

# 0.050" Centers

Standard Spring Probes

Board Test Fixture Probes & Receptacles



# Board Test Spring Probes

Smiths Interconnect offers a wide range of spring contact probes to meet your testing requirements and has long been recognized as the world's largest probe manufacturer. With over 60 different probe series that includes our standard Board Test Fixture Probes as well as our Specialty Test Probes, we provide a full portfolio designed for general purpose test on bare boards, loaded printed circuit boards, surface mount assemblies and other forms of test.



## MICRO SERIES PROBES

The Micro probe series range in pitch from 0.20" (0.51 mm) to 0.030" (0.76 mm) pitch and are typically between half an inch to an inch in length.

## ROTATOR PROBES

Ideal for non-clean and lead-free applications, this aggressive probe rotates 90° at the rated travel, virtually drilling through contaminants with a low spring force.

## STANDARD PROBES

Our standard probes range in pitch from 0.039" (1.00 mm) to 0.187" (4.75 mm). Within most series, there are multiple length and travel options, including more aggressive probes dimensionally equivalent to the standard probes.

## HIGH CURRENT PROBES

We offer two different high current probe designs in four different pitches. The SH series features a bias ball, which is the most aggressive biasing technique to aid in assuring a low and consistent resistance, cycle after cycle. The SHE Series features a bias spring, an effective biasing technique for many applications.

## DOUBLE-ENDED PROBES & RECEPTACLES

Double-ended probes feature both a top-side and bottom-side compliant plunger. Double-ended receptacles are available with a permanent bottom-side plunger and a replaceable probe on the top side. They are also available with both a top and bottom-side replaceable probe.

## SWITCH PROBES

A Switch Probe is a spring contact probe and receptacle that has two individual current paths. One current path is closed, the other is open and after a designated travel the second current path closes.

## LEAD FREE PROBES

The Lead Free probe series is based on our ICT Probe Series. The plunger material, plating and tip geometry have been optimized to provide less wear and contamination build-up while using a moderate spring force of 7 to 8 ounces.

## THERMOCOUPLE PROBES

The Thermocouple Probe is an ungrounded, thermally conductive probe used for the measurement of variations in temperature. We offer two Thermocouple Probes: Type T for up to 220°F, and Type K for up to 350°F.

## ICT PROBES

The ICT probe design features a bifurcated barrel with four separate fingers. The barrel is compliant and formed against the plunger, thus eliminating any gap between the plunger and barrel. ICT probes are more accurate and stable in resistance than standard designs.

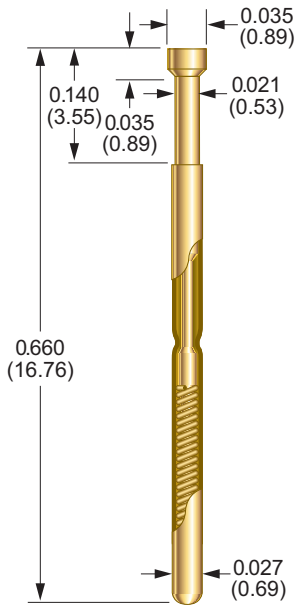
## COAXIAL PROBES

Our Coax Probes provide a low noise, controlled impedance signal path with reliable, easy connect/disconnect options. Our designs include a spring-loaded signal probe and a spring-loaded shielding plunger for the ground.

# S-0 Series

## 0.050 (1.27) Centers

For R-0 Series Receptacles see pg. 8



### BeCu Tips Diameter

Tip Style	Diameter
<b>A</b> 90°	0.035 (0.89)
<b>B</b> 30°	0.021 (0.53)
<b>B9</b> 90°	0.021 (0.53)
<b>D</b> 90°	0.035 (0.89)
<b>E</b> 90°	0.035 (0.89)
<b>ES</b> 90°	0.046 (1.17)
<b>H</b> 90°	0.035 (0.89)
<b>J</b> 90°	0.021 (0.53)
<b>JS</b> 90°	0.016 (0.41) 0.021 (0.53)
<b>T4</b> 45°	0.035 (0.89)
<b>U</b> 60°	0.021 (0.53)
<b>UT</b> 60°	0.011 (0.28) 0.021 (0.53)
<b>V</b> 60°	0.035 (0.89)

