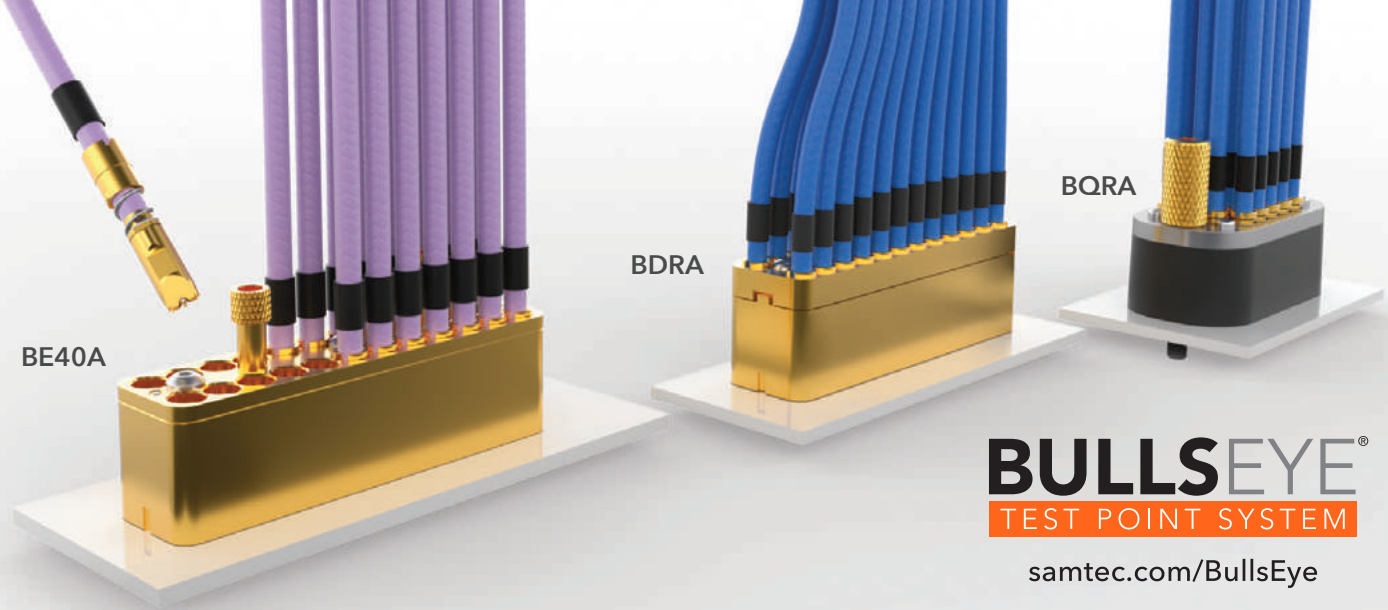




BULLS EYE[®]

APPLICATION DESIGN GUIDE



HIGH-PERFORMANCE TEST TO 65 GHz

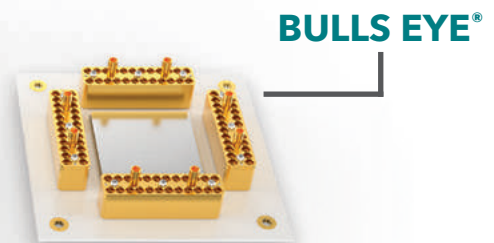
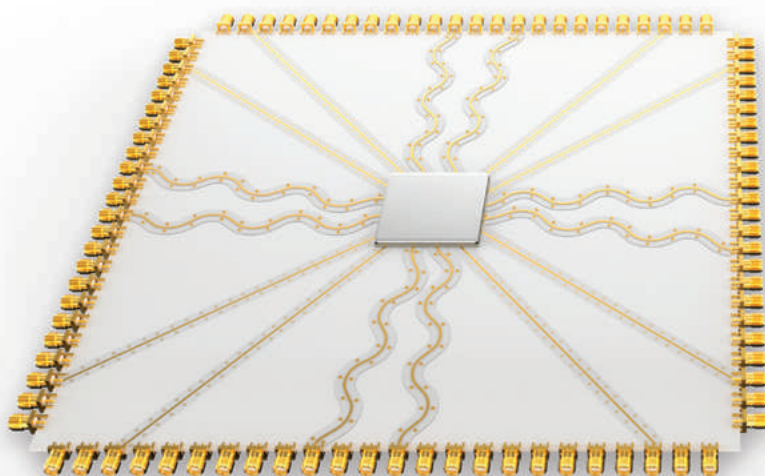
The high-density array designs and advanced cabling solutions within Samtec's Bulls Eye® product family enable optimized performance to 65 GHz. A compression interface, small footprint and high cycle count make Bulls Eye® ideal for high-performance test applications.

