Mob: +91 7217885948 www.rfconnector.in pradeeep@rfconnector.in

HIGH FREQUENCY CONNECTORS: N 18 GHZ/ N 18 GHZ SELF-LOCK/TNC 18 GHZ/TNC 18 GHZ SELF-LOCK/SMA 2.9/SMA 2.9 SELF-LOCK/2.4 MM

R143/R127/R327/R163

Plot no. 845, DSIIDC Industrial Area KHASRA NO. 33/23 (0-7) & 37/4 (0-10)Gali no. 6, near Harnandi dharam kanta Mundka Industrial Area, New Delhi, Delhi, 110041

Plot no. 845, DSIIDC Industrial Area KHASRA NO. 33/23 (0-7) & 37/4 (0-10)Gali no. 6, near Harnandi dharam kanta Mundka Industrial Area, New Delhi, Delhi, 110041

Section 11 Table of Contents

N 18 GHz

INTRODUCTION

N 18 connectors are 50 ohm precision N Type connectors designed to perform through 18 GHz. N connectors are a popular medium sized option commonly used in microwave and RF applications that require high power handling and good electrical performance. Radiall Type N connector interfaces utilizes a PTFE (Teflon) dielectric. The male connectors are provided with a 19 mm (3/4 in.) hex coupling nut so they can be properly torqued. Connector bodies are made from stainless steel, and contacts are made from gold plated and heat treated beryllium copper contacts to insure long life and reliability.

Radiall offers N connectors for semi-rigid and low loss flexible cables, receptacles and precision adapters.

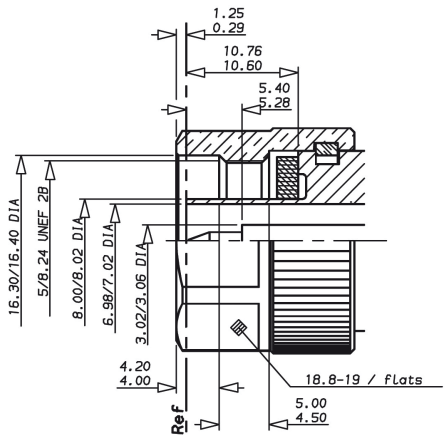
Connectors for low loss flexible cables and TestPro cables are not detailed in this section. They are available in our cable assembly offer.

TYPE N 18 DESIGN FEATURES

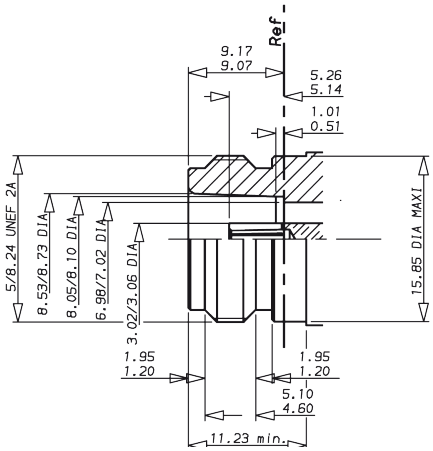
- Excellent performance up to 18 GHz
- Low VSWR and insertion loss
- Highly robust construction for reliability
- Superior interface environmental seal
- High power capability

N 18 GHz

INTERFACE



PLUG



JACK

IMPORTANT: the 50Ω and the 75Ω connectors are NOT INTERMATEABLE, results in the interface destruction.

MM	INCH
0.29	.0114
1.25	.049
3.02	.1189
3.06	.1204
4.00	.157
4.20	.165
4.50	.177
5.00	.197
5.28	.208
5.40	.2126
6.98	.2748
7.02	.2764
8.00	.315
8.02	.316
10.60	.417
10.76	.423
16.30	.642
16.40	.646
18.80	.740
19.00	.748

MM	INCH
0.51	.020
1.01	.0397
1.20	.0472
1.95	.0767
3.02	.1189
3.06	.1204
4.60	.1811
5.10	.201
5.14	.202
5.26	.207
6.98	.2748
7.02	.2764
8.05	.317
8.10	.319
8.53	.336
8.73	.3437
9.07	.357
9.17	.361
11.23	.442
15.85	.624

Notes

Mating dimensions are MIL-C-39012 nominal with tighter tolerances and solid outer contact.

N 18 GHz

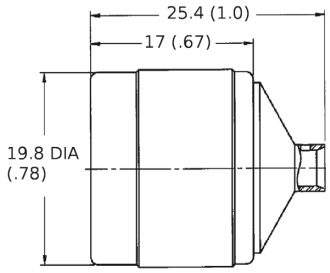
CHARACTERISTICS

TEST / CHARACTERISTICS	VALUES / REMARKS	
ELECTRICAL CHARACTERISTICS		
Impedance	50Ω	
Frequency Range	DC - 18 GHz	
Typical V.S.W.R. **• Straight Connector** **• Right Angle Connector**	With SHF Cables 1.10 at 18 GHz 1.15 at 18 GHz	
Insertion Loss	< 0.1 √F (GHz) dB	
RF Leakage	- 90 dB (2 to 3 GHz)	
Insulation Resistance	5000 MΩ min	
Contact Resistance **• Outer Contact** **• Inner Contact**	After Environment Test 2 mΩ max N.A.	Initial 1.5 mΩ max 2 mΩ max
Peak Power (At Sea Level)	5000 W	
Average Power (At Sea Level, 25 °C)	2000 W at 0.1 GHz 600 W at 1 GHz 150 W at 10 GHz	
	.085" Semi-Rigid Cable	.141" Semi-Rigid Cable
Dielectric Withstanding Voltage **• At Sea Level** **• At 70000 feet**	1000 Vrms 250 Vrms	1500 Vrms 375 Vrms
Voltage Rating **• At Sea Level** **• At 70000 feet**	335 Vrms 85 Vrms	500 Vrms 125 Vrms
RF High Potential Withstanding Voltage	670 Vrms	1000 Vrms
Corona Level	250 Vrms	375 Vrms
MECHANICAL CHARACTERISTICS		
Durability	500 Matings	
Cable Retention Force	136 N (31 lbf)	272 N (61 lbf)
Recommended Coupling Torque	160 Ncm (14 lbf.in)	
Contact Captivation	27 Ncm (6 lbf) min	
ENVIRONMENTAL CHARACTERISTICS		
Temperature Range	Standard Connectors - 65 °C + 165 °C	Connectors for Semi-Rigid Cable - 40 °C + 125 °C
Vibration	MIL-STD-1344 Method 2005 Condition 4	
Shock	MIL-STD-1344 Method 2004 Condition G	
Thermal Shock	MIL-STD-1344 Method 1003 Condition A	
Corrosion (Salt Mist)	MIL-STD-1344 Method 1001 Condition B	
High Temperature Test	CECC 22000/4.7.2	
Damp Heat	CECC 22000/4.6.6	
Low Pressure Immersion	EN2591 AECMA TestC14	
Resistance to Fluids Contamination	EN2591 AECMA TestC15	
MATERIALS		
Body	Stainless Steel	
Center Contact	Beryllium Copper and Brass	
Coupling Nut	Brass	
Insulator	PTFE or Polyetherimid Resin	
Gasket	Fluorosilicon or Fluorocarbon	
PLATING		
Body	Passivated	
Center Contact	Gold	
Coupling Nut	Nickel	

N 18 GHz

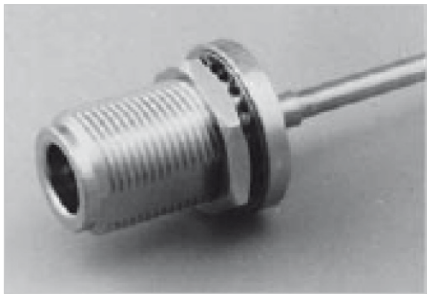
PLUGS, JACKS & ADAPTERS

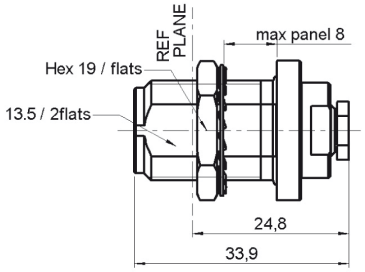
STRAIGHT PLUGS FOR SEMI-RIGID CABLES [1]



CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	CAPTIVE CENTER CONTACT	MATERIAL	NOTE
RG402	.141"	4000-1563-009	Yes	Stainless Steel	Direct Solder
RG405	.085"	4000-1563-010			