### Probe Specifications

Minimum Centers	0.050 (1.27)
Current Rating	Up to 3 Amps
Spring Force	2.20 oz (62 g), 2.50 oz (71 g), or 3.70 oz (105 g) @ 0.070 (1.78) travel
Preload Force	0.60 oz (17 g) (2.20 oz spring/BeCu) 0.60 oz (17 g) (2.50 oz spring/stainless steel) 1.90 oz (54 g) (3.70 oz spring/music wire)
Typical Resistance	< 35 mΩ
Maximum Travel	0.100 (2.54)
Working Travel	0.070 (1.78)

### Materials

Barrel	Nickel/silver, gold plated
Spring	Beryllium copper, music wire, or stainless steel, gold plated
Plunger	Beryllium copper, gold plated over nickel, or Duralloy™

### How to Order

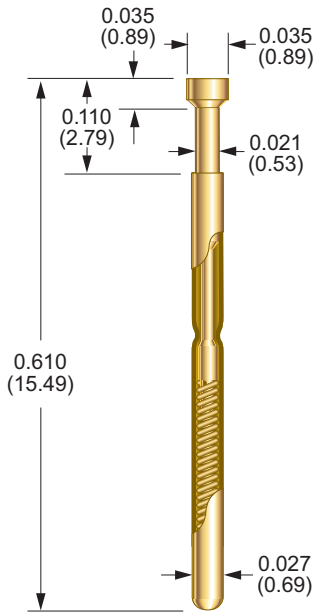
S - O - A - 2.2 - G  
1 2 3 4 5

<b>1 Series</b>	S SX
<b>2 Size</b>	O
<b>3 Tip Style</b>	A, B, B9, D, E, ES, H, J, JS, T4, U, UT, V
<b>4 Spring Force</b>	2.2 oz 2.5 oz 3.7 oz
<b>5 Plunger Plating</b>	G Gold D Duralloy™

# SS-50 Series

## 0.050 (1.27) Centers

For R-0 Series Receptacles see pg. 8



### BeCu Tips Diameter

Tip Style	Tip Angle	Diameter
<b>A</b>	90°	0.035 (0.89)
<b>B</b>	30°	0.021 (0.53)
<b>B9</b>	90°	0.021 (0.53)
<b>D</b>	90°	0.035 (0.89)
<b>E</b>	90°	0.035 (0.89)
<b>ES</b>	90°	0.046 (1.17)
<b>H</b>	90°	0.035 (0.89)
<b>J</b>	90°	0.021 (0.53)
<b>JS</b>	90°	0.100 (2.54) / 0.016 (0.41) / 0.021 (0.53)
<b>T4</b>	45°	0.035 (0.89)
<b>U</b>	60°	0.021 (0.53)
<b>UT</b>	90°	0.011 (0.28) / 0.021 (0.53)
<b>V</b>	90°	0.035 (0.89)

### Probe Specifications

Minimum Centers	0.050 (1.27)
Current Rating	Up to 3 Amps
Spring Force	2.90 oz (82 g), 3.30 oz (94 g), or 5.10 oz (145 g) @ 0.050 (1.27) travel
Preload Force	1.10 oz (31 g) (2.90 oz spring/BeCu) 1.70 oz (48 g) (3.30 oz spring/stainless steel) 1.50 oz (42 g) (5.10 oz spring/music wire)
Typical Resistance	< 35 mΩ
Maximum Travel	0.070 (1.78)
Working Travel	0.050 (1.27)

### Materials

Barrel	Nickel/silver, gold plated
Spring	Beryllium copper, stainless steel, or music wire, gold plated
Plunger	Beryllium copper, gold plated over nickel, or Duralloy™