Bulls Eye® Product Family Features

- Compression interface to the board provides easy on/off and eliminates soldering costs
- Small footprint design significantly saves space on the board
- Microstrip or Stripline PCB transmission
- **Assembly options:** Dual Row (BE65A, BE40A, BDRA) and Quad Row (BQRA)
- **Installation:** While the attach process for each series is similar, each have unique specifications that need to be observed. Contact RFTechnicalGroup@samtec.com.

HIGH-DENSITY & SAVES BOARD SPACE

Bulls Eye® enables smaller evaluation boards and shorter trace lengths.



Traditional with SMAs

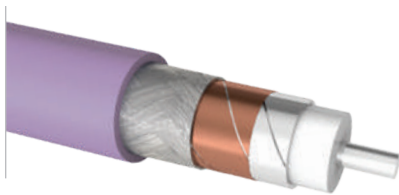
BULLS EYE® SERIES CROSS REFERENCE



	In Development			
	BE65A	BE40A	BDRA	BQRA
Performance	65 GHz	50 GHz	20 GHz	
End 2 Options	1.85 mm Jack/Plug	2.40 mm Jack/Plug (50 GHz), 2.92 mm Jack/Plug	2.92 mm Jack/Plug	
Cable Type	23 AWG, 086 Ultra-low-loss, Double Row	23 AWG, Double Row, Copper Foil Shield	23 AWG, Quad Row	
Cable Management	Yes			
PCB Transmission	Microstrip or Stripline		Stripline	
Ground	Fixed-pin design on Bulls Eye® probe end	Pogo-pin design on Bulls Eye® probe end	Elastomer	
No. of Positions	TBD	2x 3, 4, 6, 8, 10, 12, 14, 16	2x 12	20 (Quad Row)
Impedance	50 Ω			
FPGA Development Kit		Xilinx® Zynq UltraScale+ RFSoc ZCU1275		Xilinx® Virtex UltraScale FPGA VCU110
Page	4	5	6	

Replacement components are available (cables, blocks, elastomer) – See page 7

SAMTEC MICROWAVE CABLE 50 Ω, 23 AWG | High Dynamic Stability



Jacket: FEP
Ø .1050 (2.667)

Flat Wire: SPC
Ø .0807 (2.050)

Shield: 44 AWG Braid
Ø .0895 (2.273)

Dielectric: FEP Solid
Ø .0727 (1.847)

Shield: Copper Foil
Ø .0827 (2.101)

Signal Conductor: SPC
23 AWG Ø .0226 (0.574)

Insertion Loss	0.25 m	1 m
-3 dB	>40 GHz	13 GHz
-7 dB	>40 GHz	>40 GHz

Used with BE40A Series



Jacket: FEP
Ø .1020 (2.591)

Dielectric: FEP Solid
Ø .0727 (1.847)

Shield: 44 AWG Braid
Ø .0885 (2.248)

Signal Conductor: SPC
23 AWG Ø .0226 (0.574)

Flat Wire: SPC
Ø .0807 (2.050)

