

# SMP-MAX series

R222M

**RADIAL**   
The next connexion

# INTRODUCTION

## BOARD TO BOARD SOLUTIONS



### The Best Systems

Radiall's engineers work with your engineers allowing us to develop the best competitively priced misalignment RF coaxial interconnect solutions on the market today.

### The Best Choices

Radiall offers more board 2 board choices with four different product groups and ten connector series that can address the most demanding wireless telecom applications required for the new generation of infrastructure compact equipment. From base stations to repeaters and even handheld and GPS devices, we have a tailored connector solution for you; including the new SMP-MAX, SMP-Spring, IMP-Spring and other large, limited and no misalignment solutions.



SMP-MAX  
Receptacle

### SMP-MAX

Get the best for less with the new SMP-MAX large misalignment solution. Its patented impedance matching insulator is optimized for a larger operating gap between connectors making it easier for engineers to handle a board 2 board distance tolerance of at least .078" (2.0 mm) without a spring, which is 300% more than the standard SMP! It features a 3° minimum tilt (radial travel) and it has an operating frequency range of DC-6 GHz and a 1.2 max VSWR guaranteed at DC-3 GHz.



SMP-MAX Adapter

### Spring-loaded Connectors

Radiall's one connector IMP-Spring and three connector SMP-Spring and MMBX-Spring large misalignment spring-loaded series are the best for increased maximum distance tolerances.

IMP-Spring is a cost effective unique one connector solution that offers up to .023" (.6 mm) board 2 board distance tolerance with a tilt (radial travel) up to 4.5°.

The new SMP-Spring and MMBX-Spring offer up to .078" (2 mm) board 2 board distance tolerance and a 4.5° tilt (radial travel).

All spring-loaded solutions feature consistent VSWR and low RF leakage.



IMP-Spring and SMP-Spring



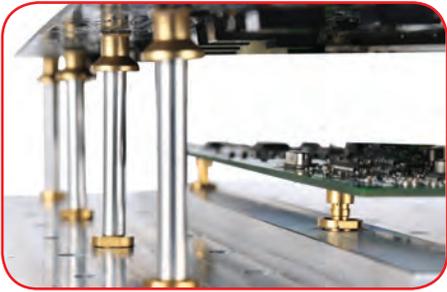
IMP

### Limited Misalignment

Radiall's one connector IMP and three connector SMP and MMBX limited misalignment series are designed for applications requiring relatively precise distance tolerance of up to .023" (.6 mm) with a tilt (radial travel) of up to 4.5°.

### No Misalignment

Radiall's MMT, MMS and MCX series are designed for applications requiring little or no distance tolerance between boards.



50Ω

DC - 6 GHz

## GENERAL

- Microminiature coaxial connectors
- Power up to 300 Watts
- Board to board distance misalignment of at least 0.078" (2.0 mm)
- Tilt (radial misalignment): 3° minimum
- 1.2 max VSWR at DC-3 GHz

## APPLICATIONS

- Broadcast
- RF components (filters, amplifiers, ...)
- Wireless communications

## The cost-effective solution for maximum mechanical misalignment

Of the several RF connectors available for interconnections in wireless remote radio heads, repeaters, base stations, GPS devices, and similar applications, the board to board style connector is growing in popularity. The product line has evolved from accommodating limited misalignment to offering the widest tolerances available.

SMP-MAX is introduced by RADIALl to provide larger misalignment tolerances than the early version board to board connectors like SMP or SMP-spring while offering lower cost.

Featuring an optimized interface, SMP-MAX can work up to 6 GHz board to board distance misalignment at least 2.0 mm and radial misalignment 3° minimum.

The SMP-MAX series offers 2 levels of retention provided by the receptacles:

- Slide-on, for the lowest retention
- Snap-on, for a positive locking with a retention

A complete SMP-MAX board to board system is made of 3 parts:

SMP-MAX Slide-on receptacle	SMP-MAX In series adapter	SMP-MAX Snap-on receptacle
		

Many other custom configurations are available. Larger distance misalignment and larger tilt versions are also available.