### How to Order

SS - 50 - A - 2.9 - G  
1 2 3 4 5

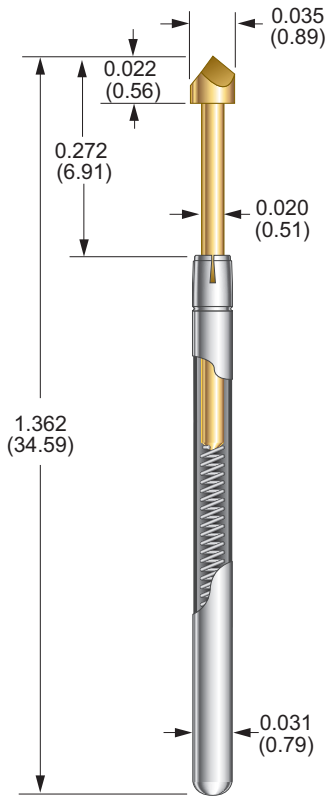
<b>1 Series</b>	SS SX S <sup>(1)</sup>
<b>2 Size</b>	50
<b>3 Tip Style</b>	A, B, B9, D, E, ES, H, J, JS, T4, U, UT, V
<b>4 Spring Force</b>	2.9 oz 3.3 oz 5.1 oz
<b>5 Plunger Plating</b>	G Gold D Duralloy™

# ICT-50C & S-50C Series

## 0.050 (1.27) Centers

For R-50C Series Receptacle see pg. 9

For R-50C-J-DE Wireless Series Receptacles see pg. 10



### BeCu Tips Diameter

<b>90°</b> <b>A</b>	0.035 (0.89)
<b>J</b>	0.020 (0.51)
<b>V8</b>	0.035 (0.89) 8 Pts.

### Steel Tips Diameter

<b>30°</b> <b>B</b>	0.020 (0.51)
<b>HS</b>	0.020 (0.51)
<b>30°</b> <b>M</b>	0.020 (0.51)
<b>10°</b> <b>SP</b>	0.020 (0.51)
<b>74°</b> <b>SW</b>	0.020 (0.51)
<b>60°</b> <b>T</b>	0.029 (0.74)
<b>60°</b> <b>TL</b>	0.035 (0.89)
<b>Z</b>	0.020 (0.51)

### Probe Specifications

Minimum Centers	0.050 (1.27)
Current Rating	Up to 3 Amps
Spring Force	4.30 oz (122 g) or 5.60 oz (159 g) @ 0.170 (4.32) travel
Preload Force	1.90 oz (54 g) (4.30 oz spring/stainless steel) 2.10 oz (60 g) (5.60 oz spring/music wire)
Typical Resistance	ICT-50C: < 20 mΩ S-50C: < 25 mΩ
Maximum Travel	0.250 (6.35)
Working Travel	0.170 (4.32)

### Materials

Barrel	Nickel/silver, gold lined
Spring	Music wire, nickel plated, or stainless steel
Plunger	Beryllium copper, or steel, gold plated over nickel

### How to Order

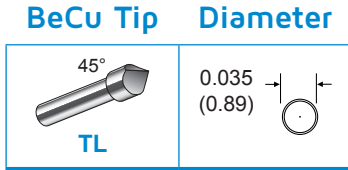
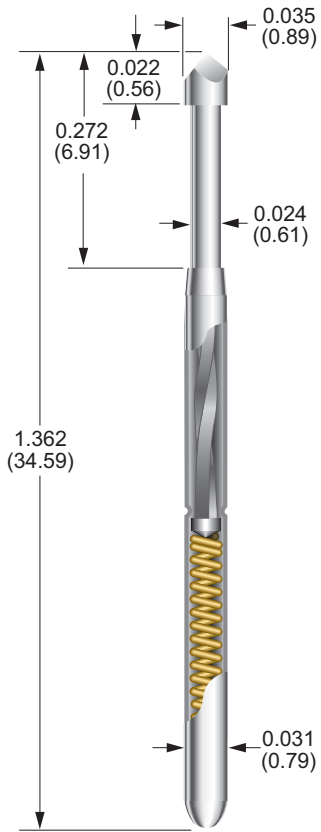
	<b>ICT - 50C - T - 5.6 - DG - S</b>
	<b>1 2 3 4 5 6</b>
<b>1 Series</b>	<b>ICT</b> <sup>(1)</sup> <b>S</b>
<b>2 Size</b>	<b>50C</b>
<b>3 Tip Style</b>	<b>A, B, HS, J, M, SP, SW, T, TL, V8, Z</b>
<b>4 Spring Force</b>	<b>4.3</b> oz <b>5.6</b> oz
<b>5 Plunger Plating</b>	<b>DG</b> Duragold™
<b>6 Steel Plunger Option</b>	<b>S</b> Steel

