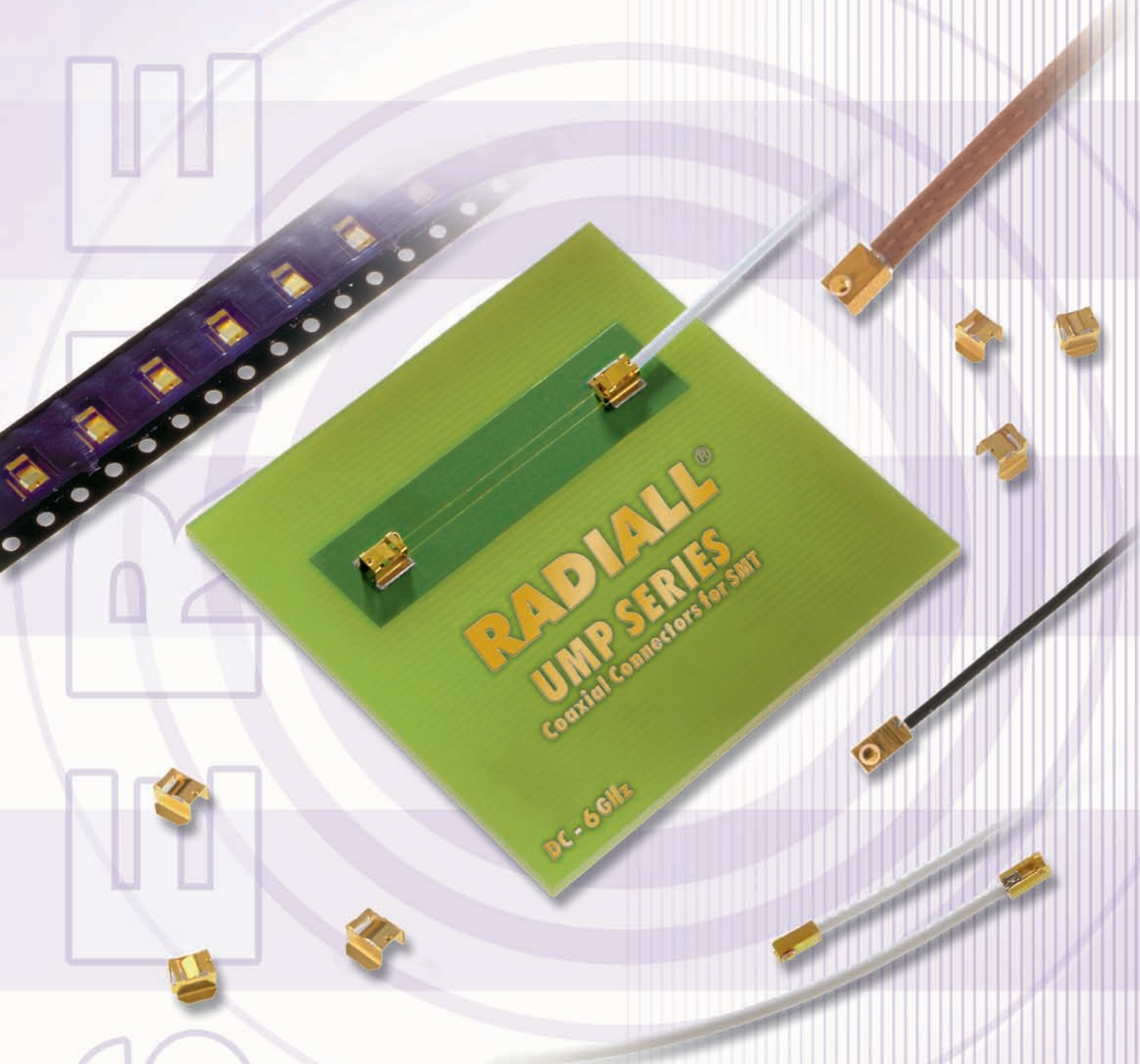
UMP series

RIO7



RADIALL
The next conneXion

MMP INTRODUCTION

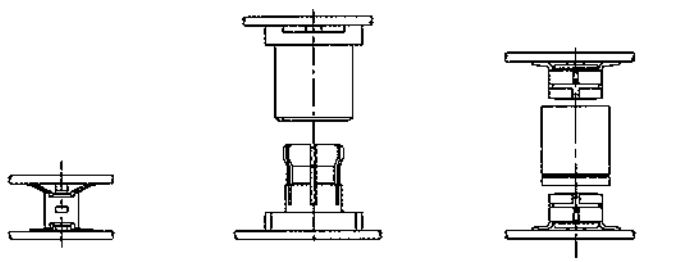
RADIALL, the pioneer in SMT coaxial connectors with the MMS series, has become a world wide leader in this technology.
Thanks to this SMT expertise, RADIALL now announces another breakthrough : the next generation of SMT coaxial connectors called **MMP** (**M**icro **M**iniature **P**ressure contact).

The **MMP** technological advance allows :
- cost savings
- further miniaturization
- exceptional RF performance
- reliability

The **MMP** product line includes :
- **IMP** series : board to board application
- **UMP** series : board to wire application

The **IMP** series (**I**nterconnect **M**icro miniature **P**ressure contact) innovation consists of 1 coaxial connector when usually the same application requires either 2 coaxial connectors (a male SMT receptacle and a female SMT receptacle), or 3 coaxial connectors (2 SMT receptacles and an in-series adapter) Catalog P/N : ***D1 039 CE***.

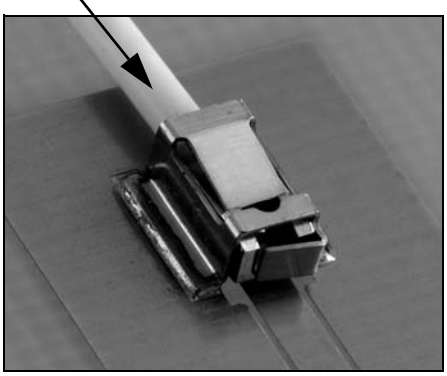
Board to board application

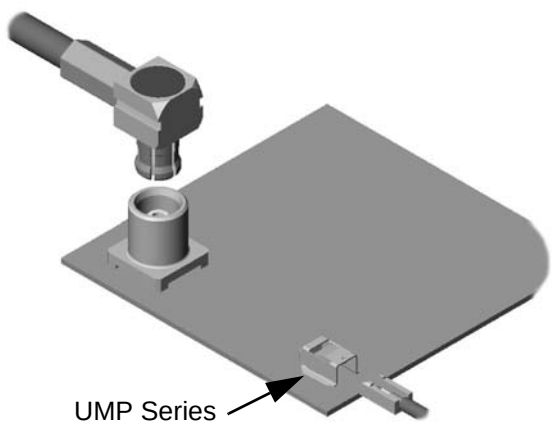


IMP 1 coaxial connector | **MCX** 2 coaxial connectors | **MMS** 3 coaxial connectors

The **UMP** series (**U**ltra **M**iniature **P**ressure contact) consists of 1 coaxial connector when 2 coaxial connectors (coaxial plug and SMT coaxial receptacle) are usually used.

