

FEATURES (E5566-E5)

- <-1db insertion loss to 34.5 GHz
- <2:1 VSWR to 34.5 GHz
- 35g operating spring force
- $Z_0 = 41.1 \Omega$
- <14.1ps risetime
- 40 milliOhms contact resistance
- 2.60 Amps max. drive current



GENERAL DESCRIPTION

The E5566 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 1.0mm, specifically for the fine pitch packaging these markets demand.

The ultra high bandwidth of these probes provides very low insertion loss of up to 34.5 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 33ps and a propagation delay of 15.5ps, the E5566 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, Rambustm, HyperTransport and 10Gb Ethernet.

E5566 Series 1.0mm (.0394) Pitch					
Model	Length Operating / initial inch [mm]	DUT Plunger and Plating	Interface Plunger	Spring	Operating Spring Force
E5566-E5	.098 [2.49] / .121 [3.08]	Crown –Solid Precious Metal Alloy	Spherical	Stainless Steel	35 Grams

FUNCTIONAL SPECIFICATIONS

Model	E5566-E5			
Time Domain	Min.	Typ.	Max.	Units
TDT Risetime into 50Ω			33.0	ps
TDR Risetime open circuit			51.0	ps
TDR Risetime short circuit			39.0	ps
Signal Delay into 50Ω		15.5		ps
Frequency Domain				
Insertion Loss <-1db	34.1		34.5	GHz
<-3db	>40		>40	GHz
Return Loss, S11 <-10db	>40			GHz
<-20db	3.2			GHz
VSWR <2:1	34.1		34.5	GHz
Equivalent Circuit Parameters				
Pin Inductance		0.49		nH
Pin Capacitance to ground		0.17		pF
Mutual Inductance		0.08		nH
Mutual Capacitance		0.03		pF
Transmission Line Zo		41.1		Ω
Tl		14.1		ps
DC Parameters				
Contact Resistance		40		mΩ
Maximum Rating				
Drive Current		2.6		A

