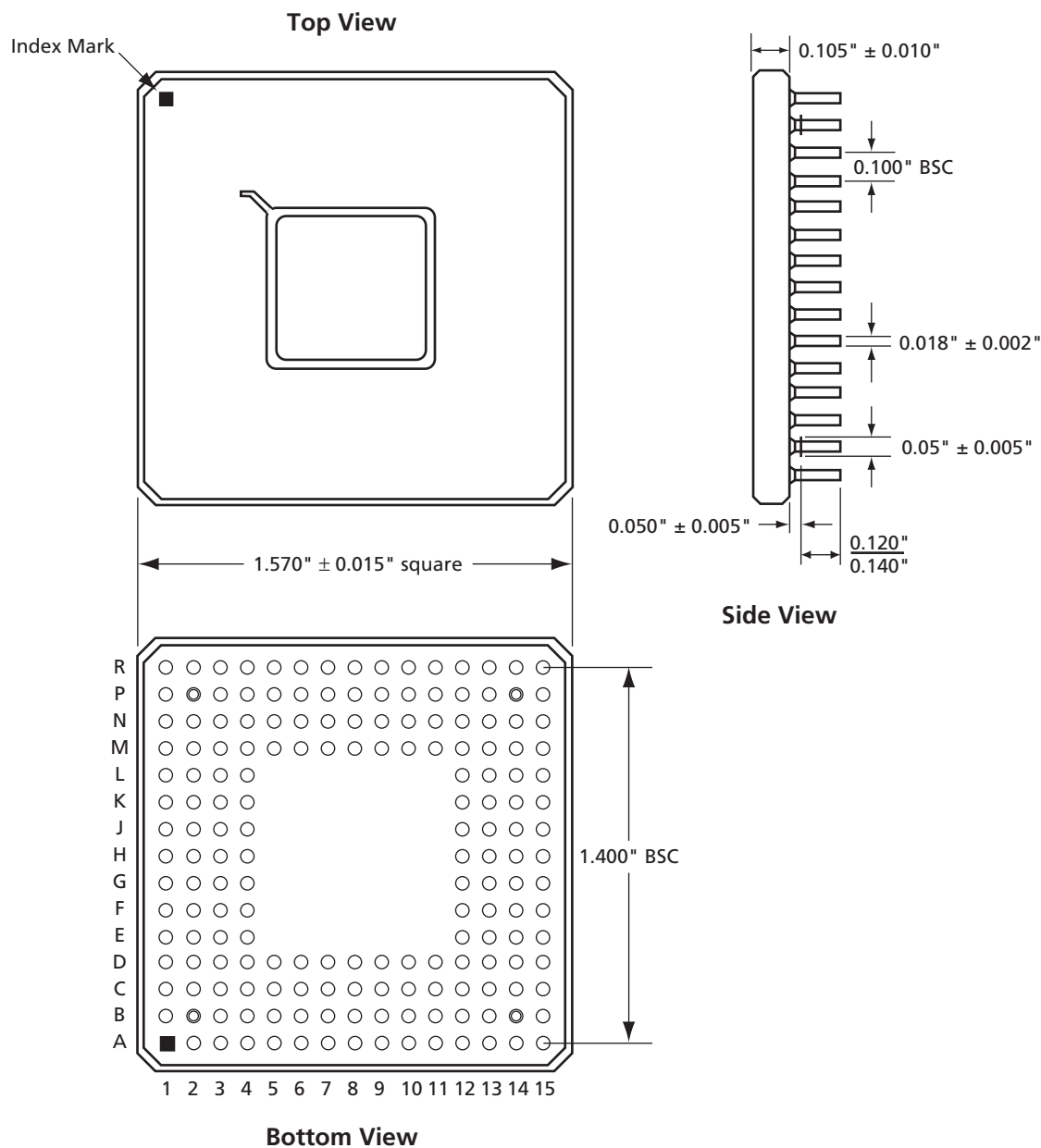
Notes:

1. All dimensions are in inches unless otherwise stated.
2. BSC—Basic Spacing between Centers

Supported Devices
A1440A

Ceramic Pin Grid Array

176-Pin CPGA



Notes:

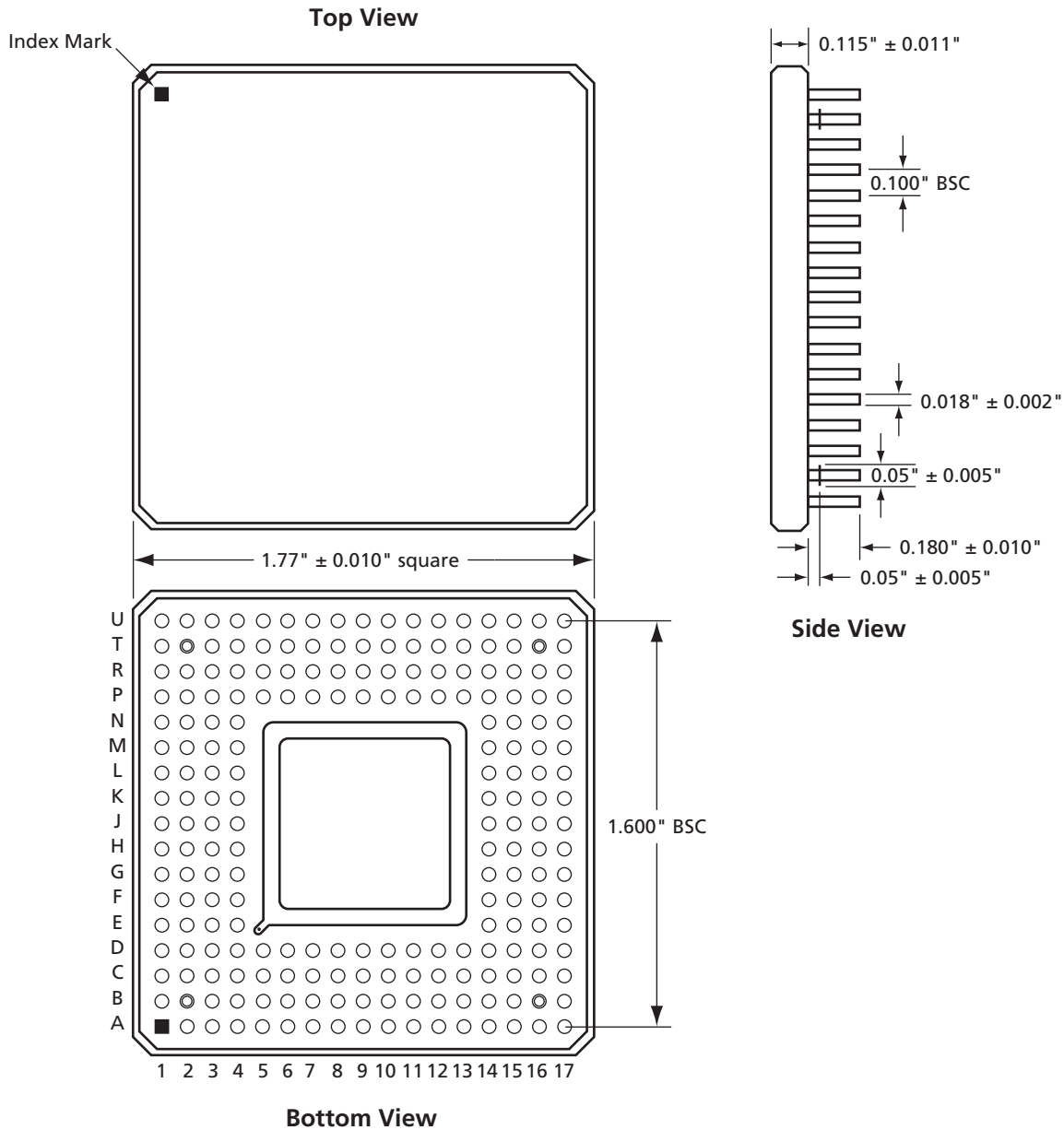
1. All dimensions are in inches unless otherwise stated.
2. BSC—Basic Spacing between Centers

Supported Devices	
A1280A	A1280XL*

Note: *This product is obsolete.

Ceramic Pin Grid Array

207-Pin CPGA



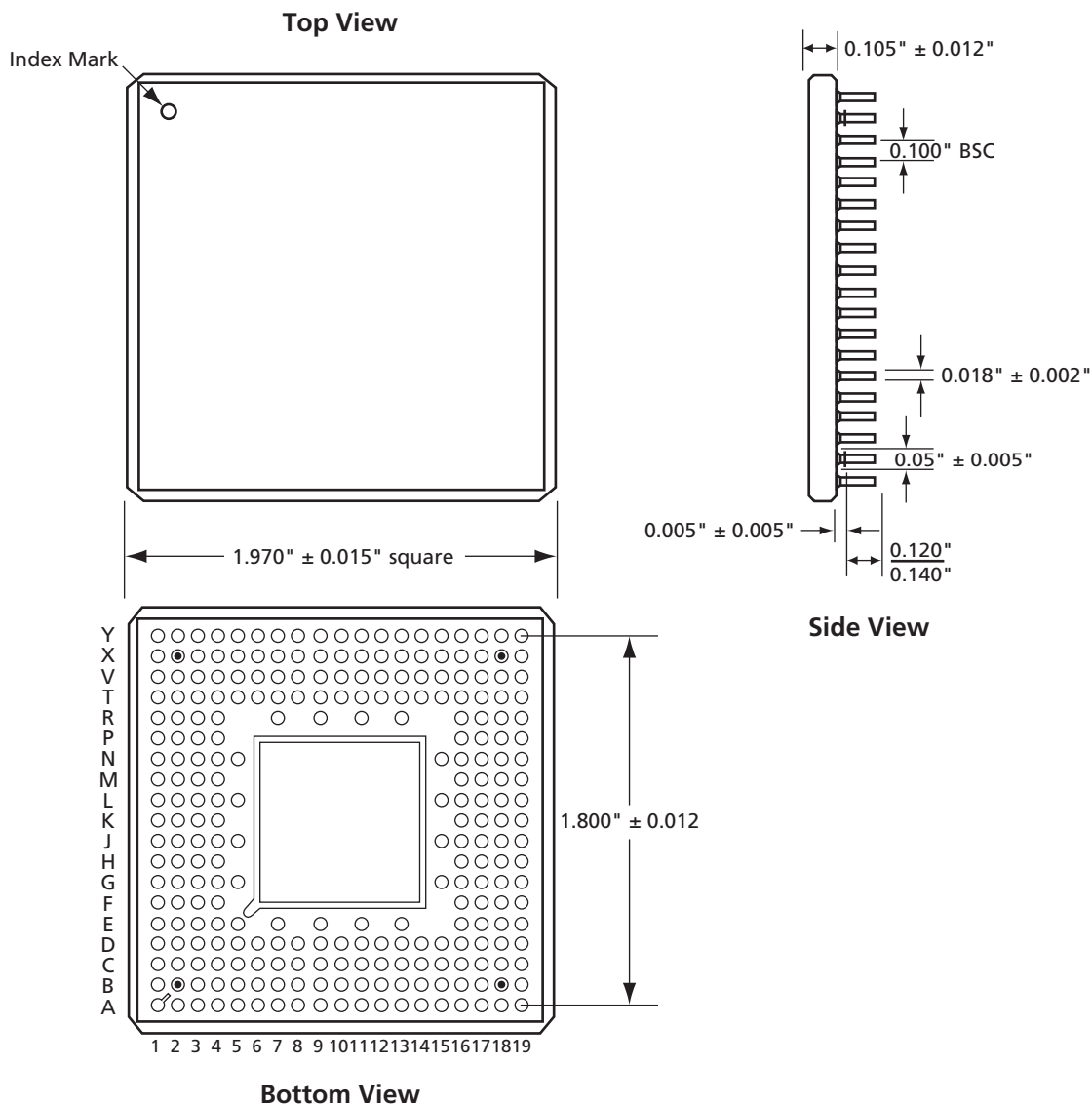
Notes:

1. All dimensions are in inches unless otherwise stated.
2. BSC—Basic Spacing between Center

Supported Devices
A1460A

Ceramic Pin Grid Array

257-Pin CPGA



Notes:

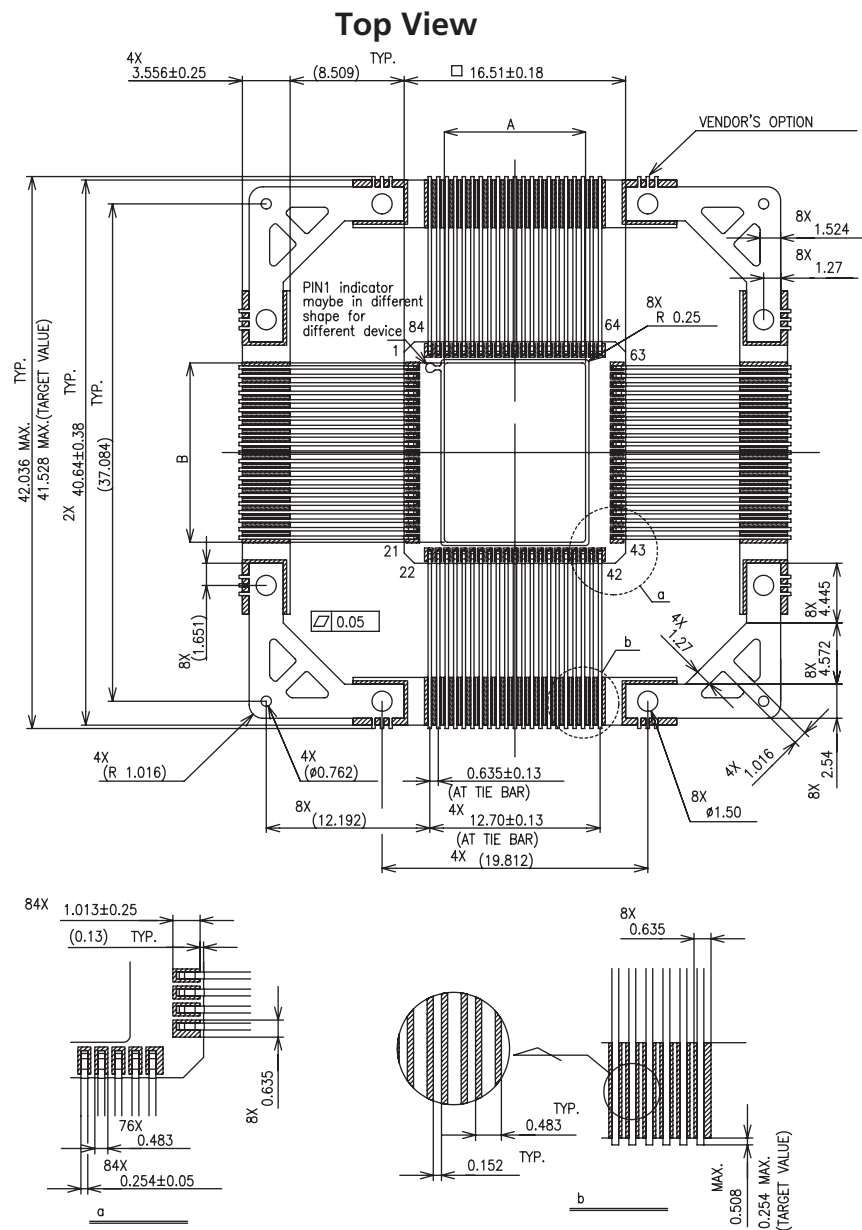
1. All dimensions are in inches unless otherwise stated.
2. BSC—Basic Spacing between Centers

Supported Devices

A14100A

Ceramic Quad Flat Pack

84-Pin CQFP Top View

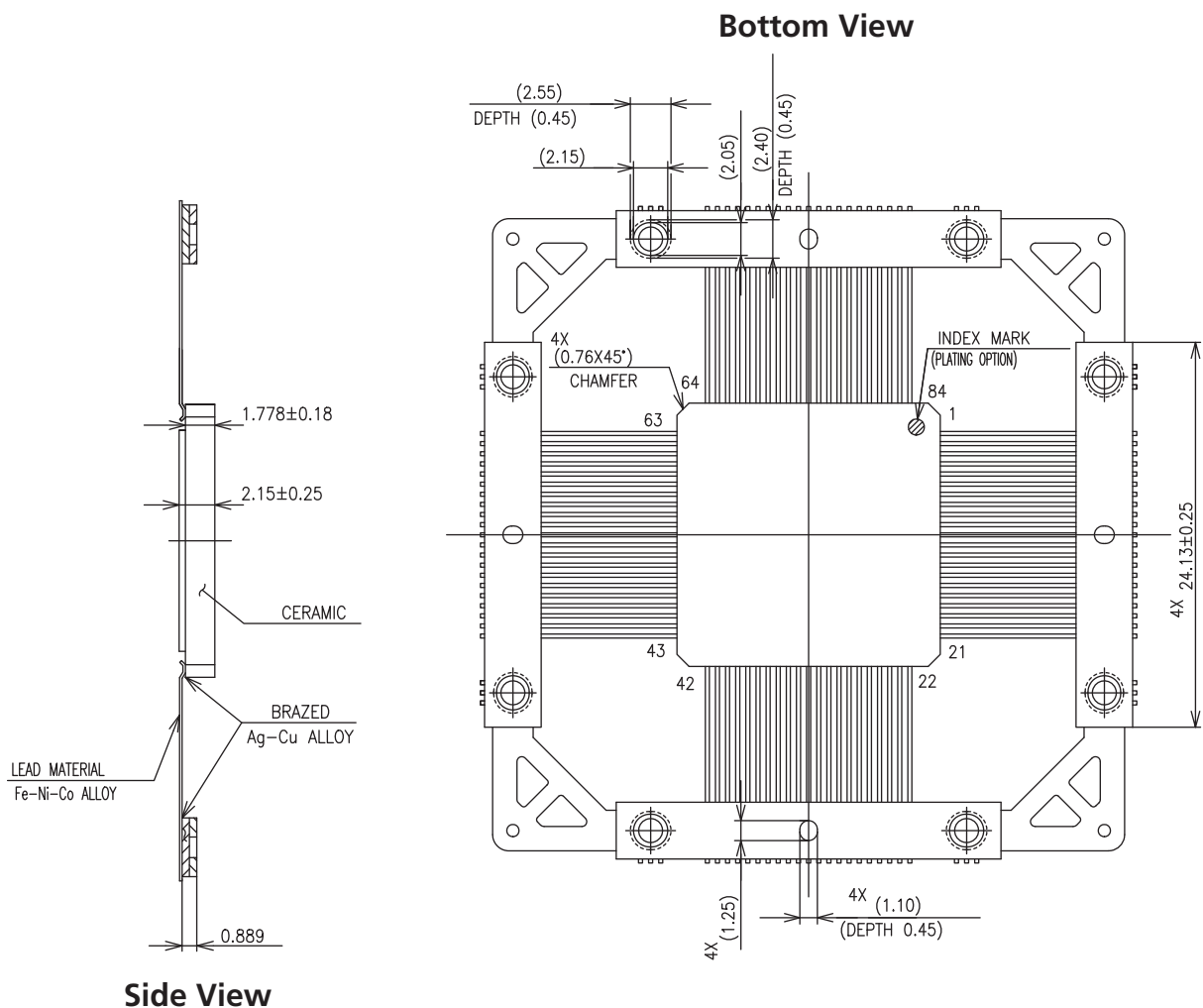


Notes:

1. Units: mm
2. LID to be connected to GND
3. Die attach area to be connected to GND

Ceramic Quad Flat Pack

84-Pin CQFP Side View and Bottom View



Note:

1. Units: mm
2. LID to be connected to GND
3. Die attach area to be connected to GND

Supported Devices	
A1020B	RT1020
A32100DX	RH1020*
A54SX32A	RT54SX32S*, RTSX32SU

Note: *This product is obsolete.

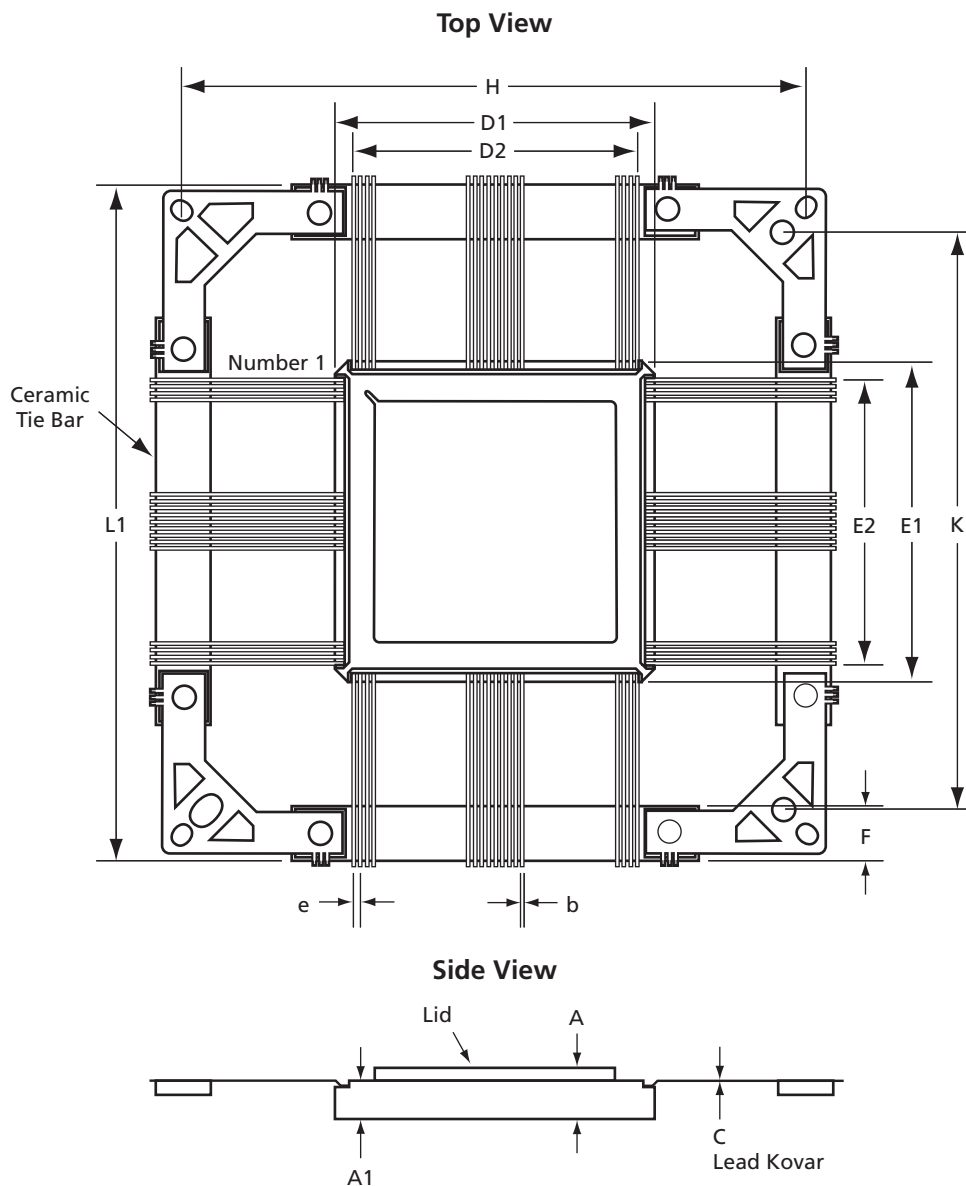
Plate Thickness	
Ni Plating	2.03~8.89 micron
Au Plating	2.54 micron min.

Lid Size (sort by device)	A	B
RT54SX32S*, RTSX32SU	10.54	13.61
A1020B	13.21	13.21
A32100DX	13.97	13.97
RT1020		
RH1020*	13.21	13.21
A54SX32A	13.21	13.21

Note: *This product is obsolete.

Ceramic Quad Flat Pack

132-, 172-, 196-, 208-, 256- and 352-Pin CQFP—Cavity Up without Heat Sink



Notes:

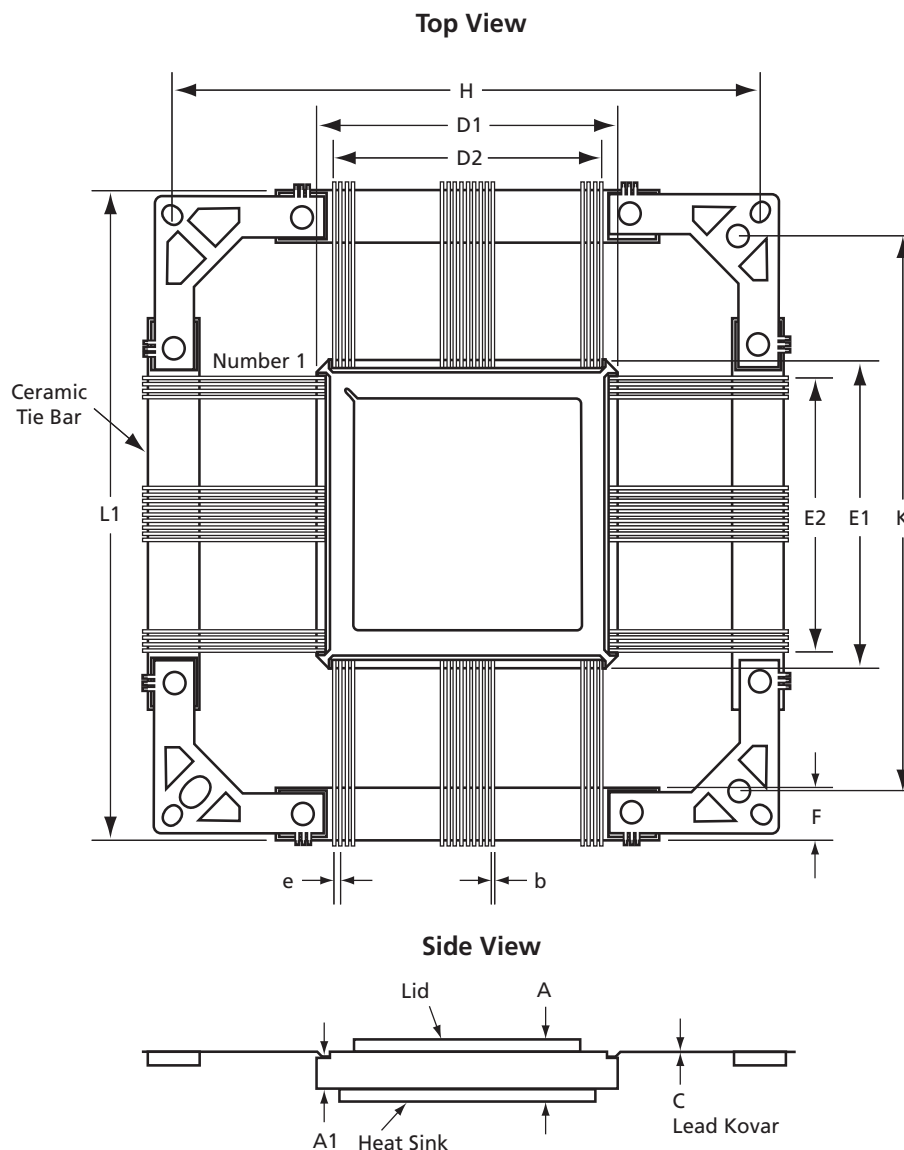
1. All dimensions are in inches except CQ208, CQ256, and CQ352 which are in millimeters. Please see the "[CQFP without Heat Sink Dimensions](#)" on page 17 for the dimensions.
2. Outside lead frame holes (from dimension H) are circular for the CQ208, CQ256, and CQ352.
3. Seal ring and lid are connected to Ground.
4. Packages are shipped unformed with the ceramic tie bar in a test carrier.

