

Smaller Modules

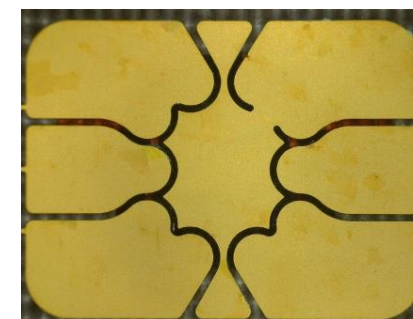
小型化6PIN双界面模块



SECURE CONNECTIONS
FOR A SMARTER WORLD

Management Summary 概要

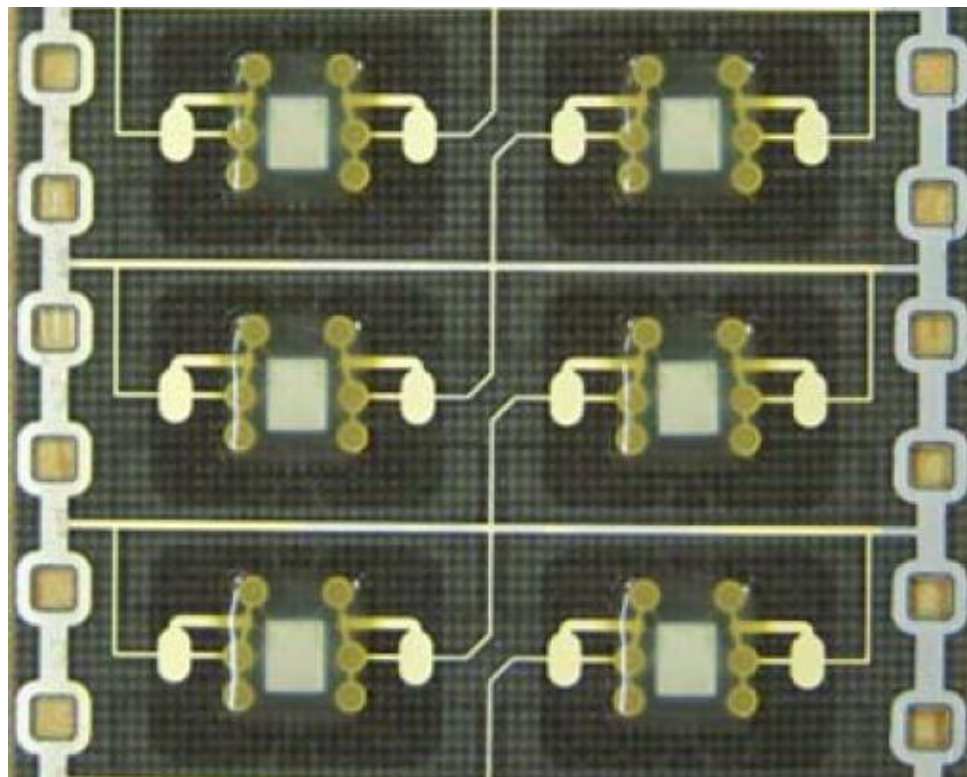
- Smaller chips enable smaller modules
更小的芯片可实现更小的模块
 - Smaller modules enable more easy embossing
更小的模块可使凸码打印更为简易
 - Smaller modules provide smaller glue area
更小的模块需要更小的粘胶面积
-
- Antenna pads of smaller modules are on different position compared to larger modules
相对8PIN模块，6PIN小模块的焊盘位置不同
 - Card cavities must fit small modules
铣槽工艺需要适配6PIN小模块
 - Smaller modules need different tooling
更小的模块需要不同的工装



