IC Packages / PCB Footprint Guidelines

Valid for TRINAMIC ICs

This application note is meant to be a practical guideline for all available TRINAMIC IC packages and PCB footprints. The document covers package dimensions, example footprints and general information on PCB footprints for these packages.

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1 Overview of TRINAMIC ICs, Available Packages, and Order Codes

This table contains only combinations of ICs and packages that are still in production and available to customers. Other versions or discontinued products are not covered here.

The table also contains the respective order codes for the IC/package combinations.

IC	Packages											
	Small Outline Packages				Quad Flat Packages		Ball Grid Array Packages		Quad Flat No-Leads Packages			
	SSOP 16	SO 20	SOP 24	SO 28	LQFP 44	TQFP 100	FBGA 144	QFN28 (5x5)	QFN32 (5x5)	QFN32 (7x7)	QFN48 (7x7)	QFN52 (8x8)
TMC222	-	TMC222-SI	-	-	-	-	-	-	-	TMC222-LI	-	-
TMC223	-	TMC223-SI	-	-	-	-	-	-	-	TC223-LI	-	-
TMC236	-	-	-	-	TMC236A-PA	-	-	-	-	-	-	-
TMC239	-	-	-	TMC239A-SA	-	-	-	-	-	-	-	-
TMC246	-	-	-	-	TMC246A-PA	-	-	-	-	-	-	-
TMC248	-	-	-	-	-	-	-	TMC248-LI	-	-	-	-
TMC249	-	-	-	TMC249A-SA	-	-	-	-	-	TMC249A-LA	-	-
TMC260	-	-	-	-	TMC260-PI	-	-	-	-	-	-	-
TMC261	-	-	--	-	TMC261-PA	-	-	-	-	-	-	-
TMC262	-	-	-	-	-	-	-	-	TMC262-LA	-		-
TMC332	-	-	-	-	-	-	TMC332-BC	-	-	-	-	-
TMC389	-	-	-	-	-	-	-	-	TMC389-LA	-	-	-
TMC424	-	-	-	-	-	TMC424	-	-	-	-	-	-
TMC429	TMC429-I	-	TMC429-PI24	-	-	-	-	-	TMC429-LI	-		-
TMC457	-	-	-	-	-	-	TMC457-BC	-	-	-	-	-
TMC5031	-	-	-	-	-	-	-	-	-	-	TMC5031-LA	-
TMC603	-	-	-	-	-	-	-	-	-	-	-	TMC603-LA

Table 1.1 Overview on all available TRINAMIC ICs and packages

2 Package Details

2.1 SSOP16

The SSOP16 (Shrink Small-Outline Package) are widely used for electronic parts. While there are various special versions, the one used for the TRINAMIC products does *not* have an additional cooling pad (ExposedPad) under the package. SSOPs are smaller than SO packages with a pin pitch of approximately 0.65mm.

Figure 2.1 SSOP16 example

2.1.1 Dimensions

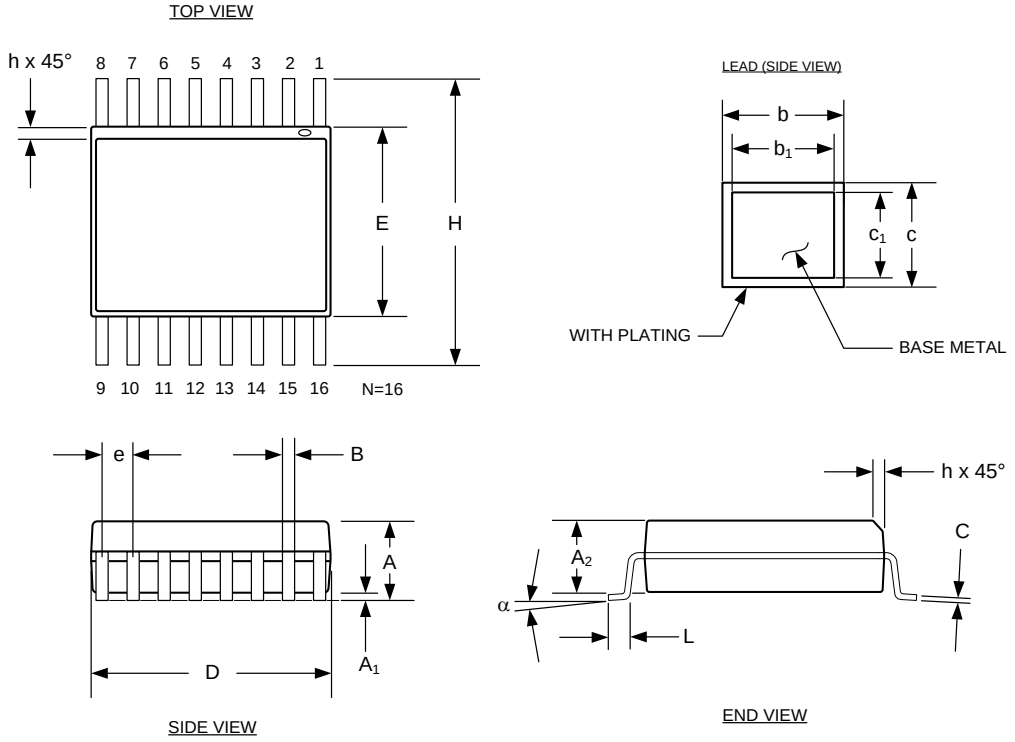


Figure 2.2 SSOP16 drawings

Symbol	Dimensions in MILLIMETERS			*Dimensions in INCHES*		
	Min	Typ	Max	*Min*	*Typ*	*Max*
A	1.55	1.63	1.73	*0.061*	*0.064*	*0.068*
A1	0.10	0.15	0.25	*0.004*	*0.006*	*0.0098*
A2	1.40	1.47	1.55	*0.055*	*0.058*	*0.061*
b	0.20		0.30	*0.008*		*0.012*
b1	0.20	0.25	0.28	*0.008*	*0.010*	*0.011*
c	0.18		0.25	*0.007*		*0.010*
c1	0.18	0.20	0.23	*0.007*	*0.008*	*0.009*
B	0.20	0.25	0.31	*0.008*	*0.010*	*0.012*
C	0.19	0.20	0.25	*0.0075*	*0.008*	*0.0098*
D	4.80	4.93	4.98	*0.189*	*0.194*	*0.196*
E	3.91 BSC			*0.154 BSC*		
e	0.635 BSC			*0.025 BSC*		
H	6.02 BSC			*0.237 BSC*		
h	0.25	0.33	0.41	*0.010*	*0.013*	*0.016*
L	0.41	0.635	0.89	*0.016*	*0.025*	*0.035*
N	**16**			**16**		
S	0.051	0.114	0.178	*0.0020*	*0.0045*	*0.0070*
α	0°	5°	8°	0°	5°	8°

Table 2.1 SSOP16 dimensions (mm and inches)

2.1.2 Land Pattern

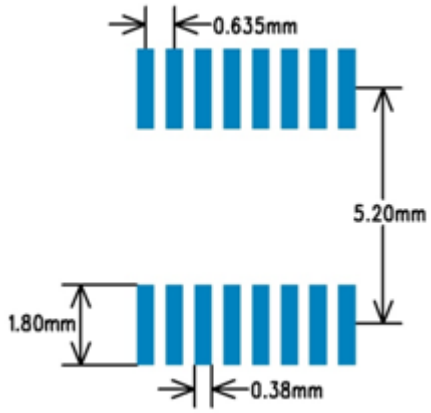


Figure 2.3 SSOP16 example land patterns (unit: mm)

2.2 SO20 / SOIC20

Small Outline (SO) packages are surface mountable packages for integrated circuits and save circa 40% of space compared to older DIL packages. SO packages are bigger than SSOP packages and have a pin pitch of approximately 1.25mm.

Figure 2.4 SO20/SOIC20 example

2.2.1 Dimensions

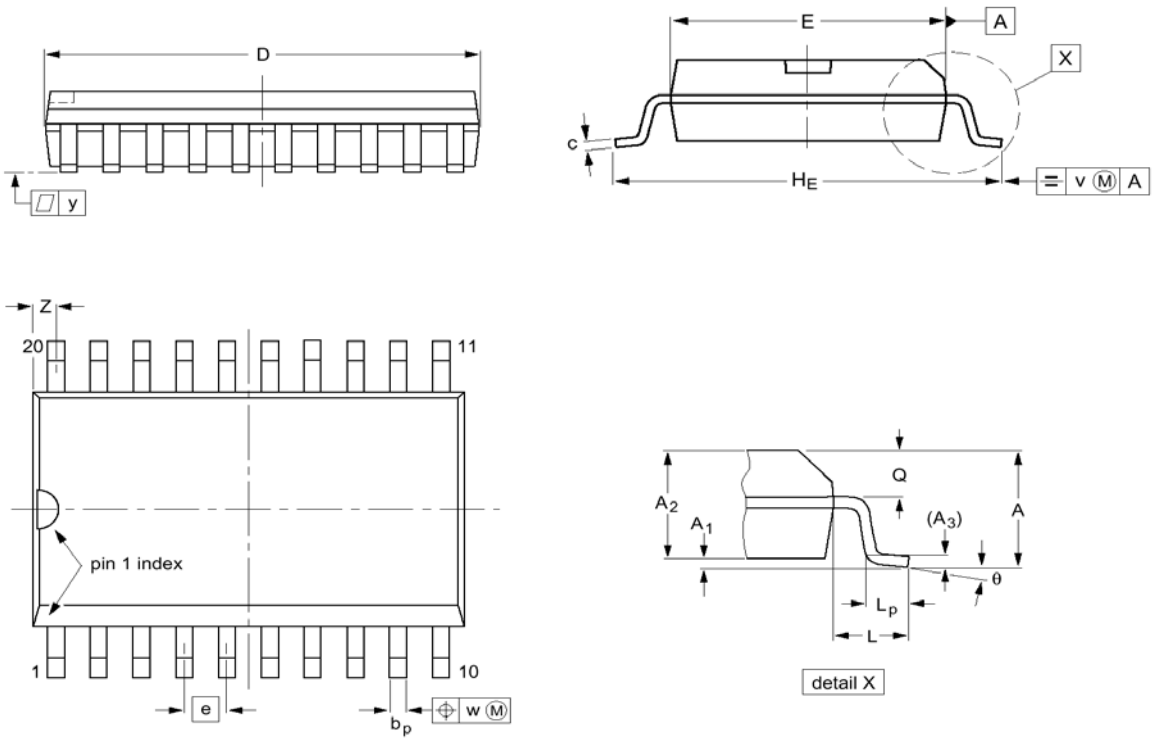


Figure 2.5 SO20/SOIC20 drawings

UNIT	A max	A_1	A_2	A_3	b_p	c	$D^{(1)}$	$E^{(1)}$	e	H_E	L	L_p	Q	v	w	y	$Z^{(1)}$	Θ
mm	2.65	0.30 0.10	2.45 2.25	0.25	0.49 0.36	0.32 0.23	13.0 12.6	7.6 7.4	1.27	10.65 10.00	1.4	1.1 0.4	1.1 1.0	0.25	0.25	0.1	0.9 0.4	8°
inch	*0.10*	*0.012* *0.004*	*0.096* *0.089*	*0.01*	*0.019* *0.014*	*0.013* *0.009*	*0.51* *0.49*	*0.30* *0.29*	*0.050*	*0.419* *0.394*	*0.055*	*0.043* *0.016*	*0.043* *0.039*	*0.01*	*0.01*	*0.004*	*0.035* *0.016*	