Supported Devices					
CQ132	CQ172	CQ196	CQ208	CQ256	CQ352
A1425A RT1425A	A1280A RH1280* RT1280A	A1460A RT1460A	A42MX36 A54SX16 A54SX32 A54SX32A A54SX72A APA300 APA600 APA1000 RT54SX32S*, RTSX32SU RTAX250S	A14100A A54SX32A A54SX72A RT14100A RT54SX32S*, RTSX32SU RTAX2000S	AX250 AX2000 APA300 APA600 APA1000 RTAX250S RTAX1000S RTAX2000S

*Note: *This product is obsolete.*

Ceramic Quad Flat Pack

208- and 256-Pin CQFP—Cavity Up with Heat Sink



Notes:

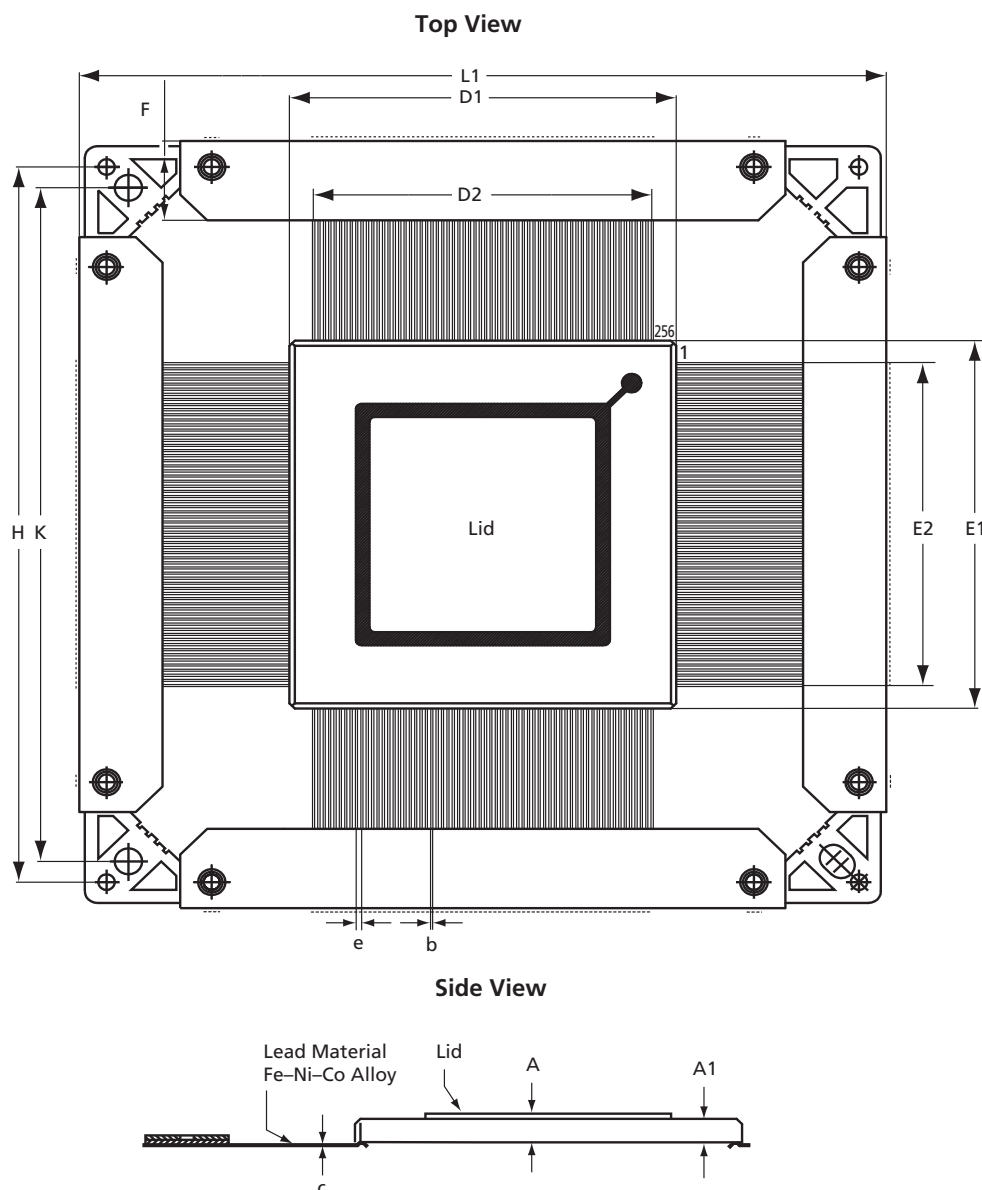
1. All dimensions are in inches except CQ208, CQ256, and CQ352 which are in millimeters. Please see the "CQFP without Heat Sink Dimensions" on page 17 for the dimensions.
2. Outside lead frame holes (from dimension H) are circular for the CQ208, CQ256, and CQ352.
3. Seal ring and lid are connected to Ground.
4. Lead material is Kovar with minimum 60 microinches gold over nickel.
5. Packages are shipped unformed with the ceramic tie bar.

Supported Devices	
CQ208	CQ256
A32200DX* RT54SX72S*, RTSX72SU	A54SX16 A54SX32 RT54SX72S*, RTSX72SU

Note: *This product is obsolete.

Ceramic Quad Flat Pack

256-Pin CQFP—Cavity Down without Heat Sink



Notes:

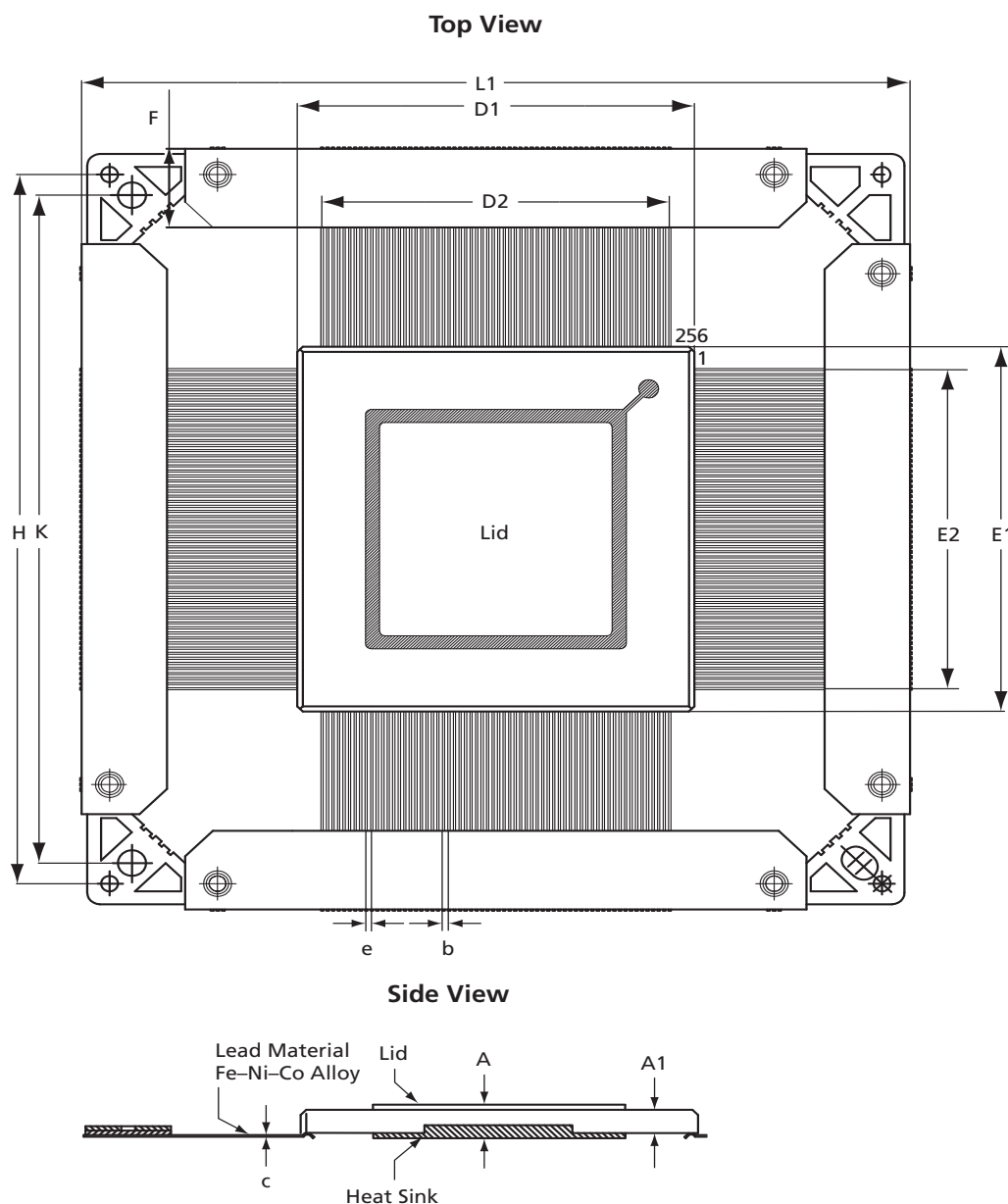
1. Dimensions are in millimeters. Please see the "CQFP with Heat Sink Dimensions" on page 18 for the dimensions.
2. Seal Ring and Lid are connected to Ground.
3. Lead material is Kovar with gold plate over nickel.
4. Packages are shipped unformed with the ceramic tie bar.
5. Package is cavity down, with the lid facing the bottom of the package. However the leads can be formed on either side if the application requires the lid to be facing the top.

Supported Devices

A42MX36

Ceramic Quad Flat Pack

256-Pin CQFP—Cavity Down with Heat Sink



Notes:

1. Packages are shipped unformed with the ceramic tie bar in a test carrier.
2. Dimensions are in millimeters. Please see the "[CQFP with Heat Sink Dimensions](#)" on page 18 for the dimensions.

Supported Devices
A32200DX*

Note: *This product is obsolete.

CQFP without Heat Sink Dimensions

JEDEC Equivalent	CQ132 MO-113 VAR AC			CQ172 MO-113 VAR AE			CQ196 MO-113 VAR AB			CQ208		
Symbol	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.094	0.105	0.116	0.094	0.105	0.116	0.094	0.105	0.116	2.30	2.80	3.30
A1	0.080	0.090	0.100	0.080	0.090	0.100	0.080	0.090	0.100	2.00	2.30	2.80
b	0.007	0.008	0.010	0.007	0.008	0.010	0.007	0.008	0.010	0.17	0.20	0.22
c	0.004	0.006	0.008	0.004	0.006	0.008	0.004	0.006	0.008	0.11	0.15	0.18
D1/E1	0.940	0.950	0.960	1.168	1.180	1.192	1.336	1.350	1.364	28.96	29.21	29.46
D2/E2	0.800 BSC			1.050 BSC			1.200 BSC			25.5 BSC		
e	0.025 BSC			0.025 BSC			0.025 BSC			0.50 BSC		
F	0.325	0.350	0.375	0.175	0.200	0.225	0.175	0.200	0.225	7.05	7.75	8.45
H	2.320 BSC			2.320 BSC			2.320 BSC			70.00 BSC		
K	2.140 BSC			2.140 BSC			2.140 BSC			65.90 BSC		
L1	2.485	2.500	2.505	2.485	2.495	2.505	2.485	2.495	2.505	74.60	75.00	75.40
JEDEC Equivalent	CQ256 MO-134 VAR AB			CQ352 MO-134 VAR AE								
Symbol	Min.	Nom.	Max.	Min.	Nom.	Max.						
A	2.30	2.80	3.30	2.43	2.66	2.89						
A1	2.00	2.30	2.80	2.05	2.28	2.51						
b	0.18	0.20	0.22	0.18	0.20	0.22						
c	0.11	0.15	0.18	0.11	0.15	0.18						
D1/E1	35.64	36.00	36.64	47.75	48.00	48.25						
D2/E2	31.5 BSC			43.51 BSC								
e	0.50 BSC			0.50 BSC								
F	7.05	7.75	8.45		5.00							
H	70.00 BSC			70.00 BSC								
K	65.90 BSC			65.90 BSC								
L1	74.60	75.00	75.40	74.60	75.00	75.40						

Notes:

1. All dimensions are in inches except CQ208, CQ256, and CQ352 which are in millimeters.
2. BSC equals Basic Spacing between Centers. This is a theoretical true position dimension and so has no tolerance.

CQFP with Heat Sink Dimensions

JEDEC Equivalent	CQ208			CQ256 MO-134 VAR AB		
Symbol	Min.	Nom.	Max.	Min.	Nom.	Max.
A	2.79	3.30	3.90	2.79	3.30	3.90
A1	2.00	2.30	2.80	2.00	2.30	2.80
b	0.18	0.20	0.22	0.18	0.20	0.22
c	0.11	0.15	0.17	0.11	0.15	0.18
D1/E1	28.96	29.21	29.46	35.64	36.00	36.66
D2/E2	25.5 BSC			31.5 BSC		
e	0.50 BSC			0.50 BSC		
F	7.05	7.75	8.45	7.05	7.75	8.45
H	70.00 BSC			70.00 BSC		
K	65.90 BSC			65.90 BSC		
L1	74.60	75.00	75.40	74.60	75.00	75.40

Notes:

1. All dimensions are in inches except CQ208, CQ256 and CQ352 which is in millimeters.
2. BSC equals Basic Spacing between Centers. This is a theoretical true position dimension and so has no tolerance.

The dimensions above are for reference only. For more accurate dimensions, use the dimensions in the SMD drawings for a specified device.

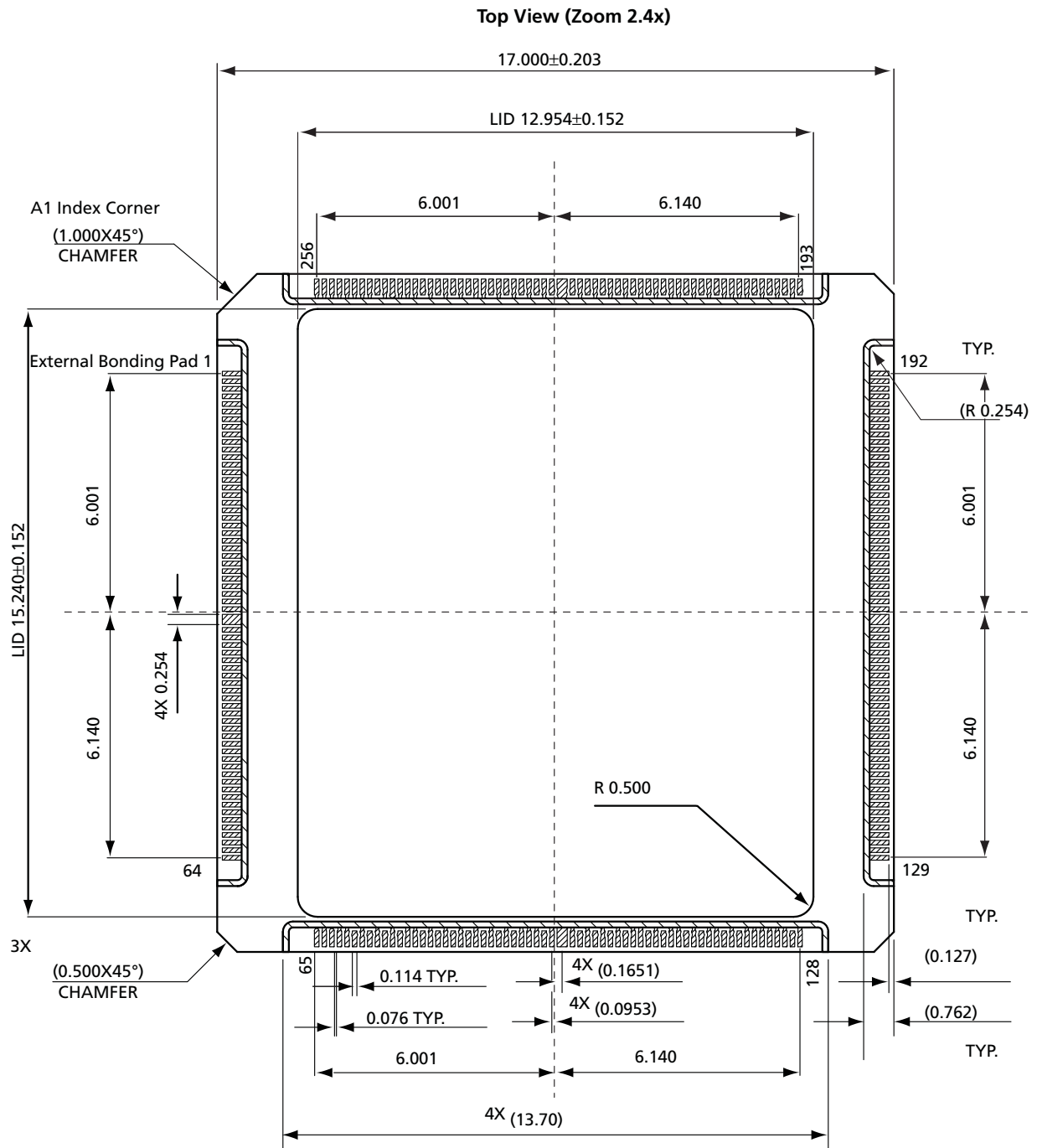
For heat sink information, refer to Actel's *Hermetic Package Mechanical (Cavity, weight, lid size and heat sink size) Configuration* document located at: <http://www.actel.com/documents/HermeticPckg.pdf>

256-Pin CCLG



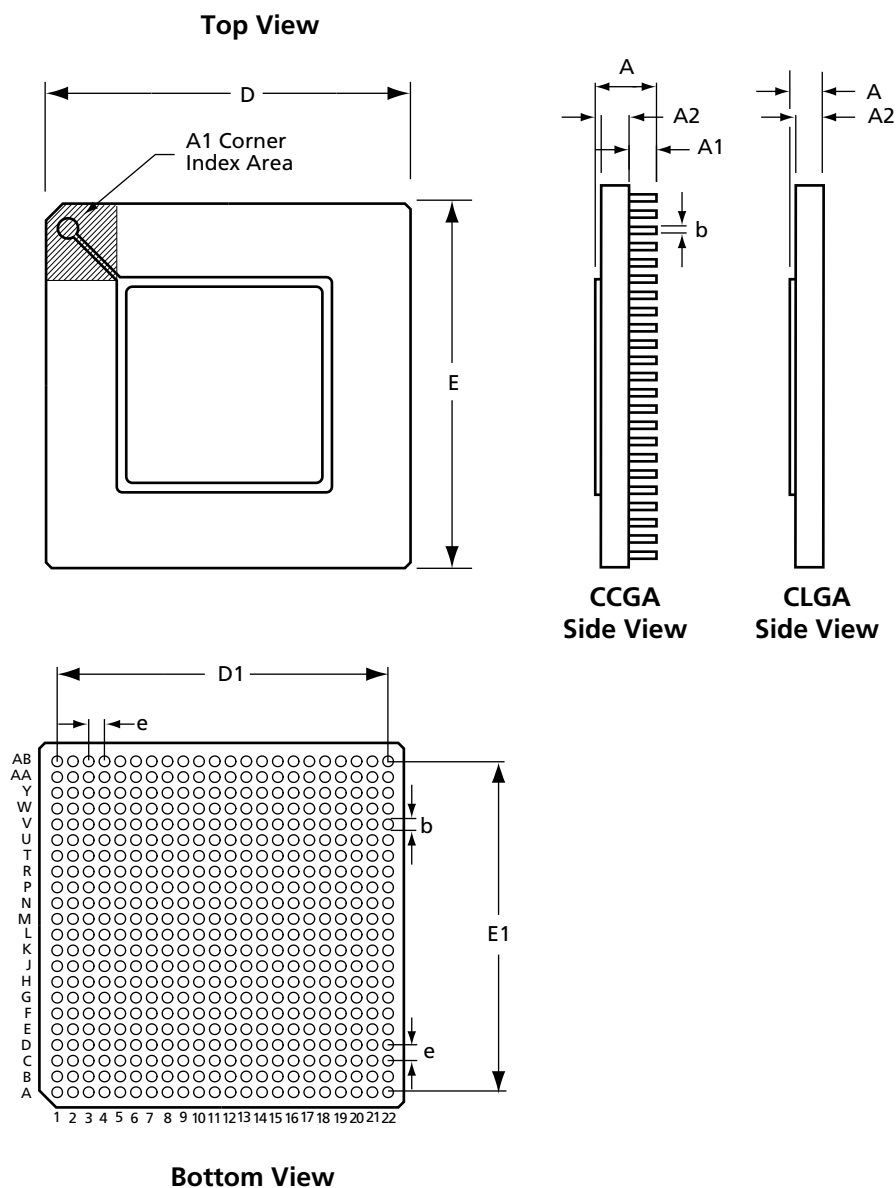
19

CCLG Substrate Dimensions



Ceramic Column Grid Array

484-Pin CCGA

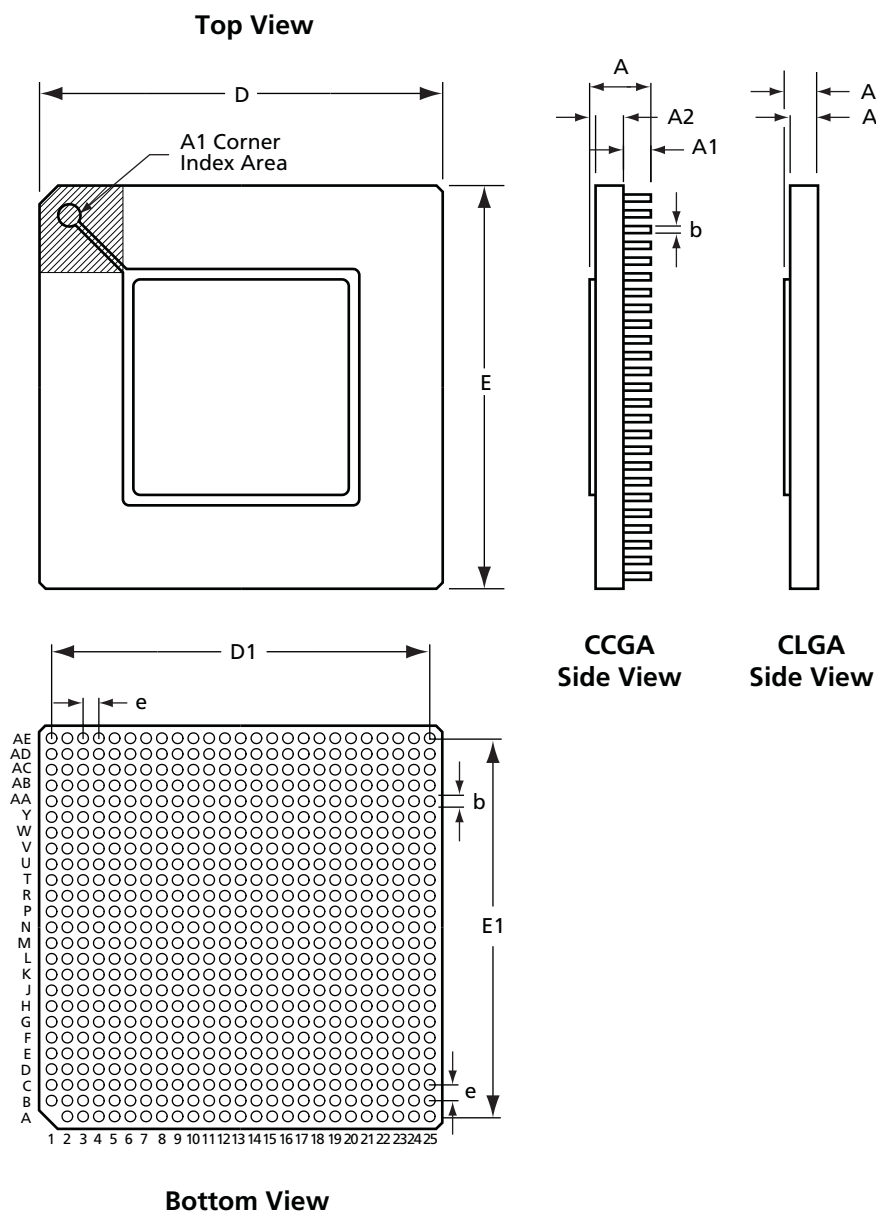


Note: The top and side views will be completed in the future.

