Components for mobile devices

IMS CONNECTOR SYSTEMS

www.imscs.com

Symbols and conventions

Product features (blue)

3,0 GHz - Frequency range

□ 5,0 - Approx. footprint (square) on PCB

20.000 - Number of mating cycles

3,5 x 3,0 - Approx. footprint (rectangular) on PCB

Suitability of a product (grey)

Automatic - Suitable for automatic testing

Car cradle - Suitable for car cradle applications

Manual - Suitable for manual testing

2795 - Suitable for/compatible to a specific product

- Suitable for test clamps

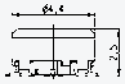
Conventions for figures and dimension units

< 0,20 dB
20.000
- A comma is used as decimal point for all figures

- All dimensions on 3D drawings are stated in mm

✓ - Available

– - Not available



- All dimensions on 2D drawings are stated in mm

Examples for mounting and manual testing

Mounting example for automatic testing machines

Example for manual testing

Mounting example for car cradles

This catalogue presents our standard products for mobile phones and other mobile devices. They can be made available within a short time frame at no or low design and tooling costs.

Please consider that our product range is currently being updated. You will find the most up-to-date range in our „Components for mobile devices“ online catalogue at www.imscs.com.

Table of contents

IMS Connector Systems

A technology company with tradition

In 1863 Johann Morat founded a company in Eisenbach in the Black Forest which focused on the development of machines to produce gear wheels and axles for mechanical clocks. Over the years, this company grew, due to his inventive skills and a commitment to highest precision and efficiency.

One century later, at the end of the 1960's, the company began the production of gear assemblies. It was a request from a customer that resulted in IMS Morat Söhne manufacturing RF connectors and cable assemblies.

This new line of business proved to be successful and in 1989, IMS Connector Systems was founded from the business division which had been previously established in 1972. Reacting to market requirements, the product range was expanded to also include components for mobile phones.

Markets today

Today, as a technology company, we develop and manufacture a wide range of RF connectors and cable assemblies, components for mobile phones and other mobile devices, antennas for mobile applications as well as SMBA® (FAKRA) connectors for automotive communication.

The markets, where IMS Connector Systems products are successfully established, include the mobile phone industry, automotive and related industries, telecommunications infrastructure, wireless data communication industries, measuring equipments as well as other technology sectors world wide.

SMBA® is a registered trademark of IMS Connector Systems, Germany

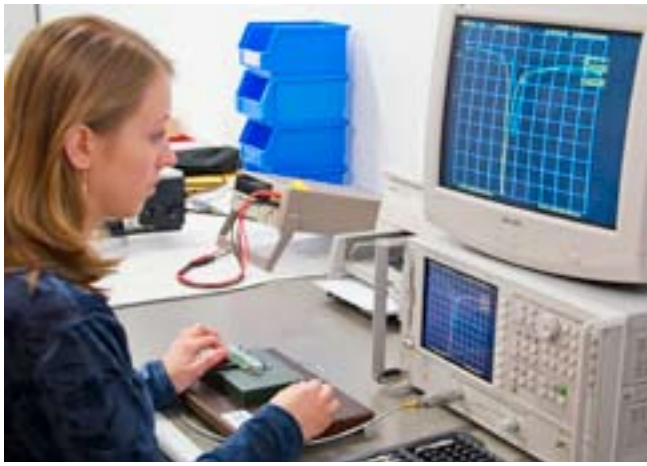
Research & development

High levels of investment have been made at IMS Connector Systems in order to establish a strong R&D department. The result is a large number of innovative products for many applications.

To provide a fast and efficient service, we use modern development tools such as CAD and sophisticated computer simulation systems for optimising mechanical designs as well as electrical / RF performance.

Our Germany based R&D center includes specialised staff for mechanical engineering, electronics engineering, RF engineering and process engineering.

The highly qualified staff, the most up to date methods and procedures as well as our modern systems environment form one part of our success. The other part of paramount importance is the co-operation with our customers and with strong partners in many R&D areas in order to provide optimum solutions for any application.



Economic and efficient high quality production

The production facilities within our network of plants and supplying partners range from basic technologies like injection moulding, metal sheet processing, precision turning, plating and others up to fully automated assembly lines. We always consider the different technology and process options and choose the best way to achieve reliable and competitive products for the world's markets.

In our modern and well equipped sample shop, we produce both prototypes and pre-production components. Product designs that work on paper must first prove to be excellent in practice. Therefore, all our prototypes are thoroughly tested.

We have implemented a number of quality assurance procedures and systems, such as FMEA, DoE, LQP, SPC and CIP that guarantee high quality products right from the beginning. Continuous quality assurance and monitoring is part of the manufacturing process.

Injection moulding

Deep drawing

Sheet metal forming

Sheet metal forming

Our high quality standards also apply to our suppliers. We integrate them in our overall quality strategy. Our supply chain quality management includes regular supplier audits, monthly supplier ratings, quality agreements and ship to stock agreements.

It goes without saying that we use latest quality assurance methods and that all company divisions are certified to meet the relevant international standards, such as ISO 9001 and ISO TS 16949.

Dedicated to protecting the environment, we implement environmental management standards throughout the production process. The protection of the environment and its finite resources is already addressed when developing new products. Environmental protection starts with the design of non-polluting products, influences the materials selected and includes the production methods used.

World wide

With representations and sales offices around the globe IMS Connector Systems offers its customers a prompt and optimal service anywhere in the world.
The company's head office is in Germany; its production plants are in Europe and Asia.

Headoffice with R&D, sample shop and central services in Löffingen, Germany

Production plant in Sopron, Hungary

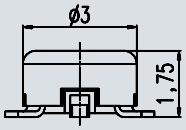
Production plant in Suzhou, China

Miniature straight female SMD RF switches

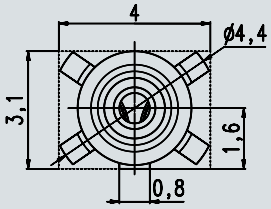
6 GHz | 10.000 50 | 4,0 x 3,1

3976.99.0030.001, 3926.99.0030.001

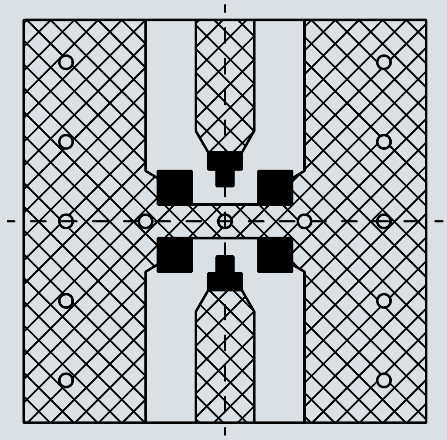
Side view



Top view



PCB layout



Due to their compact design, extremely robust construction and innovative locking mechanism the test switch 3926 and the external antenna switch 3976 from IMS Connector Systems are suitable for a broad range of applications.

3976.99.0030.001

- 10.000 mating cycles
- To application matched thickness of surface layers
- Robust design due to deep drawn housing
- Excellent guiding feature e.g. car cradle applications
- Ultra low height

3926.99.0030.001

- 50 mating cycles
- Fully footprint compatible with MuRata MM 8430-2600B
- Robust design due to deep drawn housing
- Excellent guiding feature e.g. test probe applications
- Ultra low height

Electrical characteristics		3976 Un-switched	3976 Switched	3926 Un-switched	3926 Switched
Impedance		50 Ω			
Frequency range		DC...6 GHz			
Return loss	≤ 1,0 GHz	> 30 dB	> 30 dB	> 30 dB	> 30 dB
	≤ 2,0 GHz	> 28 dB	> 24 dB	> 28 dB	> 24 dB
	≤ 3,0 GHz	> 27 dB	> 21 dB	> 27 dB	> 21 dB
	≤ 6,0 GHz	> 16 dB	> 16 dB	> 16 dB	> 16 dB
Isolation	≤ 1,0 GHz	–	> 36 dB	–	> 36 dB
	≤ 2,0 GHz	–	> 30 dB	–	> 30 dB
	≤ 3,0 GHz	–	> 26 dB	–	> 26 dB
	≤ 6,0 GHz	–	> 19 dB	–	> 19 dB
Insertion loss	≤ 1,0 GHz	< 0,15 dB	< 0,20 dB	< 0,15 dB	< 0,20 dB
	≤ 2,0 GHz	< 0,20 dB	< 0,30 dB	< 0,20 dB	< 0,30 dB
	≤ 3,0 GHz	< 0,25 dB	< 0,40 dB	< 0,25 dB	< 0,40 dB
	≤ 6,0 GHz	< 0,50 dB	< 1,00 dB	< 0,50 dB	< 1,00 dB
Insulation resistance		> 0,20 MΩ			
Contact resistance					
Center contact		< 80 mΩ	< 80 mΩ	< 80 mΩ	< 80 mΩ
Outer contact		< 50 mΩ	< 50 mΩ	< 50 mΩ	< 50 mΩ
Proof voltage (Veff / 50 Hz)		100 V			
Operating voltage		50 V			

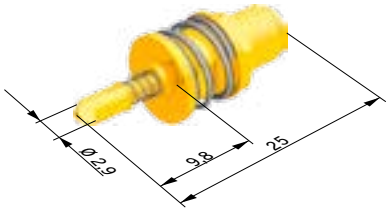
Mechanical characteristics		
Engagement force	typ. 12	
Separating force	typ. 12	
Mating cycles	10.000	50

