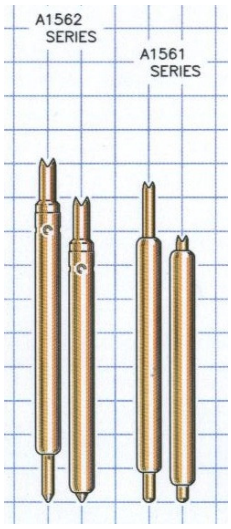
A1561
A Series
0.4mm (.0157inch) Pitch

FEATURES



- **<-1db insertion loss to 7.4 GHz**
- **<2:1 VSWR to 9.4GHz**
- **22g operating spring force**
- **Z0 = 33.6Ω**
- **<40.5ps risetime**
- **90 milliOhms contact resistance**
- **1.65 Amps max. drive current**

GENERAL DESCRIPTION

The A1561 spring probe from Signal Integrity Inc. is designed to meet the rigorous test requirements driven by the ultra fast risetimes in the digital domain, and high bandwidth, high frequency RF / microwave specifications for the wireless market. Along with speed and accuracy, these probes are designed to operate at pitches to 0.4mm, specifically for the ultra fine pitch packaging these markets demand.
The ultra high bandwidth of these probes provides very low insertion loss up to 7.4GHz. These probes will provide transparent operation on Bluetooth, 802.11b and 3G wireless protocol devices as well as exceed the test probe demands of proprietary microwave communications devices and systems.

SERIES A1561 MODELS: ORDERING INFORMATION

A Series 0.4mm (.0157) Pitch					
Model	**Length Operating / Initial inches [mm]**	**DUT Plunger and Plating**	**Interface Plunger**	**Spring**	**Operating Spring Force**
A1561-A1	.131 [3.33] / .149 [3.78]	4 Point Crown – Gold	Spherical	Music Wire	22 Grams
A1561-B2		4 Point Crown - Palladium			
A1561-C3		Ogive - Gold		Stainless Steel	16 Grams
A1561-D4		Ogive - Palladium		Music Wire	22 Grams
A1561-E5		4 Point Crown - Gold		Stainless Steel	18 Grams
A1561-F6		4 Point Crown - Palladium			
A1561-G7		Ogive - Gold			
A1561-H8		Ogive - Palladium			
A1561-K2		Ogive – Gold Antidiffusion		Stainless Steel	28 Grams
A1561-L3		Conic – Solid Pd Alloy			
A1561-M4		Crown – Gold Antidiffusion			
A1561-N5		Crown – Gold			
A1561-P6		Ogive – Pd Antidiffusion			
A1561-Q7		Crown – Pd Antidiffusion			
A1561-T2		Ogive – Solid Pd Alloy			
A1561-U3		Ogive – Solid Pd Alloy			
A1561-V4				Music Wire	22 Grams

FUNCTIONAL SPECIFICATIONS

Model	A1561-A1			
Time Domain	**Min.**	**Typ.**	**Max.**	**Units**
TDT Risetime into 50Ω			40.5	ps
TDR Risetime open circuit			52.5	ps
TDR Risetime short circuit			45.0	ps
Signal Delay into 50Ω		19.3		ps
Frequency Domain				
Insertion Loss				
<-1db	7.4			GHz
<-3db	>40.0			GHz
Return Loss, S11				
<-10db	9.2			GHz
<-20db	2.8			GHz
VSWR				
<2:1	9.4			GHZ
Equivalent Circuit Parameters				
Pin Inductance		0.67		NH
Pin Capacitance to ground , C1, C2		0.24		pF
Mutual Inductance		0.129		nH
Mutual Capacitance		0.103		pF
Transmission Line				
Zo		33.6		Ω
Tl		19.3		ps
DC Parameters				
Contact Resistance		90		mΩ
Maximum Rating				
Drive Current		1.65		A

