APPLICATION NOTE

3-lead CONTACT Package Usage

ATSHA204A, ATECC108A, and ATECC508A

Introduction

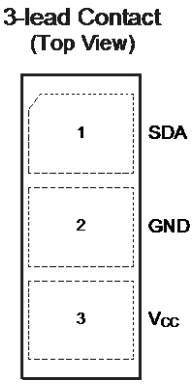
The Atmel® CryptoAuthentication™ devices are often used in product accessory or product ecosystem management. These include battery authentication or similar applications where electrical contact with the authentication device is made using mechanical pressure against compression connectors, i.e. unsoldered connections.

This application note provides general usage guidelines for the 3-lead CONTACT package option that is available with the Atmel symmetric and asymmetric authentication products: ATSHA204A, ATECC108A, and ATECC508A.

3-lead CONTACT Package

- Intended for Use With Removable Accessories, Modules, or Components
- Electrical Contact Between IC and Host System is Accomplished With Mechanical Pressure Contacts to Allow for Accessory Removal
- Use With Common Compression Connectors

Figure 1. CONTACT Package Pinout

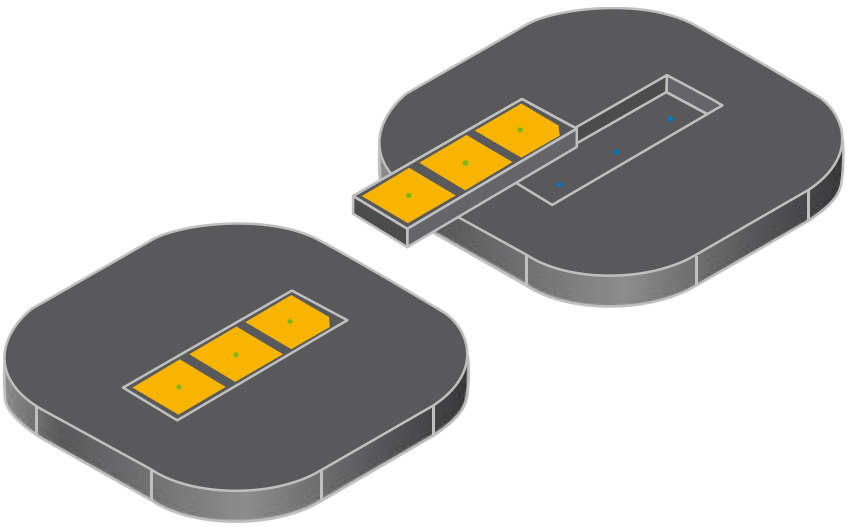


1 Package Substrate Support

The 3-lead CONTACT package is intended to be permanently attached to a base substrate (circuit board, frame, system enclosure, etc.) to provide mechanical support for the IC as pressure is applied to make the electrical contact.

The embossed/recessed IC receptacle shown in the below figure is an example and is not a required configuration, but illustrates the need for proper mechanical support for the IC to ensure reliable long-term operation under repeated pressure connection cycles.

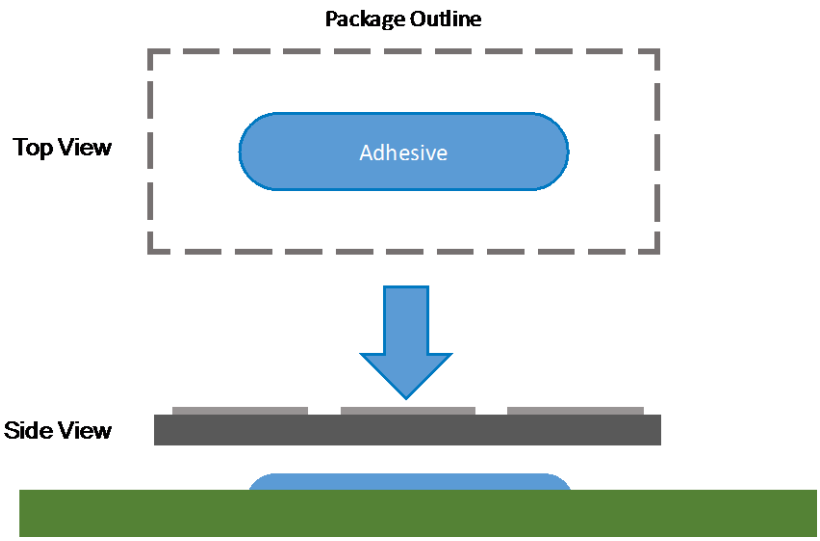
Figure 1-1. Embossed/Recessed IC Receptacle Example



