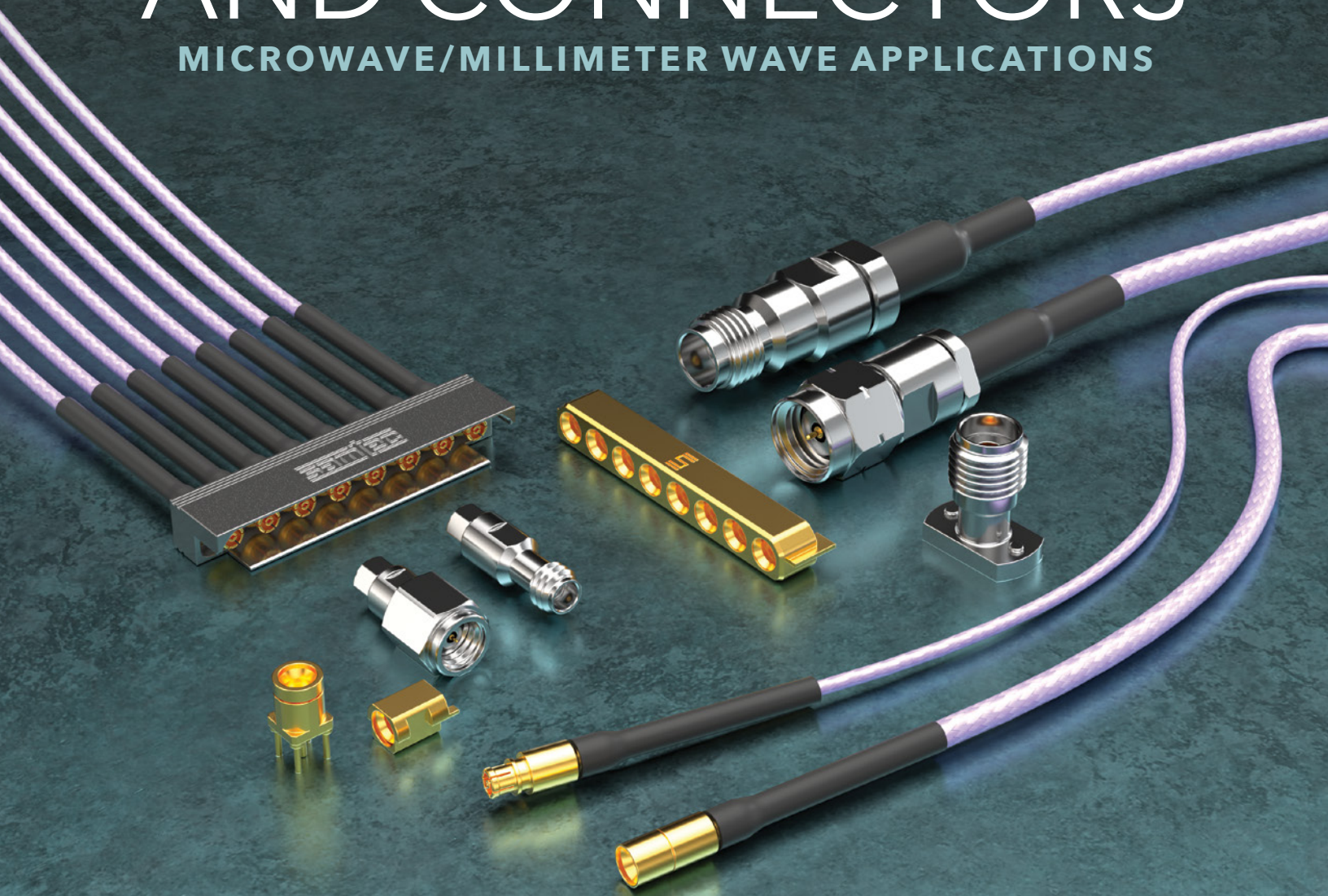




PRECISION RF CABLE ASSEMBLIES AND CONNECTORS

MICROWAVE/MILLIMETER WAVE APPLICATIONS



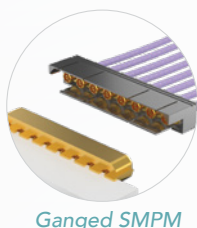
HIGH-FREQUENCY RF PRODUCT OVERVIEW

AVAILABLE NOW

CABLE ASSEMBLIES

50 Ω Microwave Cable

- .047 Cable – SMPM, 1.35 mm, 1.85 mm, 2.40 mm, 2.92 mm (RF047-A Series)
- .085 Cable – 2.40 mm, 2.92 mm (RF085 Series)
- .086 Cable – SMPM, 1.85 mm, 2.40 mm, 2.92 mm (RF086 Series)
- .178 Cable – SMA, TNCA, N Type (RF180 Series)
- RG 405 (.086) – SMP, SMA (RF405 Series)
- RG 402 (.141) – SMA (RF402 Series)
- Ganged SMPM – Multi-Position Assembly (GC47 Series)



Samtec Low Loss Microwave Cable

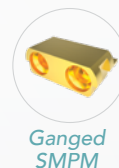
- MWC-2350CU-01 – SMPM, 2.40 mm, 2.92 mm (RF23C Series)
- MWC-2550-01 – SMP, SMA (RF25S Series)
- MWC-2350-01 – 3.50 mm (RF23S Series)



BOARD CONNECTORS

Push-On Systems

- 65 GHz – SMPM: Through-Hole, Edge Mount and Bullet (SMPM-TH, SMPM-EM & PRFIA Series)
- 65 GHz – Ganged SMPM: Blocks, Surface Mount, Right-Angle, Through-Hole (GPPB & PRFIA Series)
- 40 GHz – SMP: Through-Hole, Edge Mount and Bullet (SMP Series)



Threaded Systems

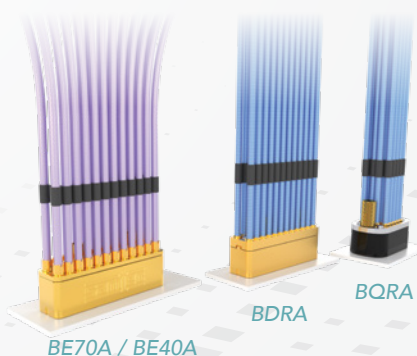
- 90 GHz – 1.35 mm Compression, Vertical (135 Series)
- 65 GHz – 1.85 mm Compression, Vertical (185 Series)
- 50 GHz – 2.40 mm Compression, Vertical (240 Series)
- 40 GHz – 2.92 mm Compression, Vertical (292 Series)