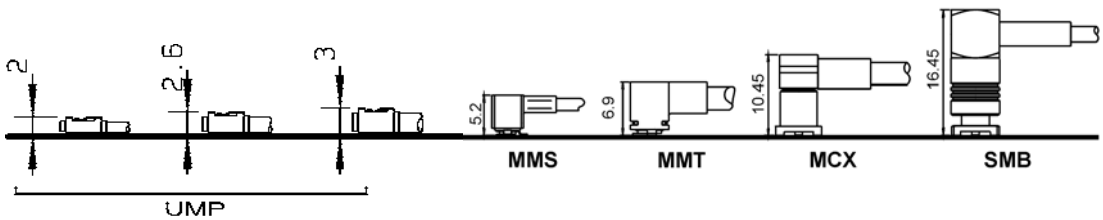
Board to wire application



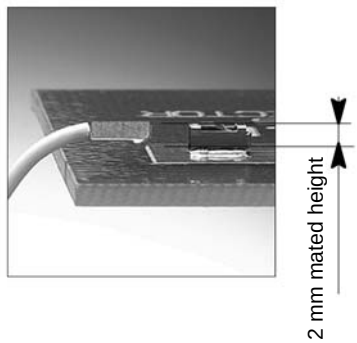


UMP Series

The **Ultra Miniature Pressure** contact (**UMP**) from **Radiall** features high RF performance in low profile (2 mm mated height). Packaged in tape & reel, the **UMP** is ideal for high volume applications. The **UMP** can be used on board or edge applications and can be used in conjunction with external or embedded antennas. There are 3 different heights (2, 2.6 and 3 mm) available in the 3 types of connection (lock, snap-on and slide-on).



Main product interest

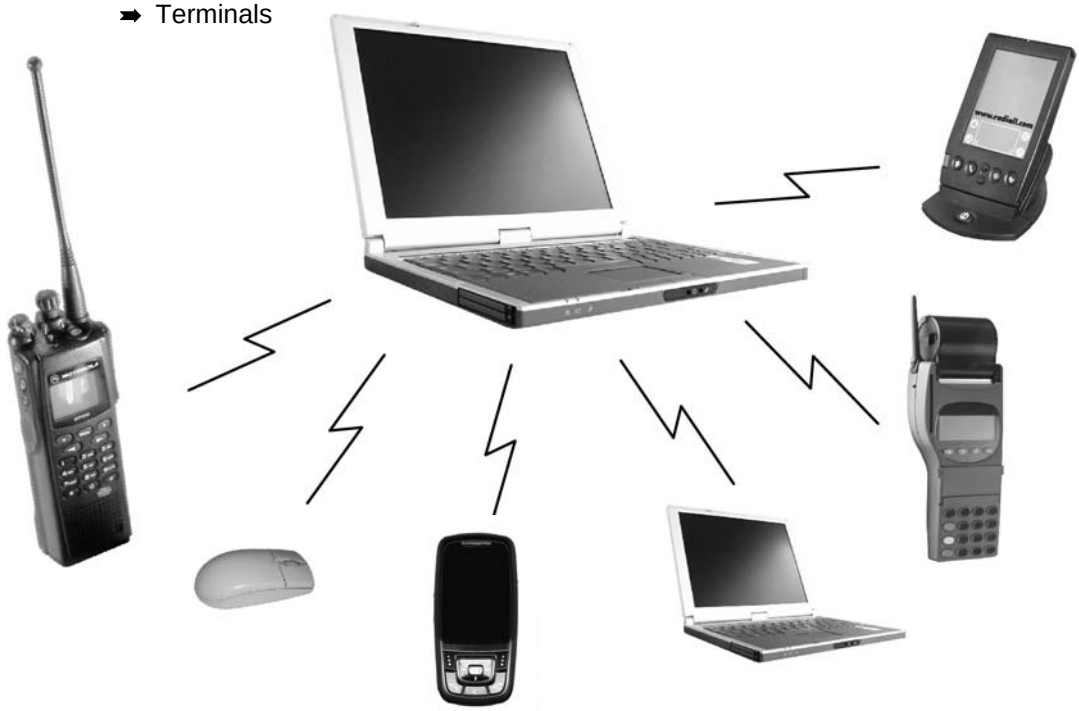


- Low profile : 2 mm, 2.6 mm and 3 mm
- Small space for connection: needs only 2 mm of height
- Cost effective solution: 1 coax connector only
- Coupling mechanism choice (lock, snap-on, slide-on)
- Large cable range from 0.8 to 2.6 mm

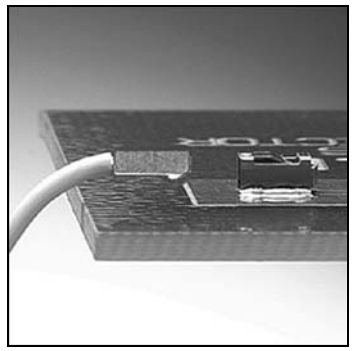
Applications:

UMP series can be used on board-to-board (or board-to-antenna) applications:

- ➡ WLAN
- ➡ Mobile phone
- ➡ Terminals
- ➡ Base station
- ➡ Automotive

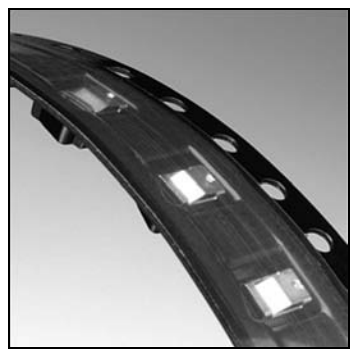


Key specifications:



- Operating frequency: DC-6 GHz
- Typical VSWR: Frequency Value
  2 GHz 1.07:1
  4 GHz 1.12:1
  6 GHz 1.20:1
- Max. insertion loss (dB) : $0.2\sqrt{F}$
- RF leakage (dB): -40 at 2 GHz
- Durability: 100 matings (lock plug)
  3000 matings (snap-on plug)
  10000 matings (slide-on plug)
- Cable retention force : 20 N to 100 N (depending of cable)
- Plating: gold

Pick and place & packaging:

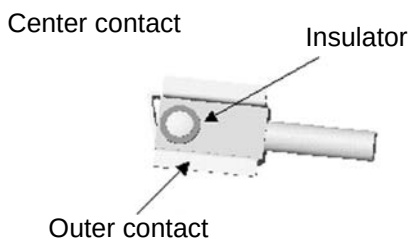


- Design adapted to automated pick and place machines. The footprint of UMP allows video positioning by using the component's shadow to facilitate its placement.
- Packaging: The **UMP** receptacle is packaged in reels of plastic embossed tape.