BULKHEAD STRAIGHT JACKS, FOR SEMI-RIGID CABLES (PANEL SEALED)





CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	CAPTIVE CENTER CONTACT	PANEL DRILLING	MATERIAL	NOTE
RG405	.085"	4501-9543-010	Yes	P14	Stainless Steel	Solder Clamp / Rear Mount
RG402	.141"	4501-9543-009				
		R163 337 001				

IN SERIES ADAPTERS [2]

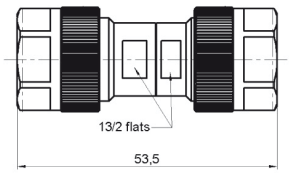


FIG. 1

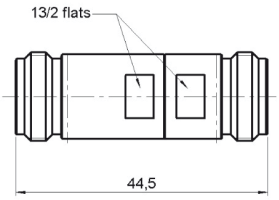


FIG. 2

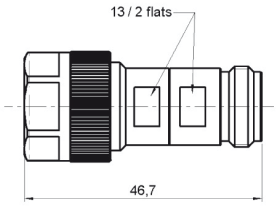


FIG. 3

PART NUMBER	FIG.	DIMENSION (MM)	NOTE
R163 703 001	1	53.5 (2.106)	Male - Male
R163 705 001	2	44.5 (1.752)	Female - Female
R163 708 001	3	46.7 (1.838)	Male - Female

Notes

1. N18 GHz plugs for SHF high frequency flexible cable are available as cable assemblies only. Consult us for standard N18 GHz cable assembly part numbers.

2. 7mm air line adapters also available upon request.

N 18 GHz Self-Lock

INTRODUCTION

Radiall introduces a new innovative technology in response to market demands to eliminate locking wires.

Radiall's Self-Lock RF connectors are the perfect solution to provide secure connection-facing vibrations experienced in aerospace applications.

The Self-Locking design is intended to eliminate the need for safety wires and saves many hours, the locking feature is achieved via a spring loaded, corrugated washer.

Self-Lock connectors are intermatable with any standard jack or female receptacle; there is no change in performance. All electrical, mechanical and environmental specifications are preserved.

With this solution, mating-unmating becomes faster, safer (no forgotten lock wire) and is proven to be more robust even in the harsh environment of an airplane bilge. The Self-Lock connectors can be provided on any compatible cable size. The innovative crimp system attachment offers the opportunity for on-site assembly as well as ordering finished cable assemblies.

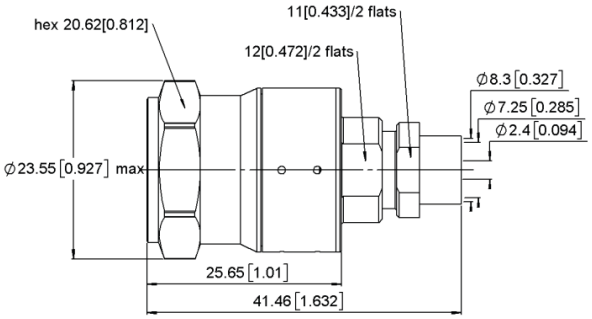
FEATURES & BENEFITS

- No locking wire
- Secure connection in harsh environments
- Easy and fast to install
- Self-Lock plugs compatible with standard jacks and receptacles

N 18 GHz Self-Lock

PLUGS

STRAIGHT PLUG SOLDER TYPE CABLE



CABLE GROUP	PART NUMBER
SHF8	R163 068 L21

STRAIGHT PLUGS CRIMP TYPE

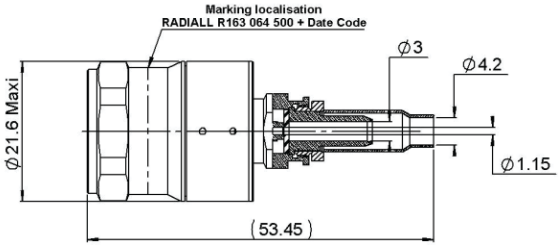


FIG. 1

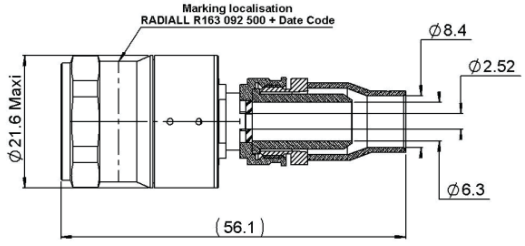
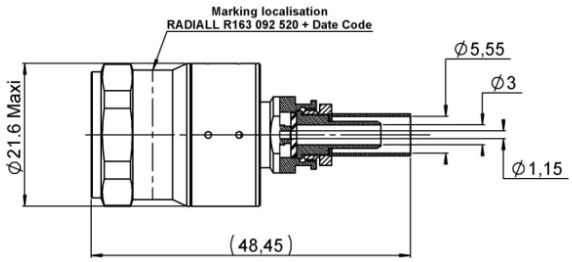


FIG. 2

CABLE GROUP	PART NUMBER	FIG.
EN4604-006WM	R163 064 500	1
EN4604-007WN	R163 092 500	2

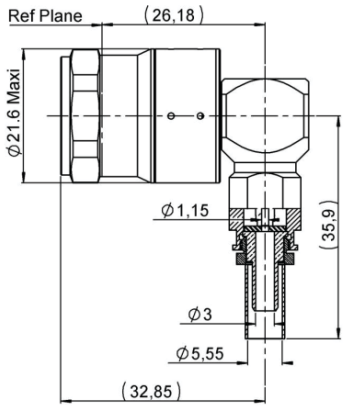
STRAIGHT PLUG FULL CRIMP TYPE



CABLE GROUP	PART NUMBER
RG 142 FTX / RG 400 / KX 23 / RG 223	R163 092 520

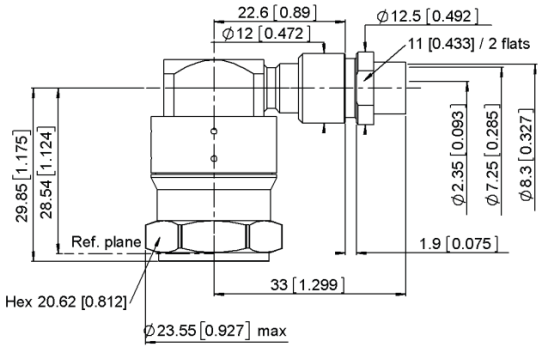
N 18 GHz Self-Lock

RIGHT ANGLE PLUG FULL CRIMP TYPE



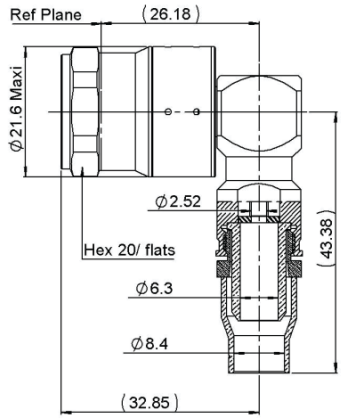
CABLE GROUP	PART NUMBER
RG 142 FTX / RG 400 / KX 23 / RG 223	R163 197 010

RIGHT ANGLE PLUG SOLDER TYPE CABLE



CABLE GROUP	PART NUMBER
SHF8	R163 198 L21

RIGHT ANGLE PLUG CRIMP TYPE



CABLE GROUP	PART NUMBER
EN 4604-007WN	R163 199 010

TNC 18 GHz

INTRODUCTION

TNC 18 connectors are 50 ohm precision TNC Type connectors designed to perform through 18 GHz. TNC connectors are a popular medium sized option commonly used in microwave and RF applications that require average power handling and good electrical performance. Radiall TNC connector interfaces utilizes a PTFE (Teflon) dielectric. The male connectors are provided with a 14 mm (9/16 in.) hex coupling nut so they can be properly torqued. Connector bodies are made from stainless steel, and contacts are made from gold plated and heat treated beryllium copper contacts to insure long life and reliability.

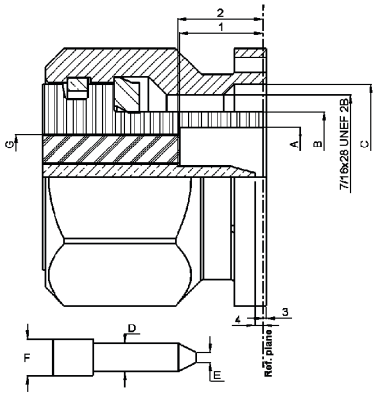
Radiall offers TNC connectors for semi-rigid and low loss flexible cables, receptacles and precision adapters.