Handling information	
Tape & reel	4.000 pcs. per reel
Pick & place	✓
Lead-free soldering	✓

(All electrical and mechanical characteristics are valid for the combination 3976.99.0030.001 / 3926.99.0030.001 and 3989.91.1420.019)

Straight test adapter with SMA interface 4021.93.8914.103

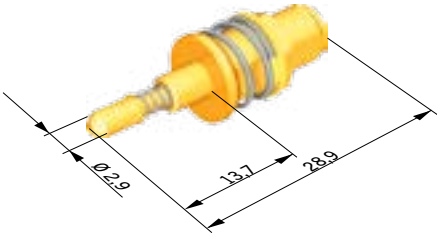
- Adapter for automatic testing
- Float mount installation
- 100.000 mating cycles



Automatic 3976/3926

Straight test adapter with SMA interface 4163.93.8914.103

- Adapter for automatic testing
- Float mount installation
- 100.000 mating cycles



Automatic 3976/3926

Right angle cable plug 3989.91.1420.019

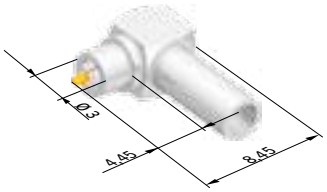
- Adapter for manual testing
- Snap-in function
- 500 mating cycles
- For cable Filotex RG 174 (other cable types on request)

Test cable assembly K-2227

Cable lengths:

- 150, 300, 500, 750, 1000 mm
- Other lengths available on request

Counterpart: SMA plug



Manual 3976/3926

Right angle cable plug 4162.91.1420.019

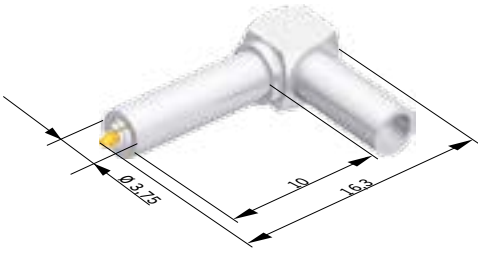
- Adapter for manual testing
- Snap-in function
- 500 mating cycles
- For cable Filotex RG 174 (other cable types on request)

Test cable assembly K-2283

Cable lengths:

- 150, 300, 500, 750, 1000 mm
- Other lengths available on request

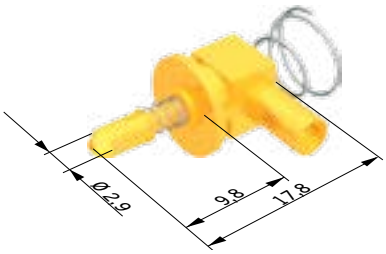
Counterpart: SMA plug

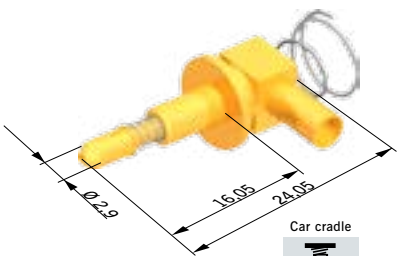


Manual 3976/3926

Right angle cable plug 4147.93.8914.123 4166.93.8914.123

- Adapter for car cradle application
- Float mount installation
- 100.000 mating cycles
- For cable RG 316
  (other cable types on request)



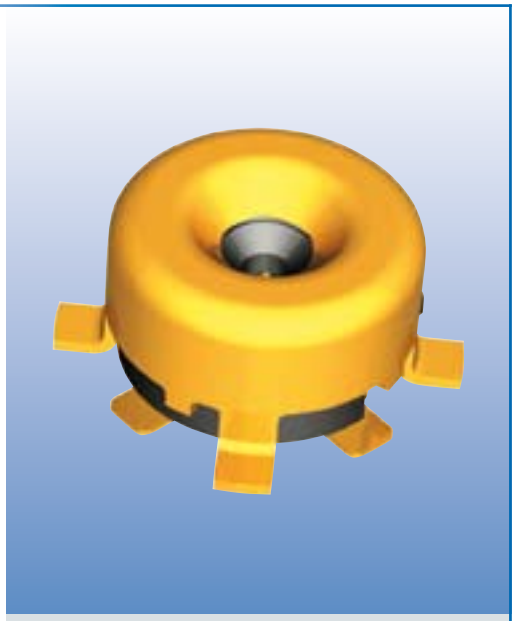


Car cradle 3976/3926

Straight female SMD RF switch

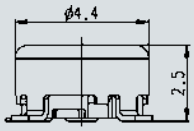
3 GHz | 20.000 | □ 5,0

2795.99.0030.001

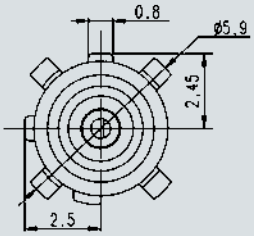


- Durable and robust design for more than 20.000 mating cycles
- Proven design
- Excellent guiding features for car cradle applications
- For all cellular freq. bands (GSM, DCS, PCS, UMTS, CDMA)

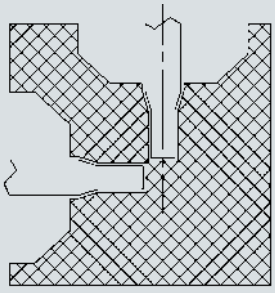
Side view



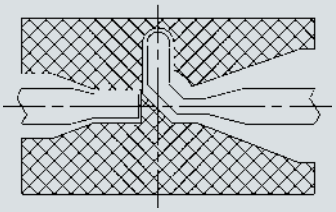
Top view



PCB layout 1



PCB layout 2



Electrical characteristics	2795 layout 1		2795 layout 2	
	Un-switched	Switched	Un-switched	Switched
Impedance	50 Ω			
Frequency range	DC...3 GHz			
Return loss				
≤ 1,0 GHz	> 34 dB	> 33 dB	> 32 dB	> 34 dB
≤ 2,0 GHz	> 23 dB	> 24 dB	> 25 dB	> 23 dB
≤ 3,0 GHz	> 23 dB	> 23 dB	> 23 dB	> 20 dB
Isolation				
≤ 1,0 GHz	–	> 34 dB	–	> 33 dB
≤ 2,0 GHz	–	> 28 dB	–	> 27 dB
≤ 3,0 GHz	–	> 23 dB	–	> 23 dB
Insertion loss				
≤ 1,0 GHz	< 0,15 dB	< 0,20 dB	< 0,15 dB	< 0,20 dB
≤ 2,0 GHz	< 0,20 dB	< 0,25 dB	< 0,20 dB	< 0,25 dB
≤ 3,0 GHz	< 0,25 dB	< 0,30 dB	< 0,25 dB	< 0,30 dB
Insulation resistance	> 500 MΩ			
Contact resistance				
Center contact	< 80 mΩ	< 50 mΩ	< 80 mΩ	< 50 mΩ
Outer contact	< 50 mΩ	< 25 mΩ	< 50 mΩ	< 25 mΩ
Contact current max.	0,3 A			
Operating voltage	50 V			

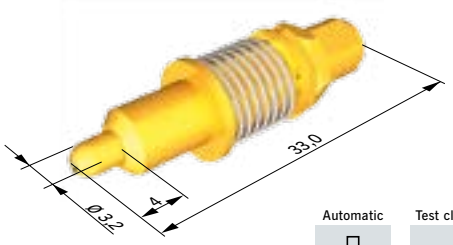
Mechanical characteristics	
Engagement force	typ. 2-4 N
Separating force	typ. 0 N
Mating cycles	20.000

Handling information	
Tape & reel	4.000 pcs. per reel
Pick & place	✓
Lead-free soldering	✓

(All electrical and mechanical characteristics are valid for the combination 2795.99.0030.001 and 2796.93.1420.031)

Straight test adapter with SMA interface — 2911.42.8914.101

- Adapter for automatic testing
- Float mount installation
- 100.000 mating cycles
- **Test clamp: AGK-3869** (for details see page 21)

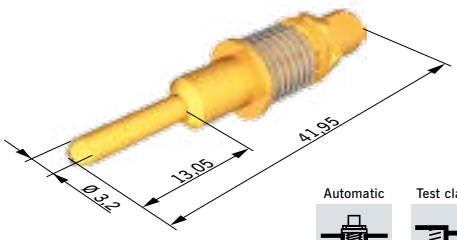


Automatic | Test clamp | 2795



Straight test adapter with SMA interface — 3265.42.8914.101

- Adapter for automatic testing
- Float mount installation
- 100.000 mating cycles
- **Test clamp: AGK-3823** (for details see page 21)



Automatic | Test clamp | 2795



Right angle cable plug — 3089.93.1420.021

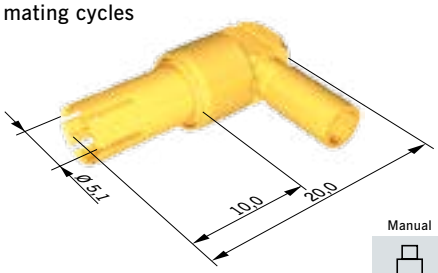
- Adapter for manual testing
- Snap-on function
- 1.000 mating cycles
- For cable Filotex RG 174 (other cable types on request)

Test cable assembly K-1772

Cable lengths:

- 150, 300, 500, 750, 1000 mm
- Other lengths available on request

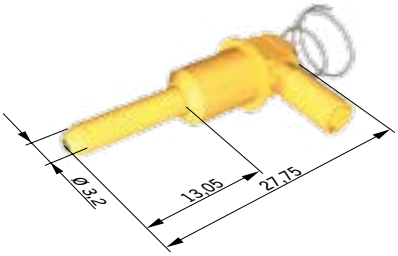
Counterpart: SMA plug

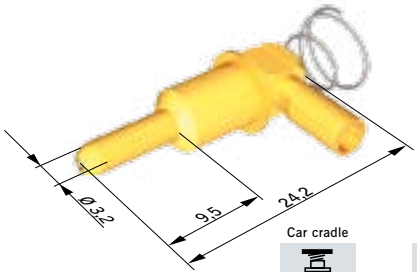


Manual | 2795


Right angle cable plug — 3095.93.1420.029 — 3582.93.1420.023

- Adapter for car cradle application
- Float mount installation
- 100.000 mating cycles
- For cable RG 316 /U, RG 174 A/U, RG 188 A/U (other cable types on request)





Car cradle | 2795


Right angle cable plug — 2796.93.1420.031

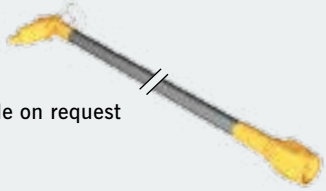
- Adapter for car cradle application
- Float mount installation
- 100.000 mating cycles
- For low loss cable 0.9L/2.25L-PV (other cable types on request)

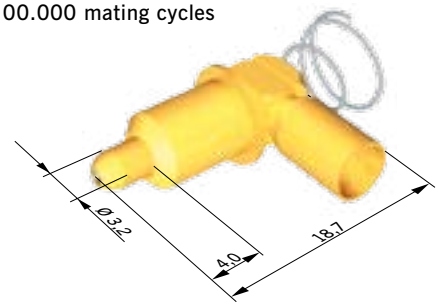
Cable assembly for car cradle K-1746

Cable lengths:

- 200, 300, 400 mm
- Other lengths available on request

Counterpart: SMA plug

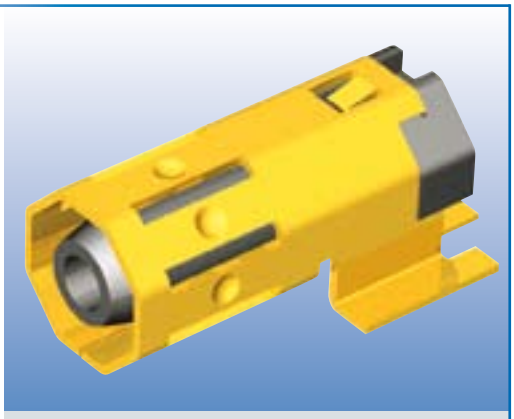


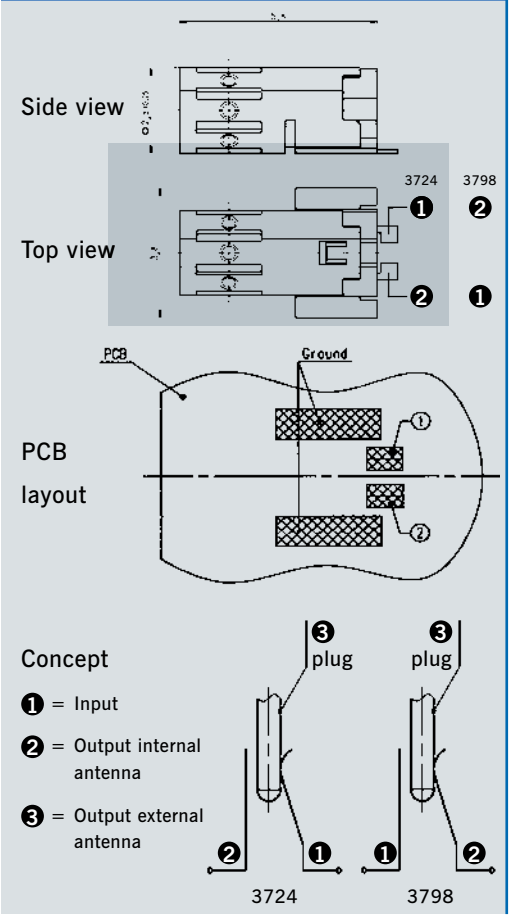


Right angle female SMD RF switches

3 GHz | 5.000 | 5,8 x 3,8

3724.99.0030.001, 3798.99.0030.001





The RF switch 3724 from IMS Connector Systems is one of the smallest angle RF switches on the market. Its robust stamped & formed metal housing provides secure engagement for both, snap-in and glide-in connectors.

- One of the world's smallest angle switches
- Reversible polarity for flexible PCB layout
- Minimum of 5.000 mating cycles
- For all cellular freq. bands (GSM, DCS, PCS, UMTS, CDMA)
- Very compact and robust design
- Outstanding return loss values
- Fully footprint compatible with SMK CRS 5001-1704 F / SMK CRS 5001-2303 F
- **Sample-kit see page 21**

Electrical characteristics	Un-switched	Switched (Adapter 3725-Type)
Impedance	50 Ω	
Frequency range	DC...3 GHz	
Return loss		
≤ 1,0 GHz	> 30 dB	> 23 dB
≤ 2,0 GHz	> 27 dB	> 18 dB
≤ 3,0 GHz	> 25 dB	> 16 dB
Isolation		
≤ 1,0 GHz	–	> 23 dB
≤ 2,0 GHz	–	> 17 dB
≤ 3,0 GHz	–	> 13 dB
Insertion loss		
≤ 1,0 GHz	< 0,10 dB	< 0,10 dB
≤ 2,0 GHz	< 0,15 dB	< 0,20 dB
≤ 3,0 GHz	< 0,20 dB	< 0,30 dB

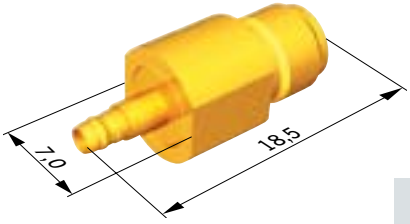
Mechanical characteristics		
Engagement force	max. 12 N	
Separating force	max. 12 N	
Mating cycles	min. 5.000	
Contact pressure force (switch)	min. 0,50 N	0,50 N

Handling information	
Tape & reel	2.500 pcs. per reel
Pick & place	✓
Lead-free soldering	✓

(All electrical and mechanical characteristics are valid for the combination 3724.99.0030.001 and 3725.91.8910.101)

Straight test adapter with SMA interface — 3725.91.8910.101

- Adapter for manual testing
- Snap-on function
- Min. 5.000 mating cycles



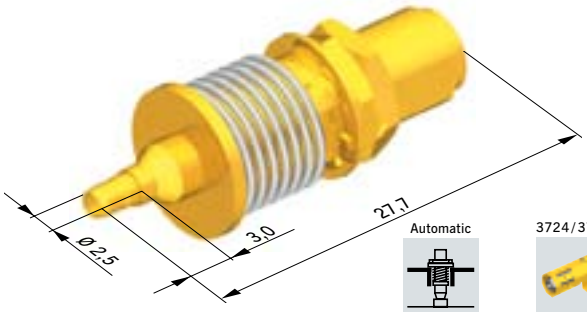
Manual

3724/3798

Straight test adapter with SMA interface

3726.93.8914.103

- Adapter for automatic testing
- Slide-on function
- Float mount installation
- 100.000 mating cycles



Automatic

3724/3798

Right angle cable adapter

3727.91.1120.023

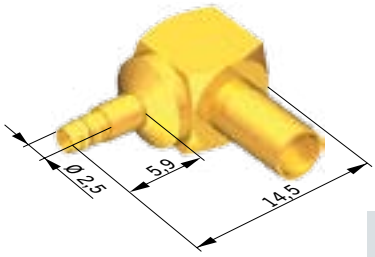
- Adapter for manual testing
- Min. 5.000 mating cycles
- For cable RG 316 /U, RG 174, RG 178, RG 196
- Snap-on function

Test cable assembly K-2082

Cable lengths:

- 50, 100, 250, 500, 1.000 mm
- Other lengths available on request

Counterpart: SMA plug



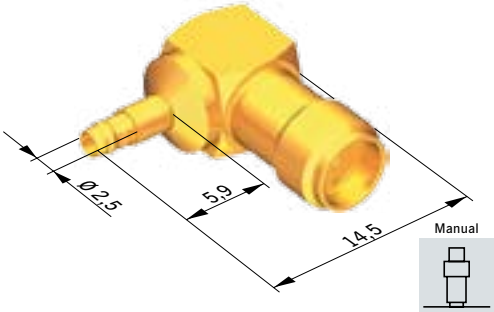
Manual

3724/3798

Right angle adapter with SMA interface

3794.91.8920.003

- Adapter for manual testing
- Snap-on function
- Min. 5.000 mating cycles



Manual

3724/3798

Straight cable adapter

3796.91.1410.023

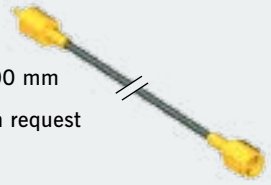
- Adapter for manual testing
- Min. 5.000 mating cycles
- For cable RG 316 /U, RG 316 U-d
- Snap-on function