Table 2.2 SO20/SOIC20 dimensions

2.2.2 Land Pattern

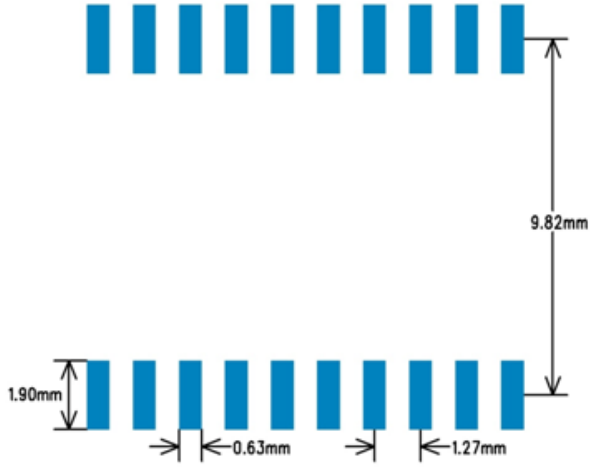


Figure 2.6 SO20/SOIC20 example land patterns (unit: mm)

2.3 SOP24

Figure 2.7 SOP24 example

2.3.1 Dimensions

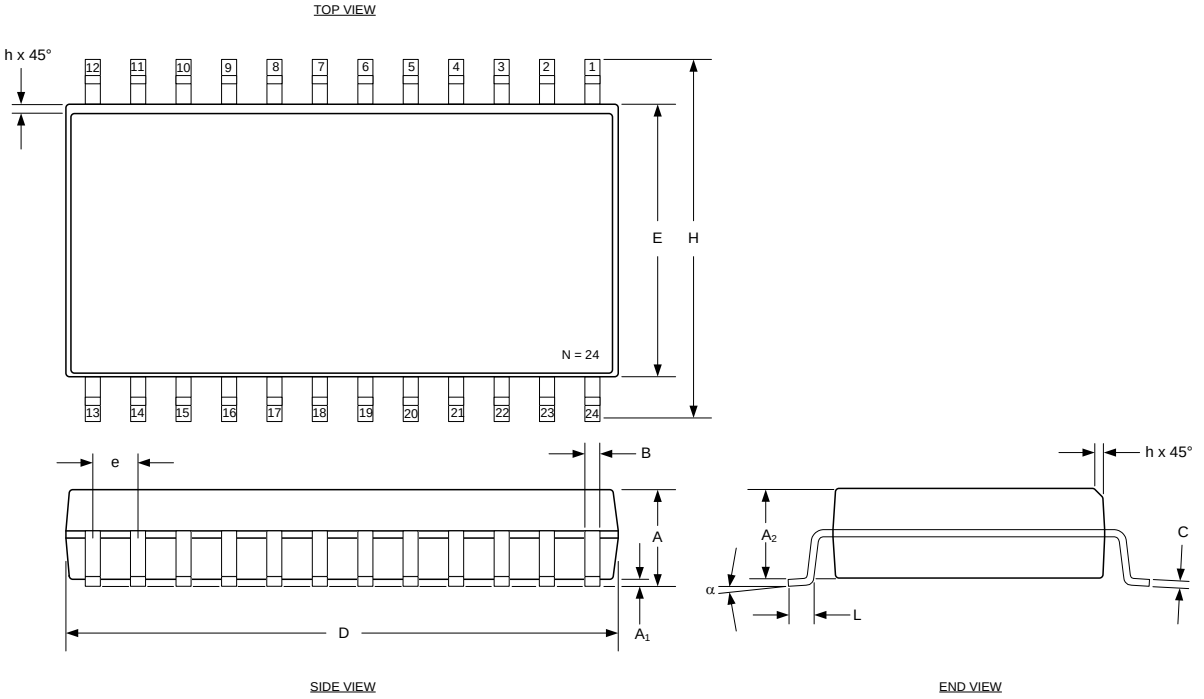


Figure 2.8 SOP24 drawings

Symbol	Dimensions in MILLIMETERS			*Dimensions in INCHES*		
	Min	Typ	Max	*Min*	*Typ*	*Max*
A	2.35		2.65	*0.0926*		*0.1043*
A1	0.1		0.3	*0.004*		*0.0118*
A2						
B	0.33		0.51	*0.013*		*0.02*
C	0.23		0.32	*0.0091*		*0.0125*
D	15.2		15.6	*0.5985*		*0.6141*
E	7.4		7.6	*0.2914*		*0.2992*
e	1.27 BSC			*0.05 BSC*		
H	10		10.65	*0.394*		*0.419*
h	0.25		0.75	*0.01*		*0.029*
L	0.4		1.27	*0.016*		*0.05*
N	24			24		
α	0°		8°	0°		8°

Table 2.3 SOP24 dimensions (unit: mm and inches)

2.3.2 Land Pattern

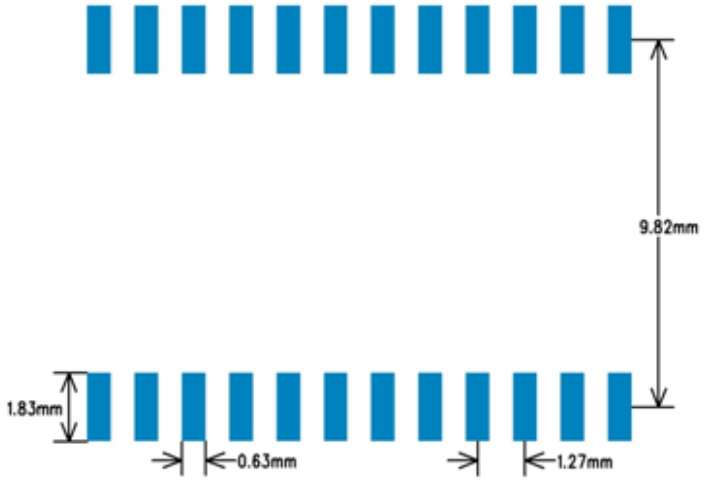


Figure 2.9 SOP24 example land patterns (unit: mm)

2.4 SO28

Figure 2.10 SO28 example

2.4.1 Dimensions

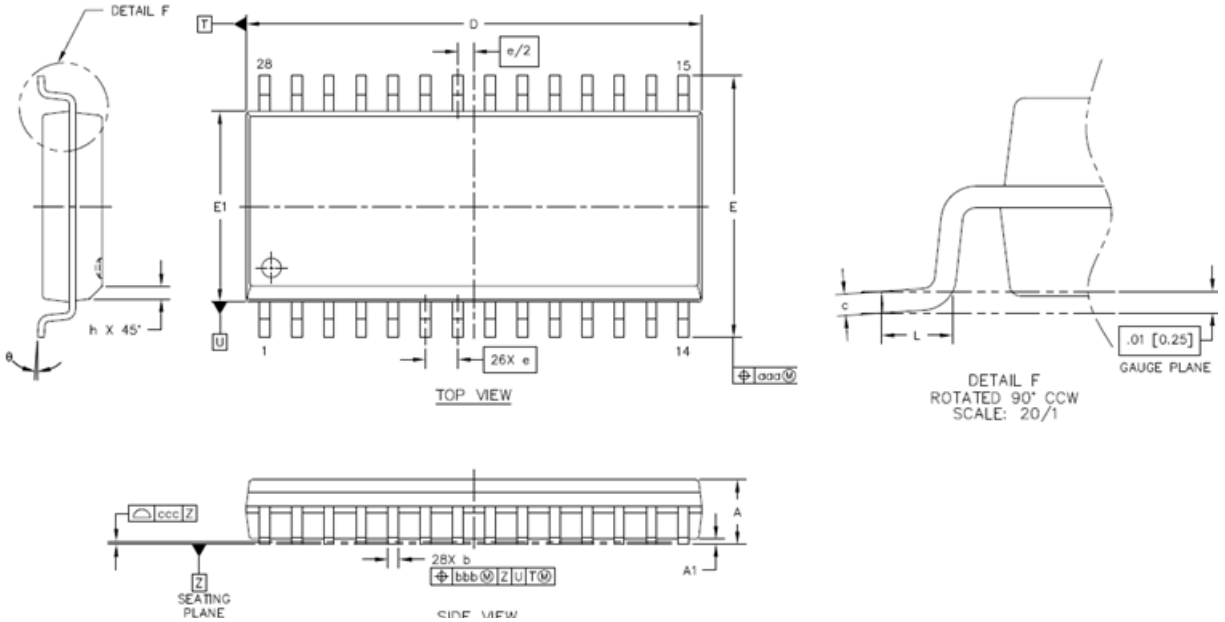


Figure 2.11 SO28 drawings

Symbol	Dimensions in MILLIMETERS			*Dimensions in INCHES*		
	Min	Typ	Max	*Min*	*Typ*	*Max*
A	2.35		2.65	*0.0926*		*0.1043*
A1	0.1		0.3	*0.004*		*0.0118*
b	0.33		0.51	*0.013*		*0.02*
C	0.23		0.32	*0.0091*		*0.0125*
D	17.7		18.1	*0.6969*		*0.7125*
E1	7.4		7.6	*0.2914*		*0.2992*
E	10.0		10.65	*0.394*		*0.419*
e	1.27 BSC			*0.05 BSC*		
L	0.4		1.27	*0.016*		*0.05*
h	0.25		0.75	*0.01*		*0.29*
Θ	0°		8°	*0°*		*8°*
aaa	0.25			*0.01*		
bbb	0.25			*0.01*		
ccc	0.1			*0.004*		

