Torpedo SOM Mechanical Hold-Down Scenarios

White Paper 419

Logic PD // Products
Published: December 2009
Last Revised: November 2011

Abstract

This white paper will suggest different methods that are available to secure the OMAP35x, DM3730, and AM3703 Torpedo SOMs in an end-product.

Revision History

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
A	JCA	-Initial Release	SD	12/10/09
B	SMC	-Generalized Torpedo SOM references throughout.	SO	08/01/11
C	SO	-Updated drawing 1014553.	SO	11/17/11

Table of Contents

1 Introduction

This document provides mechanical drawings suggesting different methods for holding the OMAP35x, DM3730, and AM3703 Torpedo SOMs in place.

2 Force Test Results

Based on testing a limited number of samples, the Torpedo SOM requires 10 lb. of extraction force after one insertion when the mating connectors are the only means of retention. After 30 insertion and extraction cycles, the extraction force is reduced to 6 lb. (See drawing number 1014552 at the conclusion of this document.)

3 Hold-Down Methods

3.1 Logic PD-Designed Hold-Down Clip

Logic PD has designed a hold-down clip that is included with the Zoom OMAP35x Torpedo Development Kit and the Zoom DM3730 Torpedo Development Kit. The clip provides a method for securing the Torpedo SOM with minimal impact on the surrounding space. (See drawing number 1014553 at the conclusion of this document.)

3.2 Enclosure

An enclosure can be built around the Torpedo SOM and custom baseboard. (See drawing number 1014554 at the conclusion of this document.)

3.3 Hold Downs Built into Final Design

Another option is to design hold downs that are built directly into the final product design. These hold downs should use the locations specified on the second page of the Torpedo SOM mechanical drawing. If this method is selected, it is also important to make sure the hold-down material used in the final product design is electrically non-conductive. (See drawing number 1012857 at the conclusion of this document.)

4 Summary

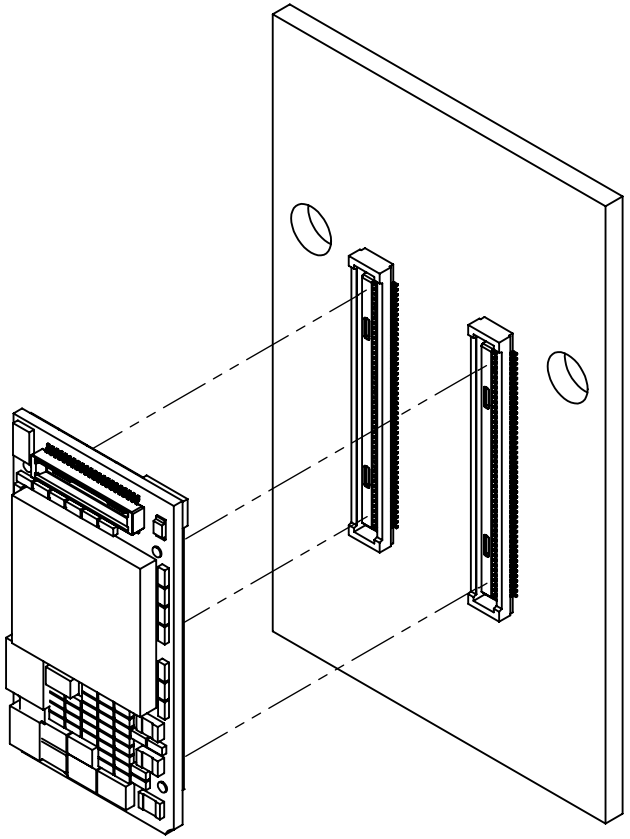
This white paper provides several methods for holding the Torpedo SOM in place. The drawings included with this document offer examples of how these methods could be implemented. Because every end-product has unique requirements, it is outside the scope of this document to provide a specific retention method for every scenario. Determining the best solution for the end-product is the responsibility of the designer, although Logic PD can help with design solutions or reviews. Please contact Logic PD[1] for more information.

