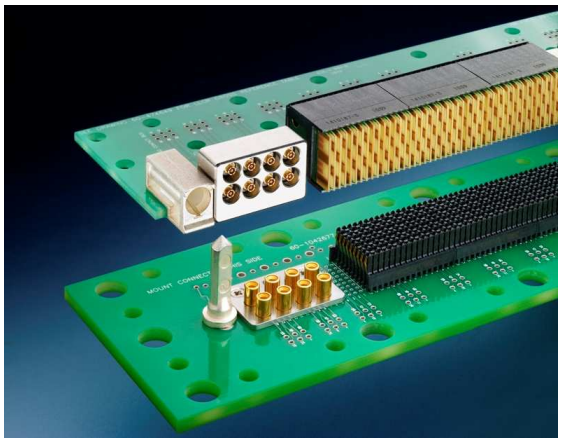
RF Modules & Contacts
VITA 67



Oct 2011

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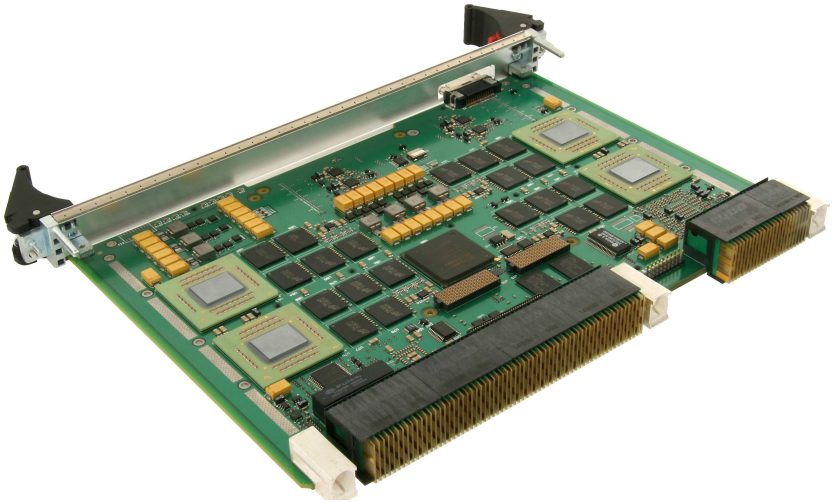
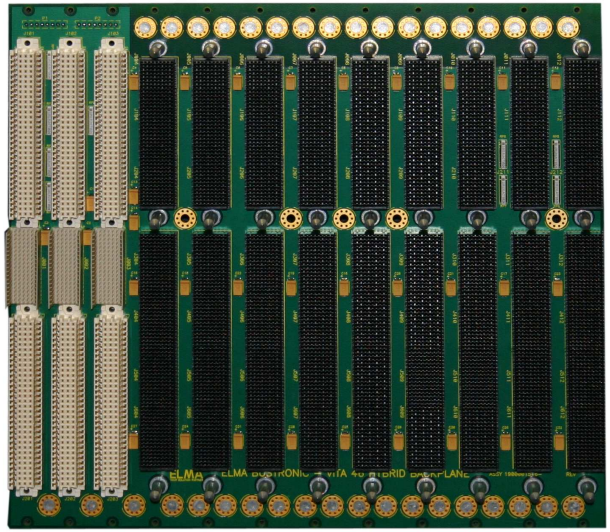
VPX Applications for VITA 67 RF Modules and Contacts

Typical VPX (VITA 46) Constructions





Source: Curtiss Wright Controls

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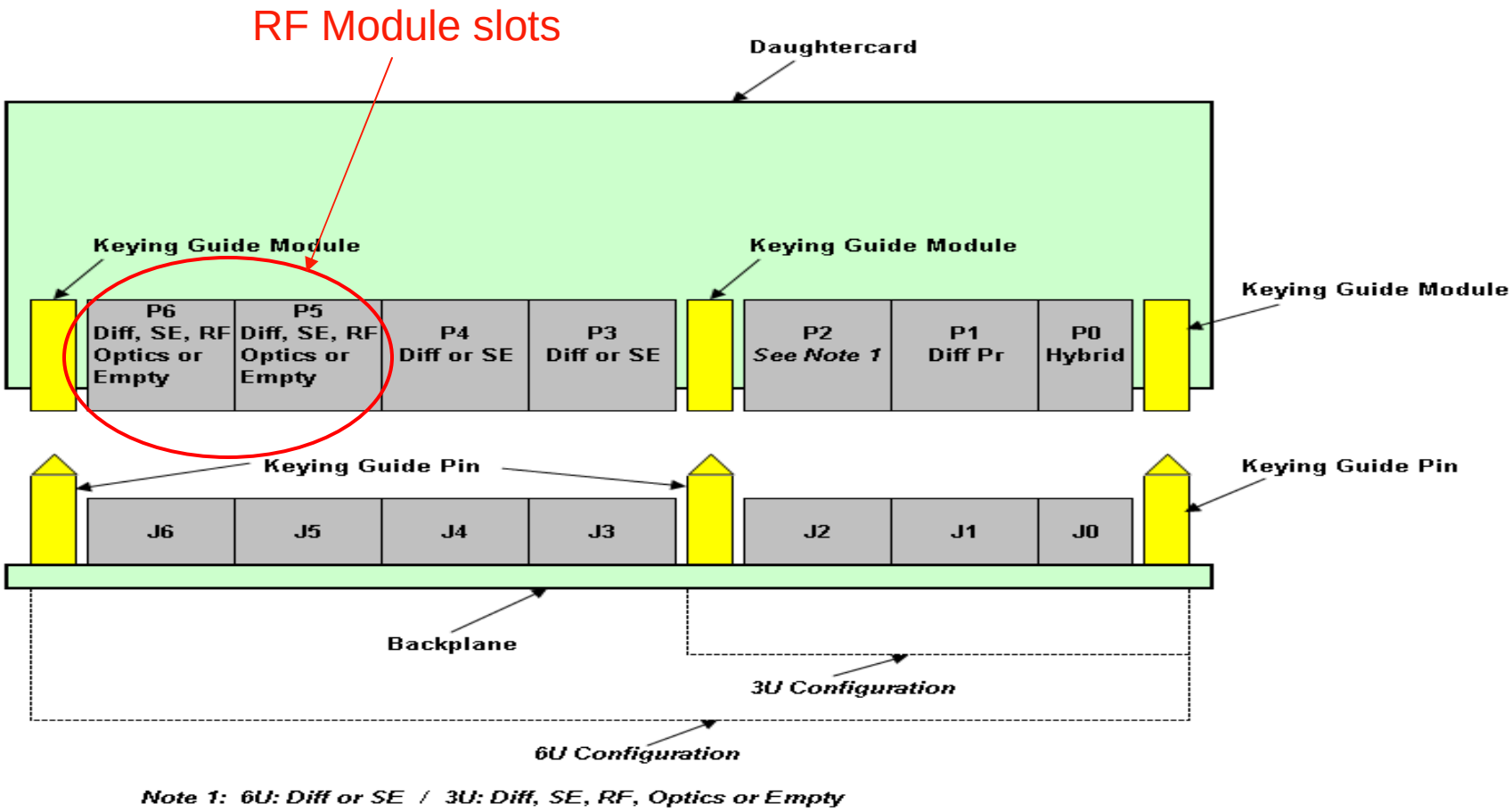
Vita 46 Board – Typical Module Layout



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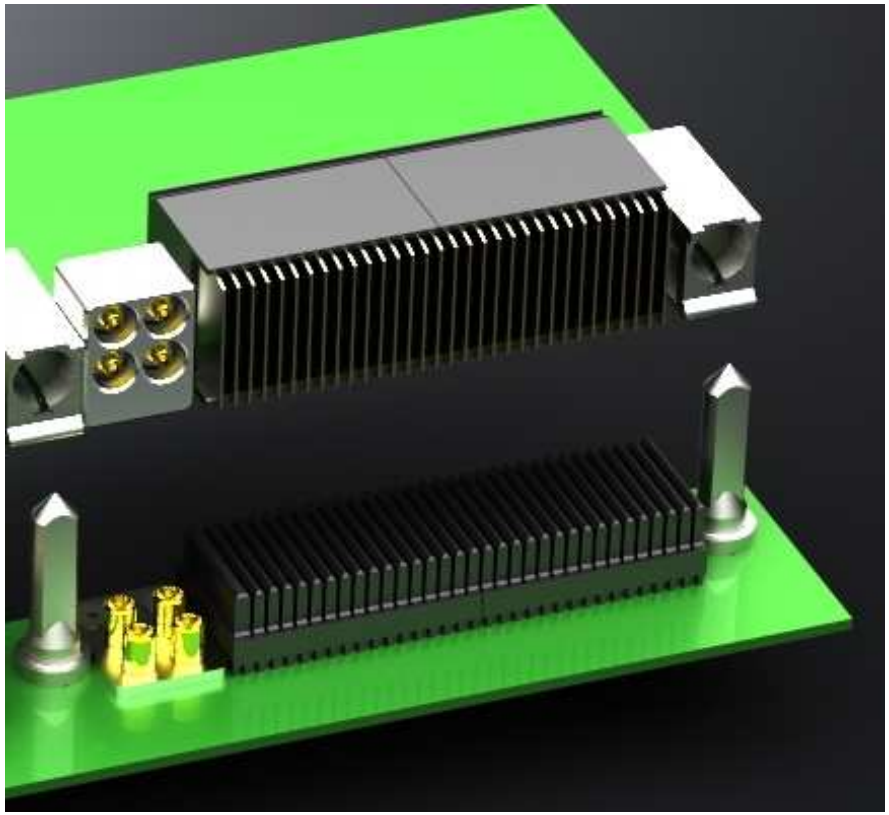
VITA 67 – 3U Configuration