Table 2.4 SO28 dimensions

2.4.2 Land Pattern

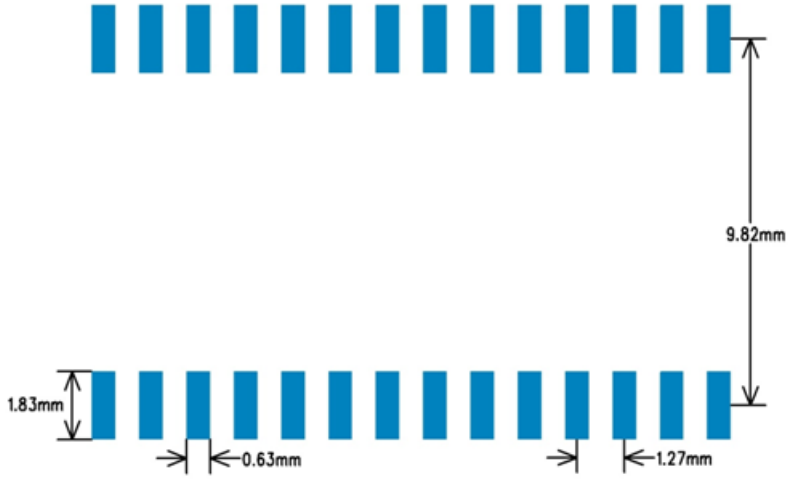
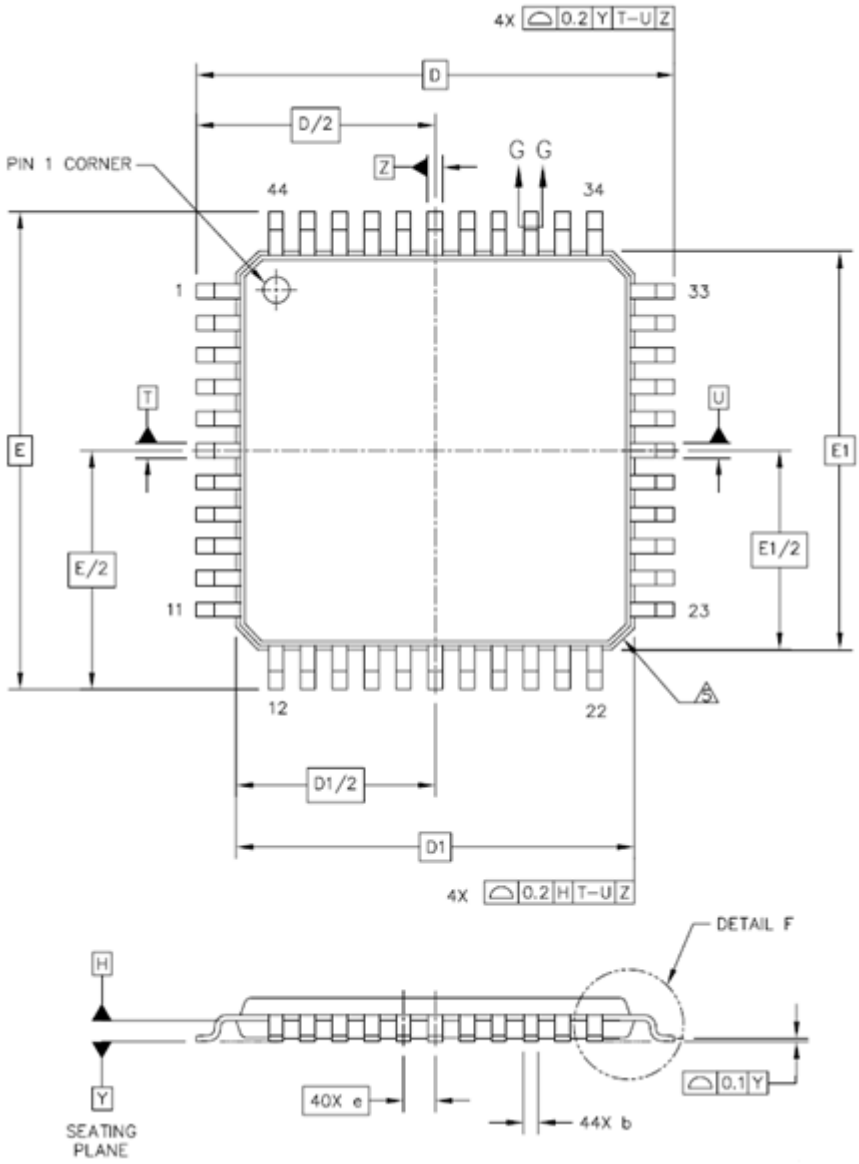


Figure 2.12 SO28 example land patterns (unit: mm)

2.5 LQFP44

Figure 2.13 LQFP44 example

2.5.1 Dimensions



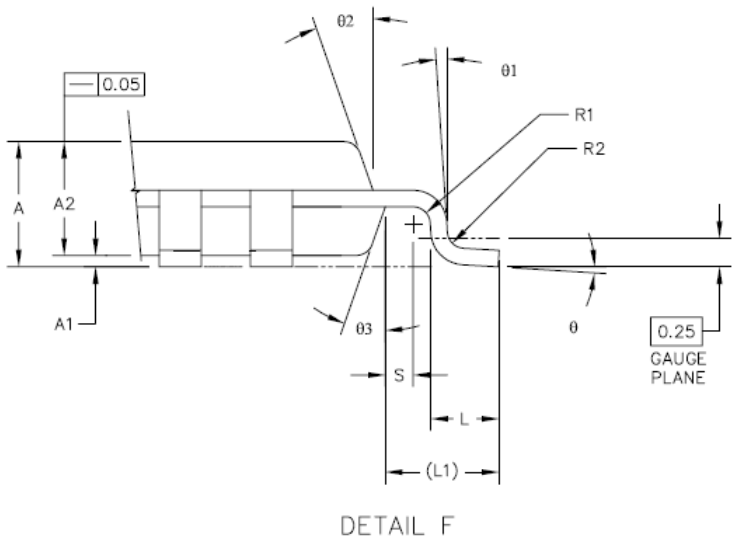


Figure 2.14 LQFP44 drawings

Symbol	Dimensions in MILLIMETERS		*Dimensions in INCHES*	
	Min	Max	*Min*	*Max*
A		1.6		*0.0629*
A1	0.05	0.15	*0.0019*	*0.0059*
A2	1.35	1.45	*0.0531*	*0.0570*
b	0.3	0.45	*0.0118*	*0.0177*
b1	0.3	0.4	*0.0118*	*0.0157*
c	0.09	0.2	*0.0035*	*0.0078*
c1	0.09	0.16	*0.0035*	*0.0062*
D	12 BSC		*0.4724 BSC*	
D1	10 BSC		*0.3937 BSC*	
e	0.8 BSC		*0.0314 BSC*	
E	12 BSC		*0.4724 BSC*	
E1	10 BSC		*0.3937 BSC*	
L	0.45	0.75	*0.0177*	*0.0295*
L1	1 REF		*0.0394*	
R1	0.08		*0.0031*	
R2	0.08	0.2	*0.0031*	*0.0078*
S	0.2		*0.0078*	
Θ	0°	7°	*0°*	*7°*
Θ1	0°		*0°*	
Θ2	11°	13°	*11°*	*13°*
Θ3	11°	13°	*11°*	*13°*

Table 2.5 LQFP44 dimensions (unit: mm)

2.5.2 Land Pattern

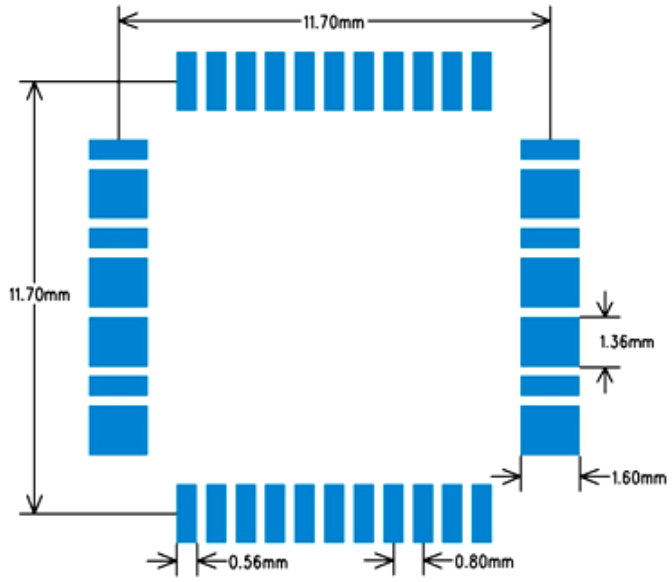


Figure 2.15 LQFP44 example land patterns (unit: mm)