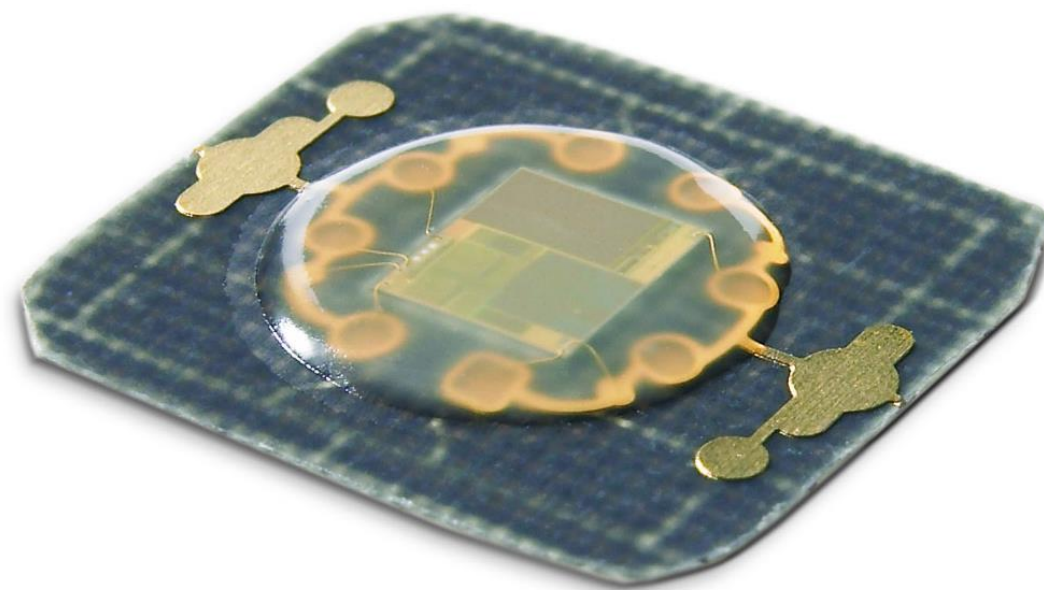
Comparison NXD6.1 vs. PDM1.1

NXP新6PIN双界面模块与原8PIN双界面模块比较

新的6PIN模块设计基于中国市场的焊接双界面制卡工艺



NXD6.1 Current Design Status
新6PIN设计



PDM1.1 Design
原8PIN设计



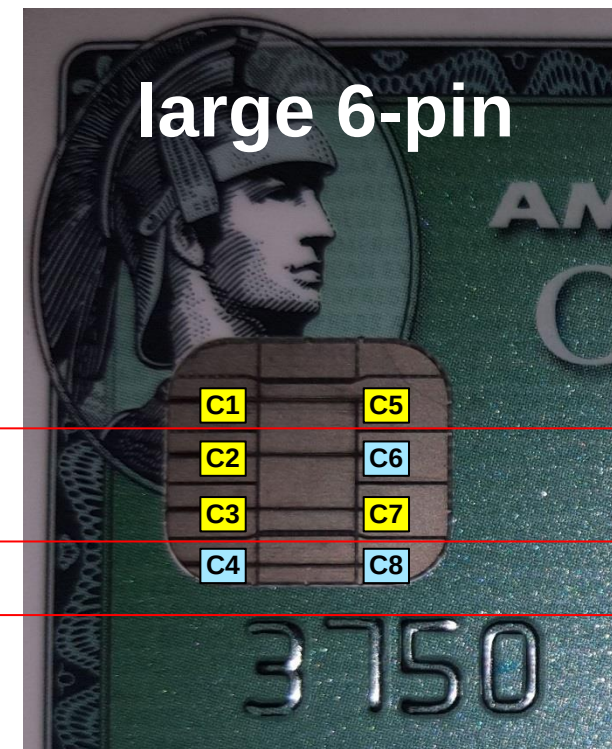
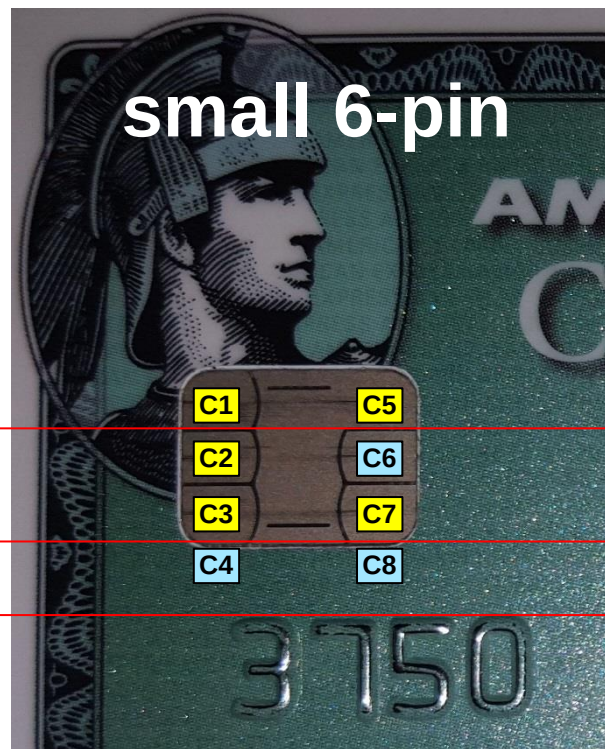
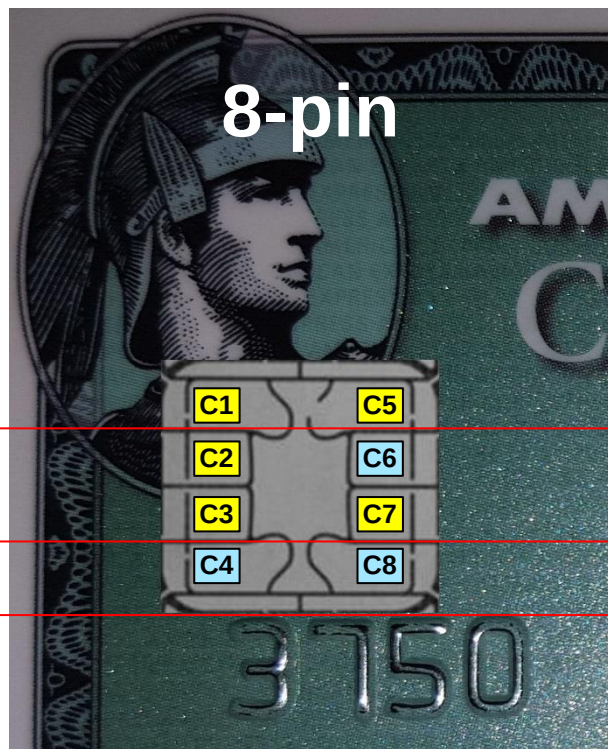
Module Positions in Card 模块在卡片上的位置