TEST & MEASUREMENT

- Bulls Eye® 70 GHz System with 360° Grounding (BE70A Series)
- Bulls Eye® 50 GHz Pogo Pin System (BE40A Series)
- Bulls Eye® 20 GHz System (BDRA Series, BQRA Series)

BULLSEYE®
TEST POINT SYSTEM



5G Networking, HPC/AI and Automotive 2.0 are driving unprecedented industry growth, along with massive increases in transmission speeds, frequencies and densities. Effectively balancing increased channel throughput with extremely low latency is just one of many resulting challenges.

Samtec offers off-the-shelf industry standard solutions, along with the ability to completely customize an interconnect, in order to support these next generation system demands.

IN DEVELOPMENT

CABLE CONNECTORS

110 GHz

- 1.00 mm (PRF10 Series)



90 GHz

- 1.35 mm (PRF13 Series)



65 GHz

- SMPM (PRFM0 Series)
- 1.85 mm (PRF18 Series)



34 - 50 GHz

- 2.40 mm – 50 GHz (PRF24 Series)
- 2.92 mm – 40 GHz (PRF92 Series)
- SMP – 40 GHz (PRF00 Series)
- 3.50 mm – 34 GHz (PRF35 Series)
- SSMA – 34 GHz (PRFS1 Series)



18 GHz

- TNCA (PRF04 Series)
- N Type (PRF06 Series)
- SMA (PRF01 Series)



CABLE ASSEMBLIES

- .277 Cable – SMA, TNCA, N Type (RF280 Series)
- MWC-19550-FCU-01 – 2.40 mm & 2.92 mm (RF120 Series)
- Micro-Cell, Air-Foamed Dielectric (.086 & .047 Assemblies)



BOARD CONNECTORS

- Between Series & In-Series Adaptors (1.00 mm, 1.85 mm, 2.40 mm, SMPM, 2.92 mm, 3.50 mm, SMA, N Type, TNCA)



