

Directional Coupler 20 dB SMA Female 300 MHz to 8 GHz

Directional Couplers Technical Data Sheet

Product Description

Directional couplers are important components for use in isolating, separating, replicating, and combining microwave signals. They can serve as accurate attenuator measurements as they eliminate reflections. They are incredibly useful in sampling RF signals for use in detectors, gain control and feedback loops.

Model APTDC-20-00300800-SMA operates from 300 MHz to 8 GHz with broadband flat coupling response, high directivity, and excellent return loss performance.

Specifications	Min	Typ	Max	Min
Frequency	300		8000	MHz
Impedance		50		Ohm
Coupling		20 ± 1.2		dB
Frequency Sensitivity (Flatness)		± 0.6	± 1.2	dB
Mainline Loss ¹		0.5	1.1	dB
Directivity	(up to 6 GHz)	18	25	dB
	(6 to 8 GHz)	16	22	
Main Line Return Loss		17	26	dB
Secondary Line Return Loss		17	23	dB
Input Power (CW) ²			20	Watts (CW)

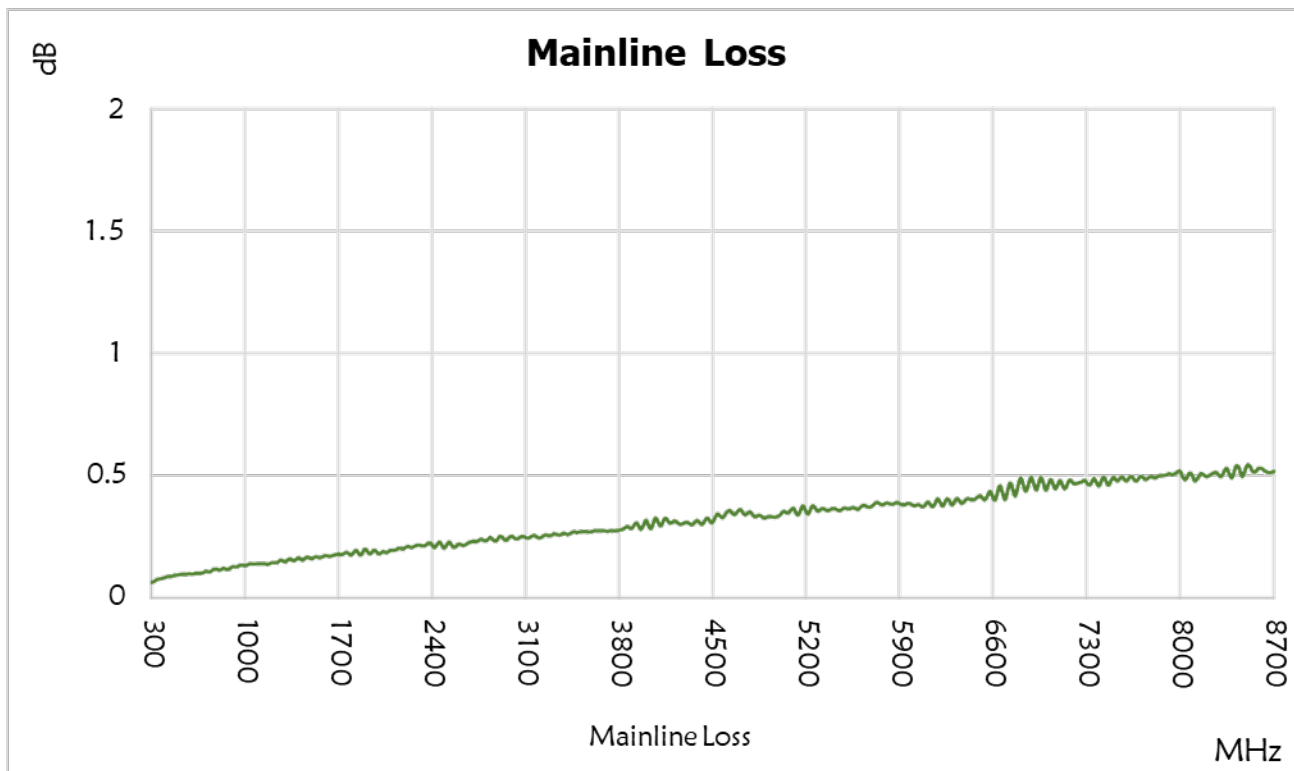
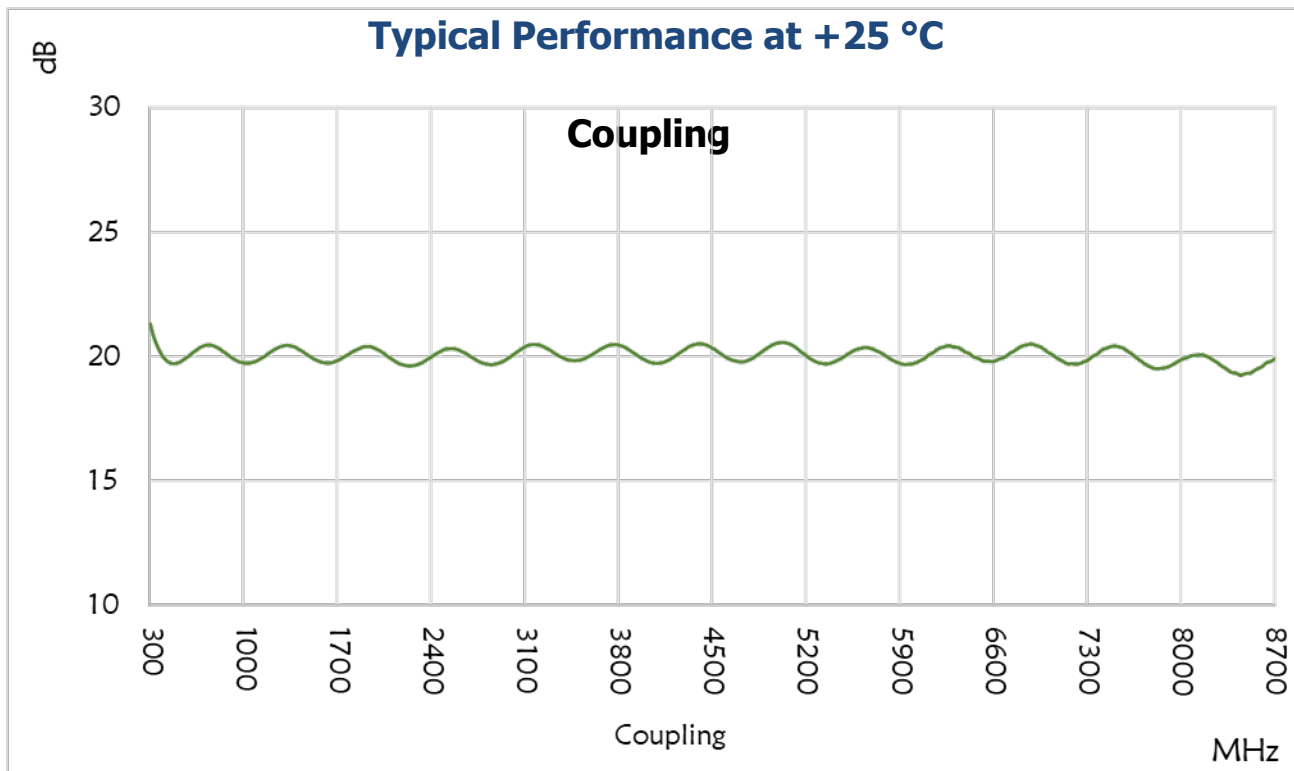
Mechanical

Connector Interface	SMA-Female
Operating Temperature ²	-55 to +85 °C
Storage Temperature	-55 to +100 °C
Weight Estimate	3.5 oz (86 g)
Humidity	10-90% non-condensing
Environment	Indoors Use Only