2 Attachment of Package to Substrate

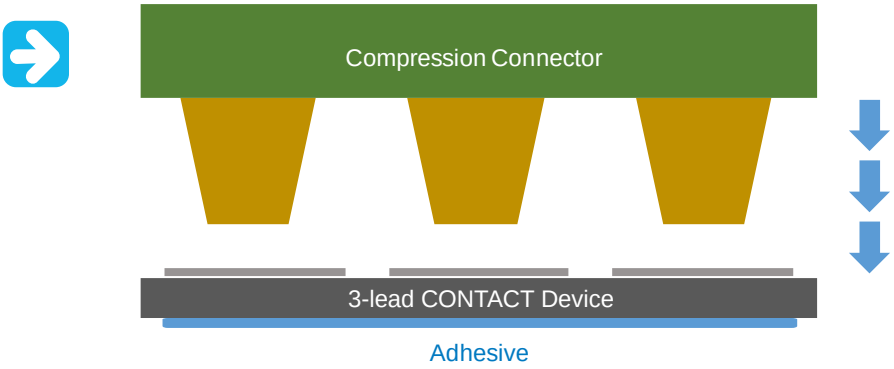
Attachment of the IC to the substrate itself can be accomplished with most standard epoxies or adhesives depending on the mechanical and environmental requirements of the system in which it is used. The adhesive should be applied in a pattern that will spread evenly along the package surface and will not leave large voids. An approximate example is shown below:

Figure 2-1. Adhesive Attachment



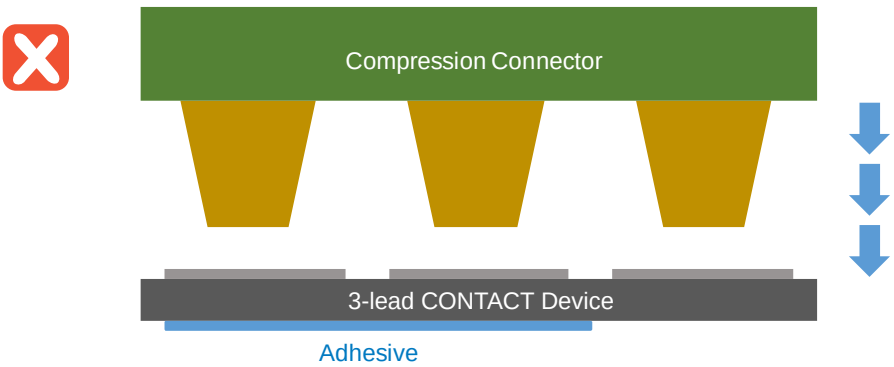
The amount of adhesive deposited depends upon the properties of the adhesive used, and the relevant application notes of the adhesive supplier should be referenced. To provide even coverage of the rear surface of the package to a uniform depth of 0.2mm will require the application of ~3mm^3 of adhesive. Proper deposition of adhesive should produce even distribution beneath the package with no voids as illustrated below:

Figure 2-2. CORRECT – Even Adhesive Coverage



If the deposition profile/pattern does not produce an even spread of adhesive, voids in the adhesive can result in stress on the package when under pressure with the compression connector. The below figure illustrates an example:

Figure 2-3. INCORRECT – Uneven Adhesive Coverage Causing Voids



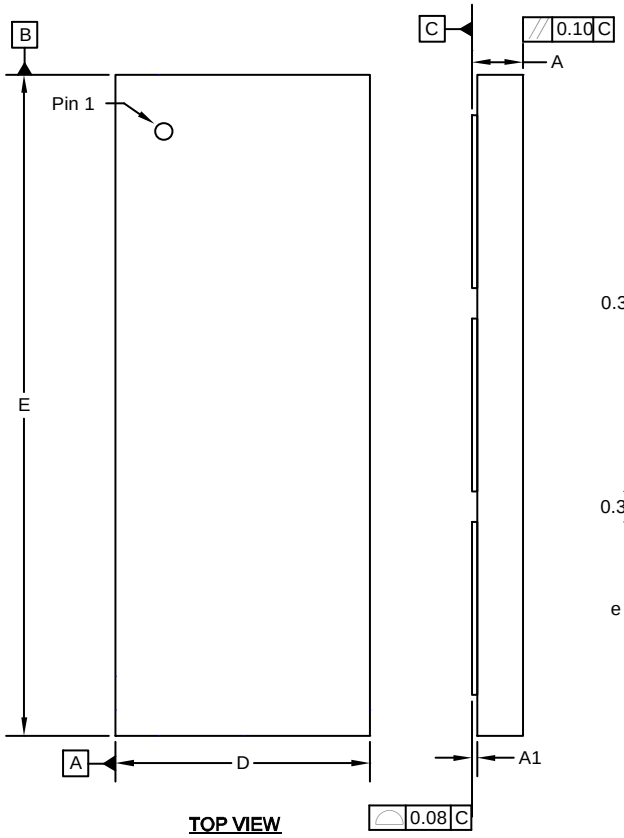
3 Compression Connectors

The 3-lead CONTACT package is intended to be used with 2mm pitch compression connectors. The connectors listed below or those with similar dimensions and mechanical characteristics can be used with this package:

- Molex 47615-020
- Molex 105040-001
- Molex 47275-001

Appendix A Package Drawing

A.1 3RB — 3-lead CONTACT



COMMON DIMENSIONS
(Unit of Measure = mm)

SYMBOL	MIN	NOM	MAX	NOTE
D	2.40	2.50	2.60	
E	6.40	6.50	6.60	
A	0.45	0.50	0.55	
A1	0.0	-	0.05	
e	1.60	1.70	1.80	
b	2.00 BSC			
L	2.10	2.20	2.30	
f	0.30	0.40	0.50	
g	0.05	0.15	0.25	