2.6 TQFP100

Figure 2.16 TQFP100 example

2.6.1 Dimensions

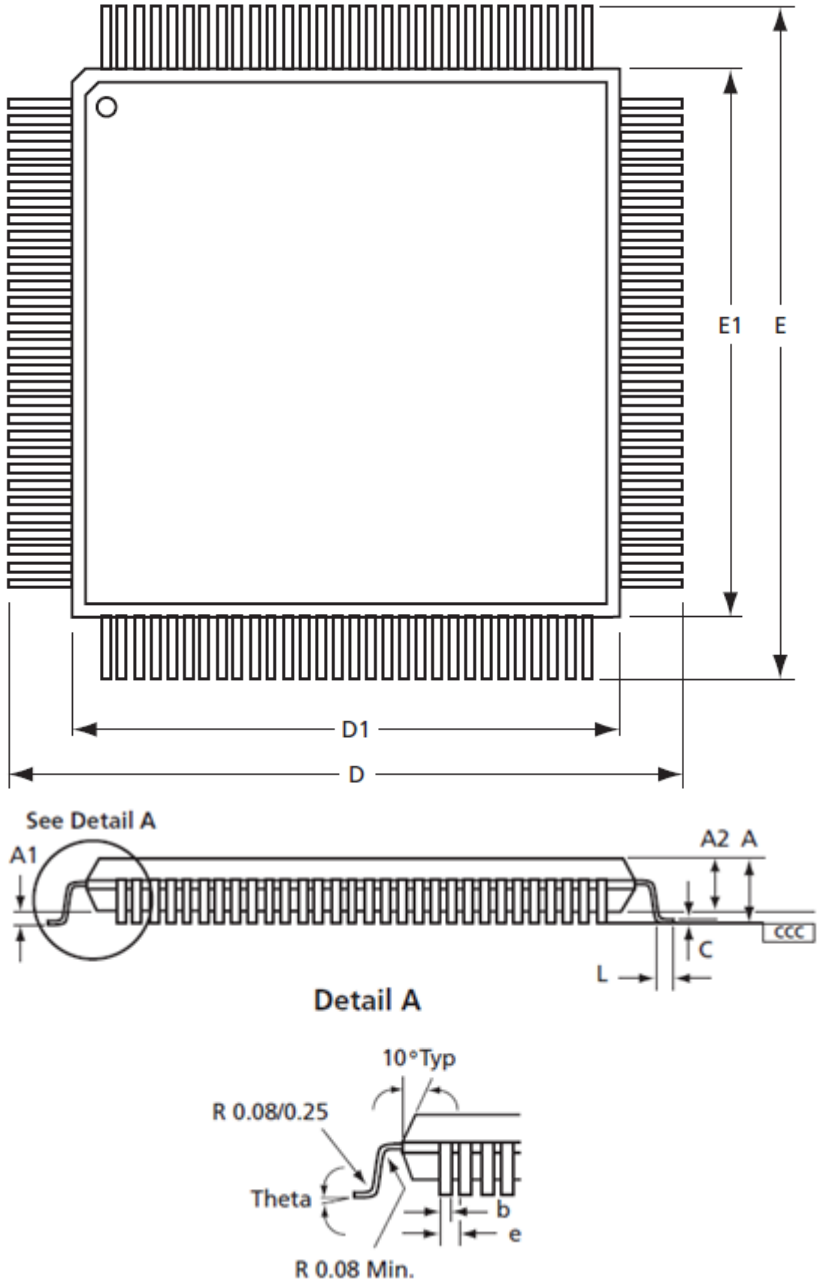


Figure 2.17 TQFP100 drawings

Symbol	Dimensions in MILLIMETERS			*Dimensions in INCHES*		
	Min	Nom	Max	*Min*	*Nom*	*Max*
A			1.6			*0.0629*
A1	0.05		0.15	*0.0019*		*0.0059*
A2	1.35	1.4	1.45	*0.0531*	*0.0551*	*0.0570*
b	0.17	0.22	0.27	*0.0066*	*0.0086*	*0.0106*
c	0.09		0.2	*0.0035*		*0.0078*
D/E	16 BSC			*0.6299 BSC*		
D1/E1	14 BSC			*0.5511 BSC*		
e	0.5 BSC			*0.0196 BSC*		
L	0.45	0.6	0.75	*0.0177*		*0.0295*
Θ	0°	3.5°	7°	*0°*	*3.5°*	*7°*

Table 2.6 TQFP100 dimensions (unit: mm)

2.6.2 Land Pattern

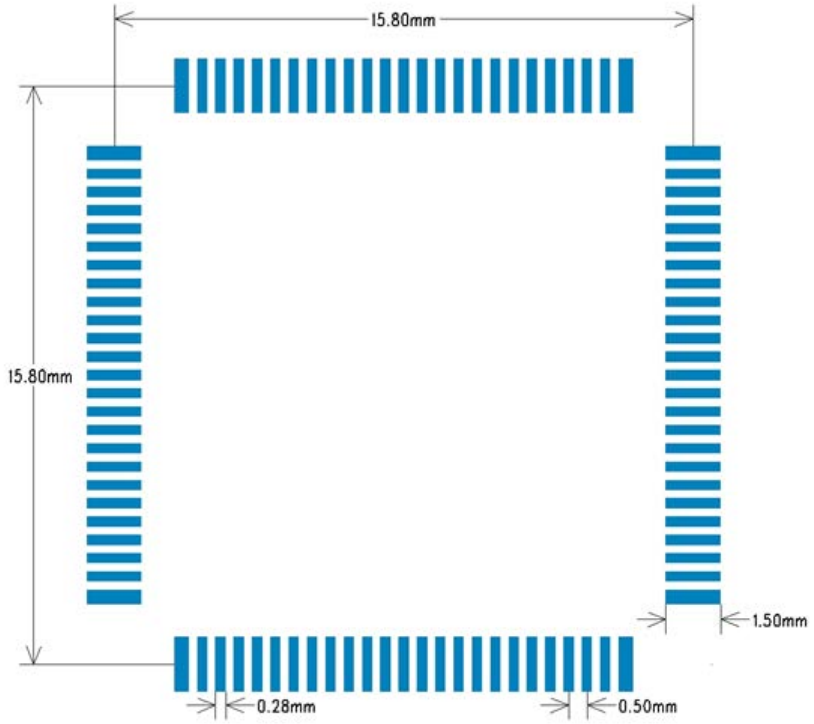


Figure 2.18 TQFP100 example land patterns (unit: mm)

2.7 FBGA144

The Fine Line Ball Grid Arrays (FBGAs) have an array of balls below the package body allowing for an extremely high pin count at small package size.

The ball pitch of FBGAs is 1mm.

A drawback is the more complex soldering process compared to QFN and QFP packages.

Figure 2.19 FBGA144 example

2.7.1 Dimensions

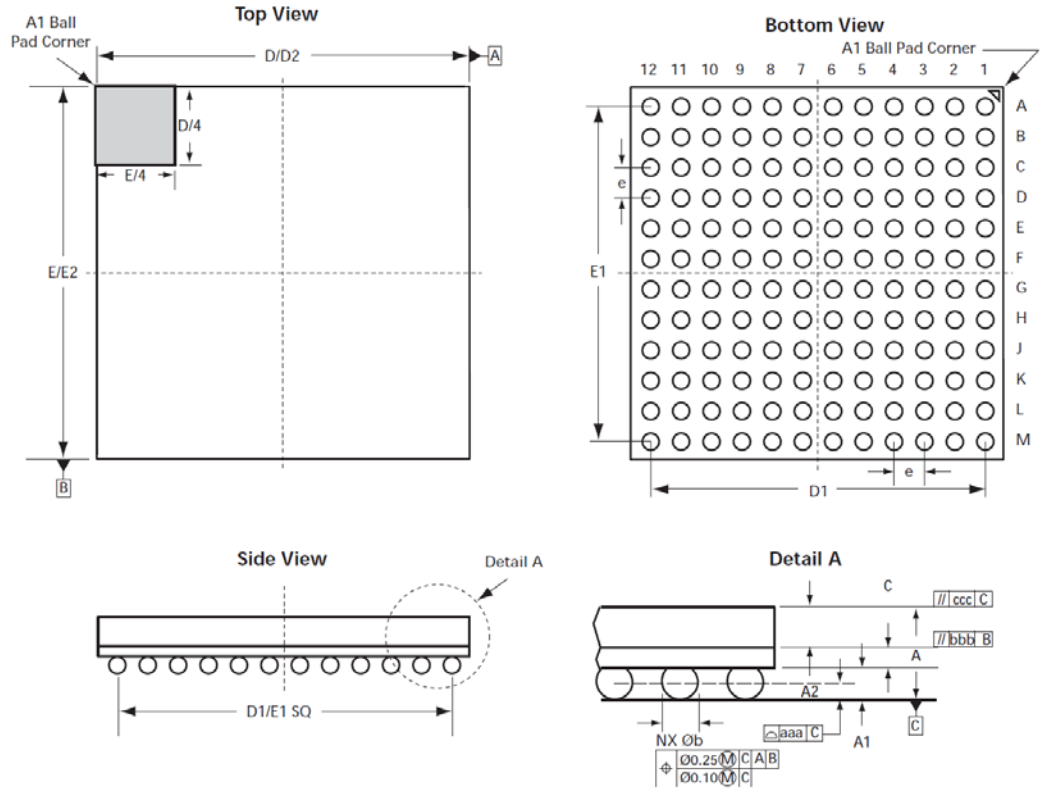


Figure 2.20 FBGA144 drawings

Symbol	Dimensions in MILLIMETERS			*Dimensions in INCHES*		
	Min	Typ	Max	*Min*	*Typ*	*Max*
A	1.35	1.45	1.55	*0.0531*	*0.057*	*0.061*
A1	0.35	0.4	0.45	*0.0137*	*0.0157*	*0.0177*
A2	0.65	0.7	0.75	*0.0255*	*0.0275*	*0.0295*
aaa		0.12			*0.0047*	
b	0.45	0.5	0.55	*0.0177*	*0.0196*	*0.0216*
bbb		0.25			*0.0098*	
c		0.35			*0.0137*	
ccc		0.35			*0.0137*	
D	12.8	13	13.2	*0.5039*	*0.5118*	*0.5197*
D1		11 BSC			*0.4330 BSC*	
D2	12.8	13	13.2	*0.5039*	*0.5118*	*0.5197*
E	12.8	13	13.2	*0.5039*	*0.5118*	*0.5197*
E1		11 BSC			*0.4330 BSC*	
E2	12.8	13	13.2	*0.5039*	*0.5118*	*0.5197*
e		1			*0.0394*	

Table 2.7 FBGA144 dimensions

2.7.2 Land Pattern

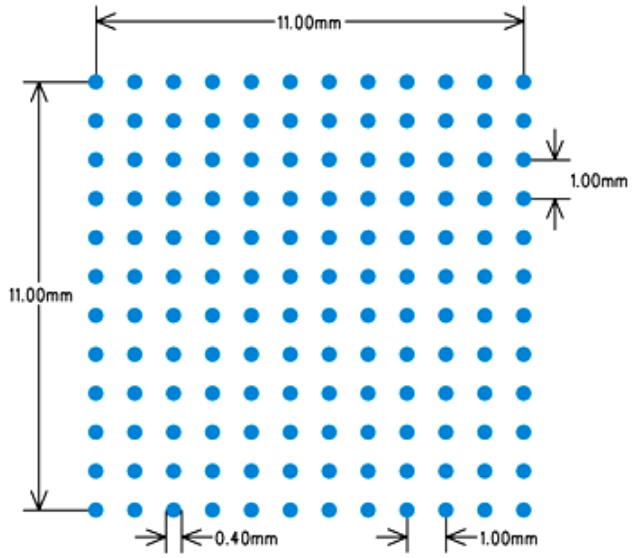


Figure 2.21 FBGA144 example land patterns (unit: mm)