large 8-pin vs. large 6-pin vs. small 6-pin



Functional ISO pad

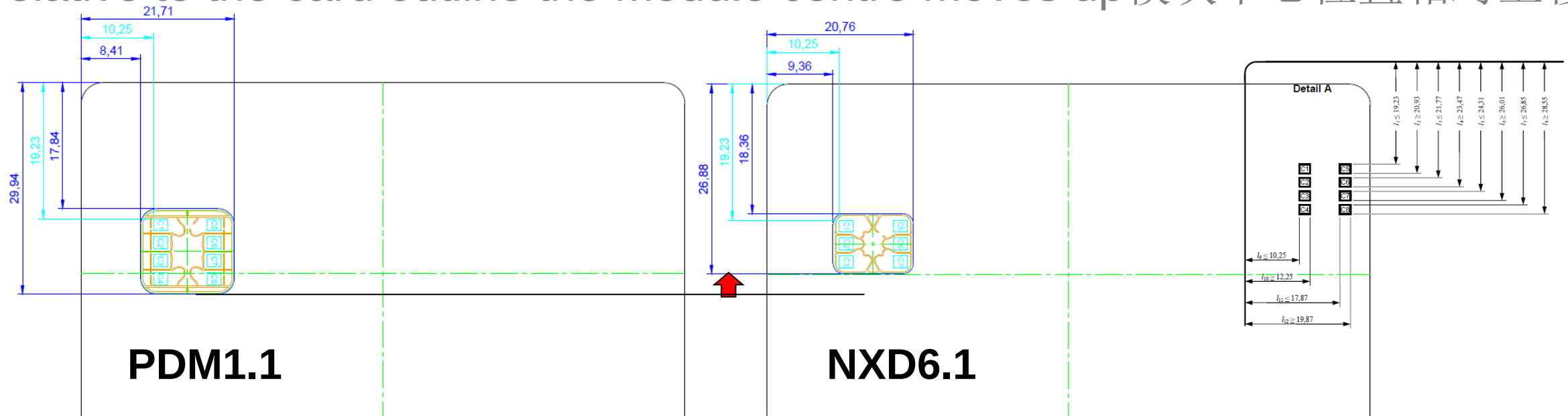
Non-Functional ISO pad



- **Very small space between large 8-pin and upper embossing line (here: “3750”)**
8PIN 模块和凸码打印字符之间间距非常小
- **Highest space between small 6-pin and upper embossing line, more design space**
6PIN 模块和凸码打印字符之间间距最大，且提供了更大的设计空间
- **Medium space between large 6-pin and upper embossing line, same size as large 8-pin**
大6PIN 模块有和8PIN 模块相同的尺寸，其与凸码打印字符之间间距居中

Module Position in Card 模块在卡片上的位置

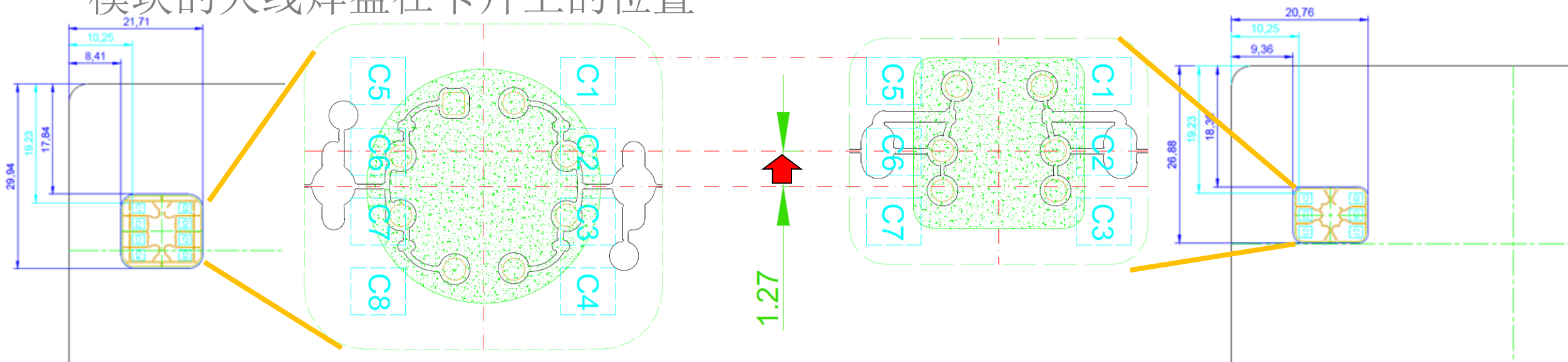
relative to the card outline the module centre moves up 模块中心位置相对上移



- **Position of the pads C1, C2, C3, C5, C6 and C7 stays the same (ISO7816-2)**
C1, C2, C3, C5, C6, C7 引脚位置保持不变(ISO7816-2)
 - More space between embossing area and module edge 模块边缘与凸码打印之间有更多的空间
- **Relative to card outline, lower edge of the module moves up 对于卡片轮廓模块下边缘上移**
 - NXD6.1 will provide 3.6 mm more space between embossing area and module edge compared to PDM1.1
相对8PIN的PDM1.1, 6PIN的NXD6.1与凸码之间多出了3.6 mm 的距离

Small 6-pin Modules – Antenna Pad Position in the Card

模块的天线焊盘在卡片上的位置



- **Relative to card outline, card cavity center and antenna pad slightly move up**