TEST & MEASUREMENT

- Bulls Eye® +70 GHz Test Systems

BULLSEYE®
TEST POINT SYSTEM



HIGH-FREQUENCY MICRO WAVEGUIDES



- Ultra Small Form Factor
- Low Loss Dielectric
- Highly Flexible Cable
- High-Performance at a Lower Overall Cost Than Traditional Metallic Waveguides

PRECISION RF

BOARD & CABLE ASSEMBLIES

VERTICAL INTEGRATION • MATED SETS • INDUSTRY-LEADING SERVICE



TO 110 GHz, REPEATABILITY, TECH SUPPORT

Precision RF interconnects require precise, repeatable electrical and mechanical results. Samtec's microwave and Signal Integrity engineers have a complex understanding of each signal path connection, so you can trust Samtec RF interconnects will meet these demands every time.

Features & Benefits

Full cable assemblies and board level interconnects supporting microwave/millimeter wave technologies are backed by the highest level of service and support in the industry.

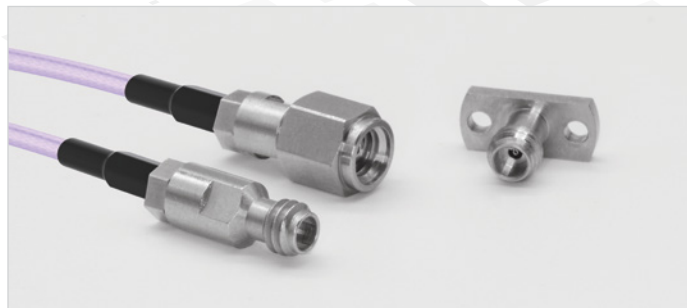
- High-frequency bands (DC to 110 GHz)
- Offering full mated sets – board level interconnects and full cable assemblies
- Variety of solutions: 1.00 mm (110 GHz) to TNCA (18 GHz), and adaptors
- Excellent repeatability and Low VSWR
- Highest level of service and support in the industry
- Customized solutions available
- Visit [samtec.com/RF](https://www.samtec.com/RF) for Samtec's full line of off-the-shelf RF solutions

[samtec.com/precisionrf](https://www.samtec.com/precisionrf)

1.00 mm • to 110 GHz • Excellent Repeatability

PART NO. (SERIES)		
Board Connector	Cable Connector	Cable Assemblies
In Development	PRF10	In Development

- Air dielectric design for low VSWR and insertion loss
- High-performance cable assemblies in development
- Excellent repeatability

**1.35 mm** • to 90 GHz • High Cycle

PART NO. (SERIES)		
Board Connector	Cable Connector	Cable Assemblies
135	PRF13	RF047-A

- Ideal for E-band applications
- Robust mechanical design, high mating cycles

**1.85 mm** • to 65 GHz • Intermateable with 2.40 mm

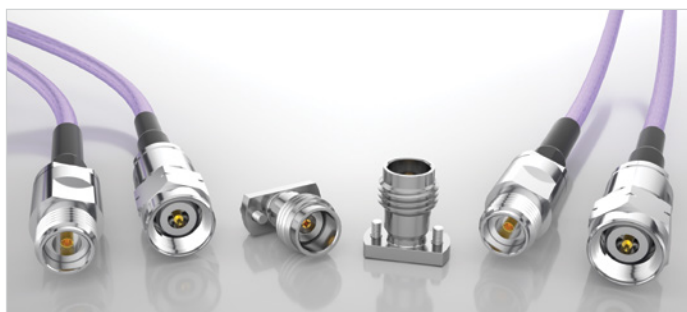
PART NO. (SERIES)		
Board Connector	Cable Connector	Cable Assemblies
185	PRF18	RF047-A, RF086

- Air dielectric design for low VSWR and insertion loss
- Rugged interface for consistent, reliable performance
- Intermateable with 2.40 mm

**2.40 mm** • to 50 GHz • Intermateable with 1.85 mm

PART NO. (SERIES)		
Board Connector	Cable Connector	Cable Assemblies
240	PRF24	RF047-A, RF085, RF086, RF23C, RF120

- Air dielectric design for low VSWR and insertion loss
- Rugged interface for consistent, reliable performance
- Intermateable with 1.85 mm



