

PRECISION FIXED SHORTS

For 3.5mm, SMA, MPC3, and 2.92mm

Description

Maury models 360B male and 360D female fixed shorts mate with 3.5mm, SMA, MPC3 and 2.92mm connectors and provide an accurate short circuit at the outer conductor mating plane of these connectors (reference plane) which is generally the measurement plane for most microwave measurements.

Model 360B Male:

Maury model 360B male fixed short consists of a solid body with a contact pin protruding from its shorting plane. The body and pin are machined from one piece of beryllium copper which is then gold plated; the coupling nut is stainless steel.

Model 360D Female:

Maury model 360D female fixed short is truly a major design improvement¹. It eliminates all the problem characteristics of prior SMA fixed shorts with the female contact buried in the shorting plane, such as: intermittent contact, erratic readings and gross errors in return loss and phase.

The model 360D consists of a large contact in which its face is essentially the complete shorting plane. When mated with a male connector it bottoms on the outer conductor then as it is tightened, the contact is compressed and grabs the male pin to make almost a perfect short circuit. **Figure 1** shows the face of the contact and the radial slots in it. The contact is made from beryllium copper, heat treated then gold plated. The body is made from stainless steel. Refer to page 2 for performance data on the model 360D.

The model 360D can be used with Maury original offset shorts, models 8706A, B, C and D (and original equivalent Agilent offset shorts, models 11639-60004, 5, 6 and 7) in order to achieve an accurate calibration. **We recommend you discard all SMA buried contact female fixed shorts and replace them with Maury precision model 360D fixed shorts.**

Model 360B



Model 360D



Model	Connector Sex	Physical Size (inches)	
		Length	Maximum O. D.
360B	Male	.62	.31 Hex
360D	Female	.70	.50 Dia.

Specifications

Frequency RangeDC - 40 GHz
 Reflection Coefficient0.98 minimum²
 Short Plane At connector reference plane
 Connectors
 (mate with)3.5mm, SMA, MPC3, and 2.92mm

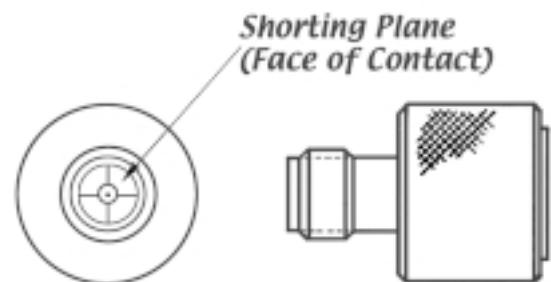


Figure 1 — Model 360D

- 1 Original design was developed by R. Stewart at Agilent, Santa Rosa.
- 2 Specification applies to 18 GHz, please consult our Sales Department for specification above this frequency.



Model 360D Performance

To say the performance of Maury's model 360D is superior to prior reference plane fixed shorts (i.e. buried contact fixed shorts) is an understatement.

- a) **Figure 2** shows the return loss comparison of two SMA buried contact fixed shorts to the model 360D. Note the roll-off characteristics and large error at 18 GHz.

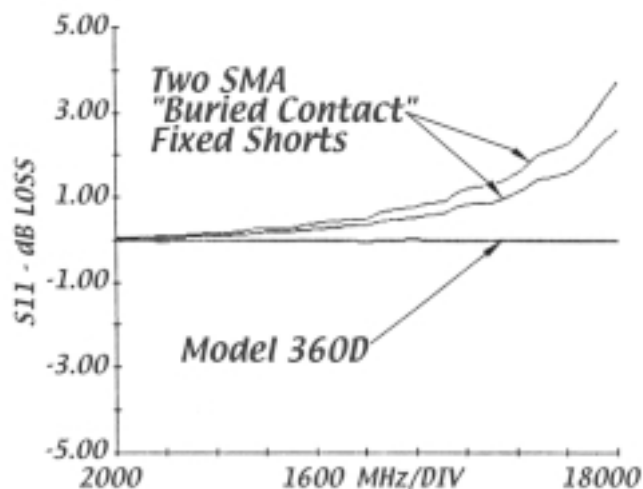


Figure 2

- b) **Figure 3** is a tabulation of a 360D and a SMA buried contact fixed short. Note the excessive error as you go up in frequency both in return loss and phase. Numerous buried contact shorts were tested and they were tremendously inconsistent in both return loss and phase.
- c) **Figure 4** shows a phase comparison of six (6) model 360Ds which reflect their excellent reproducibility.