Connectors for low loss flexible cables and TestPro cables are not detailed in this section. They are available in ourcable assembly offer.

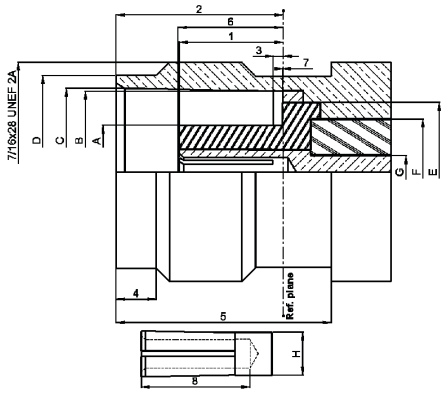
TNC 18 DESIGN FEATURES

- Excellent performance up to 18 GHz
- Low VSWR and insertion loss
- Rugged construction for reliability
- Superior interface environmental seal
- Medium power capability

INTERFACE



PLUG



JACK

LETTER	MM		INCH	
	MIN	MAX	MIN	MAX
A	6.18	6.22	0.243	0.245
B	8.03	8.09	0.316	0.319
C	11.40	11.60	0.449	0.457
D	1.34	1.36	0.053	0.054
E	0.35	0.65	0.014	0.026
F	1.62	1.66	0.064	0.065
G	5.28	5.32	0.208	0.210
1	5.28	5.38	0.208	0.212
2	5.35	5.50	0.211	0.217
3	-0.30	0.55	-0.012	0.022
4	0.35	0.90	0.014	0.065

LETTER	MM		INCH	
	MIN	MAX	MIN	MAX
A	4.68	4.72	0.184	0.186
B	8.10	8.15	0.319	0.321
C	8.32	8.46	0.328	0.333
D	9.61	9.68	0.379	0.381
E	6.93	6.98	0.273	0.275
F	5.28	5.32	0.208	0.210
G	1.62	1.66	0.064	0.065
H	2.14	2.18	0.084	0.086
1	4.98	5.23	0.196	0.206
2	8.36	8.46	0.329	0.333
3	0.48	1.02	0.019	0.040
4	1.80	2.20	0.071	0.087
5	10.60	11.00	0.417	0.432
6	5.18	5.28	0.204	0.208
7	-0.10	0.05	0.004	0.002
8	5.20	5.70	0.204	0.224

TNC 18 GHz

CHARACTERISTICS

TEST / CHARACTERISTICS	MIL-C-39012 A	VALUES / REMARKS	
ELECTRICAL CHARACTERISTICS			
Impedance	-	50Ω	
Frequency Range	-	DC - 18 GHz	
V.S.W.R.	3-14	Semi–Rigid Cable: 1.17 max	
		Flexible Cable: 1.35 at 12.4 GHz	In Series Adapter: 1.35 max
Insertion loss	3-27	0.18 dB max at 9 GHz	
RF Leakage	3-26	-60 dB min from 2 to 3 GHz	
Insulation Resistance	3-11	5000 MΩ min	
Contact Resistance **• Center Contact (mΩ)** **• Outer Contact (mΩ)**	3-16 - -	Initial 1.5 0.2	After Proof 2 -
Working Voltage	-	At sea level: 500 V rms	at 70000 ft (21000 m): 125 V rms
Dielectric Withstanding Voltage	3-17	At sea level: 1500 V rms	at 70000 ft (21000 m): 375 V rms
RF Withstanding Voltage	3-23	At sea level: 1000 V rms (5 MHz sine wave)	
MECHANICAL CHARACTERISTICS			
Durability	3-15	500 Matings	
Mating / Unmating	-	Axial Force: Not Applicable Torque: 1.96 inch pounds (22.6 N.cm)	
Recommended Mating Torque	-	22.98 inch pounds (265 N.cm)	
Proof Torque	-	29.40 inch pounds (339 N.cm)	
Coupling Mechanism Retention Force	3-25	100 Lbf (44.5 daN)	
Cabling Retention Force	3-24	51 Lbf (227 N min) (cable dia. .189 (4.8) to .228 (5.8))	
		76.4 Lbf (340 N min) (cable dia. .250 (6.35) and above)	
Center Contact Retention	-	Axial: 6.06 Lbf (27 N)	
ENVIRONMENTAL CHARACTERISTICS			
Temperature Range **• Standard Models** **• Hermetic Sealed Models** **• Models for Semi-Rigid Cables**	- - -	-65 °C / + 165 °C -65 °C / +100 °C -65 °C / +105 °C	
Combined Climate Tests			
Thermal Shock	3-20	MIL-STD-202, Method 107, Condition B	
High Temperature Endurance	-	MIL-STD-202, Method 108	
Corrosion (Salt Spray)	3-13	MIL-STD-202, Method 101, Condition B	
Vibrations	3-18	MIL-STD-202, Method 204, Condition B	
Shocks	3-19	MIL-STD-202, Method 213, Condition G	
Moisture Resistance	3-21	MIL-STD-202, Method 106	
Low Pressure	3-22	Not Applicable	
Hermetic Seal	-	Applied Vacuum 10^{-6} mm of Hg (Torrs) Leakage Rate < 10^{-6} atm/cm^3/s	
Leakage	-	Pressure 3.5 bars; Duration 2 mn; Temperature 15 °C to 25 °C	
MATERIALS			
Body	-	Stainless Steel	
Center Socket Contact **• Male** **• Female**	-	 Brass Bronze	
Ferrules	-	Brass	
Insulators	-	PTFE Teflon	
Gaskets	-	Silicone Elastomer	
PLATING			
Body	-	Passivated	
Center Contacts	-	Gold Plated	

TNC 18 GHz

PLUGS & JACKS

STRAIGHT PLUGS CRIMP TYPE FOR FLEXIBLE CABLE

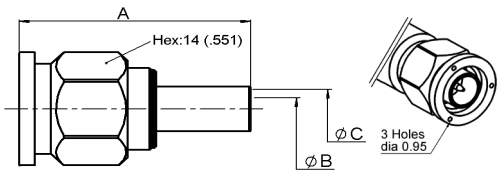


FIG. 1

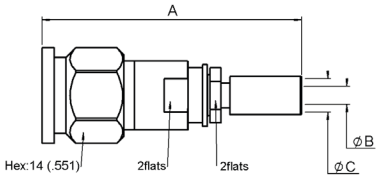
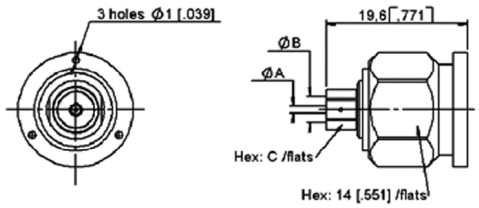


FIG. 2

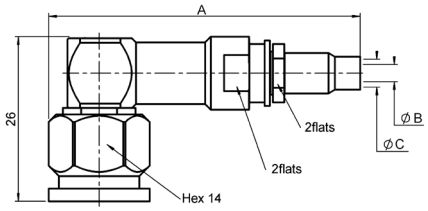
CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	FIG.	DIMENSIONS MM (INCH)			NOTE
				A	B	C	
RG142 / RG223 / RG400	5/50/D	R143 082 700	1	30 (1.181)	3.2 (.126)	5.5 (.218)	Incl. Heatshrink Tube
		R143 097 700	2	43.5 (1.713)	3 (.118)	5.5 (.218)	
-	3.85/50/S	R143 088 101		47 (1.85)	3 (.118)	4.2 (.165)	
-	4.13/50/S	R143 093 700		43.5 (1.71)	2.7 (.106)	4.5 (.177)	
-	8.07/50/S	R143 092 790		49.7 (1.957)	6.3 (.248)	8.4 (.331)	
RG214 / RG225	11/50/D	R143 089 700	1	35 (1.38)	7.5 (.295)	11 (.433)	-

STRAIGHT PLUGS SOLDER TYPE FOR SEMI-RIGID CABLE



CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	DIMENSIONS MM (INCH)		
			A	B	C
RG402	.141"	R143 051 700	1 (.039)	3.65 (.144)	5 (.197)
RG401	.250"	R143 054 700	1.7 (.067)	6.45 (.254)	8 (.315)