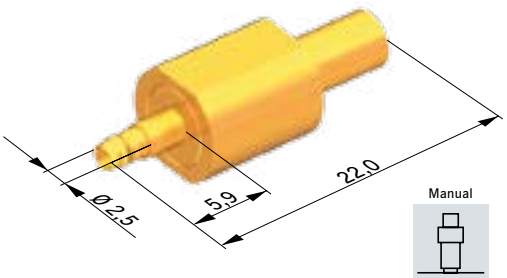
Test cable assembly K-2084

Cable lengths:

- 60, 100, 250, 500, 1.000 mm
- Other lengths available on request

Counterpart: SMA plug





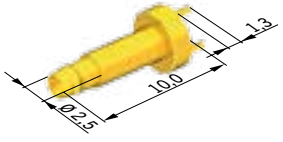
Manual

3724/3798

PCB mount plug antenna connector

3857.91.1510.003

- Special solution for antenna applications
- Snap-on function
- Min. 5.000 mating cycles
- 10.000 revolving cycles at 180° angle

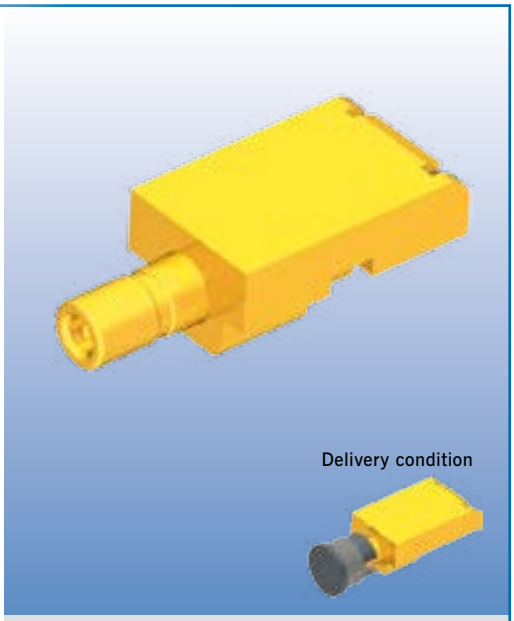


3724/3798

Straight male SMD RF switch

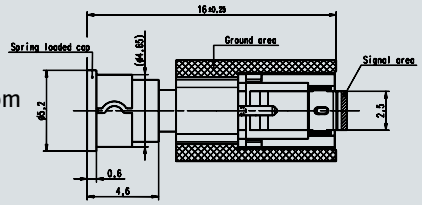
3 GHz | 1.000 | 11,7 x 6,5

3461.99.0030.003

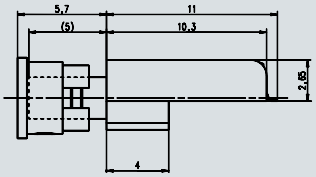


- ESD protected
- Low height 2,65 mm
- SSMB nano interface (HF3)
- PCB edge mount
- 1.000 mating cycles
- For all cellular freq. bands (GSM, DCS, PCS, UMTS, CDMA)

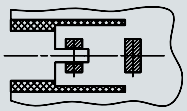
Bottom view



Side view



PCB layout



Electrical characteristics	Un-switched	Switched
Impedance	50 Ω	
Frequency range	DC...3 GHz	
Return loss		
≤ 1,0 GHz	> 23 dB	> 23 dB
≤ 2,0 GHz	> 20 dB	> 20 dB
≤ 3,0 GHz	> 17 dB	> 17 dB
Isolation		
≤ 1,0 GHz	–	> 30 dB
≤ 2,0 GHz	–	> 25 dB
≤ 3,0 GHz	–	> 22 dB
Insertion loss	max. 0,5 dB	max. 0,5 dB
Insulation resistance	> 500 MΩ	
Contact resistance		
Center contact	< 50 mΩ	< 50 mΩ
Outer contact	< 30 mΩ	< 30 mΩ
Operating voltage	200 V	

Mechanical characteristics	
Engagement force	max. 27 N
Separating force	min. 6 N
Mating cycles	1.000

Handling information	
Tape & reel	1.300 pcs. per reel
Pick & place	✓
Lead-free soldering	✓

(All electrical and mechanical characteristics are valid for the combination 3461.99.0030.003 and 2813.91.1310.021)

Straight cable connector 2813.91.1310.021

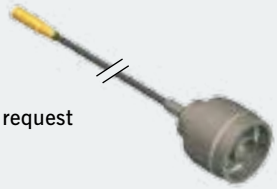
- Engagement force max. 27 N
- Separating force min. 4,5 N
- Mating cycles > 500

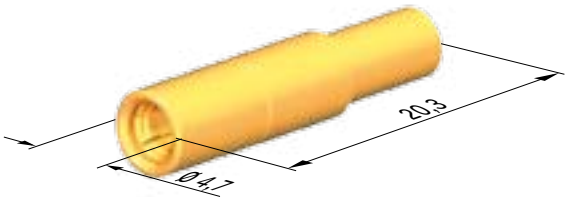
Cable assembly K-2091

Cable length:

- 1.000 mm
- Other lengths available on request

Counterpart: N plug





3461

Straight cable connector 3479.91.1310.021

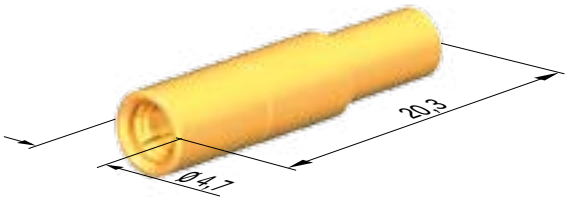
- Engagement force max. 30 N
- Separating force min. 6 N
- Mating cycles > 500

Cable assembly K-1989

Cable length:

- 600 mm
- Other lengths available on request

Counterpart: FME plug



3461

Right angle cable mount jack 4007.91.2120.021

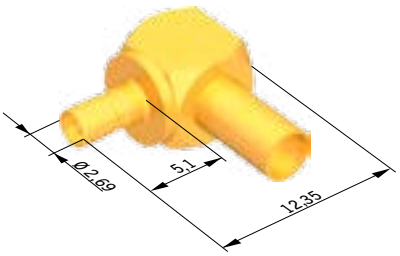
- Mating cycles > 500

Cable assembly K-2165

Cable length:

- 500 mm
- Other lengths available on request

Counterpart: 4012.91.1420.021



3461

Right angle cable mount plug 4012.91.1420.021

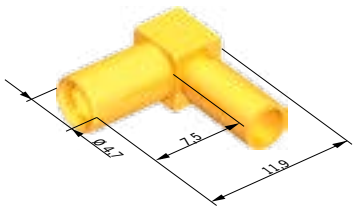
- Engagement force max. 27 N
- Separating force min. 5,5 N
- Mating cycles > 500

Cable assembly K-2165

Cable length:

- 500 mm
- Other lengths available on request

Counterpart: 4007.91.2120.021

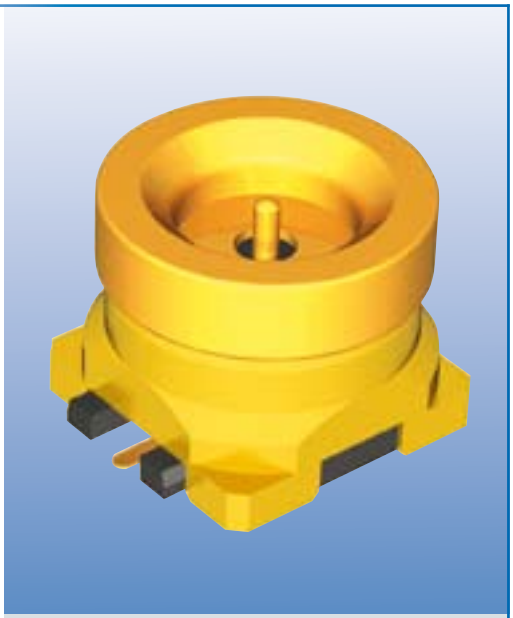


3461

Straight male SMD RF switch

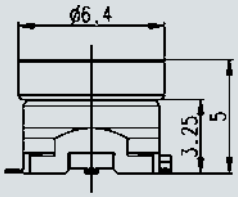
2 GHz | 20.000 | 6,0 x 7,3

2909.99.0030.003

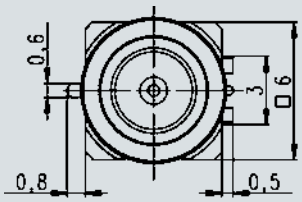


- Robust design for more than 20.000 mating cycles
- Excellent guiding features
- Watertight
- ESD protected
- For most cellular freq. bands (GSM, DCS, PCS and CDMA)
- **Adapters see page 19**

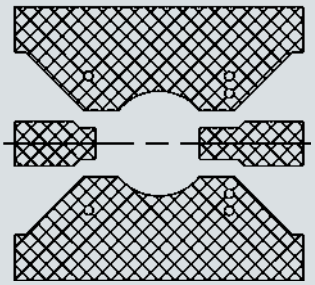
Side view



Top view



PCB layout



Electrical characteristics	Un-switched	Switched
Impedance	50 Ω	
Frequency range	DC...2 GHz	
Return loss		
≤ 1,0 GHz	> 30 dB	> 26 dB
≤ 2,0 GHz	> 27 dB	> 24 dB
Isolation		
≤ 1,0 GHz	–	> 30 dB
≤ 2,0 GHz	–	> 23 dB
Insertion loss		
≤ 1,0 GHz	< 0,13 dB	< 0,13 dB
≤ 2,0 GHz	< 0,18 dB	< 0,20 dB
Insulation resistance	> 500 MΩ	
Contact resistance		
Center contact	< 80 mΩ	< 30 mΩ
Outer contact	< 5 mΩ	< 5 mΩ
Operating voltage	100 V	