相对卡片轮廓，卡片铣槽中心以及天线焊盘少许上移

- NXD6.1 antenna pad center will reside 1.27 mm closer to the top edge of the card compared to PDM1.1
6PIN的NXD6.1模块的天线焊盘中心将相对接近卡片上边缘1.27 mm

- **Process parameters for card manufacturing need to be adapted for NXD6.1**

制卡工艺参数需要调整以适配6PIN小模块

- If soldering technology is used, soldering position needs to be adapted
如使用双界面焊接工艺，焊接位置需要调整。如使用导电胶工艺，点胶位置需要调整。
- If flex bum technology is used, flex bump drop position needs to be adapted (still above the meander structure)

Small 6-pin NXD6.1 铣槽建议 Option for Card Cavity

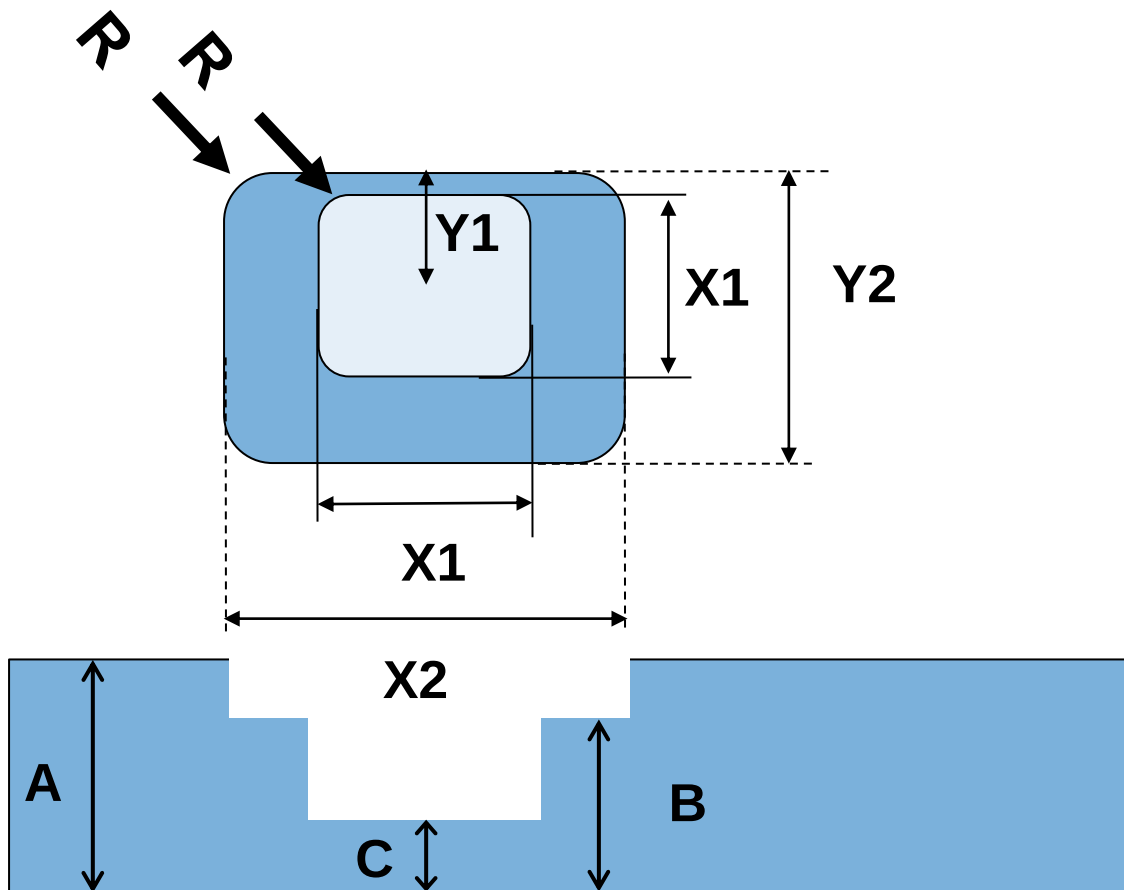
- **Definition of Card Cavity needs to be confirmed by the card manufacturer**

