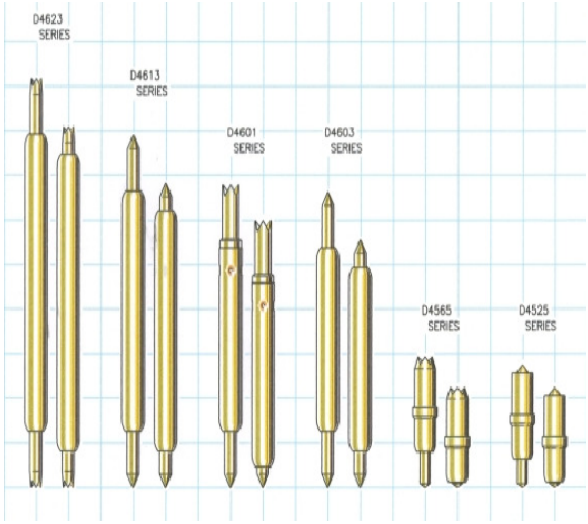
D4603
D Series
0.8mm (.0315inch) Pitch

FEATURES

- **<-1db insertion loss to 12.4GHz**
- **<2:1VSWR to 11.2GHz**
- **24g operating spring force**
- **Z0 = 35.8Ω**
- **<34.5ps risetime**
- **70milliOhms contact resistance**
- **4 Amps max. drive current**



GENERAL DESCRIPTION

The D4603 series spring probes from Signal Integrity Inc. are designed to meet the rigorous test probe bandwidth of the wireless and RF test markets as well as very fast rise times in test applications for telecommunication and broadband data communications system-on-a-chip devices. The risetime requirements for these devices are usually well below 150 picoseconds. Along with speed and accuracy, these probes are designed for testing very fine pitch to 0.8mm, well suited to the packaging constraints driven by the consumer wireless market.

The high bandwidth of these probes provides very low insertion loss up to 12.4GHz. 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 34.5ps and a propagation delay of 24ps, the AC performance of the series D4603 probes are transparent for test applications and interconnections solutions that operate in high speed CMOS, SiGe and GaAs technologies.

SERIES D4603 MODELS: ORDERING INFORMATION

D Series 0.8mm (.0315) Pitch				
Model	**Length – Operating/Initial inch [mm]**	**DUT Plunger and Plating**	**Spring**	**Operating Spring Force**
D4603-A1	.181 [4.59] / .209 [5.30]	Crown - Gold	Stainless Steel	24 Grams
D4603-B2		Conical - Gold		24 Grams
D4603-D4		Crown - Gold		24 Grams
D4603-E5		Crown - Palladium		24 Grams
D4603-F6		Crown - Palladium		34 Grams
D4603-H8		Conical - Gold		
D4603-J1		Crown - Gold		
D4603-C3	.191 [4.85] / .219 [5.56]	Crown - Gold		24 Grams

FUNCTIONAL SPECIFICATIONS

Model	D4603-B2			
Time Domain	**Min.**	**Typ.**	**Max.**	**Units**
TDT Risetime into 50Ω			34.5	ps
TDR Risetime open circuit			42.0	ps
TDR Risetime short circuit			51.0	ps
Signal Delay into 50Ω		24.0		ps
Frequency Domain				
Insertion Loss				
<-1db	12.4			GHz
<-3db	>40.0			GHz
Return Loss, S11				
<-10db	11.0			GHz
<-20db	4.0			GHz
VSWR				
<2:1	11.2			GHz
Equivalent Circuit Parameters				
Pin Inductance		1.16		nH
Pin Capacitance to ground		0.63		pF
Mutual Inductance		0.22		nH
Mutual Capacitance		0.09		pF
Transmission Line				
Zo		35.8		Ω
Tl		24.0		ps
DC Parameters				
Contact Resistance		70		mΩ
Maximum Rating				
Drive Current		4		A