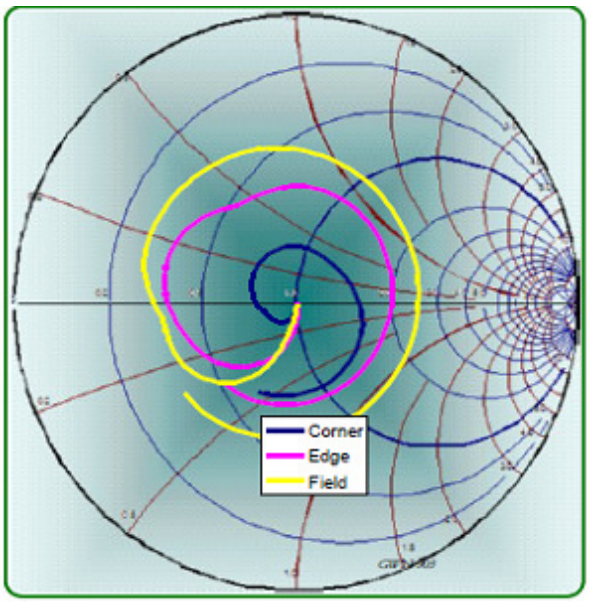


Figure 2: Measurement into 50Ω, A1561-A1

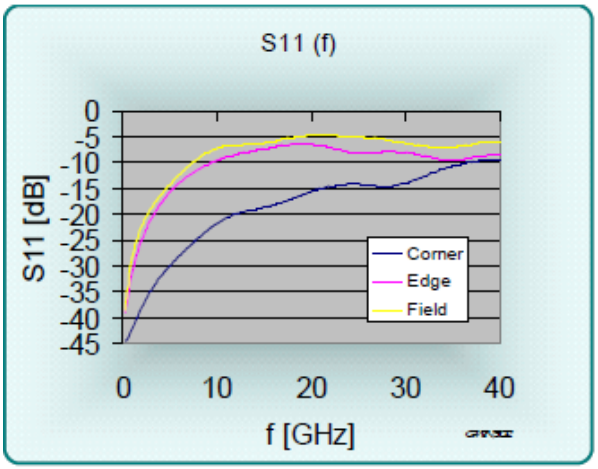


Figure 3: Return Loss, S11, A1561-A1

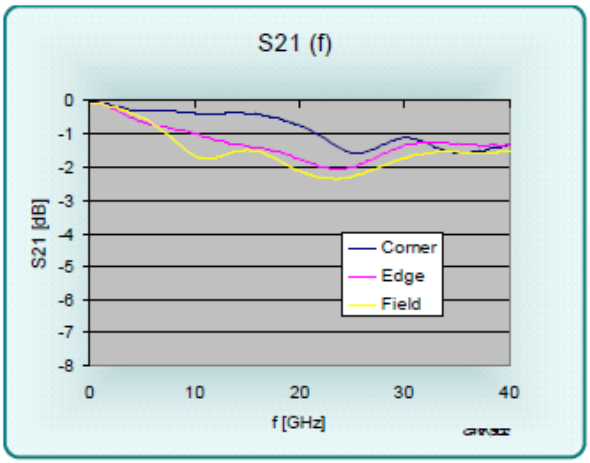


Figure 1: Insertion Loss, S21, A1561-A1

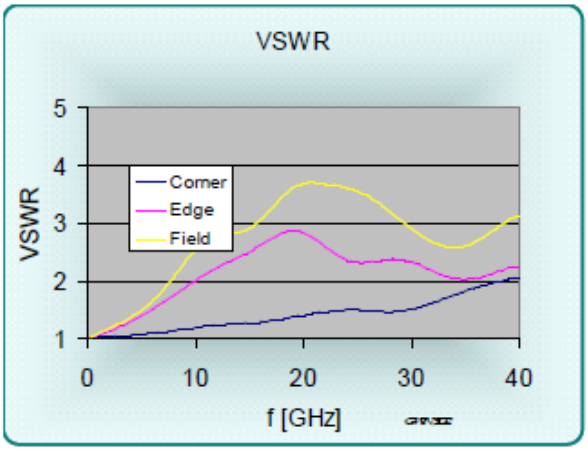


Figure 4: VSWR, A1561-A1

EQUIVALENT CIRCUITS / SPICE MODELS

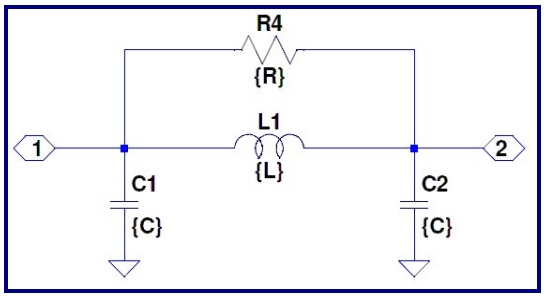


Figure 5: Pi Equivalent, Valid to 13GHz

Site	Cg = C1+C2	L1	R4
Corner	0.333 pF	0.92 nH	700 Ω
Edge	0.433 pF	0.81 nH	400 Ω
Field	0.487 pF	0.67 nH	400 Ω
Diagonal	0.487 pF	0.67 nH	400 Ω

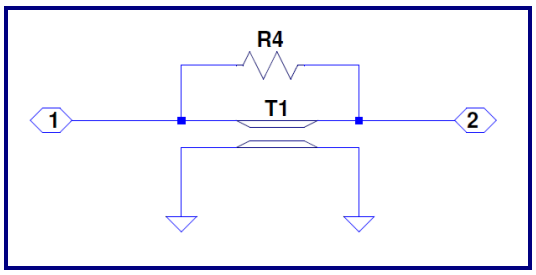


Figure 6: Transmission Line Model
Valid to >40GHz

Site	Zo	L	R4
Corner	52.6 Ω	17.53 ps	1000 Ω
Edge	43.2 Ω	18.71 ps	600 Ω
Field	37.0 Ω	18.04 ps	600 Ω