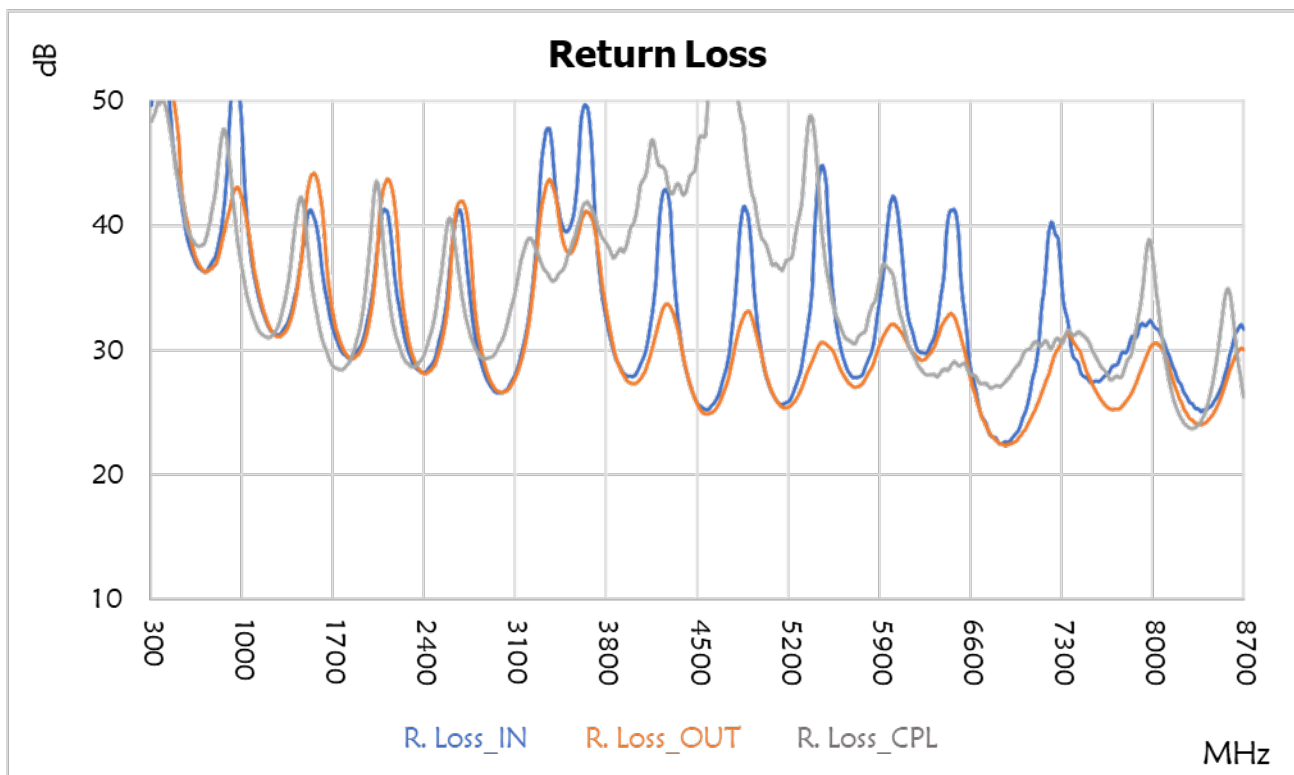
