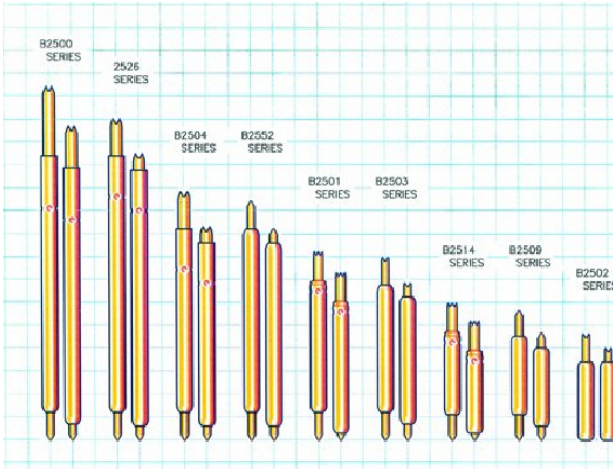
B2501
B Series
0.5mm (.0197) Pitch

FEATURES

- **<-1db insertion loss to 11.2GHz**
- **<2:1VSWR to 9.56GHz**
- **20-28g operating spring force**
- **Z0 = 34.8Ω**
- **<36ps risetime**
- **50mOhms contact resistance**
- **2.8Amps max. drive current**



GENERAL DESCRIPTION

The B2501 series spring probes from Signal Integrity Inc. are designed to meet the rigorous test requirements driven by the fast risetimes and increased need for RF and wireless bandwidth in the high volume, very fine pitch test socket market. Along with speed and accuracy, these probes are designed to operate at pitches down to 0.5mm, specifically tailored to the ultra fine packaging these markets demand.

The high bandwidth of these probes provides very low insertion loss up to 11.2GHz. These probes will provide transparent operation on Bluetooth, 802.11b and 3G wireless protocol devices and exceed the test probe requirements for fine pitch SOC devices, ASIC devices, microwave communications devices and system interconnects.

With an impulse risetime of less than 36ps and a propagation delay of 24ps, the B2501 Series is designed for building transparent test channels or interconnect solutions that must address the signal performance needed in data communications and source synchronous memory busses up to 5Gb/s.

SERIES B2501 MODELS: ORDERING INFORMATION

B Series 0.5mm (.0197inch) Pitch				
Model	**Length Operating /Initial Inches [mm]**	**DUT Plunger and Plating**	**Spring**	**Operating Spring Force Grams**
B2501-A1	.150 [3.81] / .162 [4.11]	Crown - Gold	Stainless Steel	20
B2501-CD		Kelvin - Palladium	Stainless Steel	28
B2501-G7		Crown - Gold	Stainless Steel	20
B2501-J1		Crown - Palladium	Stainless Steel	20
B2501-K2		Crown - Gold	Stainless Steel	28
B2501-L3		Crown - Gold	Stainless Steel	28
B2501-P6		Crown - Palladium	Stainless Steel	28
B2501-Q7		Conic - Gold	Stainless Steel	28
B2501-S1		Kelvin - Gold	Stainless Steel	28

FUNCTIONAL SPECIFICATIONS

Model	B2501-A1			B2501-L3			
Time Domain	**Min.**	**Typ.**	**Max.**	**Min.**	**Typ.**	**Max.**	**Units**
TDT Risetime into 50Ω			37.5			36.0	ps
TDR Risetime open circuit			54.0			45.0	ps
TDR Risetime short circuit			48.0			45.0	ps
Signal Delay into 50Ω		21.0			24.0		ps
Frequency Domain							
Insertion Loss							
<-1.0db	4.6			11.2			GHz
<-2.0db		17.0			15.0		GHz
<-3.0db	18.7			23.91			GHz
VSWR							
<2:1	8.2			9.56			GHz
Equivalent Circuit Parameters							
Pin Inductance		0.79			0.97		nH
Pin Capacitance to ground		0.62			0.58		pF
Transmission Line							
Zo		32.7			34.8		Ohm
Tl		21.0			24.0		ps
DC Parameters							
Contact Resistance		50			50		milliOhm
Maximum Rating							
Drive Current		2			2.8		A