Supported Devices
RT3PE600L
RT3PE3000L

Ceramic Column Grid Array

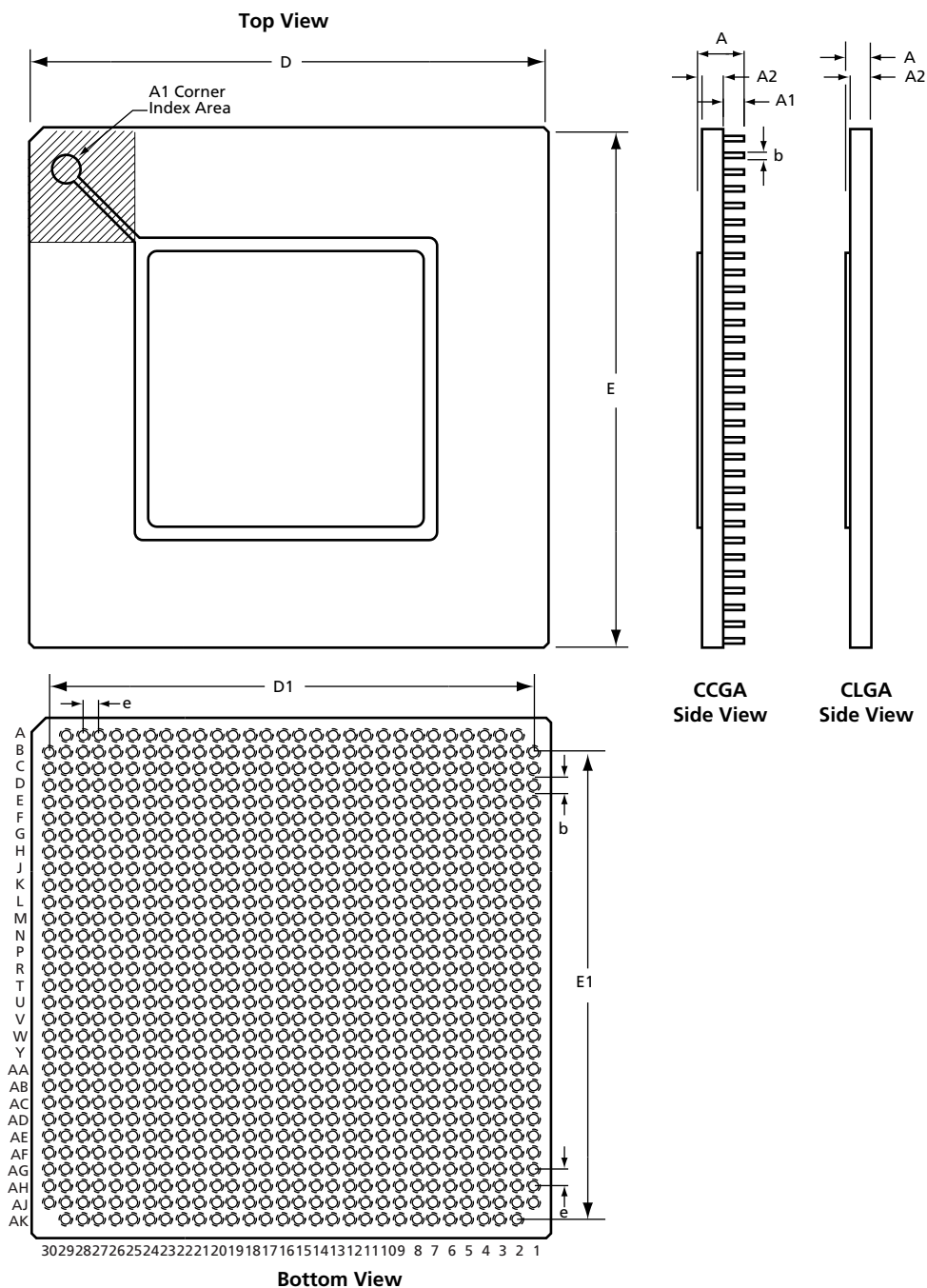
624-Pin CCGA



Supported Devices		
AX1000	RTAX1000S	APA600
AX2000	RTAX2000S	APA1000
	RTSX72SU	

Ceramic Column Grid Array

896-Pin CCGA



Supported Devices

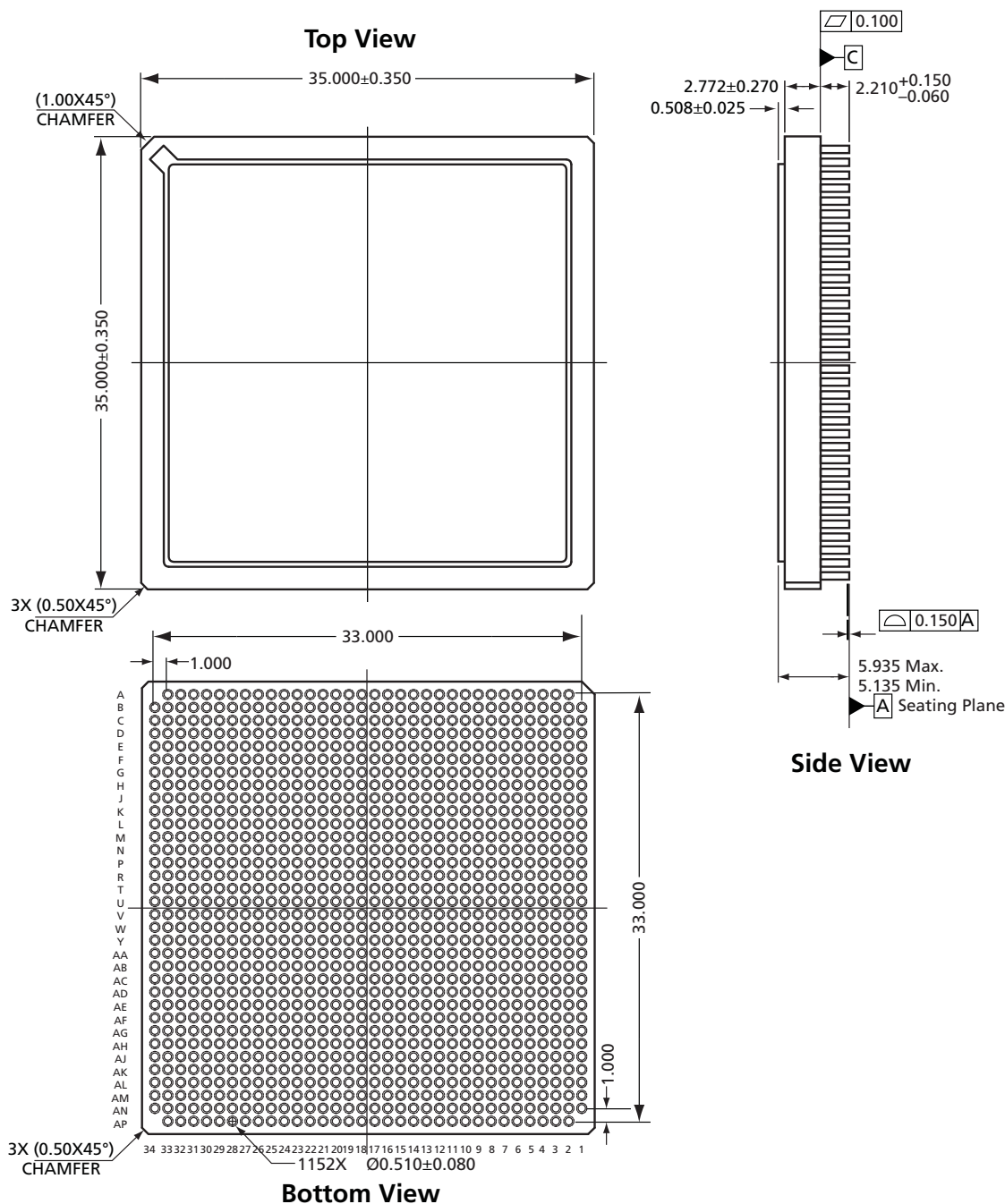
RT3PE3000L

CCGA Dimensions

Dimension	CG484			CG624			CG896		
	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
CCGA - A	5.19	5.72	6.19	4.54	4.88	5.41	5.65	6.23	6.75
CLGA - A	3.06	3.51	3.83	2.41	2.67	3.05	3.16	3.51	3.86
A1	2.15	2.21	2.36	2.15	2.21	2.36	2.15	2.21	2.36
A2	2.70	3.00	3.30	2.06	2.29	2.52	3.16	3.51	3.86
b	0.43	0.51	0.59	0.43	0.51	0.59	0.43	0.51	0.59
D	22.77	23.00	23.23	32.17	32.50	32.83	30.69	31.00	31.31
D1	21.00 BSC			30.48 BSC			29.00 BSC		
E	22.77	23.00	23.23	32.17	32.50	32.83	30.69	31.00	31.31
E1	21.00 BSC			30.48 BSC			29.00 BSC		
e	1.00 BSC			1.27 BSC			1.00 BSC		

Ceramic Column Grid Array

1152-Pin CCGA



Notes:

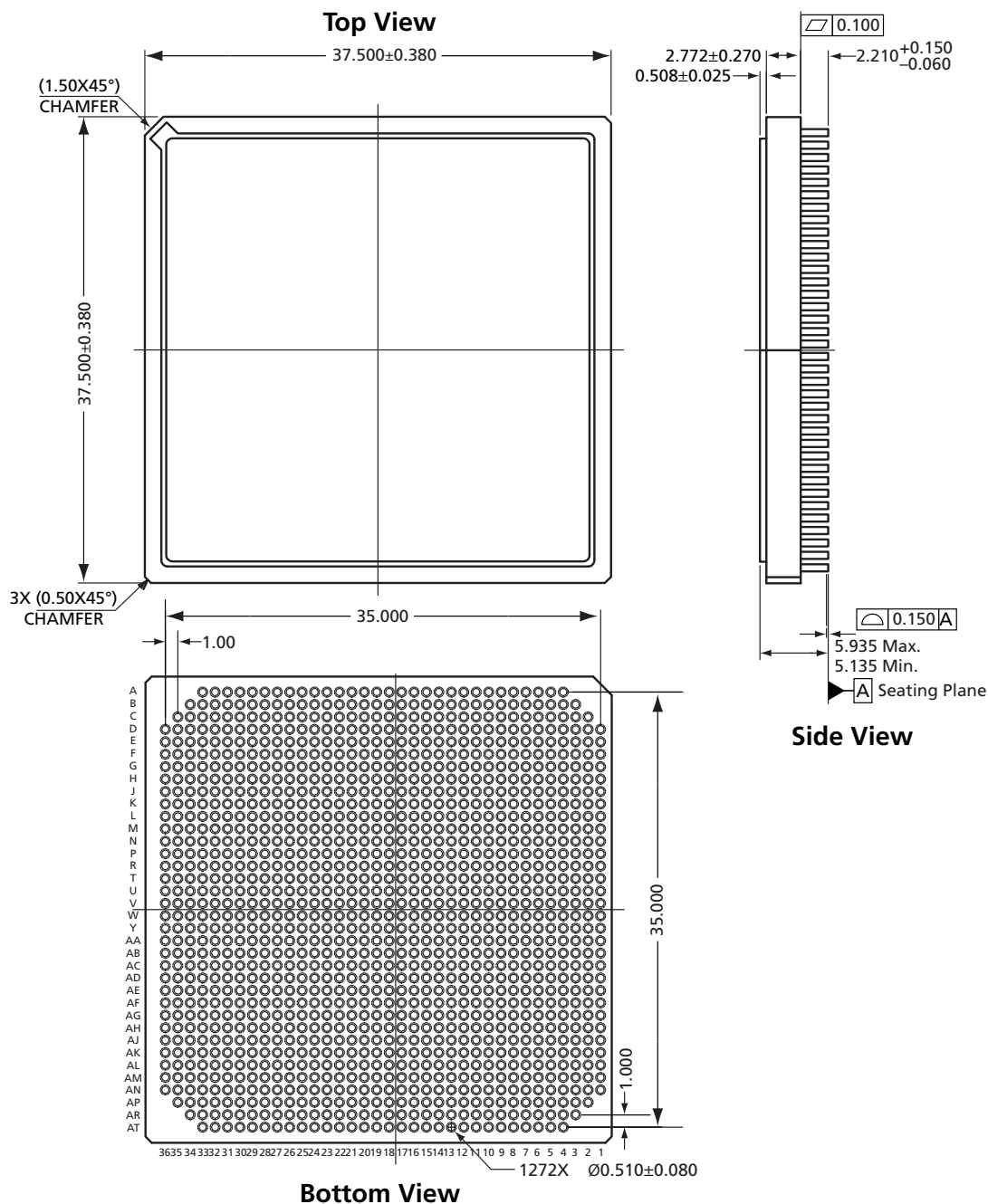
1. The units are in mm.
2. The seal ring area must be connected to GND.
3. Die attach area must be connected to GND.

Supported Devices

RTAX2000S

Ceramic Column Grid Array

1272-Pin CCGA



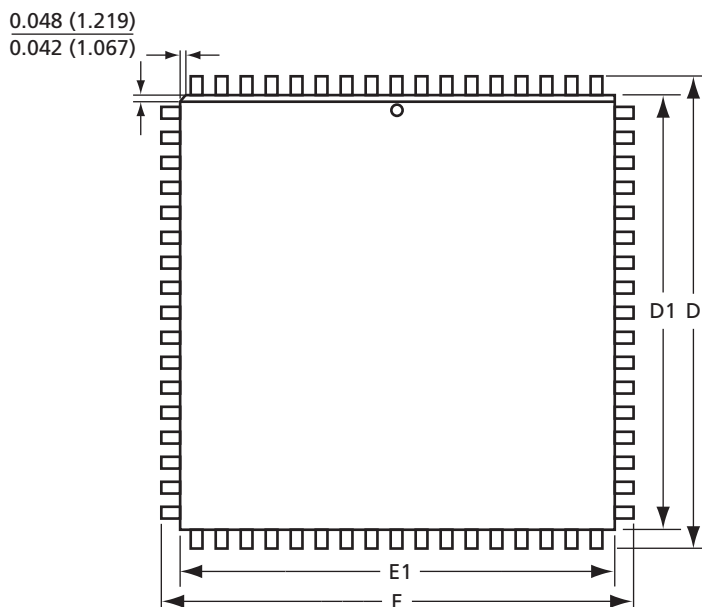
Notes:

1. The units are in mm.
2. The seal ring area must be connected to GND.
3. Die attach area must be connected to GND.

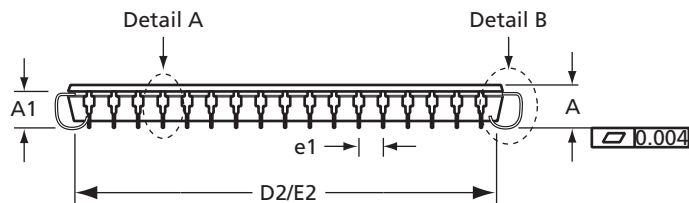
Supported Devices
RTAX4000S

Plastic Leaded Chip Carrier (PLCC)

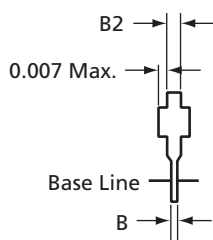
Top View



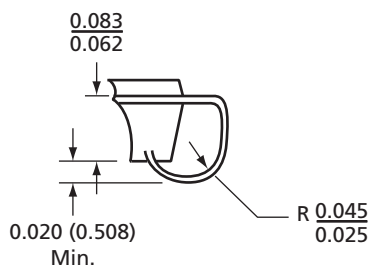
Side View



Detail A



Detail B



Note: Dimensions are in millimeters. Please see the "Plastic Leaded Chip Carrier Dimensions" on page 28 for the dimensions.

Supported Devices				
PLCC 44	PLCC 68	PLCC 84		
A1010B	A1010B	A10V20B	A1020B	A3265A
A1020B	A1020B	A1225XLV*	A1225A	A545X08
A40MX02	A10V10B	A1280XLV*	A1240A	A32100DX*
A40MX04	A10V20B	A1240XLV*	A1280A	A32140DX*
	A40MX02	A14V15A	A1225XL*	A40MX04
	A40MX04	A14V25A	A1240XL*	A42MX09
		A14V40A	A1280XL*	A42MX16
		A3265DXV*	A1415A	A42MX24
		A32100DXV*	A1425A	
		A32140DXV*	A1440A	

Note: *This product is obsolete.

Plastic Leaded Chip Carrier Dimensions

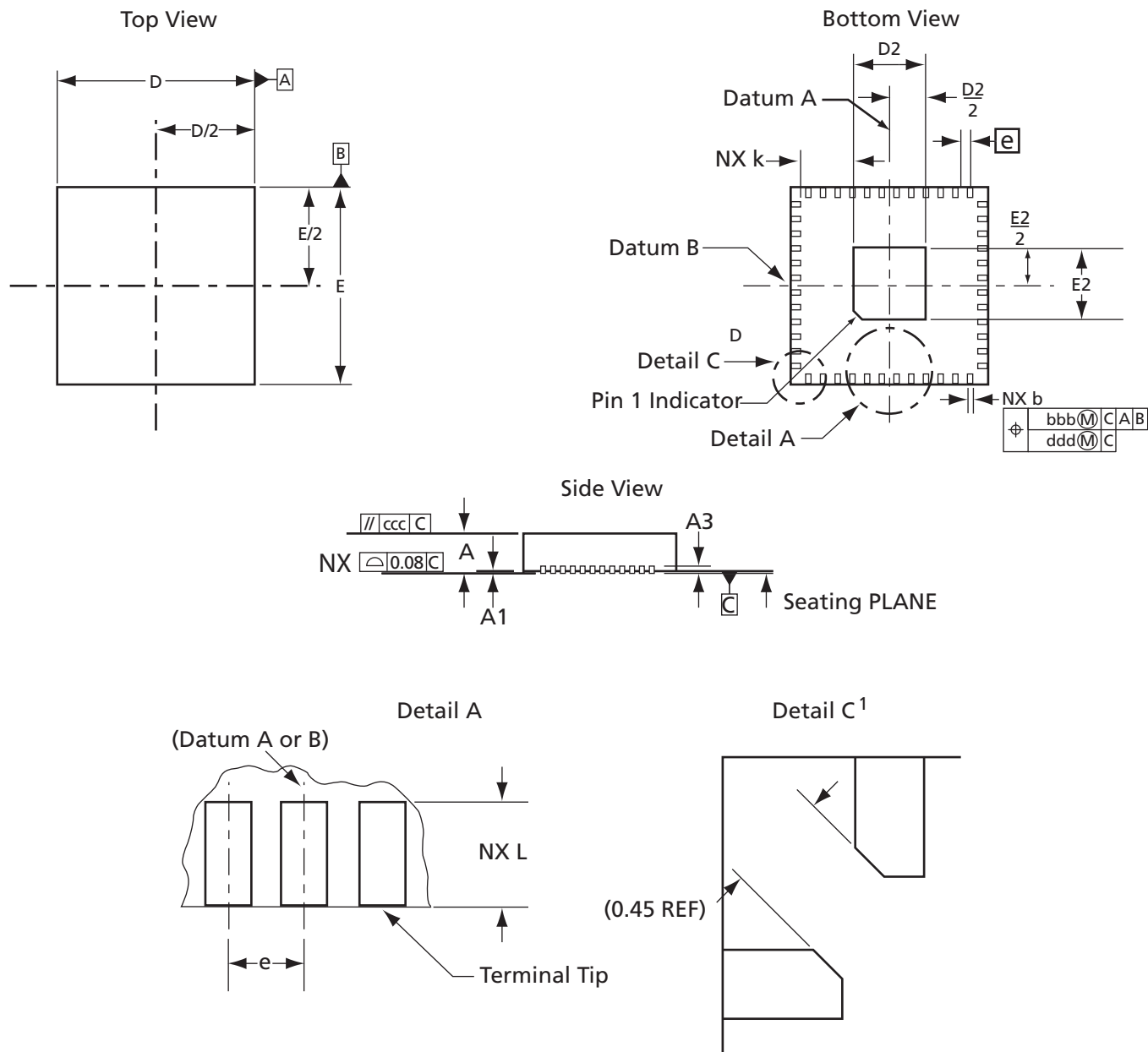
JEDEC Equivalent	PLCC 44 MS-018 VAR AC			PLCC 68 MS-018 VAR AE			PLCC 84 MS-018 VAR AF		
	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.165	0.172	0.180	0.165	0.172	0.180	0.165	0.172	0.180
A1	0.090	0.105	0.120	0.090	0.105	0.120	0.090	0.105	0.120
B	0.013	–	0.021	0.013	–	0.021	0.013	–	0.021
B2	0.026	–	0.032	0.026	–	0.032	0.026	–	0.032
D/E	0.685	0.690	0.695	0.985	0.990	0.995	1.185	1.190	1.195
D1/E1	0.650	0.653	0.656	0.950	0.954	0.958	1.150	1.154	1.158
D2/E2	0.590	0.610	0.630	0.890	0.910	0.930	1.090	1.110	1.130
e1	0.050 BSC			0.050 BSC			0.050 BSC		

Notes:

1. All dimensions are in inches.
2. BSC—Basic Spacing between Centers

Quad Flat No Lead

48-Pin (QFN48)

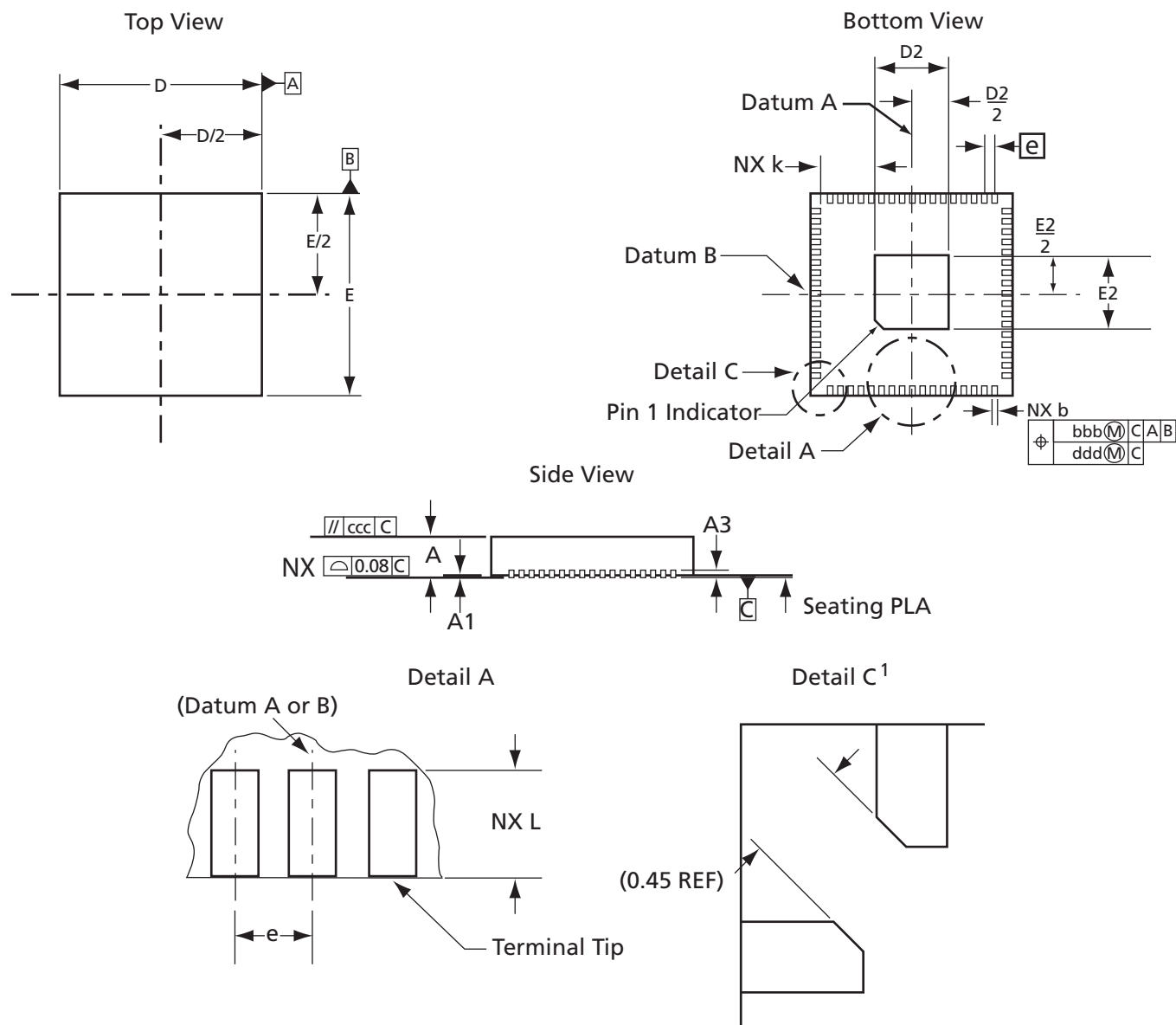


Notes:

1. Corner chamfer leads are applied to maintain minimum spacing between corner leads; otherwise, keep normal lead shape.
2. Die attach paddle center of package is tied to ground (GND).

Supported Devices	
A3PN010 A3P030/A3PN030	AGN010 AGL030/AGLN030

68-Pin (QFN68)



Notes:

1. Corner chamfer leads are applied to maintain minimum spacing between corner leads; otherwise, keep normal lead shape.
2. Die attach paddle center of package is tied to ground (GND).

Supported Devices	
A3P015/A3PN015	AGL015/AGLN015
A3PN020	AGLN020
A3P030/A3PN030	AGL030/AGLN030

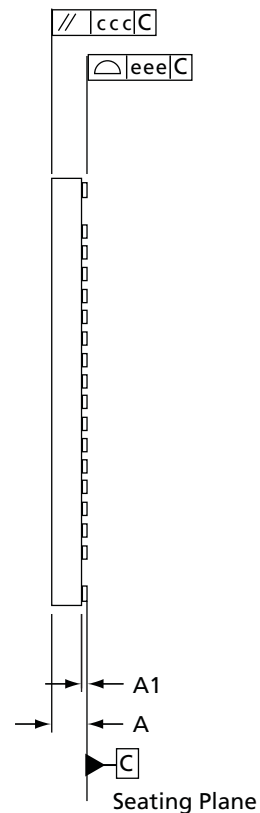
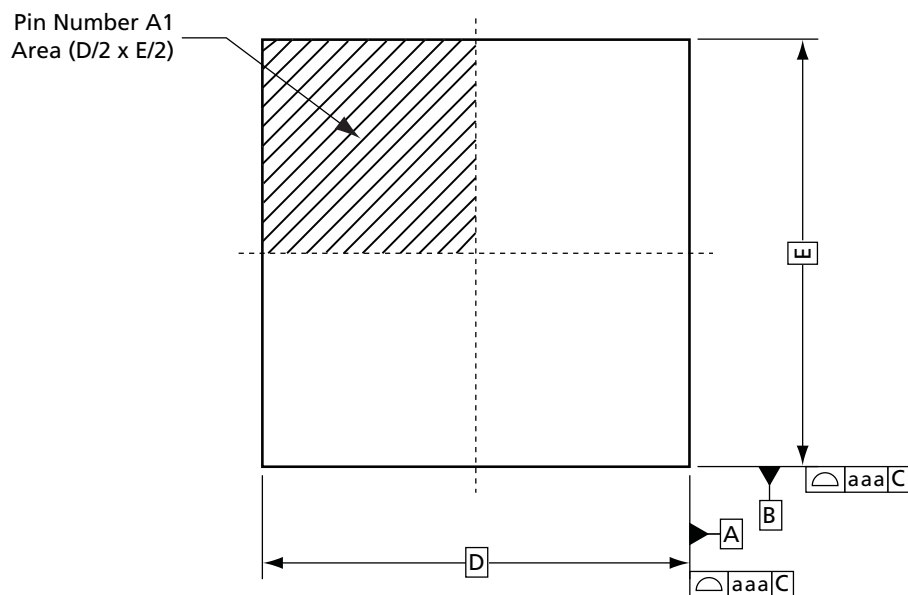
QN48 and QN68 Quad Flat No Leads Single Row Dimension Table

Dimension	QN48 (page 29) MO-220, Variation VLLE-1			QN68 (page 30) MO-220, Variation VLLE-1		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.80	0.90	1.00	0.80	0.90	1.00
A1	0	.02	0.05	0.00	0.02	0.05
A3	0.20 REF			0.20 REF		
b	0.15	0.20	0.25	0.15	0.20	0.25
D/E	5.90	6.00	6.1	7.90	8.00	8.10
D2/E2	4.50	4.65	4.8	2.77	2.92	3.07
e	0.40 BSC			0.40 BSC		
k	0.20	–	–	0.20	–	–
L	0.30	0.40	0.5	0.35	0.40	0.45
N	48			68		
bbb	0.07			0.07		
ccc	0.10			0.10		
ddd	0.05			0.05		

Note: All dimensions are in millimeters

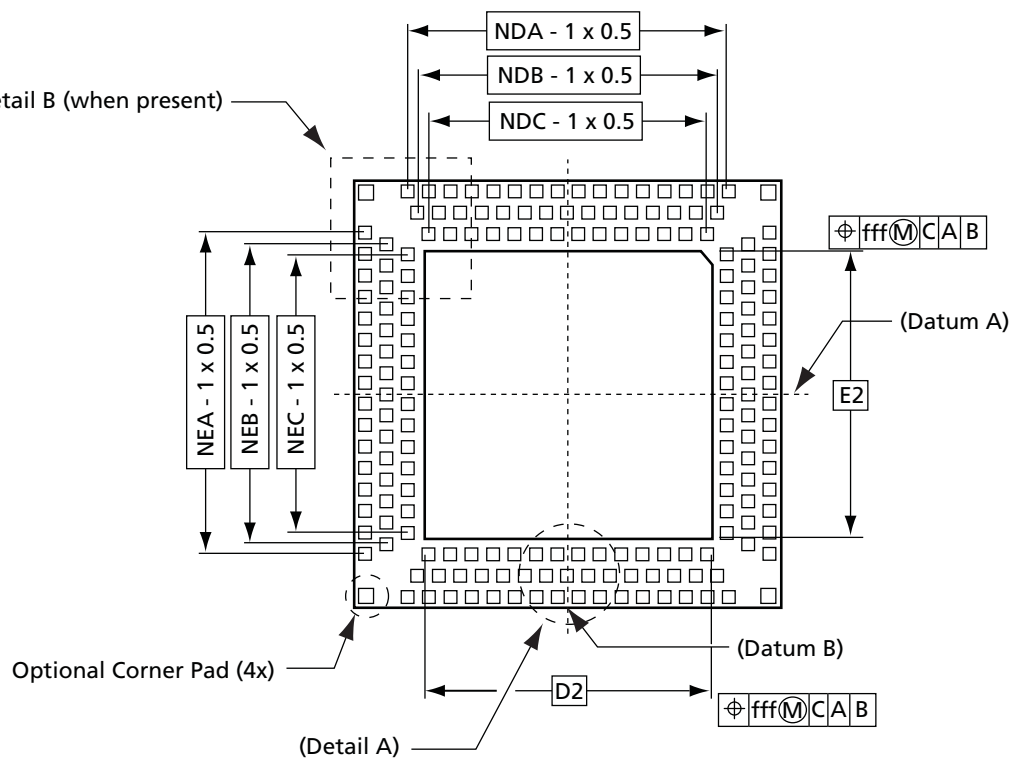
Quad Flat No Lead (QFN)