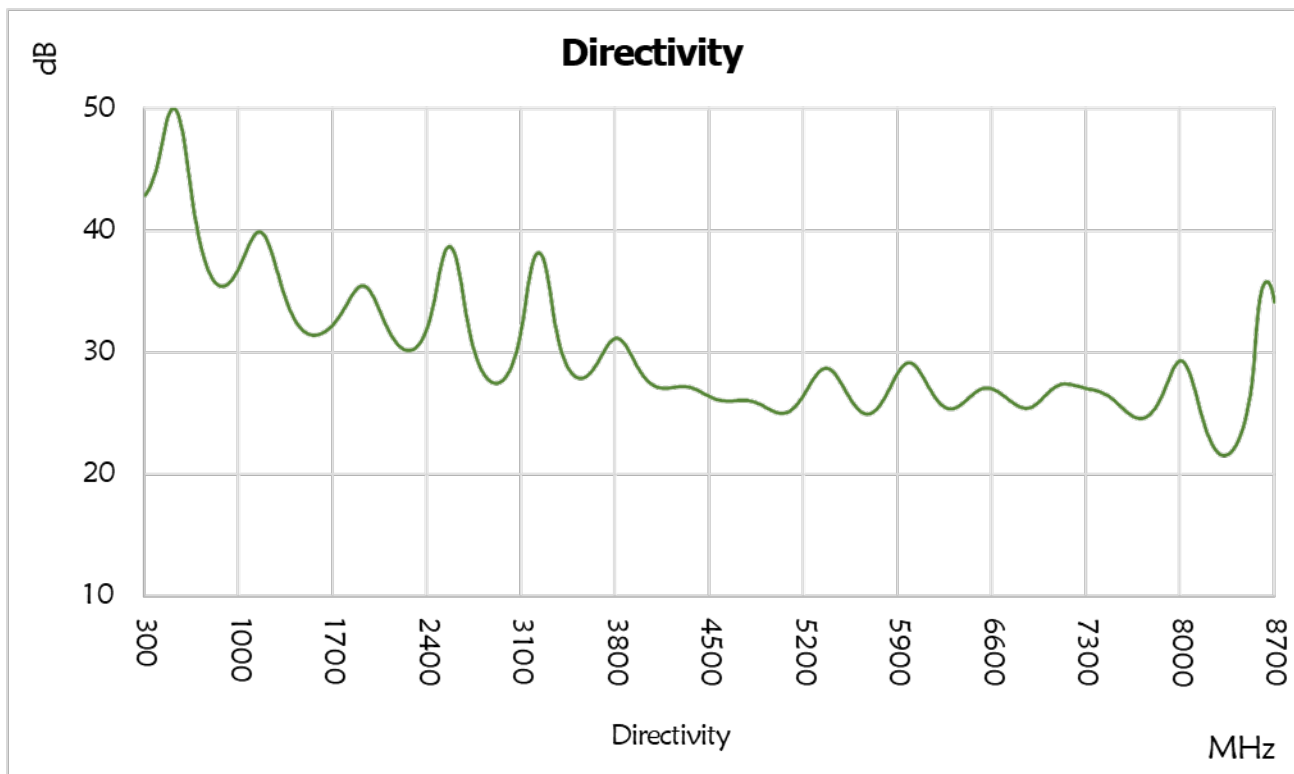
Materials