# CHARACTERISTICS

Test/characteristics	Values/remarks		
<b>ELECTRICAL CHARACTERISTICS</b>			
Impedance	50Ω		
Frequency	DC - 6 GHz		
Typical V.S.W.R. (Board to Board connection)	Misalignment	DC - 3 GHz	3-6 GHz
	Radial 0°, Axial 0 mm	< 1.15	< 1.25
	Radial 0°, Axial +/- 1 mm	< 1.20	< 1.35
	Radial 3°, Axial 0 mm	< 1.15	< 1.25
	Radial 3°, Axial +/- 1 mm	< 1.20	< 1.35
Insertion loss (Board to Board connection)	Misalignment	DC - 3 GHz	3-6 GHz
	Radial 0°, Axial 0 mm	0.10	0.15
	Radial 0°, Axial +/- 1 mm	0.12	0.25
	Radial 3°, Axial 0 mm	0.10	0.15
	Radial 3°, Axial +/- 1 mm	0.12	0.25
Insulation resistance	5000 MΩ		
Center contact resistance	< 3 mΩ		
Outer contact resistance	< 1.5 mΩ		
Working voltage	330 VRMS		
Dielectric withstanding voltage	1000 VRMS		
Power handling (typical)	> 300W @ 2.7 GHz, 25°C > 200W @ 2.7 GHz, 85°C		
RF leakage	-70dB to 3 GHz, axial misalignment 0mm		

## MECHANICAL CHARACTERISTICS

Mating cycles	100 cycles	
	Slide-on	Snap-on
Engagement force	< 14 N	< 45 N
Disengagement force	< 9 N	> 9, < 45 N
Center contact retention force	> 7 N	
Minimum distance between PCB	13 mm	
Radial misalignment tolerance	3°min	
Axial misalignment tolerance	2.0 mm	
	Larger axial misalignment version available	

## ENVIRONMENTAL CHARACTERISTICS

Temperature range	-55°C / +165°C
Thermal shock	MIL-STD-202, method 107, condition B
Vibration	MIL-STD-202, method 204, condition B
Shock	MIL-STD-202, method 213, condition A
Corrosion salt spray	MIL-STD-202, method 101, condition B
Moisture resistance	MIL-STD-202, method 106

## MATERIALS

Body	Brass/Beryllium copper
Male center contact	Brass
Female center contact	Beryllium copper
Gasket	Silicon rubber
Insulator	PTFE/PEEK

## PLATING

Body	NPGR/BBR
Male center contact	NPGR
Female center contact	NPGR

Packaging = 100 pieces box / 500 pieces reel.

All dimensions are given in mm

## BULKHEAD STRAIGHT SLIDE-ON MALE JACKS FOR CABLES

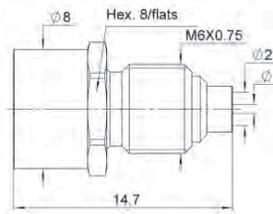


Fig. 1

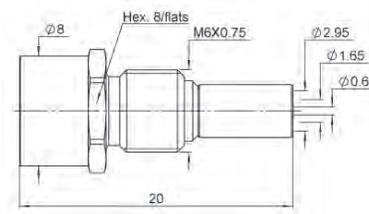
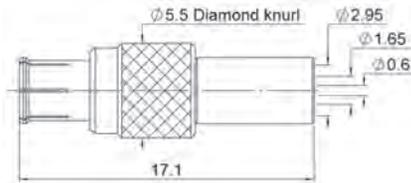


Fig. 2

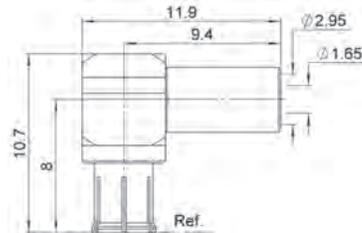
Cable group	Cable group dia.	Part number	Fig	Captive center contact	Panel drilling	Packaging
RG405	.085"	R222 M20 700	1	yes	P01	Bulk 100 pieces
RG174/RG316	2.6/50/S	R222 M20 710	2			

## STRAIGHT FEMALE PLUG FOR FLEXIBLE CABLE



Cable group	Cable group dia.	Part number	Captive center contact	Packaging
RG174/RG316	2.6/50/S	R222 M80 400	yes	Bulk 100 pieces

## RIGHT ANGLE FEMALE PLUG FOR FLEXIBLE CABLE



Cable group	Cable group dia.	Part number	Captive center contact	Packaging
RG174/RG316	2.6/50/S	R222 M80 500	yes	Bulk 100 pieces

To download data sheets and assembly instructions, visit [www.radiall.com](http://www.radiall.com) & enter the part number in the Search box. **Bold** part numbers represent products typically in stock & available for immediate shipment.