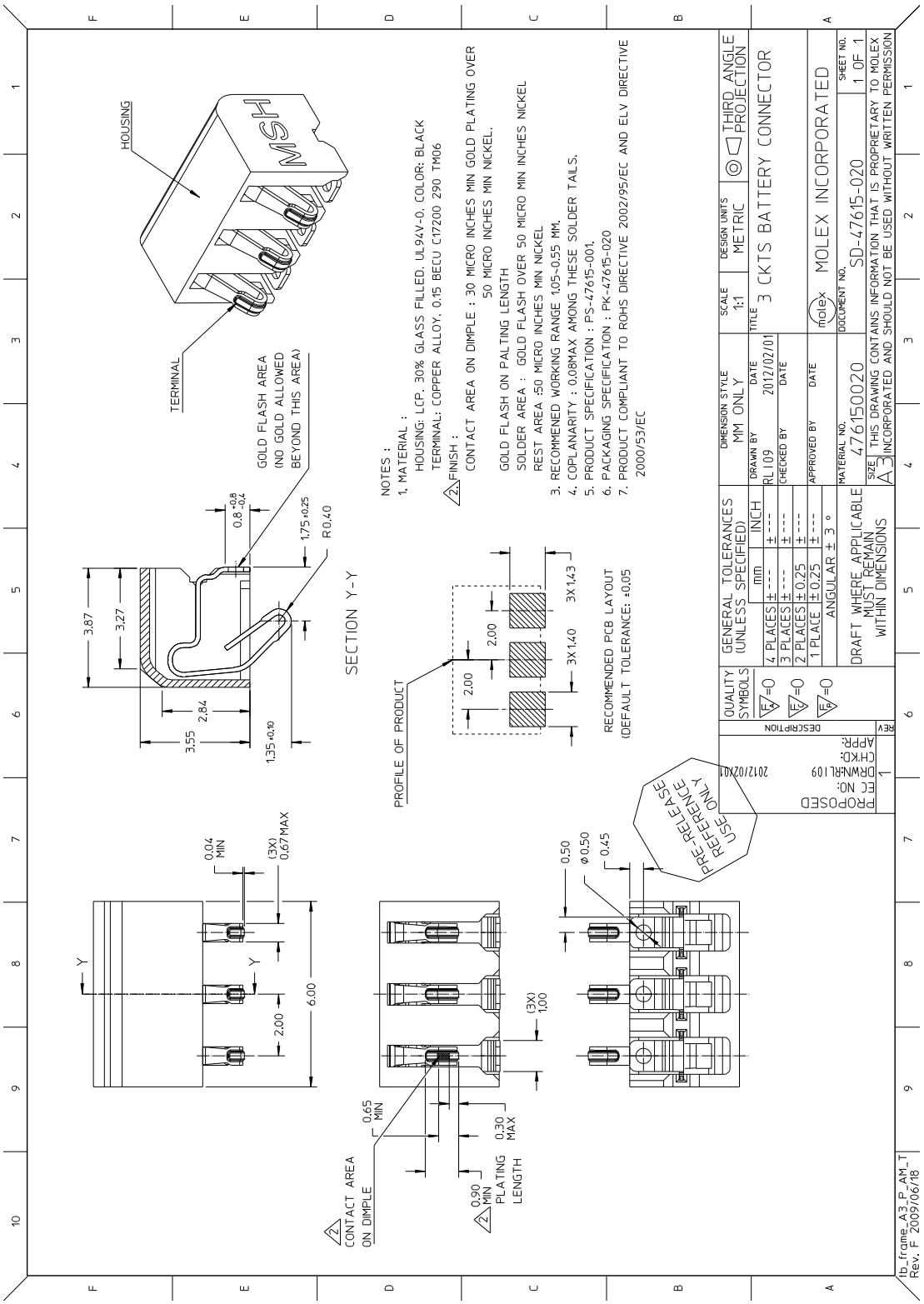
12/16/11

	TITLE	GPC	DRAWING NO.	REV.
Package Drawing Contact: packagedrawings@atmel.com	3RB, 3-lead 2.5x6.5mm Body, 2.0 mm pitch, CONTACT PACKAGE. (Sawn)	RHB	3RB	A

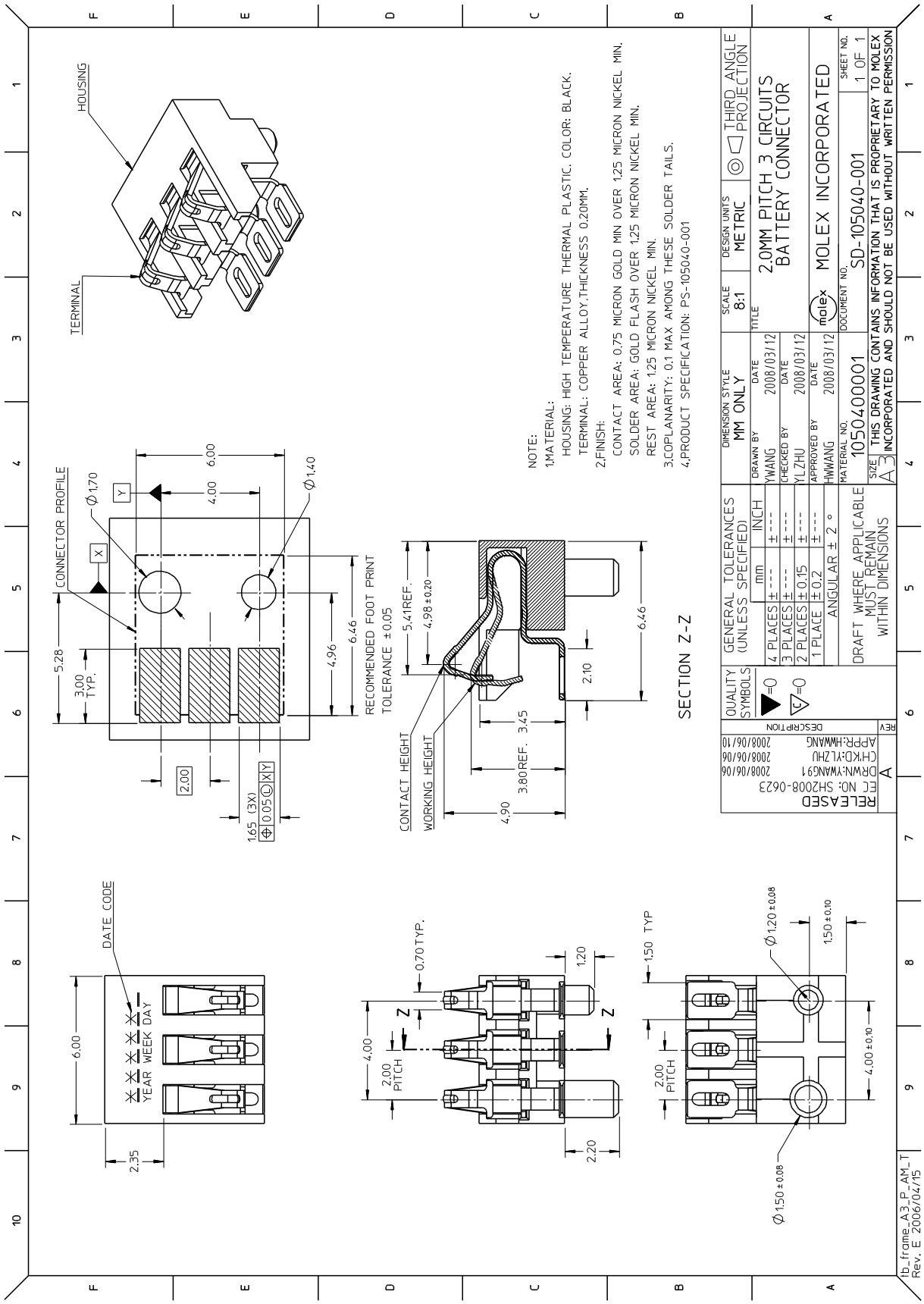
Appendix B

The following are drawings for connectors listed in Section 3.