2.8 QFN28 (5x5mm)

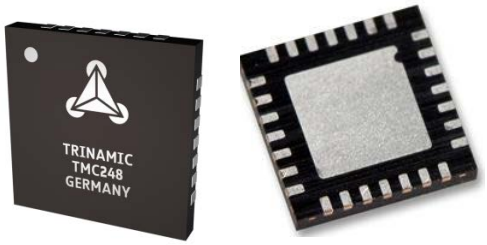


Figure 2.22 QFN28 (5x5mm) examples

2.8.1 Dimensions

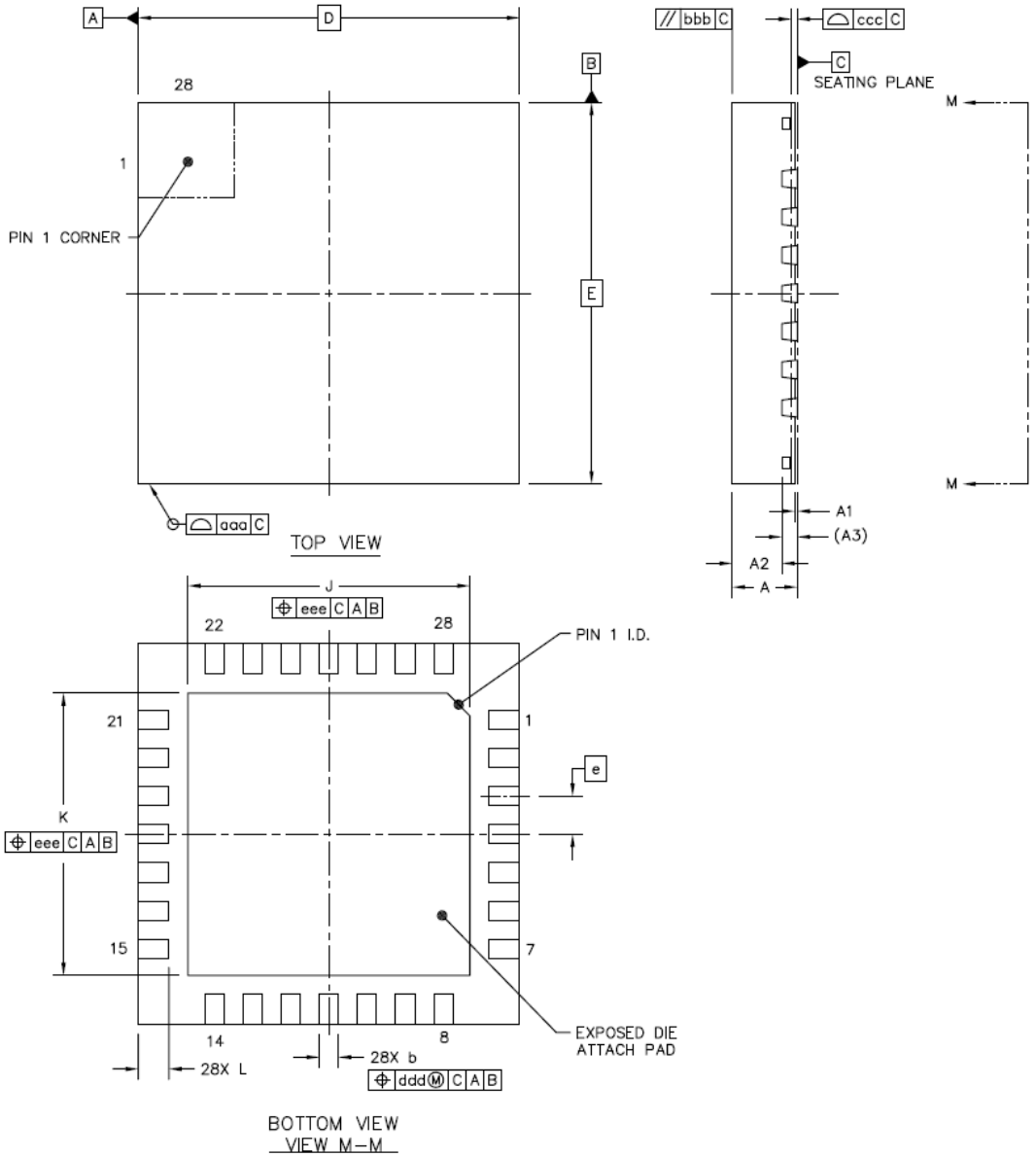


Figure 2.23 QFN28 (5x5mm) drawings

Symbol	Dimensions in MILLIMETERS			*Dimensions in INCHES*		
	Min	Typ	Max	*Min*	*Typ*	*Max*
A	0.8	0.85	0.9	*0.0315*	*0.0335*	*0.0354*
A1	0	0.035	0.05	*0*	*0.0014*	*0.002*
A2		0.65	0.67		*0.0256*	*0.0264*
A3		0.203 REF			*0.0078 REF*	
b	0.2	0.25	0.3	*0.0079*	*0.0098*	*0.0118*
D		5 BSC			*0.1969*	
E		5 BSC			*0.1969*	
e		0.5 BSC			*0.0197*	
J	3.6	3.7	3.8	*0.1417*	*0.1457*	*0.1496*
K	3.6	3.7	3.8	*0.1417*	*0.1457*	*0.1496*
L	0.35	0.4	0.45	*0.0137*	*0.0157*	*0.0177*
aaa		0.1			*0.0039*	
bbb		0.1			*0.0039*	
ccc		0.08			*0.0031*	
ddd		0.1			*0.0039*	
eee		0.1			*0.0039*	

Table 2.8 QFN28 (5x5mm) dimensions

2.8.2 Land Pattern

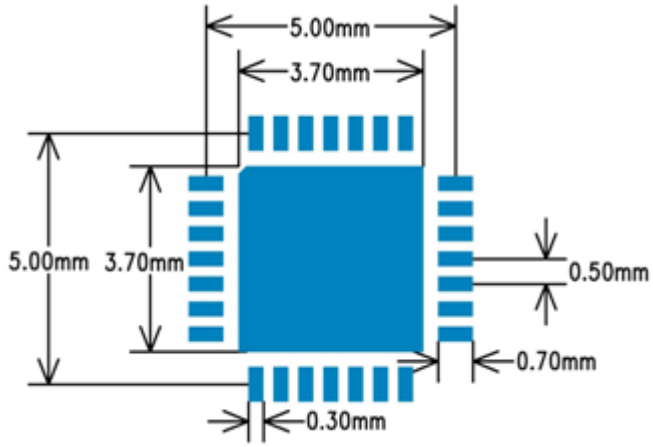


Figure 2.24 QFN28 (5x5mm) example land patterns (unit: mm)

2.9 QFN32 (5x5mm)

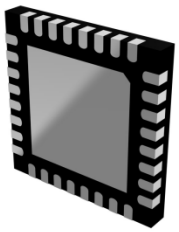


Figure 2.25 QFN32 (5x5mm) example

2.9.1 Dimensions of

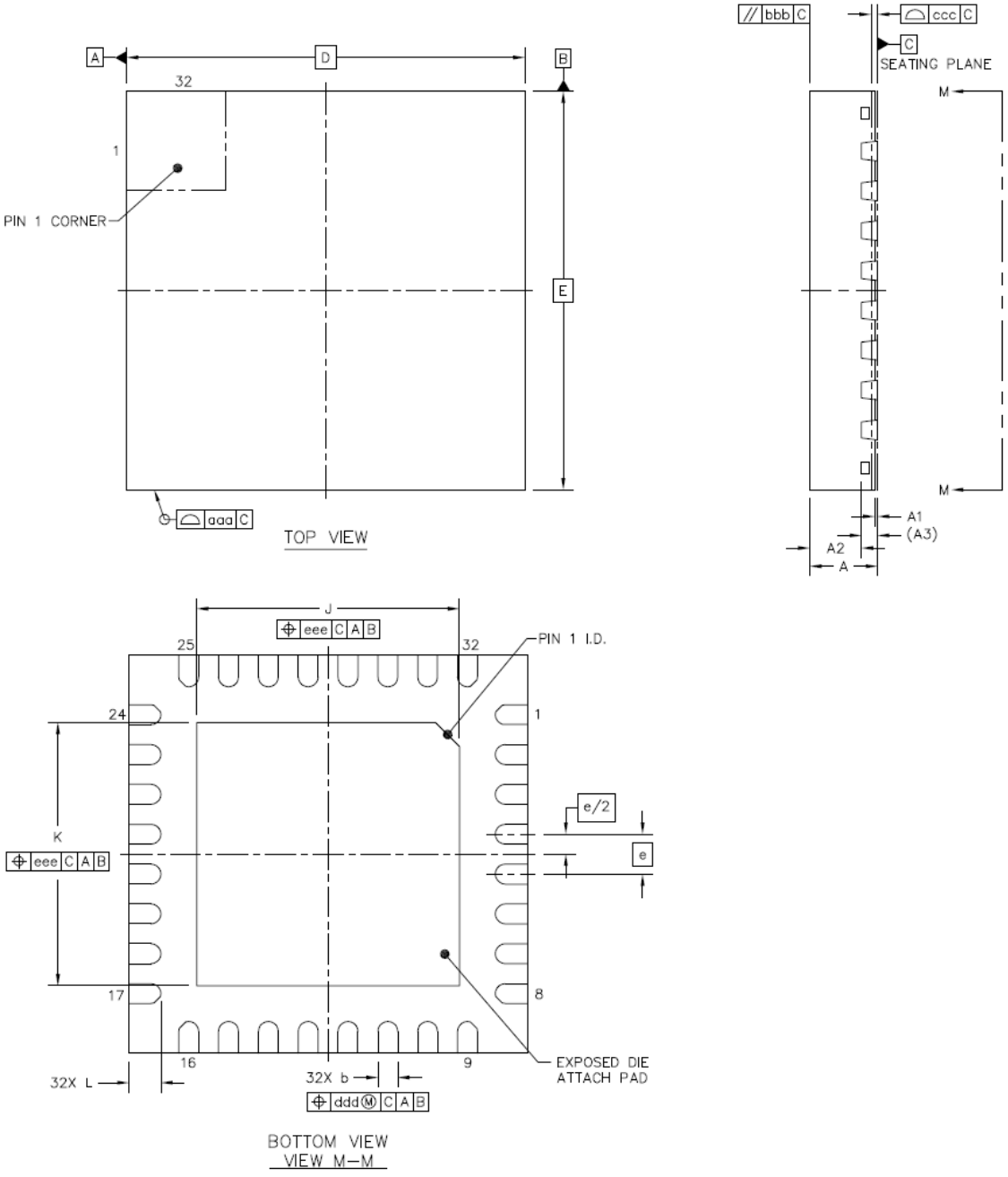


Figure 2.26 QFN32 (5x5mm) drawings

Symbol	Dimensions in MILLIMETERS			*Dimensions in INCHES*		
	Min	Typ	Max	*Min*	*Typ*	*Max*
A	0.8	0.85	0.9	*0.0315*	*0.0335*	*0.0354*
A1	0	0.035	0.05	*0*	*0.0014*	*0.002*
A2		0.65	0.67		*0.0256*	*0.0264*
A3		0.203 REF			*0.0078 REF*	
b	0.2	0.25	0.3	*0.0079*	*0.0098*	*0.0118*
D		5 BSC			*0.1969*	
E		5 BSC			*0.1969*	
e		0.5 BSC			*0.0197*	
J	3.2	3.3	3.4	*00126*	*0.13*	*0.134*
K	0.32	0.33	0.34	*0.0126*	*0.013*	*0.0134*
L	0.35	0.4	0.45	*0.0137*	*0.0157*	*0.0177*
aaa		0.1			*0.0039*	
bbb		0.1			*0.0039*	
ccc		0.08			*0.0031*	
ddd		0.1			*0.0039*	
eee		0.1			*0.0039*	