铣槽的尺寸需要由卡商确认

- **Drilling Tools need to support the tight radius of NXD6.1 encapsulation**

铣刀需要适配6PIN小模块的包封半径

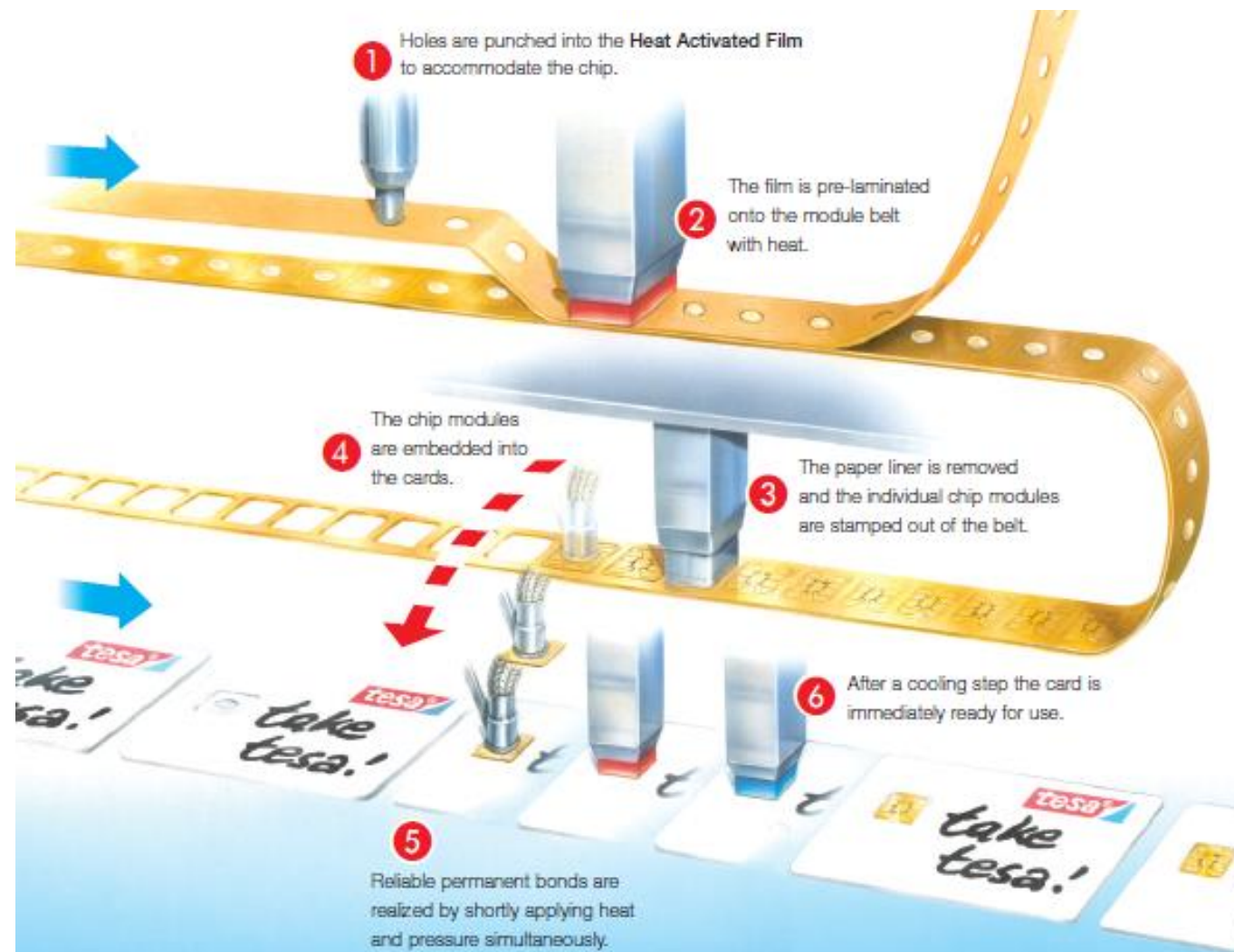
- To achieve best push-out performance, gluing space should be maximized by using small diameter drills and fitting programming
为了达到最佳的粘结牢度，应使用小直径的铣刀和合适的程序使得备胶面积尽量大
- Hot melt punch design needs to fit encapsulation shape
热熔胶铣切设计需要适合包封胶形状