RIGHT ANGLE PLUGS CRIMP TYPE FOR FLEXIBLE CABLE

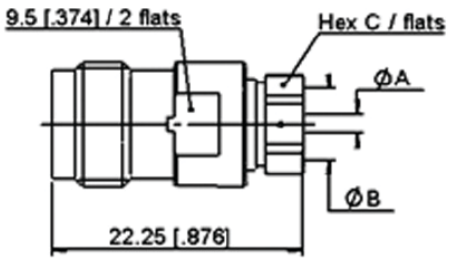


CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	DIMENSIONS MM (INCH)			NOTE
			A	B	C	
-	3.85/50/S	R143 188 101	54.2 (2.13)	3 (.118)	4.2 (.165)	Incl. Heatshrink Tube
-	4.13/50	R143 191 700	50 (1.97)	2.7 (.106)	4.5 (.177)	

Notes
Standard packaging = unit
All dimensions are given in mm (inch)

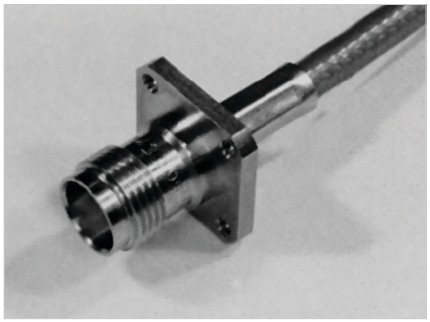
TNC 18 GHz

STRAIGHT JACK SOLDER TYPE FOR SEMI-RIGID CABLE



CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	DIMENSIONS MM (INCH)		
			A	B	C
RG402	.141"	R143 227 700	1 (.039)	3.65 (.143)	5 (.197)

STRAIGHT SQUARE FLANGE JACK CRIMP TYPE FOR FLEXIBLE CABLE



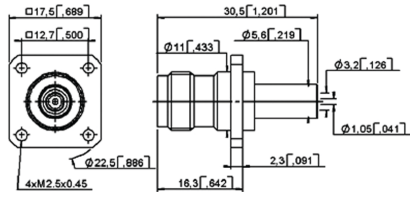


FIG. 1

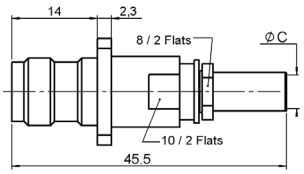
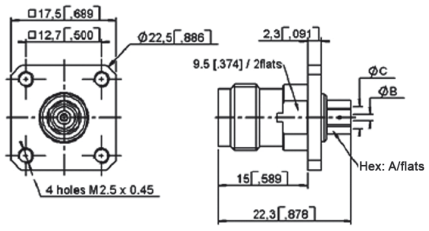


FIG. 2

CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	FIG.	C	PANEL DRILLING	NOTE
-	4.13/50	R143 295 700	2	4.4 (.173)	P01	Ind. Heatshrink Tube
RG142 / RG223 / RG400	5/50/D	R143 292 700	1	5.6 (.219)		
		R143 297 700	2			

STRAIGHT SQUARE FLANGE JACKS SOLDER TYPE FOR SEMI-RIGID CABLE



CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	DIMENSIONS MM (INCH)			PANEL DRILLING
			A	B	C	
RG405	.085"	R143 272 700	4 (.157)	0.6 (.024)	2.25 (.089)	P12
RG402	.141"	R143 273 700	5 (.197)	1 (.039)	3.65 (.144)	
RG401	.250"	R143 274 700	8 (.315)	-	6.45 (.254)	

TNC 18 GHz

JACKS & RECEPTACLES

STRAIGHT BULKHEAD JACK PANEL SEALED

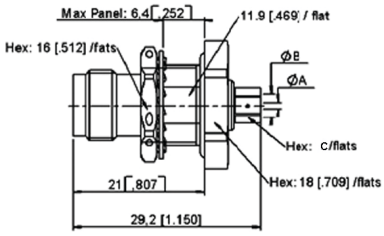


FIG. 1

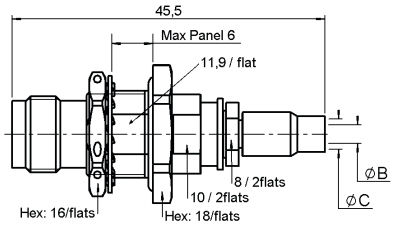
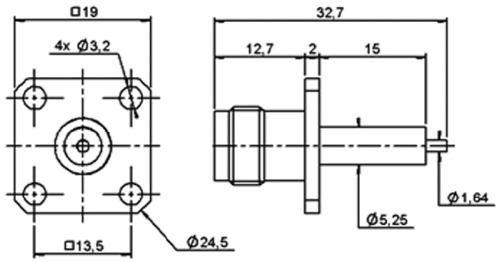


FIG. 2

CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	FIG.	DIMENSIONS MM (INCH)		PANEL DRILLING	TYPE
				A	B		
RG402	.141"	R143 321 700	1	3.65 (.144)	5 (.197)	P09	Solder
RG401	.250"	R143 322 700		6.45	8		
-	4.13/50	R143 340 700	2	2.7	4.5		Crimp

SQUARE FLANGE STRAIGHT FEMALE RECEPTACLE (EXTENDED DIELECTRIC)



PART NUMBER	CAPTIVE CENTER CONTACT	PANEL DRILLING
R143 412 700	Yes	P13

TNC 18 GHz

ADAPTERS & CAPS

IN SERIES ADAPTERS

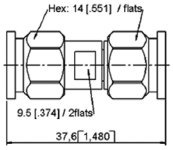


FIG. 1

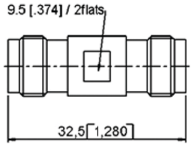


FIG. 2

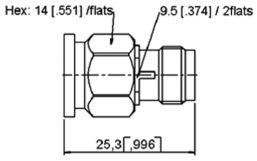


FIG. 3

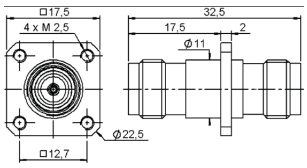


FIG. 4

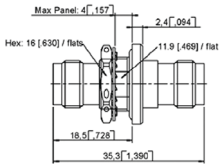
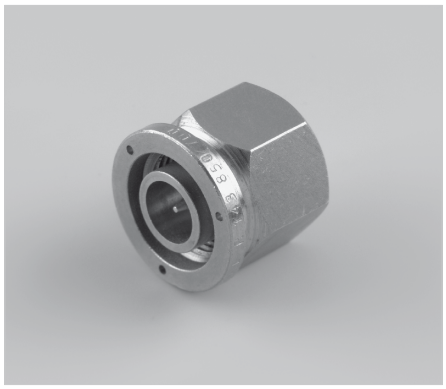
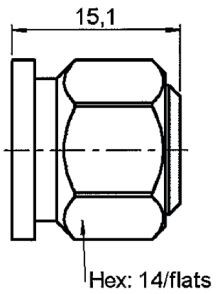


FIG. 5

PART NUMBER	FIG.	CAPTIVE CENTER CONTACT	PANEL DRILLING	NOTE
R143 703 700	1	Yes	-	Male - Male
R143 704 700	2		-	Female - Female
R143 705 700	3		-	Male - Female
R143 710 700	4		P16	Square Flange Female - Female
R143 730 700	5		P09	Bulkhead Panel Sealed Female - Female

CAPS





PART NUMBER	NOTE
R143 850 700	Male Short Circuit

TNC 18 GHz Self-Lock

INTRODUCTION

Radiall introduces a new innovative technology in response to market demands to eliminate locking wires.

Radiall's Self-Lock RF connectors are the perfect solution to provide secure connection-facing vibrations experienced in aerospace applications.

The Self-Locking design is intended to eliminate the need for safety wires and saves many hours, the locking feature is achieved via a spring loaded, corrugated washer.

Self-Lock connectors are intermatable with any standard jack or female receptacle; there is no change in performance. All electrical, mechanical and environmental specifications are preserved. With this solution, mating-unmating becomes faster, safer (no forgotten lock wire) and is proven to be more robust even in the harsh environment of an airplane bilge.

The Self-Lock connectors can be provided on any compatible cable size. The innovative crimp system attachment offers the opportunity for on-site assembly as well as ordering finished cable assemblies.