2.92 mm • to 40 GHz • Intermateable with 3.50 mm & SMA

PART NO. (SERIES)		
Board Connector	Cable Connector	Cable Assemblies
292	PRF92	RF047-A, RF085, RF086, RF23C, RF120

- Air dielectric design for low VSWR and insertion loss
- Rugged interface for consistent, reliable performance
- Intermateable with 3.50 mm and SMA



3.50 mm • to 34 GHz • Intermateable with 2.92 mm & SMA

PART NO. (SERIES)		
Board Connector	Cable Connector	Cable Assemblies
N/A	PRF35	RF23S

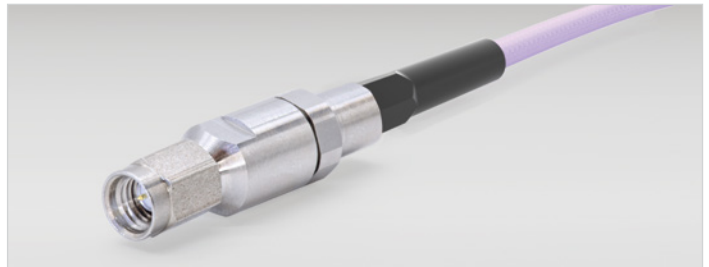
- Air dielectric design for low VSWR and insertion loss
- Rugged interface for consistent, reliable performance
- Intermateable with 2.92 mm and SMA



SSMA • to 34 GHz • Reduced Size for High-Density

PART NO. (SERIES)		
Board Connector	Cable Connector	Cable Assemblies
N/A	PRFS1	In Development

- PTFE-loaded dielectric
- Reduced size for high-density



SMP • to 40 GHz • Compensates for Misalignment

PART NO. (SERIES)		
Board Connector	Cable Connector	Cable Assemblies
SMP	PRF00	RF25S, RF405

- Push-on design for quick, easy mating
- Full detent or smooth bore for varying retention forces
- Bullet adaptor for board-to-board blind mate applications
- Compensates for misalignment



SMPM/Ganged SMPM • to 65 GHz • Miniature Footprint

PART NO. (SERIES)		
Board Connector	Cable Connector	Cable Assemblies
SMPM	PRFM0	RF047-A, RF086, RF23C

SMPM

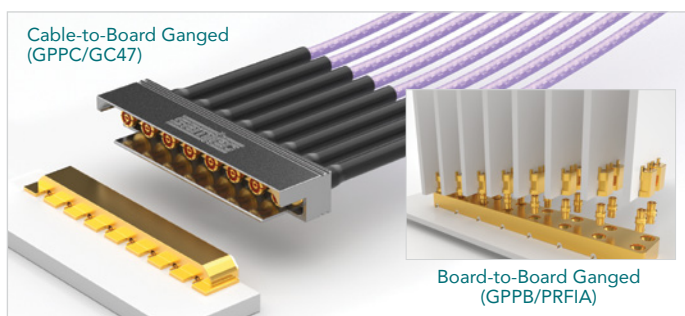
- Push-on design for quick, easy mating
- Miniature footprint; 30% smaller than SMP
- Full detent or smooth bore for varying retention forces
- Bullet adaptor for board-to-board blind mate applications



PART NO. (SERIES)		
Board Connector	Bullet Adaptor	Cable Assemblies
GPPC		GC47
GPPB	PRFIA	

Ganged SMPM

- High-density, space-saving design
- 3.56 mm (.140") pitch (GC47/GPPC);
8.33 mm (.328") pitch (GPPB/PRFIA)
- Push-on interface for quick installation
- .047 low-loss flexible microwave/millimeter wave cable



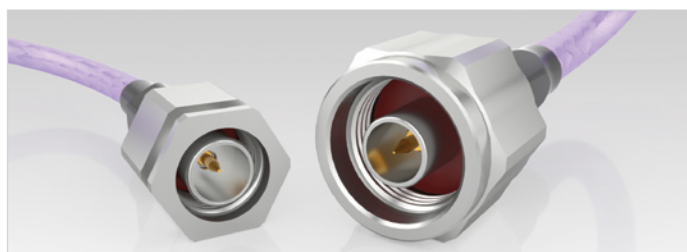
SMA / N Type / TNCA • to 18 GHz • Extended Frequency Options

PART NO. (SERIES)		
Board Connector	Cable Connector	Cable Assemblies
SMA	PRF01	RF402, RF405, RF25S, RF180, RF280