# RECEPTACLES

## STRAIGHT SLIDE-ON MALE RECEPTACLES

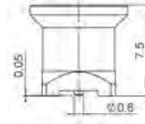
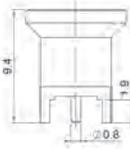
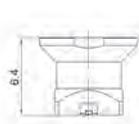
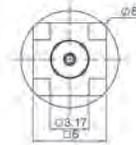
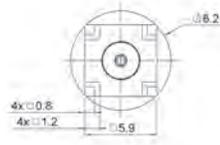
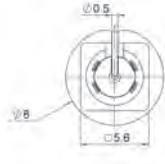


Fig. 1

Fig. 2

Fig. 3

Fig. 4

Part number	Fig	Captive center contact	Panel drilling	Packaging	Note
R222 M00 700	1	yes		Tape & reel 500 pieces	SMT
R222 M00 720	2		P02	Bulk 100 pieces	Solder legs
R222 M00 740	3			Tape & reel 500 pieces	SMT
R222 M10 700	4		P01	Bulk 100 pieces	Screw on

## STRAIGHT SNAP-ON MALE RECEPTACLES

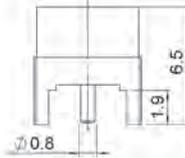
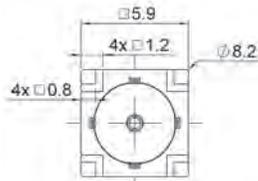


Fig. 1

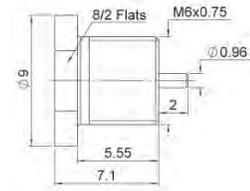
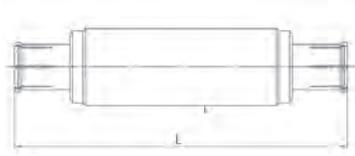


Fig. 2

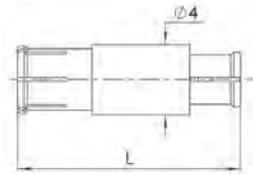
Part number	Fig	Captive center contact	Panel drilling	Packaging	Note
R222 M00 080	1	yes	P02	Bulk 100 pieces	Solder legs
R222 M10 000	2		P01		Screw on

**IN-SERIES BOARD TO BOARD ADAPTERS**



Part number	Lenght L (mm)	Series	Packaging
R222 M40 010	9.5	SMP-MAX female / SMP-MAX female	Bulk 100 pieces
R222 M40 050	25.3		

**BETWEEN-SERIES BOARD TO BOARD ADAPTERS**



Part number	Lenght L (mm)	Series	Packaging
R191 996 110	12.6	SMP-MAX female / SMP female	Bulk 100 pieces
R191 996 130	8.9		
R191 560 000	7.5	SMP-MAX female / MMBX male snap	

**BETWEEN-SERIES ADAPTERS**

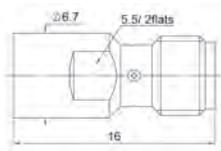


Fig. 1

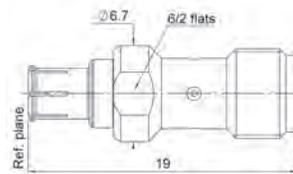
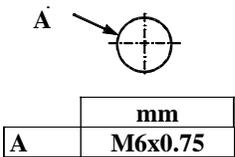


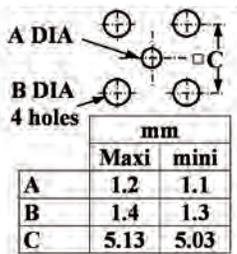
Fig. 2

Part number	Fig	Series	Packaging
R191 552 000	1	SMP-MAX male / SMA female	Unit
R191 553 000	2	SMP-MAX female / SMA female	

P01



P02



**PANEL DRILLING**

To download data sheets and assembly instructions, visit [www.radiall.com](http://www.radiall.com) & enter the part number in the Search box. Bold part numbers represent products typically in stock & available for immediate shipment.