Extra Tooling Needed for Small 6-pin Modules

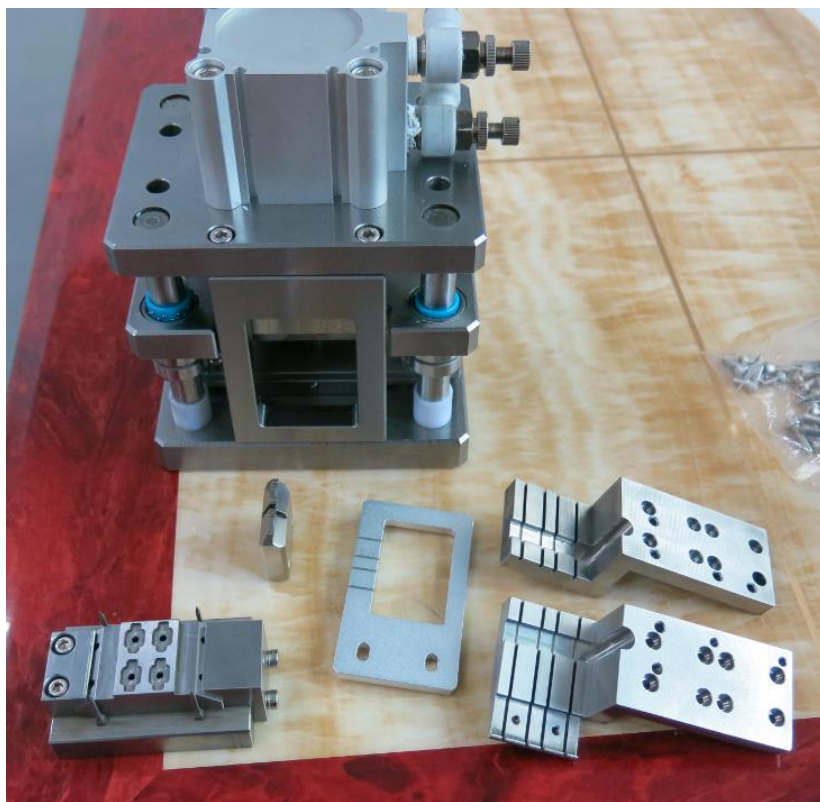
6PIN小模块所需调整的工装

Limited Cost
有限的改造成本

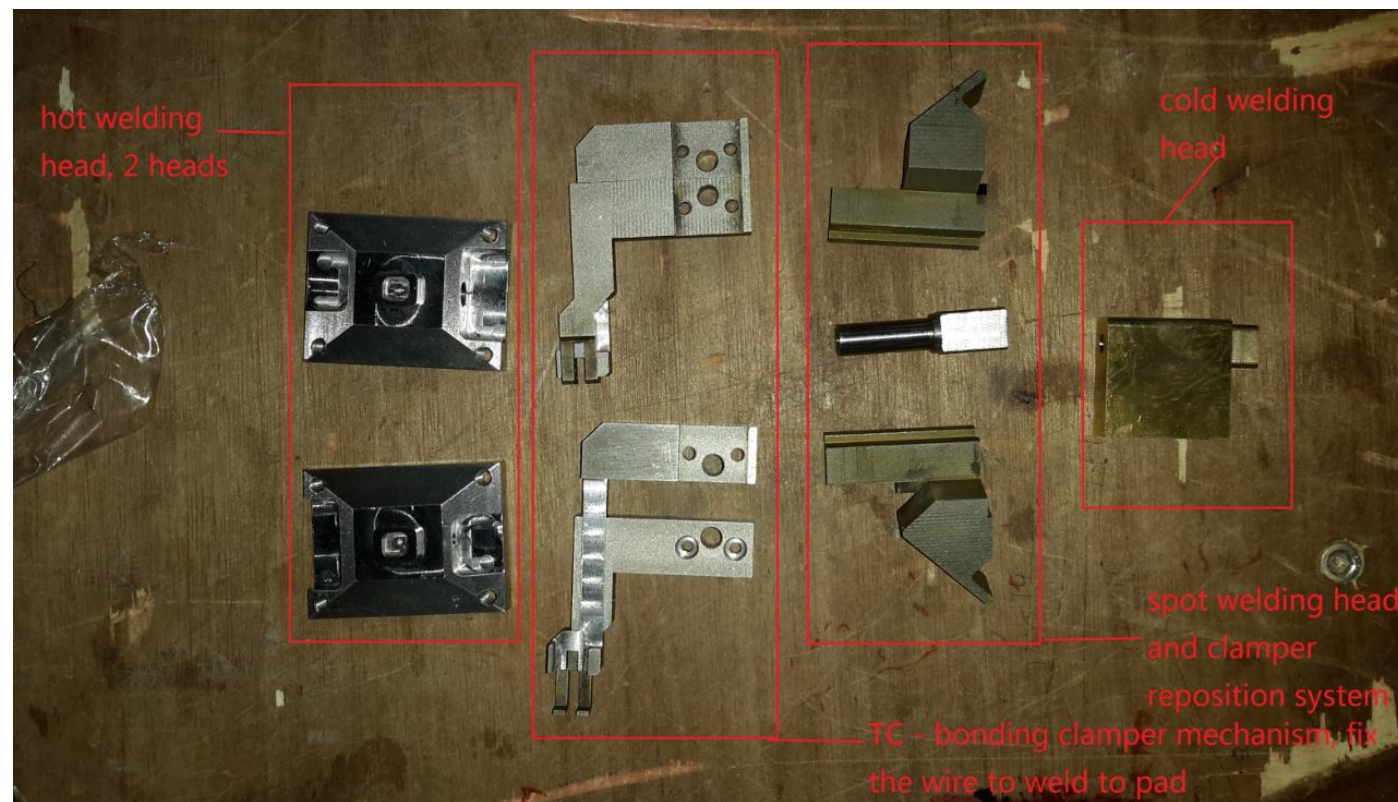


Extra Tooling Needed for Small 6-pin Modules

6PIN小模块所需调整的工装



Soldering Tools

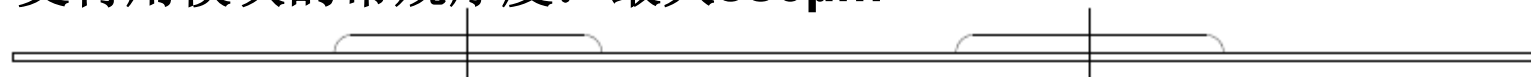


Card Embedding (TC Bonding)