1. High performance  
Dimensions are in inches (mm) | All specifications are subject to change

# S-50C Rotator Series

## 0.050 (1.27) Centers

For R-50C Series Receptacles see pg. 9



### Probe Specifications

Minimum Centers	0.050 (1.27)
Current Rating	Up to 3 Amps
Spring Force	3.70 oz (105 g) @ 0.170 (4.32) travel
Preload Force	1.50 oz (42 g)
Typical Resistance	< 25 mΩ
Maximum Travel	0.250 (6.35)
Working Travel	0.170 (4.32)
Rotation	85° @ 0.170 (4.32) travel

### Materials

Barrel	Nickel/silver, gold lined
Spring	Music wire, gold plated
Plunger	Beryllium copper, Duralloy™ plated

### How to Order

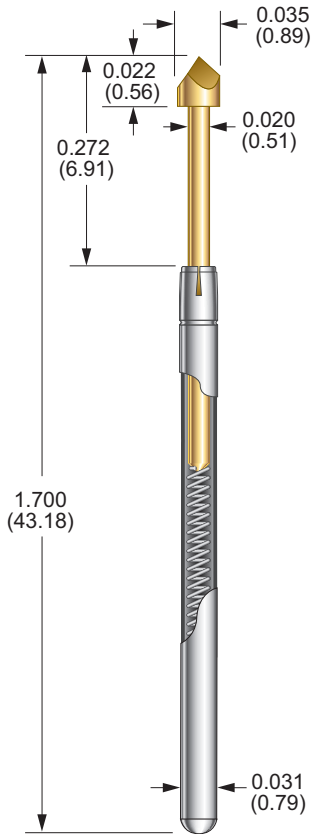
**S - 50C - TL - 3.7 - RT**  
 1      2      3      4      5

1 Series	S
2 Size	50C
3 Tip Style	TL
4 Spring Force	3.7 oz
5 Rotator	RT

# ICT-50J Series

## 0.050 (1.27) Centers

For R-50J Series Receptacles see pg. 11



### BeCu Tips Diameter

<b>90°</b> <b>A</b>	0.035 (0.89)	
<b>J</b>	0.020 (0.51)	
<b>V8</b>	0.035 (0.89) 8 Pts.	

### Steel Tips Diameter

<b>30°</b> <b>B</b>	0.020 (0.51)	
<b>HS</b>	0.020 (0.51)	
<b>30°</b> <b>M</b>	0.020 (0.51)	
<b>SP</b>	0.020 (0.51)	
<b>10°</b> <b>SW</b>	0.020 (0.51)	
<b>74°</b> <b>T</b>	0.029 (0.74)	
<b>60°</b> <b>TL</b>	0.035 (0.89)	
<b>60°</b> <b>UR</b>	0.016 (0.41) 0.020 (0.51)	
<b>Z</b>	0.020 (0.51)	

### Probe Specifications

Minimum Centers	0.050 (1.27)
Current Rating	Up to 3 Amps
Spring Force	4.00 oz (113 g), 5.60 oz (159 g), 7.00 oz (198 g), or 10.00 oz (283 g) @ 0.170 (4.32) travel
Preload Force	1.80 oz (51 g) (4.00 oz spring/stainless steel) 2.50 oz (71 g) (5.60 oz spring/stainless steel) 3.10 oz (88 g) (7.00 oz spring/music wire) 4.60 oz (130 g) (10.00 oz spring/music wire)
Typical Resistance	< 20 mΩ
Maximum Travel	0.250 (6.35)
Working Travel	0.170 (4.32)

### Materials

Barrel	Nickel/silver, gold lined
Spring	Music wire, nickel plated, or stainless steel
Plunger	Beryllium copper, or steel, gold plated over nickel

### How to Order

**I C T - 5 0 J - T - 5 . 6 - D G - S**  
1 2 3 4 5 6

<b>1 Series</b>	<b>I C T</b> <sup>(1)</sup>
<b>2 Size</b>	<b>5 0 J</b>
<b>3 Tip Style</b>	<b>A, B, HS, J, M, SP, SW, T, TL, UR, V8, Z</b>
<b>4 Spring Force</b>	<b>4 oz 5.6 oz</b> <b>7 oz 10 oz</b>
<b>5 Plunger Plating</b>	<b>D G</b> Duragold™
<b>6 Steel Plunger Option</b>	<b>S</b> Steel