Uses VITA 67.1
4-position module



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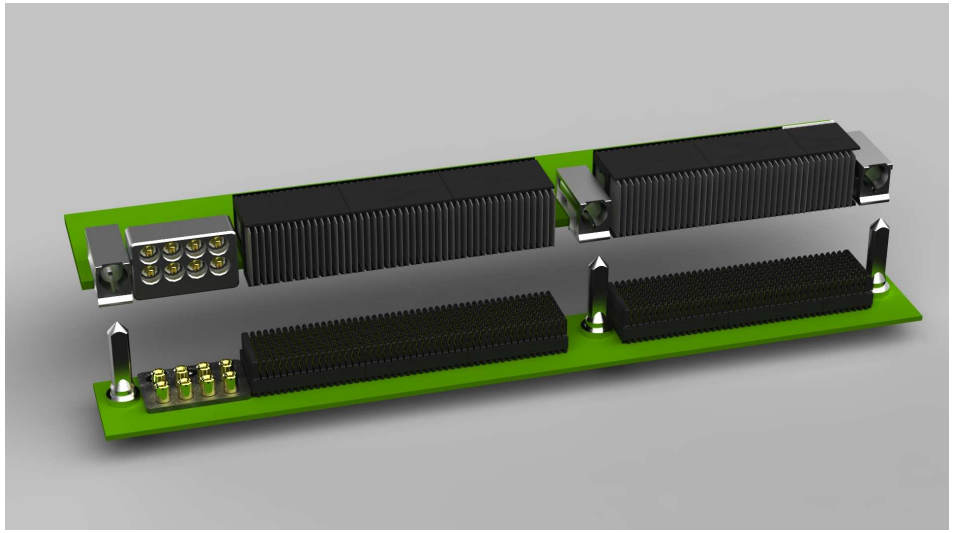
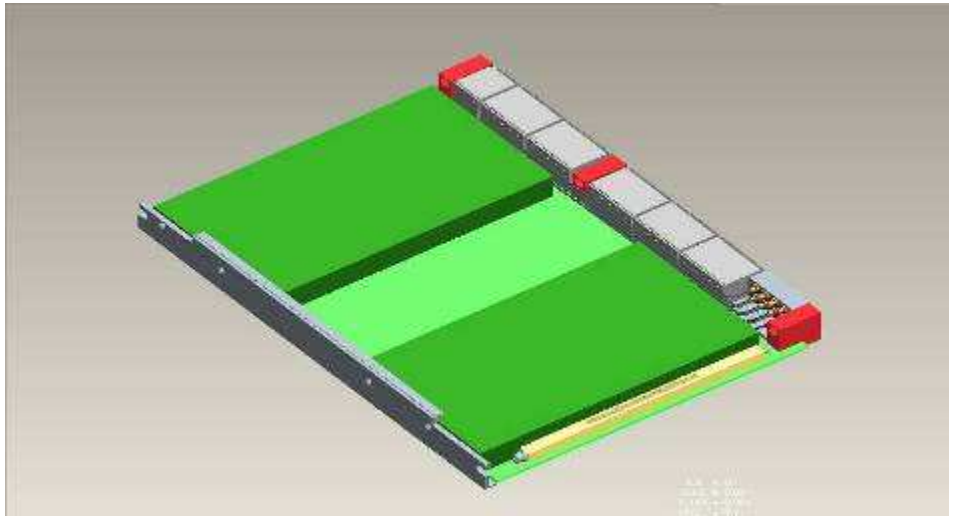
VITA 67 – 6U Configuration

Uses VITA 67.2
8-position module





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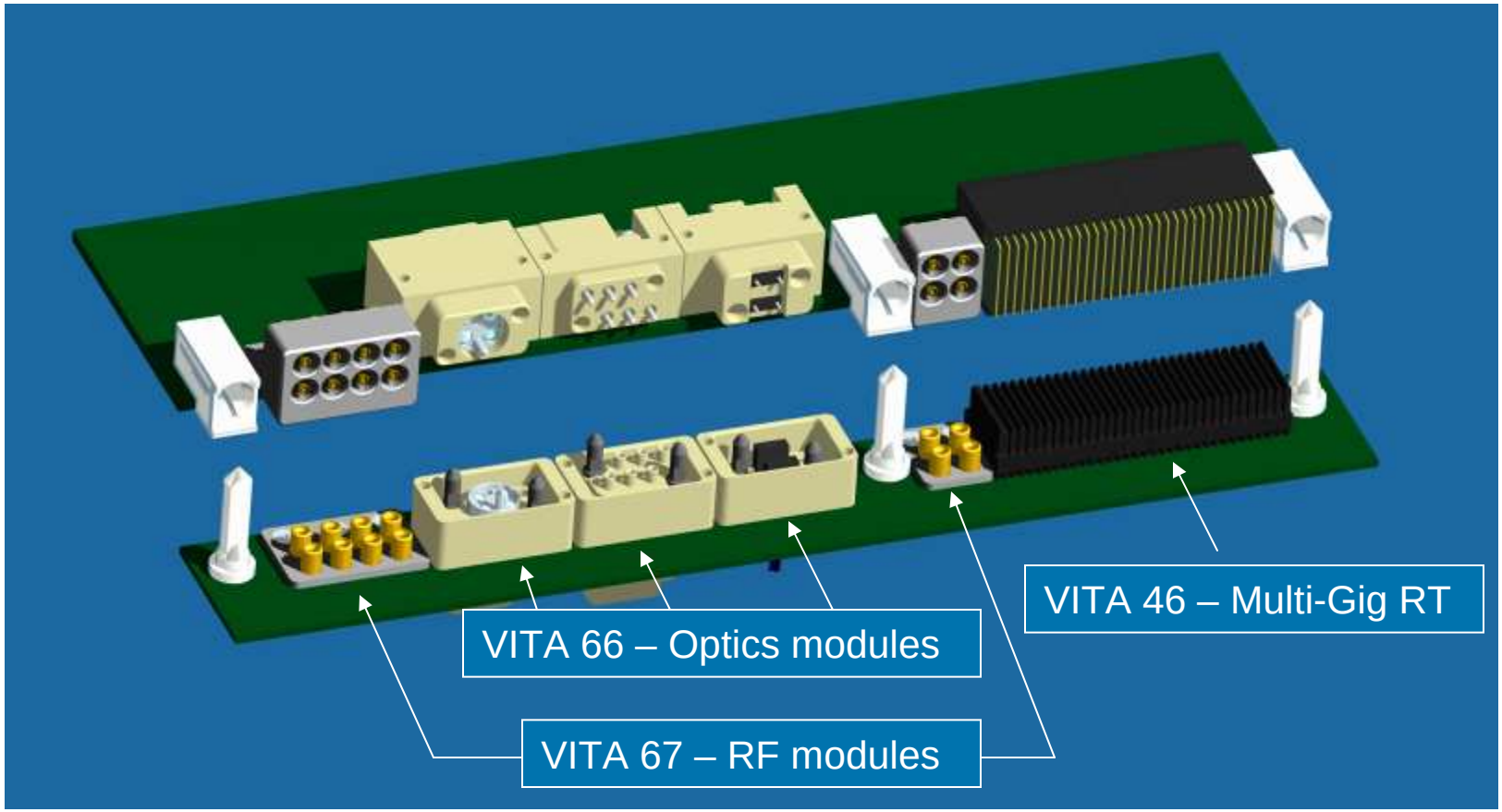
VPX
User Configurable Connector System



Mixed Signal Configuration

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Features & Specifications
VITA 67 RF Modules

VITA 67 - RF Modules
Features

- Modular design permits application specific configuration
- RF Modules available in Stainless steel and Aluminum
- Float mounted jack maintains positive RF connection
- Excellent channel-to-channel isolation
- Will support .8” (20mm) card pitch
- .240 center-to-center contact spacing
- RF (SMPM) contact performance to 40.0 GHz
- RF contacts are available for a variety of cables

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VITA 67 - RF Modules
Electrical Requirements

- Freq Range: DC to 26.5 GHz
- Flatness: +/- 1 dB DC- 26.5 GHz (transmission loss)
- Insertion Loss: <0.12 dB
- VSWR: 1.15:1 Max. up to 10 GHz
  1.25:1 Max. 10-26.5 GHz
  1.35:1 Max. 26.5-40 GHz
- DWV: 325 Vrms
- Temperature Range: -65°to +105°C
- Isolation: (Channel – Channel)
  - SHF (3-30 GHz) > 100 dB
  - VHF/UHF (30 MHz–3 GHz) > 120 dB
  - HF (3-30 MHz) > 140 dB
- RF Power: (C.W. Ave.)
  - VHF/UHF/SHF (30 MHz–30 GHz) > 20 dBm
  - HF (3-30 MHz) > 30 dBm

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VITA 67 - RF Modules

Mating and Misalignment

- Axial float: = .079” (2.0mm) Min.
- Radial misalignment: .010” (.020” total)
- Force to Engage: 3.5 lbs (typical @ .052 axial spring deflection)
- Force to Disengage: 1.35 lbs (typical)
- Float Mount Preload: 2.3 lbs (typical)
- Float Mount force at full axial deflection: 4.25 lbs (typical)

Note: All values are typical for a single RF contact in a smooth bore receptacle.