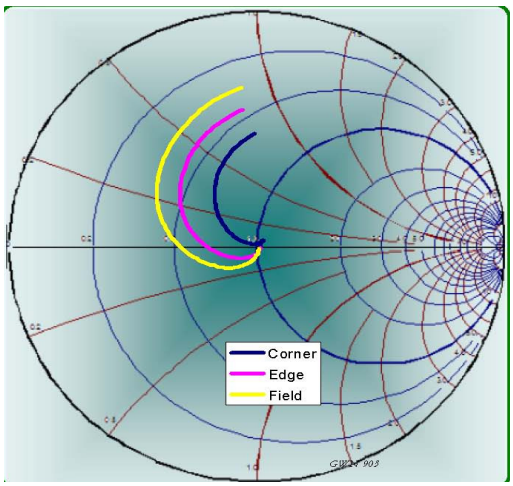


Fig. 1 B2501-L3, through into 50Ω

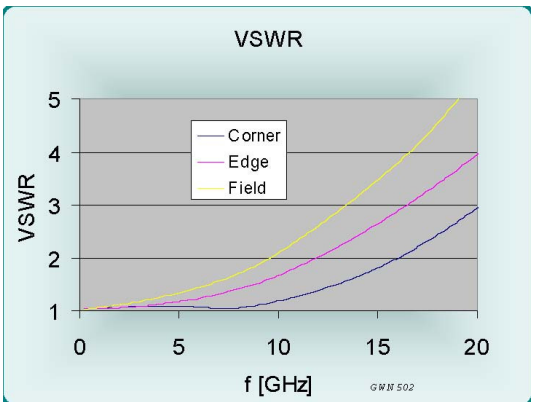


Figure 2: VSWR, B2501-L3

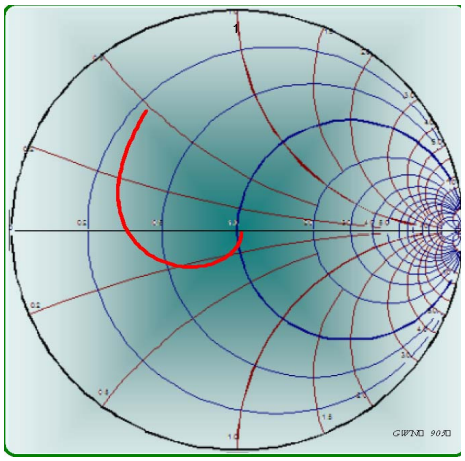


Figure 3: B2501-A1, through into 50Ω

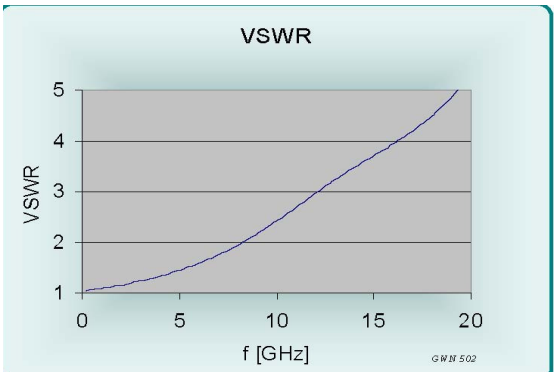


Figure 4: VSWR, B2501-A1

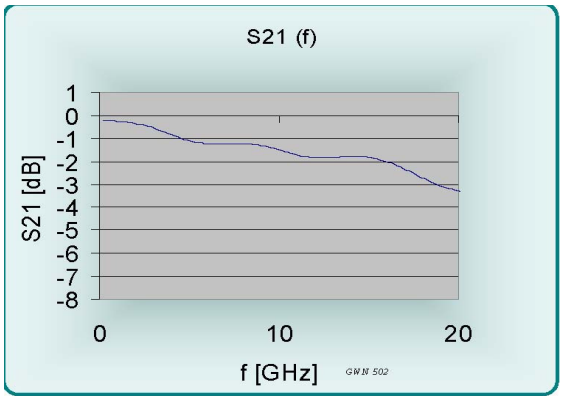


Figure 5: Insertion Loss, S21, B2501-A1

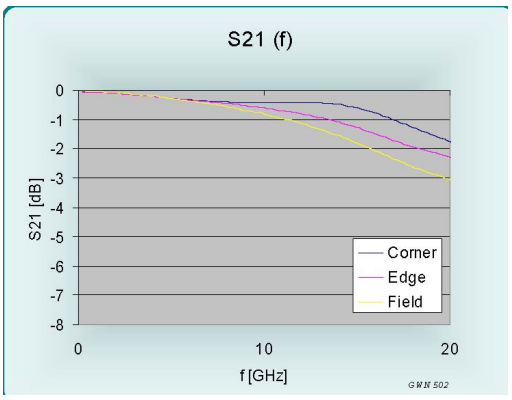


Figure 6: Insertion Loss, S21, B2501-L3

EQUIVALENT CIRCUITS / SPICE MODELS

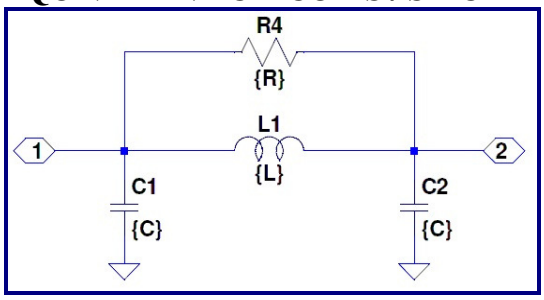


Figure 5: Pi Equivalent, Valid to 10GHz

C1, C2	0.291	pF
L1	0.97	nH
R4	700	Ohms

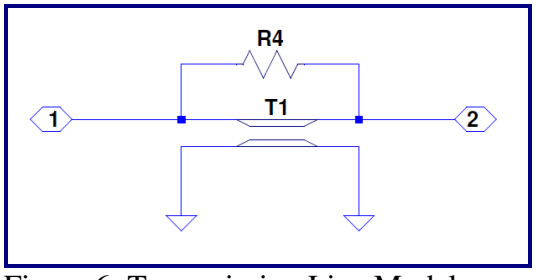