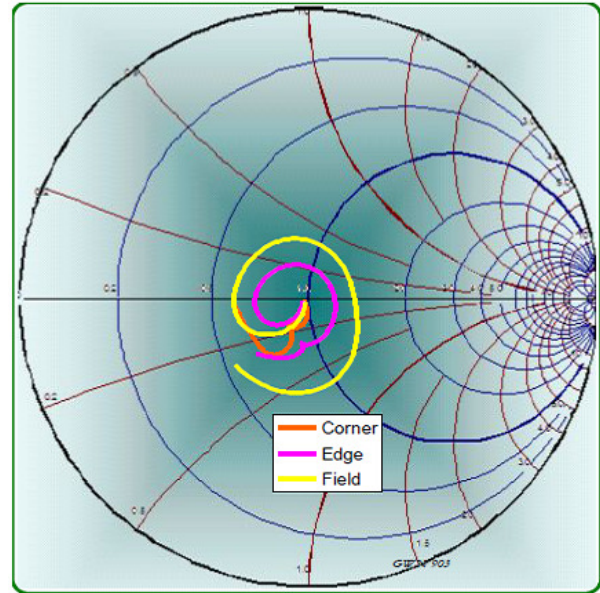


Figure 2: Measurement into 50Ω, E5566-E5

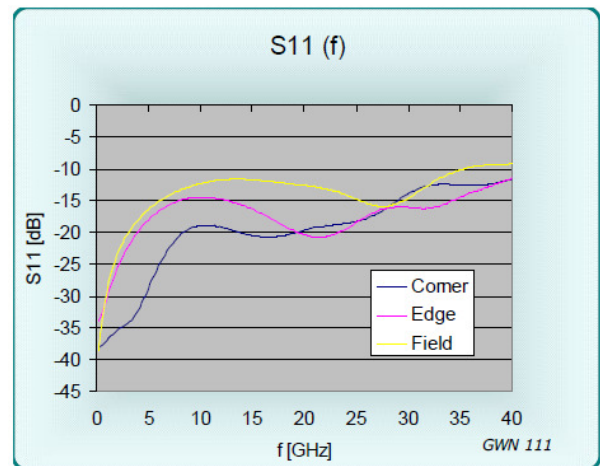


Figure 3: Return Loss, S11, E5566-E5

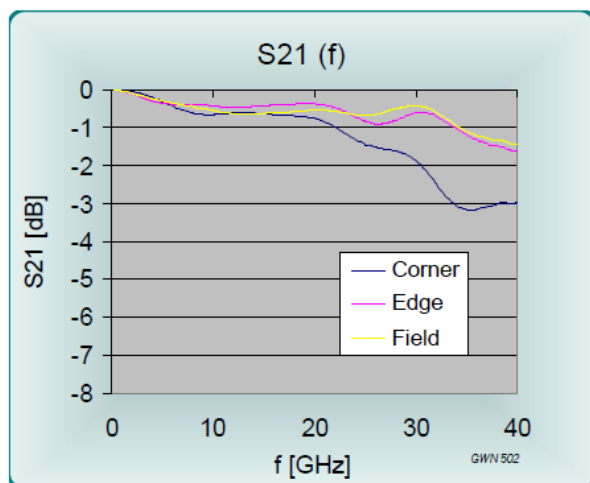


Figure 1: Insertion Loss, S21, E5566-E5

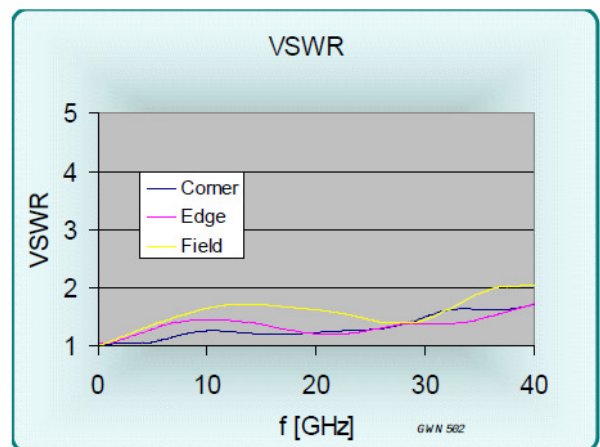


Figure 4: VSWR, E5566-E5

EQUIVALENT CIRCUITS / SPICE MODELS

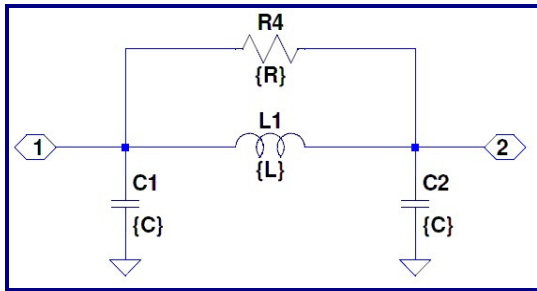


Figure 5: Pi equivalent, Valid to <16GHz

Site	Cg = C1+C2	L1	R4
Corner	0.291 pF	0.76 nH	300 Ω
Edge	0.317 pF	0.59 nH	400 Ω
Field	0.339 pF	0.49 nH	300 Ω
Diagonal	0.339 pF	0.49 nH	300 Ω

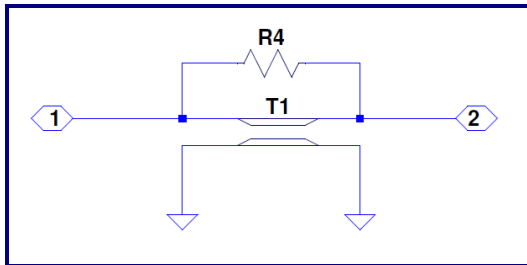


Figure 6: Transmission Line

	Zo	L	R4
Corner	51.1 Ω	14.87 ps	700 Ω
Edge	43.0 Ω	13.65 ps	1500 Ω
Field	37.8 Ω	12.83 ps	2000 Ω

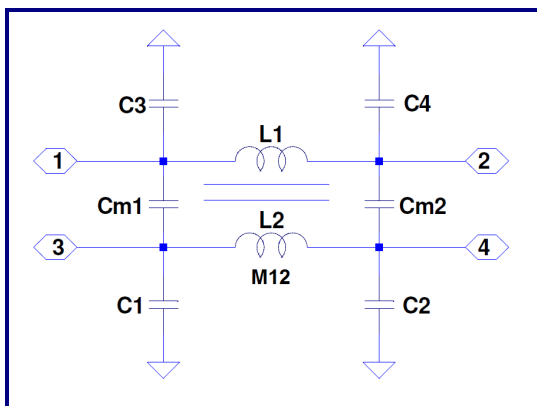


Figure 7: Lumped, Mutual Elements

Site	C1,2,3,4	Cm1,Cm2	L1,L2	M
Corner	0.146	0.044 pF	0.76	0.369 nH
Edge	0.158	0.046 pF	0.59	0.220 nH
Field	0.170	0.037 pF	0.49	0.128 nH
Diagonal	0.170	0.006 pF	0.49	0.080 nH

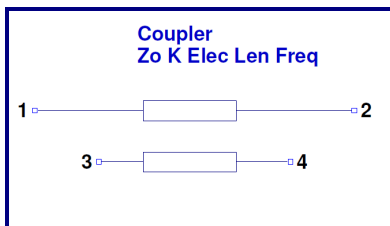
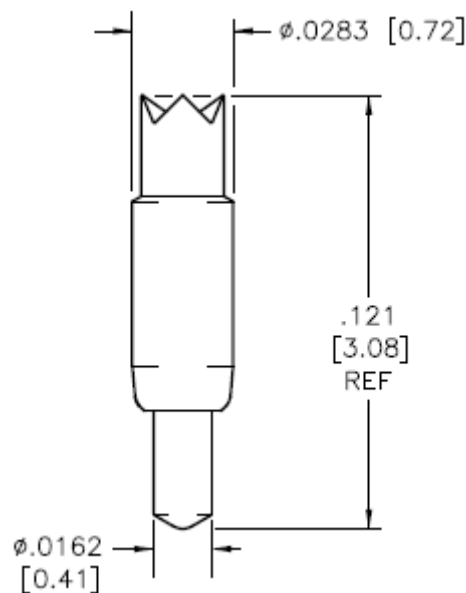


Figure 8: Transmission Line Equivalent for Crosstalk

Z0	41.1	Ohms
Lel	14.1	ps
k	0.26	
f	39.0	Ghz

E Series 1.0mm (.0394) 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
E5566	.121"	3.08	.098"	2.49	24-35 g	0.49 nH	>40 GHz	20 mOhms	4.3 A
E5533	.144"	3.66	.119"	3.02	25-40 g	0.72 nH	25.3 GHz	20 mOhms	8.5 A
E5544	.124"	3.15	.098"	2.49	25 g	0.70 nH	>40 GHz	30 mOhms	2.7 A
E5548	.180"	4.57	.156"	3.96	20-39 g	1.04 nH	14.5 GHz	25 mOhms	7.0 A
E5593					27 g	1.14 nH	31.5 GHz	20 mOhms	6.0 A
E5656					28-36 g	0.90 nH	13.9 GHz	20 mOhms	6.0 A

MECHANICAL DIMENSIONS
INCHES [MM]



Signal Integrity, Inc.
104 County Street, Ste. 210, Attleboro, MA 02703
Tel: 1-508-226-6480 Fax: 1-508-226-6488 Internet: www.signalin.com

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