Top View



Side View

Detail B (when present)

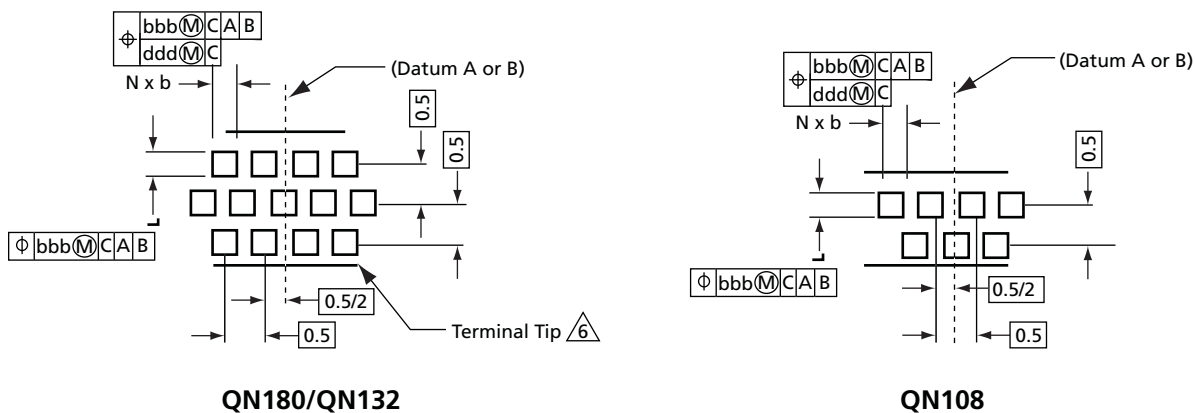


Bottom View

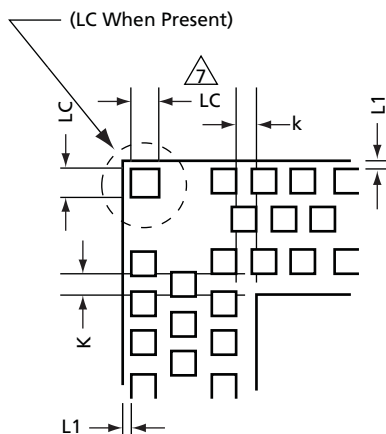
Quad Flat No Lead

Quad Flat No Lead Details

Detail A

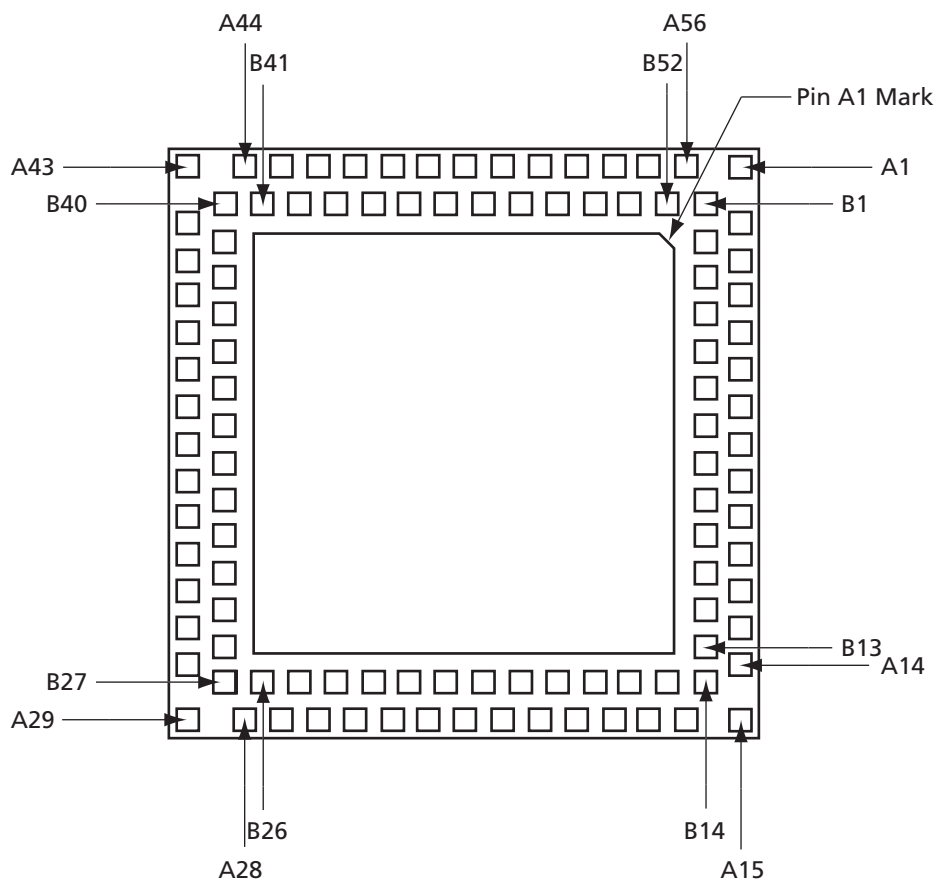


Detail B



Quad Flat No Lead

108-Pin Bottom View (QFN108)

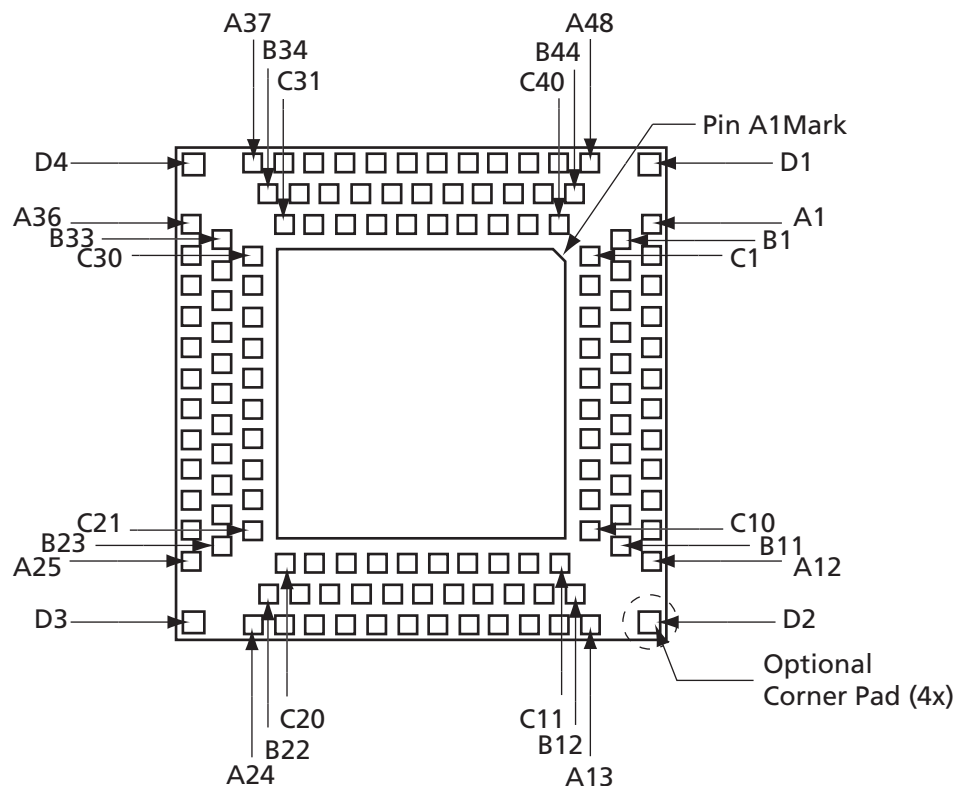


Note: Die attach paddle center of package is tied to ground (GND).

Supported Devices
AFS090

Quad Flat No Lead

132-Pin Bottom View (QFN132)

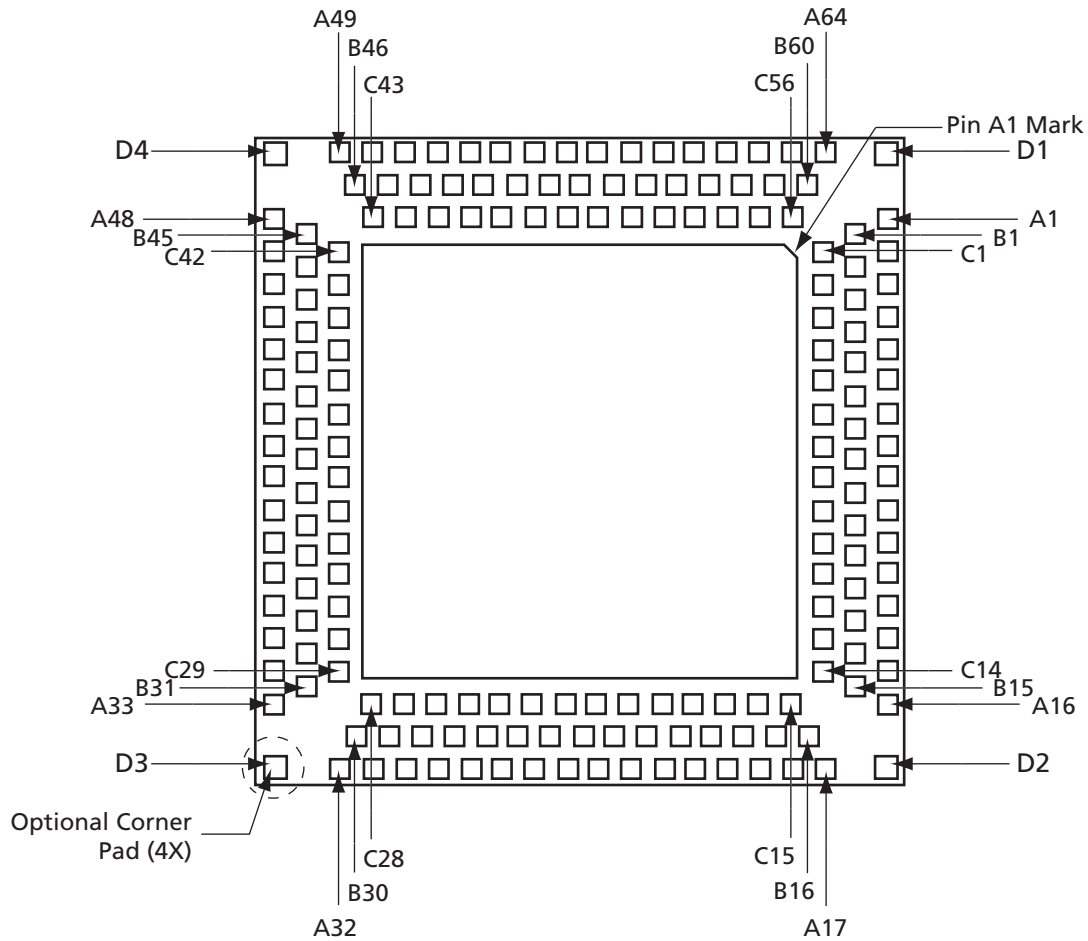


Note: Die attach paddle center of package is tied to ground (GND).

Supported Devices	
AGL030	A3P030
AGL060	A3P060
AGL125	A3P125
AGL250/M1AGL250	A3P250/M1A3P250

Quad Flat No Lead

180-Pin Bottom View (QFN180)



Note: Die attach paddle center of package is tied to ground (GND).

Supported Devices

AFS090
AFS250/M1AFS250

Quad Flat No Leads Dimensions

Symbol	Min.	Nom.	Max.
A	0.70	0.75	0.80
A1	0.00	–	0.05
b	0.25	–	0.35
k	0.20	–	–
L	0.25	–	0.35
L1	0.05	–	0.15
Tolerance of Form and Position			
aaa	0.15		
bbb	0.10		
ccc	0.10		
ddd	0.05		
eee	0.08		
fff	0.10		

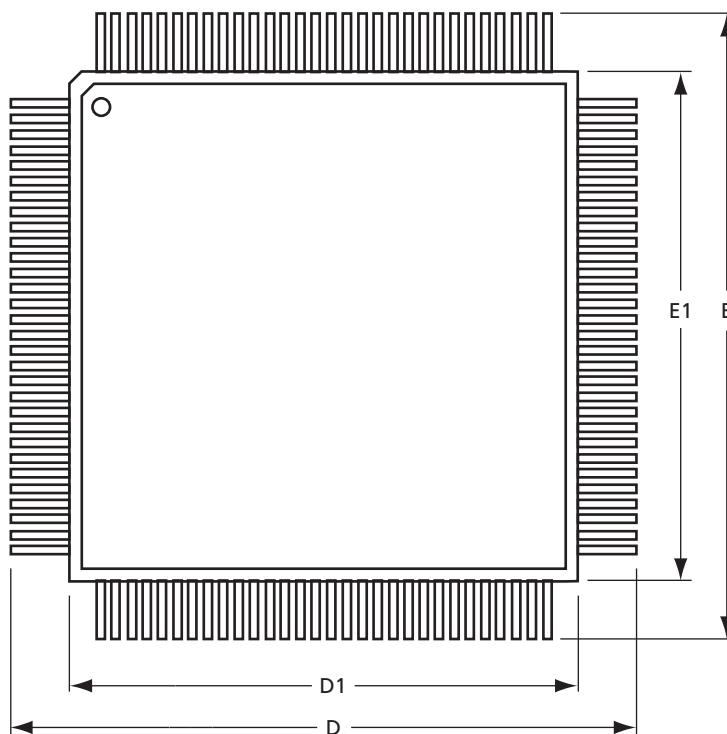
Notes:

1. All dimensions are in millimeters.
2. BSC—Basic Spacing between Centers

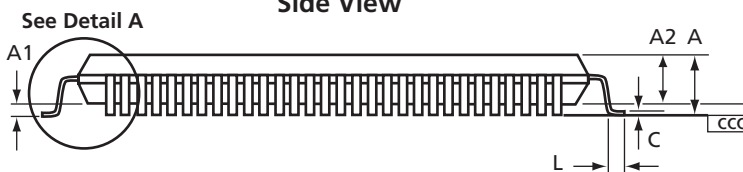
Variation		QFN108	QFN132	QFN180
Symbol				
D BSC.		8.00	8.00	10.00
E BSC.		8.00	8.00	10.00
D2	Min.	5.65	4.65	6.65
	Nom.	5.70	4.70	6.70
	Max.	5.75	4.75	6.75
E2	Min.	5.65	4.65	6.65
	Nom.	5.70	4.70	6.70
	Max.	5.75	4.75	6.75
LC	Min.	–	0.30	0.30
	Nom.	–	–	–
	Max.	–	0.40	0.40
N		108	132	180
NDA		12	12	16
NDB		11	11	15
NDC		–	10	14
NEA		12	12	16
NEB		11	11	15
NEC		–	10	14

Plastic Quad Flat Pack (PQFP, TQFP, VQFP)

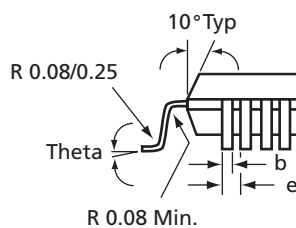
Top View



Side View



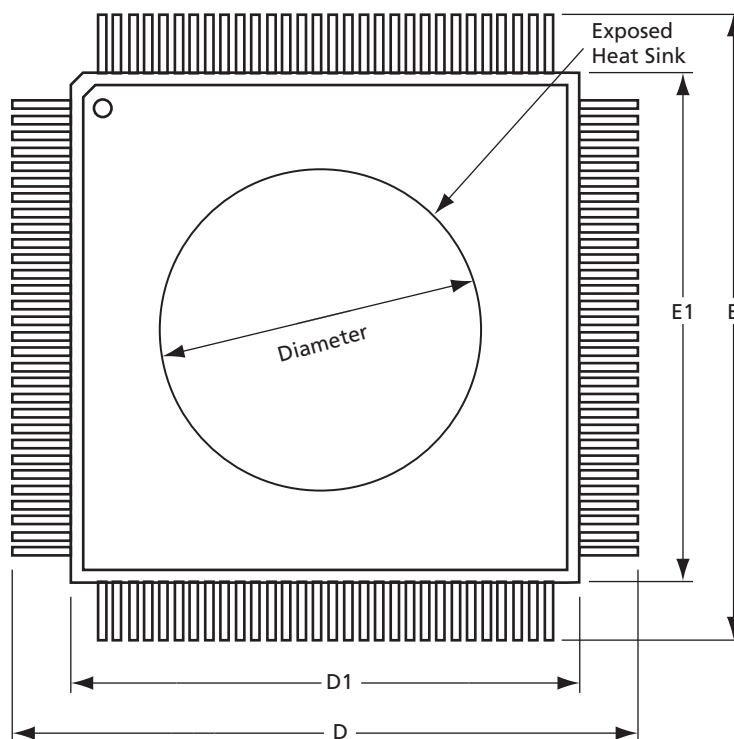
Detail A



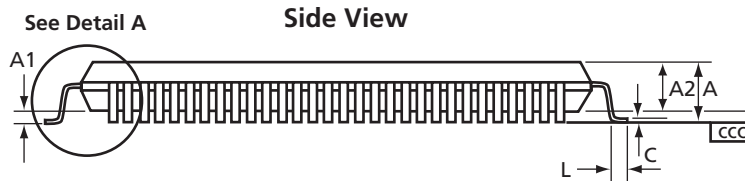
Note: Dimensions are in millimeters. Please see the "Plastic Quad Flat Pack (PQFP) Dimensions" on page 42, "Plastic Quad Flat Pack (TQFP) Dimensions" on page 44, and "Plastic Quad Flat Pack (VQFP) Dimensions" on page 44 for the dimensions.

Plastic Quad Flat Pack (RQFP)

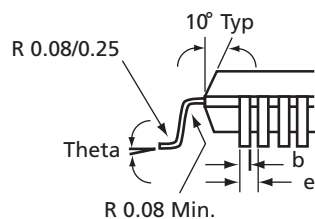
Top View



Side View



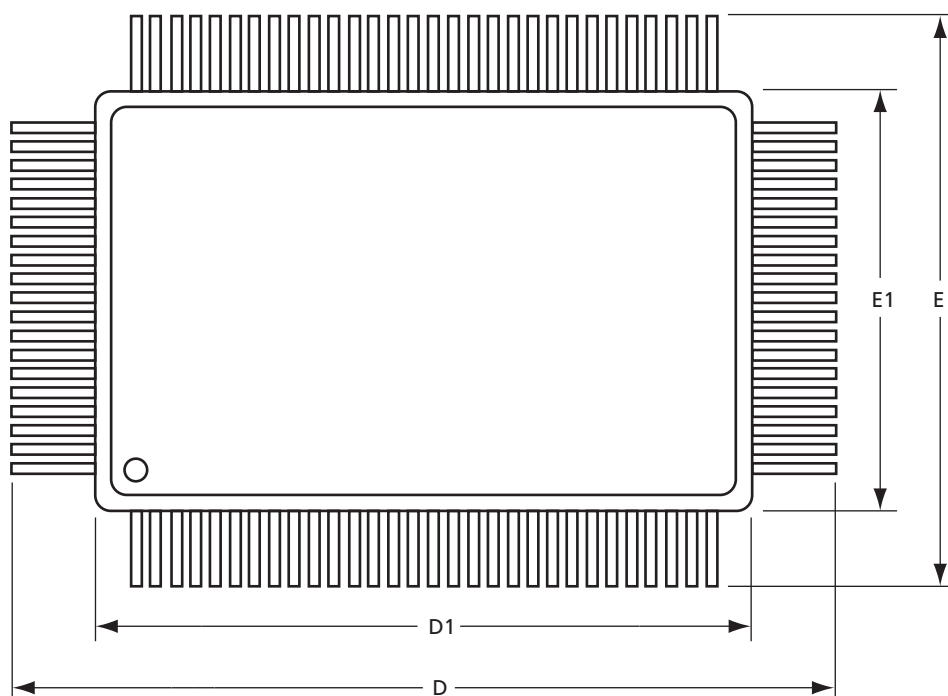
Detail A



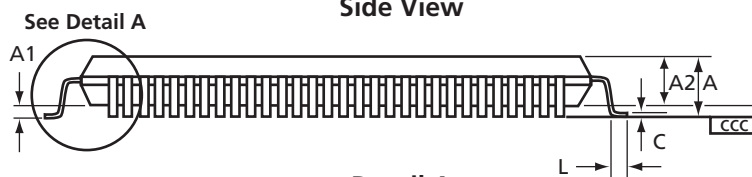
Note: Dimensions are in millimeters. Please see the "Plastic Quad Flat Pack (RQFP/PQFP) Dimensions" on page 42 for the dimensions.

Plastic Quad Flat Pack Rectangular Package (PQ100)

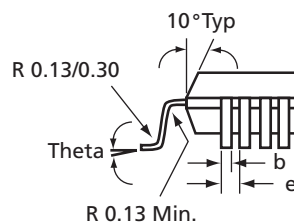
Top View



Side View



Detail A



Note: Dimensions are in millimeters. Please see the "Plastic Quad Flat Pack (PQFP) Dimensions" on page 42 for the dimensions.

Supported Devices								
RQFP 208	PQFP 100	PQFP 144	PQFP 160	PQFP 208			RQFP 240	PQFP 240
A14V100A	A1010B	A1240A	A14V25A	A1280XL*	A545X32A	APA1000	A32200DX*	A42MX36
A14100A	A1020B	A1240XL	A1425A	A32100DX*	A545X72A	A1460A	A32300DX*	
A32200DX*	A1225A		A14V40A	A32140DX*	AX250	A14V60A	A32200DXV*	
A32300DX*	A1225XL*		A1440A	A32200DX*	AX500	A3P125	A32300DXV*	
A32300DXV*	A1240XL*		A14V60A	A32200DXV*	A500K050*	A3P250L/ A3P250/ M1A3P250		
	A1415A		A1460A	A42MX16	A500K130*	A3P400/ M1A3P400		
	A1425A		A1280A	A42MX24	A500K180*	A3P600L/ M1A3P600L/ A3P600/ M1A3P600		
	A3265DX*		A1280XL*	A42MX36	A500K270*	A3P1000L/ M1A3P1000L/ A3P1000/ M1A3P1000/ M7A3P1000		
	A40MX02		A3265DX*	A545X08	APA075	A3PE600/ M1A3PE600		
	A40MX04		A32100DX*	A545X16	APA150	A3PE1500/ M1A3PE1500		
	A42MX09		A32140DX*	A545X16P	APA300	A3PE3000L/ M1A3PE3000L/ A3PE3000/ M1A3PE3000		
	A42MX16		A42MX09	A545X32	APA450	AFS250/ M1AFS250		
			A42MX16	A545X08A	APA600	AFS600/ M1AFS600/ M7AFS600		
			A42MX24	A545X16A	APA750			

Note: *This product is obsolete.

Plastic Quad Flat Pack (PQFP) Dimensions

JEDEC Equivalent	PQFP 100 MS-022 VAR GC-1			PQFP 144 MS-022 VAR DC-1			PQFP 160 MS-022 VAR DD-1		
Dimension	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
A	–	–	3.40	–	–	4.10	–	–	4.10
A1	0.25	–	0.5	0.25	–	0.50	0.25	0.33	0.50
A2	2.50	2.70	2.9	3.20	3.40	3.60	3.20	3.40	3.60
b	0.22	–	0.40	0.22	–	0.40	0.22	–	0.40
c	0.11	–	0.23	0.11	–	0.23	0.11	–	0.23
D	23.20 BSC			31.20 BSC			31.20 BSC		
D1	20.00 BSC			28.00 BSC			28.00 BSC		
E	17.20 BSC			31.20 BSC			31.20 BSC		
E1	14.00 BSC			28.00 BSC			28.00 BSC		
e	0.65 BSC			0.65 BSC			0.65 BSC		
L	0.73	0.88	1.03	0.73	0.88	1.03	0.73	0.88	1.03
ccc	0.10			0.10			0.10		
Theta	0	–	7 deg	0	–	7 deg	0	–	7 deg

Plastic Quad Flat Pack (RQFP/PQFP) Dimensions

JEDEC Equivalent	RQFP 208/PQFP 208 MS-029 VAR FA-1			RQFP 240/PQFP 240 MS-029 VAR GA		
Dimension	Min.	Nom.	Max.	Min.	Nom.	Max.
A	–	–	4.10	–	–	4.10
A1	0.25	–	0.50	0.25	–	0.50
A2	3.20	3.40	3.60	3.20	3.40	3.60
b	0.17	–	0.27	0.17	–	0.27
c	0.09	–	0.20	0.09	–	0.20
D/E	30.60 BSC			34.60 BSC		
D1/E1	28.00 BSC			32.10 BSC		
e	0.50 BSC			0.50 BSC		
L	0.45	0.60	0.75	0.50	0.60	0.75
ccc	0.08			0.08		
Theta	0	3.50	8 deg	0	3.50	8 deg
Diameter	19.82	20.32	20.82	23.63	24.13	24.63

Notes:

1. All dimensions are in millimeters.
2. BSC—Basic Spacing between Centers

Supported Devices									
TQFP 64	TQFP 100	TQFP 144	TQFP 176		VQFP 80	VQFP 100		VQFP 128	VQFP 176
eX64	APA075	A54SX08	A1240A	A3265DXV*	A1010B	A1225XL*	A54SX16P	AGLP030	AGLP060
eX128	APA150	A54SX16P	A1440A	A32140DXV*	A10V10B	A1415A	A54SX08		
	A54SX08A	A54SX32	A1460A		A1020B	A1425A	AGL030/ ALGN030		
	A54SX16A	A54SX08A	A14V40A	A42MX09	A10V20B	A1440A	AGL060/ AGLN060		
	A54SX32A	A54SX16A	A14V60A	A42MX16	A40MX02	A14V15A	AGL125/ AGLN125		
	eX64	A54SX32A	A1240XL*	A42MX24	A40MX04	A14V25A	AGL250/ AGLN250		
	eX128	APA075	A1280XL*	A54SX08		A14V40A	A3P030/ A3PN030		
	eX256	A3P060	A1280XLV*	A54SX16		A42MX09	A3P060/ A3PN060		
		A3P125	A1240XLV*	A54SX16P		A42MX16	A3P125/ A3PN125		
			A3265DX*	A54SX32		A54SX16	A3P250/ A3PN250/ A3P250L/ M1A3P250		
			A32140DX*	A54SX32A					

Note: *This product is obsolete.