[1] http://support.logicpd.com/support/askaquestion.php

REVISIONS			
REV.	ECO NUMBER	DESCRIPTION	DATE
A	-	INITIAL RELEASE	09.28.09

NOTES:

1. BASED ON TESTING A LIMITED NUMBER OF SAMPLES, THE TORPEDO REQUIRES 10 LBS OF EXTRACTION FORCE AFTER 1 INSERTION CYCLE. AFTER 30 INSERTION AND EXTRACTION CYCLES, THIS IS REDUCED TO 6 LBS.



THIS DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.5-2000

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED

TOLERANCES UNLESS OTHERWISE SPECIFIED

X ± 0.5
X.X ± 0.2
X.XX ± 0.1
X° ± 1°

THIRD ANGLE PROJECTION

ENG	NWR
DATE	09.28.09
CHECK	KAG
DATE	09.28.09
MGR	PMH
DATE	09.28.09
MANF	
DATE	

LOGIC
411 N. Washington Ave. Suite 400 Minneapolis, MN 55401
T: 612.672.9495 F: 612.672.9489 I: www.logicpd.com

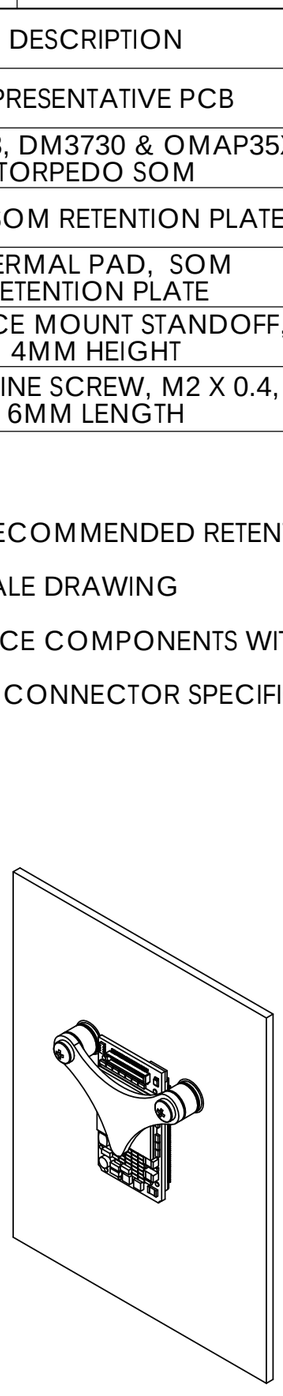
SIZE	TITLE	REV
A	Torpedo Retention System - None	A
SCALE 2:1	DWG NO 1014552	SHEET 1 OF 1