Table 2.9 QFN32 (5x5mm) dimensions (unit: mm)

2.9.2 Land Pattern

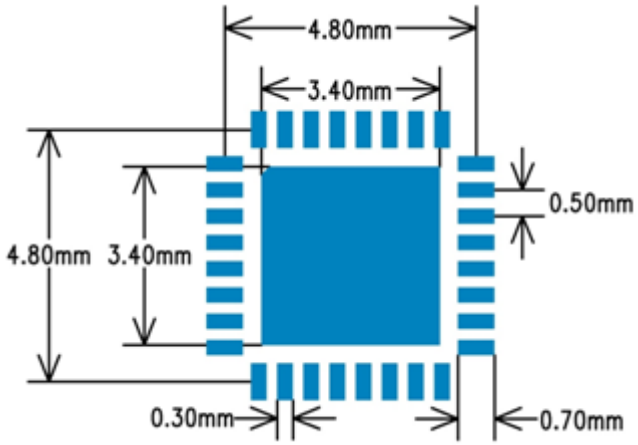


Figure 2.27 QFN32 (5x5mm) example land patterns

2.10 QFN32 (7x7mm)

Figure 2.28 QFN32 (7x7mm) example

2.10.1 Dimensions

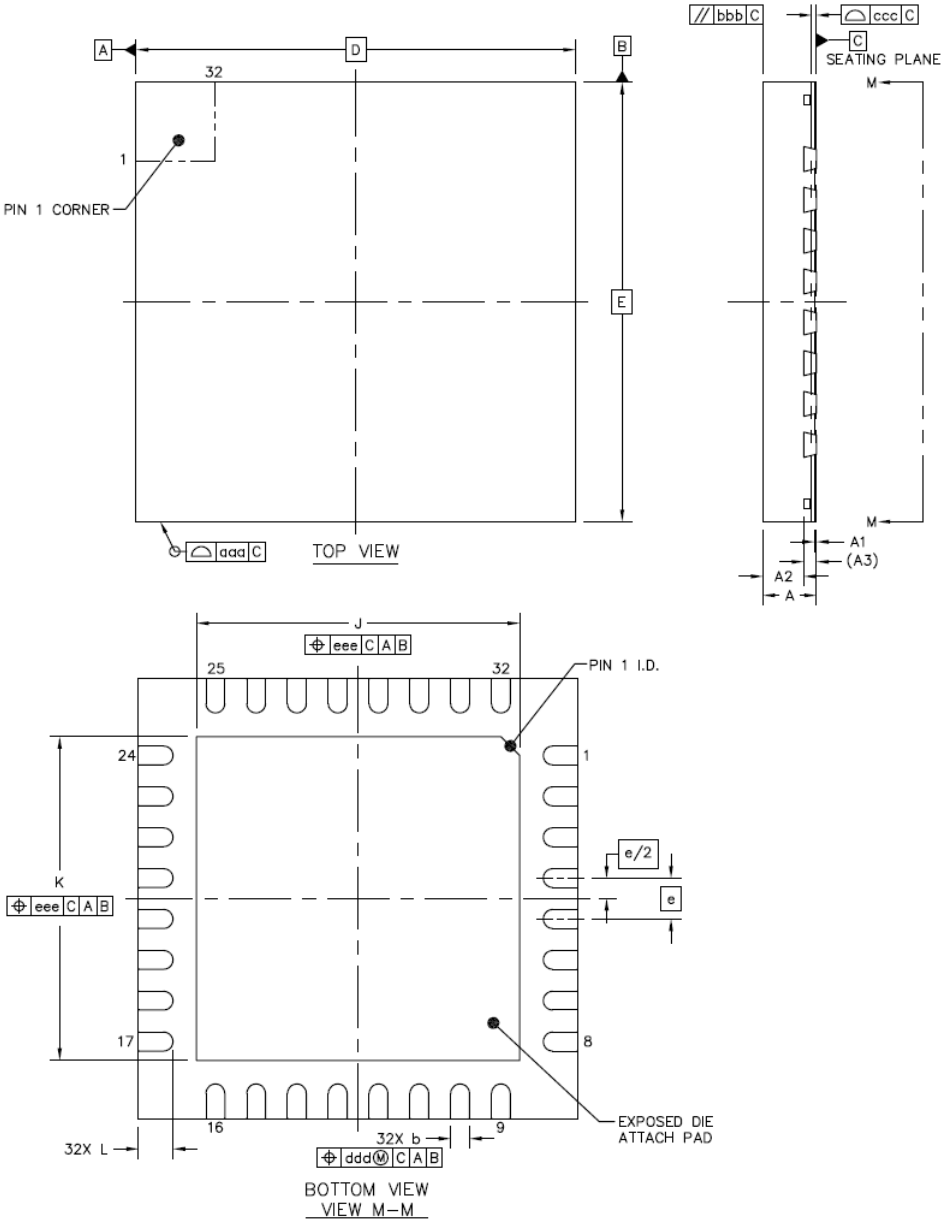


Figure 2.29 QFN32 (7x7mm) drawings

Symbol	Dimensions in MILLIMETERS			*Dimensions in INCHES*		
	Min	Typ	Max	*Min*	*Typ*	*Max*
A	0.8	0.85	0.9	*0.0315*	*0.0335*	*0.0354*
A1	0	0.035	0.05	*0*	*0.0014*	*0.002*
A2		0.65	0.67		*0.0256*	*0.0264*
A3		0.203 REF			*0.0078 REF*	
b	0.25	0.3	0.35	*0.0098*	*0.0118*	*0.0138*
D		7 BSC			*0.2756 BSC*	
E		7 BSC			*0.2756 BSC*	
e		0.65 BSC			*0.02559 BSC*	
J	5.05	5.15	5.25	*0.1988*	*0.2028*	*0.2067*
K	5.05	5.15	5.25	*0.1988*	*0.2028*	*0.2067*
L	0.5	0.55	0.6	*0.0197*	*0.0217*	*0.0236*
aaa		0.1			*0.0039*	
bbb		0.1			*0.0039*	
ccc		0.08			*0.0031*	
ddd		0.1			*0.0039*	
eee		0.1			*0.0039*	

Table 2.10 QFN32 (7x7mm) dimensions

2.10.2 Land Pattern

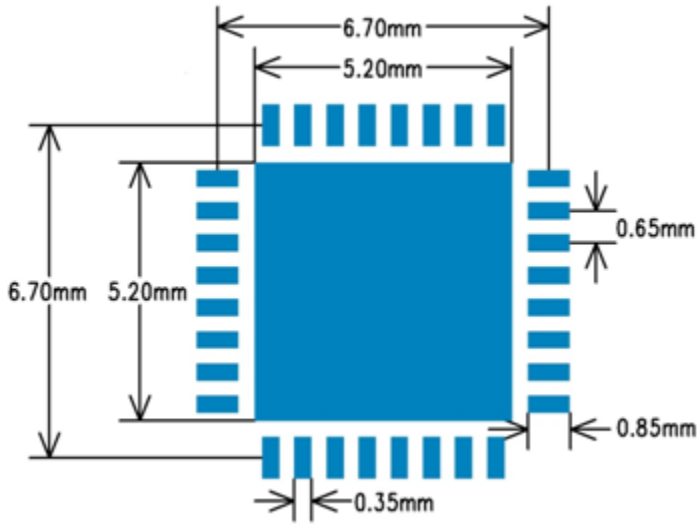


Figure 2.30 QFN32 (7x7mm) example land patterns (unit: mm)

2.11 QFN48 (7x7mm)

I drawings

2.11.1 Dimensions

Attention: Drawings not to scale.