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VITA 67 - RF Modules
Environmental

- Durability: EIA-364-9, 500 mating cycles, smooth bore
- Vibration: EIA-364-28, Test Condition III 10 nanosecond discontinuity
- Mechanical shock: EIA-364-27, Method G
- Operating Temperature: -65 to +165 C
- Humidity/Temperature cycling: EIA-364-31, Method III
- Corrosion resistance: 48 hours salt fog exposure IAW ASTM G85, Annex A4

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VITA 67 - RF Modules

Standards & Specifications

- Materials and plating meet the requirements of MIL-PRF-39012
- Designed to meet the vibration and corrosion resistance requirements of ANSI/VITA 47
- SMPM RF contact interfaces compatible with MIL-STD-348

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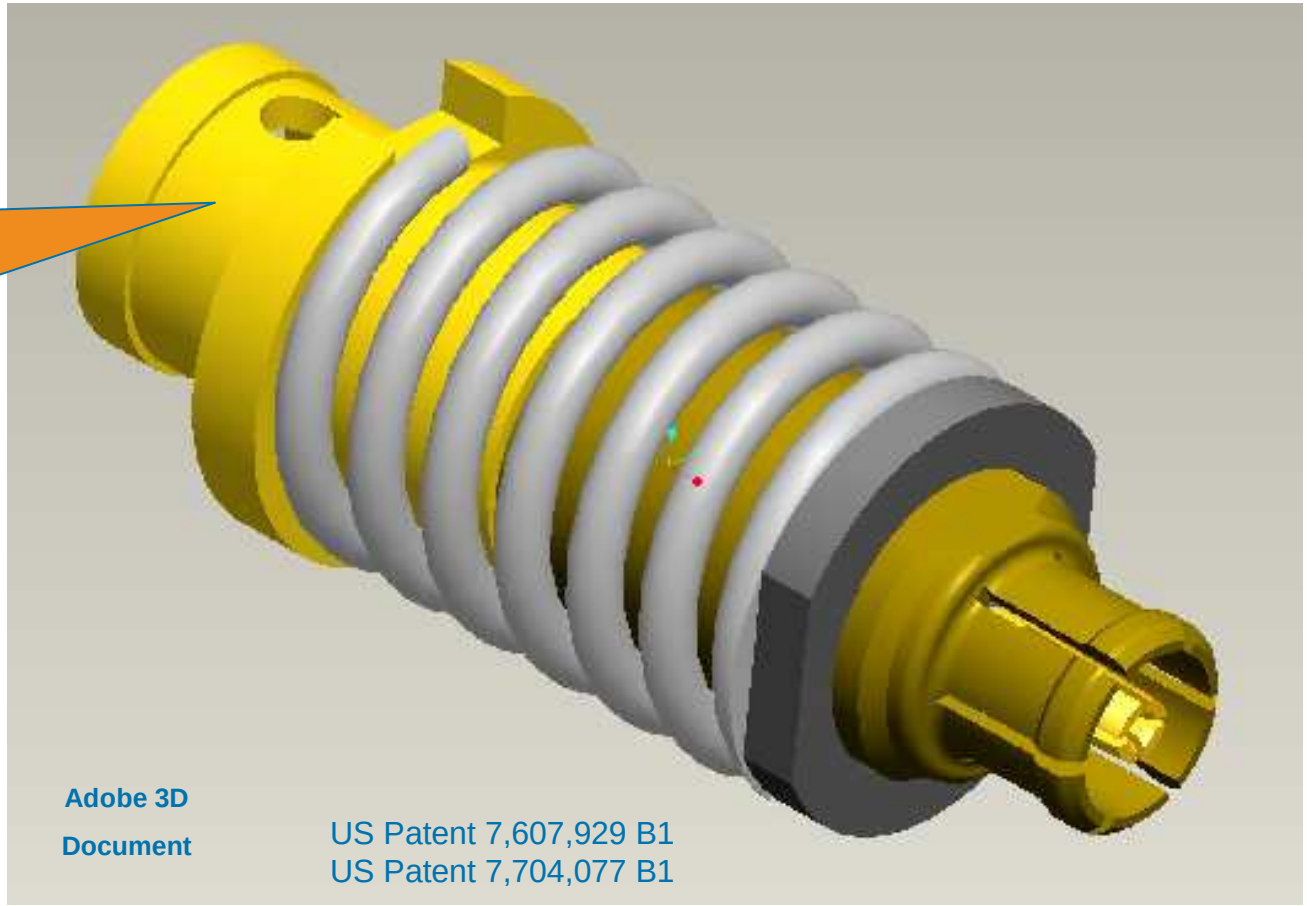
VITA 67
Float Mount SMPM Connector

VITA 67, Daughter Card RF Contact

SMPM FLOAT MOUNT RECEPTACLE (.086 Cable)



Spring and retaining ring supplied unassembled

Adobe 3D Document

US Patent 7,607,929 B1
US Patent 7,704,077 B1

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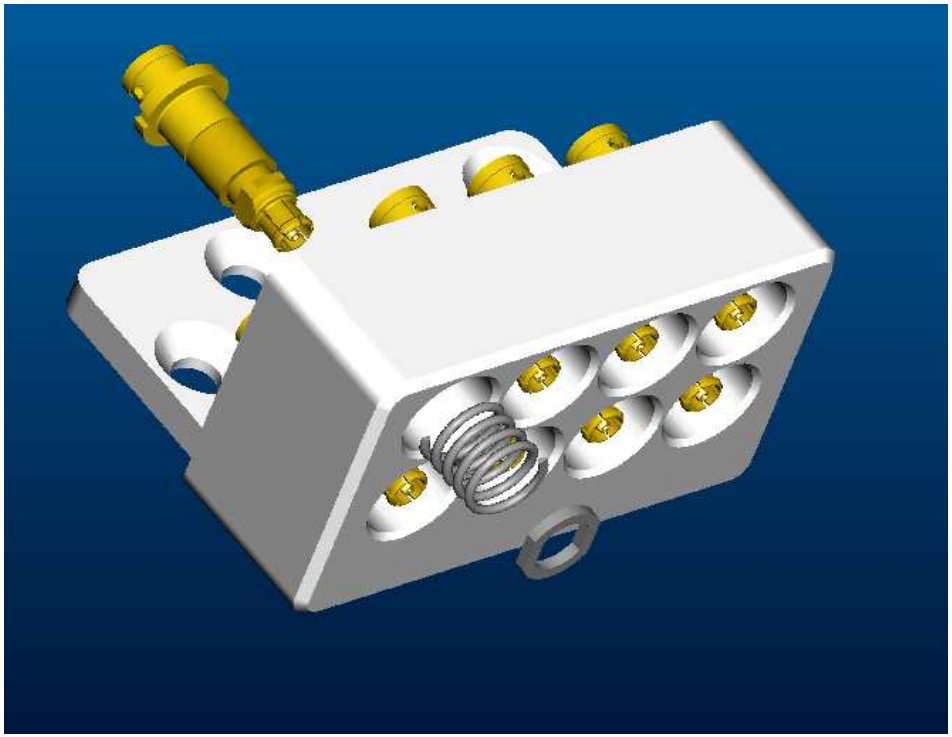
VITA 67, Daughter Card RF Contact

Cabled contact is inserted into the module, insertion tool is used to rotate and lock the retaining ring, holding the contact and spring in place.