Data presented in these figures were taken on an Agilent 8409B automated network analyzer calibrated with a Maury model 8050A, 3.5mm calibration kit which utilizes a precision Maury model 8046F, 0.5cm offset fixed short.

Model 360D			SMA "Buried Contact Short		
Frequency	Return	Loss-In S11	Frequency	Return	Loss-In S11
MHz	dB	ANG	MHz	dB	ANG
2000.0000	-.00	-180.0	2000.0000	.07	178.4
2500.0000	.04	-180.0	2500.0000	.10	178.0
3000.0000	-.00	-180.0	3000.0000	.07	177.7
3500.0000	-.00	-180.0	3500.0000	.06	177.3
4000.0000	-.00	-179.9	4000.0000	.07	176.7
4500.0000	.00	180.0	4500.0000	.07	176.4
5000.0000	.01	-179.9	5000.0000	.08	175.9
5500.0000	-.00	-179.9	5500.0000	.09	175.5
6000.0000	.00	-179.9	6000.0000	.08	175.0
6500.0000	.05	-179.9	6500.0000	.09	174.7
7000.0000	-.00	-179.9	7000.0000	.06	173.8
7500.0000	-.00	-180.0	7500.0000	.10	173.1
8000.0000	.00	-179.9	8000.0000	.07	172.6
8500.0000	.00	-179.9	8500.0000	.10	171.6
9000.0000	-.00	-179.9	9000.0000	.12	170.9
9500.0000	-.00	-180.0	9500.0000	.13	169.9
10000.0000	-.00	-179.9	10000.0000	.20	169.1
10500.0000	-.00	-179.9	10500.0000	.29	168.1
11000.0000	-.00	-179.9	11000.0000	.31	167.1
11500.0000	-.00	-180.0	11500.0000	.40	166.1
12000.0000	-.00	-179.9	12000.0000	.49	164.7
12500.0000	-.00	-179.9	12500.0000	.58	163.7
13000.0000	-.00	-179.9	13000.0000	.70	162.2
13500.0000	-.00	-179.9	13500.0000	.85	161.3
14000.0000	.01	-180.0	14000.0000	1.00	159.5
14500.0000	-.00	-180.0	14500.0000	1.10	157.8
15000.0000	-.02	-179.9	15000.0000	1.24	155.7
15500.0000	-.00	-180.0	15500.0000	1.52	152.9
16000.0000	.01	-179.9	16000.0000	1.75	150.0
16500.0000	.01	-179.9	16500.0000	2.11	146.3
17000.0000	-.02	-179.9	17000.0000	2.65	140.2
17500.0000	.00	-179.8	17500.0000	3.38	132.9
18000.0000	-.01	-179.9	18000.0000	4.46	123.0

Figure 3

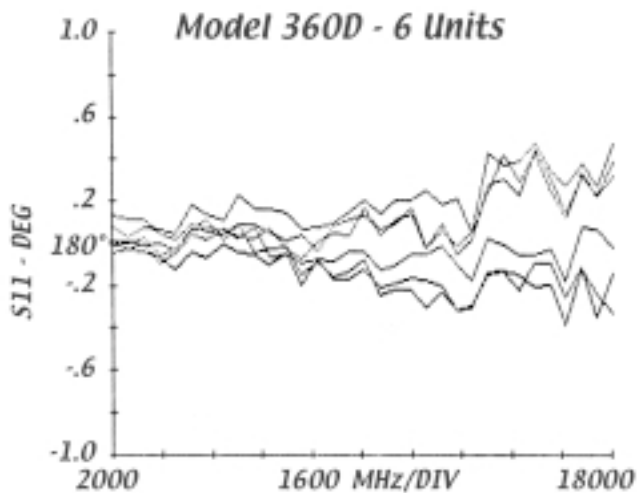


Figure 4