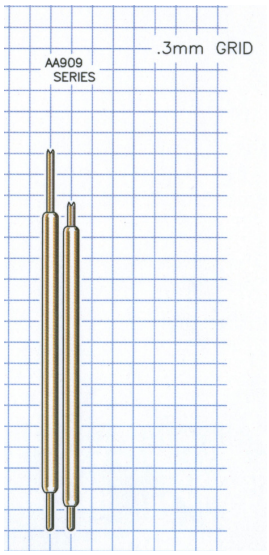
AA909
AA Series
0.3mm (.0118 inch) Pitch

FEATURES



- **<-1db insertion loss to 12.0 GHz**
- **<2:1 VSWR to 28.5 GHz**
- **12 - 17g operating spring force**
- **Z0 = 61.1 Ω**
- **<22.2 ps risetime**
- **72milliOhms contact resistance**
- **.95 Amps max. drive current**

GENERAL DESCRIPTION

The AA909 spring probes from Signal Integrity are 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 0.3mm, specifically for the ultra fine pitch packaging these markets demand.

The ultra high bandwidth of these probes provides very low insertion loss up to 12.0 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 36.0 ps and a propagation delay of 22.2 ps, the AA909 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 data communication and source synchronous memory busses. Among others, these include Infiniband, PCI-Express, Source Synchronous DDR, Rambus^{tm}, HyperTransport and 10Gb Ethernet.

SERIES AA909 MODELS: ORDERING INFORMATION

AA Series 0.3 mm (.0118 inch) Pitch				
Model	**Length Operating / Initial inches [mm]**	**DUT Plunger and Plating**	**Spring**	**Operating Spring Force**
AA909-A1	**.193" [4.90] / .2146" [5.45]**	**4 Point Crown - Gold**	**Music wire**	**17 Grams**
AA909-B2				**12 Grams**

FUNCTIONAL SPECIFICATIONS

Model	AA909-A1			
Time Domain	**Min.**	**Typ.**	**Max.**	**Units**
TDT Risetime into 50Ω			36.0	ps
TDR Risetime open circuit			36.0	ps
TDR Risetime short circuit			106.5	ps
Signal Delay into 50Ω		22.2		ps
Frequency Domain				
Insertion Loss				
<-1db	5.6		12.0	GHz
<-3db	24.71		26.7	GHz
Return Loss, S11				
<-10db	25.1		27.5	GHz
<-20db	3.2		6.6	GHz
VSWR				
<2:1	25.3		28.5	GHz
Equivalent Circuit Parameters				
Pin Inductance		1.54		nH
Pin Capacitance to ground, C1, C2		0.438		pF
Mutual Inductance		0.297		nH
Mutual Capacitance		0.074		pF
Transmission Line				
Zo		61.1		Ω
Tl		22.2		ps
DC Parameters				
Contact Resistance		72		mΩ
Maximum Rating				
Drive Current		0.95		A