1. High performance  
Dimensions are in inches (mm)  
All specifications are subject to change

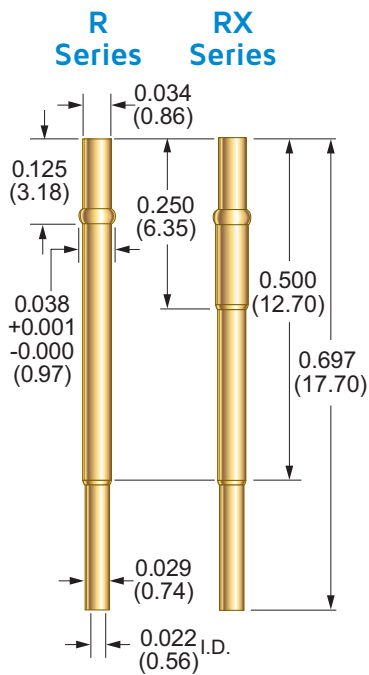
# R-0 Series

## 0.050 (1.27) Centers

For S-0 Series Probes see pg. 3

For SS-50 Series Probes see pg. 4

Part Number	Style/Termination	Receptacle or Terminal Length	Probe/Receptacle Combined Length		Notes
			S-0	SS-50	
R-0-CR	Crimp	0.697 (17.70)	0.857 (21.77)	0.807 (20.50)	—
R-0-SC	Solder Cup	0.697 (17.70)	0.857 (21.77)	0.807 (20.50)	—
R-0-WW-016	Wire Wrap	0.947 (24.05)	1.107 (28.12)	1.057 (26.85)	0.250 post length – 0.016 sq.
R-0-WW-025	Wire Wrap	0.997 (25.32)	1.157 (29.39)	1.107 (28.12)	0.300 post length – 0.025 sq.
R-0-PW-12-1	Preattached Wire <sup>(2)</sup>	0.697 (17.70)	0.857 (21.77)	0.807 (20.50)	12" wire length, 1" strip length
R-0-PW-36-1	Preattached Wire <sup>(2)</sup>	0.697 (17.70)	0.857 (21.77)	0.807 (20.50)	36" wire length, 1" strip length



### Probe Specifications

Minimum Centers	0.050 (1.27)
Drill Size	#64
Mounting Hole Size	0.035/0.0365 (0.89/0.93)
Recommended Wire	28-30 gage
Materials	Nickel/silver, gold plated, gold plated post

### Tools

Crimping Pliers	CP-0 (for 28-30 gage solid conductor)
Insertion Tool	RT-0

### How to Order

R - 0 - CR  
1 2 3

1 Series	R	RX <sup>(1)</sup>
2 Size	0	
3 Termination	CR	Crimp
	SC	Solder Cup
	WW - 016	Wire wrap 0.016 sq.
	WW - 025	Wire wrap 0.025 sq.
	PW - 12 - 1	Preattached wire 12", 1" strip length <sup>(2)</sup>
PW - 36 - 1	Preattached wire 36", 1" strip length <sup>(2)</sup>	