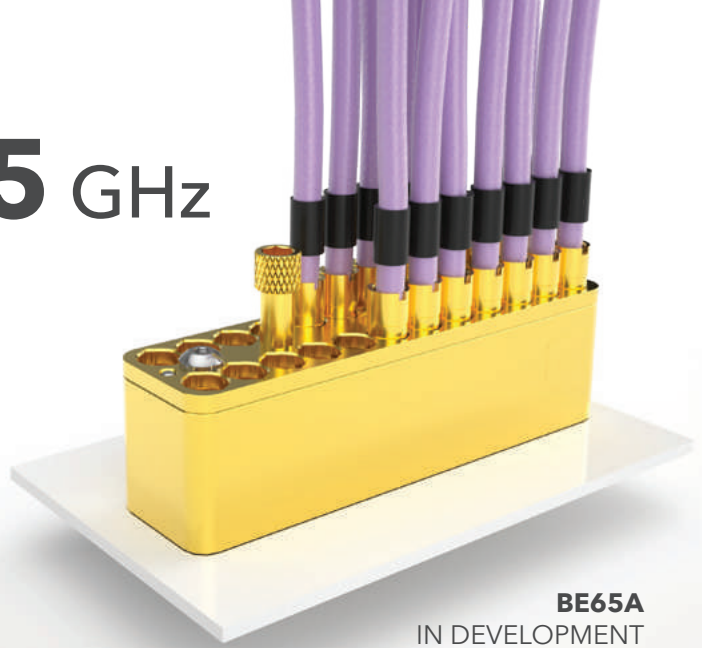
Insertion Loss	0.25 m	1 m
-3 dB	>20 GHz	16.6 GHz
-7 dB	>20 GHz	>20 GHz

Used with BDRA and BQRA Series

BULLSEYE®

TEST POINT SYSTEM

65 GHz

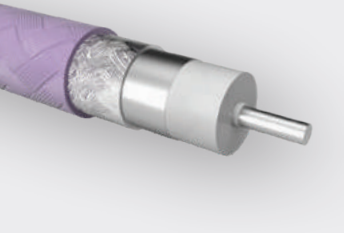





BE65A
IN DEVELOPMENT

65 GHz BULLS EYE® ASSEMBLIES IN DEVELOPMENT

Fixed-pin for Signal and Ground

Compression interface design, small footprint and high-cycle count make Bulls Eye® ideal for high-performance test applications.

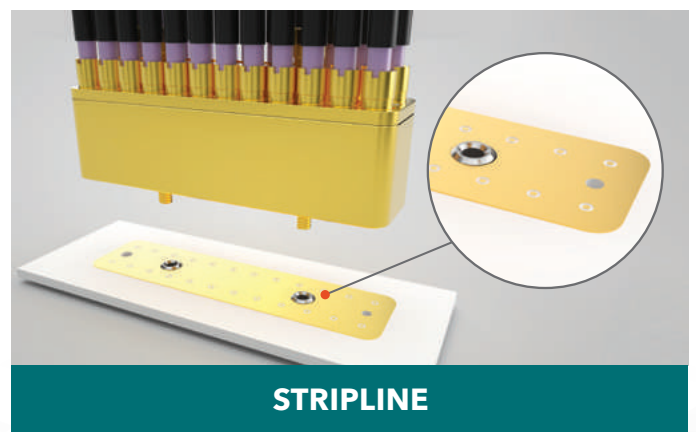
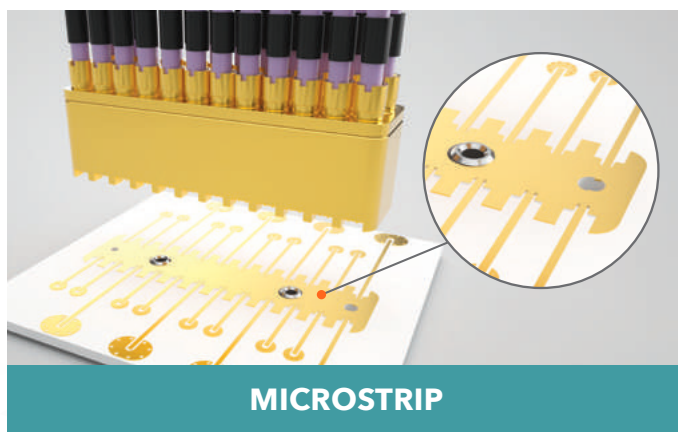
086 Ultra-Low-Loss Microwave Cable	Compression Interface to the Board	Fixed-pin for both Signal and Ground	1.85 mm, Precision End 2 Interconnect
		 <p>In Development</p>	