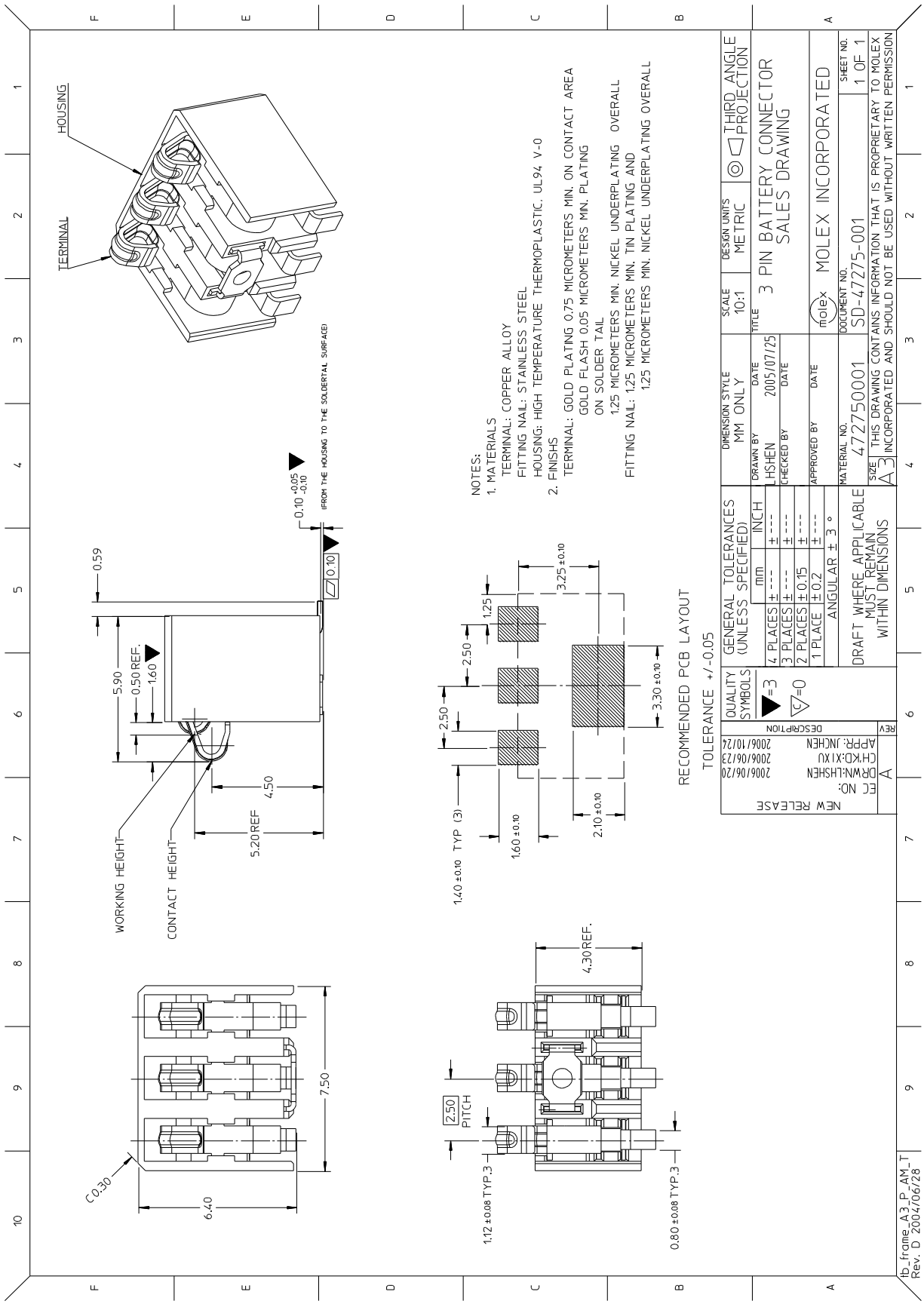
B.1 Molex 47615-020



B.2 Molex 105040-001



B.3 Molex 47275-001



Appendix C Revision History

Doc Rev.	Date	Comments
8977A	08/2015	Initial document release.

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