Plastic Quad Flat Pack (TQFP) Dimensions

JEDEC Equivalent	TQFP 64 MS-026 VAR BCD			TQFP 100 MS-026 VAR BED			TQFP 144 MS-026 VAR BFB			TQFP 176 MS-026 VAR BCA		
Dimension	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
A	–	–	1.60	–	–	1.60	–	–	1.60	–	–	1.60
A1	0.05	–	0.15	0.05	–	0.15	0.05	–	0.15	0.05	–	0.15
A2	1.35	1.40	1.45	1.35	1.40	1.45	1.35	1.40	1.45	1.35	1.40	1.45
b	0.17	0.22	0.27	0.17	0.22	0.27	0.17	0.22	0.27	0.17	0.22	0.27
c	0.09	–	0.20	0.09	–	0.20	0.09	–	0.20	0.09	–	0.20
D/E	12.00 BSC			16.00 BSC			22.00 BSC			26.00 BSC		
D1/E1	10.00 BSC			14.00 BSC			20.00 BSC			24.00 BSC		
e	0.50 BSC			0.50 BSC			0.50 BSC			0.50 BSC		
L	0.45	0.60	0.75	0.45	0.60	0.75	0.45	0.60	0.75	0.45	0.60	0.75
ccc	0.08			0.08			0.08			0.10		
Theta	0	3.50 deg	7 deg	0	3.50 deg	7 deg	0	3.50 deg	7 deg	0	3.50 deg	7 deg

Notes:

1. All dimensions are in millimeters.
2. BSC—Basic Spacing between Centers

Plastic Quad Flat Pack (VQFP) Dimensions

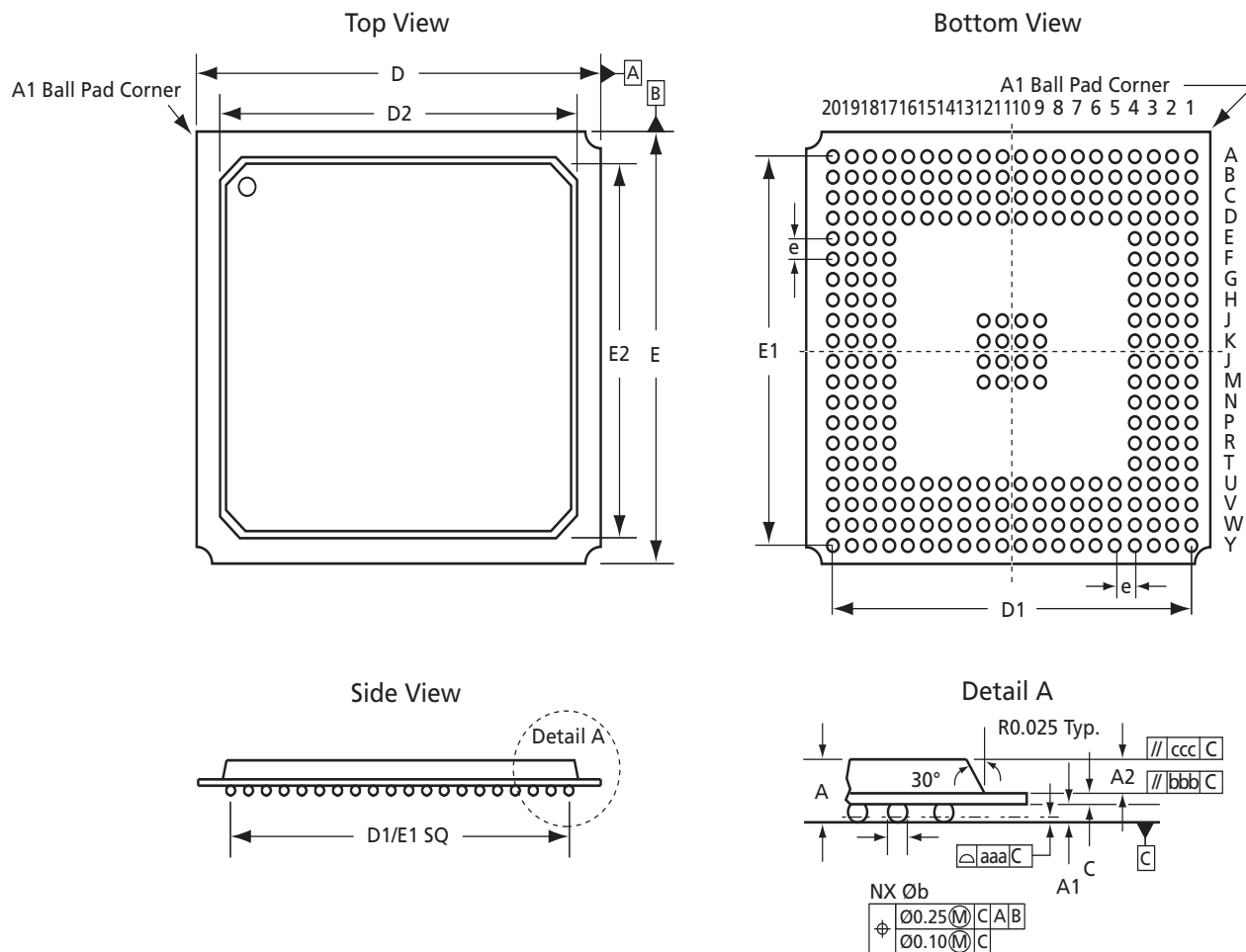
JEDEC Equivalent	VQFP 80 MS-026 VAR AEC			VQFP 100 MS-026 VAR AED			VQFP 128 MS-026 VAR AEE ³			VQFP 176 MS-026 VAR BFC		
Dimension	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
A	–	–	1.20	–	–	1.20	–	–	1.20	–	–	1.20
A1	0.05	–	0.15	0.05	–	0.15	0.05	0.10	0.15	0.05	0.10	0.15
A2	0.95	1.00	1.05	0.95	1.00	1.05	0.95	1.00	1.05	0.95	1.00	1.05
b	0.22	0.32	0.38	0.17	0.22	0.27	0.13	0.18	0.23	0.13	0.18	0.23
c	0.09	–	0.20	0.09	–	0.20	0.09	–	0.20	0.09	–	0.20
D/E	16.00 BSC			16.00 BSC			16.00 BSC			22.00 BSC		
D1/E1	14.00 BSC			14.00 BSC			14.00 BSC			20.00 BSC		
e	0.65 BSC			0.50 BSC			0.40 BSC			0.40 BSC		
L	0.45	0.60	0.75	0.45	0.60	0.75	0.45	0.60	0.75	0.45	0.60	0.75
ccc	0.10			0.08			0.08			0.08		
Theta	0	3.50 deg	7 deg	0	3.50 deg	7 deg	0	3.50 deg	7 deg	0	3.50 deg	7 deg

Notes:

1. All dimensions are in millimeters.
2. BSC—Basic Spacing between Centers
3. Variation AEE plus 8 leads

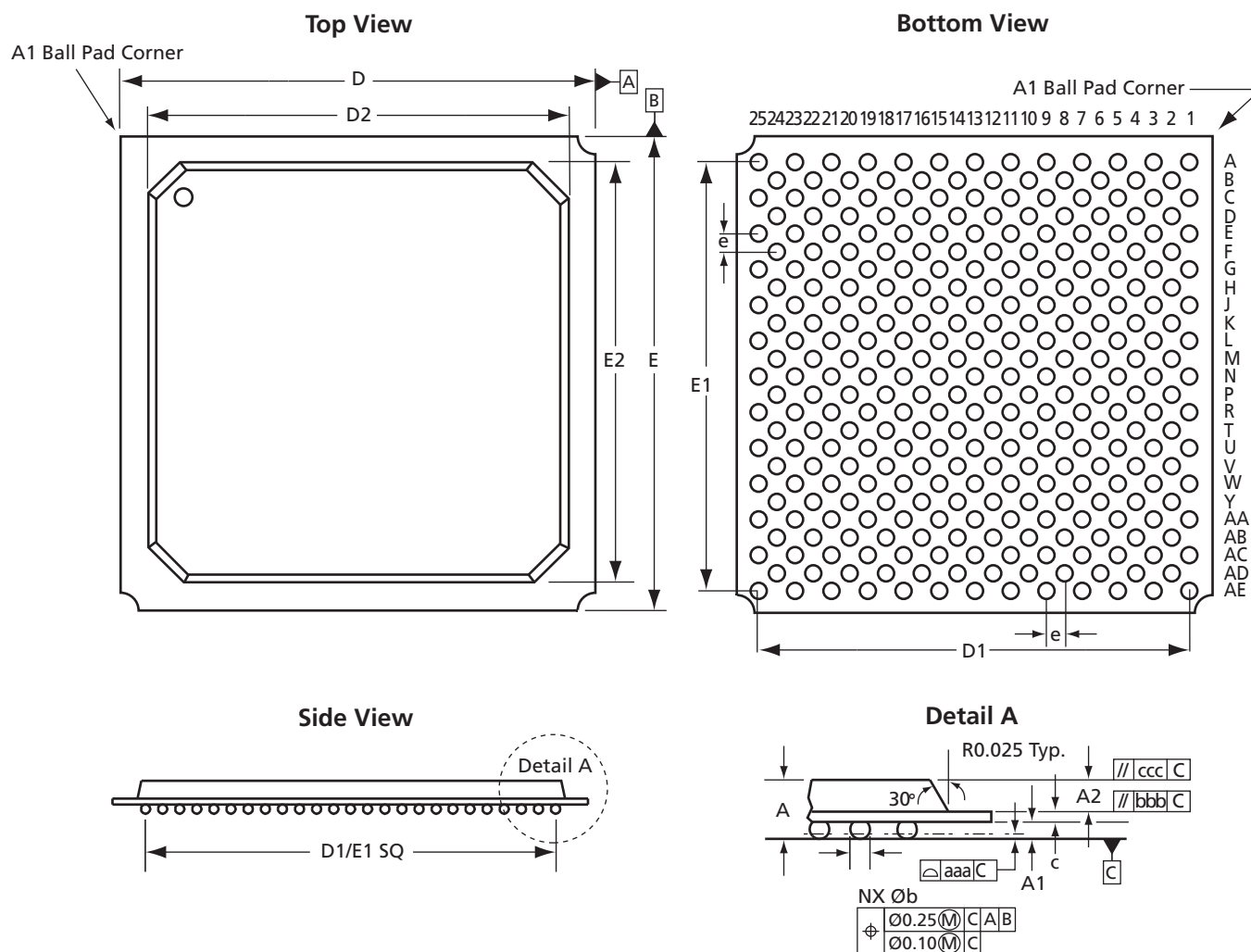
Plastic Ball Grid Array

272-Pin PBGA



Plastic Ball Grid Array

313-Pin PBGA

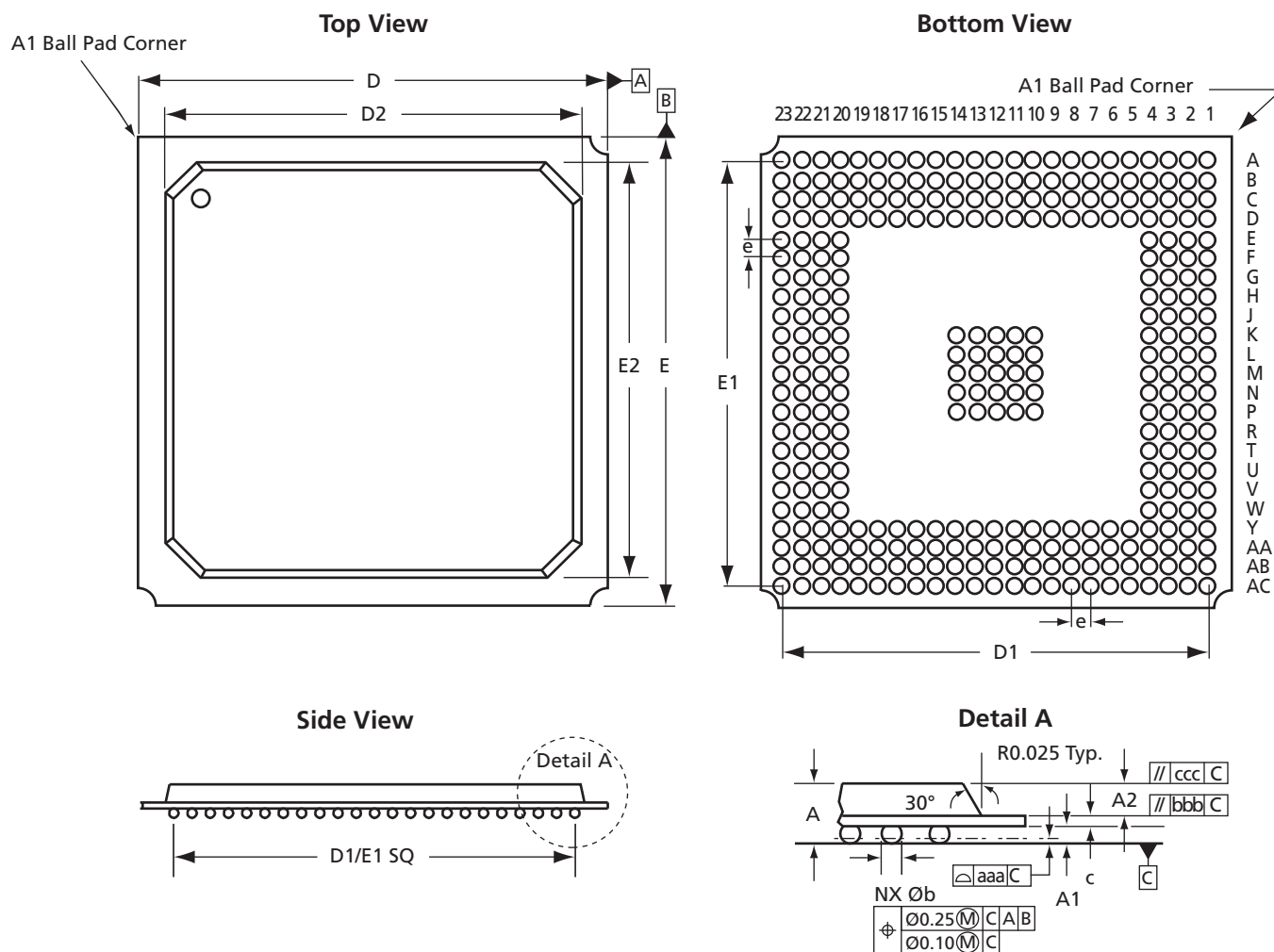


Note: Dimensions are in millimeters. Please see the "Plastic Ball Grid Array Dimensions" on page 50 for the dimensions.

Supported Devices		
A54SX32	A14100A	A14V100A

Plastic Ball Grid Array

329-Pin PBGA

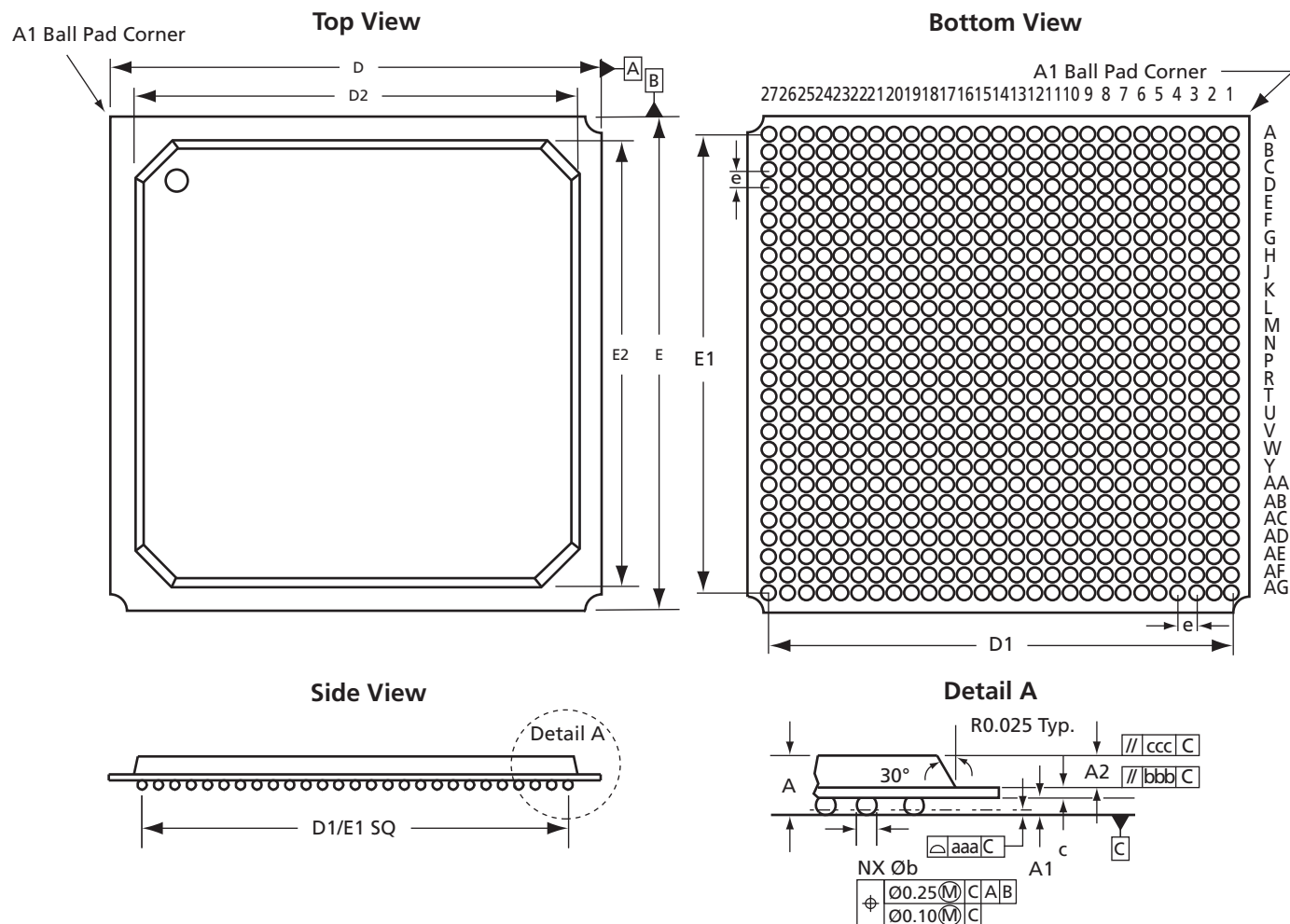


Note: Dimensions are in millimeters. Please see the "Plastic Ball Grid Array Dimensions" on page 50 for the dimensions.

Supported Devices	
A54SX32	A53SX32A

Plastic Ball Grid Array

729-Pin PBGA



Note: Dimensions are in millimeters. Please see the "Plastic Ball Grid Array Dimensions" on page 50 for the dimensions.

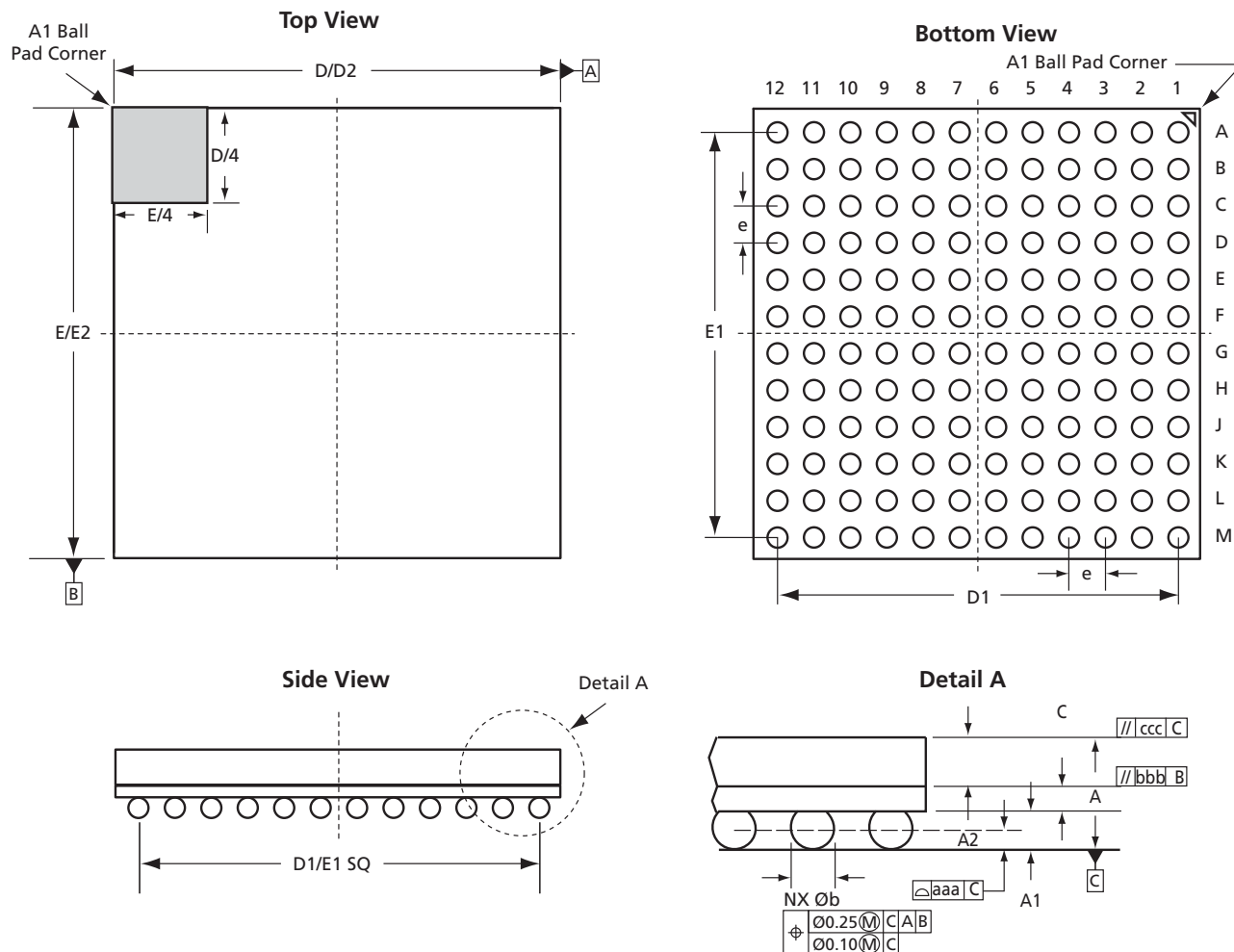
Supported Devices
AX1000

Plastic Ball Grid Array Dimensions

JEDEC Equivalent	PBGA272 MS-034 VAR BAL-2			PBGA313 MS-034			PBGA329 MS-034 VAR BAN-2			PBGA456 MS-034 VAR BAR-2		
Dimension	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
A	2.18	2.33	2.50	2.12	2.33	2.52	2.17	2.33	2.70	2.12	2.33	2.54
A1	0.50	0.60	0.70	0.50	0.60	0.70	0.50	0.60	0.70	0.50	0.60	0.70
A2	1.15	1.17	1.19	1.12	1.17	1.22	1.10	1.20	1.30	1.12	1.17	1.19
aaa	0.20			0.20			0.20			0.20		
b	0.60	0.75	0.90	0.60	0.76	0.90	0.60	0.76	0.90	0.60	0.76	0.90
bbb	0.25			0.25			0.25			0.25		
c	0.53	0.56	0.61	0.53	0.56	0.61	0.53	0.60	0.70	0.51	0.56	0.61
ccc	0.35			0.35			0.35			0.35		
D	26.80	27.00	27.20	34.80	35.00	35.20	30.80	31.00	31.20	34.80	35.00	35.20
D1	24.13 BSC			30.48 BSC			27.94 BSC			31.75 BSC		
D2	23.90	24.00	24.10	29.50	30.00	30.70	27.90	28.00	28.10	29.80	30.00	30.20
E	26.80	27.00	27.20	34.80	35.00	35.20	30.80	31.00	31.20	34.80	35.00	35.20
E1	24.13 BSC			30.48 BSC			27.94 BSC			31.75 BSC		
E2	23.90	24.00	24.10	29.50	30.00	30.70	27.90	28.00	28.10	29.80	30.00	30.20
e	1.27 typ.			1.27 typ.			1.27 typ.			1.27 typ.		
JEDEC Equivalent	PBGA729 MS-034 VAR BAR-1											
Dimensions	Min.	Nom.	Max.									
A	2.12	2.33	2.54									
A1	0.50	0.60	0.70									
A2	1.12	1.17	1.19									
aaa	0.20											
b	0.60	0.76	0.90									
bbb	0.25											
c	0.50	0.56	0.62									
ccc	0.35											
D	34.80	35.00	35.20									
D1	33.02 BSC											
D2	29.95	30.00	30.70									
E	34.80	35.00	35.20									
E1	33.02 BSC											
E2	29.95	30.00	30.70									
e	1.27 typ.											

Fine Pitch Plastic Ball Grid Array

144-Pin FG



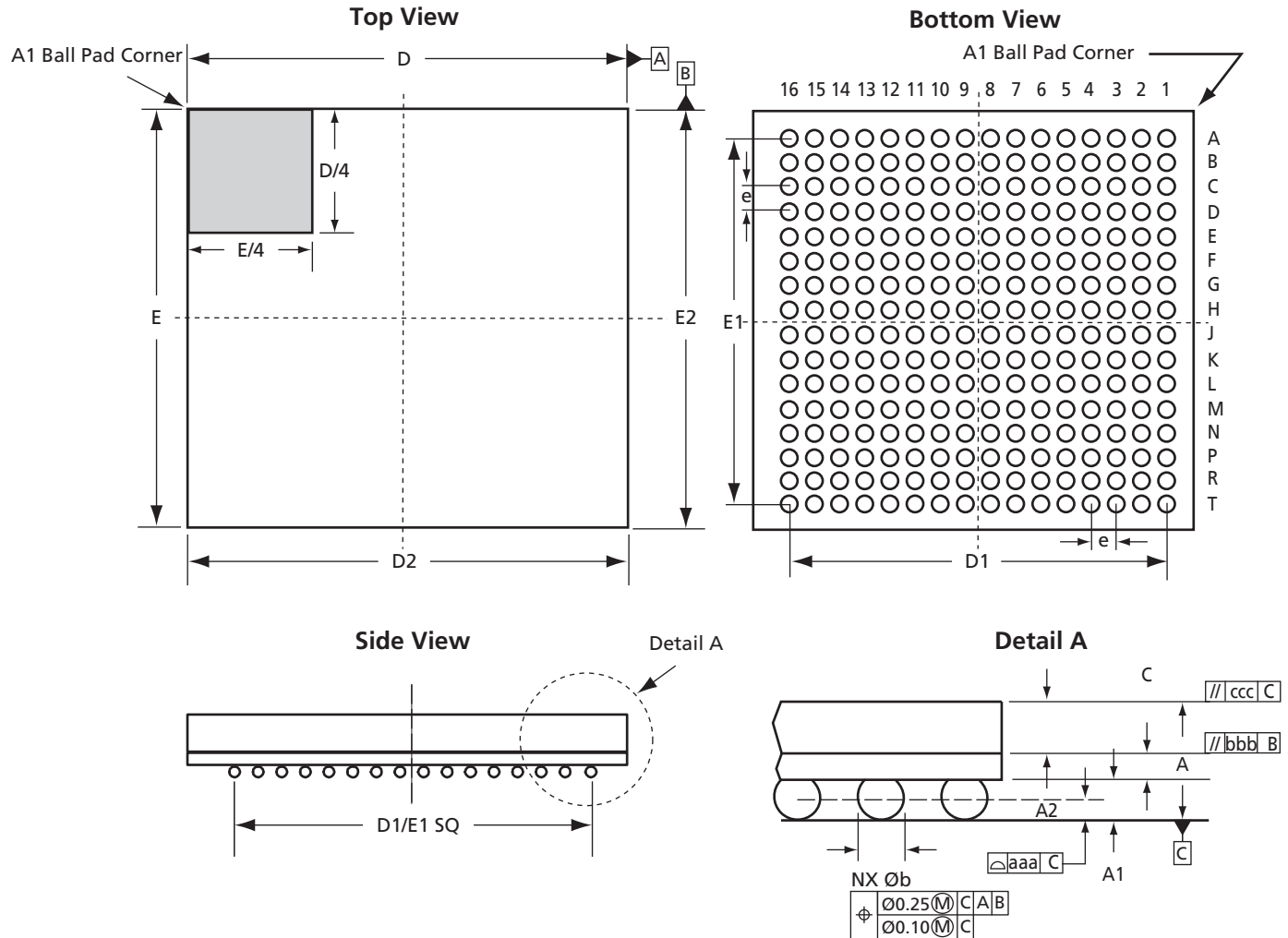
Note: Dimensions are in millimeters. Please see the "Fine Pitch Plastic Ball Grid Array Dimensions" on page 60 for the dimensions.