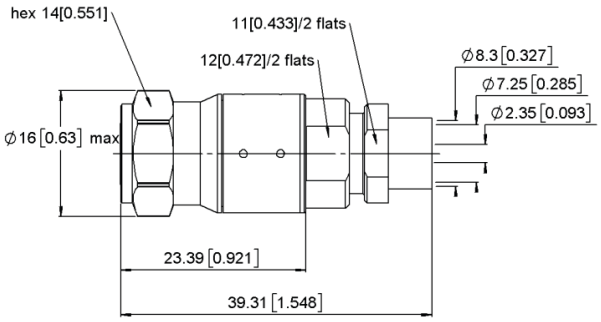
FEATURES & BENEFITS

- No locking wire
- Secure connection in harsh environments
- Easy and fast to install
- Self-Lock plugs compatible with standard jacks and receptacles

TNC 18 GHz Self-Lock

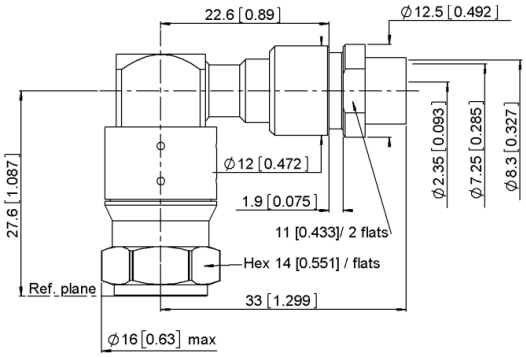
PLUGS

STRAIGHT PLUG SOLDER TYPE CABLE



CABLE GROUP	PART NUMBER
SHF8	R143 068 L21

RIGHT ANGLE PLUG SOLDER TYPE CABLE



CABLE GROUP	PART NUMBER
SHF8	R143 198 L21

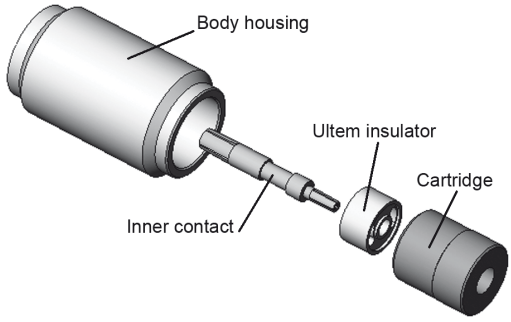
SMA 2.9

INTRODUCTION

SMA 2.9 series is compatible with K® series, 2.92 mm, SMA and SMA 3.5 series, and has a shortened male center contact, ensuring a non destructive mating. Radiall offers four product variations for SMA 2.9 to meet all your needs with two different designs. The standard design is using our "ULTEM" insulator technology and is qualified up to 40 GHz. The high frequency design is using our "KAPTON" insulator technology and is qualified up to 46 GHz. All versions feature the same electrical high performance and are available in a variety of configurations.

SMA 2.9 FOR GENERAL USE, "ULTEM" TECHNOLOGY, DC-40 GHZ

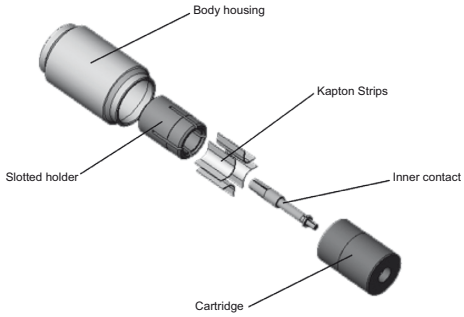
This robust design is suitable for most applications. The ULTEM insulator provides a high ingress protection level against chemicals, fluids or dust and is well suited for high frequency aerospace and military equipment.



3D VIEW OF SMA 2.9 "ULTEM" DESIGN

SMA 2.9 FOR TEST LABORATORY USE, "KAPTON" TECHNOLOGY, DC-46 GHZ

The KAPTON insulator design is excellent for high frequency measurements in test laboratories. KAPTON is also very stable with temperature. Radiall SMA 2.9 adapters using KAPTON are specified DC-46 GHz and operate within a large temperature range - 65 °C/+200 °C.



3D VIEW OF SMA 2.9 "KAPTON" DESIGN

SMA 2.9 FOR SPACE APPLICATIONS

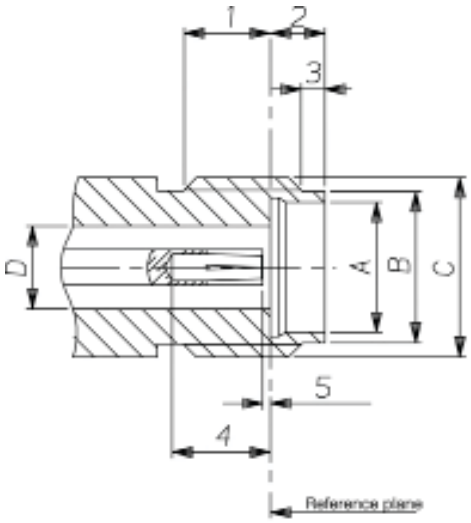
Radiall is a certified manufacturer of connectors for space applications according to ESA specifications. A range of space qualified SMA 2.9 connectors using the ULTEM insulator technology is available. Please consult us.

SMA 2.9 FOR HARSH ENVIRONMENTS

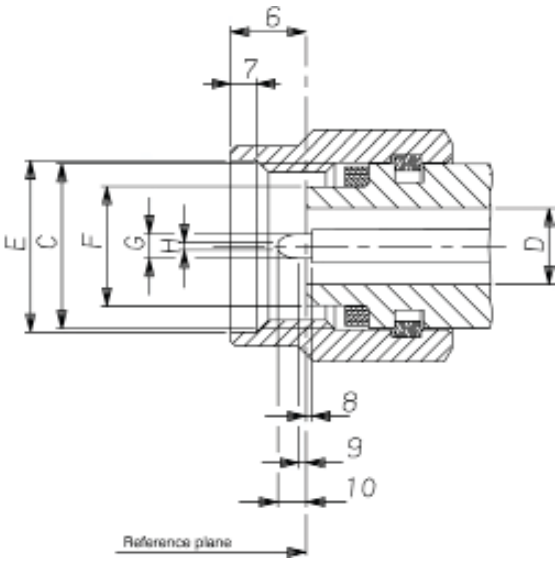
Radiall also offers a range of cable assemblies equipped with specific connectors for applications in harsh environment. The connectors are made of high grade stainless steel 316L ultra resistant to corrosion and wear. Please consult us.

SMA 2.9

INTERFACE



JACK



PLUG

LETTER OR FIGURE	MM		INCH	
	MIN	MAX	MIN	MAX
1	2.87	3.27	.113	.129
2	1.88	1.98	.074	.078
3	0.65	0.95	.026	.037
4	2.40	2.68	.094	.105
5	-	0.08	-	.003
A	4.60	4.63	.181	.182
B	5.30	5.35	.209	.211
C	1/4 - 36 UNS 2A			
D	2.90	2.94	.114	.116

LETTER OR FIGURE	MM		INCH	
	MIN	MAX	MIN	MAX
6	2.63	3.25	.103	.128
7	0.90	1.10	.35	.043
8	-	0.08	-	.003
9	0.49	0.78	.019	.031
10	1.22	1.40	.048	.055
C	1/4 - 36 UNS 2B			
D	2.90	2.94	.114	.116
E	6.60	6.70	.260	.264
F	4.55	4.58	.179	.180
G	0.92	0.94	.036	.037
H	0.20	0.34	.008	.013

SMA 2.9

CHARACTERISTICS

TEST / CHARACTERISTICS	VALUES / REMARKS	
	ULTEM TECHNOLOGY	KAPTON TECHNOLOGY
ELECTRICAL CHARACTERISTICS		
Impedance	50Ω	
Frequency Range	DC - 40 GHz	DC - 46 GHz
V.S.W.R.	< 1.05 + 0.005 F (GHz)	
Insertion Loss	0.03 √ F (GHz)	
RF Leakage	– 90 dB max	
Insulation Resistance	≥ 5000 MΩ	
Contact Resistance **• Outer Contact** **• Inner Contact**	≤ 2 mΩ Straight ≤ 3 mΩ Hermetic ≤ 7 mΩ	
Voltage Rating	350 V(RMS)	
Dielectric Withstanding Voltage	750 V(RMS)	
MECHANICAL CHARACTERISTICS		
Mechanical Endurance	500 Matings	
Force to Engage and Disengage	≤ 23 N cm (2 in/lbs)	
Mating Torque	80 to 115 N cm (7 to 10 in/lbs)	
Coupling Nut Retention Force	≤ 272 N (61 lbf)	
Cable Retention Force **• .085"** **• .141"**	 135 N (30 lbf) 270 N (60 lbf)	
Contact Captivation	28N (6.3 lbf)	
ENVIRONMENTAL CHARACTERISTICS		
Temperature Range	-65 °C / + 165 °C	-65 °C / +200 °C
Thermal Shock	MIL STD 202, Method 107, Condition B	
High Temperature Test	MIL STD 202, Method 108	
Corrosion (Salt Spray)	MIL STD 202, Method 101, Condition B, 5 %	
Vibration	MIL STD 202, Method 204, Condition D, 20g	
Shock	MIL STD 202, Method 213, Condition I, 100g	
Moisture Resistance	MIL STD 202, Method 106	