Spring compression assures that the contact interface is bottomed when modules are mated, optimizing RF performance



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VITA 67 Daughtercard Modules, Cable applied

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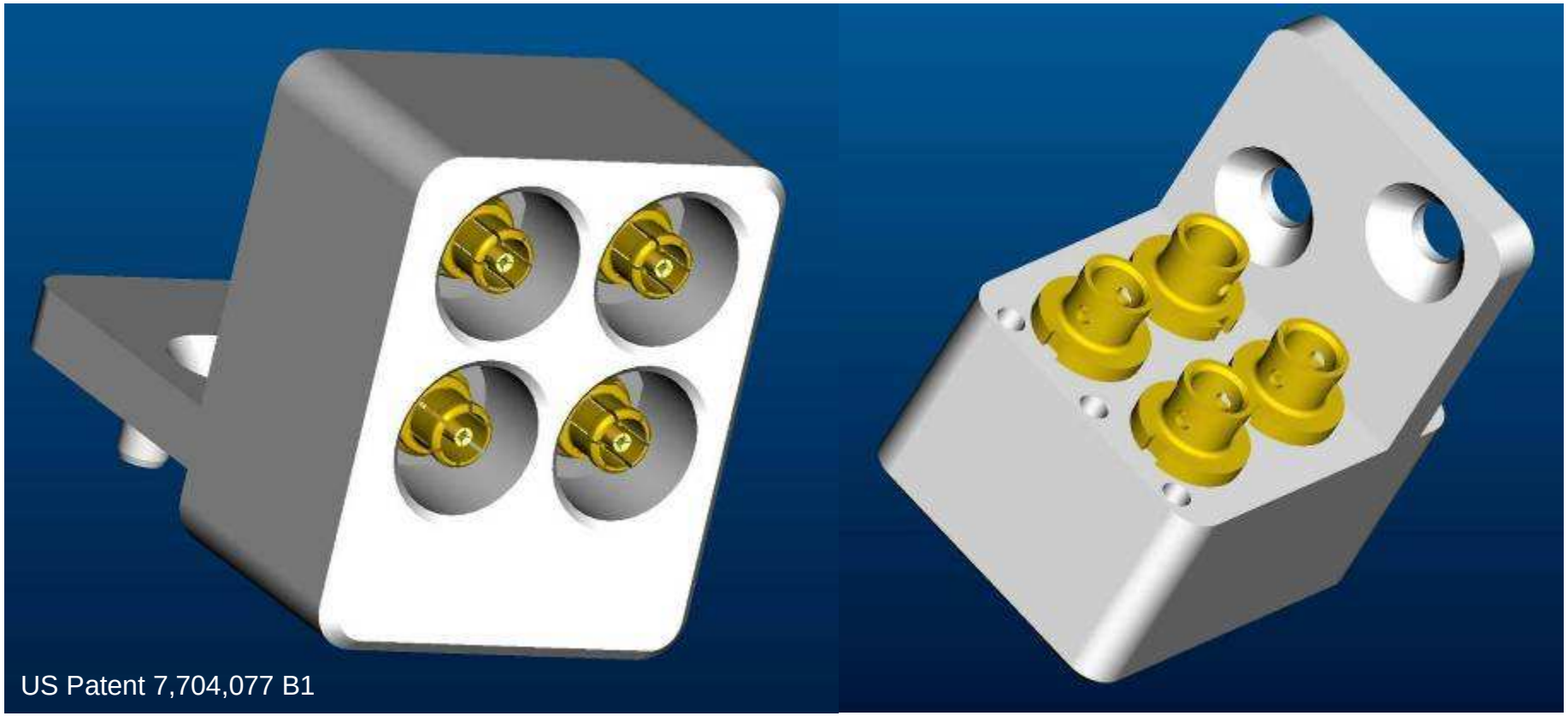
VITA 67.1 4 Position RF Module

VITA 67.2 8 Position RF Module

VITA 67.1
4 Position Daughter Card RF Module



Stainless Steel	1996883-4
Aluminum	2157338-3

Contacts purchased separately

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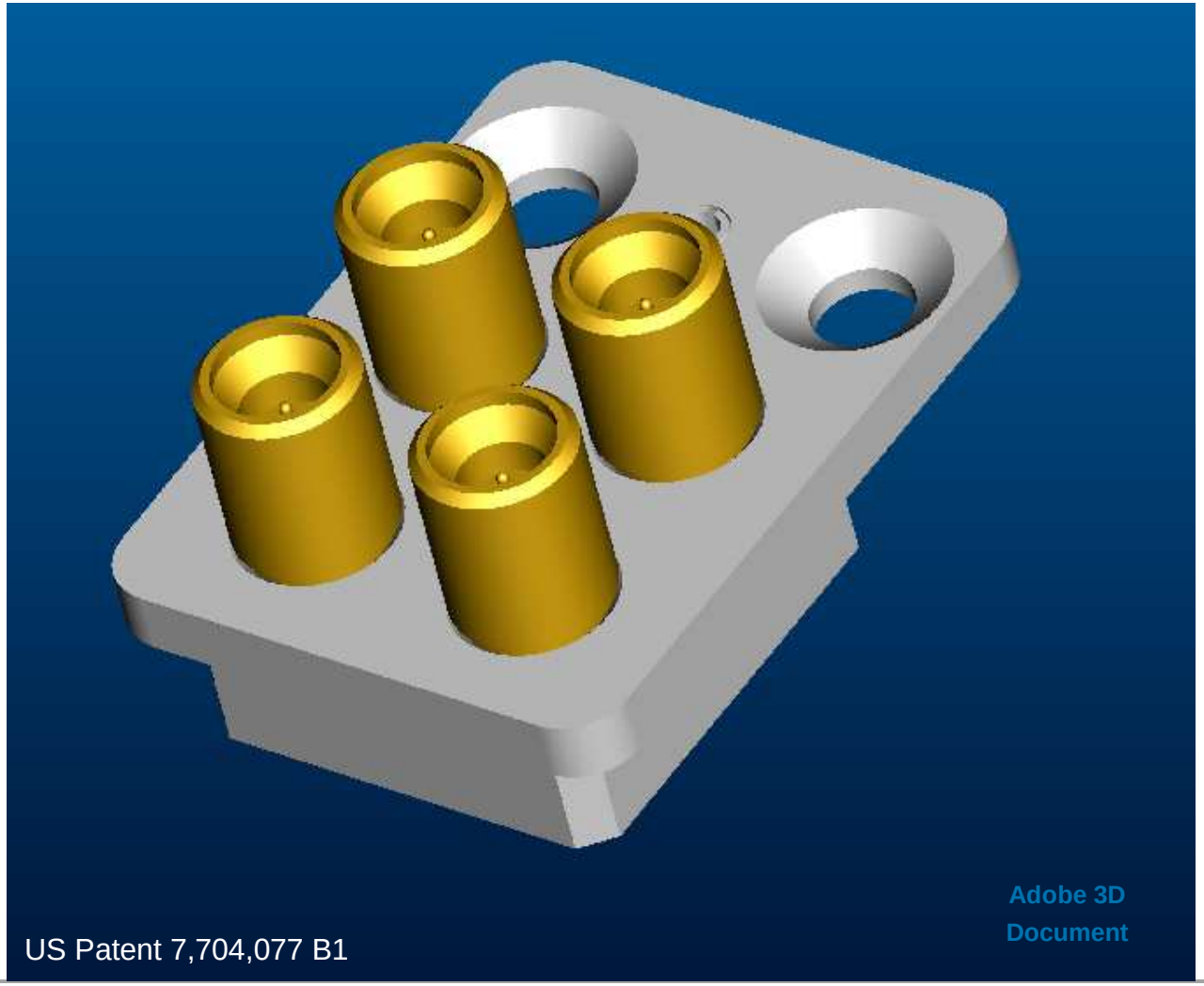
VITA 67.1
4 Position Backplane RF Module – 1996884-1

Designed for use on
3U VITA 46
Configuration



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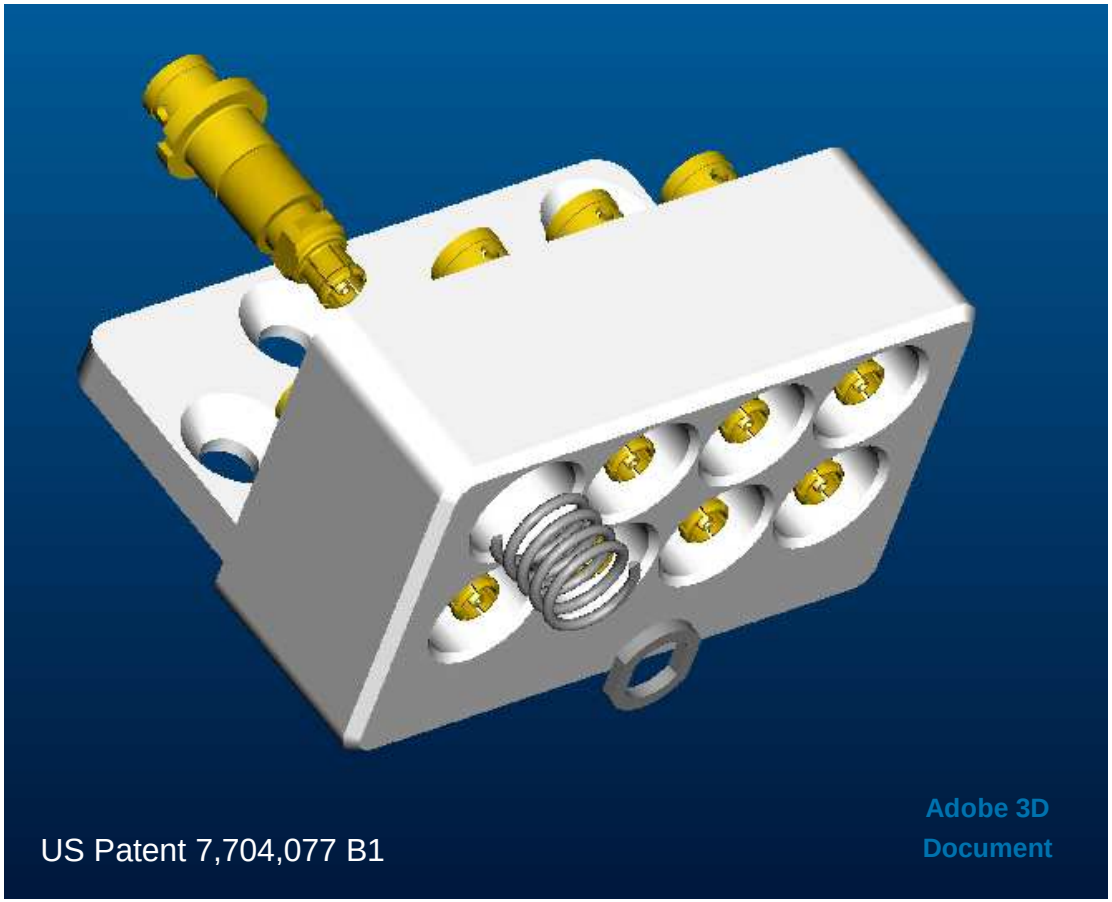
VITA 67.2
8 Position Daughter Card RF Module