Figure 6: Transmission Line Model

Z0	40.8	Ohms
L	18.0	ps
R4	2,000	Ohms
L2	0.25	nH
L3	0.3	nH

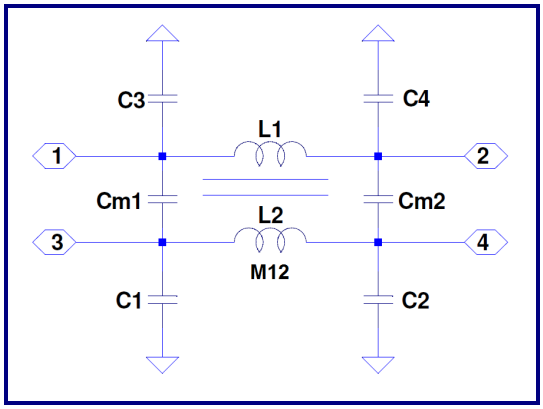


Figure 7: Lumped, Mutual Elements

C1,2,3,4	0.291	pF
Cm1, Cm2	0.099	pF
L1, L2	0.97	nH
M12	0.142	nH

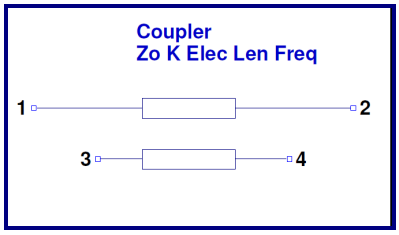


Figure 8: : Transmission Line Equivalent for Crosstalk

Z0	34.8	Ohms
Tl	24	ps
K	0.15	
F	20.8	GHz

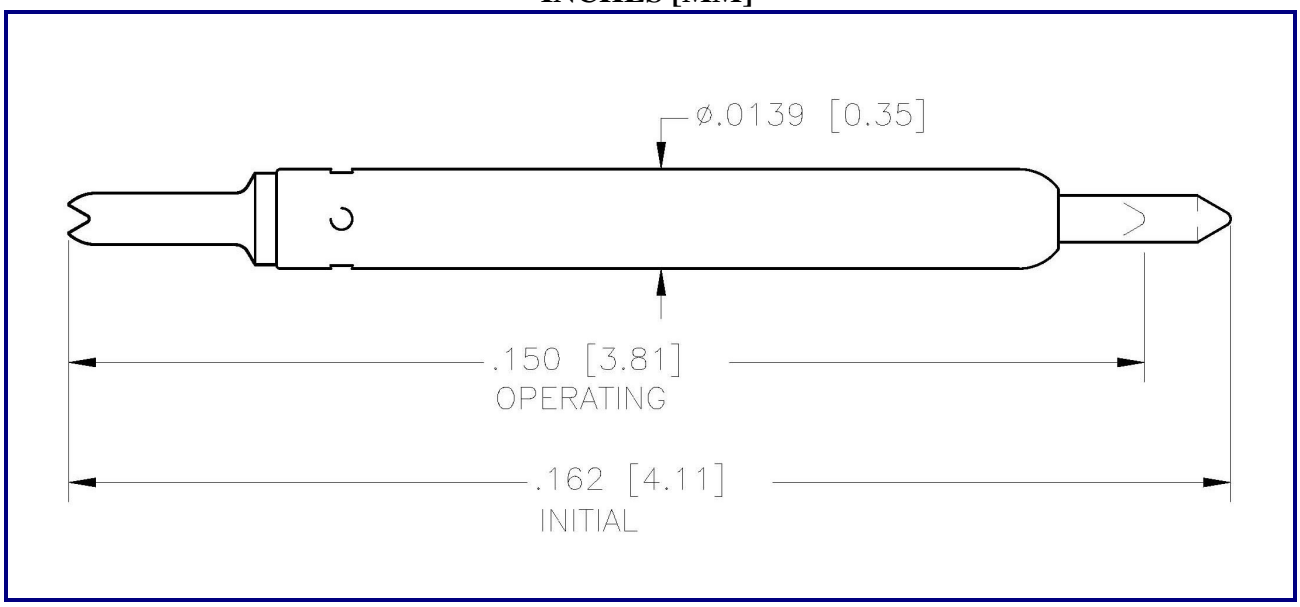
B SERIES MODELS

B Series 0.5mm (.0197 inch) Pitch									
Probe Series	Initial Length inch / mm		Operating Position inch / mm		Spring Force	Self Inductance	Insertion Loss <-1db to	Typical Contact Resistance	Maximum Current
B2500	.304”	7.72	.275”	6.99	28 g	1.73 nH	6.4 GHz	80 mOhms	2.6 A
B2501	.162”	4.11	.150”	3.81	20-35 g	0.97 nH	11.2 GHz	50 mOhms	2.8 A
B2502	.091”	2.31	.085”	2.16	32 g	0.54 nH	17.0 GHz	30 mOhms	1.5 A
B2503	.157”	3.99	.142”	3.61	26-32 g	0.71 nH	13.0 GHz	60 mOhms	1.7 A
B2504	.214”	5.42	.190”	4.82	24-34 g	1.12 nH	8.8 GHz	60 mOhms	2.9 A
B2509	.108”	2.74	.094”	2.39	26 g	0.60 nH	13.2 GHz	90 mOhms	2.0 A
B2514	.116”	2.95	.104”	2.64	26 g	0.63 nH	12.2 GHz	90 mOhms	2.0 A
B2535	.217”	5.50	.199”	5.05	26-31 g	~	~	55 mOhms	2.3 A

SIGNAL INTEGRITY

B2501

MECHANICAL DIMENSIONS
INCHES [MM]



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