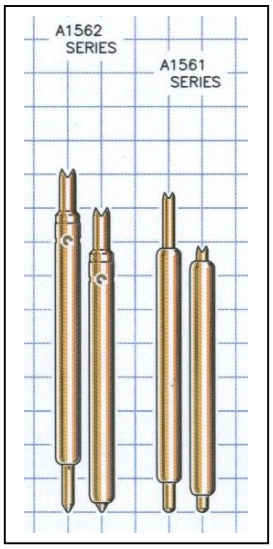
SIGNAL INTEGRITY

A1562
A Series
0.4mm (.0157inch) Pitch



FEATURES

- **<-1db insertion loss to 11.6 GHz**
- **<2:1 VSWR to 9.6 GHz**
- **14 – 30 gram operating spring force**
- **Z0 = 34.3 Ω**
- **<36 ps risetime**
- **90 milliOhms contact resistance**
- **1.45 Amps max. drive current**

GENERAL DESCRIPTION

The A1562 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 11.6 GHz. 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.

With an impulse risetime of less than 36 ps and a propagation delay of 20.6 ps, the A1562 has more than enough performance for probe applications and interconnection solutions in broadband digital. These probes are ideal for building transparent test channels or interconnection solutions that must address datacom and source synchronous memory busses. Among others, these include Infiniband, PCI-Express, Source Synchronous DDR, Rambus[tm], HyperTransport and 10Gb Ethernet.

SERIES A1562 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**
A1562-A1	.144 [3.66] / .160 [4.06]	4 Point Crown - Gold	Conic	Music Wire	24 Grams
A1562-B2		Conic – Gold			
A1562-C3		4 Point Crown - Gold		Stainless Steel	14 Grams
A1562-D4		Conic – Gold			
A1562-E5		4 Point Crown - Gold		Music Wire	30 Grams
A1562-F6		Conic – Gold			
A1562-G7	.150 [3.81] / .168 [4.27]	Kelvin – Gold		Stainless Steel	16 Grams
A1562-H8		Ogive – Gold			
A1562-J1		Conic – Gold			

FUNCTIONAL SPECIFICATIONS

Model	A1562-A1			
Time Domain	**Min.**	**Typ.**	**Max.**	**Units**
TDT Risetime into 50Ω			36.0	ps
TDR Risetime open circuit			49.5	ps
TDR Risetime short circuit			39.0	ps
Signal Delay into 50Ω		20.6		ps
Frequency Domain				
Insertion Loss				
<-1db	11.6			GHz
<-3db	>40.0			GHz
Return Loss, S11				
<-10db	9.0			GHz
<-20db	2.6			GHz
VSWR				
<2:1	9.6			GHZ
Equivalent Circuit Parameters				
Pin Inductance		0.80		nH
Pin Capacitance to ground , C1, C2		0.525		pF
Mutual Inductance		0.147		nH
Mutual Capacitance		0.112		pF
Transmission Line				
Zo		34.3		Ω
Tl		20.6		ps
DC Parameters				
Contact Resistance		90		MΩ
Maximum Rating				
Drive Current		1.45		A