Type of mating:

Only 1 coaxial connector

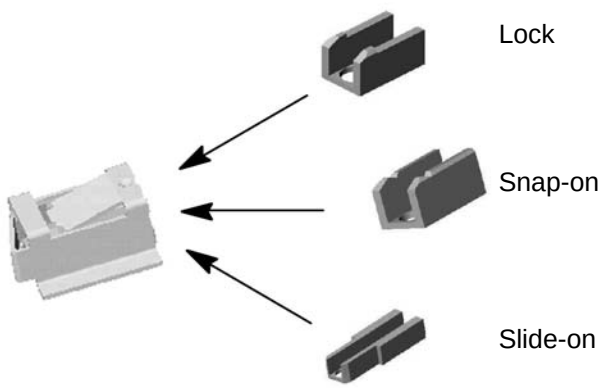
With 3 types of connection :



➡ lock: - only disconnectable using a tool
- need a disconnecting tool
- number of matings 100
- withstands severe vibrations

➡ snap-on: - number of matings 3000

➡ slide-on: - number of matings 10000
- use in tests



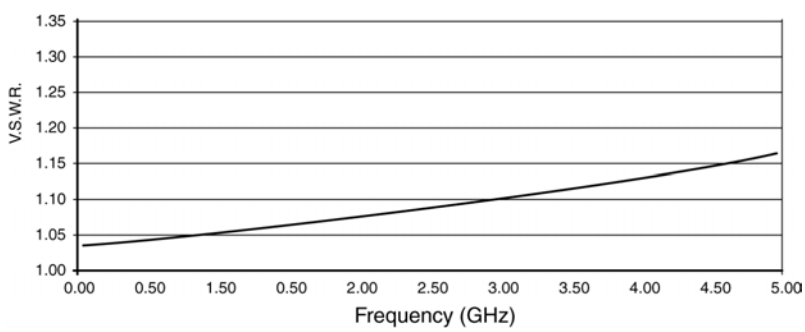
Plugs exist in the 3 types of mating (lock, snap-on and slide-on).

CHARACTERISTICS

See test report SC99.03.5865

	TEST STANDARD	RESULTS
ELECTRICAL CHARACTERISTICS		
Impedance	CE CC 22 000	50 Ω
Frequency range		DC - 6 GHz
Max VSWR (mated connectors)		1.05 + 0.03 F
Max Insertion loss (dB) (mated connectors)		$0.2\sqrt{F}$
RF leakage		- 40 dB min at 2 GHz
Insulation resistance		1000 MΩ min
Contact resistance • *center contact* • *outer contact*		60 MΩ 10 MΩ
Working voltage		100 VRMS
Dielectric withstanding voltage		350 VRMS
MECHANICAL CHARACTERISTICS		
Durability • *lock* • *snap-on* • *slide-on*	CE CC 22 000	100 matings 3000 matings 10000 matings
Force to engage		5 N
Cable retention force		20 N - 100 N
Sine vibrations	IEC 68-2-6	passed
Random vibrations	IEC 68-2-36	passed
Shocks	IEC 68-2-29	passed
Retention on test board		20 N min
Damp heat	IEC 68-2-56	passed
Weight • *receptacle* • *plug*		0.03 g 0.08 g
ENVIRONMENTAL CHARACTERISTICS		
Operating Temperature	CE CC 22 000	- 40/+90 °C
MATERIALS		
Bodies • *plug* • *receptacle*		Brass Berylium copper
Center contact		Brass
Outer contact • *plug* • *receptacle*		Brass Berylium copper
Insulator		PTFE
PLATINGS		
Bodies		Gold
Center contact		Gold
Outer contact		Gold

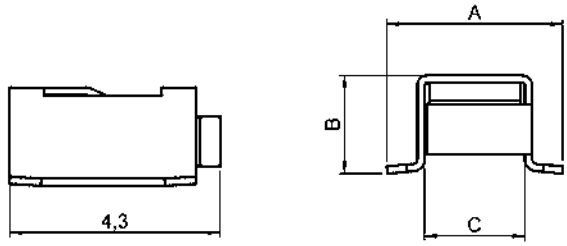
Power : P = 50 W at sea level, 40°C, at 1.8 GHz, V.S.W.R. = 1.1



Frequency	Typical VSWR
1 GHz	1.05
2 GHz	1.07
3 GHz	1.09
4 GHz	1.12
5 GHz	1.16
6 GHz	1.20

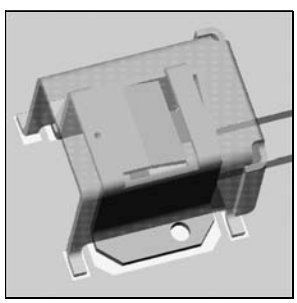
All dimensions are given in mm.

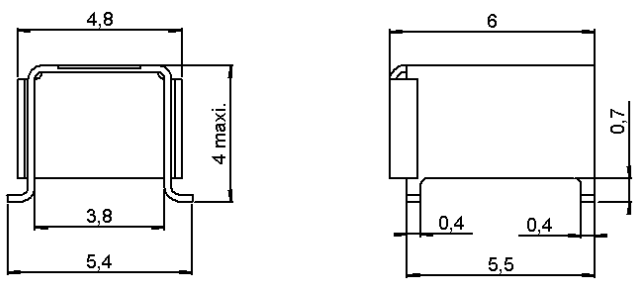
SMT RECEPTACLES



UMP type	Part number	Dimension (mm)			Finish	Packaging	Reel dimensions (mm)
		A	B	C			
H2	**R107 003 000**	3.6	2	2.05	gold	4000 pces	330
	R107 003 010					100 pces	180
	R107 003 010W					1	/
H2.6	**R107 103 030**	5	2.6	2.45		3300 pces	330
	R107 103 020					700 pces	180
	R107 103 040					100 pces	180
	R107 103 040W					1	/
H3	**R107 303 030**	5.5	3	2.95		2800 pces	330
	R107 303 040					100 pces	180
	R107 303 040W					1	/

FCC15.407D OPTION : OTM COVER (One Time Mate)





OTM cover enables to mate equipment definitively.
It makes UMP H3 and H2.6 **compliant with FCC15.407D requirements.**

UMP type	Part number	Finish	Packaging	Reel dimensions (mm)
H2.6 - H3	**R107 306 030**	gold	2000 pces	330
	R107 306 040		100 pces	180
	R107 306 040W		1	/

Please see soldering procedure on page 14 to 16.