Interface Type	Cable Connector	Cable Assemblies
N Type	PRF06	RF180, RF280
TNCA	PRF04	RF180, RF280

SMA

- Ideal for size, performance and cost-critical applications
- Intermateable with 2.92 mm and 3.50 mm
- Extended frequency versions to 26.5 GHz also available



N Type

- Robust interface environmental seal
- High power capability

TNCA

- Excellent voltage breakdown resistance
- Superior average power handling

ALSO AVAILABLE: PRECISION RF ADAPTORS

- Between series and in-series adaptors
- Designed for well-performing VSWR
- 1.00 mm, 1.85 mm, 2.40 mm,
2.92 mm, 3.50 mm, N Type,
SMA, SMPM, TNCA



PRECISION RF CABLE CONNECTORS

CABLE CONNECTORS • INDUSTRY STANDARD MICROWAVE CABLES



PERFORMANCE, PRECISION & QUALITY

Designed for a wide range of use in the microwave/mmWave industry, Samtec's high-frequency cable connectors are manufactured with a precise tolerance interface to ensure superior repeatability and high mechanical stability.

Precision RF Cable Connector Features

RF microwave/millimeter wave precision interconnects offer the precision, quality and performance needed to move into the millimeter wave spectrum through 110 GHz.

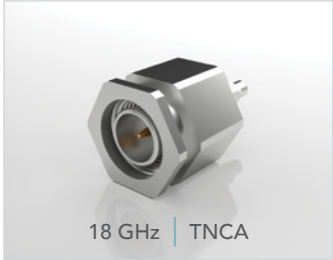
- Samtec's line of precision cable connectors offers the flexibility to terminate to an industry-standard cable specified for your application
- High-frequency bands (DC to 110 GHz)
- 2.92 mm cross-mateable to other industry standards (SMA, 3.50 mm)
- 2.40 mm and 1.85 mm are intermateable
- 1.00 mm cable connectors up to 110 GHz
- Customized solutions available
- Visit [samtec.com/RF](https://www.samtec.com/RF) for Samtec's full line of standard, off-the-shelf RF solutions

Cable Connectors • Industry Standard Cable Compatibility Guide

Series	GHz	Type	Industry Cable
PRF10	110	1.00 mm	.047, semi-rigid
PRF13	90	1.35 mm	.047 Temp-Flex, low loss flexible, 29 AWG
PRF18	65	1.85 mm	.047, semi-rigid
			.047 Temp-Flex, low loss flexible, 29 AWG
			Harbour SS405, flexible alternative to RG 405
			RG 405, .085, semi-rigid
			.086 Temp-Flex, low loss flexible
PRFM0		SMPM	.047 Temp-Flex, low loss flexible, 29 AWG
			.047 Temp-Flex, low loss flexible, 28 AWG
			Harbour SS405, flexible alternative to RG 405
			.086 Temp-Flex, low loss flexible
PRF24	50	2.40 mm	Harbour SS405, flexible alternative to RG 405
			RG 405, .085, semi-rigid
			.086 Temp-Flex, low loss flexible
			Semflex HP120, low loss flexible
			Semflex HP160, low loss flexible
			IW 1401, low loss flexible
			IW 1501, low loss flexible
			Dynawave DF150, low loss flexible
PRF92	40	2.92 mm	.047, semi-rigid
			RG 405, .085, semi-rigid
			.085, semi-rigid, 23 AWG
			Harbour SS405, flexible alternative to RG 405
			.086 Temp-Flex, low loss flexible
			Haverhill HC35004, .118, semi-rigid
			Semflex HP120, low loss flexible
			RG 402, .141, semi-rigid
			Semflex HP160, low loss flexible
			IW 1501, low loss flexible
			Dynawave DF150, low loss flexible
			Dynawave DF140, low loss flexible
			Harbour LL142, low loss flexible
			Semflex HP190, low loss flexible
Times Max Gain 200, low loss flexible			
PRF00		SMP	.047 Temp-Flex, low loss flexible, 29 AWG
			.085, semi-rigid, 23 AWG