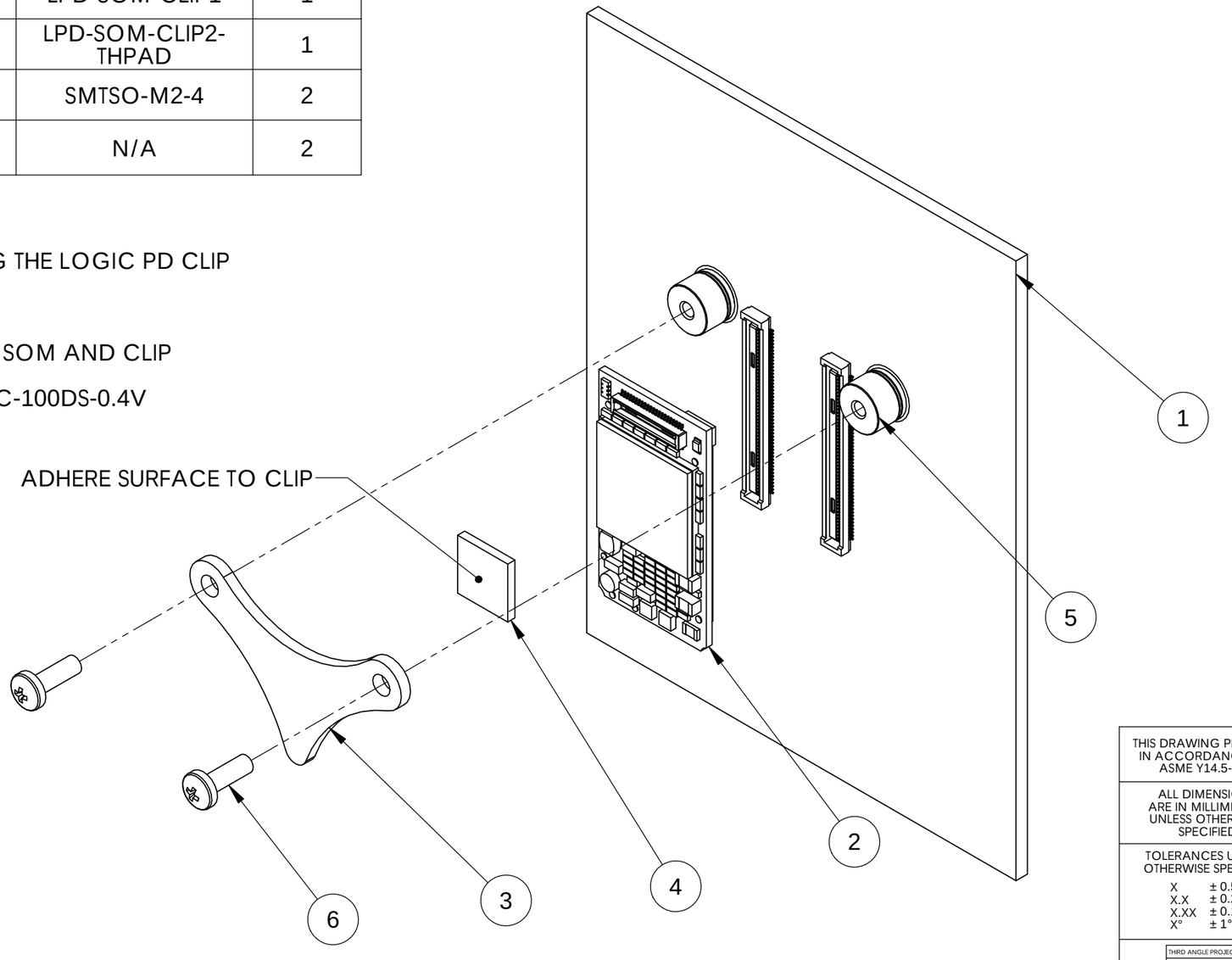
ITEM NO.	DESCRIPTION	MANUFACTURER	PART NUMBER	Default/ QTY.
1	REPRESENTATIVE PCB	N/A	N/A	1
2	AM3703, DM3730 & OMAP35X TORPEDO SOM	LOGIC PD	DEPENDANT ON CONFIGURATION	1
3	CLIP, SOM RETENTION PLATE	LOGIC PD	LPD-SOM-CLIP1	1
4	THERMAL PAD, SOM RETENTION PLATE	LOGIC PD	LPD-SOM-CLIP2-THPAD	1
5	SURFACE MOUNT STANDOFF, 4MM HEIGHT	PEM	SMTSO-M2-4	2
6	MACHINE SCREW, M2 X 0.4, 6MM LENGTH	N/A	N/A	2

REVISIONS		
REV.	DESCRIPTION	DATE
C	UPDATED BOM, EXPLODED VIEW, SHEET FORMAT	06.21.11
D	REPLACED THERMAL PAD	10.21.11

NOTES:

1. THIS IS THE RECOMMENDED RETENTION METHOD IF USING THE LOGIC PD CLIP
2. DO NOT SCALE DRAWING
3. DO NOT PLACE COMPONENTS WITHIN LAYOUT AREA OF SOM AND CLIP
4. BASEBOARD CONNECTOR SPECIFICATION: HIROSE DF40C-100DS-0.4V