Stainless Steel	1996705-4
Aluminum	2157350-3

Contacts purchased separately

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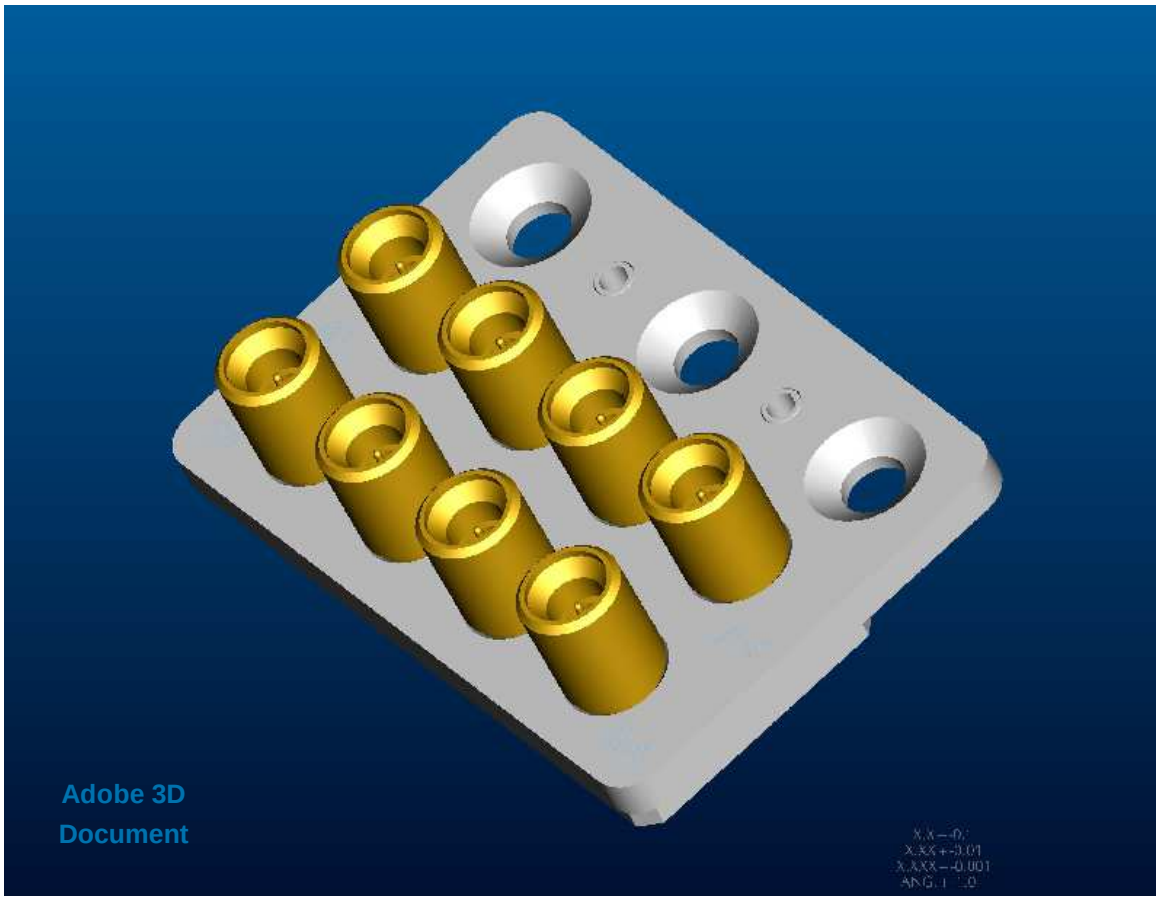
VITA 67.2
8 Position Backplane RF Module – 1996706-1

Designed for use on
6U VITA 46
Configuration



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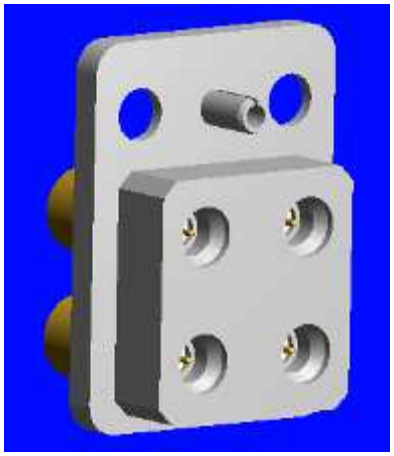
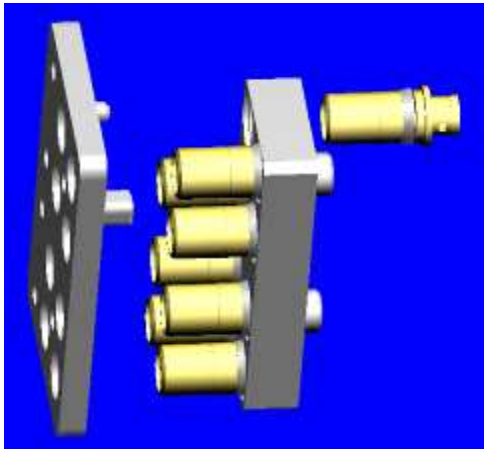
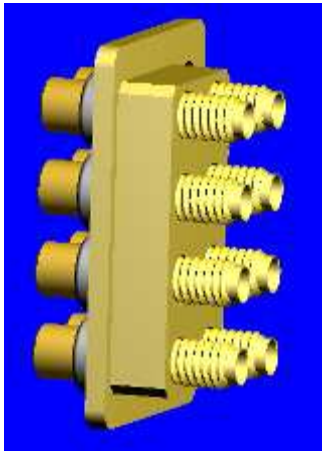
Backplane Connection Side Options



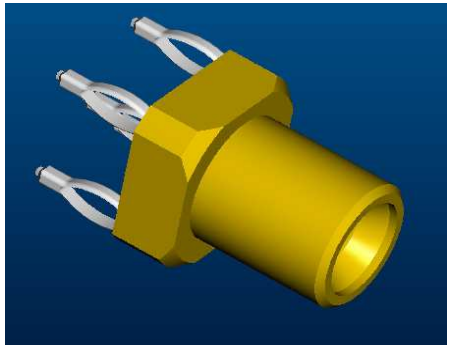
SMPM plug interface



Direct cable attach



OSMM jack interface



Press-fit PCB termination

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Direct Cable Attach

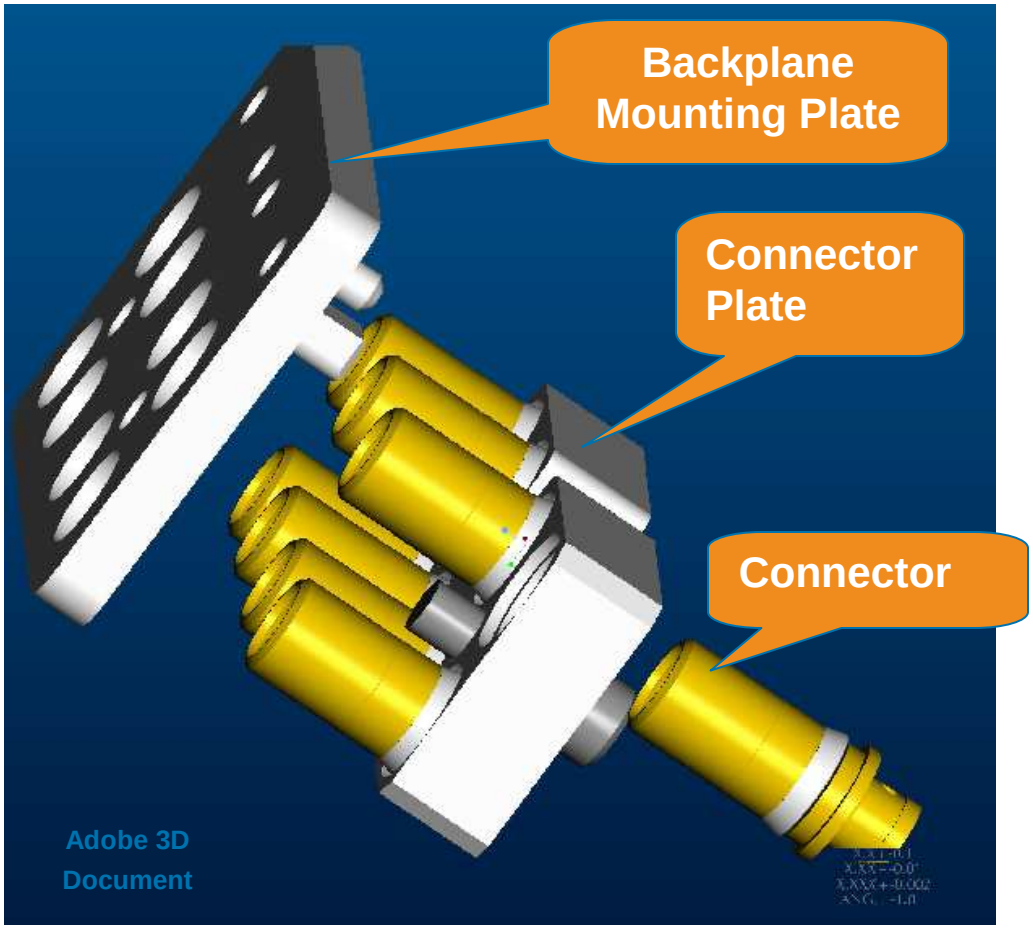
Module kit is supplied with backplane mounting plate and connector plate