Series	GHz	Type	Industry Cable	
PRF35	34	3.50 mm	RG 405, .085, semi-rigid	
			Semflex HP120, low loss flexible	
			RG 402, .141, semi-rigid	
			Semflex HP160, low loss flexible	
PRFS1		SSMA	RG 405, .085, semi-rigid	
			Harbour SS402, flexible alternative to RG 402	
PRF01	18	SMA	.047, semi-rigid	
			RG 405, .085, semi-rigid	
			Harbour LL120, low loss flexible	
			IW 1201, low loss flexible	
			RG 402, .141, semi-rigid	
			Semflex HP160, low loss flexible	
			Dynawave DF150, low loss flexible	
			Harbour SS402, flexible alternative to RG 402	
			Harbour LL142, low loss flexible	
			Harbour SB142, low loss flexible	
			Semflex HP190, low loss flexible	
			Times Max Gain 200, low loss flexible	
			Semflex LA290, low loss flexible	
			Harbour LL335i, low loss flexible	
			Harbour LL335, low loss flexible	
			Semflex HP305, low loss flexible	
			PRF06	N Type
Harbour SB142, low loss flexible				
Semflex HP190, low loss flexible				
Semflex LA290, low loss flexible				
Harbour LL335i, low loss flexible				
Harbour LL335, low loss flexible				
Semflex HP305, low loss flexible				
Semflex HP120, low loss flexible				
PRF04		TNCA	Harbour SS402, flexible alternative to RG 402	
			RG 402, .141, semi-rigid	
			Harbour LL142, low loss flexible	
			Semflex HP190, low loss flexible	
			Semflex LA290, low loss flexible	
				Harbour LL335i, low loss flexible
				Harbour LL335, low loss flexible



50 Ω MICROWAVE CABLES

STANDARD, OFF-THE-SHELF ASSEMBLIES

TYPE		MWC-2550-01	MWC-2350-01	MWC-2350CU-01	MWC-19550-FCU-01	RG 405 (.086")
						
ELECTRICAL						
Max Frequency (GHz)		40	35	50	45	20
Insertion Loss (dB/m)	1 GHz	0.79	0.72	0.68	0.43	0.72
	26 GHz	3.80 @ 20 GHz	3.71 @ 20 GHz	4.27	2.78	4.26 @ 20 GHz
	40 GHz	—	—	5.59	3.66	—
	50 GHz	—	—	6.46	—	—
Propagation Delay (ns/m)		4.76	4.72	4.76	4.12	4.79
Velocity of Propagation		70%			81%	70%
Capacitance (pF/m)		96.80	95.45	97.80	82.39	104.97
CONSTRUCTION						
Center Conductor		Solid Silver Plated Copper				
Dielectric		FEP			Foam Fluoropolymer	PTFE
Shield		1) Ag Plated Cu 2) Ag Plated Cu	1) Ag Plated Cu 2) Cu Tape 3) Ag Plated Cu		1) Ag Plated Cu 2) Ag Plated Cu	Tinned Cu
Jacket		FEP				—
MECHANICAL						
Operating Temp		-40 °C to 200 °C		-65 °C to 125 °C	-65 °C to 150 °C	-40 °C to 125 °C
Min. Bend Radius (mm)		9.00	12.00	6.00	12.50	6.00
Connector Options		SMA, SMP	3.50 mm	2.92 mm, 2.40 mm, SMPM	2.92 mm, 2.40 mm	SMA, SMP
PART NUMBER						
Series		RF25S	RF23S	RF23C	RF120	RF405

CHOOSE YOUR CABLE CONNECTOR

Samtec cable assemblies are available with a variety of cable connector options, all as standard off-the-shelf solutions. Visit [samtec.com/precisionRF](https://www.samtec.com/precisionRF).