MATERIALS AND PLATING

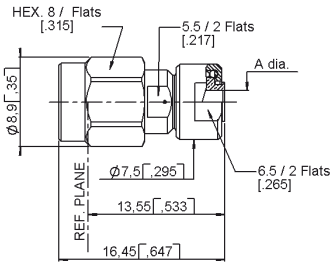
	Material	Plating
Bodies	Stainless Steel	Passivated
Center Contacts	Beryllium Copper	Gold Plated
Gasket	Silicone Rubber	-
Insulators	Ultem (Ultem Technology) Kapton (Kapton Technology)	-

Notes
Packaging: unit
All dimensions are given in mm (inch)

SMA 2.9

PLUGS

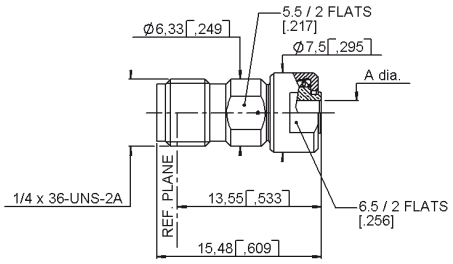
STRAIGHT PLUGS, SOLDER TYPE FOR MICROPOROUS SEMI-RIGID CABLES



CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	INSULATOR	DIMENSION A (MM)	CAPTIVE CENTER CONTACT	FREQUENCY RANGE
RG405	.085" Microporous	R127 800 001	ULTEM	2.25	Yes	DC - 40 GHz
RG402	.141" Microporous	R127 800 101		3.66		
RG405	.085" Microporous	R127 052 001	KAPTON	2.2		DC - 46 GHz
-	.116" Microporous	R127 055 001		3.0		

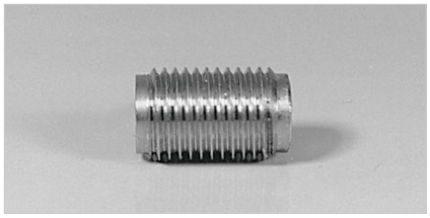
JACKS & RECEPTACLES

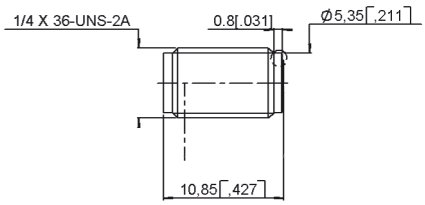
STRAIGHT JACK SOLDER TYPE FOR MICROPOROUS SEMI-RIGID CABLES



CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	INSULATOR	DIMENSION A (MM)	CAPTIVE CENTER CONTACT	FREQUENCY RANGE
RG405	.085" Microporous	R127 820 001	ULTEM	2.25	Yes	DC - 40 GHz

UNIVERSAL SCREW-ON FEMALE RECEPTACLES

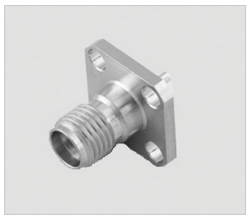




PART NUMBER	INSULATOR	FREQUENCY RANGE	USED WITH GLASS BEAD	FOR PIN DIAMETER
R127 841 001	ULTEM	DC - 40 GHz	R280 760 040	0.3 (.012)
R127 601 001	KAPTON	DC - 46 GHz		
R127 601 421			R280 760 000 Included	

SMA 2.9

FLANGE FEMALE RECEPTACLES



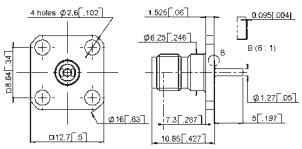


FIG. 1

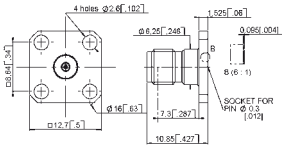


FIG. 2

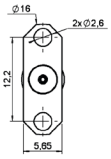


FIG. 3

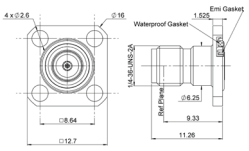
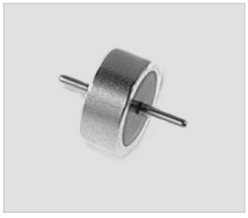


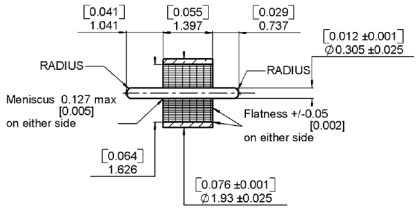
FIG. 4

PART NUMBER	FIG.	INSULATOR	CAPTIVE CENTER CONTACT	PANEL DRILLING	USED WITH GLASS BEAD	NOTE
R127 840 021	1	ULTEM	Yes	P02	N/A	With Cylindrical Center Contact
R127 842 001	2			P01	R280 760 040	Accept Pin Dia 0.3 (.012)
R127 631 001		KAPTON			-	
R127 632 001	3			-	-	
R127 842 101	4	PEEK		P01	-	Accept Pin Dia 0.3 (.012) Panel Leakage IP67

GLASS BEAD & IN SERIES ADAPTERS

GLASS BEAD





PART NUMBER	PACKAGING
R280 760 040	100

IN SERIES ADAPTERS

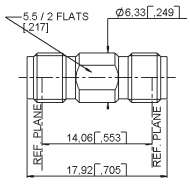


FIG. 1

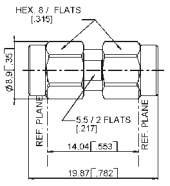


FIG. 2

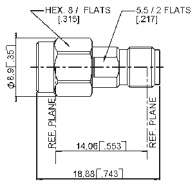


FIG. 3

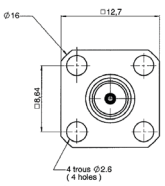


FIG. 4

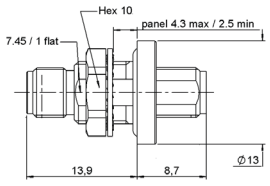


FIG. 5

PART NUMBER	FIG.	INSULATOR	NOTE	FREQUENCY RANGE
R127 703 001	2	KAPTON	Male- Male	DC - 46 GHz
R127 704 001	3		Female- Male	
R127 705 001	1		Female- Female	
R127 712 001	4		Female - Female - 4 Hole Flange	
R127 732 100	5		Female - Female - Bulkhead Panel Sealed	
R127 753 000	5		Female - Female - Bulkhead Hermetic	
R127 870 001	1	ULTEM	Female- Female	DC - 40 GHz
R127 872 001	3		Female- Male	
R127 871 001	2		Male- Male	

SMA 2.9

BETWEEN SERIES ADAPTERS

BETWEEN SERIES ADAPTERS [1]

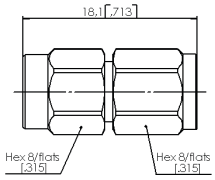


FIG. 1

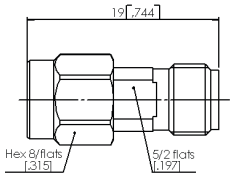


FIG. 2

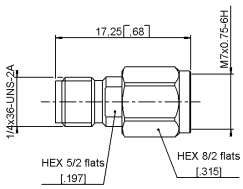


FIG. 3

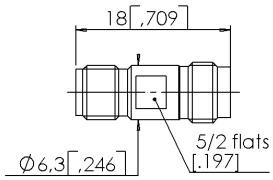
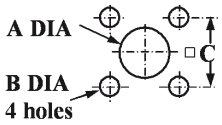


FIG. 4

PART NUMBER	FIG.	INSULATOR	NOTE	FREQUENCY RANGE
R191 970 061	1	KAPTON	SMA 2.9 Male - SMA 2.4 Male	DC - 46 GHz
R191 970 071	2		SMA 2.9 Male - SMA 2.4 Female	
R191 970 081	3		SMA 2.9 Female - SMA 2.4 Male	
R191 970 091	4		SMA 2.9 Female - SMA 2.4 Female	

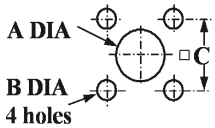
PANEL DRILLING

P01



	mm		inch	
	maxi	mini	maxi	mini
A	1.63	1.60	.064	.063
B	2.70	2.60	.106	.102
C	8.69	8.59	.342	.338

P02



	mm		inch	
	maxi	mini	maxi	mini
A	2.95	2.91	.116	.115
B	2.7	2.6	.106	.102
C	8.69	8.59	.342	.338

Notes

1. These adapters are still using the previous technology (4 kapton strips) allowing to reach 46 GHz within a temperature range of – 65 °C/+ 200 °C.

