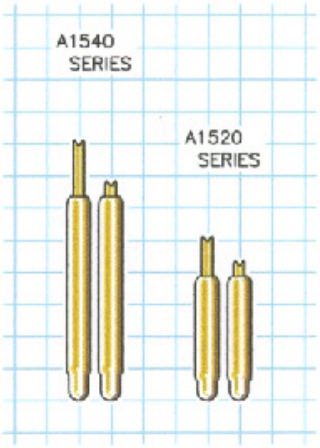
A1540
A Series
0.4mm (.0157inch) Pitch

FEATURES



- **<-1db insertion loss to 16.1GHz**
- **<2:1VSWR to 15.7GHz**
- **18g operating spring force**
- **Z0 = 38.1Ω**
- **<30ps risetime**
- **20milliOhms contact resistance**
- **4.3Amps max. drive current**

GENERAL DESCRIPTION

The A1540 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 16.1GHz. 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 30ps and a propagation delay of 15ps, the A1540 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 A1540 MODELS: ORDERING INFORMATION

A Series 0.4mm (.0157) Pitch				
Model	**Length Operating / Initial inches [mm]**	**DUT Plunger and Plating**	**Spring**	**Operating Spring Force**
A1540-B2	.114 [2.90] / .126 [3.20]	4 Point Crown - Gold	Music wire	22 Grams
A1540-C3		4 Point Crown - Gold	Stainless Steel	19 Grams
A1540-D4		4 Point Crown – Pd	Music wire	26 Grams
A1540-E5		Ogive - Gold	Music wire	22 Grams
A1540-F6		Conic - Gold	Music wire	22 Grams
A1540-H8		4 Point Crown - Gold	Stainless Steel	29 Grams
A1540-K2		Ogive - Gold	Stainless Steel	17 Grams
A1540-L3		Ogive - Gold	Stainless Steel	29 Grams
A1544-B2		4 Point Crown - Gold	Music wire	29 Grams
A1544-E5		Conic – Gold		

FUNCTIONAL SPECIFICATIONS

Model	A1540-B2			
Time Domain	**Min.**	**Typ.**	**Max.**	**Units**
TDT Risetime into 50Ω			30.0	ps
TDR Risetime open circuit			39.0	ps
TDR Risetime short circuit			36.0	ps
Signal Delay into 50Ω		15.0		ps
Frequency Domain				
Insertion Loss				
<-1db	16.1			GHz
<-3db	>40.0			GHz
Return Loss, S11				
<-10db	14.0			GHz
<-20db	6.0			GHz
VSWR				
<2:1	15.74			GHZ
Equivalent Circuit Parameters				
Pin Inductance		0.42		nH
Pin Capacitance to ground , C1, C2		0.19		pF
Mutual Inductance		0.12		nH
Mutual Capacitance		0.03		pF
Transmission Line				
Zo		38.1		Ω
Tl		15.0		ps
DC Parameters				
Contact Resistance		20		mΩ
Maximum Rating				
Drive Current		4.3		A