PIGTAILS

Lock

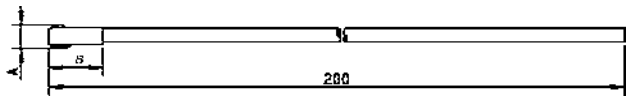


Fig. 1

Snap-on

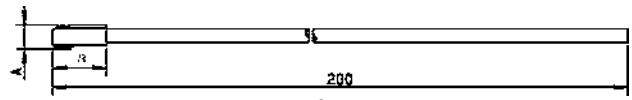


Fig. 2

Slide-on

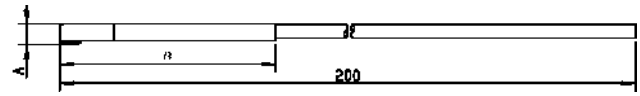
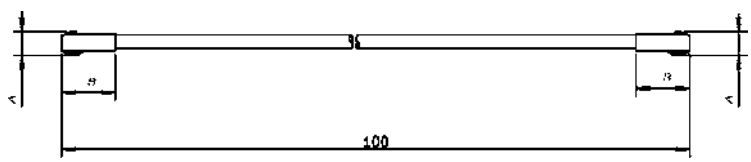


Fig. 3

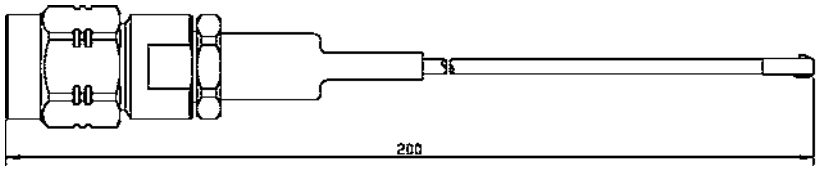
Cable group	UMP type	Mating type	Part number	Fig	Dimension A (mm)	Dimension B (mm)	Cable
0.8/50/S	**H2**	lock	**R285 020 201**	1	1.74	4	C291 042 066
		snap-on	**R285 020 211**	2	1.65	4	
		slide-on	**R285 020 221**	3	1.54	16	
1/50/S		lock	**R285 020 202**	1	1.74	4	C291 050 066
		snap-on	**R285 020 212**	2	1.65	4	
		slide-on	**R285 020 222**	3	1.54	16	
1/75/S		lock	**R285 020 203**	1	1.74	4	C291 055 076
2/50/S	**H2.6**	lock	**R285 020 301**	1	2.34	4	C291 140 087
		snap-on	**R285 020 311**	2	2.34	4	
		slide-on	**R285 020 321**	3	2.24	10	
2/75/S		lock	**R285 020 302**	1	2.34	4	C291 180 072
2.6/50/S	**H3**	lock	**R285 020 401**	1	2.84	4	C291 170 017
		slide-on	**R285 020 421**	3	2.74	10	

UMP CABLE ASSEMBLIES



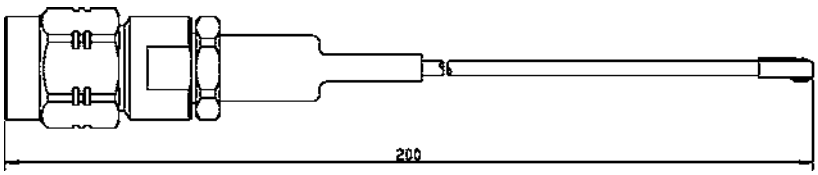
Cable group	UMP type	Mating type	Part number	Dimension A (mm)	Dimension B (mm)	Cable	Series
0.8/50/S	**H2**	lock	**R285 020 231**	1.74	4	C291 042 066	UMP / UMP
1/50/S		lock	**R285 020 232**	1.74	4	C291 050 066	

Packaging: 100 pieces. For unit packaging, add "W" after the P/N.



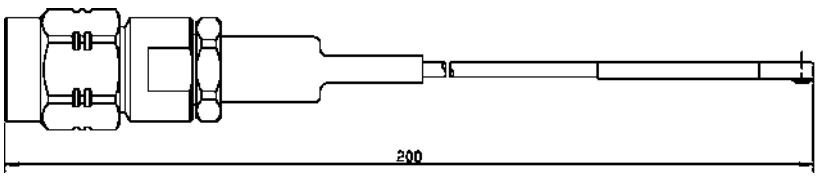
Lock

Fig. 1



Snap-on

Fig. 2



Slide-on

Fig. 3

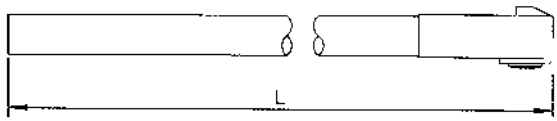
Cable group	UMP type	Mating type	Part number	Fig	Cable	Series
0.8/50/S	**H2**	lock	**R285 025 201**	1	C291 042 066	UMP / SMA
		snap-on	**R285 025 211**	2		
		slide-on	**R285 025 221**	3		
1/50/S		lock	**R285 025 202**	1	C291 050 066	
		snap-on	**R285 025 212**	2		
		slide-on	**R285 025 222**	3		
2/50/S	**H2.6**	lock	**R285 025 301**	1	C291 140 087	
		snap-on	**R285 025 311**	2		
		slide-on	**R285 025 321**	3		
2.6/50/S	**H3**	lock	**R285 025 401**	1	C291 170 017	
		slide-on	**R285 025 421**	3		

Packaging: 20 pieces. For unit packaging, add "W" after the P/N.