Mechanical characteristics	
Engagement force	< 2 N
Separating force	< 1 N
Mating cycles	20.000

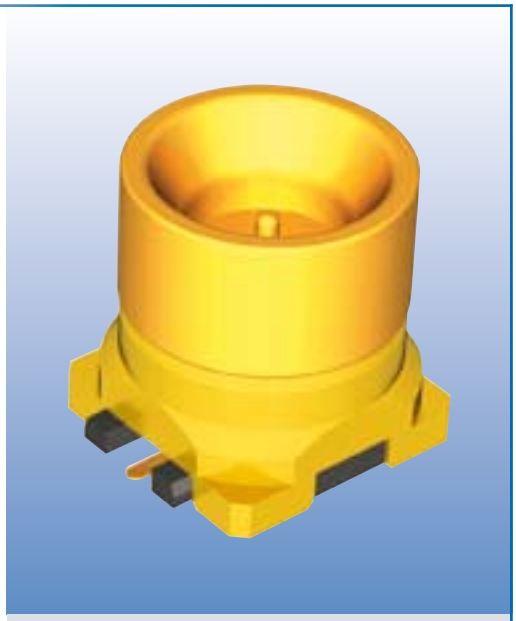
Handling information	
Tape & reel	500 pcs. per reel
Pick & place	✓
Lead-free soldering	✓

(All electrical and mechanical characteristics are valid for the combination 2909.99.0030.003 and 2613.93.1420.039)

Straight male SMD RF switch

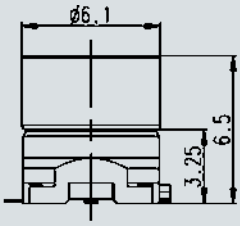
2 GHz | 20.000 | 6,0 x 7,3

2984.99.0030.003

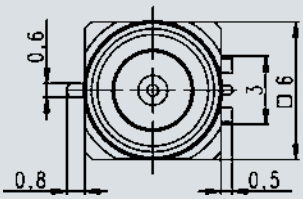


- Robust design for more than 20.000 mating cycles
- Excellent guiding features
- ESD protected
- For most cellular freq. bands (GSM, DCS, PCS and CDMA)
- **Adapters see page 19**

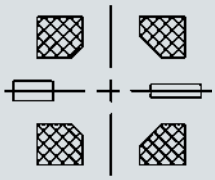
Side view



Top view



PCB layout



Electrical characteristics	Un-switched	Switched
Impedance	50 Ω	
Frequency range	DC...2 GHz	
Return loss		
≤ 1,0 GHz	> 24 dB	> 22 dB
≤ 2,0 GHz	> 19 dB	> 20 dB
Isolation		
≤ 1,0 GHz	–	> 30 dB
≤ 2,0 GHz	–	> 23 dB
Insertion loss		
≤ 1,0 GHz	< 0,12 dB	< 0,20 dB
≤ 2,0 GHz	< 0,16 dB	< 0,60 dB
Insulation resistance	> 500 MΩ	
Contact resistance		
Center contact	< 80 mΩ	< 30 mΩ
Outer contact	< 5 mΩ	< 5 mΩ
Operating voltage	100 V	

Mechanical characteristics	
Engagement force	< 2 N (with mating connector 2613.93.1420.039)
Separating force	< 1 N (with mating connector 2613.93.1420.039)
Mating cycles	20.000

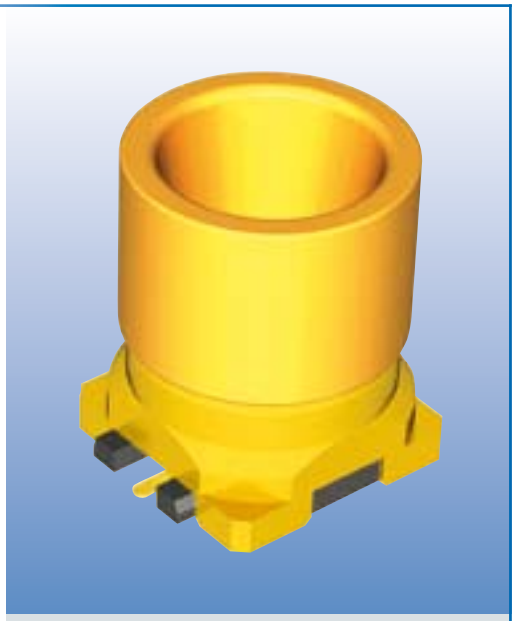
Handling information	
Tape & reel	800 pcs. per reel
Pick & place	✓
Lead-free soldering	✓

(All electrical and mechanical characteristics are valid for the combination 2984.99.0030.003 and 3115.49.8910.003)

Straight male SMD RF switch

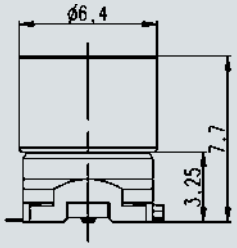
3 GHz | 20.000 | 6,0 x 7,3

3208.99.0030.003

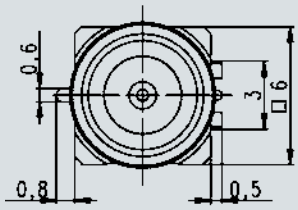


- Robust design for more than 20.000 mating cycles
- Excellent guiding features
- Watertight
- ESD protected
- For all cellular freq. bands (GSM, DCS, PCS, UMTS, CDMA)
- **Adapters see page 19**

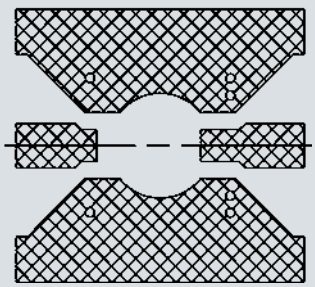
Side view



Top view



PCB layout



Electrical characteristics	Un-switched	Switched
Impedance	50 Ω	
Frequency range	DC...3 GHz	
Return loss		
≤ 1,0 GHz	> 28 dB	> 28 dB
≤ 2,0 GHz	> 25 dB	> 26 dB
≤ 3,0 GHz	> 19 dB	> 24 dB
Isolation		
≤ 1,0 GHz	–	> 28 dB
≤ 2,0 GHz	–	> 22 dB
≤ 3,0 GHz	–	> 19 dB
Insertion loss		
≤ 1,0 GHz	< 0,15 dB	< 0,2 dB
≤ 2,0 GHz	< 0,25 dB	< 0,3 dB
≤ 3,0 GHz	< 0,3 dB	< 0,4 dB
Insulation resistance	> 500 MΩ	
Contact resistance		
Center contact	< 80 mΩ	< 40 mΩ
Outer contact	< 10 mΩ	< 25 mΩ

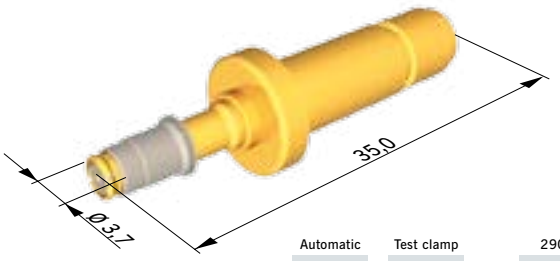
Mechanical characteristics	
Engagement force	< 8 N
Separating force	< 1 N
Mating cycles	20.000

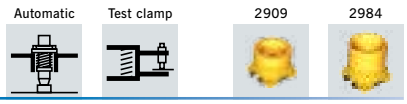
Handling information	
Tape & reel	350 pcs. per reel
Pick & place	✓
Lead-free soldering	✓

(All electrical and mechanical characteristics are valid for the combination 3208.99.0030.003 and 3221.93.1420.039)

Straight test adapter with SMA interface — 3115.49.8910.003

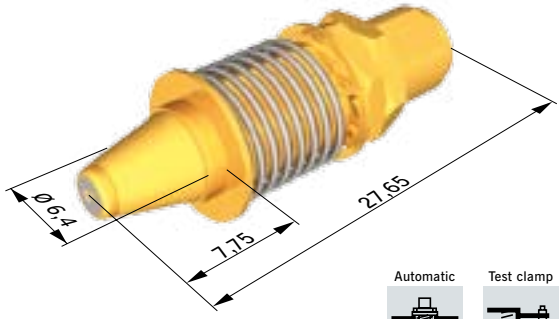
- Adapter for automatic testing
- 100.000 mating cycles

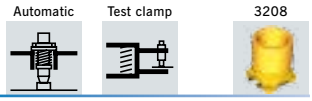




Straight test adapter with SMA interface — 3246.42.8914.103

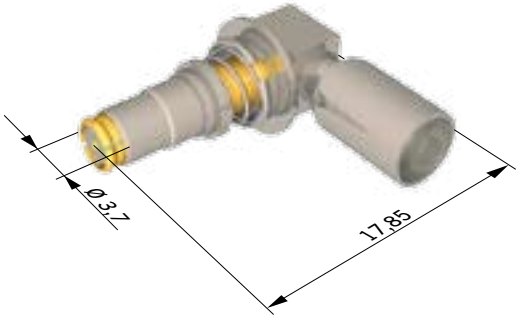
- Adapter for automatic testing
- Float mount installation
- 100.000 mating cycles