1. Improved pointing accuracy

2. Wire length 36" with a 1" strip length, 12" & 36" standard, blue solid conductor Kynar wire

Dimensions are in inches (mm) | All specifications are subject to change



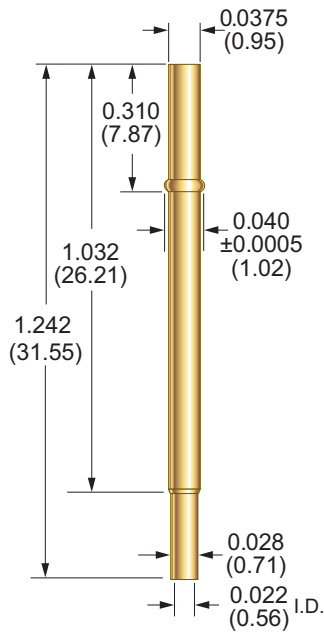
# R-50C Series

## 0.050 (1.27) Centers

For ICT-50C/S-50C Series Probes see pg. 5

For S-50C Rotator Series Probes see pg. 6

Part Number	Style/Termination	Receptacle Length	Probe/Receptacle Combined Length	Notes
R-50C-CR	Crimp	1.242 (31.54)	1.572 (39.92)	—
R-50C-SC	Solder Cup	1.242 (31.54)	1.572 (39.92)	—
R-50C-WW-016	Wire Wrap	1.492 (37.89)	1.822 (46.27)	0.250 post length – 0.016 sq.
R-50C-WW-025	Wire Wrap	1.542 (39.16)	1.872 (47.55)	0.300 post length – 0.025 sq.
R-50C-PW-12-1	Preattached Wire <sup>(1)</sup>	1.242 (31.54)	1.572 (39.92)	12" wire length, 1" strip length
R-50C-PW-36-1	Preattached Wire <sup>(1)</sup>	1.242 (31.54)	1.572 (39.92)	36" wire length, 1" strip length



### Probe Specifications

Minimum Centers	0.050 (1.27)
Drill Size	#61
Mounting Hole Size	0.0385/0.0390 (0.98/0.99)
Recommended Wire	28-30 gage
Materials	Beryllium copper, preplated gold, gold plated post

### Tools

Crimping Pliers	CP-50C (for 28-30 gage solid conductor)
Insertion Tool	RT-50

### How to Order

**R - 50C - CR**  
**1 2 3**

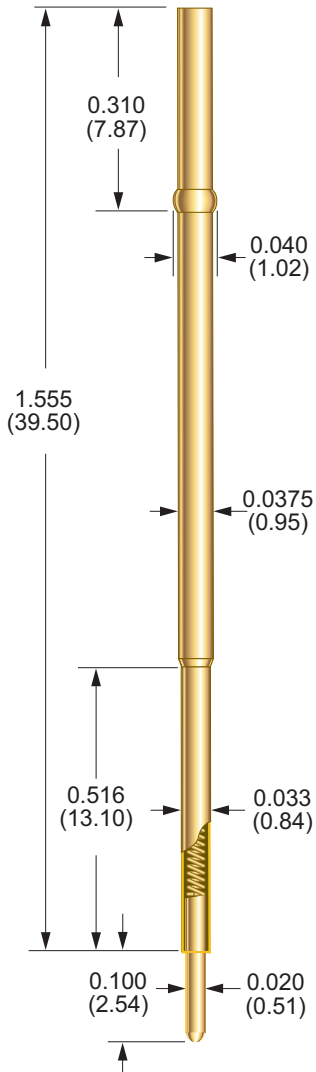
<b>1 Series</b>	<b>R</b>
<b>2 Size</b>	<b>50C</b>
<b>3 Termination</b>	<b>CR</b> Crimp <b>SC</b> Solder Cup
	<b>WW - 016</b> Wire wrap 0.016 sq.
	<b>WW - 025</b> Wire wrap 0.025 sq.
	<b>PW - 12 - 1</b> Preattached wire 12", 1" strip length <sup>(1)</sup>
	<b>PW - 36 - 1</b> Preattached wire 36", 1" strip length <sup>(1)</sup>



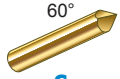

1. Wire length 36" with a 1" strip length, 12" & 36" standard, blue solid conductor Kynar wire  
 Dimensions are in inches (mm) | All specifications are subject to change

# R-50C-J-DE Series

## 0.050 (1.27) Centers | Wireless Receptacle

For ICT-50C/S-50C Series Probes see pg. 5



BeCu Tips	Diameter
 <b>J</b>	0.020 (0.51) 
 <b>S</b>	0.020 (0.51) 

### Probe Specifications

Minimum Centers	0.050 (1.27)
Drill Size	#61
Mounting Hole Size	0.0385/0.0390 (0.98/0.99)
Spring Force	2.70 oz (77 g) @ 0.069 (1.75) travel
Maximum Travel	0.100 (2.54)
Working Travel	0.070 (1.77)

### Materials

Receptacle	Beryllium copper, gold plated
Spring	Music wire, gold plated
Plunger	Beryllium copper, gold plated over nickel

### Tools

Insertion Tool	RT-50
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### How to Order