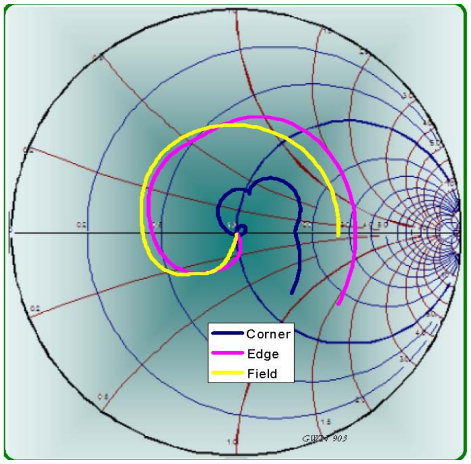


Figure 2: Measurement into 50Ω, A1540-B2

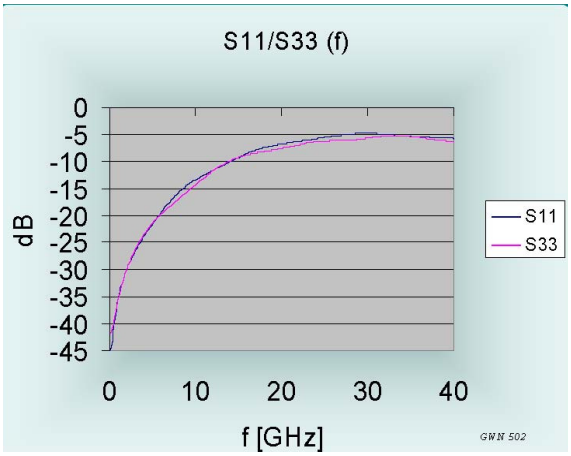


Figure 3: Return Loss, S11, A1540-B2

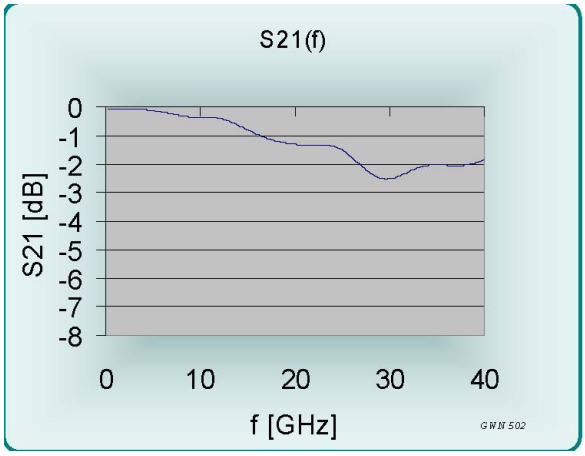


Figure 1: Insertion Loss, S21, A1540-B2

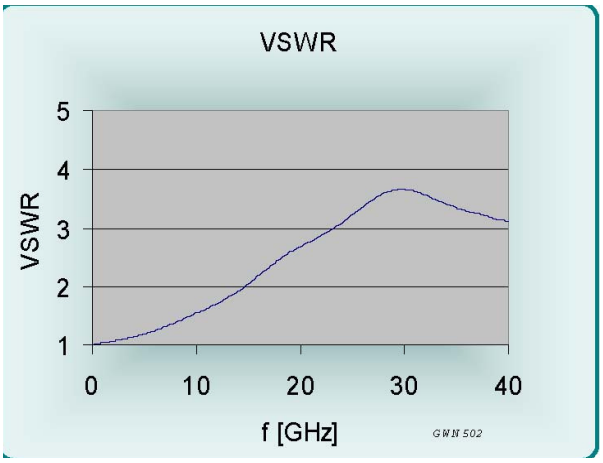


Figure 4: VSWR, A1540-B2

EQUIVALENT CIRCUITS / SPICE MODELS

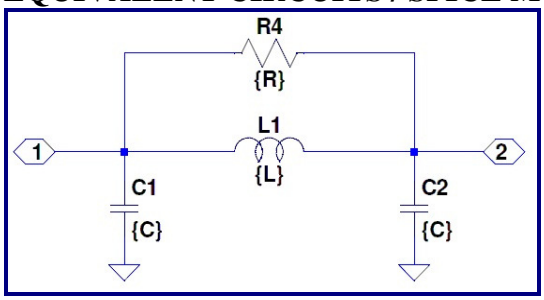


Figure 5: Pi Equivalent, Valid to 16GHz

Site	Cg = C1+C2	L1
Corner	0.139 pF	0.83 nH
Edge	0.168 pF	0.71 nH
Field	0.191 pF	0.42 nH
Diagonal	0.191 pF	0.42 nH