PIGTAILS (or cable assemblies)

The straight plugs are only delivered as pigtails or cable assemblies.
Please select P/N page 11

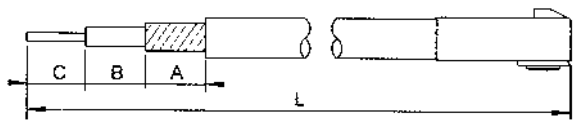
How to order
Examples of composition (minimum length = 4 cm (1.575") :



Example 1:

Pigtail featuring one straight plug

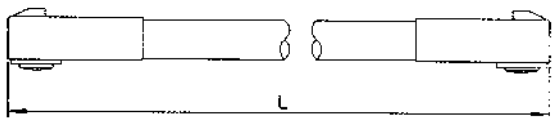
Connector** (p. 11) / **Cable (see table below**) / **Length
R107 001 000 / C291 050 066 / L (cm)



Example 2:

Pigtail featuring one straight plug, with stripping option (stripping according to customers requirements with possibility of tinned central conductor)

Connector** (p. 11) / **Cable (see table below)** / **Length
R107 001 000 / C291 050 066 / L (cm)
A= (mm) B= (mm) C= (mm)



Example 3:

Cable assembly featuring two straight plugs

Connector** (p. 11) / **Cable (see table below)** / **Connector** (p. 11) / **Length
R107 001 000 / C291 050 066 / R107 001 000 / L (cm)

Example 4:

Cable assembly featuring one UMP straight plug and any other connector compatible with one of the referenced cable. Please consult us.

CABLE CHARACTERISTICS

Cable type	Part number	Outer dia. (mm)	Outer screen type	Imp.	Dielectric type	900 MHz	1.9 GHz	2.4 GHz	3.5 GHz	5.8 GHz
						Insertion loss (dB)				
0.8/50/S	**C291 042 066**	0.8	FEP	50	PFA	2.0	2.8	4.0	4.9	6.6
1/50/S	**C291 050 066**	1.17		50	PTFE	1.9	3.0	3.6	4.2	5.8
1/50/S	**C291 051 270**	1.13		50		1.8	2.6	3.0	3.6	5.0
1/50/S	**C291 066 070**	1.37		50		1.5	2.0	2.3	2.8	3.8
1/75/S	**C291 055 076**	1.22		75		1.8	2.7	3.3	4.0	5.4
2/50/S	**C291 140 087**	1.8		50		1.0	1.8	2.4	3.0	3.9
2/50/D	**C291 146 087**	2.1		50		1.0	1.8	2.4	3.0	3.9
2/75/S	**C291 180 072**	2		75	celloflon	1.0	1.5	1.6	1.9	2.6
2.6/50/S	**C291 170 017**	2.5		50	PTFE	0.8	1.2	1.4	1.8	2.4

Not contractual data - for guidance only. Please consult us for other coaxial cable type.

UMP PLUGS (solder type)

ONLY AVAILABLE AS PART OF A PIGTAIL OR A CABLE ASSEMBLY

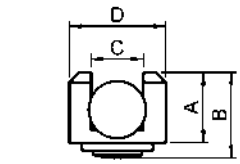
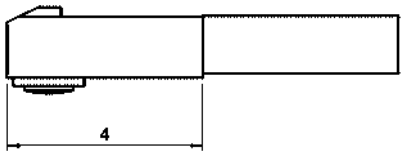


Fig. 1



Lock

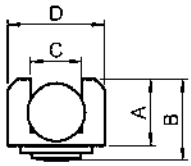
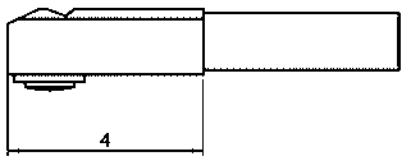


Fig. 2



Snap-on

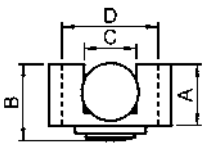
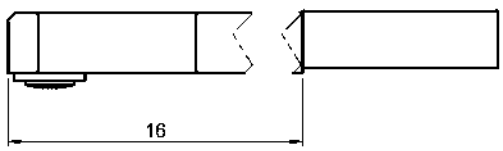


Fig. 3



Slide-on

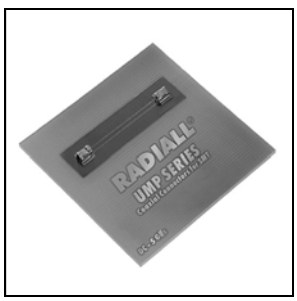
Cable	UMP type	Mating type	Part number	Fig	Dimension (mm)				Finish
					A	B	C	D	
0.8 + 1/50/S	**H2**	lock	**R107 001 000**	1	1.44	1.74	1.07	1.97	gold
		snap on	**R107 011 000**	2	1.35	1.65	1.07	1.97	
		slide on	**R107 021 020**	3	1.24	1.54	1.07	1.97	
1/75/S		lock	**R107 001 020**	1	1.44	1.74	1.07	1.97	
2/50/S	**H2.6**	lock	**R107 101 200**	1	1.94	2.34	1.5	2.34	
		snap on	**R107 111 200**	2	1.94	2.34	1.5	2.34	
		slide on	**R107 121 020**	3	1.94	2.24	1.5	2.34	
2/75/S		lock	**R107 101 220**	1	1.94	2.34	1.5	2.34	
2/50/D	**H3**	lock	**R107 301 190**	1	2.44	2.84	1.9	2.82	
2.6/50/S		lock	**R107 301 200**	1	2.44	2.84	2.3	2.82	
		slide on	**R107 321 020**	2		2.74			

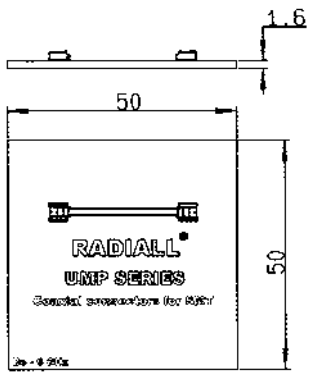
PRODUCTION LINE TEST ADAPTER: UMP - SMA female (to be used with lock and snap pigtails only)

Part Number	Connector height (mm)
R107 009 901	H 2
R107 009 902	H 2.6
R107 009 903	H 3

For measurement and test purposes.
Packaging : unit.

TEST BOARD





Part Number	Receptacle height (mm)
R107 009 500	H 2
R107 009 501•	H 2.6
R107 009 502•	H 3

Connected to a network analyser by 2 cable assemblies, this board allows to measure the VSWR of the complete link.

Packaging: unit.

EXTRACTION TOOL (for lock version only)

Photo 1 **Photo 2**

Part Number	Photo	Note	To disconnect
R282 867 020	1	axial disconnection	H2
R282 867 030	2	lateral disconnection	H2.6 & H3

The 2 disconnection tools allows axial and lateral disconnections depending on the occupied space on the PCB. Please see extraction procedure on page 17.