Supported Devices					
A54SX08	A500K050* A500K130*	APA075 APA150 APA300 APA450	A54SX08A A54SX16A A54SX32A	AGL060 AGL125 AGL250/M1AGL250 AGL400 AGL600/M1AGL600 AGL1000/M1AGL1000	A3P060 A3P125 A3P250L A3P250/M1A3P250 A3P400/M1A3P400 A3P600L/M1A3P600L/ A3P600/M1A3P600 A3P1000L/M1A3P1000L/ A3P1000/M1A3P1000/M7A3P1000

Note: *This product is obsolete.

Fine Pitch Plastic Ball Grid Array

256-Pin FG



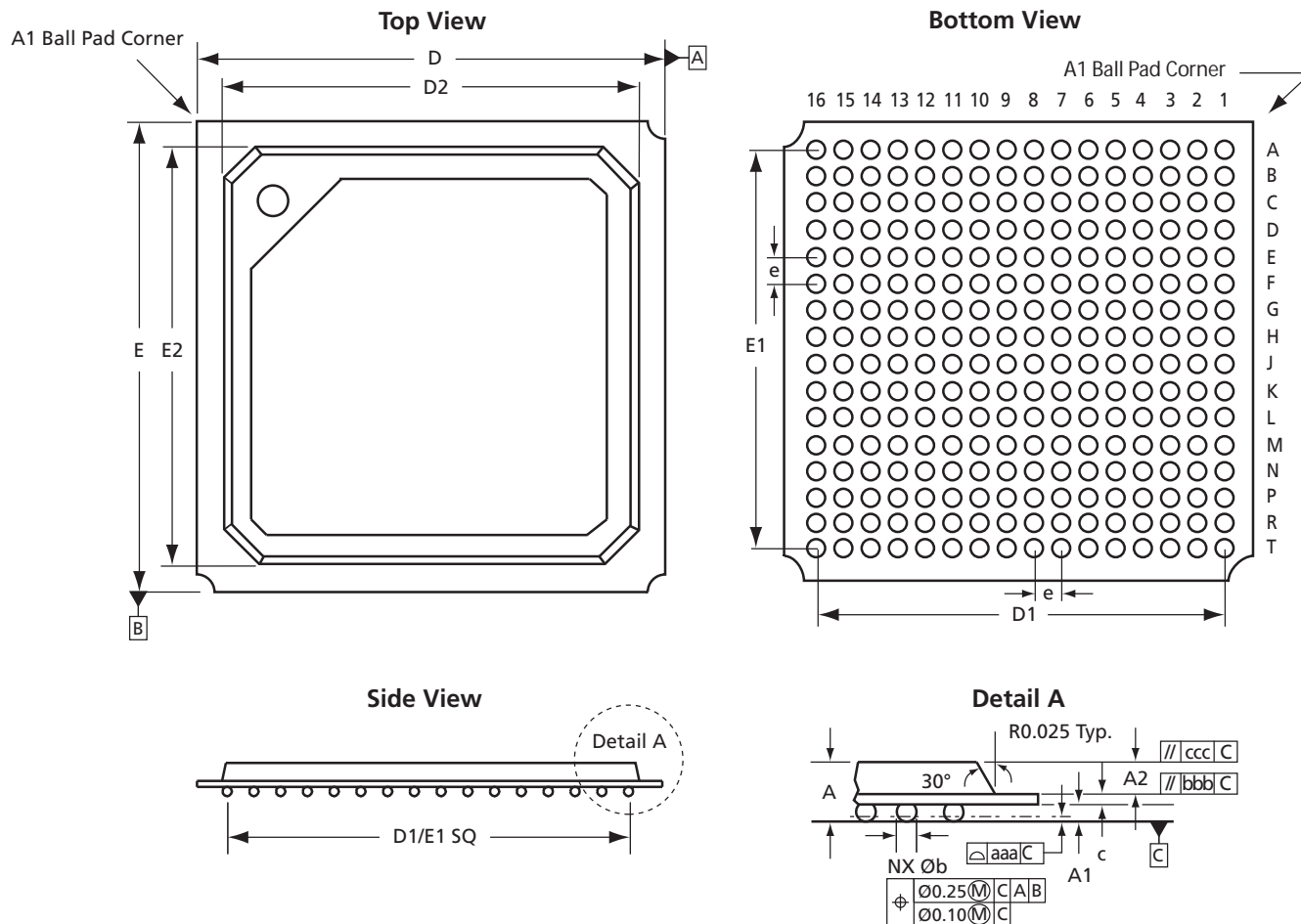
Note: Dimensions are in millimeters. Please see the "Fine Pitch Plastic Ball Grid Array Dimensions" on page 60 for the dimensions.

Supported Devices							
A500K130*	APA150	A545X16A	AX125	AGL400	A3P250L/ A3P250	AFS090	A2F060
A500K180*	APA300		AX250	AGL600	A3P400/M1A3P400	AFS250/M1AFS250	A2F200
A500K270*	APA450			AGL1000/ M1AGL1000	A3P600L/M1A3P600L/ A3P600/M1A3P600	AFS600/M1AFS600/ M7AFS600	A2F500
	APA600			AGLE600	A3P1000L/M1A3P1000L/ A3P1000/M1A3P1000/ M7A3P1000	AFS1500/M1AFS1500	
					A3PE600		

Note: *This product is obsolete.

Fine Pitch Plastic Ball Grid Array

256-Pin FG

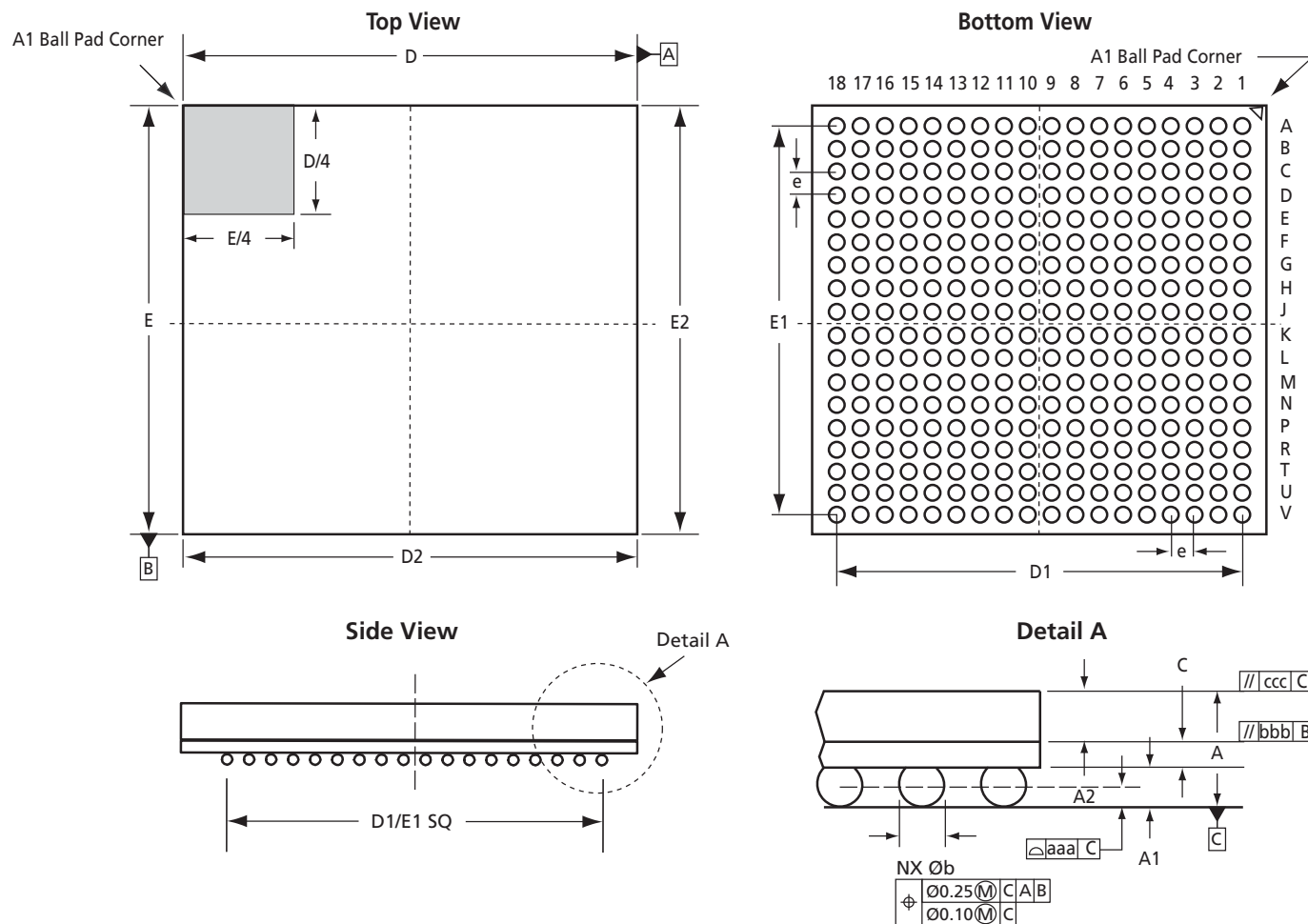


Note: Dimensions are in millimeters. Please see the "Fine Pitch Plastic Ball Grid Array Dimensions" on page 60 for the dimensions.

Supported Devices	
A54SX32A	A54SX72A

Fine Pitch Plastic Ball Grid Array

324-Pin FG



Note: Dimensions are in millimeters. Please see the "Fine Pitch Plastic Ball Grid Array Dimensions" on page 60 for the dimensions.

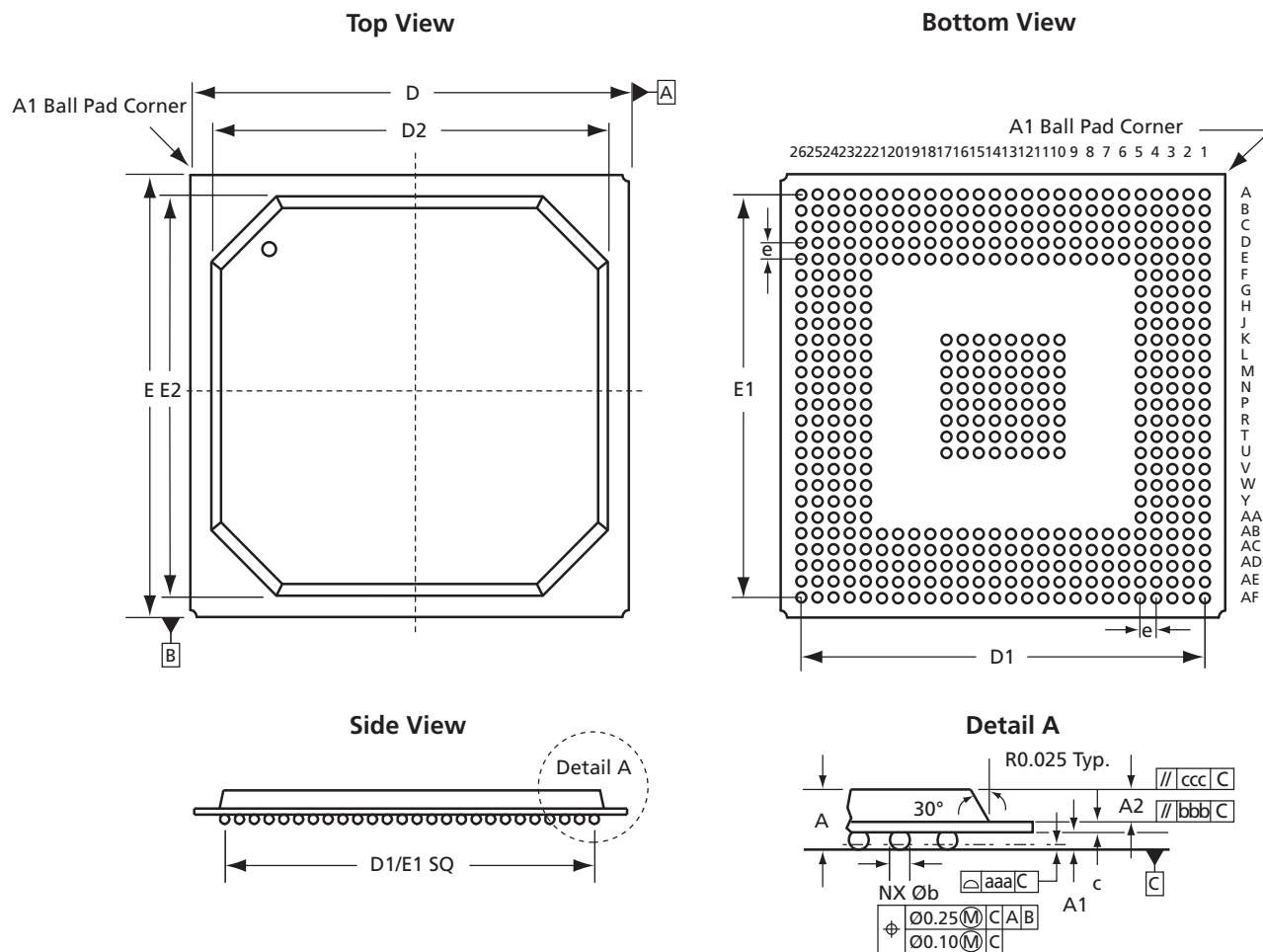
Supported Devices

AX125

A3PE3000L/M1A3PE3000L/
A3PE3000/M1A3PE3000

Fine Pitch Plastic Ball Grid Array

484-Pin FG

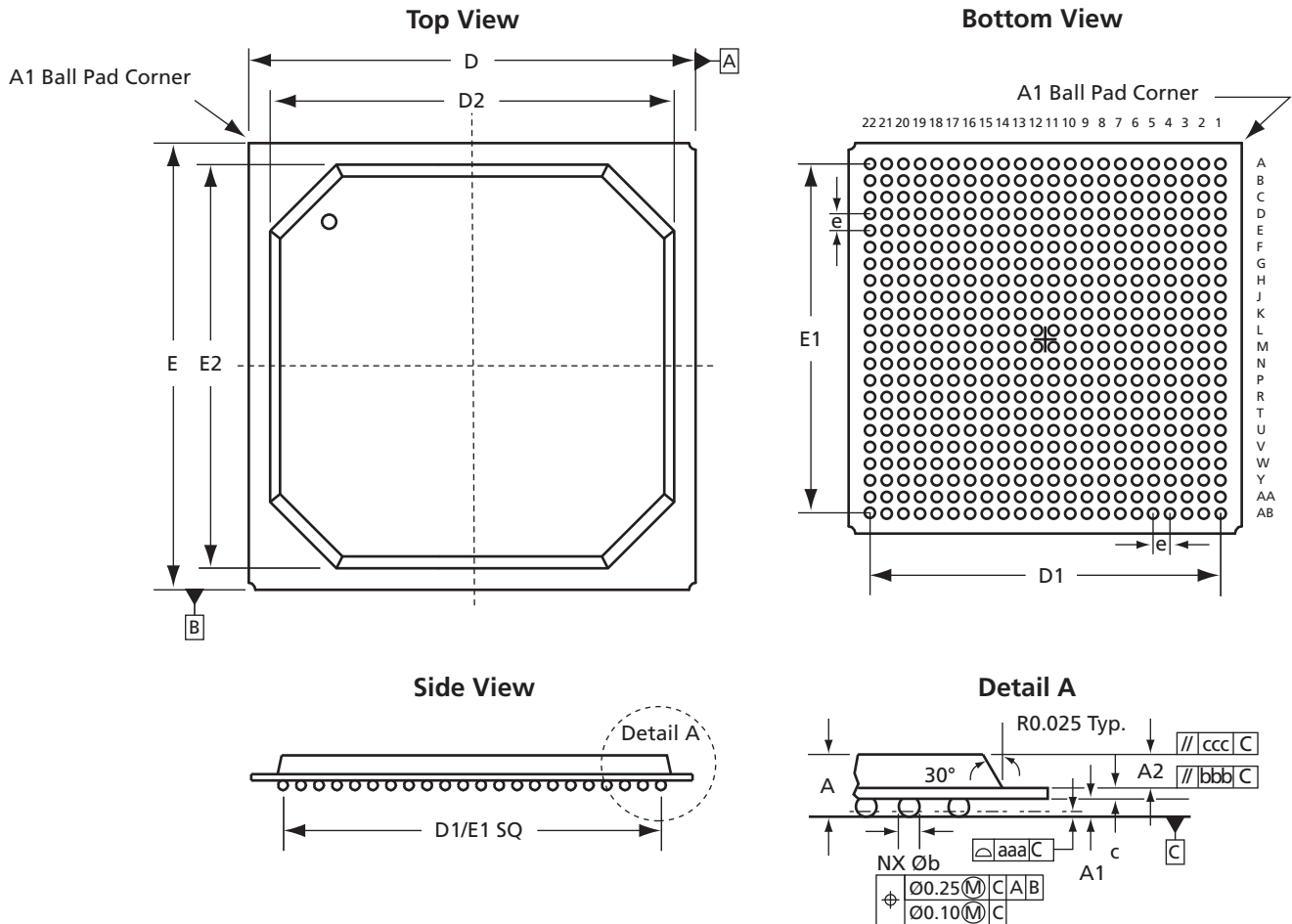


Note: Dimensions are in millimeters. Please see the "Fine Pitch Plastic Ball Grid Array Dimensions" on page 60 for the dimensions.

Supported Devices
A54SX32A
A54SX72A

Fine Pitch Plastic Ball Grid Array

484-Pin FG—Fully Populated

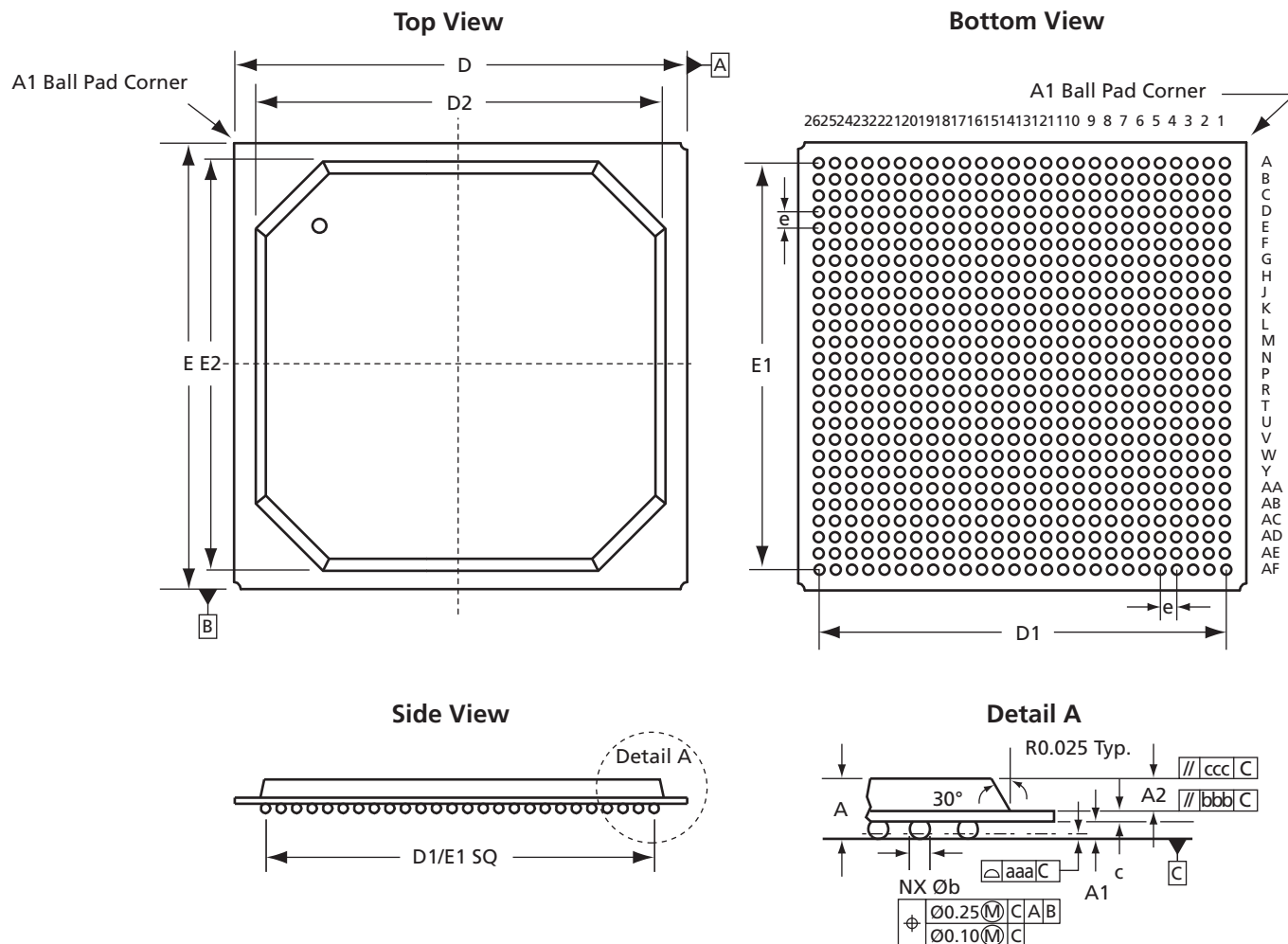


Note: Dimensions are in millimeters. Please see the "Fine Pitch Plastic Ball Grid Array Dimensions" on page 61 for the dimensions.

Supported Devices					
APA450	AX250	AGL400	A3P400/M1A3P400	AFS600/M1AFS600/ M7AFS600	A2F200
APA600	AX500	AGL600/M1AGL600	A3P600L/M1A3P600L/ A3P600/M1A3P600	AFS1500/M1AFS1500	A2F500
	AX1000	AGL1000/M1AGL1000	A3P1000L/M1A3P1000L/ A3P1000/M1A3P1000/M7A3P1000	A2F200, A2F500	
		AGLE600	A3PE600/M1A3PE600/A3PE600L/ M1A3PE600L		
		AGLE3000/ M1AGLE3000	A3PE1500/M1A3PE1500		
			A3PE3000L/M1A3PE3000L/ A3PE3000/M1A3PE3000		

Fine Pitch Plastic Ball Grid Array

676-Pin FG



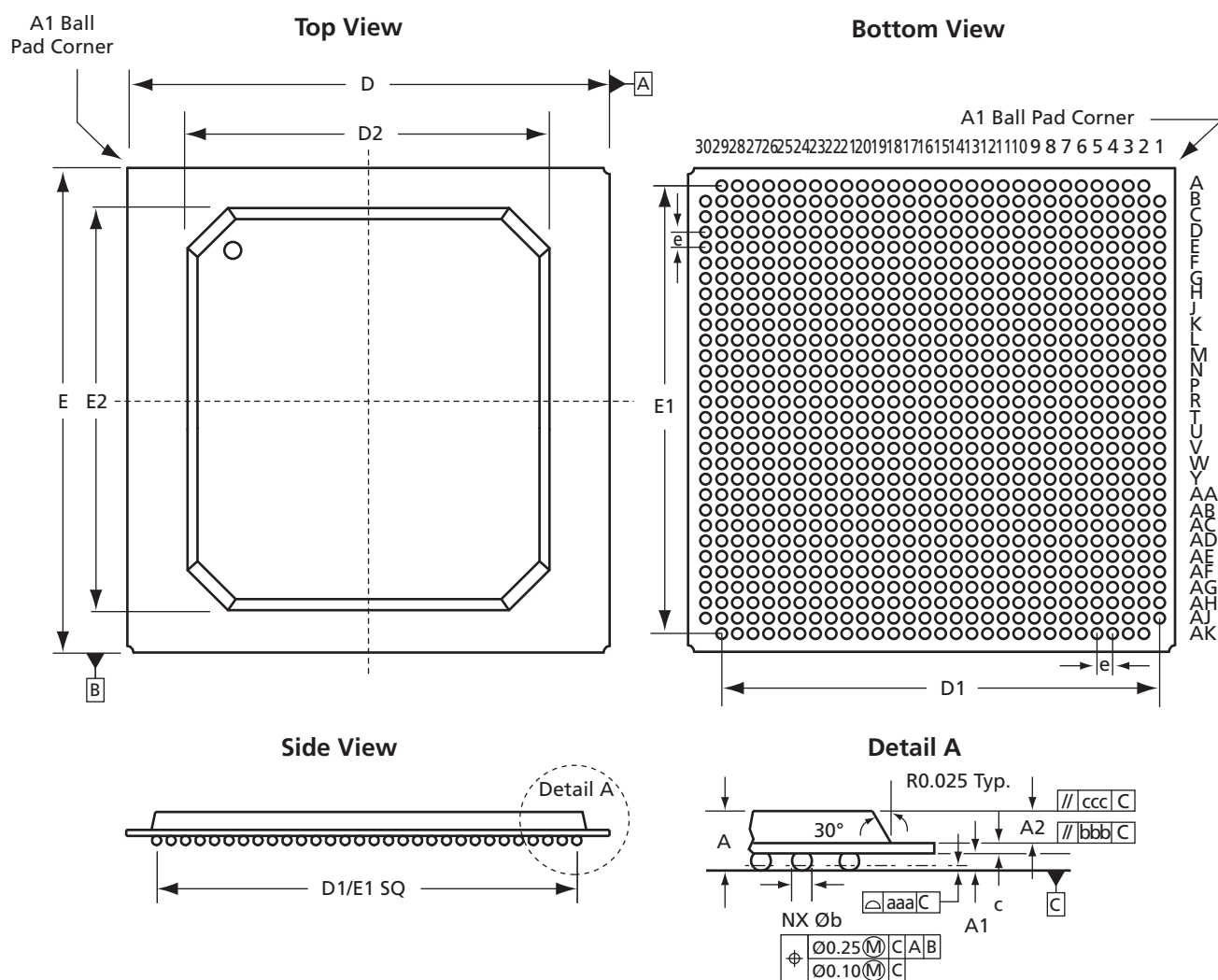
Note: Dimensions are in millimeters. Please see the "Fine Pitch Plastic Ball Grid Array Dimensions" on page 61 for the dimensions.

Supported Devices				
A500K270*	APA600	AX500	A3PE1500/M1A3PE1500	AFS1500/M1AFS1500
	APA750	AX1000		

Note: *This product is obsolete.

Fine Pitch Plastic Ball Grid Array

896-Pin FG



Note: Dimensions are in millimeters. Please see the "Fine Pitch Plastic Ball Grid Array Dimensions" on page 61 for the dimensions.

Supported Devices		
APA750 APA1000	AX1000 AX2000	AGLE3000/M1AGLE3000 A3PE3000L/M1A3PE3000L/ A3PE3000/M1A3PE3000

1152-Pin FG



Supported Devices	
APA1000	AX2000

Fine Pitch Plastic Ball Grid Array Dimensions

JEDEC Equivalent	FBGA 144 (page 51) MO-192 VAR DAD-1			FBGA 256 (page 52) MO-192 VAR DAF1			FBGA 256 (page 53) MS-034 VAR AAF-1			FBGA 324 (page 54) MS-034 VAR AAG-1			FBGA 484 (page 55) MS-034 VAR AAL-1		
	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
A	1.35	1.45	1.55	1.35	1.60	1.70	1.55	1.76	1.97	1.48	1.63	1.78	2.02	2.23	2.44
A1	0.35	0.40	0.45	0.25	0.40	–	0.30	0.40	0.50	0.33	0.38	0.43	0.40	0.50	0.60
A2	0.65	0.70	0.75	0.65	0.70	0.75	0.75	0.80	0.85	0.65	0.70	0.75	1.12	1.17	1.22
aaa	0.10			0.12			0.20			0.20			0.20		
b	0.45	0.50	0.55	0.45	0.50	0.55	0.40	0.50	0.60	0.49	0.54	0.59	0.50	0.63	0.70
bbb	0.25			0.25			0.25			0.25			0.25		
c	–	0.35	–	0.25	0.50	1.10	0.50	0.56	0.62	0.50	0.55	0.60	0.50	0.56	0.62
ccc	0.35			0.35			0.35			0.35			0.35		
D	12.80	13.00	13.20	16.80	17.00	17.20	16.80	17.00	17.20	18.80	19.00	19.20	26.80	27.00	27.20
D1	11.00 BSC			15.00 BSC			15.00 BSC			17.00 BSC			25.00 BSC		
D2	12.80	13.00	13.20	16.80	17.00	17.20	14.80	15.00	15.20	18.80	19.00	19.20	23.80	24.00	24.20
E	12.80	13.00	13.20	16.80	17.00	17.20	16.80	17.00	17.20	18.80	19.00	19.20	26.80	27.00	27.20
E1	11.00 BSC			15.00 BSC			15.00 BSC			17.00 BSC			25.00 BSC		
E2	12.80	13.00	13.20	16.80	17.00	17.20	14.80	15.00	15.20	18.80	19.00	19.20	23.80	24.00	24.20
e	1.00 typ.			1.00 typ.			1.00 typ.			1.00 typ.			1.00 typ.		