THIS DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.5-2000

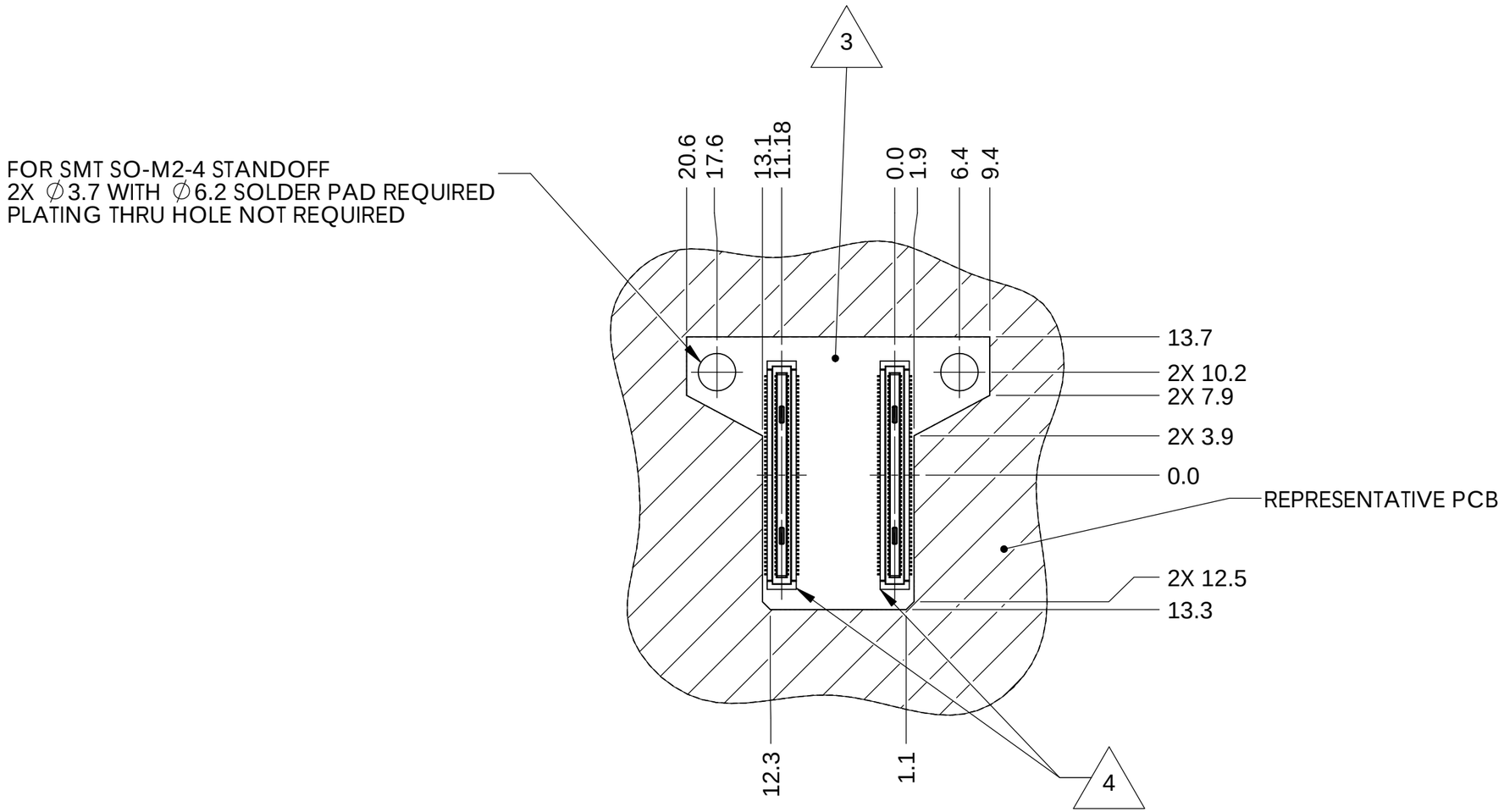
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED

TOLERANCES UNLESS OTHERWISE SPECIFIED

X	± 0.5
X.X	± 0.2
X.XX	± 0.1
X°	± 1°

THIRD ANGLE PROJECTION

ENG KAG	DATE 06.21.11	LOGIC PD™	SIZE B	TITLE TORPEDO RETENTION SYSTEM - CLIP	REV D
CHECK NWR	DATE 06.21.11	411 WASHINGTON AVE. SUITE 400 MINNEAPOLIS, MN 55401 T : 612.672.9495 F : 612.672.9489 I : WWW.LOGICPD.COM	SCALE 2:1	DWG NO 1014553	SHEET 1 OF 2
MGR PMH	DATE 06.21.11				
MANF	DATE				



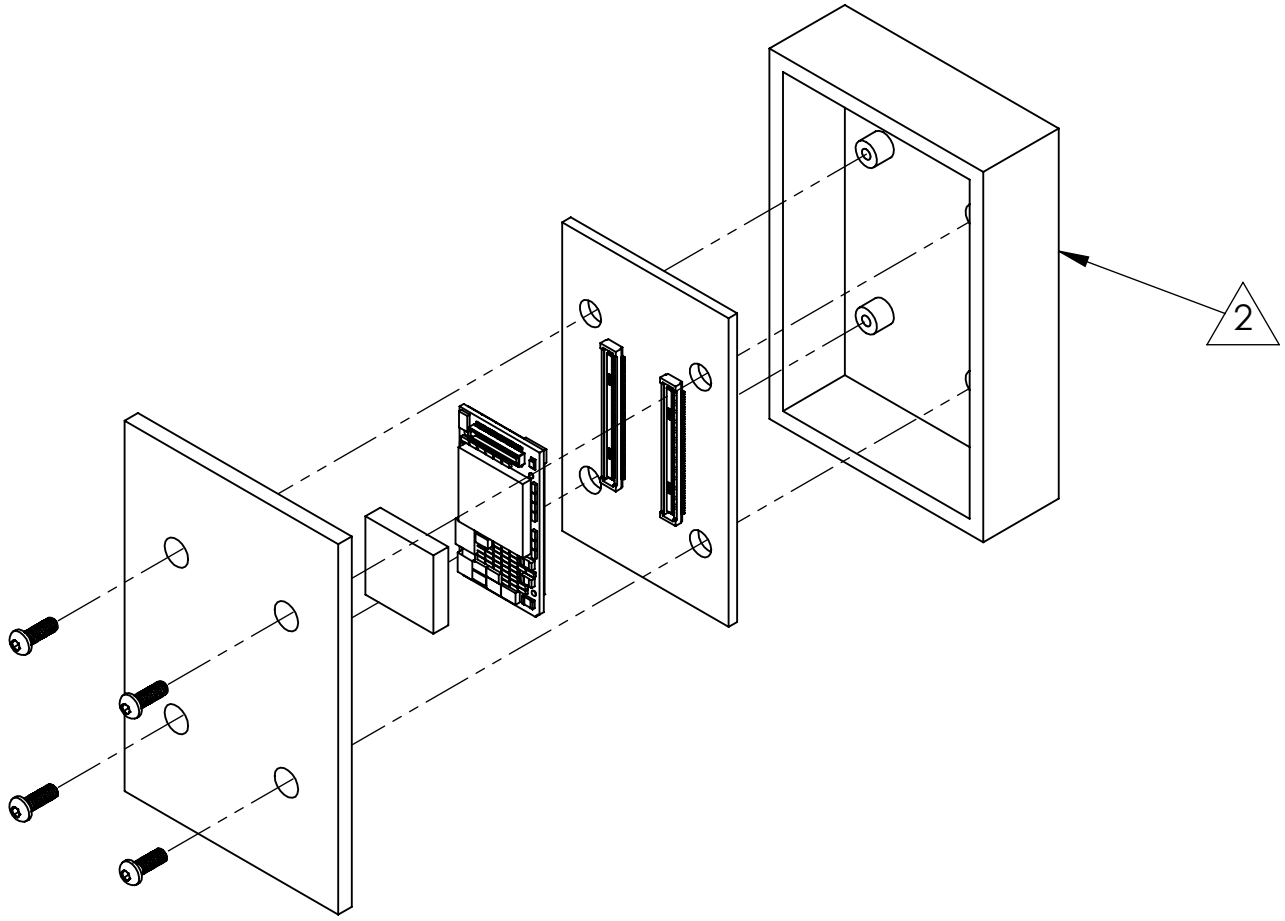
RECOMMENDED BASEBOARD FOOTPRINT AND KEEPOUT AREA

SIZE	TITLE	REV
B	TORPEDO RETENTION SYSTEM-CLIP	D
SCALE	DWG NO	SHEET
2:1	1014553	2 OF 2

REVISIONS			
REV.	ECO NUMBER	DESCRIPTION	DATE
A	-	INITIAL RELEASE	09.28.09

NOTES:
1. THE TORPEDO CAN BE RETAINED IN PLACE BY THE SURROUNDING ENCLOSURE.

2. REPRESENTATIVE ENCLOSURE



THIS DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.5-2000