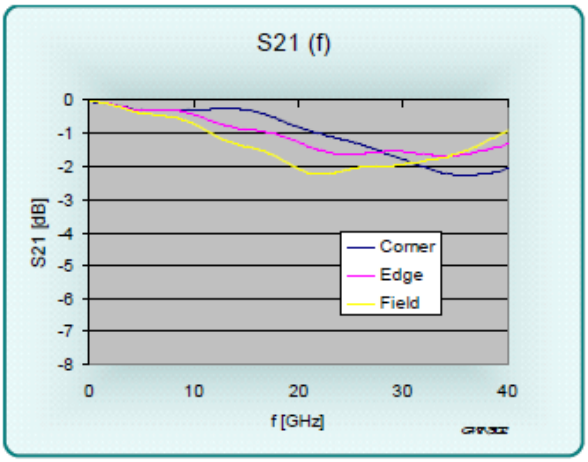


Figure 1: Insertion Loss, S21, A1562-A1

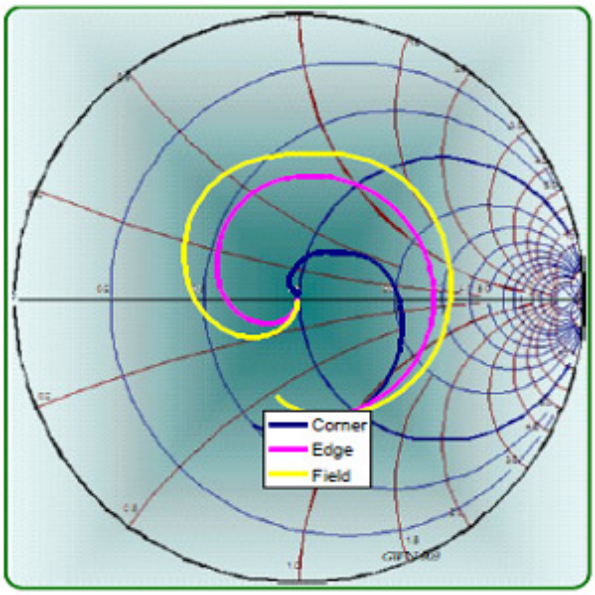


Figure 2: Measurement into 50Ω, A1562-A1

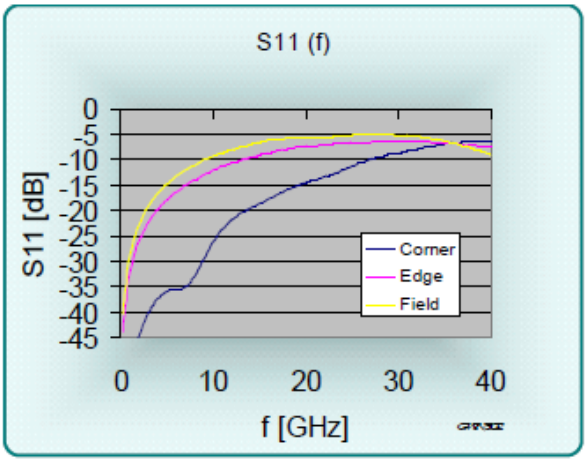


Figure 3: Return Loss, S11, A1562-A1

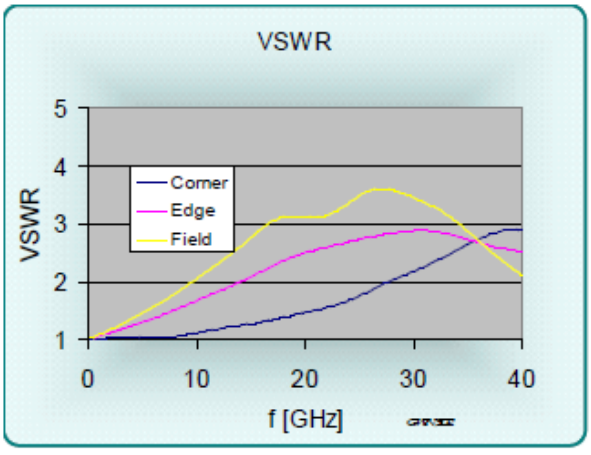


Figure 4: VSWR, A1562-A1

EQUIVALENT CIRCUITS / SPICE MODELS

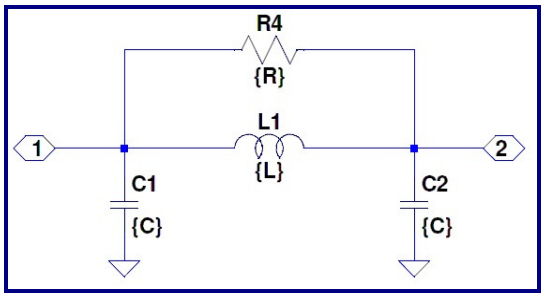


Figure 5: Pi Equivalent, Valid to 11GHz

Site	C1 + C2	L1	R4
Corner	0.380 pf	1.14 nH	700 Ohms
Edge	0.478 pf	0.82 nH	400 Ohms
Field	0.525 pf	0.80 nH	400 Ohms
Diagonal	0.525 pf	0.80 nH	400 Ohms