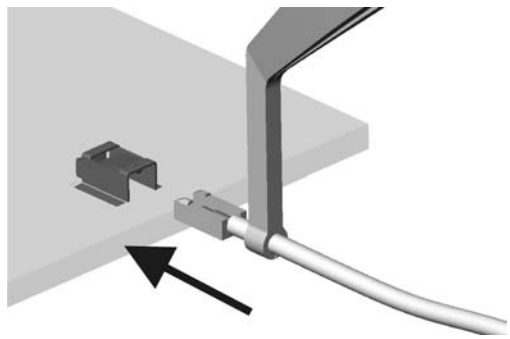
Packaging: 10 pieces. For unit packaging, add "W" after the P/N.

• Upon request

INSERTION TOOL (optional)

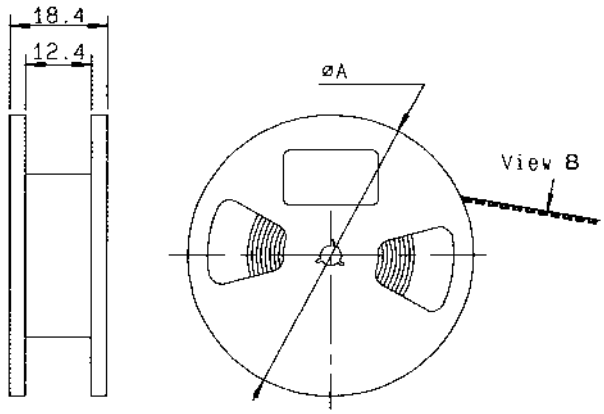
Part Number
R282 203 020

This optional tool allows you a more precise connection in a limited space.
Please see manual connection on page 17.



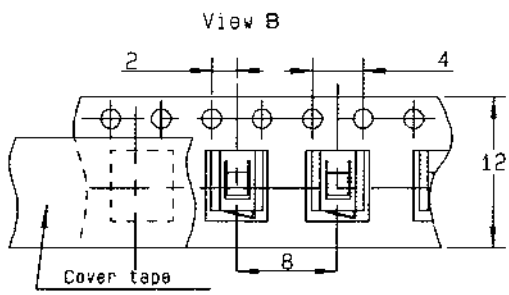
Packaging: unit.

RECEPTACLE PACKAGING



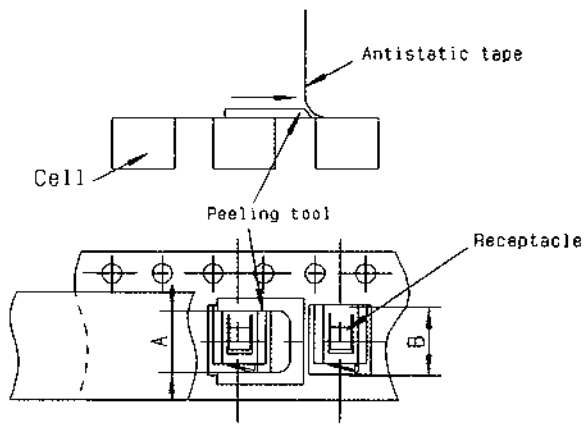
ACCORDING TO IEC 286-3 STANDARD

MATERIALS
Reel : polyester
Carrier tape : antistatic PETG (polyester)
Cover tape : polyester

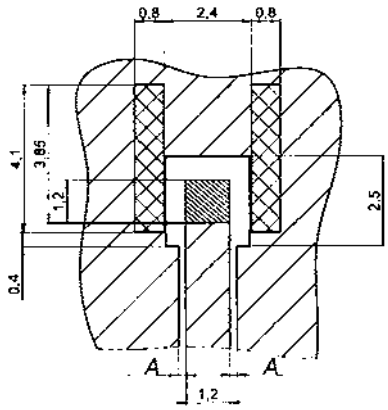


PRECAUTION FOR USE

Automated pick and place machines use standard tooling to peel the antistatic film off. Sometimes the "A" dimension of this tool is shorter than the overall "B" width between the two legs of the receptacle. There is thus a risk for the two legs being deformed while they pass through the tool during the suction operation. The user must then widen the "A" dimension of the peeling tool.

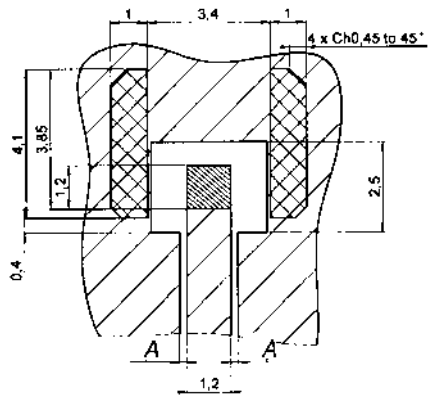


FOR COPLANAR LINE



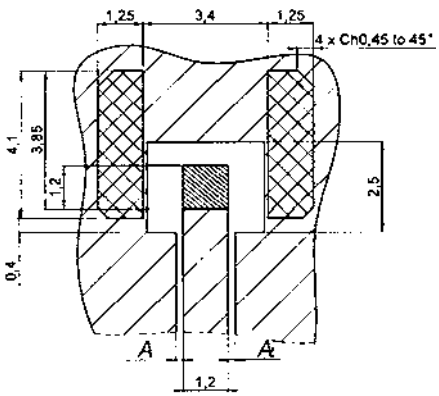
H2 type receptacle

R107 003 000
R107 003 010
R107 003 010W



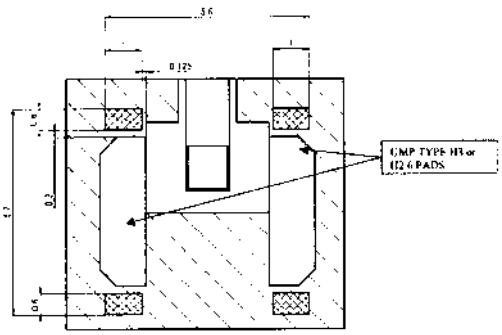
H2.6 type receptacle

R107 103 020
R107 103 030
R107 103 040
R107 103 040W



H3 type receptacle

R107 303 020
R107 303 040
R107 303 040W



OTM Cover

R107 306 030
R107 306 040
R107 306 040W

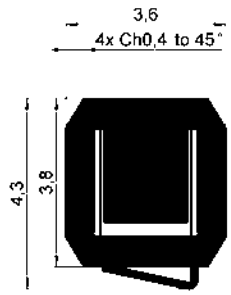
Gold over Nickel prefered for solder paste
Gold can be replaced by tin lead (see test report SC2000.02.6587)