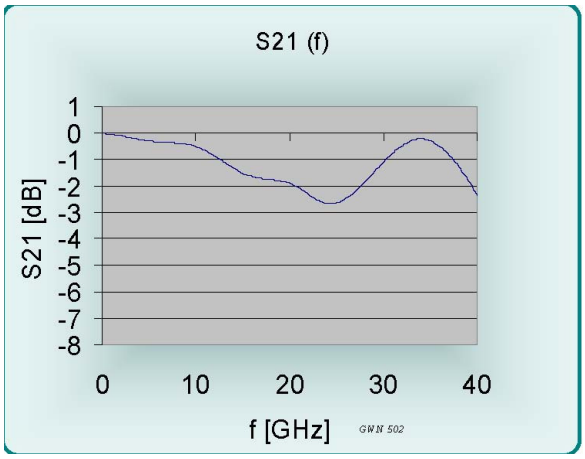


Figure 1: Insertion Loss, S21, D4603-B2

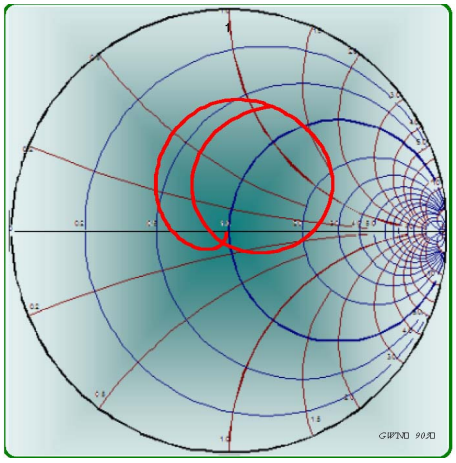


Figure 2: Measurement into 50Ω, D4603-B2

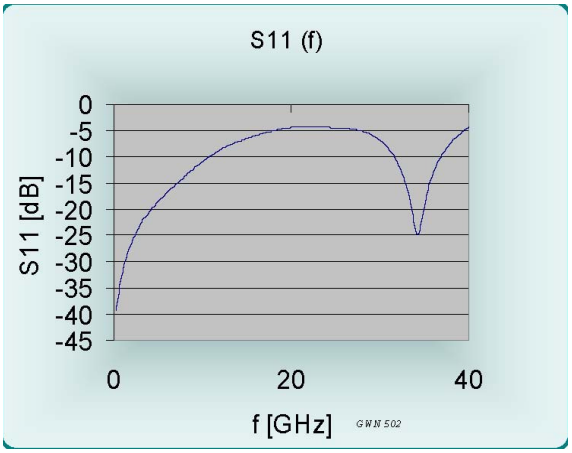


Figure 3: Return Loss, S11, D4603-B2

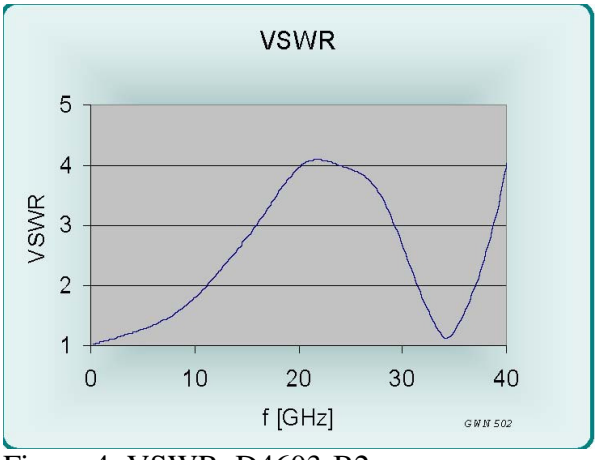


Figure 4: VSWR, D4603-B2

EQUIVALENT CIRCUITS / SPICE MODELS

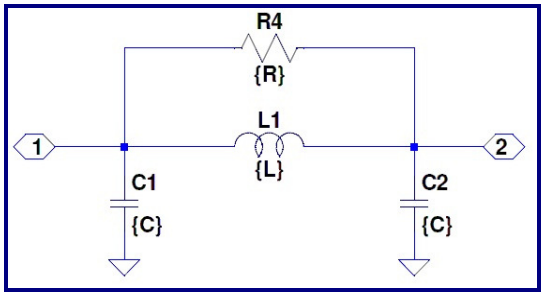


Figure 5: Pi Equivalent, Valid to <9GHz

C1, C2	0.313	pF
L1	1.16	nH
R4	500	Ohms

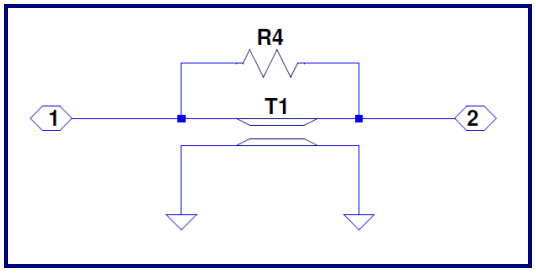


Figure 6: Distributed, Valid to >40GHz

Z0	35.8	Ohms
L	24.0	ps
R4	1000	Ohms

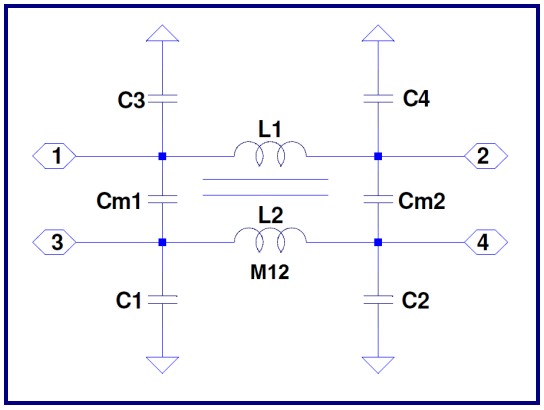


Figure 7: Lumped, Mutual Elements

C1,2,3,4	0.313	pF
Cm1, Cm2	0.044	pF
L1, L2	1.16	nH
M12	0.224	nH

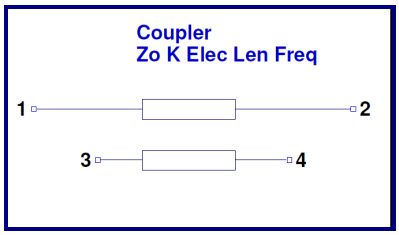


Figure 8: Transmission Line Equivalent for Crosstalk

Z0	35.8	Ohms
Tl	24.0	ps

SIGNAL INTEGRITY

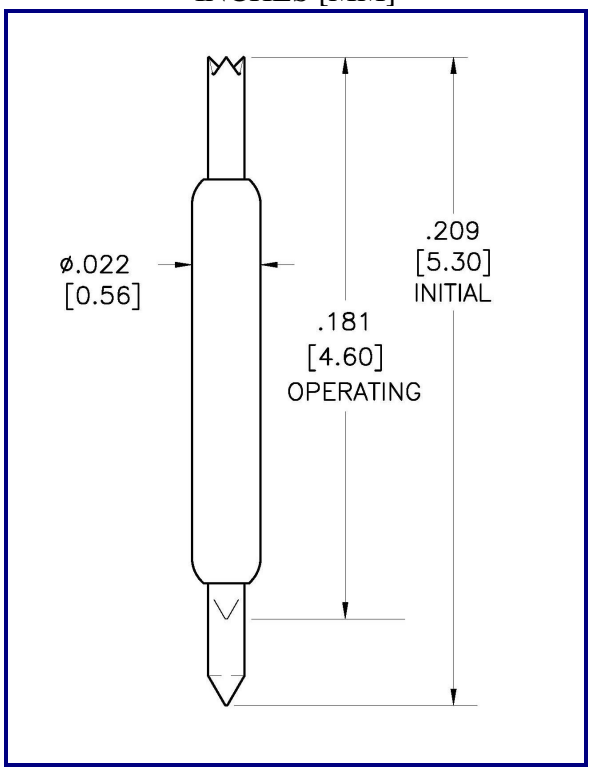
D4603

D SERIES MODELS

D Series 0.8mm (.0315) pitch									