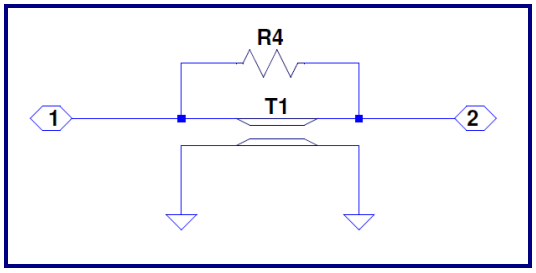


Figure 6: Transmission Line Model
Valid to >40GHz

Site	Zo	L	R4
Corner	54.8 Ω	20.82 ps	1000 Ω
Edge	41.5 Ω	19.83 ps	800 Ω
Field	39.2 Ω	20.55 ps	600 Ω

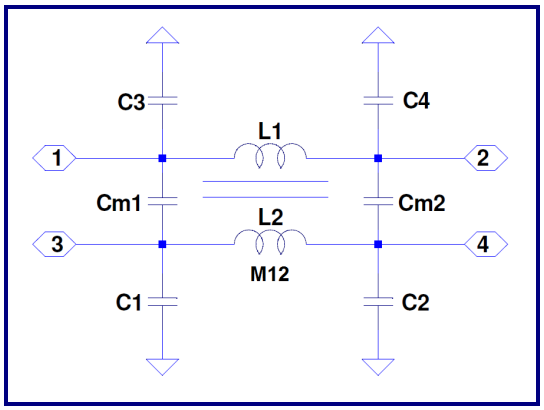


Figure 7: Lumped, Mutual Elements

Site	C1,2,3,4	Cm1,Cm2	L1,L2	M
Corner	0.190	0.082 pF	1.14	0.350 nH
Edge	0.239	0.059 pF	0.82	0.226 nH
Field	0.262	0.056 pF	0.80	0.147 nH
Diagonal	0.262	0.009 pF	0.80	0.032 nH

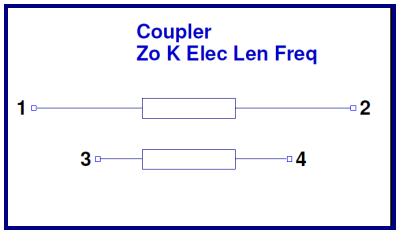


Figure 8: Transmission Line
Equivalent for Crosstalk

Z0	L1	k	f
34.3 Ω	20.6 ps	0.18	20.8 GHz

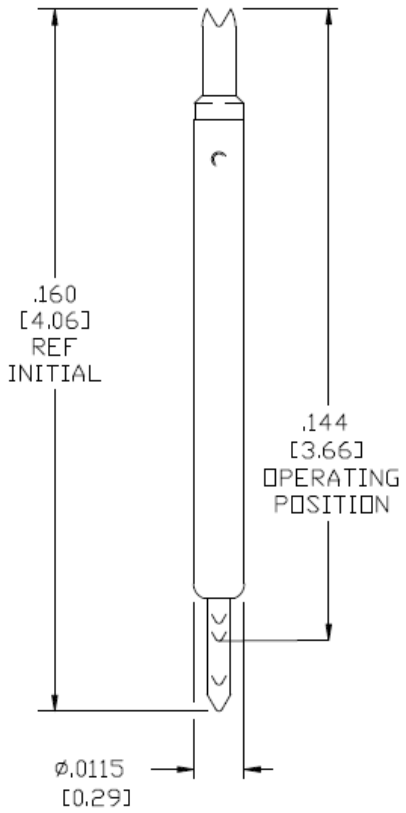
SIGNAL INTEGRITY

A1562

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

Signal Integrity, Inc.
104 County Street, Ste. 210, Attleboro, MA 02703
Tel: 1-508-226-6480 Email: sales@signalin.com Internet: www.signalin.com

Rev 6.00–10/31/14