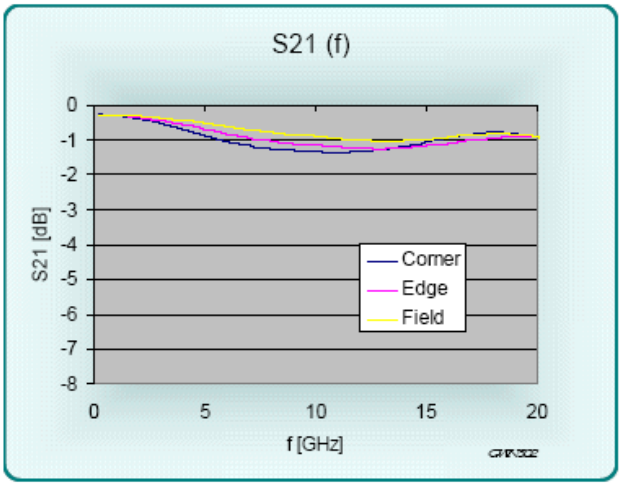


Figure 1: Insertion Loss, S21, AA909-A1

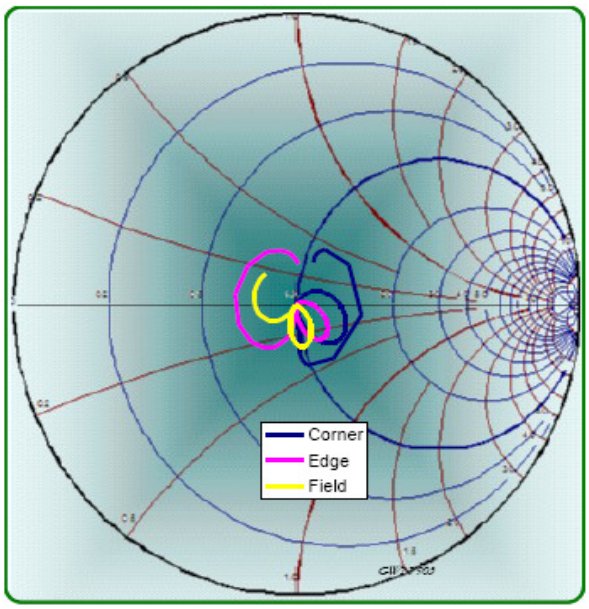


Figure 2: Measurement into 50Ω, AA909-A1

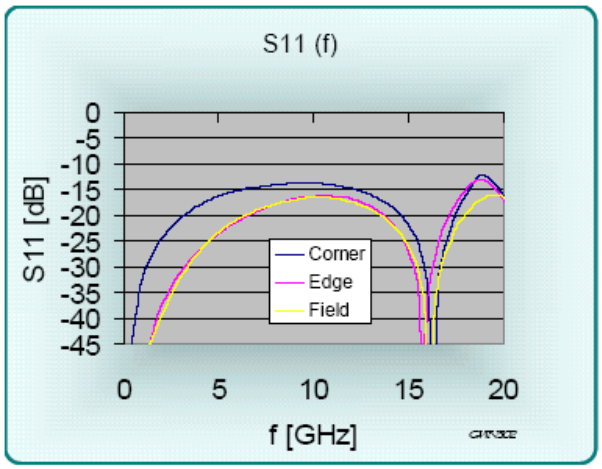


Figure 3: Return Loss, S11, AA909-A1

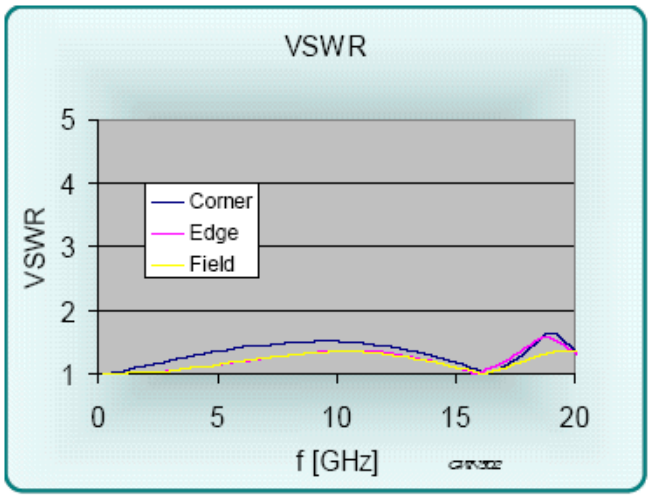


Figure 4: VSWR, AA909-A1

EQUIVALENT CIRCUITS / SPICE MODELS

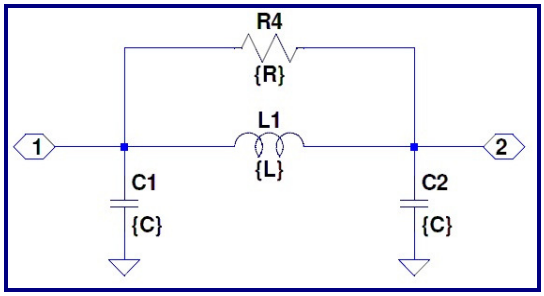


Figure 5: Lumped, Valid to 10GHz

Site	C1 + C2	L1	R4
Corner	0.342 pf	1.77 nH	1000 Ω
Edge	0.384 pf	1.59 nH	1000 Ω
Field	0.438 pf	1.54 nH	1000 Ω
Diagonal	0.438 pf	1.54 nH	1000 Ω