SMA 2.9 Self-Lock

INTRODUCTION

Radiall introduces a new innovative technology in response to market demands to eliminate locking wires.

Radiall's Self-Lock RF connectors are the perfect solution to provide secure connection-facing vibrations experienced in aerospace applications.

The Self-Locking design is intended to eliminate the need for safety wires and saves many hours, the locking feature is achieved via a spring loaded, corrugated washer.

Self-Lock connectors are intermatable with any standard jack or female receptacle; there is no change in performance. All electrical, mechanical and environmental specifications are preserved. With this solution, mating-unmating becomes faster, safer (no forgotten lock wire) and is proven to be more robust even in the harsh environment of an airplane bilge.

The Self-Lock connectors can be provided on any compatible cable size. The innovative crimp system attachment offers the opportunity for on-site assembly as well as ordering finished cable assemblies.

FEATURES & BENEFITS

- No locking wire
- Secure connection in harsh environments
- Easy and fast to install
- Self-Lock plugs compatible with standard jacks and receptacles

SMA 2.9 Self-Lock

CHARACTERISTICS

TEST / CHARACTERISTICS	VALUES / REMARKS
ELECTRICAL CHARACTERISTICS	
Impedance	50Ω
Frequency Range	DC - 46 GHz
V.S.W.R.	< 1.05 + 0.005 F (GHz)
Insertion Loss (Typ) dB	0.03 √ F (GHz) dB
RF Leakage (Min) dB	-90 dB max
Insulation Resistance	≥ 5 GΩ
Contact Resistance	CC : ≤ 7 MΩ OC : ≤ 3 MΩ
MECHANICAL CHARACTERISTICS	
Durability	500 Cycles
Force to Engage and Disengage	6.5 N Max
Cable Retention Force	.141: 270 N
ENVIRONMENTAL CHARACTERISTICS	
Temperature Range	-65 °C to +165 °C
Thermal Cycling	MIL STD 202 Method 107 Condition B
Vibration	MIL STD 202 Method 214A Cond D 20G
Shock	MIL STD 202 Method 213 Cond I, 100g
Moisture Resistance	MIL STD 202 Method 106
Corrosion	MIL STD 202 Method 101 Cond B, 5%

SMA 2.9 Self-Lock

PLUGS

STRAIGHT PLUG SOLDER TYPE CABLE

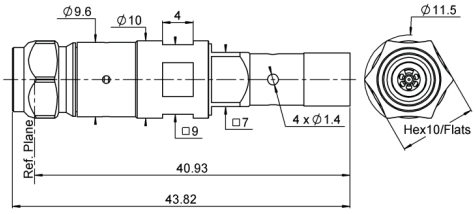


FIG. 1

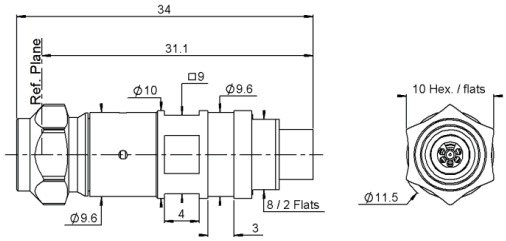
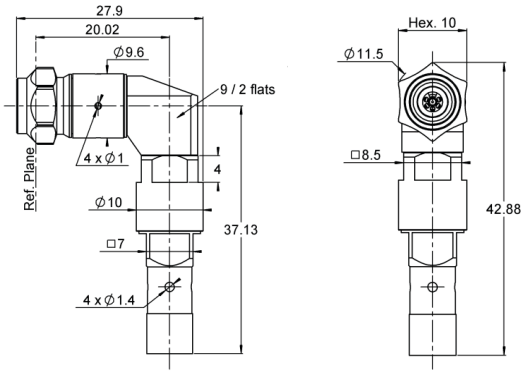


FIG. 2

CABLE GROUP	PART NUMBER	FIG.
SHF3UF	R127 017 101	1
SHF4.6M	R127 017 111	2

RIGHT ANGLE SOLDER TYPE CABLE



CABLE GROUP	PART NUMBER
SHF3UF	R127 197 101

2.4 mm

INTRODUCTION

2.4 mm connectors are 50 ohm precision connectors designed for use to 50 GHz. The design eliminates the fragility of the SMA and 2.92 mm connectors by increasing the outer wall thickness and strengthening the female fingers. The outer conductor measures 2.4 mm and the robust wall of the connector body is designed to engage before the center conductor, assuring a rugged, repeatable mating interface. The male connectors are provided with a 8 mm (5/16 in.) hex coupling nut so they can be properly torqued.

2.4 mm connectors are mechanically compatible with 1.85 mm connectors. They cannot mate with SMA, 3.5-mm and 2.92-mm without the use of precision adapters.

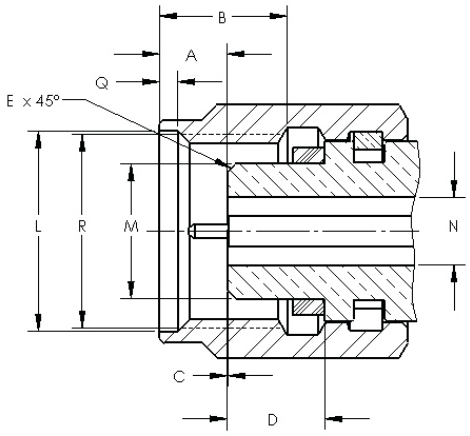
Radiall offers 2.4 mm connectors for semi-rigid and low loss flexible cables, receptacles, and precision adapters.

Connectors for low loss flexible cables and TestPro cables are not detailed in this section. They are available in our cable assembly offer.

2.4 MM DESIGN FEATURES

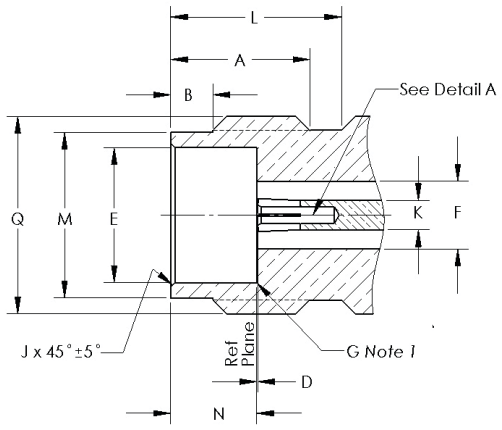
- Excellent performance up to 50 GHz
- Low VSWR and insertion loss
- Rugged construction for reliability
- Mechanically compatible with 1.85 mm connector series

INTERFACE



JACK

LETTER	MM		INCH
	MIN	MAX	MIN
A	1.8500	2.4500	0.0728
B	4.3400	4.6600	0.1709
C	0.0000	0.0760	0.0000
D	3.3800	3.4800	0.1331
L	7.0100	7.1100	0.2760
M	4.7250	4.7500	0.1860
N	2.3875	2.4125	0.0940
Q	0.5100	0.7700	0.0201
R	M7x0.75-6H		



PLUG

LETTER	MM		INCH
	MIN	MAX	MIN
A	4.8000	5.0600	0.1890
B	1.3700	1.6300	0.0539
D	0.0000	0.0760	0.0000
E	4.7700	4.7950	0.1878
F	2.3875	2.4125	0.0940
K	1.0290	1.0540	0.0405
L	6.0000	-	0.2362
M	5.7900	5.8900	0.2280
N	3.0000	3.1000	0.1181
Q	M7x0.75-6G		