TYPE		RG 402 (.141")	.047 Low-Loss Flexible	.085 Low-Loss Flexible	.086 Low-Loss Flexible	.178 Low-Loss Flexible	.277 Low-Loss Flexible
		 <i>Shown at ~1/2 scale.</i>				 <i>Shown at ~1/2 scale.</i>	 <i>Shown at ~1/3 scale.</i>
ELECTRICAL							
Max Frequency (GHz)		20	65	50	65	27	18
Insertion Loss (dB/m)	1 GHz	0.40	1.21	0.69	0.65	0.27	0.17
	26 GHz	2.30 @ 20 GHz	7.43	4.28	3.90	1.23 @ 18 GHz	0.79 @ 18 GHz
	40 GHz	—	9.68	5.59	5.06	—	—
	50 GHz	—	11.14	6.47	5.81	—	—
Propagation Delay (ns/m)		4.79	4.76	4.75	4.20	4.17	4.02
Velocity of Propagation		70%			80%		83%
Capacitance (pF/m)		98.07	95.00	88.2	83.37	82.00	
CONSTRUCTION							
Center Conductor		Solid Silver Plated Copper					
Dielectric		PTFE	PFA	Solid PTFE	Foam Fluoro-polymer	PTFE Tape	
Shield		Tinned Cu	1) Ag Plated Cu 2) Ag Plated Cu	Spiral Strip Ag Plated Cu	1) Ag Plated Cu 2) Ag Plated Cu	1) Flat Ag Plated Cu 2) Al Polyester 3) Round Ag Plated Cu	
Jacket		—	FEP				
MECHANICAL							
Operating Temp		-40 °C to 125 °C	-55 °C to 105 °C	-55 °C to 200 °C	-65 °C to 150 °C	-55 °C to 200 °C	
Min. Bend Radius (mm)		10.90	5.00	13.20	8.90	24.80	38.10
Connector Options		SMA	1.35 mm, 1.85 mm, 2.40 mm, 2.92 mm, SMPM	2.92 mm, 2.40 mm	1.85 mm, 2.40 mm, 2.92 mm, SMPM	SMA, TNCA, N Type	SMA, TNCA, N Type
PART NUMBER							
Series		RF402	RF047-A	RF085	RF086	RF180	RF280

CUSTOM RF

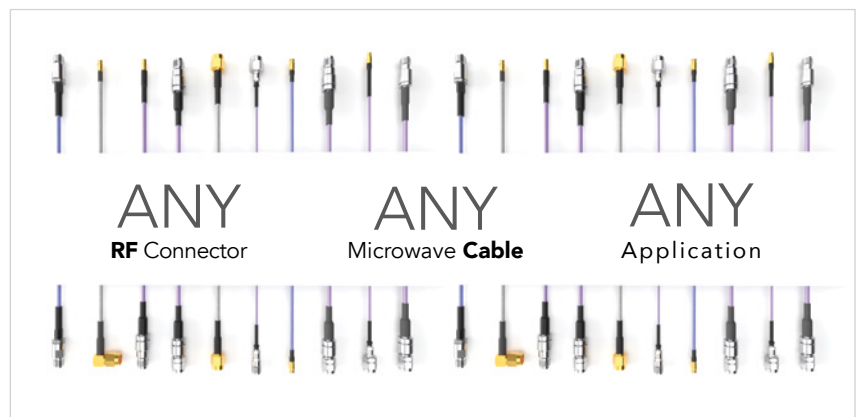
APPLICATION SPECIFIC SOLUTIONS

EXTREME FLEXIBILITY • QUICK-TURN MODIFICATIONS • CUSTOM DESIGNS

Samtec's fully vertically integrated business model enables the flexibility to quickly and efficiently identify and/or develop innovative, application-specific interconnect solutions to meet a variety of demands in digital/analog systems. Contact RFGroup@samtec.com to discuss your application.

Customized Cable Assemblies • Extreme Flexibility

- Mix & Match solutions for any application
- Choose any cable connector
- Choose any standard cable



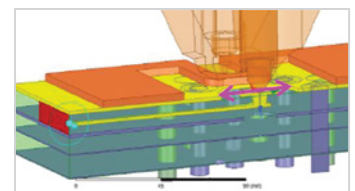
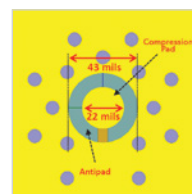
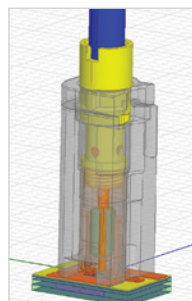
Quick-Turn Modifications & Customs • Standards & New Designs

- Termination types
- Custom tail lengths / designs
- Right-angle height adjustment
- Heat-shrink tubing
- High-frequency applications
- Pick & Place machine designs
- Alternate platings
- Custom labels
- Test & Measurement solutions



Technical Support • Full System Design & Development

- Launch design
- Prototyping
- Fabrication
- Simulations
- Launch optimization support
- Full system test & measurement





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