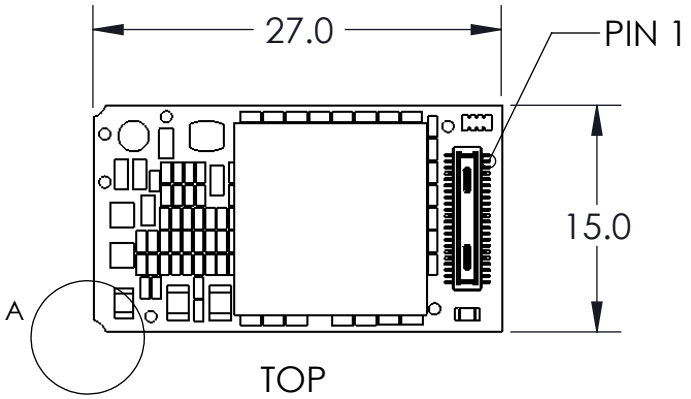
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED

TOLERANCES UNLESS OTHERWISE SPECIFIED
X ± 0.5
X.X ± 0.2
X.XX ± 0.1
X° ± 1°

THIRD ANGLE PROJECTION

ENG NWR	DATE 09.28.09	LOGIC 411 N. Washington Ave. Suite 400 Minneapolis, MN 55401 T: 612.672.9495 F: 612.672.9489 I: www.logicpd.com	SIZE A	TITLE Torpedo Retention System - In Housing	REV A
CHECK KAG	DATE 09.28.09				
MGR PMH	DATE 09.28.09		SCALE 1:1	DWG NO 1014554	SHEET 1 OF 1
MANF	DATE				

REVISIONS			
REV.	PCB NUMBER	DESCRIPTION	DATE
D	1013993, 1017857	UPDATED FOR AM3703 & DM3730 MODELS, ADDED ETM DIMENSIONS	06.21.11



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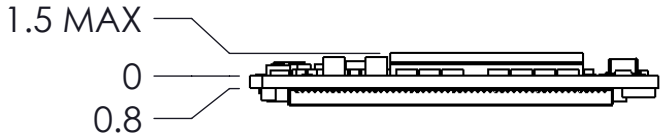
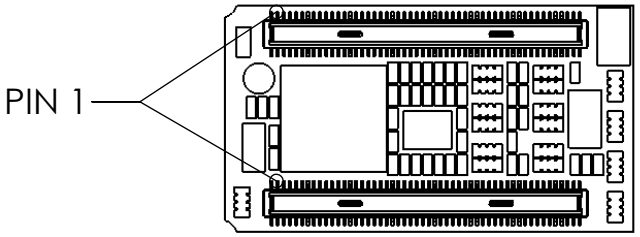
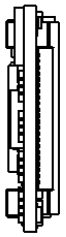