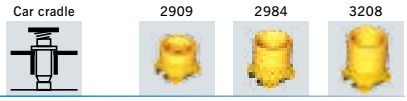




Right angle cable plug — 2613.93.1420.039

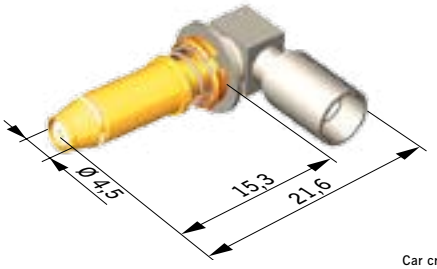
- Adapter for car cradle application
- Float mount installation
- 20.000 mating cycles
- For low loss cable 0.9L/2.25L-PV (other cable types on request)

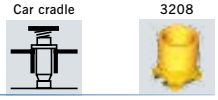




Right angle cable plug — 3221.93.1420.039

- Adapter for car cradle application
- Float mount installation
- 20.000 mating cycles
- For low loss cable 0.9L/2.25L-PV (other cable types on request)

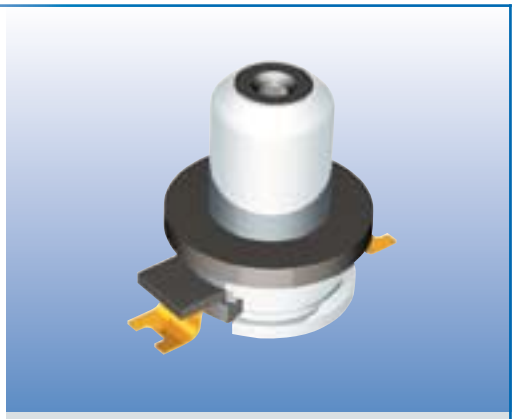




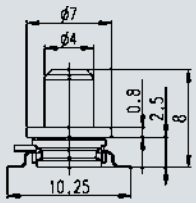
Straight female SMD RF switch

2 GHz | 20.000 | 10,25 x 5,2

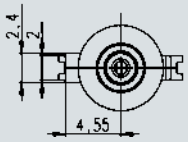
2421.99.0000.008



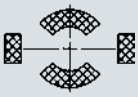
Side view



Top view



PCB layout



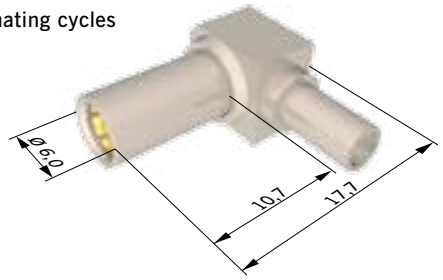
- Durable design for more than 20.000 mating cycles
- Increased contact security
- Compact and robust
- Outer gasket for better sealing properties
- For most cellular freq. bands (GSM, DCS, PCS and CDMA)

Electrical characteristics	Un-switched	Switched
Impedance	50 Ω	
Frequency range	DC...2,0 GHz	
Return loss		
≤ 1,0 GHz	> 15 dB	> 15 dB
≤ 2,0 GHz	> 15 dB	> 15 dB
Isolation		
≤ 1,0 GHz	–	> 20 dB
≤ 2,0 GHz	–	> 20 dB
Insertion loss	< 0,3 dB	< 0,4 dB
Insulation resistance	> 1 GΩ	
Contact resistance	< 25 mΩ	
Mechanical characteristics		
Separating force	typ. 2,2 N	
Mating cycles	20.000	
Handling information		
Tape & reel	500 pcs. per reel	
Pick & place	✓	
Lead-free soldering	✓	

(All electrical and mechanical characteristics are valid for the combination 2421.99.0000.008 and 2307.93.1420.029)

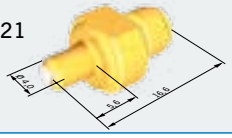
Right angle cable plug — 2307.93.1420.029

- Adapter for car cradle application
- Min. 20.000 mating cycles
- For cable RG 174 A/U (other cable types on request)



Straight test adapter 3094.42.9910.001

- Adapter for manual testing of 2307.93.1420.029
- Mating interface same as 2421
- 20.000 mating cycles
- With SMA interface

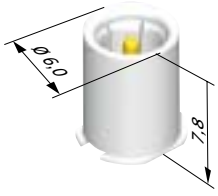


Car cradle

2421

PCB mount plug — 3384.99.0000.008

- SMT solderable
- For board to board connections
- 50 mating cycles
- Packed in tape & reel



2421

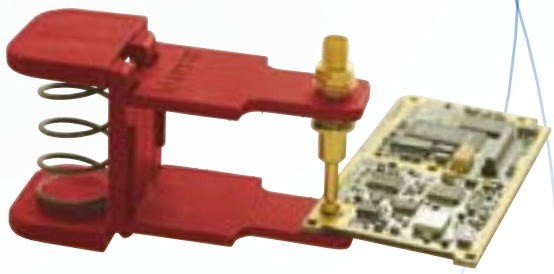
Accessories

The test clamps from IMS Connector Systems are functional and cost effective tools, which facilitate the manual testing process of RF devices. They assure proper engagement with defined forces.

- Easy to use
- For use in labs and for test applications
- No strain on solder joint
- Adapter is fixed to the board by clamp force

Test clamp — AGK-3823

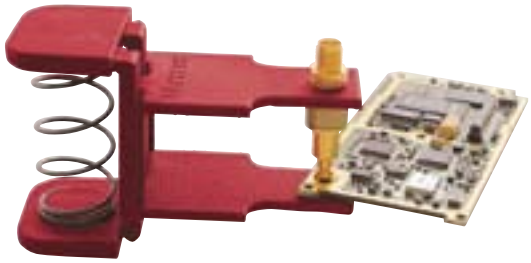
- For switch testing



2795

Test clamp — AGK-3869

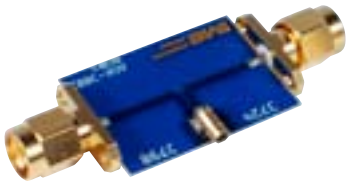
- For switch testing



2795

Sample-kit — AGK-3888

- Consisting of
  - 3724.99.0030.001 - Right angle female SMD RF antenna switch
  - 3798.99.0030.001 - Right angle female SMD RF antenna switch (reversible polarity)
  - 3725.91.8910.101 - Straight test adapter with SMA interface (manual testing)
  - 3726.93.8914.103 - Straight test adapter with SMA interface (automatic testing)
  - K-2082 - Test cable assembly
  - 3857.91.1510.003 - PCB antenna connector
  - AGK-3882 - Circuit board for testing



3724/3798

Details on page 12/13

Your global antenna team

State of the art antennas

Your global antenna team is structured to offer all levels of services around modern antenna development and manufacturing. Our expertise and facilities range from basic developments through high quality and economic volume production.

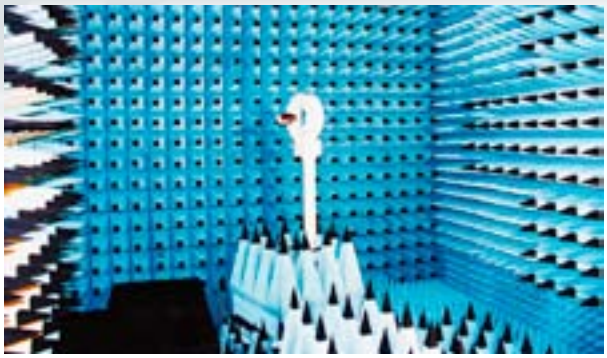
Your global antenna team provides you an excellent start position. Many basic developments and off the shelve interface solutions are ready to build on. This will save you time, R&D cost and resources, and will improve your time to market.

Example for a mobile terminal with embedded GSM antenna

Design

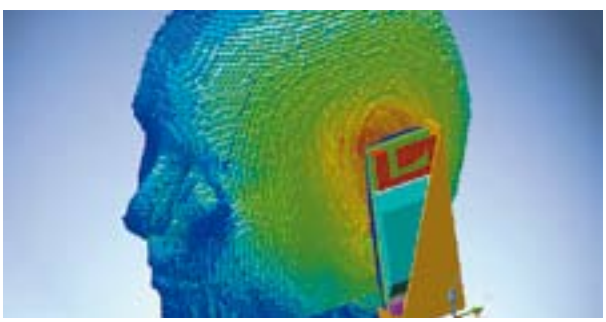
Experienced RF engineers and powerful simulation tools guarantee fast and accurate antenna design.

We rely not only on a variety of commercial tools, but also on our own 3D field solver. It enables us to predict the antenna performance in a real environment at a very early stage of the design process.



Measuring & testing

Your global antenna team can offer you a wide range of equipment and know-how for antenna testing. In our anechoic chambers and measurement labs we can measure all relevant electrical, mechanical and environmental parameters like far field, SAR (Specific Absorption Rate) and EMC (Electromagnetical Compatibility)



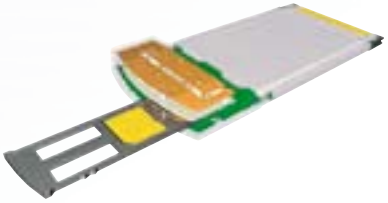
Applications & examples

No matter which application you are looking for, we support you with all of them. Whether handsets, datacom products or terminals, we will always choose the most suitable concept.

Our know-how, developments and products cover all major standards of wireless communication.