2.4 mm

CHARACTERISTICS

TEST / CHARACTERISTICS	VALUES / REMARKS

ELECTRICAL CHARACTERISTICS

Impedance	50Ω
Frequency Range	DC - 50 GHz
V.S.W.R.	< 1.05 + 0.003 F (GHz)
Insertion Loss	0.04 √ F (GHz)
RF Leakage	– 100 dB max
Insulation Resistance **• Contact Resistance**	<= 1400Veff > 5000 mΩ
Contact Resistance **• Outer Conductor** **• Inner Conductor**	 < 0.8 mΩ < 4 mΩ
Voltage Rating	250 V(RMS)
Dielectric Withstanding Voltage	500 V(RMS)

MECHANICAL CHARACTERISTICS

Mechanical Endurance	500 Matings
Force to Engage and Disengage	< 23 N cm
Mating Torque	90 N cm
Coupling Nut Retention Force	< 272 N
Cable Retention Force **• Outer Conductor** **• Inner Conductor**	 130 N
Contact Captivation	27N

ENVIRONMENTAL CHARACTERISTICS

Temperature Range	-65 °C / + 165 °C
Thermal Shock	MIL STD 202, Method 107, Condition B, -65 °C / + 165 °C
High Temperature Test	MIL STD 202, Method 108, Condition D, 1000 H at 150 °C
Corrosion (Salt Spray)	MIL STD 202, Method 101, Condition B, 48 H / 35 °C / 5 %
Vibration	MIL STD 202, Method 204, Condition H, 30g RMS
Shock	MIL STD 202, Method 213, Condition I, 100g
Moisture Resistance	MIL STD 202, Method 106, 80% / 100% 25 °C / 65 °C 10 Cycles

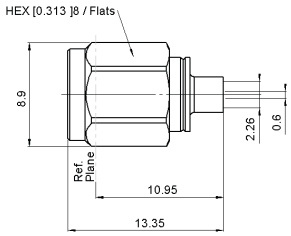
MATERIALS AND PLATING

	Material	Plating
Bodies	Beryllium Copper	Cu2.5 Au0.8
Outer Contact (Body Insert)	Brass	Cu2.5 Au0.8
Center Contacts	Beryllium Copper	Ni2 Au1.3
Coupling Nut	Stainless Steel	Passivated
Gaskets	Silicone Rubber	-
Insulators	PEEK	-

2.4 mm

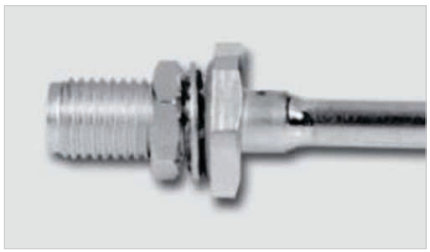
PLUGS, JACKS & RECEPTACLES

STRAIGHT PLUGS, SOLDER TYPE FOR SEMI-RIGID CABLES



CABLE GROUP	CABLE GROUP DIA.	PART NUMBER	CAPTIVE CENTER CONTACT
RG405	.085"	R327 052 000	Yes
RG405	.085" Microporous	R327 052 202	

STRAIGHT JACKS, SOLDER TYPE FOR SEMI-RIGID CABLES



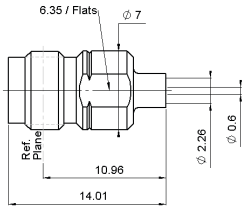


FIG. 1

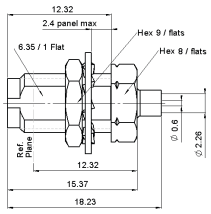
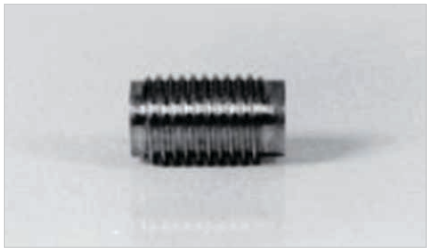
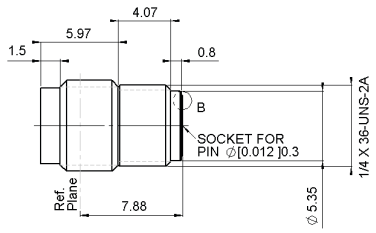


FIG. 2

CABLE GROUP	CABLE GROUP DIA.	FIG.	PART NUMBER	CAPTIVE CENTER CONTACT
RG405	.085"	1	R327 222 000	Yes
	.085" Microporous		R327 222 200	
	.085"	2	R327 316 000	
	.085" Microporous		R327 316 010	

UNIVERSAL SCREW-ON FEMALE RECEPTACLES

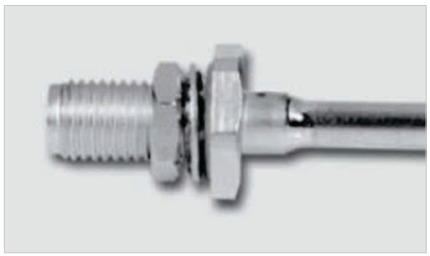




PART NUMBER	USING WITH GLASS BEAD	FOR PIN DIAMETER
R327 556 000	R280 760 040	0.3 (0.12)

2.4 mm

FLANGE RECEPTACLES



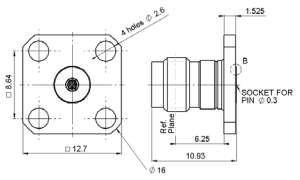


FIG. 1

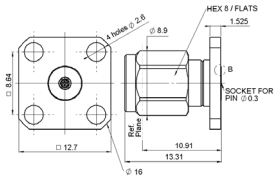


FIG. 2

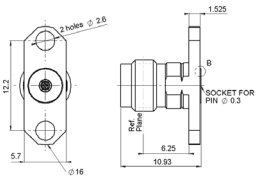
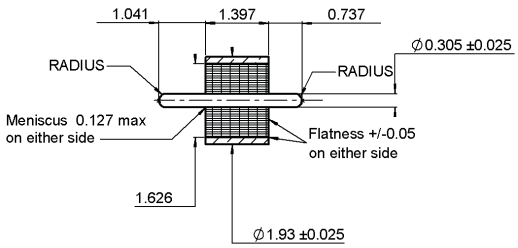


FIG. 3

PART NUMBER	FIG.	CAPTIVE CENTER CONTACT	PANEL DRILLING	USE WITH GLASS BEAD	FOR PIN DIAMETER
R327 430 000	1	Yes	P01	R280 760 040	0.3 (0.12)
R327 411 000	2				
R327 465 000	3		P02		

GLASS BEAD



PART NUMBER	PACKAGING
R280 760 040	100

2.4 mm

IN SERIES ADAPTERS

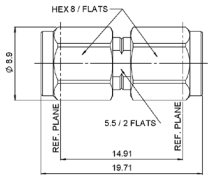


FIG. 1

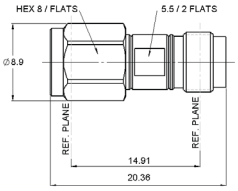


FIG. 2

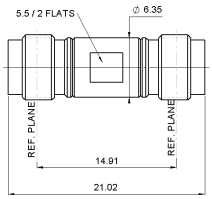


FIG. 3

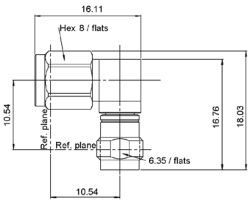
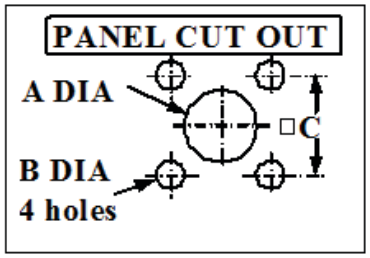


FIG. 4

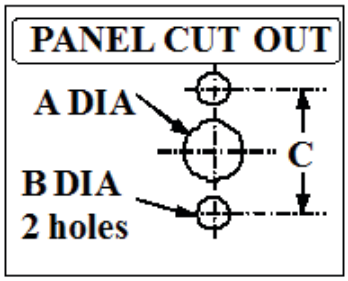
PART NUMBER	FIG.	FOR PIN DIAMETER
R327 703 000	1	Male / Male
R327 704 000	2	Male / Female
R327 705 000	3	Female / Female
R327 771 000	4	Male / Female Right Angle

PANEL DRILLING

P01



P02



LETTER	MM		INCH	
	MIN	MAX	MIN	MAX
A	1.63	1.60	0.064	0.063
B	2.70	2.60	0.106	0.102
C	8.69	8.59	0.342	0.338