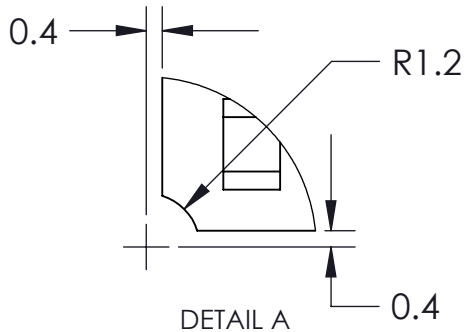


BOTTOM



NOTES:

1. DO NOT SCALE DRAWING
2. DO NOT PLACE ANY COMPONENTS WITHIN LAYOUT AREA OF SOM
3. BASEBOARD CONNECTOR SPECIFICATION: HIROSE DF40C-100DS-0.4V
4. IF USING THE ETM DEBUG BOARD DURING DEVELOPMENT, VERIFY COMPONENT HEIGHT CONSTRAINTS IN SPECIFIED AREA
5. PANEL VESTIGES ON ALL FOUR EDGES. PLEASE DO NOT PLACE COMPONENTS DIRECTLY ALIGNED WITH EDGE OF SOM



DETAIL A
SCALE 6 : 1

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X	± 0.5
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ENG	KAG
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DATE	

LOGIC PD™
411 WASHINGTON AVE. SUITE 400 MINNEAPOLIS, MN 55401
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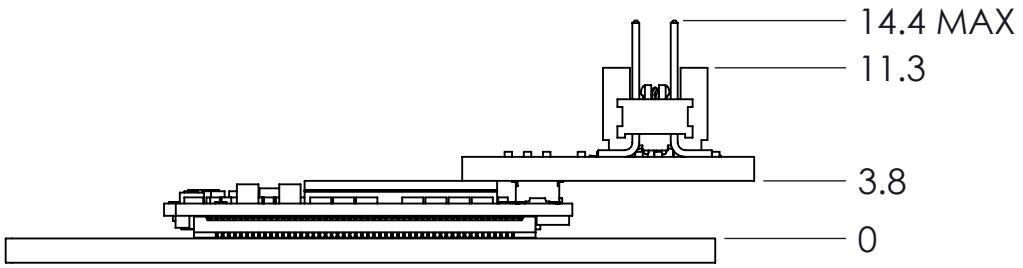
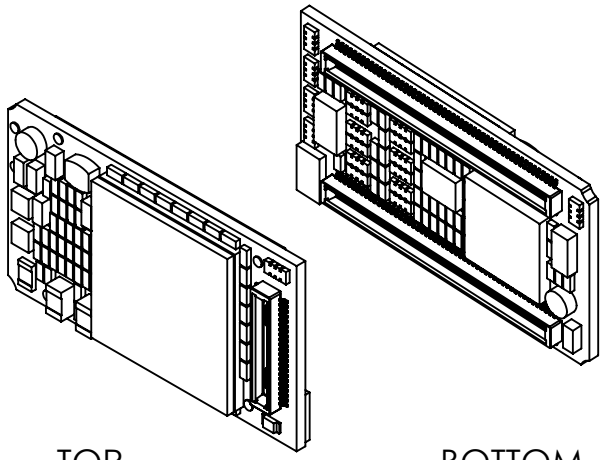
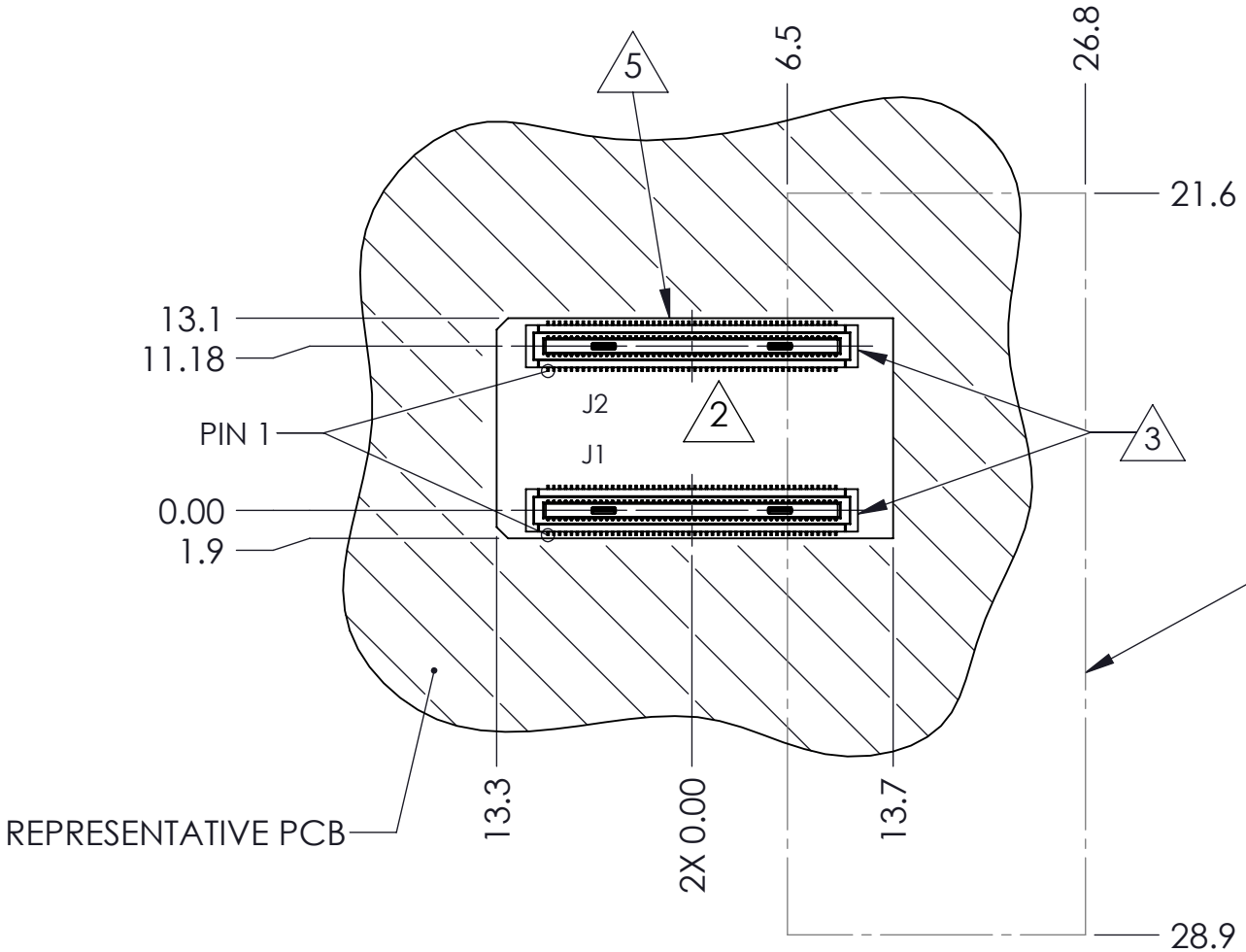
SIZE	TITLE	REV
A	AM3703, DM3730 & OMAP35X TORPEDO SOM	D
SCALE	DWG NO	SHEET
2:1	1012857	1 OF 2



ETM DEBUG BOARD HEIGHT CONSTRAINTS



ISOMETRIC VIEWS
FOR REFERENCE ONLY



RECOMMENDED KEEPOUT AREA AND BASEBOARD FOOTPRINT

SIZE	TITLE	REV
A	AM3703, DM3730 & OMAP35X TORPEDO SOM	D
SCALE	DWG NO	SHEET
2:1	1012857	2 OF 2