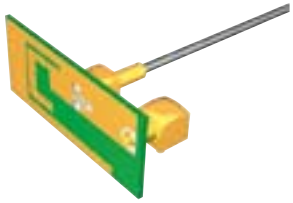
PCMCIA-cards for laptops

- GSM/DCS and WLAN concept
- SIM handling included
- Useable with standard PCMCIA housing



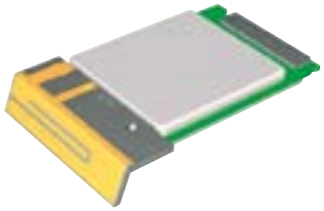
Hand-held data terminals

- Triple band internal antenna
- Standard carrier
- Customised layout



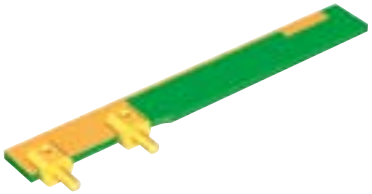
Hand-held data terminals

- Triple band internal antenna
- Standard assembly
- Customised layout possible
- Flexible mounting concept directly to PCB or module



Special solutions for wireless applications

- Custom design of antenna for special applications
- Various solutions for antenna concept
- Specific solutions for mechanical design



Mobile phones

- Triple band internal antenna
- Custom design

Antenna contacts with pogo pins

The SMD technology pogo pin contacts for antennas feature a very compact design and fulfil high mechanical and electrical requirements.

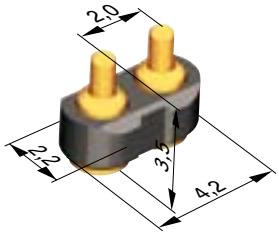
Different versions, low distances between PCB and contact area, high tolerance compensation and small footprints offer high flexibility for various designs.

The robust contacts are manufactured in a fully automated and computer controlled process. This guarantees a very high quality standard and a high number of mating cycles.

Antenna contact — AGK-3959

Working height	
Minimum	2,70 mm
Nominal	3,05 mm
Maximum	3,40 mm

Dimensions	
Contact pin	Ø 0,70 mm
Footprint	Ø 1,65 mm

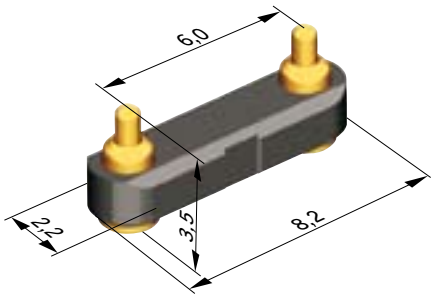


Spring force	
Force at nominal height	0,7 N
Electrical characteristics	
Contact resistance (initial value)	<30 mΩ
Current per contact	2 A
Mechanical characteristics	
Life time (cycles)	> 5.000
Operating temperature range	-25 °C up to +85 °C
Handling information	
Tape & reel	2.200 pcs. per reel
Pick & place	✓
Lead-free soldering	✓

Antenna contact — AGK-3850

Working height	
Minimum	2,70 mm
Nominal	3,05 mm
Maximum	3,40 mm

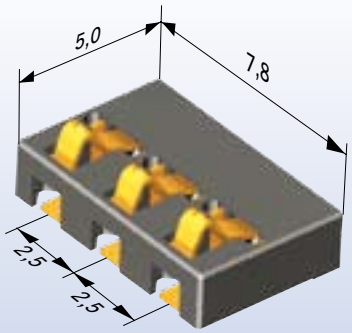
Dimensions	
Contact pin	Ø 0,70 mm
Footprint	Ø 1,65 mm

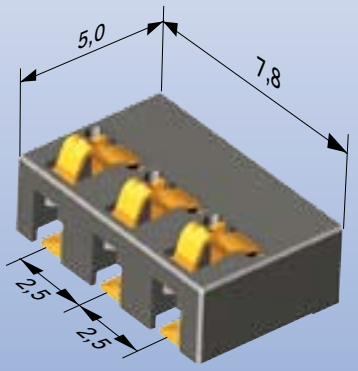


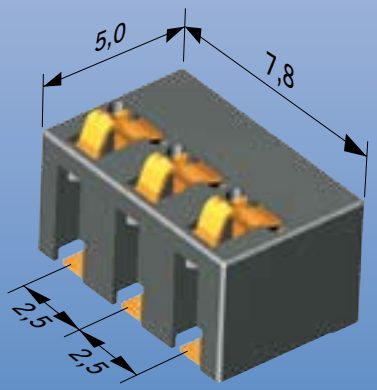
Spring force	
Force at nominal height	0,7 N
Electrical characteristics	
Contact resistance (initial value)	30 mΩ
Current per contact	2 A
Mechanical characteristics	
Life time (cycles)	> 5.000
Operating temperature range	-25 °C up to +85 °C
Handling information	
Tape & reel	2.200 pcs. per reel
Pick & place	✓
Lead-free soldering	✓

SMD leaf spring battery contact

AGK-3835-xxx







- Secure and reliable contact due to stamped & formed spring
- Space saving design
- Available standard heights are 1,8 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm and 4,0 mm
- Tape & reel packing for pick & place machines
- Contact springs are pre-loaded. The entire spring stroke is available as working stroke.

Electrical characteristics	
Contact resistance typ.	30 mΩ
Contact resistance max.	40 mΩ
Insulation resistance	1 GΩ
Operation voltage	60 VDC
Proof voltage	500 VAC
Current per contact spring	1,5 A (nom. stroke) 2,0 A (static)

Mechanical characteristics	
Minimum spring force	≥0,3 N
Minimum spring force after 10.000 mating cycles	≥0,25 N
Nominal working force	0,8 N ±0,2
Maximum working force	1,2 N ±0,3
Spring stroke	0,8 mm +0,15/-0,05
Durability	≥10.000 mating cycles

Material and plating	
Housing	PA
Contact spring material	copper-bronze
Contact spring plating	complete Ni selective 1,3 µm Au selective 0,1 µm Au

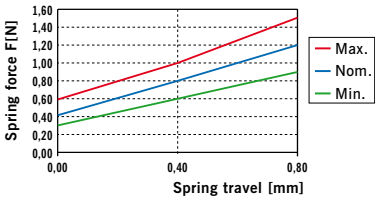
Material and plating	
Tape & reel	2.500 pcs. per reel
Pick & place	✓
Lead-free soldering	✓

Sample circuit board

AGK-3965

	Height
AGK-3835-180	1,80 mm
AGK-3835-200	2,00 mm
AGK-3835-250	2,50 mm
AGK-3835-300	3,00 mm
AGK-3835-350	3,50 mm
AGK-3835-400	4,00 mm

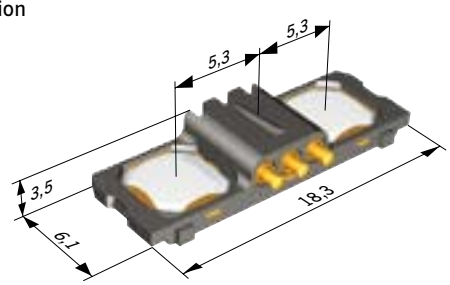
Force/Movement Diagramm



Two circuit side key

AGK-2584

- Solder free pogo pin solution
- Wide mating tolerances
- Spring loaded pin contact

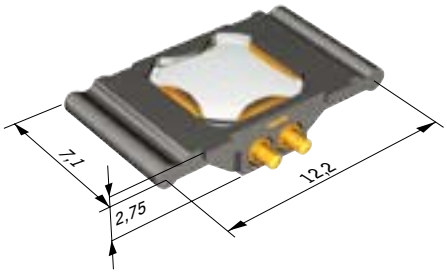


Electrical characteristics	
Contact resistance	0,5 Ω
Operating current	< 100 mA
Operating voltage	< 42 V DC
Mechanical characteristics	
Actuation force	0,3 N
Actuation distance	0,3 mm
Life time (cycles)	> 50.000
Handling information	
Tape & reel	1.300 pcs. per reel
Pick & place	✓
Solder free	✓

One circuit side key

AGK-3065

- Solder free pogo pin solution
- Increased activating forces
- Spring loaded pin contact

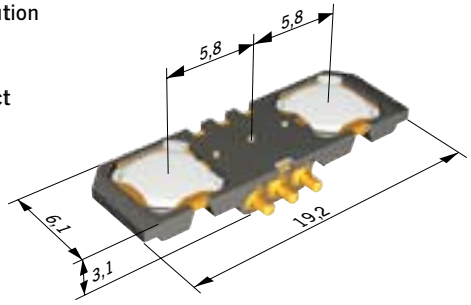


Electrical characteristics	
Contact resistance	0,5 Ω
Operating current	< 100 mA
Operating voltage	< 42 V DC
Mechanical characteristics	
Actuation force	2,35 N
Actuation distance	0,4 mm
Life time (cycles)	> 50.000
Handling information	
Tape & reel	2.000 pcs. per reel
Pick & place	✓
Solder free	✓

Two circuit side key

AGK-3067

- Solder free pogo pin solution
- Wide mating tolerances
- Spring loaded pin contact

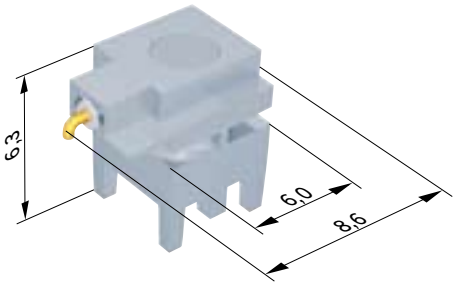


Electrical characteristics	
Contact resistance	< 0,5 Ω
Operating current	< 100 mA
Operating voltage	< 42 V DC
Mechanical characteristics	
Actuation force	1,7 N
Actuation distance	0,3 mm
Life time (cycles)	> 50.000
Handling information	
Tape & reel	2.100 pcs. per reel
Pick & place	✓
Solder free	✓