Gold over Nickel contact area free of any surface contaminant

Ground + varnish

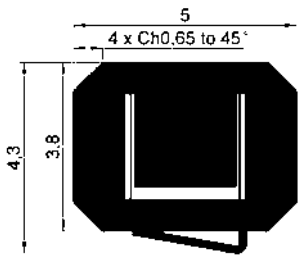
PCB thickness (mm)	Coplanar ligne A (mm)
0.8	0.183
1.0	0.190
1.2	0.195
1.6	0.20

VIDEO SHADOWS



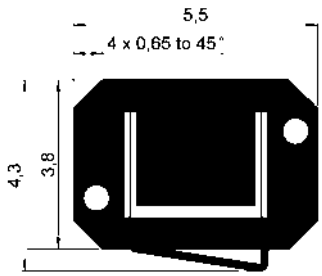
H2 type receptacle

R107 003 000
R107 003 010
R107 003 010W



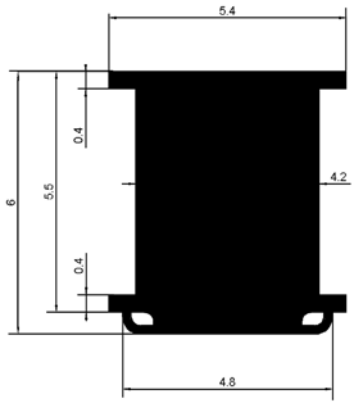
H2.6 type receptacle

R107 103 020
R107 103 030
R107 103 040
R107 103 040W



H3 type receptacle

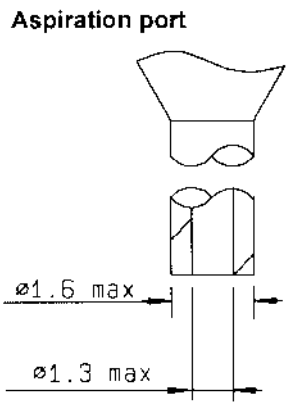
R107 303 020
R107 303 040
R107 303 040W

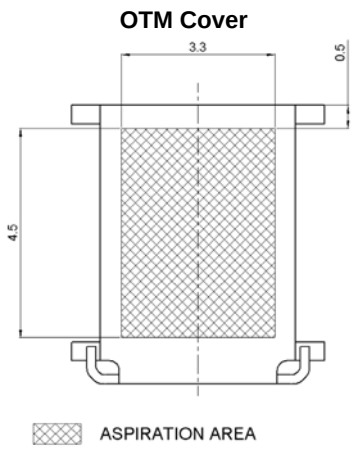


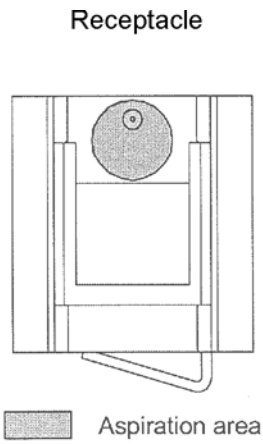
OTM Cover

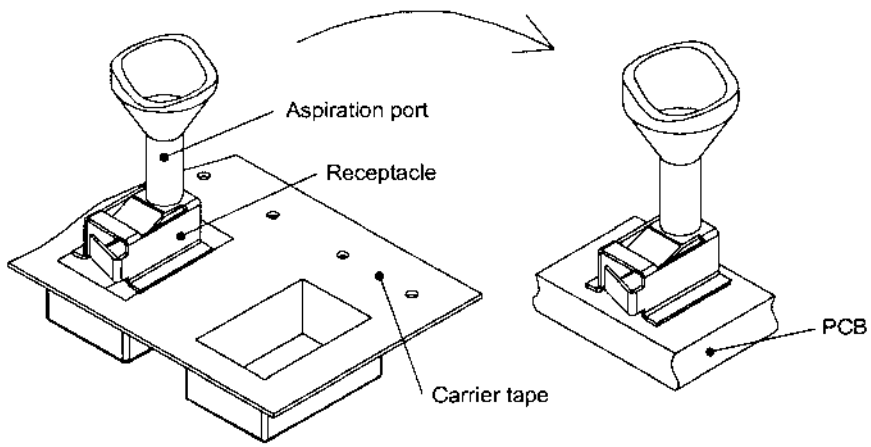
R107 306 030
R107 306 040
R107 306 040W

SUCTION PROCEDURE









SOLDER PROCEDURE OF UMP RECEPTACLE IN INDUSTRIAL ENVIRONMENT

SOLDER PROCEDURE

1

Deposit solder paste 'Sn Ag4 Cu0.5' on mounting zone by screen printing application. We recommend a low residue flux.
We advise a thickness of 150 micron mm (5.850 micro inch). Verify that the edges of the zone are clean.

2

Placement of the cover on the mounting zone with an automatic machine of 'pick and place' type. A video camera is recommended for positioning of the component. Adhesive agents must not be used on the cover.

3

This process of soldering has been tested with convection oven. Below please find, the typical profile to use.

4

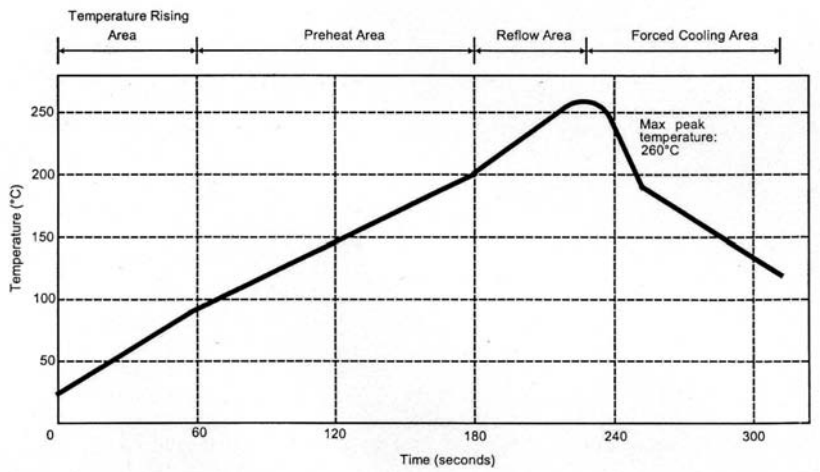
The cleaning of printed circuit boards is not obliged.