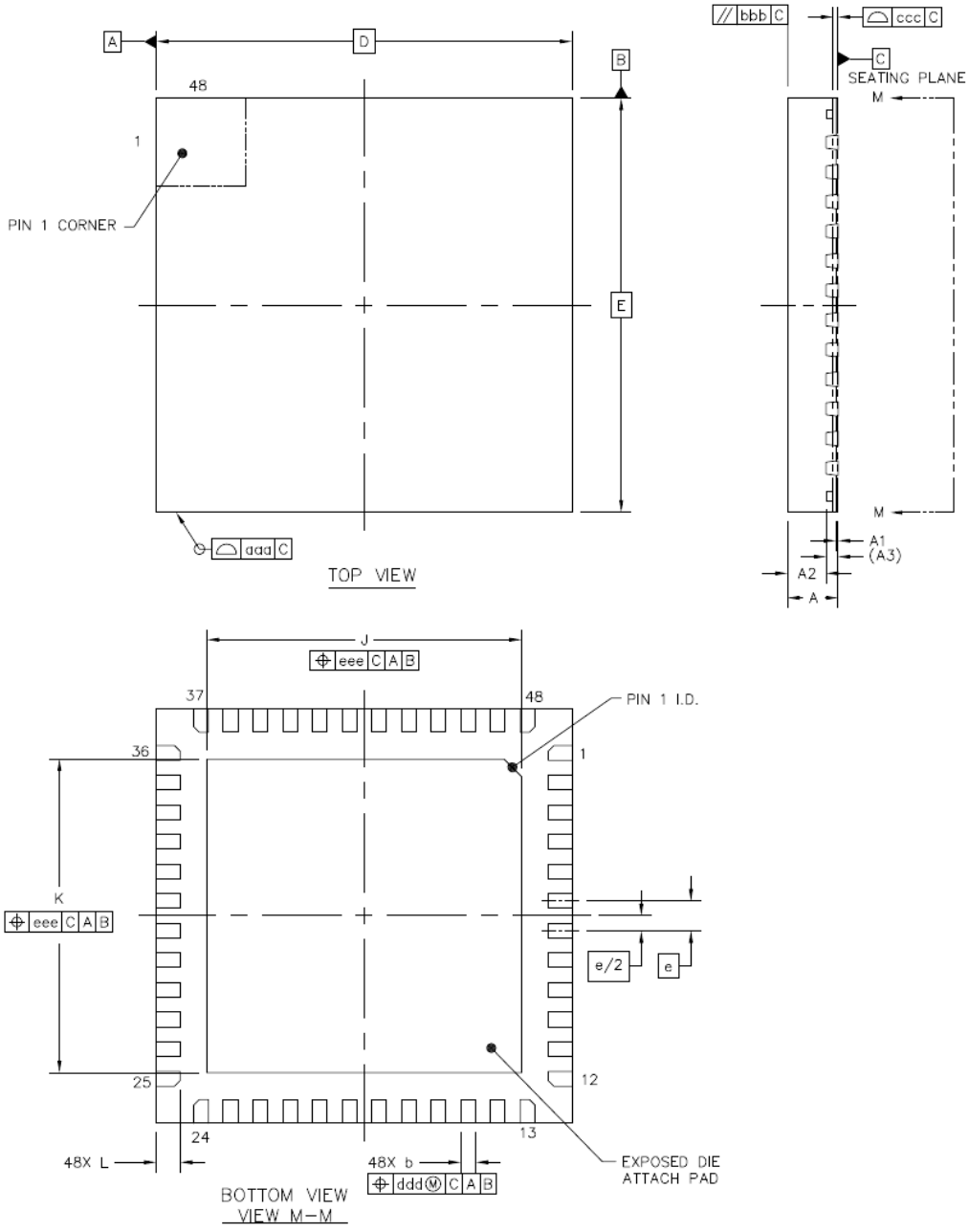


Figure 2.32 QFN48 (7x7mm) drawings

Symbol	Dimensions in MILLIMETERS			*Dimensions in INCHES*		
	Min	Typ	Max	*Min*	*Typ*	*Max*
A	0.8	0.85	0.9	*0.0315*	*0.0335*	*0.0354*
A1	0	0.035	0.05	*0*	*0.0014*	*0.002*
A2		0.65	0.67		*0.0256*	*0.0264*
A3	0.203 REF			*0.0078 REF*		
b	0.2	0.25	0.3	*0,0079*	*0,0098*	*0,0118*
D	7 BSC			*0.2756 BSC*		
E	7 BSC			*0.2756 BSC*		
e	0.5 BSC			*0,0197BSC*		
J	5.2	5.3	5.4	*0,2047*	*0,2087*	*0,2126*
K	5.2	5.3	5.4	*0,2047*	*0,2087*	*0,2126*
L	0.35	0.4	0.45	*0,0138*	*0,0157*	*0,0177*
aaa	0.1			*0.0039*		
bbb	0.1			*0.0039*		
ccc	0.08			*0.0031*		
ddd	0.1			*0.0039*		
eee	0.1			*0.0039*		

Table 2.11 QFN48 (7x7mm) dimensions

2.11.2 Land Pattern

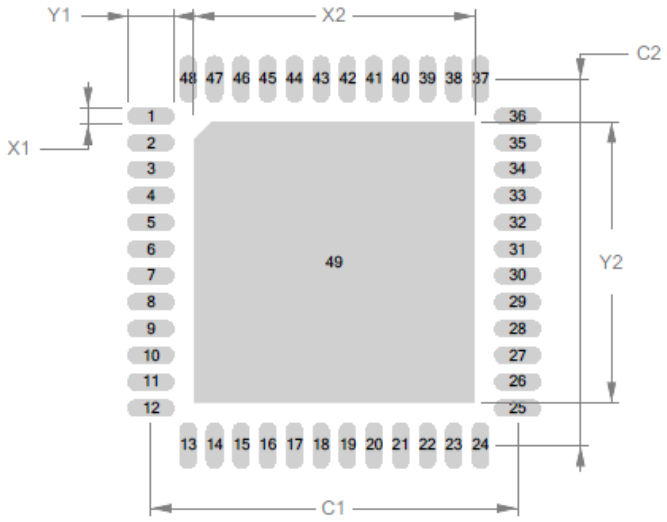


Figure 2.33 QFN48 (7x7mm) example land patterns (unit: mm)

Symbol	Dimensions in mm	*Dimensions in inch*
C1	6.90	*0,2717*
Y1	0.85	*0,0335*
X1	0.30	*0,0118*
C2	6.90	*0,2717*
Y2	5.30	*0,2087*
X2	5.30	*0,2087*

Table 2.12 QFN48 (7x7mm) dimensions of example land patterns

2.12 QFN52 (8x8mm)

Figure 2.34 QFN52 (8x8mm) example

2.12.1 Dimensions

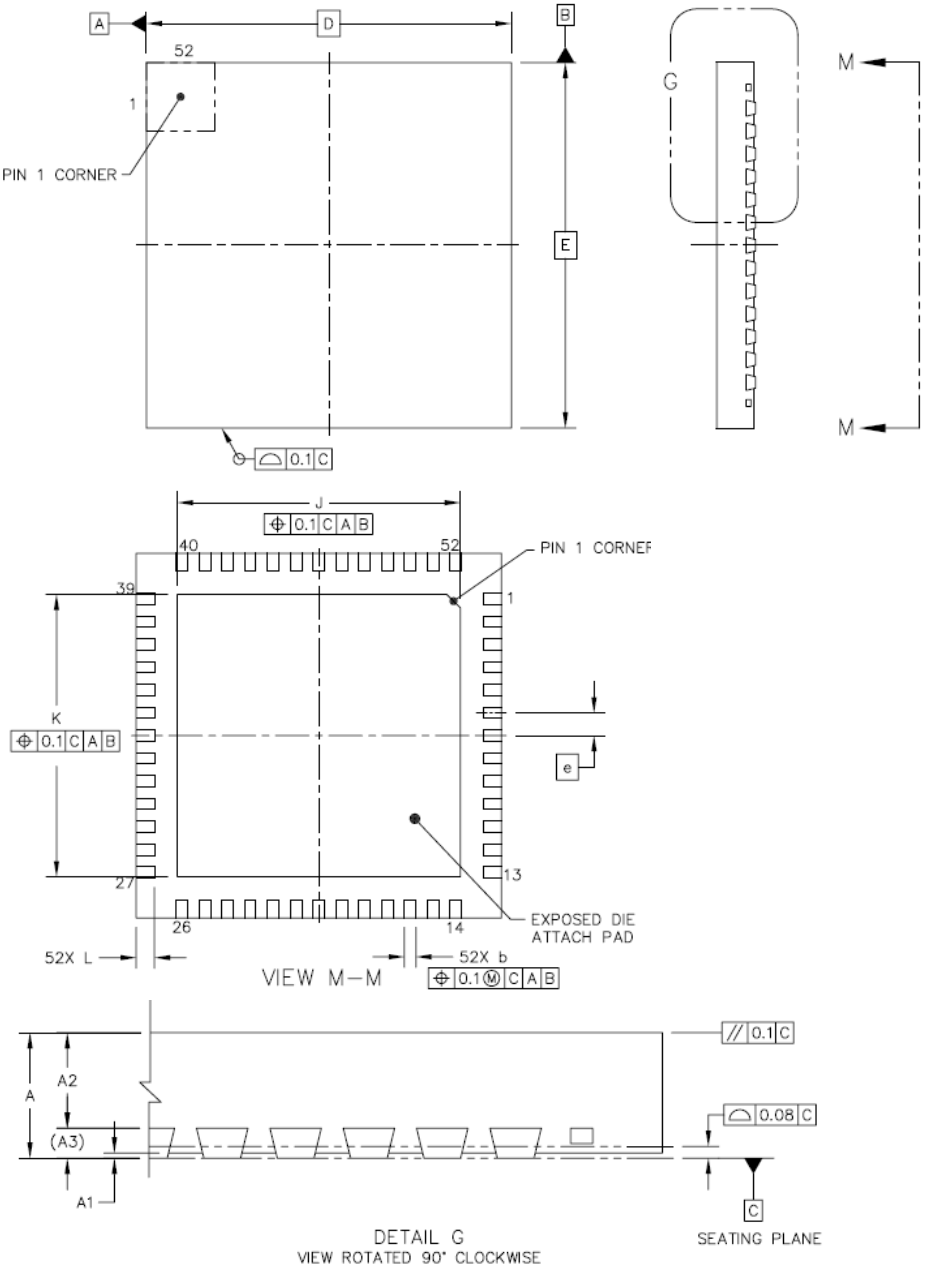


Figure 2.35 QFN52 (8x8mm) drawings

Symbol	Dimensions in MILLIMETERS			*Dimensions in INCHES*		
	Min	Typ	Max	*Min*	*Typ*	*Max*
A	0.8	0.85	0.9	*0.0315*	*0.0335*	*0.0354*
A1	0	0.035	0.05	*0*	*0.0014*	*0.002*
A2		0.65	0.67		*0.0256*	*0.0264*
A3		0.203 REF			*0.0078 REF*	
b	0.2	0.25	0.3		*0.0098*	*0.0118*
D		8 BSC			*0.315 BSC*	
E		8 BSC			*0.315 BSC*	
e		0.5 BSC			*0.0197 BSC*	
J	6.1	6.2	6.3	*0.024*	*0.0244*	*0.0248*
K	6.1	6.2	6.3	*0.024*	*0.0244*	*0.0248*
L	0.35	0.4	0.45	*0.0138*	*0.0157*	*0.0177*