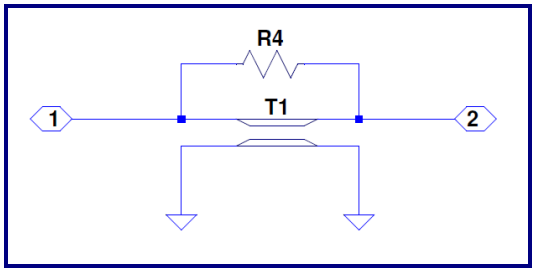


Figure 6: Transmission Line Model, Valid to >40GHz

	Zo	L	R4
Corner	54.0 Ω	15 ps	1500 Ω
Edge	42.6 Ω	15 ps	1000 Ω
Field	38.1 Ω	15 ps	1000 Ω

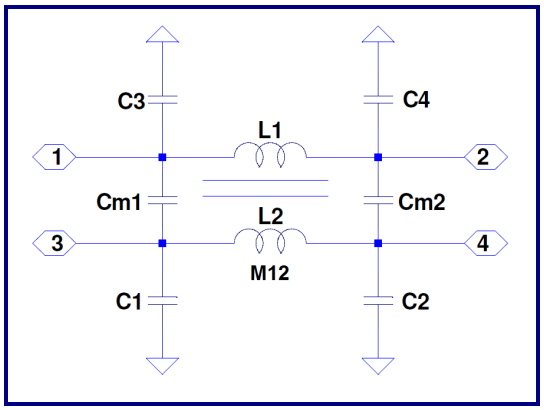


Figure 7: Lumped, Mutual Elements

Site	C1,2,3,4	Cm1,Cm2	L1,L2	M
Corner	0.139	0.046 pF	0.83	0.249 nH
Edge	0.168	0.043 pF	0.71	0.163 nH
Field	0.191	0.032 pF	0.42	0.119 nH
Diagonal	0.191	0.007 pF	0.42	0.045 nH

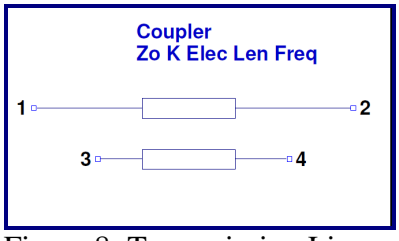


Figure 8: Transmission Line Equivalent for Crosstalk

Z0	38.1	Ohms
Lel	15	ps
k	0.07	
f	66.67	Ghz

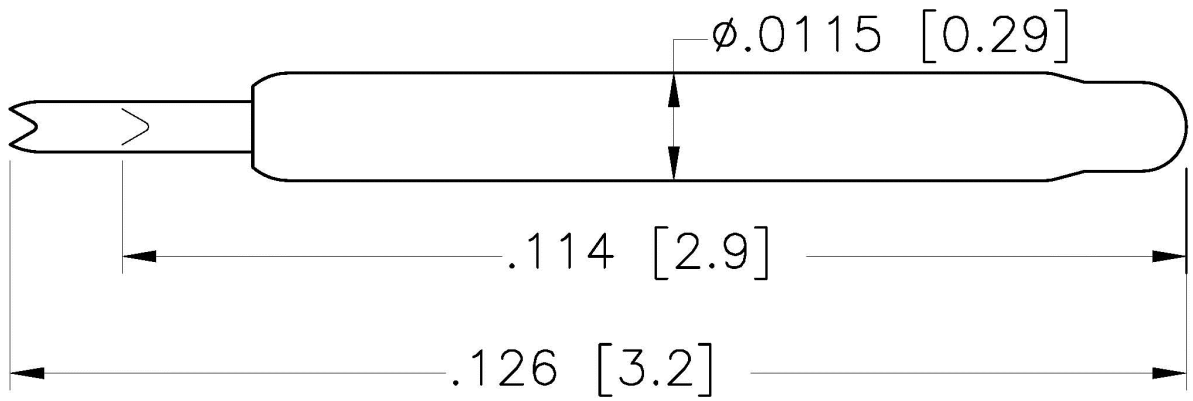
SIGNAL INTEGRITY

A1540

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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