AEROSPACE



AUTOMOTIVE



DEFENSE



INDUSTRIAL



INSTRUMENTATION



MEDICAL



SPACE



TELECOM

## EUROPE

### France - RADIALL S.A.

101, Rue Ph. Hoffmann  
93116 ROSNY sous BOIS (Paris)  
Tel.: +33 1 49 35 35 35 - Fax: +33 1 48 54 63 63  
E-Mail: info@radiall.com

### Finland - RADIALL SF

P.O. Box 202 - 90101 OULU  
Tel.: +358 407 522 412  
E-Mail: infofi@radiall.com

### Germany - RADIALL GmbH

Carl-Zeiss Str. 10 Postfach 200143  
D63307 - RÖDERMARK (Frankfurt)  
Tel.: +49 60 74 91 07 0 - Fax: +49 60 74 91 07 70  
E-Mail: infode@radiall.com

### Italy - RADIALL Elettronica S.R.L.

Via Concordia, 5 - 20090 ASSAGO MILANO  
Tel.: +39 02 48 85 121 - Fax: +39 02 48 84 30 18  
E-Mail: infoit@radiall.com  
Regional office: Roma

### Netherlands - RADIALL B.V.

Hogebrinkerweg 15b - 3871 KM HOEVELAKEN  
Tel.: +31 33 253 40 09 - Fax: +31 33 253 45 12  
E-Mail: infofl@radiall.com

### Sweden - RADIALL A.B.

Sjöängsvägen 2 - SE-192 72 SOLLENTUNA (Stockholm)  
Tel.: +46 844 434 10 - Fax: +46 875 449 16  
E-Mail: infose@radiall.com

### U.K. - RADIALL Ltd.

Ground Floor, 6 The Grand Union Office Park,  
Packet Boat Lane  
UXBRIDGE Middlesex UB8 2GH (London)  
Tel.: +44 1895 425 000 - Fax: +44 1895 425 010  
E-Mail: infouk@radiall.com

## NORTH AMERICA

### USA - RADIALL USA, Inc.

6825 West Galveston Street  
CHANDLER, Arizona 85226  
Tel.: +1 480 682 9400 - Fax: +1 480 682 9403  
E-Mail: infousa@radiall.com

## ALSO REPRESENTED IN

Australia	Hungary	Poland
Austria	Indonesia	Russia
Belgium	Israel	Singapore
Brazil	Korea	Spain
Czech Republic	Latvia	Switzerland
Denmark	Lithuania	Taiwan
Estonia	Malaysia	Thailand
Greece	Norway	Vietnam
	Philippines	South Africa

For the above countries, please contact the local agent or RADIALL at info@radiall.com

## ASIA

### China - SHANGHAI RADIALL Electronic Co., Ltd.

N° 390 Yong He Road 200072 - SHANGHAI  
Tel.: +86 21 66 52 37 88 - Fax: +86 21 66 52 11 77  
E-Mail: infosh@radiall.com

### Japan - NIHON RADIALL

Shibuya-ku Ebisu 1-5-2, Kougetsu Bldg 405  
TOKYO 150-0013  
Tel.: +81 3 3440 6241 - Fax: +81 3 3440 6242  
E-Mail: infojp@radiall.com

### Hong Kong - RADIALL Electronics Ltd.

Flat D, 6/F Ford Glory Plaza,  
37-39 Wing Hong Street  
Cheung Sha Wan  
KOWLOON HONG KONG  
Tel: +852-2959-3833 - Fax:+852-2959-2636  
E-Mail: infohk@radiall.com

### India - RADIALL India Pvt. Ltd.

25 D, II Phase, Peenya Industrial Area  
BANGALORE 560058  
Tel.: +91 80 83 95 271 - Fax: +91 80 83 97 228  
E-Mail: infoin@radiall.com

This information is intended as a guide only. To ensure a continuing policy of product improvement, Radiall reserves the right to modify its specifications without prior notification.