Board to board connector

2985.80.0520.009

- Replaces cable assemblies
- Suitable for automated pick & place handling
- For GSM applications

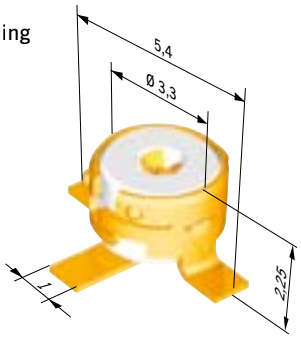


Electrical characteristics		
Impedance		50 Ω
Frequency range		DC...2 GHz
Insulation resistance		> 30 GΩ
Contact resistance	Center	10 mΩ
	Outer	10 mΩ
Contact current max. (DC)		2 A
Operating voltage		350 V
Proof voltage		1.000 V
Handling information		
Packaging		70 pcs. per L-tube
Pick & place		✓
Solder free		✓

PCB mount jack

1645.99.2610.007

- Low mounting height
- Suitable for automated pick & place handling
- For all cellular freq. bands
  (GSM, DCS, PCS, UMTS, WLAN)
- Snap function



Electrical characteristics	
Impedance	50 Ω
Frequency range	up to 4 GHz
Insertion loss	0,1 dB
Return loss	20 dB

Mechanical characteristics	
Mating cycles	max. 50

Handling information	
Tape & reel	3.000 pcs. per reel
Pick & place	✓
Solder free	✓

For related products please visit www.imscs.com/coaxial connectors/SMM or check our RF-coaxial connector catalogue

IDC (Insulation displacement connector)

AGK-3979

- Compact design
- Low cost installation
- Solder free leaf spring solution

Electrical characteristics	
Contact resistance	30 mΩ
Contact resistance max.	40 mΩ
Insulation resistance	1 GΩ
Operation voltage	60 V DC
Proof voltage	500 V DC
Current per contact spring	1,5 A

Mechanical characteristics	
Max. working height (2,6 mm)	min. 0,6 N
Min. working height (3,0 mm)	min 0,3 N
Working area	0,4 mm
Durability within working area	1.000
Pull out force (Cable)	min. 3 N

Handling information	
Packaging	100 pcs. per plastic bag
Solder free	✓

Application: For loudspeaker contact in combination with cable assembly

Your global connection

IMS Connector Systems

Head Office, Germany
IMS Connector Systems GmbH
Obere Hauptstraße 30
D-79843 Löffingen
Tel (+49) 7654 9010
Fax (+49) 7654 901199
Net www.imscs.com
E-mail sales@imscs.com

Hungary
IMS Connector Systems Kft
Ipar körút 27
H-9400 Sopron
Tel (+36) 99513513
Fax (+36) 99513514
E-mail hungary@imscs.com

China
IMS Connector Systems Ltd
No 35, Huo Ju Road
SND Science & Technology Park
VCR-Suzhou 215011
Tel (+86) 51268081816
Fax (+86) 51268252388
E-mail sales@imscscn.com

Northern Europe
IMS Connector Systems GmbH
Obere Hauptstraße 30
D-79843 Löffingen
Contact Elo Patricia Mayer
Tel (+46) 221 80188
Fax (+49) 7654 901199
E-mail emayer@imscs.com

United Kingdom
IMS Connector Systems GmbH
Obere Hauptstraße 30
D-79843 Löffingen
Contact Graham Coleman
Tel (+44) 7867542413
Fax (+49) 7654 901199
E-mail gcoleman@uk.imscs.com

USA
IMS Connector Systems Inc.
6606 Mapleshade Lane
Dallas, TX 75252
Contact Thomas Strasser
Tel (+1) 972 6128515
E-mail tstrasser@imscsusa.com

Distributors and Agents

Asia and Pacific

Taiwan
Invax System and Trading Corp.
4F, NO. 815, Chung HSIAO E. Road, SEC.5
RC-Taipei
Tel (+886) 227885218
Fax (+886) 227831658
Net www.invax.com.tw
E-mail invax@ms4.hinet.net

Europe

Austria, Hungary and Slovenia
EPI Components Trade GmbH
Industriepark Lieserbrücke
Gewerbestraße 9
A-9851 Lieserbrücke
Tel (+43) 476240220
Fax (+43) 47625451
Net www.epi.at
E-mail office@epi.at

Belgium and Luxembourg
ACAL N.V.
Lozenberg 4
B-1932 Zaventem
Tel (+32) 27205983
Fax (+32) 27251014
Net www.acal.be
E-mail acal@acal.be

Denmark
ACTE A/S
Vallensbækvej 41
DK-2605 Brøndby
Tel (+45) 46900400
Fax (+45) 46900500
Net www.acte.dk
E-mail info@acte.dk

Estonia
Antes Sales Oy
Tehnika 1 A
46107 Tamsalu
Tel (+372) 3255063
Fax (+372) 3255064
Net www.antessales.ee
E-mail info@antessales.ee

Finland
Milcon Oy
Tykkitie 1
FIN- 36240 Kangasala
Tel (+358) 3 364 2810
Fax (+358) 3 364 2812
Net www.milcon.fi
E-mail janne.korpinen@milcon.fi

France
BFI Optilas
4 allée du Cantal
ZI la Petite Montagne Sud
CE1834
F-91018 Lisses
Tel (+33) 1 60 79 89 09
Fax (+33) 1 60 79 89 03
Net www.bfioptilas.com
E-mail info@bfioptilas.com

PN Electronics
Le Gystalys
6 avenue Morane Saulnier
F-78140 Vélizy-Villacoublay
Tel (+33) 1 39 45 15 50
Fax (+33) 1 39 45 15 60
Net www.pne.fr
E-mail sales@pne.fr

Germany North
EVG Elektro-Vertriebs-Gesellschaft
Martens GmbH & Co KG
Trompeterallee 244-246
D-41189 Mönchengladbach
Tel (+49) 216655080
Fax (+49) 2166550890
Net www.evg.de
E-mail info@evg.de

MC Technologies GmbH
Kabelkamp 2
D-30179 Hannover
Tel (+49) 5116769990
Fax (+49) 511676999150
Net www.mc-technologies.net
E-mail info@mc-technologies.net

Germany South
MTS Systemtechnik GmbH
Gewerbepark Ost 8
D-86690 Mertingen
Tel (+49) 9078912940
Fax (+49) 90789129470
Net www.mts-systemtechnik.de
E-mail peter.doebber@mts-systemtechnik.de

MES Electronic Connect GmbH + Co.KG
In der Lache 24
D-78056 VS-Schwenningen
Tel (+49) 7720 945-200
Fax (+49) 7720 945-108
Net www.mes-electronic.de
E-mail info@mes-electronic.de

Israel
ShirTech Ltd
2, Rozanski St. New Industrial Park
IL-75706 Rishon Lezion
Tel (+972) 3-9516495
Fax (+972) 3-9516493
Net www.shirtech.co.il
E-mail shirtech@bezeqint.net

Italy
CPE Italy s.p.a.
Via Chiasserini 15
I-20157 Milano
Tel (+39) 02390961
Fax (+39) 023570774
Net www.cpeitaly.it
E-mail sales@cpeitaly.it

Norway
EC Partner as
Bjørnerudveien 24
N-1205 Oslo
Tel (+47) 22766600
Fax (+47) 22766601
Net www.ecpartner.no
E-mail component@ecpartner.no

Spain and Portugal
Connecta S.L.
Pje. Salvador Espriu, 1-3.
Planta 1ª. Local 3.
08908 Hospitalet de Llobregat
Barcelona
Tel (+34) 90 2333 075
Fax (+34) 93 3779 151
Net www.connectaeys.es
E-mail info@connectaeys.es

Switzerland and Liechtenstein
Precimation AG
Erlenstrasse 35 A
CH-2555 Brügg BE
Tel (+41) 323666999
Fax (+41) 323666990
Net www.precimation.ch
E-mail welcome@precimation.ch

United Kingdom
Quadrant Connectors Ltd
Bridgefoot House, Watling Street
Radlett
Hertfordshire WD7 7HT
Tel (+44) 1923851400
Fax (+44) 1923857567
Net www.quadrantconnections.com
E-mail info@quadrantconnections.com

Flint
Walker Road
Bardon Hill
Coalville
Leicestershire, LE67 1TU
England
Tel (+44) 1530510333
Fax (+44) 1530510275
Net www.flint.co.uk
E-mail enq@flint.co.uk

North America

Canada
Utech Electronics
5250 Finch Avenue East, Unit 1
Scarborough, Ontario
Canada M1S 5A4
Tel (+416) 609 2900
Fax (+416) 609 2588
Net www.utech.ca
E-mail sales@utech.ca

USA
Reichenbach International, Inc.
2080 Stonesgate Street
Westlake Village, California 91361, USA
Tel (+1) 805 495 7003
Fax (+1) 805 379 4310
Net www.reichenbachintl.com
E-mail sales@reichenbachintl.com

TRG Components
5801 Lee Highway
Arlington, VA 22207, USA
Tel (+1) 703 533 8555
Fax (+1) 703 533 2079
Net www.trgcomp.com
E-mail pcox@trgcomp.com

IMS CONNECTOR SYSTEMS
www.imscs.com