Contact snaps into connector plate

Eliminates a secondary interface at the backplane connection

<u>Advantages:</u>

- Better RF performance
- Lower Cost
- Lighter Weight
- Replaceable contacts



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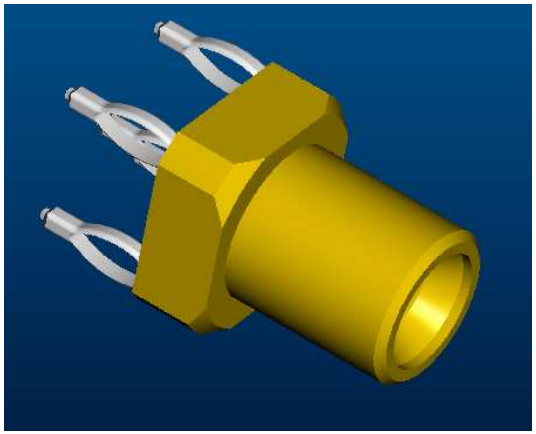
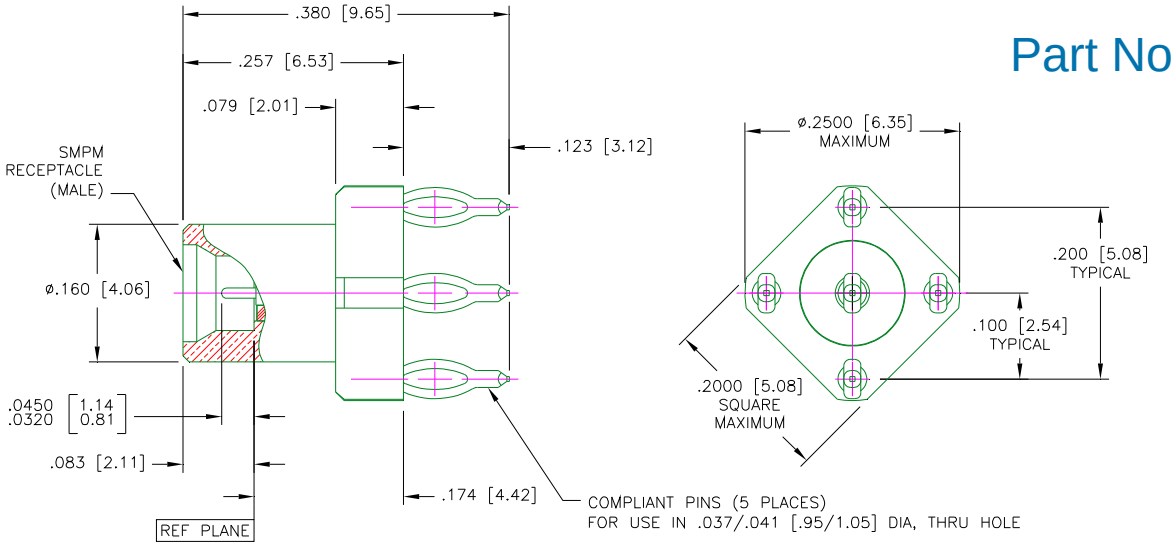
VITA 67

Compliant Pin, Backplane Connector

No backplane module plate required, PCB layout sets contacts in the position required for mating daughtercard module.



Part No. 1996318-1



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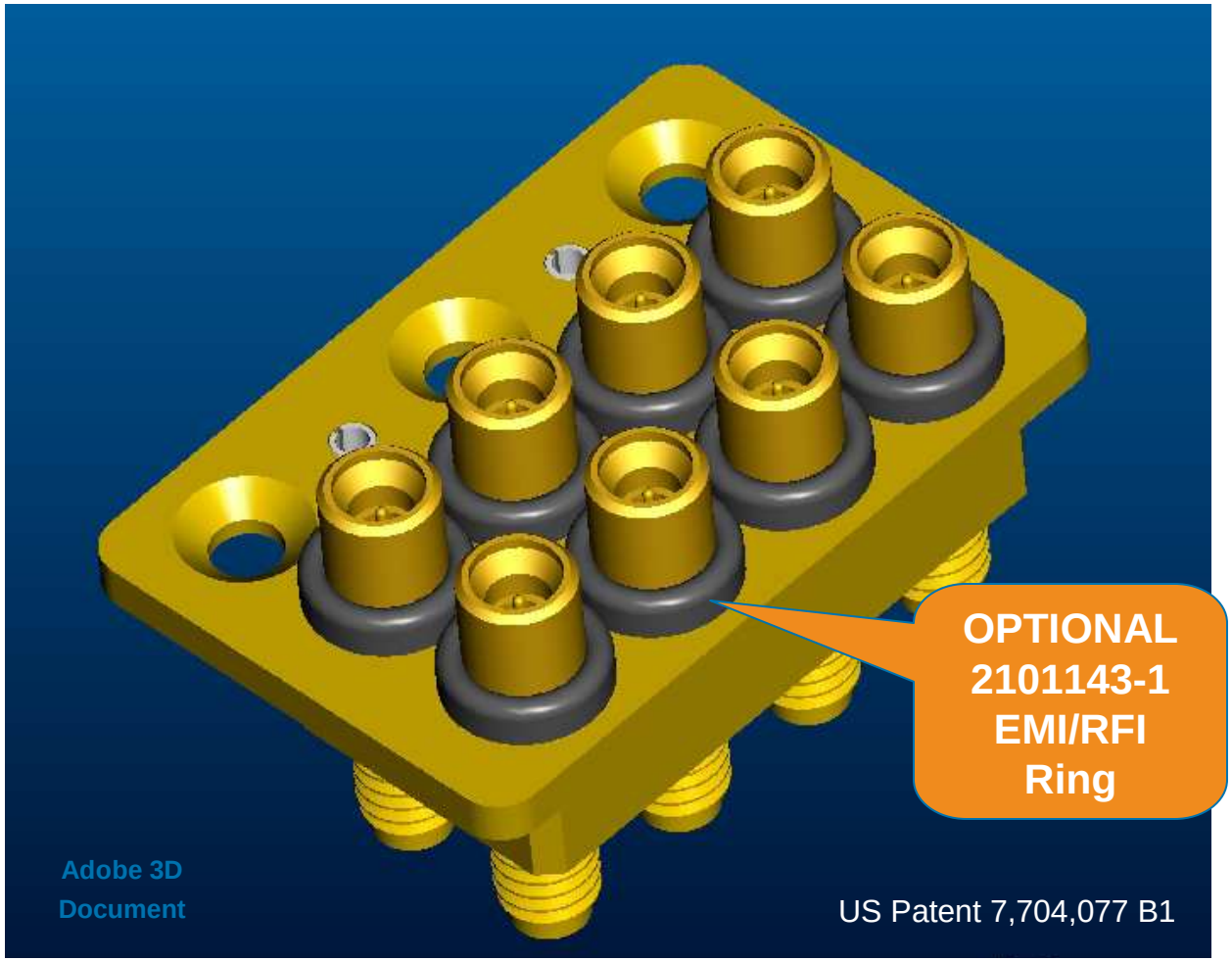
VITA 67 Type
RF Backplane Module (OSMM)