**R - 50C - J - DE**  
**1 2 3 4**

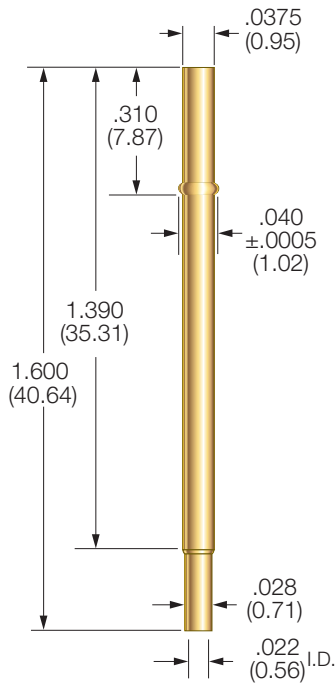
<b>1 Series</b>	<b>R</b>
<b>2 Size</b>	<b>50C</b>
<b>3 Tip Style</b>	<b>J, S</b>
<b>4 Termination</b>	<b>DE</b> Double-Ended

# R-50J Series

## 0.050 (1.27) Centers

For ICT-50J Series Probes see pg. 7

Part Number	Style/Termination	Receptacle Length	Probe/Receptacle Combined Length	Notes
R-50J-CR	Crimp	1.600 (40.64)	1.910 (48.51)	—
R-50J-SC	Solder Cup	1.600 (40.64)	1.910 (48.51)	—
R-50J-WW-016	Wire Wrap	1.850 (46.99)	2.160 (54.86)	0.250 post length – 0.016 sq.
R-50J-WW-025	Wire Wrap	1.900 (48.26)	2.210 (56.13)	0.300 post length – 0.025 sq.
R-50J-PW-12-1	Preattached Wire <sup>(1)</sup>	1.600 (40.64)	1.910 (48.51)	12" wire length, 1" strip length
R-50J-PW-36-1	Preattached Wire <sup>(1)</sup>	1.600 (40.64)	1.910 (48.51)	36" wire length, 1" strip length



### Probe Specifications

Minimum Centers	0.050 (1.27)
Drill Size	#61
Mounting Hole Size	0.0385/0.0390 (0.98/0.99)
Recommended Wire	28-30 gage
Materials	Beryllium copper, preplated gold, gold plated post

### Tools

Crimping Pliers	CP-50J (for 28-30 gage solid conductor)
Insertion Tool	RT-50

### How to Order

**R - 50J - CR**  
**1 2 3**

<b>1 Series</b>	<b>R</b>
<b>2 Size</b>	<b>50J</b>
<b>3 Termination</b>	<b>CR</b> Crimp <b>SC</b> Solder Cup
	<b>WW - 016</b> Wire wrap 0.016 sq.
	<b>WW - 025</b> Wire wrap 0.025 sq.
	<b>PW - 12 - 1</b> Preattached wire 12", 1" strip length <sup>(1)</sup>
	<b>PW - 36 - 1</b> Preattached wire 36", 1" strip length <sup>(1)</sup>

1. Wire length 36" with a 1" strip length, 12" & 36" standard, blue solid conductor Kynar wire  
 Dimensions are in inches (mm) | All specifications are subject to change

# Global Support

## Americas

- Kansas City, KS  
+1 913 342 5544  
info.us@smithsinterconnect.com
- Tampa, FL  
+ 1 813 901 7200  
info.tampa@smithsinterconnectinc.com
- Milpitas, CA  
+1 408 957 9607 x-1125  
info.us@smithsinterconnect.com
- Kirkland, QC, Canada  
+1 514 842 5179  
info.us@smithsinterconnect.com
- Salisbury, MD  
+1 800 780 2169  
info.us@smithsinterconnect.com

## Europe

- Deggendorf, Germany  
+49 991 250 120  
info.de@smithsinterconnect.com
- Rouen, France  
+33 2 3296 9176  
info.fr@smithsinterconnect.com
- Dundee, UK  
+44 1382 427 200  
info.dundee@smithsinterconnect.com
- Genova, Italy  
+39 0 10 60361  
info.it@smithsinterconnect.com

## Asia

- Bangalore, India  
+91 080 4241 0529  
info.in@smithsinterconnect.com
- Singapore  
+65 6846 1655  
info.asia@smithsinterconnect.com
- Mianyang, China  
+86 816 231 5566  
HSICSR@hf-smiths.com
- Suzhou, China  
+86 512 6273 1188  
info.asia@smithsinterconnect.com
- Shanghai, China  
+86 21 2283 8008  
info.asia@smithsinterconnect.com

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