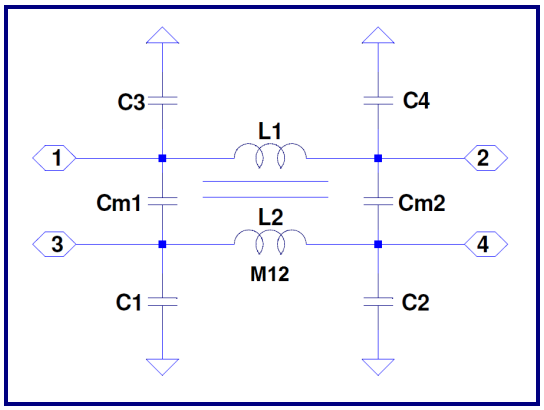


Figure 7: Lumped, Mutual Elements

Site	C1,2,3,4	Cm1,Cm2	L1,L2	M
Corner	0.167	0.060 pF	0.92	0.300 nH
Edge	0.217	0.050 pF	0.81	0.211 nH
Field	0.244	0.052 pF	0.67	0.129 nH
Diagonal	0.244	0.008 pF	0.67	0.079 nH

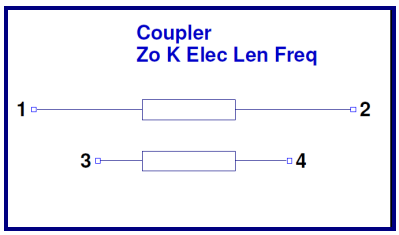


Figure 8: Transmission Line
Equivalent for Crosstalk

Z0	L1	k	f
33.6 Ω	19.3 ps	0.19	23.8 GHz

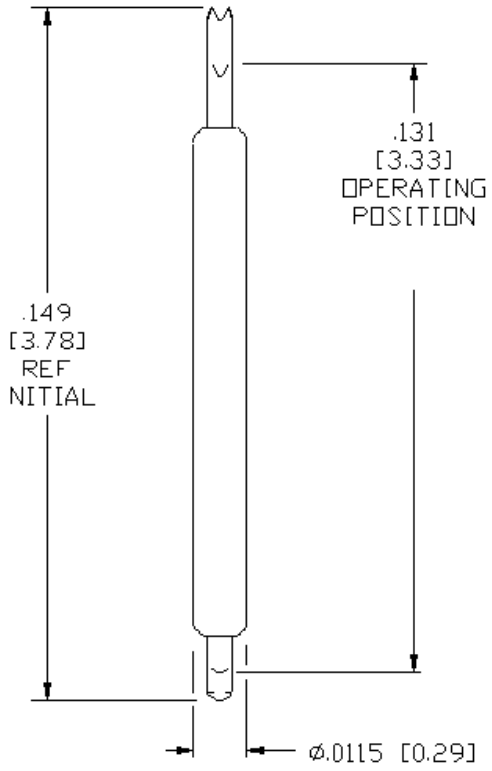
SIGNAL INTEGRITY

A1561

A Series 0.4mm (.0157) pitch									
Probe Series	Initial Length inch/mm		Operating Position inch/mm		Operating Spring Force	Self Inductance	Insertion Loss < -1db to	Typical Contact Resistance	Maximum Current
A1512	.131"	3.32	.119"	3.02	18-29g	0.66 nH	20.3 GHz	72 mOhms	2.0 A
A1520	.081”	2.05	.075”	1.90	20g	0.44 nH	24.1 GHz	60 mOhms	2.0 A
A1540	.126"	3.20	.114"	2.90	22-29g	0.42 nH	16.1 GHz	20 mOhms	4.3 A
A1550	.133”	3.30	.118”	3.00	20-29g	0.71 nH	18.7 GHz	85 mOhms	2.0 A
A1561	.149”	3.78	.131”	3.33	16-29g	0.67 nH	7.4 GHz	90 mOhms	1.65 A
A1562	.160”	4.06	.144”	3.66	14-30g	0.80 nH	11.6 GHz	90 mOhms	1.45 A
A1580	.210”	5.33	.192”	4.88	16-32g	1.02 nH	7.4 GHz	95 mOhms	1.55 A
A1582	.210”	5.33	.184”	4.67	16-30g	0.93 nH	9.6 GHz	100 mOhms	1.4 A
A1586	.219”	5.56	.199”	5.06	19-20g	-	-	-	-

MECHANICAL DIMENSIONS

INCHES [MM]



RoHS

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