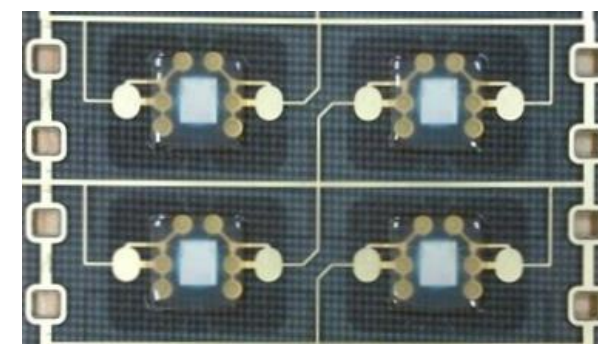
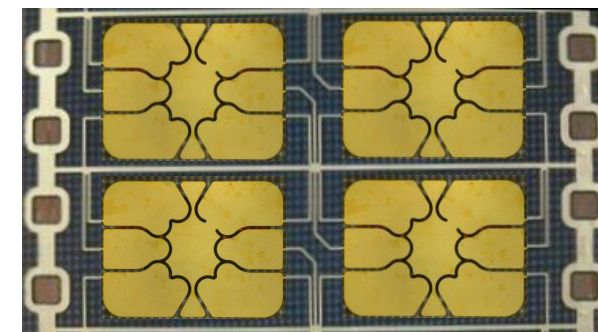
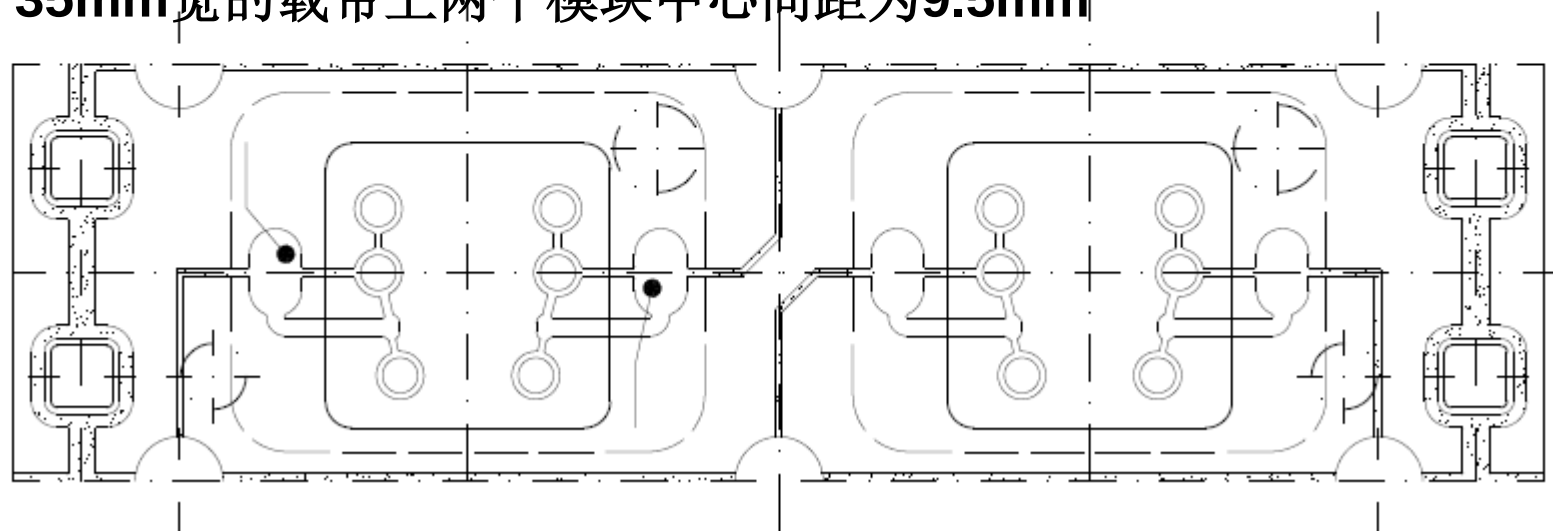
NXD6.1 Package Drawing – Chip Side

6PIN小模块图纸

Typical thickness of Payment modules: 580μm max.
支付用模块的常规厚度：最大580μm



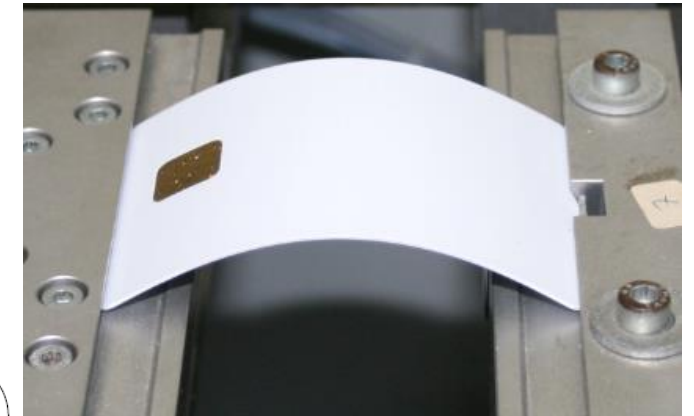
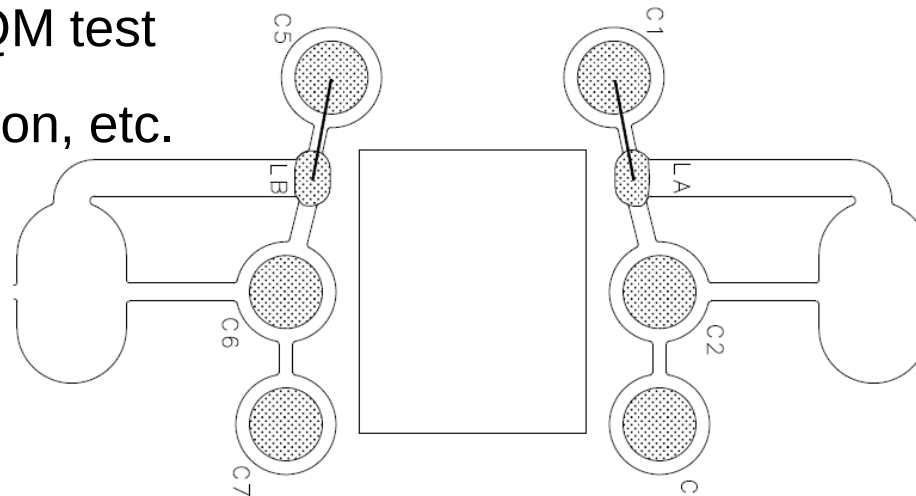
Small 6-pin: 9.5 mm pitch on super 35 mm reels
35mm宽的载带上两个模块中心间距为9.5mm