- High-density array test assembly
 - Double-row (BE65A)
- Microwave Cable
 - 23 AWG, foam core
 - Ultra-low-loss
 - 086 style

- Microstrip or stripline PCB Transmission
- Replacement components (cable and block)
- 50 Ω impedance

- End 2: 1.85 mm
- Cable management available with protective sleeve
- Test data: contact RFTechnicalGroup@samtec.com

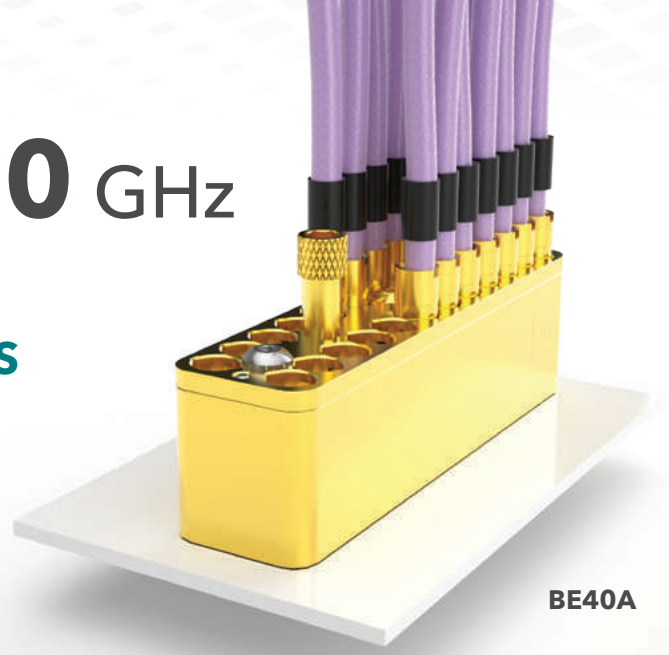
TRANSMISSION TYPES



BULLSEYE®

TEST POINT SYSTEM

50 GHz



50 GHz BULLS EYE® ASSEMBLIES

Pogo-pin for Signal and Ground

Compression interface design, small footprint and high-cycle count make Bulls Eye® ideal for high-performance test applications.

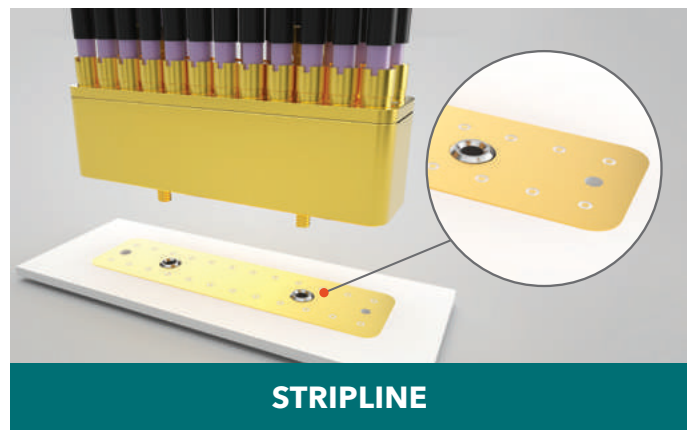
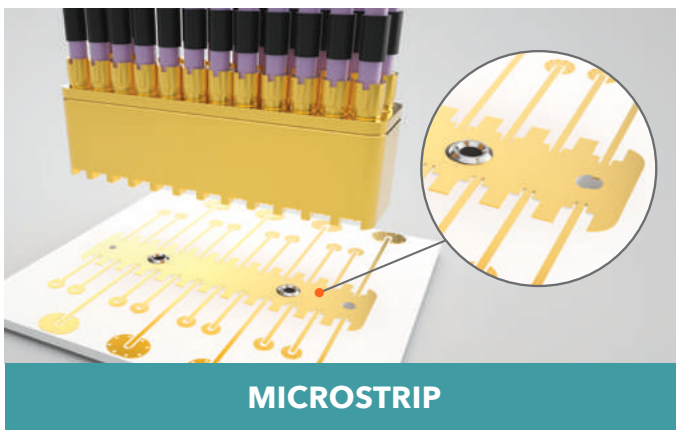
Backward Compatible with BDRA Gen 1	High Stability Microwave Cable	Compression Interface to the Board	Pogo-pin for both Signal and Ground
<p>BE40A</p>			