EMI/RFI Ring
Improves Shielding
Effectiveness



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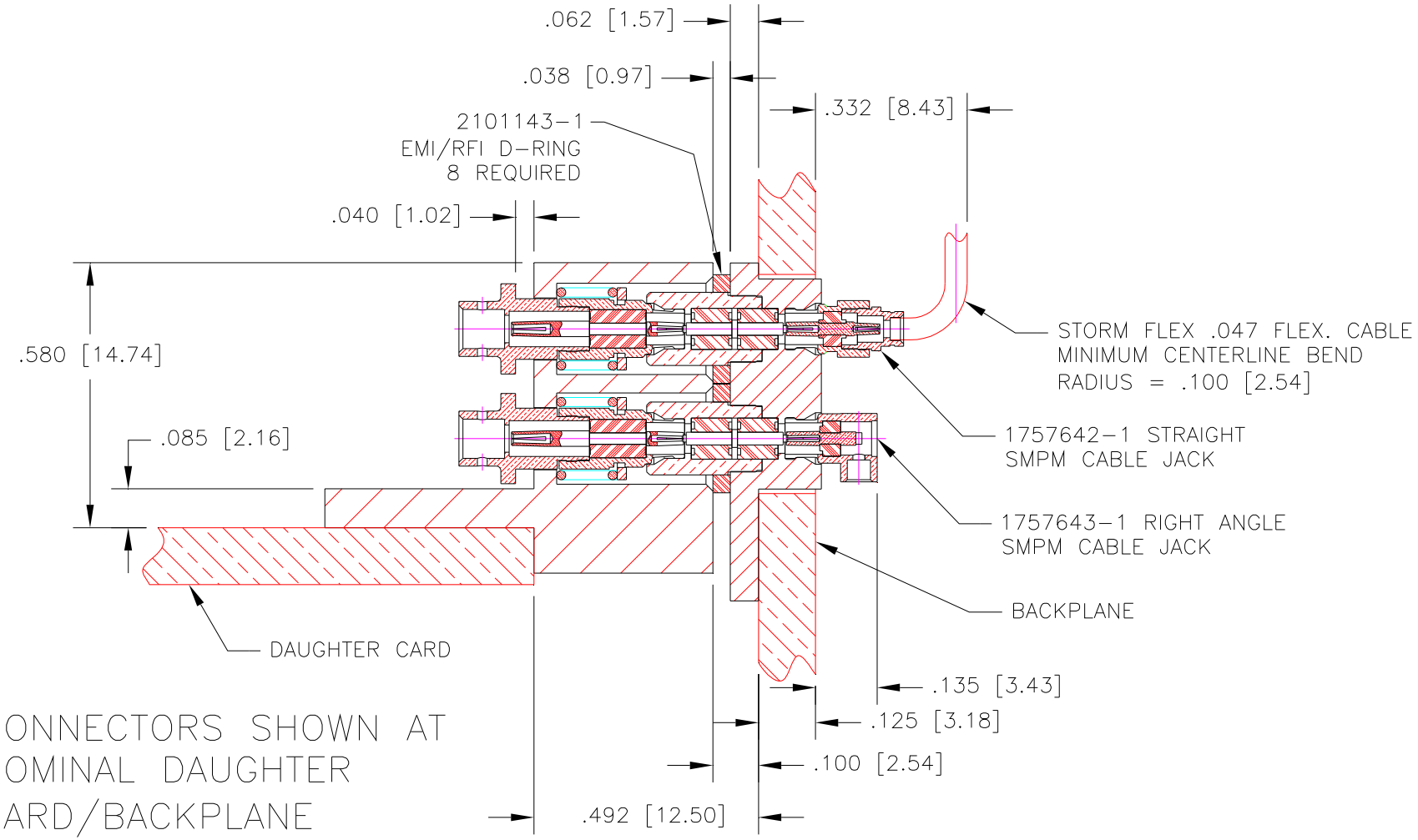
VITA 67, Typical Module Cross Section



CONNECTORS SHOWN AT NOMINAL DAUGHTER CARD/BACKPLANE SPACING. (.040 SPRING COMPRESSION)

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SMPM Series Connector

SMPM Series Connectors

Sub-miniature, push-on, RF interconnect system similar to SMP, except 30% smaller, with the following features:

- Center-to-center spacing of .135” for higher packaging density than SMP
- RF performance to 40 GHz
- Can accommodate both axial and radial misalignment similar to SMP
- Standard interface design per MIL-STD-348A, Notice 5
- 2 different detent styles for varied insertion force requirements (full detent, smooth bore)

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SMPM
Product Performance/Specifications

- Impedance: 50 ohms
- Frequency Range: DC to 40 GHz
- VSWR: 1.15 max to 26.5 GHz, 1.50 max to 40 GHz (typical values)
- Engagement force: 8.0 lbs max (full detent), 2.5 lbs max (smooth bore)
- Disengagement force: 5 lbs min (full detent), 0.5 lbs min (smooth bore)
- Radial misalignment: .010” min
- Axial misalignment: .000-.010”
- DWV: 200 VRMS min (@ sea level)

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SMPM
Product Performance/Specifications (cont.)

- Operating Temperature: -65°C to +165°C
- Durability: 100 cycles (full detent) - 500 cycles (smooth bore)
- Insulation resistance: 5,000 megohms min
- Corona level: 125 VRMS @ 70,000 feet
- Humidity-temperature cycling: EIA-364-31, Method III
- Temperature life: EIA-364-17, Method A, Test condition V
- Corrosion: EIA-364-26, Condition B
- Mechanical shock: EIA-364-27, Method G
- Thermal shock: EIA-364-32
- Vibration, sinusoidal: EIA-364-28, Test condition III

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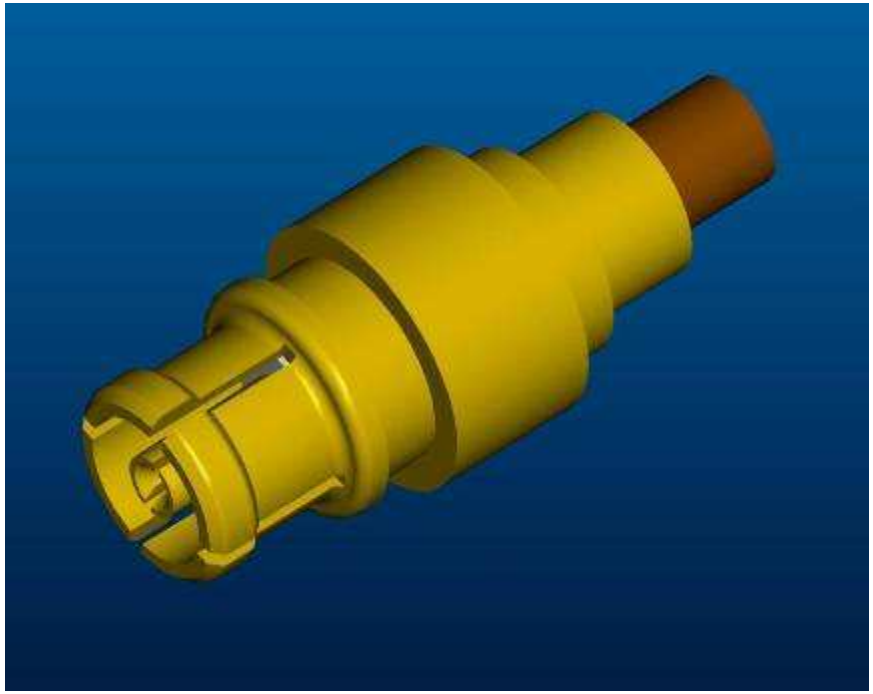
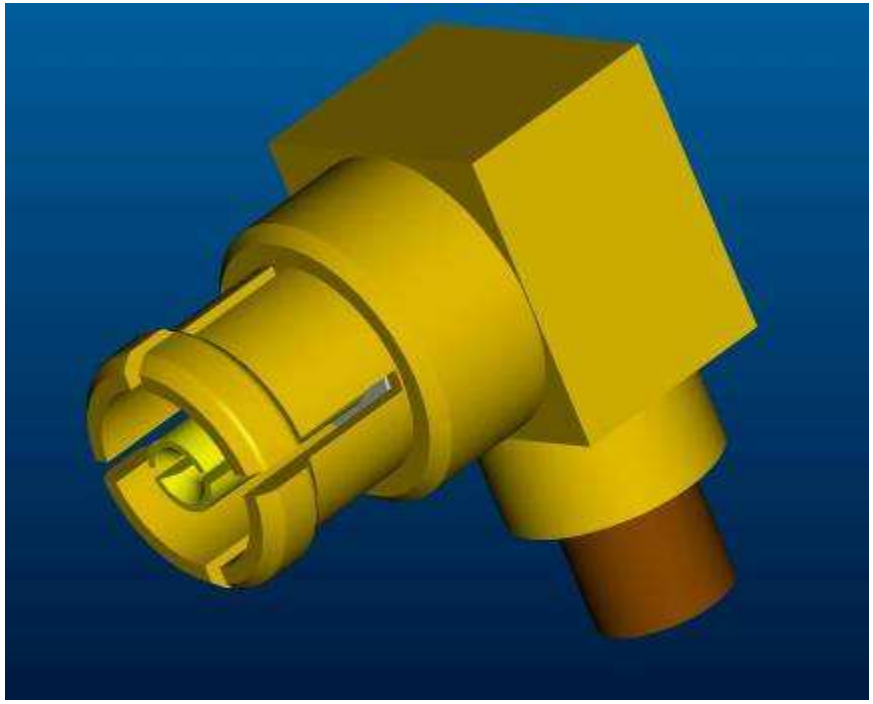
SMPM Connectors, for use with RF Backplane (*pass-thru*) modules