Notes:

1. All dimensions are in millimeters.
2. BSC—Basic Spacing between Centers

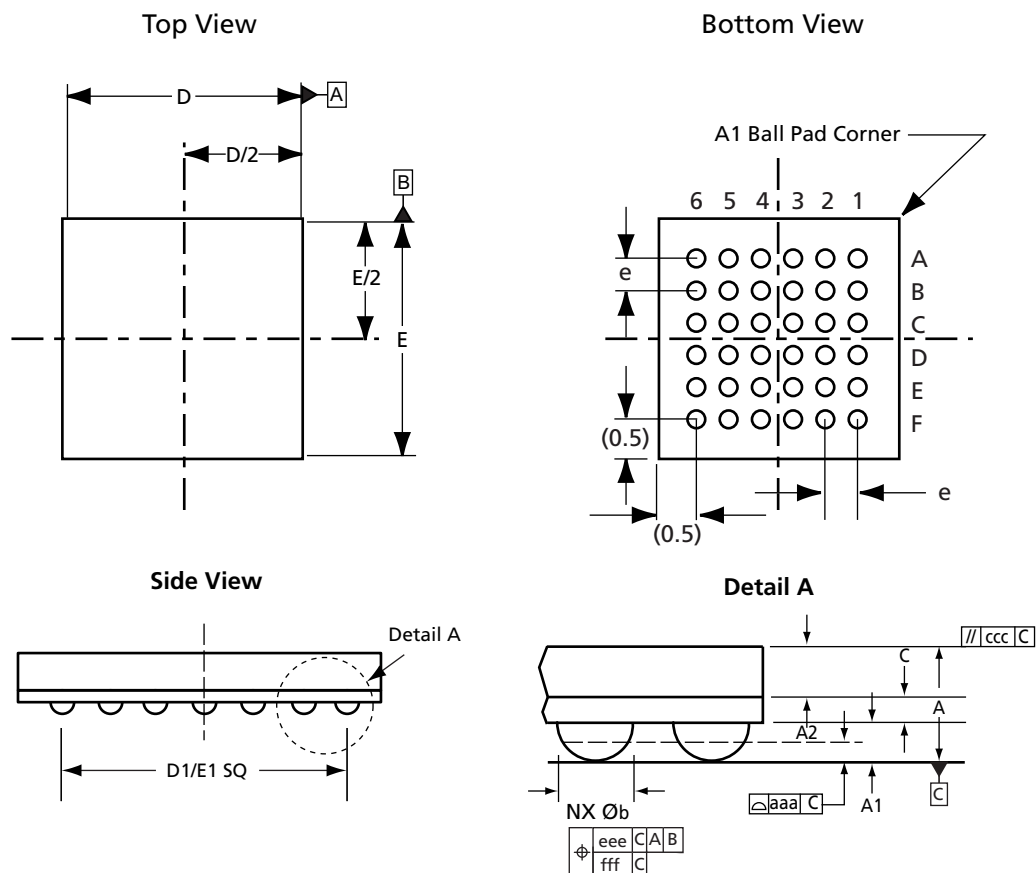
JEDEC Equivalent	FBGA 484 (page 56) (23x23 Fully Populated) MS-034 VAR AAJ-1			FBGA 676 (page 57) MS-034 VAR AAL-1			FBGA 896 (page 58) MS-034 VAR AAN-1			FBGA 1152 (page 59) MS-034 VAR AAR-1		
Dimension	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
A	2.02	2.23	2.44	2.02	2.23	2.44	2.02	2.23	2.44	2.02	2.23	2.44
A1	0.40	0.50	0.60	0.40	0.50	0.60	0.40	0.50	0.60	0.40	0.50	0.60
A2	1.12	1.17	1.22	1.12	1.17	1.22	1.12	1.17	1.22	1.12	1.17	1.22
aaa	0.20			0.20			0.20			0.20		
b	0.50	0.63	0.70	0.50	0.63	0.70	0.50	0.63	0.70	0.50	0.63	0.70
bbb	0.25			0.25			0.25			0.25		
c	0.50	0.56	0.62	0.50	0.56	0.62	0.50	0.56	0.62	0.50	0.56	0.62
ccc	0.35			0.35			0.35			0.35		
D	22.80	23.00	23.20	26.80	27.00	27.20	30.80	31.00	31.20	34.80	35.00	35.20
D1	21.00 BSC			25.00 BSC			29.00 BSC			33.00 BSC		
D2	19.45	19.50	20.20	23.95	24.00	24.70	25.95	26.00	26.70	33.65	33.70	34.20
E	22.80	23.00	23.20	26.80	27.00	27.20	30.80	31.00	31.20	34.80	35.00	35.20
E1	21.00 BSC			25.00 BSC			29.00 BSC			33.00 BSC		
E2	19.45	19.50	20.20	23.95	24.00	24.70	25.95	26.00	26.70	33.65	33.70	34.20
e	1.00 typ.			1.00 typ.			1.00 typ.			1.00 typ.		

Notes:

1. All dimensions are in millimeters.
2. BSC—Basic Spacing between Centers

Chip Scale Package (UC/CS/VF)

36-Pin UC

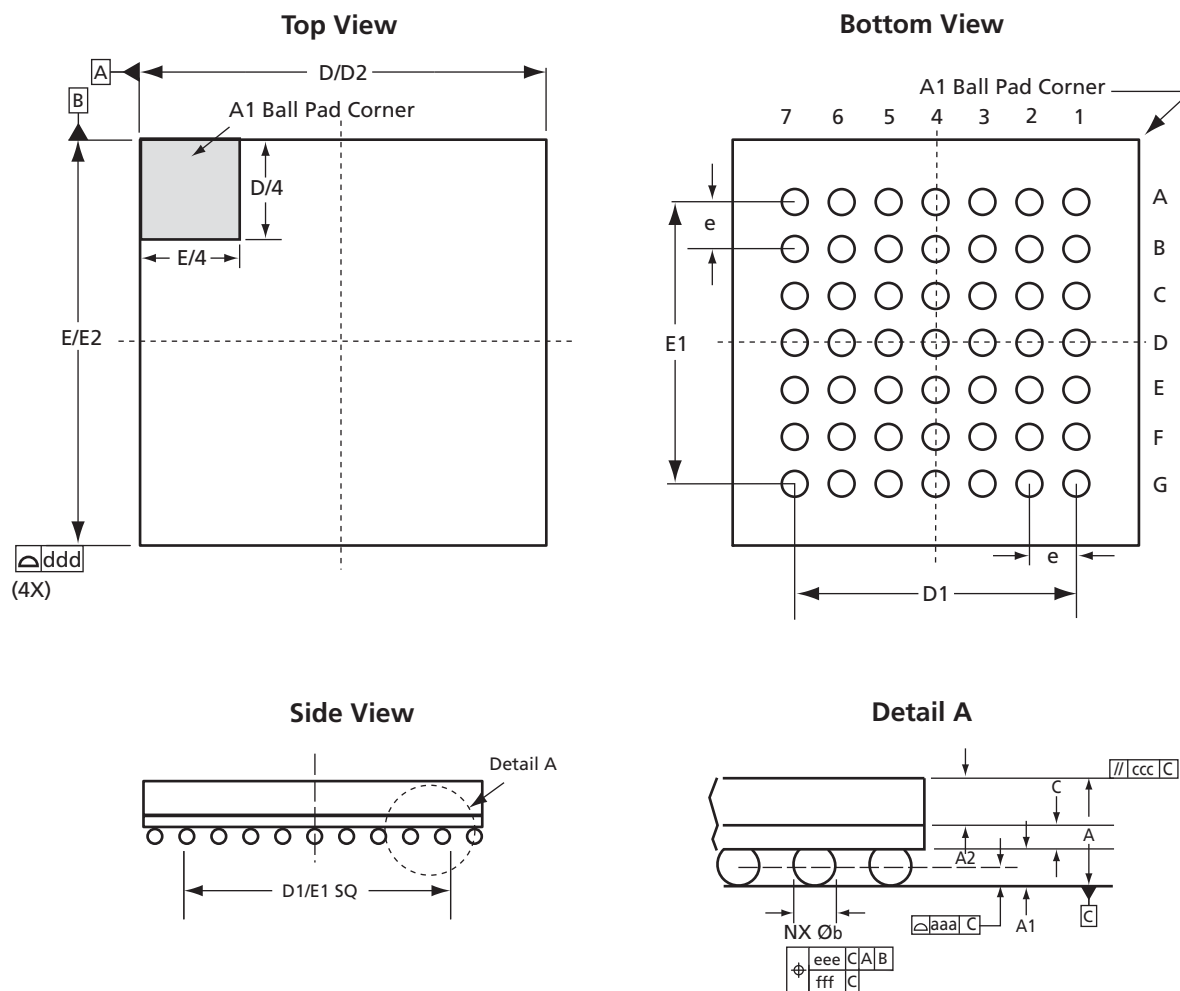


Note: Dimensions are in millimeters. Please see the "Chip Scale Package Dimensions" on page 74 for the dimensions.

Supported Devices
AGLN010

Chip Scale Package

49-Pin CS

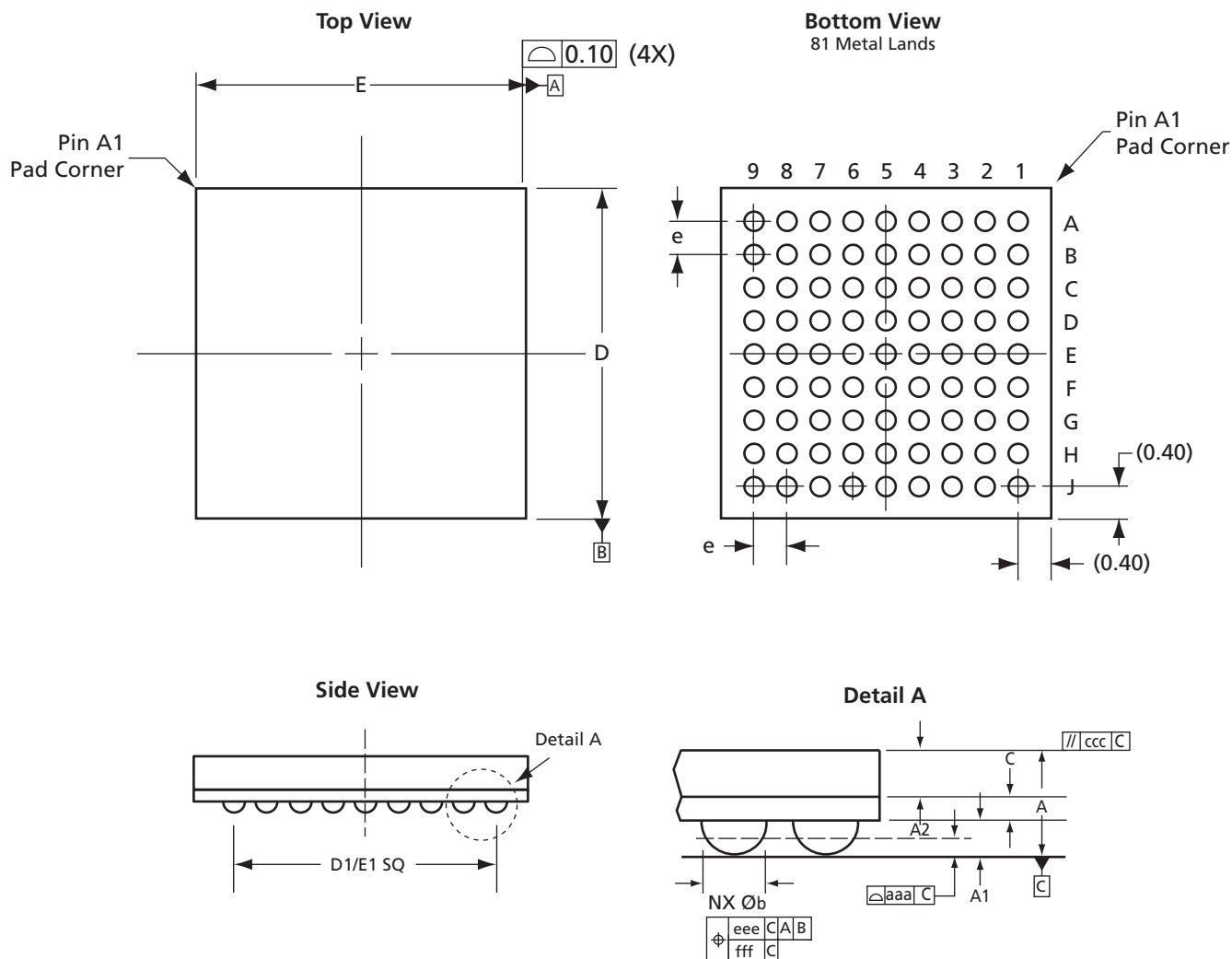


Note: Dimensions are in millimeters. Please see the "Chip Scale Package Dimensions" on page 74 for the dimensions.

Supported Devices	
eX64	eX128

Chip Scale Package

81-Pin μ C

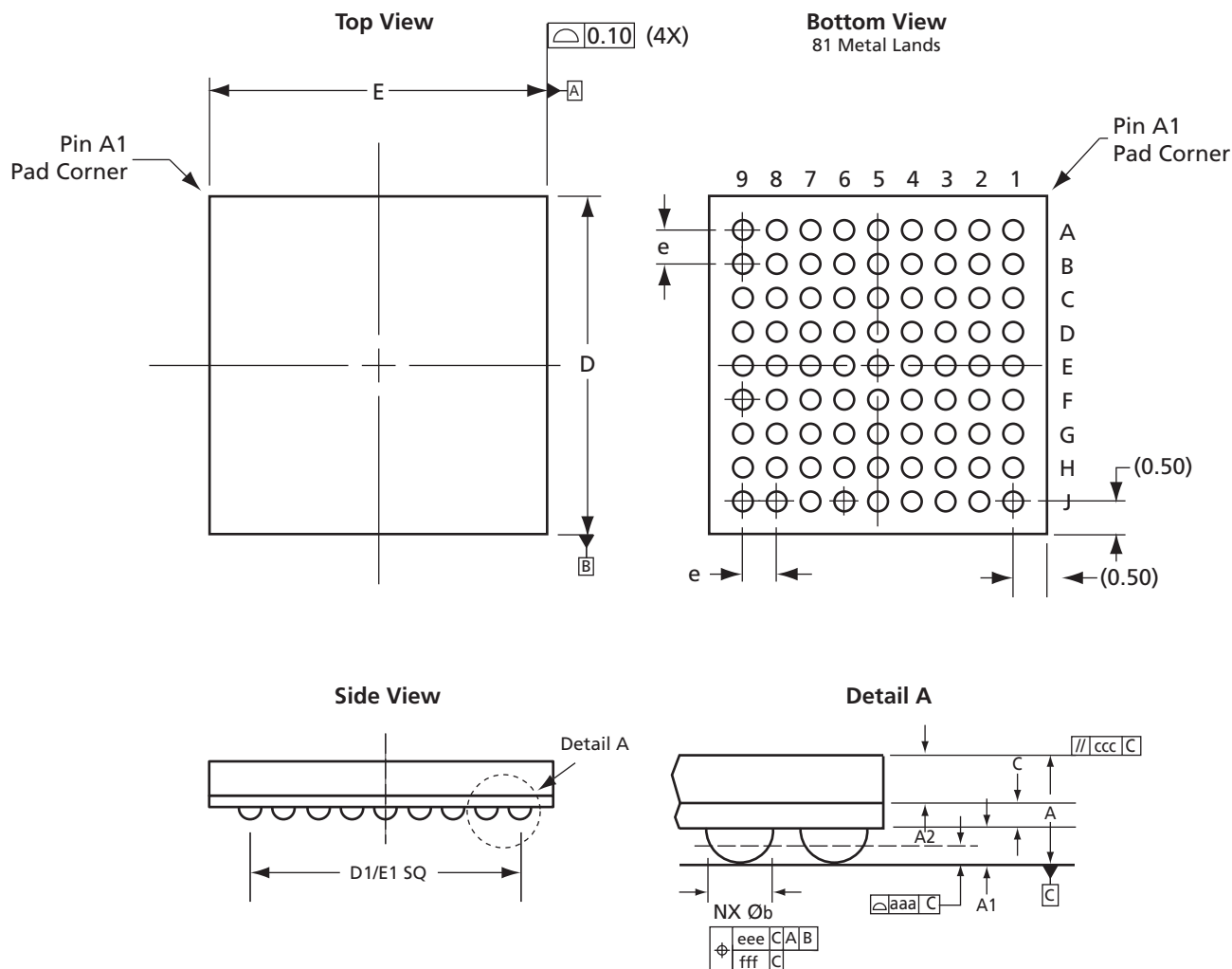


Note: Dimensions are in millimeters. Please see the "Chip Scale Package Dimensions" on page 74 for the dimensions.

Supported Devices
AGLN020
AGL030/AGLN030

Chip Scale Package

81-Pin CSP

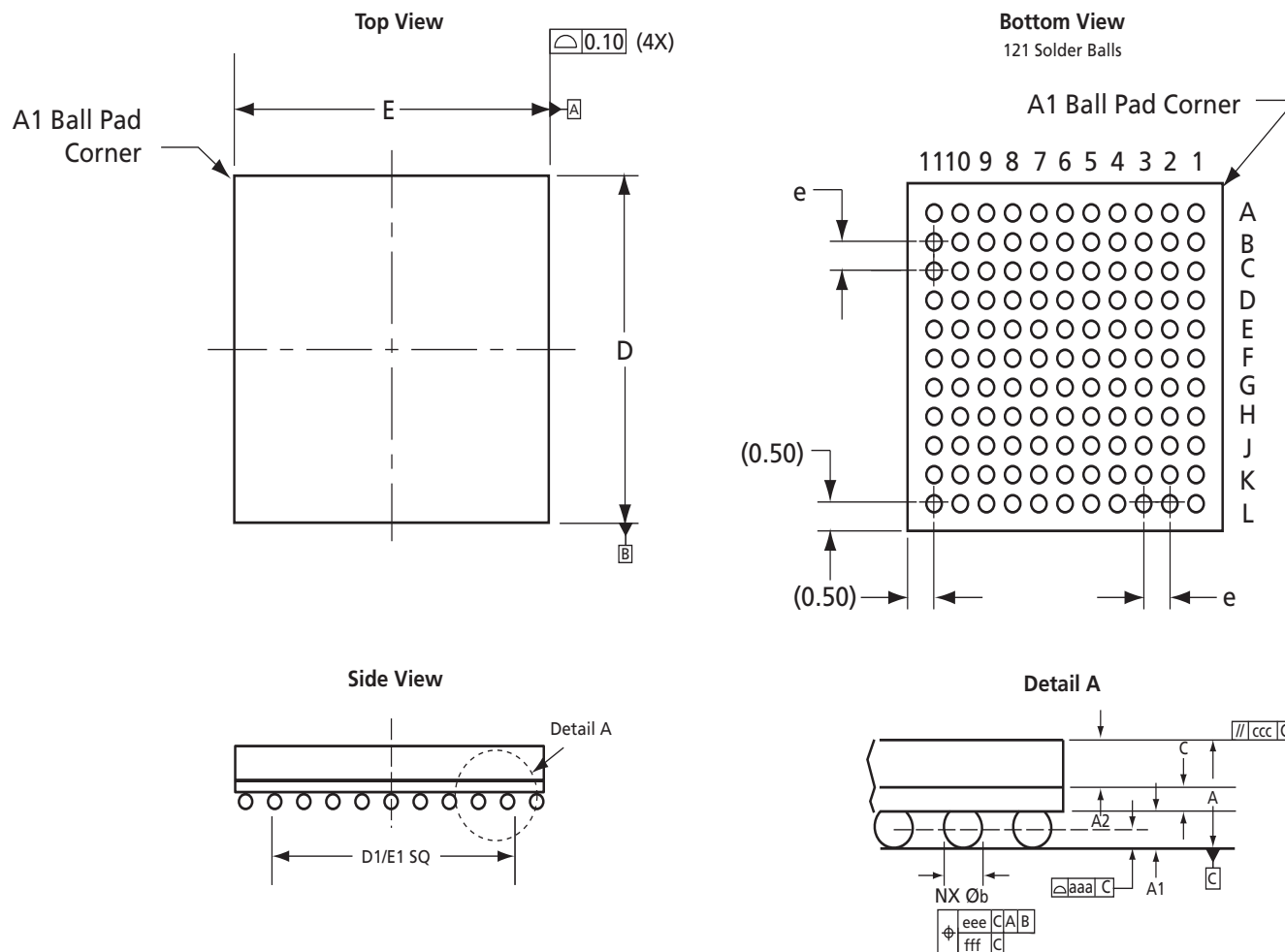


Note: Dimensions are in millimeters. Please see the "Chip Scale Package Dimensions" on page 74 for the dimensions.

Supported Devices
AGLN020
AGL030/AGLN030
AGLN060
AGLN125
AGLN250

Chip Scale Package

121-Pin CSP

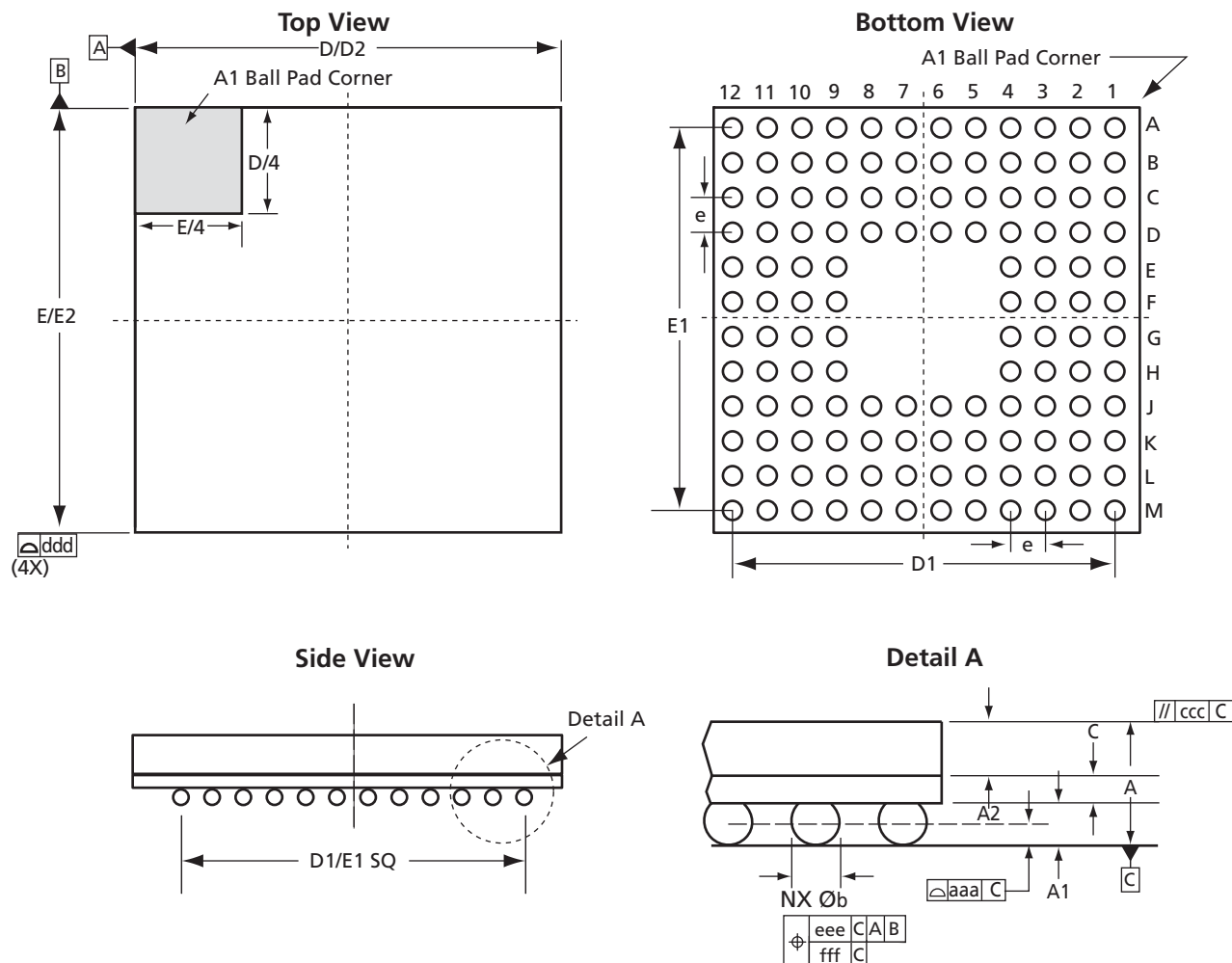


Note: Dimensions are in millimeters. Please see the "Chip Scale Package Dimensions" on page 74 for the dimensions.