Probe Series	Initial Length inch/mm		Operating Position inch/mm		Spring Force	Self Inductance	Insertion Loss < -1db to	Typical Contact Resistance	Maximum Current
D4525	.087"	2.21	.071"	1.80	30 g	0.5 nH	17.0 GHz	20 mOhms	6.0 A
D4565	.092"	2.33	.071"	1.80	30 g	0.5 nH	17.0 GHz	25 mOhms	6.0 A
D4595	.154"	3.91	.128"	3.25	38 g	0.82 nH	19.5 GHz	30 mOhms	3.0 A
D4601	.214"	5.43	.186"	4.72	24-34 g	1.0 nH	12.8 GHz	50 mOhms	6.0 A
D4603	.209"	5.30	.181"	4.59	24 g	1.16 nH	12.4 GHz	70 mOhms	4.0 A
D4613	.249"	6.32	.213-.216"	5.49	24-34 g	1.25 nH	14.3 GHz	40 mOhms	2.15 A
D4623	.289"	7.33	.253”	6.43	34 g	1.55 nH	8.2 GHz	60 mOhms	5.4 A
D4823	.289"	7.33	.253”	6.43	28 g	-	-	-	-
D4693	.185”	4.71	.157”	4.00	24-34 g	0.92 nH	18.3 GHz	40 mOhms	3.0 A
D4694	.185”	4.71	.157”	4.00	23-36 g	0.80 nH	7.8 GHz	40 mOhms	3.0 A
D4697	.339”	8.61	.295”	7.50	32 g	2.01 nH	8.6 GHz	45 mOhms	2.6 A

MECHANICAL DIMENSIONS

INCHES [MM]



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Rev 5.1 6/12/2015