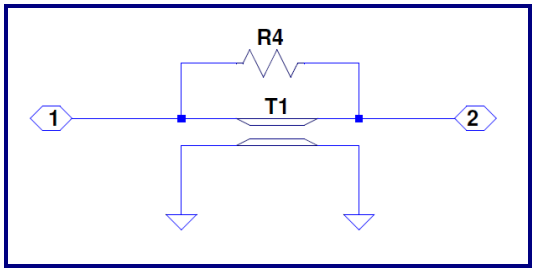


Figure 6: Transmission Line Model
Valid to >40GHz

Site	Zo	L	R4
Corner	71.9 Ω	24.63 ps	1000 Ω
Edge	64.4 Ω	24.71 ps	1000 Ω
Field	59.3 Ω	25.99 ps	1000 Ω

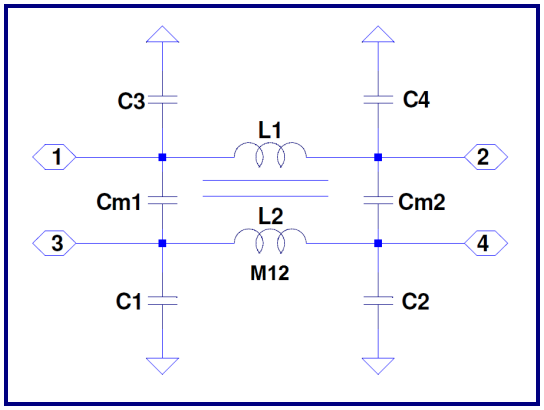


Figure 7: Lumped, Mutual Elements

Site	C1,2,3,4	Cm1,Cm2	L1,L2	M
Corner	0.171	0.068 pF	1.77	0.587 nH
Edge	0.192	0.066 pF	1.59	0.475 nH
Field	0.219	0.037 pF	1.54	0.297 nH
Diagonal	0.219	0.022 pF	1.54	0.132 nH

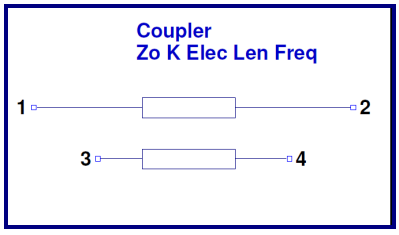
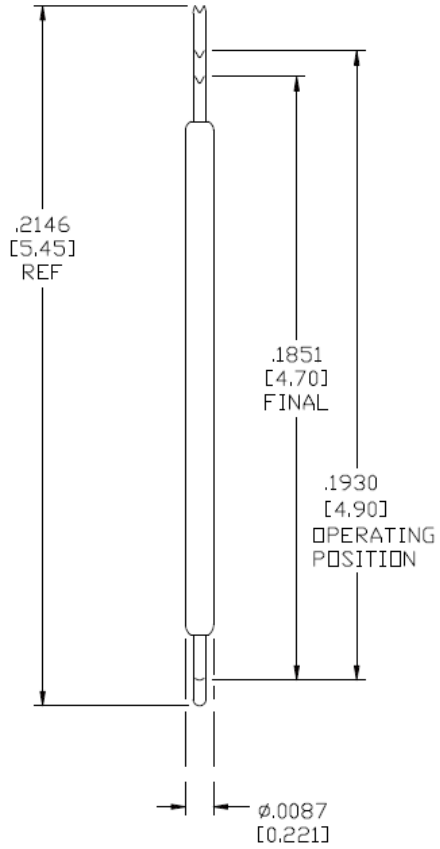


Figure 8: Transmission Line
Equivalent for Crosstalk

Z0	L1	k	f
61.1 Ω	22.2 ps	0.19	19.6 GHz

MECHANICAL DIMENSIONS

INCHES [MM]



RoHS

AA Series 0.3mm (.0118) 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
AA905	.100	2.54	.086	2.18	20 grams	0.54 nH	>40 GHz	110 mOhms	1.43 A
AA909	.215	5.45	.193	4.90	12-17 grams	1.54 nH	12.0 GHz	72 mOhms	0.95 A
AA917	.219	5.57	.199	5.05	18-20 grams	1.0 nH	37.1 GHz	100 mOhms	1.32 A

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