SMPM Straight (F) Plug
.047 Cable 1757642-1



SMPM Right Angle (F) Plug
.047 Cable 1757643-1

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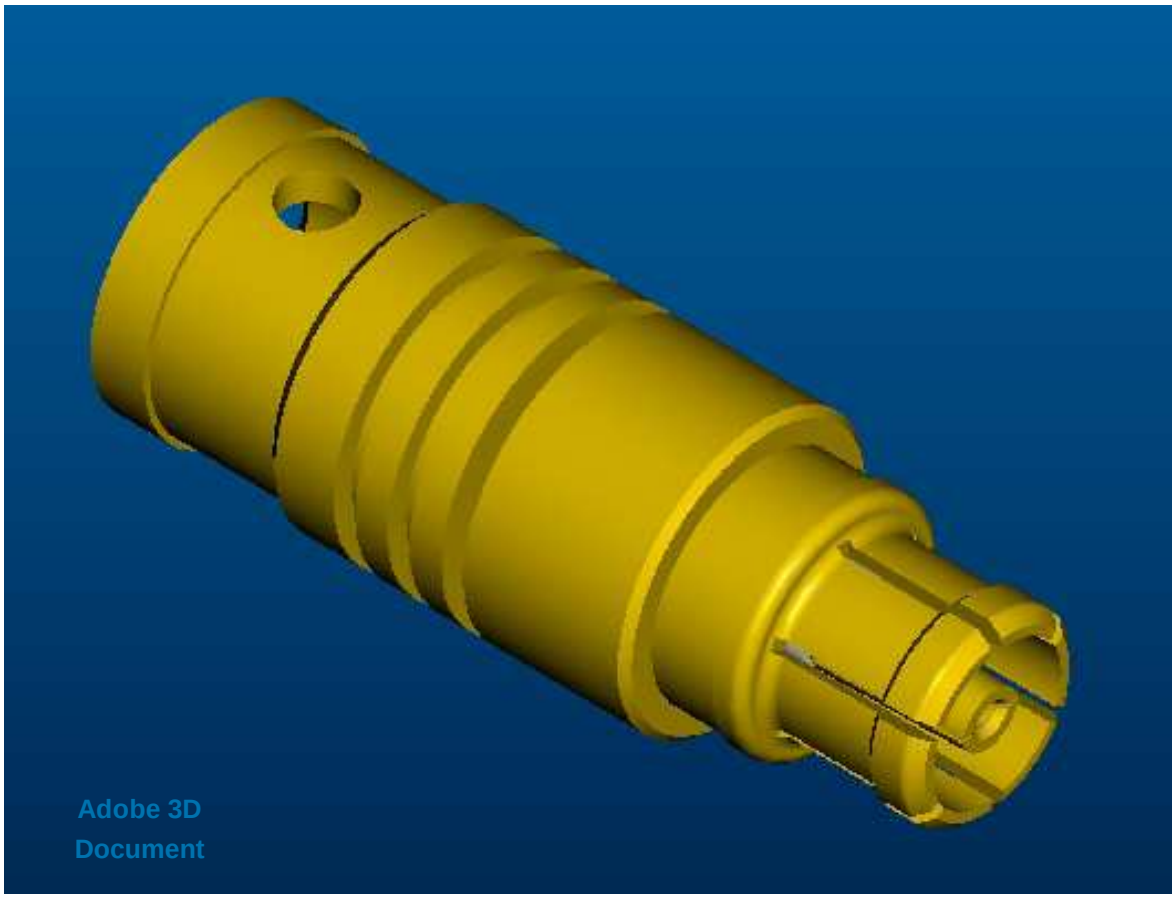
SMPM Connectors, for use with RF Backplane (*pass-thru*) modules



SMPM Straight (F) Plug,
.086 Cable, 1996328-1

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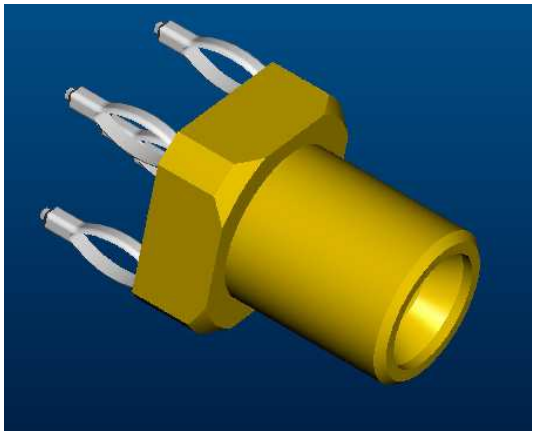
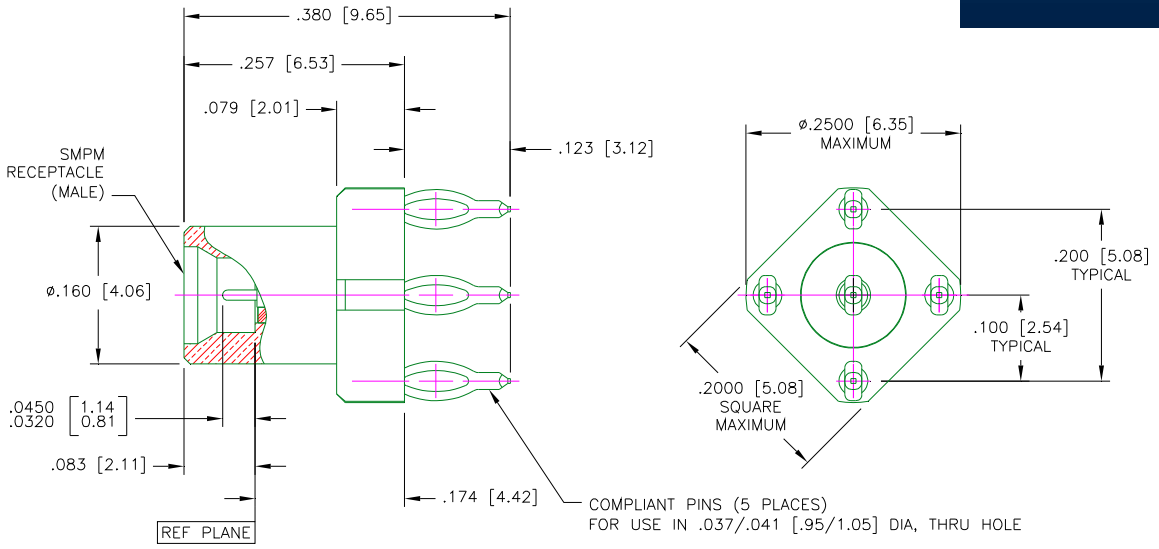
VITA 67
Compliant Pin, Backplane Connector

Part No. 1996318-1





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RF Module Part Numbers

VITA 67 Part Number Matrix

RF Modules and RF Connectors

Application		Motherboard (Backplane)		Daughter Card			
		RF Module	RF Connector SMPM	RF Module		SMPM Cable Connector	
# positions	Backplane Connection Side			Stainless Steel	Aluminum	.047 Cables	.086 Cables
8	SMPM cables attach to module	1996706-1	Integrated into RF module	1996705-4	2157350-3	1996771-1	1996390-1
8	Direct PCB termination	N/A	1996318-1	1996705-4	2157350-3	1996771-1	1996390-1
8	OSMM plug attach	1996777-2	Integrated into RF module	1996705-4	2157350-3	1996771-1	1996390-1
8	SMPM cables insert into backplane module	2157553-1	2101012-1 (.086 cable) 2157248-1 (.047 cable)	1996705-4	2157350-3	1996771-1	1996390-1
4	SMPM cables attach to module	1996884-1	Integrated into RF module	1996883-4	2157338-3	1996771-1	1996390-1
4	OSMM plug attach	2101510-2	Integrated into RF module	1996883-4	2157338-3	1996771-1	1996390-1
Installation & Removal Tool		2101595-1	For use on 1996771-1 and 1996390-1, for Twist Lock Retaining Ring				

Notes:
RF contacts may be used with .047./.086 dia semi-rigid, conformable, and flexible cables
Other configurations available and custom solutions are possible.

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VITA 67 Backplane Mating Connectors

Backplane Mating Connectors	Connect to 1996706-1 and 1996884-1 (SMPM), and 1996777-1/-2 and 2101510-1/-2 (OSMM) Backplane Module *(pass thru)*		
	RF Connector		
	.047 S.R.	.086 S.R.	RG 196/U
SMPM Straight Cable Plug	1757642-1	1996328-1	N/A
SMPM Right Angle Cable Plug	1757643-1 1757638-1 *(Low Profile)*	2101777-1	N/A
OSMM Straight Cable Plug	1058955-1	1996942-1	1059057-1
OSMM Right Angle Cable Plug	1058993-1	TBD	1059063-1

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LifeElectronics
Живое партнерство

ООО «ЛайфЭлектроникс» **“LifeElectronics” LLC**

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

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С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

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- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
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- *Формирование склада под заказчика.*

- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
- *Техническую поддержку проекта.*
- *Защиту от снятия компонента с производства.*
- *Оценку стоимости проекта по компонентам.*
- *Изготовление тестовой платы монтаж и пусконаладочные работы.*

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