Table 2.13 QFN52 (8x8mm) dimensions

2.12.2 Land Pattern

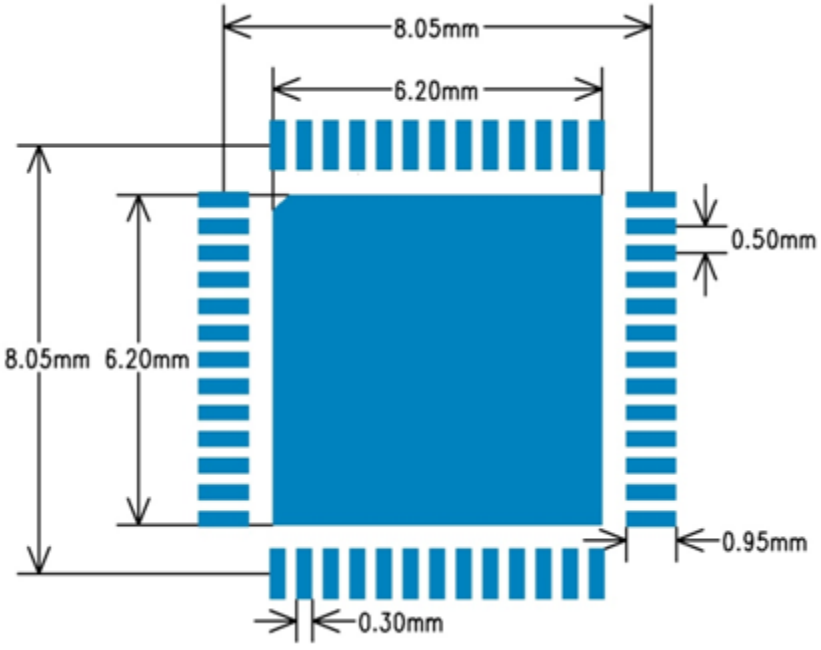


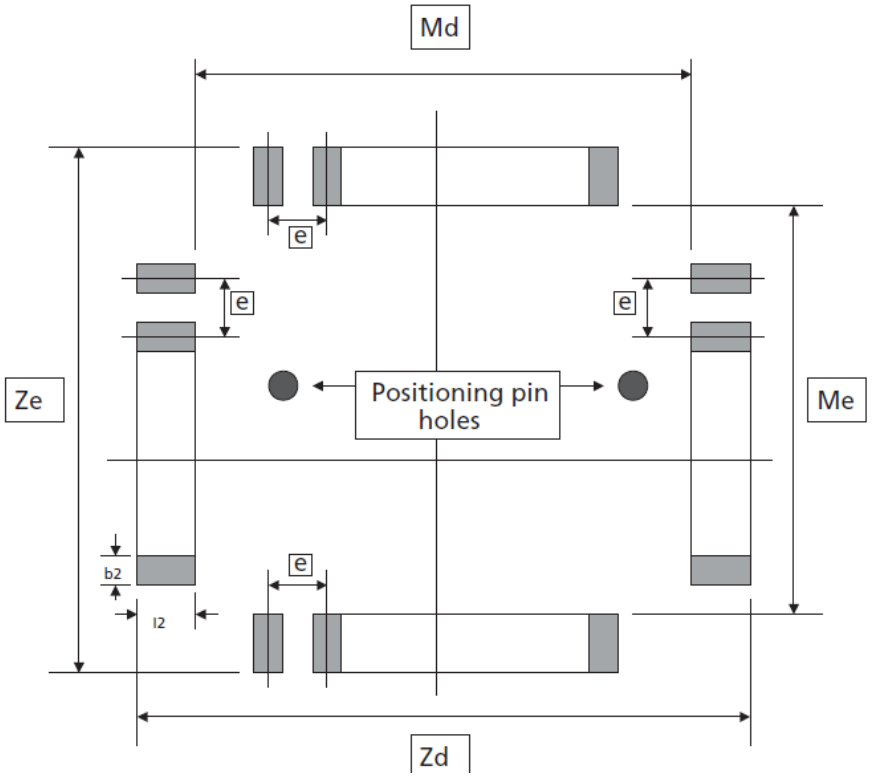
Figure 2.36 QFN52 (8x8mm) example land patterns (unit: mm)

3 General PCB Footprint Information Resources

These guidelines and information are proposals and suggestions as they are proven and work well with TRINAMIC modules.

3.1 QFP Packages

These guidelines are for Quad Flat Packages in general (PQFP, LQFP, TQFP) and are derived from the EIA/JEDEC standard.



Dim.	PQ100	PQ144	PQ160 3.2mm	PQ160 3.9mm	PQ/ RQ208	PQ/ RQ240	VQ80	VQ/ TQ100	VQ128	VQ176	TQ64	TQ144	TQ176
Md	20.4	28.4	28.4	29.2	28.2	32.2	13.8	13.8	13.8	19.8	10.1	19.8	23.8
Me	14.4	28.4	28.4	29.2	28.2	32.2	13.8	13.8	13.8	19.8	10.1	19.8	23.8
e	0.65	0.65	0.65	0.65	0.5	0.5	0.65	0.5	0.4	0.4	0.5	0.5	0.5
b2	0.3-0.5	0.3-0.5	0.3-0.5	0.3-0.5	0.3-0.4	0.3-0.4	0.3-0.5	0.3-0.4	0.25-0.30	0.25-0.30	0.3-0.4	0.3-0.4	0.3-0.4
l2	1.8	1.8	1.8	1.8	1.6	1.6	1.8	1.6	1.6	1.6	1.6	1.6	1.6

Figure 3.1 EIA Standard Board Layout of Soldered Pad for QFP Devices (unit: mm)

3.2 QFN Packages

These are basic guidelines for Quad Flat No Leads Packages (QFNs). They are derived from the Technical Brief TB389 from Intersil (http://www.intersil.com/data/tb/TB389.pdf).

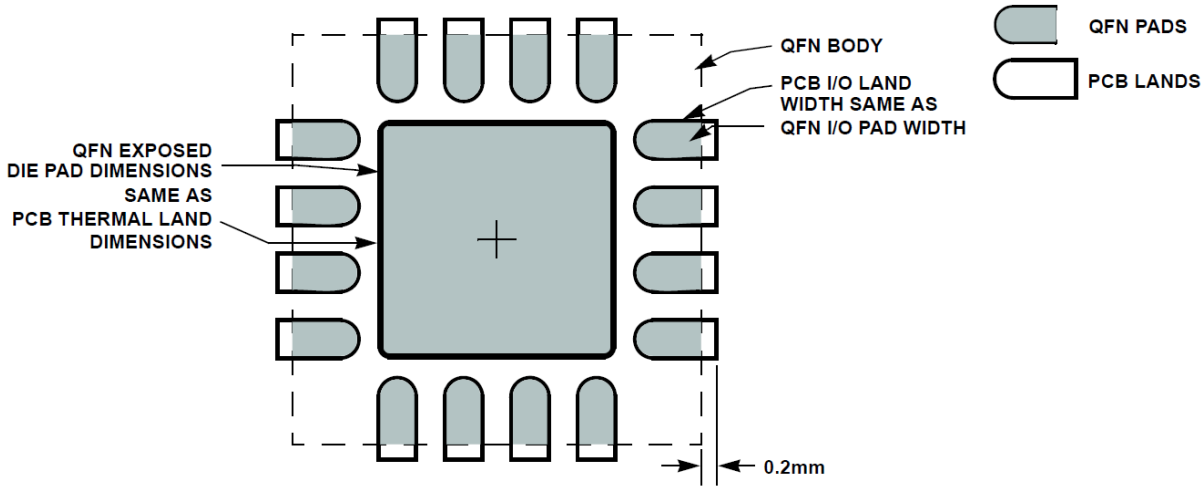
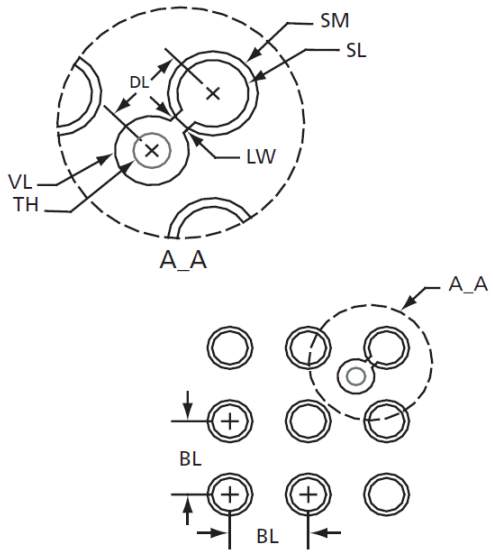


Figure 3.2 Board Layout of Soldered Pad for QFN Devices according to Intersil TB389

3.3 FBGA Packages

These guidelines are for Fine Line Ball Grid Arrays (FBGAs) with 1mm ball pitch and are derived from the EIA/JEDEC standard.



Dimension	FG144
Component Land Pad Diameter (SM)	0.40
Solder Land Diameter (SL)	0.35
Solder Mask Opening Diameter (SM)	0.5
Solder Ball Land Pitch (BL)	1.00
Line Width Between Via and Solder Land (LW)	0.15
Distance Between Via and Solder Land (DL)	0.70
Via Land Diameter (VL)	0.60
Through Hole Diameter (TH)	0.30
Pad Array	Full
Pad Matrix	12x12

Figure 3.3 EIA Standard Board Layout of Soldered Pad for FBGA Devices (unit: mm)

3.4 IPC-7351B Standard and Land Pattern Calculator Tool

The IPC-7351B standard as well as the Calculator Tool are available online:
- http://landpatterns.ipc.org/default.asp

The IPC-7351B Land Pattern Calculator is based upon algorithms and engineering goals established in the IPC-7351B standard.

Mentor Graphics provides a similar free tool:
- http://www.mentor.com/products/pcb-system-design/library-tools/lp-wizard/lp-viewer-download

IPC-7351B Description (Source: IPC Online Store, https://portal.ipc.org/Association/Index.htm):

"*IPC-7351B includes both the standard and an IPC-7351B land pattern calculator on CD-ROM for accessing component and land pattern dimensional data. The calculator includes the document's mathematical algorithms so users can build a land pattern for a corresponding surface mount part quickly and accurately. The tool also allows for modification of dimensional attributes of IPC approved land patterns.*

This popular document covers land pattern design for all types of passive and active components, including resistors, capacitors, MELFs, SOPs, QFPs, BGAs, QFNs and SONs. The standard provides printed board designers with an intelligent land pattern naming convention, zero component rotations for CAD systems and three separate land pattern geometries for each component that allow the user to select a land pattern based on desired component density.

Revision B now includes land pattern design guidance and rules for component families such as resistor array packages, aluminum electrolytic capacitors, column and land grid arrays, flat lead devices (SODFL and SOTFL) and dual flat no-lead (DFN) devices. The revision also discusses the usage of thermal tabs and provides a new padstack naming convention that addresses the shape and dimensions of lands on different layers of printed boards.

Purchasers also receive a 30-day trial of the IPC-7351 Land Pattern Wizard developed by Mentor Graphics, which is an advanced version of the IPC-7351B Land Pattern Calculator. The IPC-7351B Land Pattern Wizard tool enables users to not only save their land patterns within new land pattern library files, but also to instantly export land patterns to their preferred CAD format, such as Allegro, Board Station, Expedition, PADS, CADSTAR, OrCAD, Pantheon and P-CAD. 102 pages. Released June 2010."

4 Disclaimer

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5 Revision History

5.1 Document Revision

Version	Date	Author SK – Stephan Kubisch SD – Sonja Dwersteg JP – Jonas P. Proeger	Description
0.1	2011-NOV-28	SK	First version
0.2	2011-DEZ-07	SK	Added Example Land Patterns per package
1.00	2012-JUN-19	SD	New design and inch values added
1.01	2013-APR-03	SD	QFN48 added
1.02	2014-AUG-04	JP	Dimensions for landing-pads QFN32 changed

Table 5.1 Document revision