- High-density array test assembly
 - Double-row (BE40A)
- Advanced cable solutions
 - 23 AWG, solid dielectric
 - Low-loss microwave
 - Copper foil shield

- Microstrip or stripline PCB Transmission
- Replacement components (cable and block)
- 50 Ω impedance
- Phase-matched pairs

- End 2: 2.92 mm, 2.40 mm
- Cable management available with protective sleeve
- Test boards available for performance verification, contact RFTechnicalGroup@samtec.com

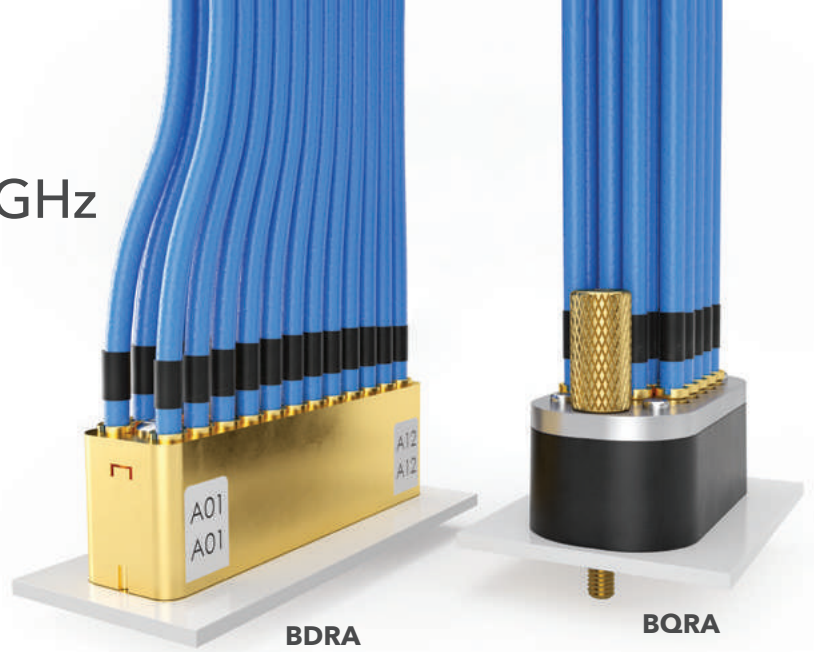
TRANSMISSION TYPES



20 GHz BULLS EYE[®] ASSEMBLIES

Fixed-pin for signal, elastomer for ground

Compression interface design, small footprint and high-cycle count make Bulls Eye[®] ideal for high-performance test applications.