Supported Devices
AGL060

Chip Scale Package

128-Pin CS

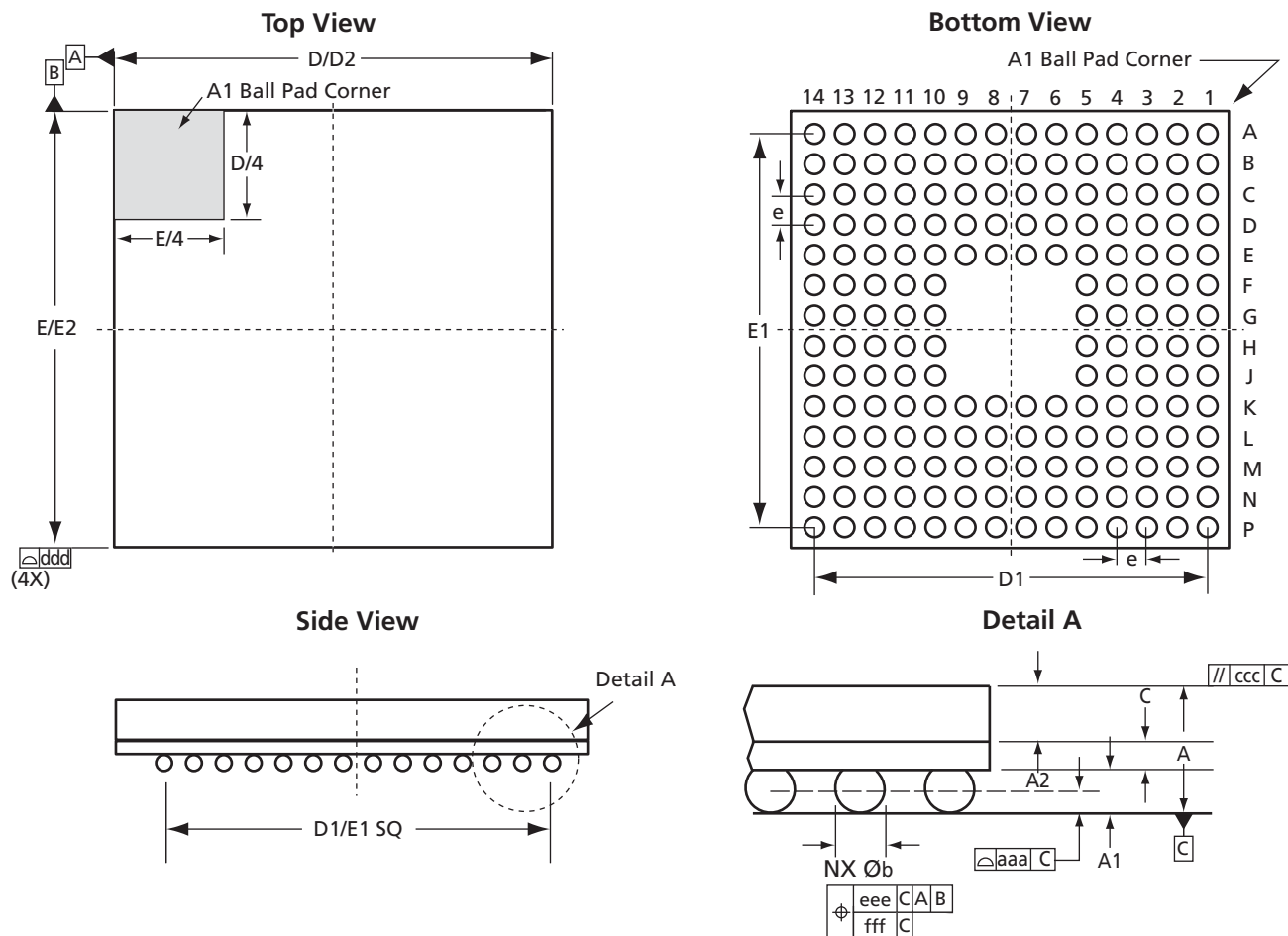


Note: Dimensions are in millimeters. Please see the "Chip Scale Package Dimensions" on page 74 for the dimensions.

Supported Devices	
	eX64
	eX128
	eX256

Chip Scale Package

180-Pin CS

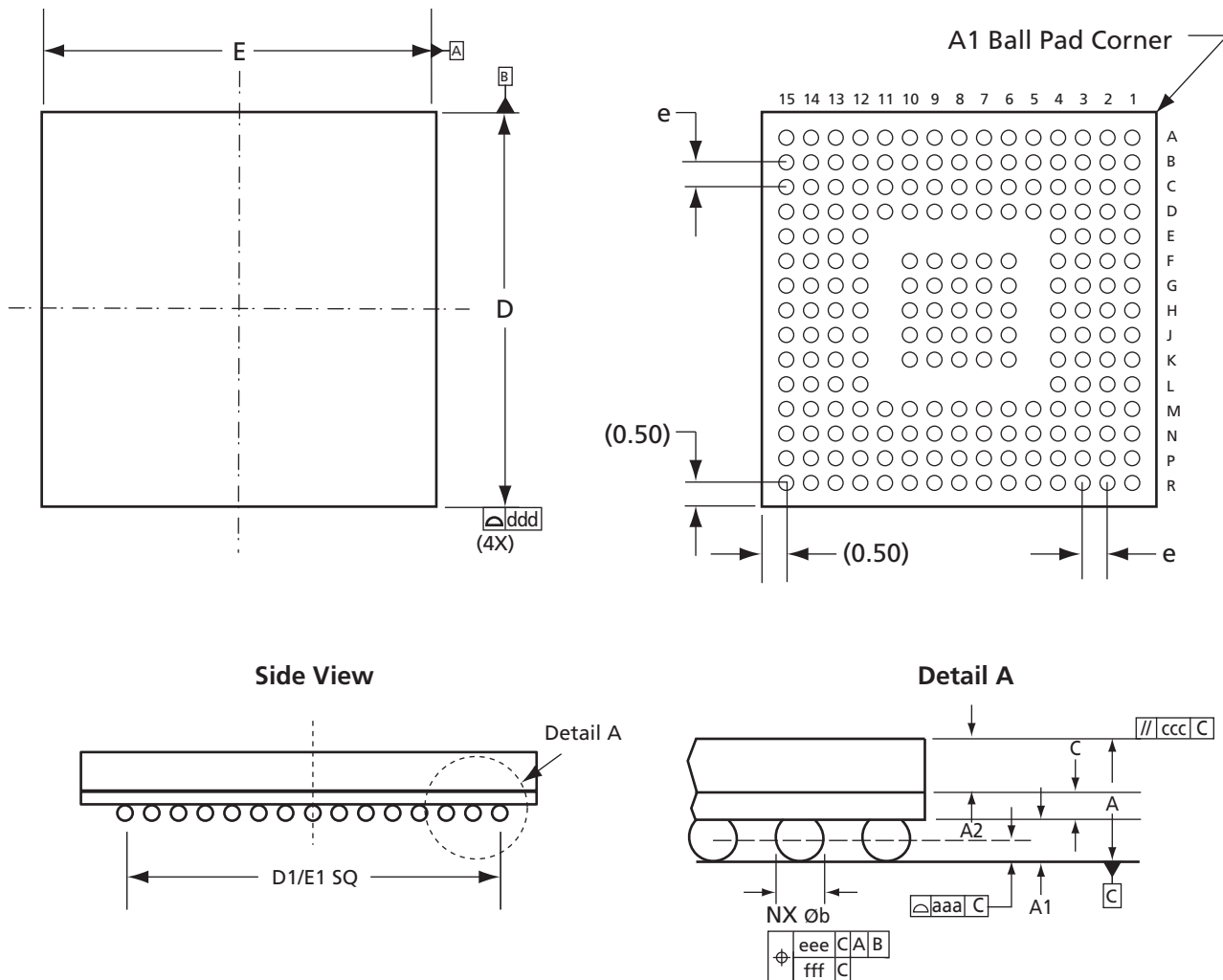


Note: Dimensions are in millimeters. Please see the "Chip Scale Package Dimensions" on page 74 for these dimensions.

Supported Devices	
eX256	AX125

Chip Scale Package

201-Pin CSP

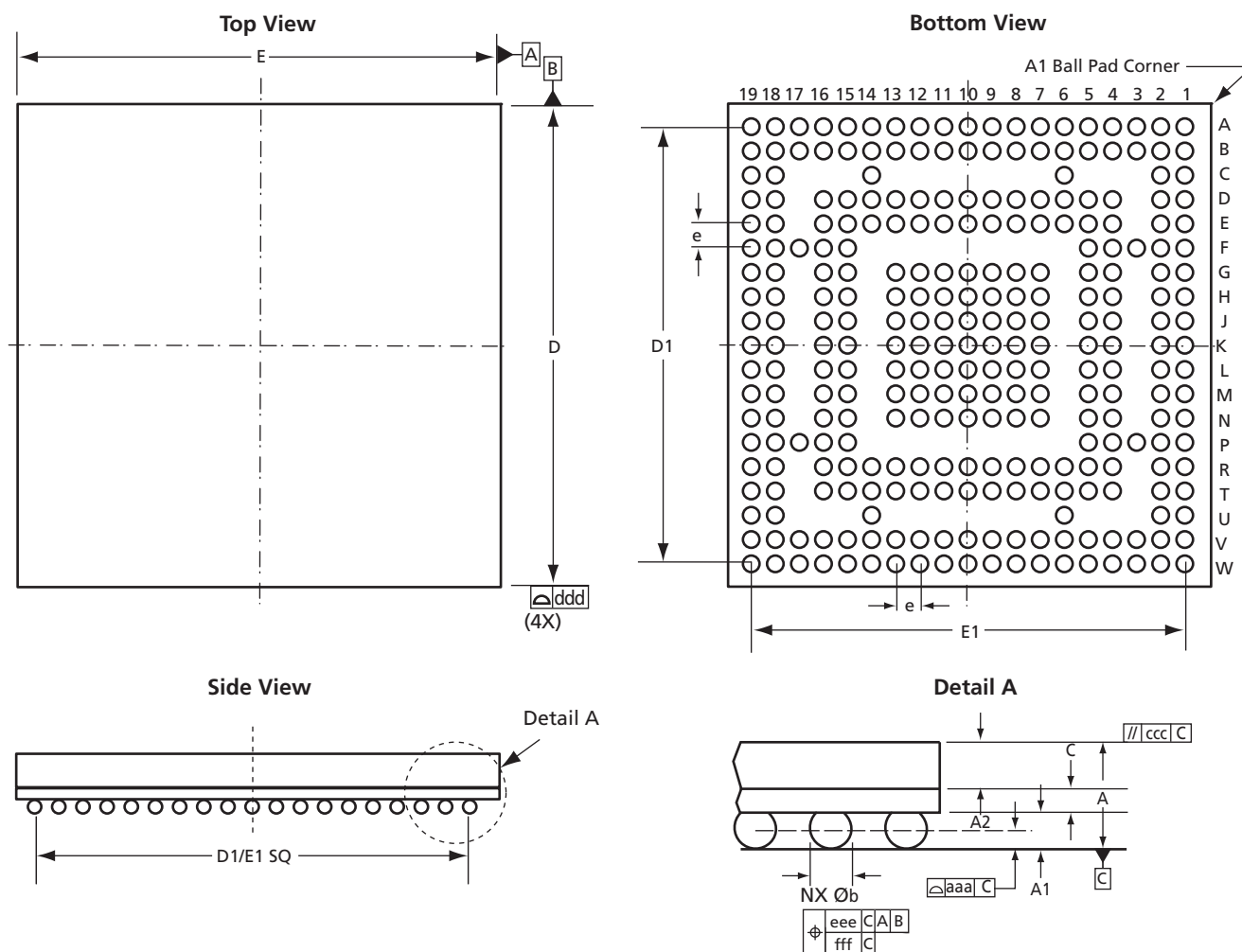


Note: Dimensions are in millimeters. Please see the "Chip Scale Package Dimensions" on page 74 for these dimensions.

Supported Devices
AGLP030
AGLP060

Chip Scale Package

281-Pin CSP

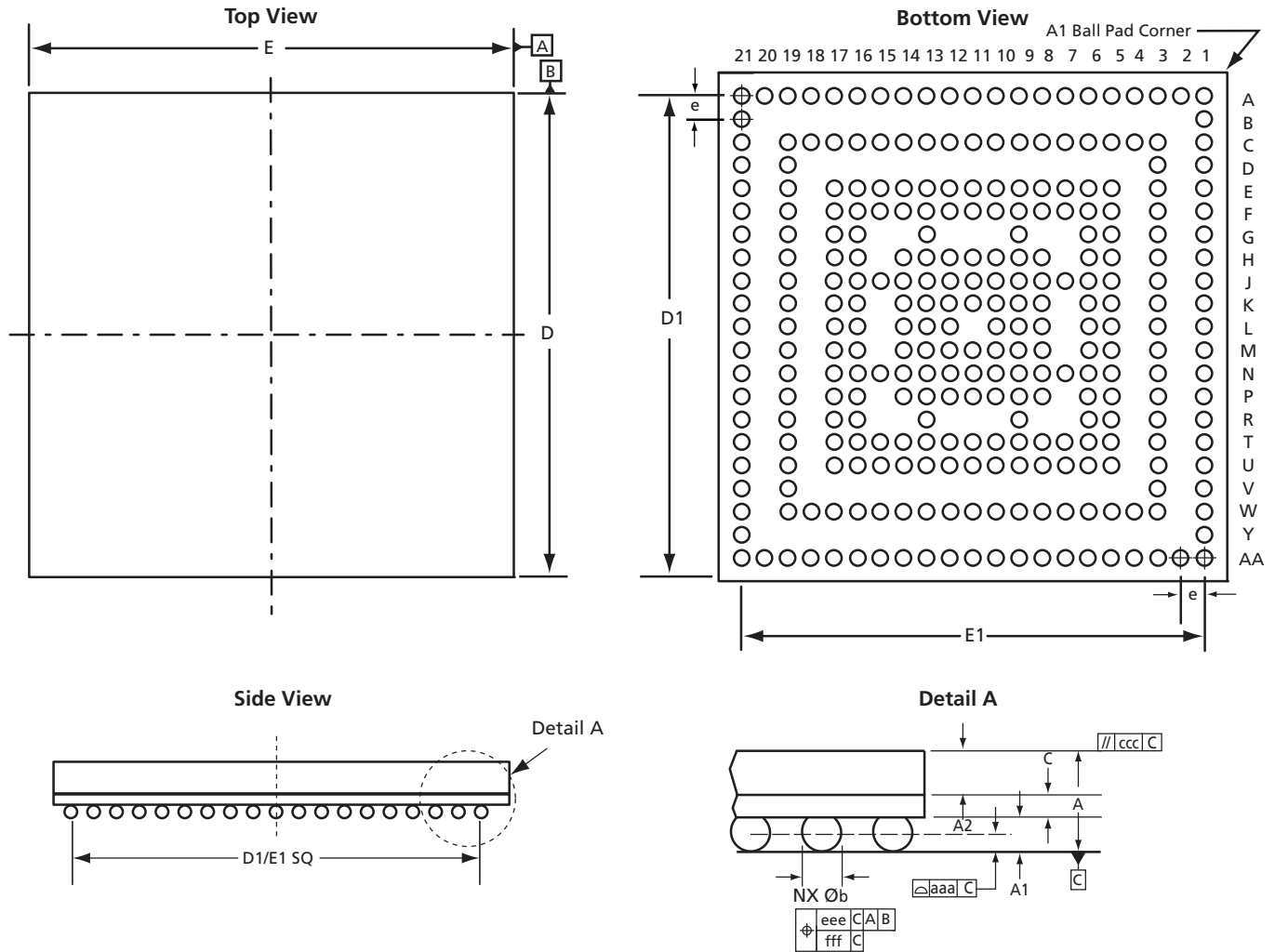


Note: Dimensions are in millimeters. Please see the "Chip Scale Package Dimensions" on page 74 for these dimensions.

Supported Devices
AGLP125
AGL600/M1AGL600
AGL1000/M1AGL1000

Chip Scale Package

288-Pin CSP



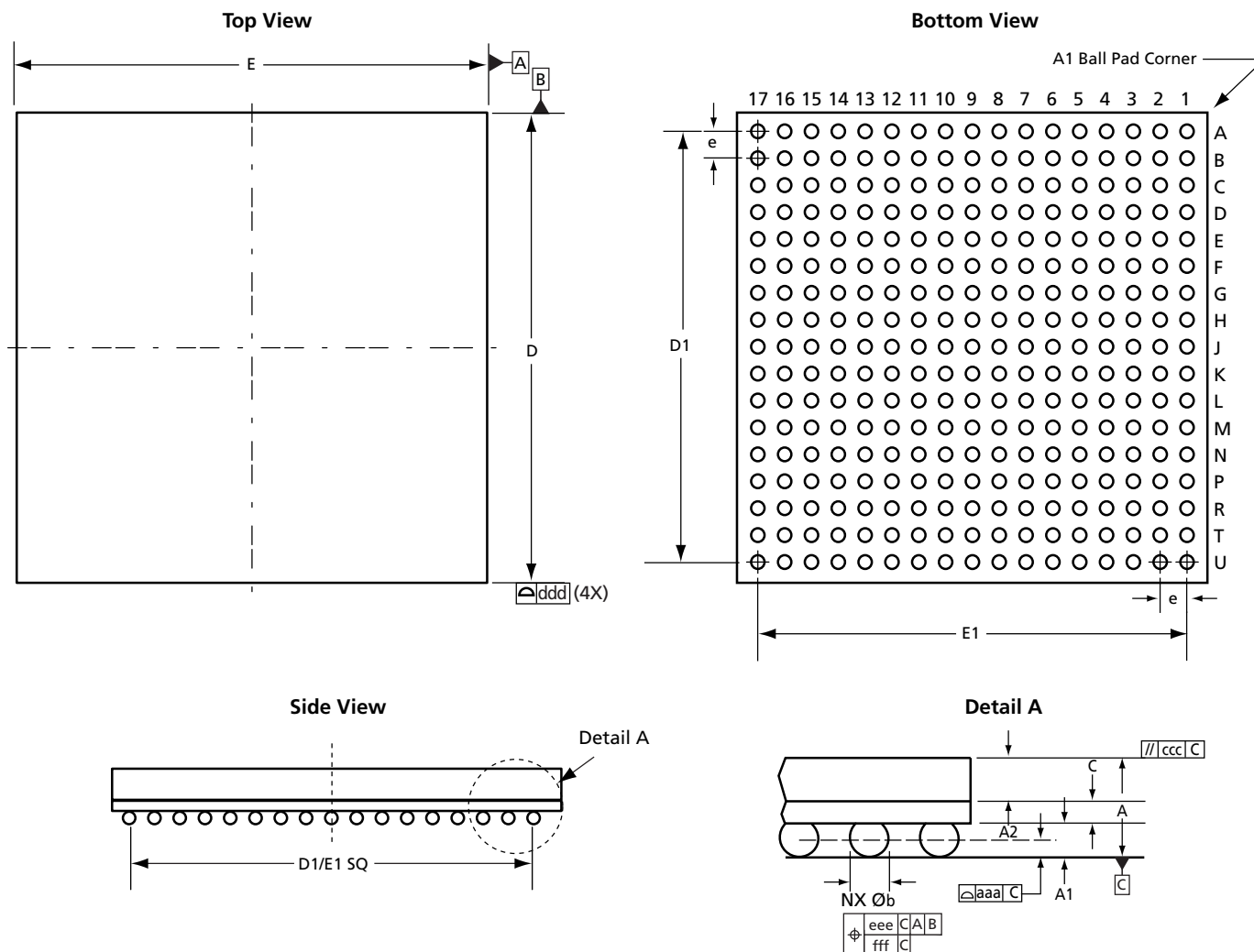
Note: Dimensions are in millimeters. Please see the "Chip Scale Package Dimensions" on page 74 for these dimensions.

Supported Devices

A2F200, A2F500

Chip Scale Package

289-Pin VF



Note: Dimensions are in millimeters. Please see the "Chip Scale Package Dimensions" on page 74 for these dimensions.

Supported Devices
AGLP030
AGLP060
AGLP125

Chip Scale Package Dimensions

JEDEC Equivalent	μ C36 (page 62)			CS49 (page 63) MO-205			μ C81 (page 64)			CS81 (page 65)		
Dimension	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.66	0.73	0.80	–	–	1.50	0.66	0.73	0.80	0.66	0.73	0.80
A1	0.07 REF			0.25	–	–	0.07 REF			0.07 REF		
A2	0.40	0.45	0.50	0.85	–	–	0.42	0.45	0.48	0.42	0.45	0.48
aaa	0.08			0.12			0.08			0.08		
b	0.18	0.23	0.28	0.45	0.50	0.55	0.18	0.23	0.28	0.20	0.25	0.30
c	0.21 REF			–	0.36	–	0.21 REF			0.21 REF		
ccc	0.10			0.10			0.10			0.10		
D/E	3.00 BSC			7.00 BSC			4.00 BSC			5.00 BSC		
D1/E1	2.00			–	4.80	–	–	3.20	–	–	4.00	–
e	0.4 BSC			0.8 BSC			0.4 BSC			0.5 BSC		
eee	0.15			0.15			0.15			0.15		
fff	0.05			0.08			0.05			0.05		

JEDEC Equivalent	CS121 (page 66) MO-195, Variation AC			CS128 (page 67) MO-205, Variation BD			CS180 (page 68) MO-205, Variation BF			CS196 (page 69) MO-195, Variation BE			CS201 (page 70) MO195, Variation AE ²		
Dimension	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.79	0.89	0.99	–	–	1.50	–	–	1.50	–	–	1.20	0.79	0.89	0.99
A1	0.18	0.23	0.28	0.25	–	–	0.25	–	–	0.15	–	–	0.18	0.23	0.28
A2	0.40	0.45	0.50	0.85	–	–	0.85	–	–	0.60	–	–	0.40	0.45	0.50
aaa	0.08			0.12			0.12			0.08			0.08		
b	0.25	0.30	0.35	0.45	0.50	0.55	0.45	0.50	0.55	0.25	0.30	0.35	0.25	0.30	0.35
c	0.16	0.21	0.26	–	0.36	–	–	0.36	–	–	0.36	–	0.16	0.21	0.25
ccc	0.10			0.10			0.10			0.10			0.10		
D/E	6.00 BSC			11.00 BSC			13.00 BSC			8.00 BSC			8.00 BSC		
D1/E1	–	5.00	–	–	8.80	–	–	10.40	–	–	6.50	–	–	7.00	–
e	0.5 BSC			0.8 BSC			0.8 BSC			0.5 BSC			0.5 BSC		
eee	0.15			0.15			0.15			0.15			0.15		
fff	0.05			0.08			0.08			0.05			0.05		

Notes:

1. All dimensions are in millimeters.
2. Variation AG depopulated.

JEDEC Equivalent	CS281 (page 71) MO-195, Variation AG ²			CS288 (page 72)			VF289 (page 73)		
	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
A	–	–	1.05	–	–	1.05	1.01	1.11	1.20
A1	0.18	0.23	0.28	0.18	0.23	0.28	0.25	0.30	0.35
A2	–	0.45 REF	–	–	0.45 REF	–	0.55	0.60	0.65
aaa	0.08			0.08			0.08		
b	0.26	0.31	0.36	0.26	0.31	0.36	0.35	0.40	0.45
c	–	0.26 REF	–	–	0.26 REF	–	0.17	0.21	0.25
ccc	0.20			0.20			0.10		
D/E	9.85	10.00	10.15	10.85	11.0	11.15	14.00 BSC		
D1/E1	9.00 BSC			10.00 BSC			–	12.80	–
e	0.5 BSC			0.5 BSC			0.8 BSC		
eee	0.15			0.15			0.15		
fff	0.05			0.05			0.08		

Notes:

1. All dimensions are in millimeters.
2. Variation AG depopulated.

List of Changes

The following table lists critical changes that were made in each revision of the document.

Revision	Changes	Page
Revision 39 (August 2010)	The versioning system has been changed. This document is assigned a revision number that increments each time the document is updated.	N/A
	SmartFusion devices A2F060, A2F200, and A2F500 were added to the supported devices table for the 256-Pin FG "Fine Pitch Plastic Ball Grid Array" (SAR 25571).	page 52
	SmartFusion devices A2F200 and A2F500 were added to the supported devices table for the 484-Pin FG—Fully Populated "Fine Pitch Plastic Ball Grid Array" (SAR 25571).	page 55
	The following package names were changed: 36-Pin CSP was changed to "36-Pin UC" 289-Pin CSP was changed to "289-Pin VF"	page 62 page 73
	The side views in the following "Chip Scale Package (UC/CS/VF)" drawings were corrected to show half sphere bumps instead of solder balls (SAR 26665): 36-Pin UC 81-Pin μC 81-Pin CSP	page 63 , page 64 , page 65
	The 288-Pin CSP "Chip Scale Package" section is new (SAR 27106).	page 72
	The A1 dimension values were changed to 0.07 REF in the "Chip Scale Package Dimensions" table for "μC36" , "μC81" , and "CS81" (SAR 26432). The c dimension values were changed to 0.21 REF. The text, "MO-195, Variation AB," was deleted from the heading for these two packages. The b dimension values for the "CS81" package were revised.	page 74
v11.4 (March 2010)	The "CCGA Dimensions" table was updated. The D1 and E1 dimensions for CG484 were changed from 22.00 to 21 (SAR 22814).	page 24
v11.3	Updated aaa dimension for FBGA 144 package in the "Fine Pitch Plastic Ball Grid Array Dimensions" table.	page 60
v11.2	A54SX16 was removed from the "CQ256" .	page 12
v11.1	The ccc specification was changed from 0.10 to 0.08 in the "Plastic Quad Flat Pack (RQFP/PQFP) Dimensions" table.	page 42
	The ccc specification was changed from 0.10 to 0.08 for the TQFP 167 in the "Plastic Quad Flat Pack (TQFP) Dimensions" table.	page 44
	The ccc specification was changed from 0.10 to 0.08 for the CSP 289 in the "Chip Scale Package Dimensions" table.	page 42
	In the "Fine Pitch Plastic Ball Grid Array Dimensions" table, the following specs were updated for the "FBGA 256 (page 52) MO-192 VAR DAF1" : A, A1, and c.	page 60
v11.0	The document has been updated to include IGLOO nano packages.	
	The "48-Pin (QFN48)" section is new.	page 29
	The "36-Pin UC" section is new.	page 62
v10.9	The AGL400 device is new and has been added to "144-Pin FG" , "256-Pin FG" , "484-Pin FG—Fully Populated" , "196-Pin CSP" .	N/A
v10.8	The "484-Pin CCGA" section is new.	page 21
	The "896-Pin CCGA" is new.	page 23
	Data for the 484 and 896 CCGA/LGA packages was added to the "CCGA Dimensions" table.	page 24
	In the "Quad Flat No Leads Dimensions" table, "d" was deleted.	page 37

Revision	Changes	Page								
v10.7	"VQFP 128" and "VQFP 176" were added to the VQFP "Supported Devices" table.	page 43								
	"VQFP 128 MS-026 VAR AEE3" and "VQFP 176 MS-026 VAR BFC" dimension data are new.	page 44								
v10.6	A3PE600L was added to the supported devices table of the "484-Pin FG—Fully Populated" package.	page 56								
	The following specifications have been updated for the "FBGA 256 (page 52) MO-192 VAR DAF1": <table><tr><th>Dimension</th><th>New Data</th></tr><tr><td>A</td><td>1.80</td></tr><tr><td>A1</td><td>0.35 and 0.45</td></tr><tr><td>c</td><td>0.35 and 0.60</td></tr></table>	Dimension	New Data	A	1.80	A1	0.35 and 0.45	c	0.35 and 0.60	page 60.
	Dimension	New Data								
A	1.80									
A1	0.35 and 0.45									
c	0.35 and 0.60									
v10.5	bbb has been removed from all chip scale package drawings.	page 63 and page 73								
	The Detail A circle on the side view was added to the "288-Pin CSP" package drawing.	page 72								
	The "289-Pin VF" information is new.	page 73 and page 75								
v10.4	Note 2 under the "68-Pin (QFN68)" package drawing is new and bottom view has been removed from the heading.	page 30								
v10.3	The note under the "108-Pin Bottom View (QFN108)" package drawing is new.	page 34								
	The note under the "132-Pin Bottom View (QFN132)" package drawing is new. The figure was also updated to include D1 to D4.	page 35								
	The note under the "180-Pin Bottom View (QFN180)" package drawing is new. The figure was also updated to include D1 to D4.	page 36								
v10.2	M1A3P250L was deleted; it is no longer supported.	N/A								
v10.1	In Detail A, the A1 top arrow was incorrectly placed. It was originally at the top of the substrate and it has been moved to the bottom of the substrate.	page 45 to page 49								
	In Detail A, the A1 top arrow was incorrectly placed. It was originally at the top of the substrate and it has been moved to the bottom of the substrate.	page 53 to page 59								
v10.0	In the "256-Pin CCLG" figure, one of the side view dimensions was updated from 0.45±0.05 to 0.254±0.025.	page 19								
	The "201-Pin CSP" section is new.	page 70								
	In the "288-Pin CSP" supported devices, the AGLP125 was added to the table.	page 72								
	In the "Chip Scale Package Dimensions" table, several CS package dimensions were updated and the CS201 information is new. Please review carefully.	page 74								
v9.9	The Ø symbol was missing from all CCGA, PBGA, FBGA, and CSP figures. It has been added back into the document	N/A								
v9.8	The "68-Pin (QFN68)" section, which includes the mechanical drawings and dimension measurements, is new.	page 30								



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