NXD6.1 “Plug-in” type dummy modules 即插式的测试模块

- Priority: 优势:
enable more easy qualification at customer
客户端可以更简易的进行生产认证
- Qualification of customer card with NXP module
- For early module release / parallel release to OS writing, NXP provides “plug-in” type dummy modules
为了方便客户并行认证OS及模块本身，NXP提供了即插式测试模块
- La / Lb contacts wired to front contact pads to check if antenna connection is still OK after CQM test

e.g. after Bending, Torsion, etc.



Small 6-pin Application Note

P40C012/040/072

How to Use P40C012/040/072 Package Qualification OS

Rev. 1.1 —
310011

Delivery type

Warpage application note for contact and dual interface

Rev. 1.0 —
315610

Delivery type

Boundary Conditions of Module Implantation P
Pre-Soldering and Welding Processes on Dual-
Modules

Rev. 0.3 — 9 December 2014
315903

COMPAN

Document inform
Info
Keywords
Abstract

Document inform
Info
Keywords
Abstract

Document information

Info	Content
Keywords	Dual-Interface (DIF) Module, Pre-soldering, TC welding, Card Manufacturing, Module Manufacturing, Module Implantation
Abstract	This document describes information on module implantation process for DIF module with soldering and welding technique

6-pin Contact Module

Small 6-pin application note for contact modules

Rev. 1.0 — 23 March 2015
324210

Application note
COMPANY CONFIDENTIAL

Document information

Info	Content
Keywords	6-pin Contact Module, Card Manufacturing, Module Manufacturing
Abstract	This document describes important info on small outline 6-pin contact module design and corresponding manufacturing considerations on this outline



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	sw225241	MIFAR... Smart...
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	ad258132	Data s... family
	ad275833	Data s... family
	ds262931	Smart... P40C0...
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	sw225241	MIFARE Plus Simulation Plug-in for SmartMX2 Extension package for	4.1	Development Tools	SmartMX2	2015-07-06 11:47:5	2015-07-06 11:47:5	AUTO-ORE		
	ds317330	Contact chip card module specification NXC6.1G/NXC6.1P	3.0	Contact interface modules	Contact and Dual Interface Modules, general module	2015-07-02 13:39:5	2015-07-02 13:40:0	AUTO-ORE		
	ad258132	Data sheet addendum SmartMX2 P40 family P40Cxxx Instruction Set	3.2	SmartMX2_P40Cxxx Docs	SmartMX2_P40	2015-07-02 13:36:0	2015-07-02 13:36:0	AUTO-ORE		
	ad275833	Data sheet addendum SmartMX2 P40 family P40Cxxx Firmware Interface	3.3	SmartMX2_P40Cxxx Docs	SmartMX2_P40	2015-07-02 13:35:1	2015-07-02 13:35:1	AUTO-ORE		
	ds262931	SmartMX2 P40 family P40C008/012/024/040/072	3.1	SmartMX2_P40Cxxx Docs	SmartMX2_P40	2015-06-26 11:57:3	2015-06-26 11:57:3	AUTO-ORE		
	ds292330	Product data sheet SmartMX2 family P6021y VA	3.0	SmartMX2 P6021y	SmartMX2	2015-06-26 11:52:0	2015-06-26 11:53:2	AUTO-ORE		

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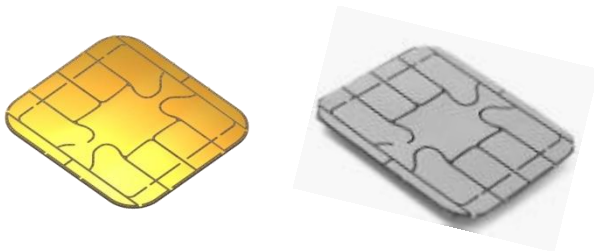
NXP Package Portfolio NXP产品形态组合

Secure Identity & Payment 安全识别及支付



▶ Wafers 晶圆

- Contact and Contactless applications 接触及非接应用
- 8-inch (CMOS140), 12-inch (CMOS090)
8英寸（CMOS140工艺），12寸（CMOS090工艺）
- 150 μ , 120 μ and 75 μ sawn wafers available
提供150 μ , 120 μ and 75 μ 的减薄晶圆



▶ PCM & PDM 接触式&双界面模块

- 6/8 Contact and Contactless applications 6/8PIN的接触和双界面
- gold and silver (Pd-plated) 金色和银色（镀钯）
- 580 μ m max. thickness (560 μ m for PxM3.1)
最大厚度580 μ m （PxM3.1系列产品最厚560 μ m）
- Variations with non-opaque and mold technologies
可提供模塑工艺



▶ MOB and MOA MOB和MOA封装形式的非接模块

- Contactless applications 非接应用
- From 390 μ m to 250 μ m thickness 厚度为390 μ m 至 250 μ m
- First supplier of 250 μ m thickness module
首家250 μ m厚度非接模块的供应商