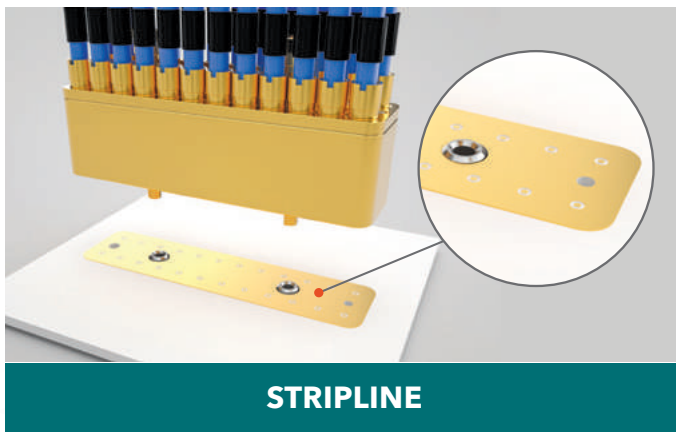
Elastomer for Grounding	Replacement Components (cable, block, elastomer)	Compression Interface to the Board	Fixed-pin Design

- High-density array test assembly
 - Double-row (BDRA)
 - Quad-row (BQRA)
- Advanced Cable solutions
 - 23 AWG, solid dielectric
 - Low-loss microwave

- Stripline PCB Transmission
- Replacement components (cable, block and elastomer)
- 50 Ω impedance
- Phase-matched pairs

- End 2: 2.92 mm
- Cable management available with protective sleeve
- Test boards available for performance verification, contact RFTechnicalGroup@samtec.com

TRANSMISSION TYPES



BE40A (page 5) is backward compatible with **BDRA**

REPLACEMENT COMPONENTS

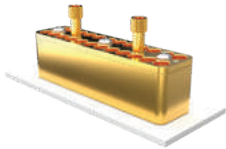
Testing can be a long, arduous process and engineers need an assembly that will stand up to the demands. Yet, even the best components have a life cycle. As a result, Samtec makes it easy to order replacement components for our Bulls Eye® assemblies. The following outlines each replacement component, and in which assembly it is used:

SERIES	COMPONENT	ASSEMBLY USED IN
BE65B	Block	BE65A (In development)
BE65C	Cable	BE65A (In development)
BE40B	Block	BE40A
BE40C	Cable	BE40A
BE23S	Cable	BDRA and BQRA
BDR	Block	BDRA
BQR	Block	BQRA
	Elastomer	BDRA and BQRA

BULLSEYE® TEST POINT SYSTEM

To find these replacement components on our website, simply type the series name into the search box in the upper, right-hand corner of samtec.com.

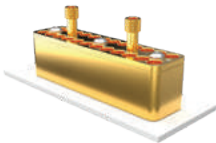
Contact RFTechnicalGroup@samtec.com for additional information.



BE65B SERIES (In development) | Replacement block for 65 GHz Bulls Eye® (BE65A)
 • Microstrip or stripline PCB transmission • Double row



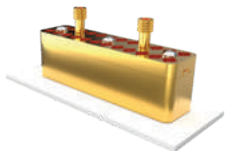
BE65C SERIES (In development) | Replacement cable for 65 GHz Bulls Eye® (BE65A)
 • Fixed-pin design for both signal and ground
 • 23 AWG, 086 ultra-low-loss microwave cable



BE40B SERIES | Replacement block for 50 GHz Bulls Eye® (BE40A)
 • Microstrip or stripline PCB transmission • Double row



BE40C SERIES | Replacement cable for 50 GHz Bulls Eye® (BE40A)
 • Pogo-pin design with ground/signal/ground
 • 23 AWG solid dielectric low loss cable with additional copper foil shield



BDR SERIES | Replacement block for 20 GHz Bulls Eye® (BDRA)
 • Stripline PCB transmission • Double row



BQR SERIES | Replacement block for 20 GHz Bulls Eye® (BQRA)
 • Stripline PCB transmission • Quad row



BE23S SERIES | Replacement cable for 20 GHz Bulls Eye® (BDRA, BQRA)
 • Fixed-pin design for signal • 23 AWG solid dielectric low loss cable



samtec

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