5

Verification of solder joints and position of the component by visual inspection.

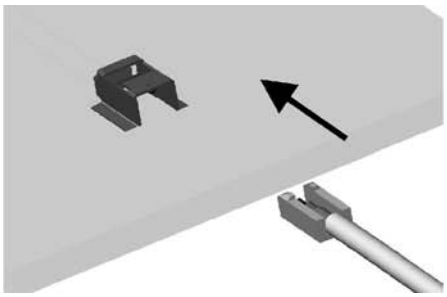
NOTE: THE UMP RECEPTACLE AND THE UMP PLUG MUST NOT BE MATED BEFORE COMPLETION OF THIS PROCEDURE

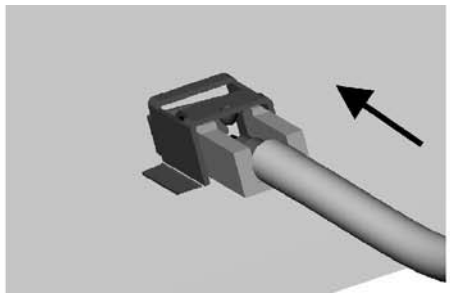
TEMPERATURE PROFILE



Parameter	Value	Unit
Temperature rising Area	1 - 4	°C/sec
Max Peak Temperature	260	°C
Max dwell time @260°C	10	sec
Min dwell time @235°C	20	sec
Max dwell time @235°C	60	sec
Temperature drop in cooling Area	-1 to - 4	°C/sec
Max dwell time above 100°C	420	sec

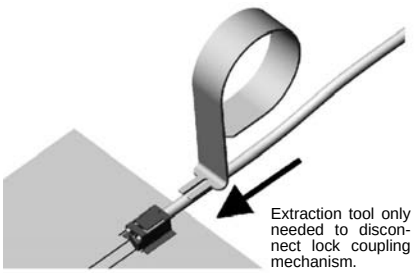
Manual connection

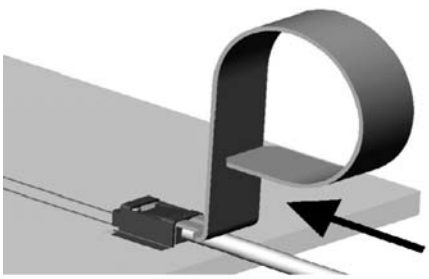


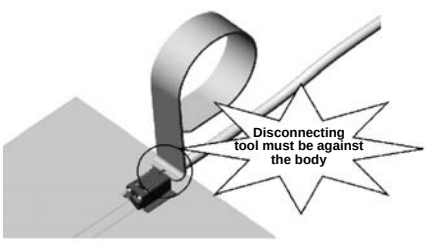


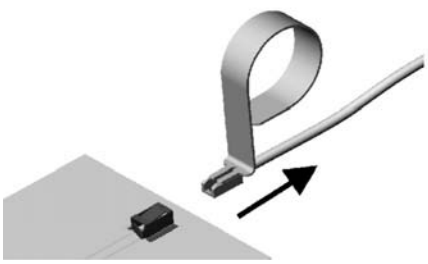
Axial disconnection

Tool R282 867 020 (see page 12).



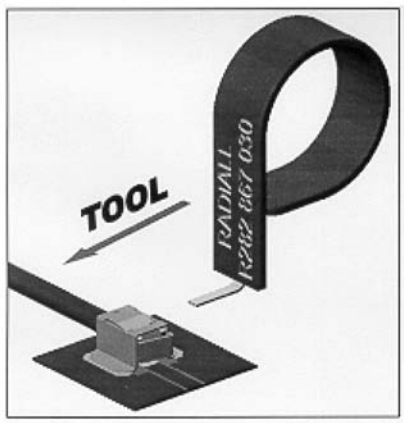


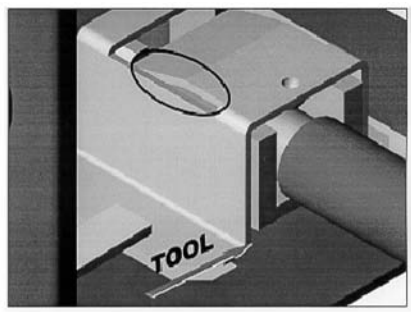


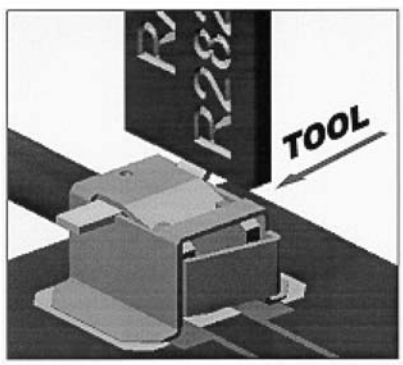


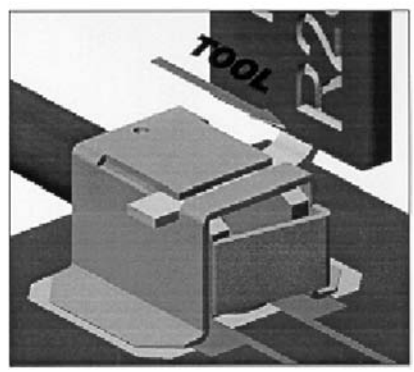
Lateral disconnection

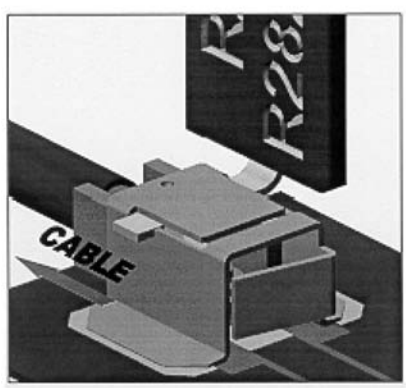
Tool R282 867 030 (see page 12).

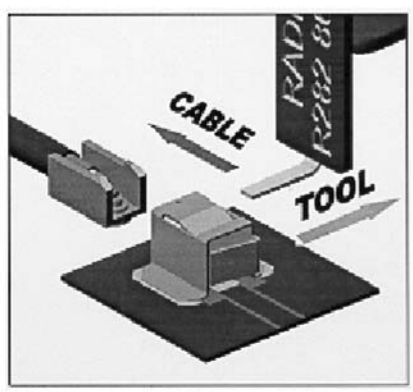












NOTES