RoHS /REACH Compliant ³	Yes
Enclosure	Aluminum
Connectors	Stainless Steel
Contacts	Be Cu, Gold Plated
Insulators	PTFE
Finish	Gray Paint

1. Mainline loss includes coupling loss.
2. All output ports should be terminated in a 50-ohm load with 1.2:1 max VSWR.
3. Electrical specifications at +25 °C only.
4. To the best of our knowledge at the time of publication.
5. Non-RoHS solder is available upon request.



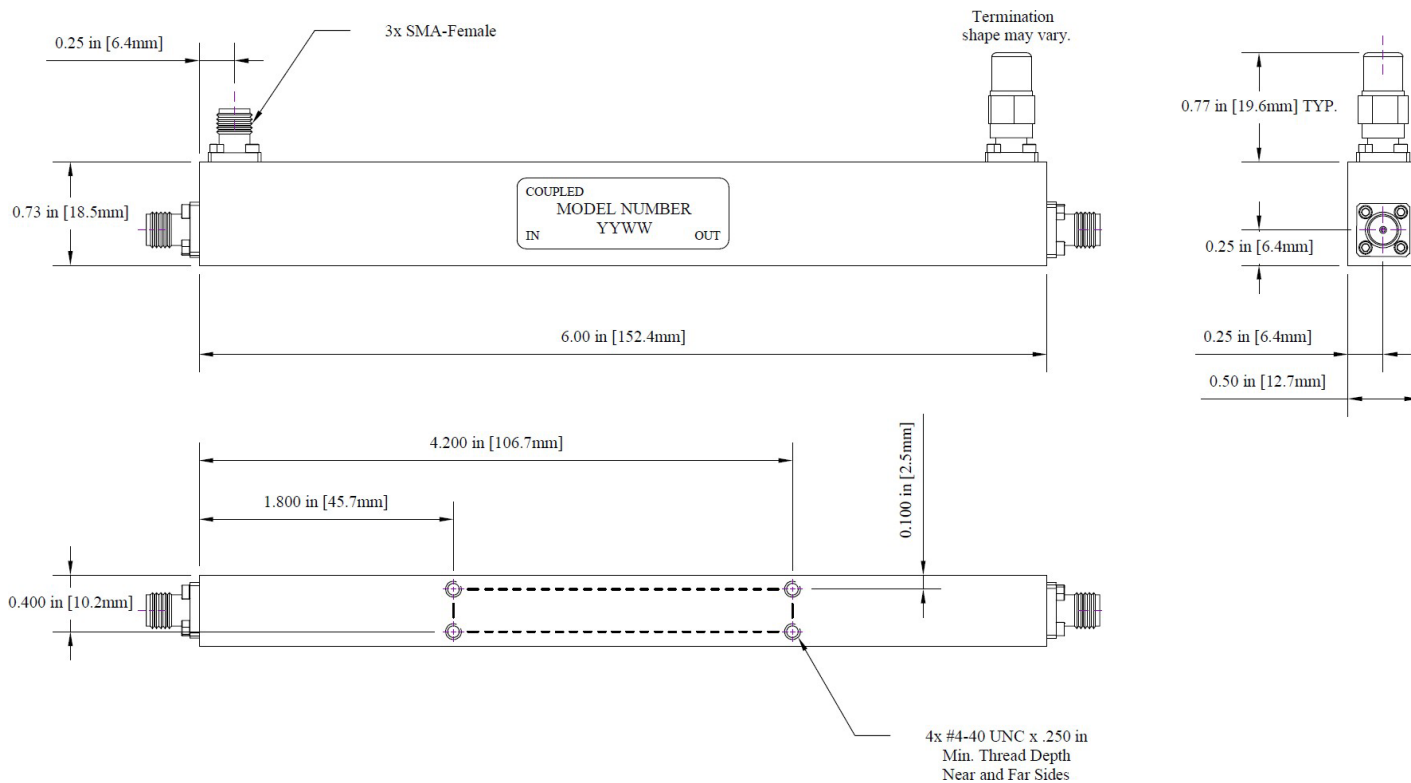
Typical Performance at +25 °C



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Frequency (MHz)	Return Loss (dB)			Mainline Loss (dB)		Coupling (dB)	Directivity (dB)
	In	Out	Cpl.	In-Out	In-Cpl.		
300	58.8	55.4	53.4	0.1	20.6	44.6	
500	40.0	39.6	44.9	0.1	19.9	48.0	
700	36.0	37.4	38.3	0.1	20.5	36.0	
900	62.2	45.1	42.4	0.1	19.8	36.5	
1100	33.2	32.4	31.4	0.1	20.0	40.5	
1300	32.8	33.1	34.2	0.2	20.5	33.1	
1500	43.9	46.3	35.4	0.2	19.9	31.4	
1700	30.2	29.8	28.6	0.2	19.9	33.6	
1900	31.6	32.1	33.1	0.2	20.5	35.2	
2100	37.0	38.5	34.4	0.2	19.8	30.4	
2300	28.2	27.8	28.7	0.2	19.8	31.3	
2500	33.5	33.4	36.3	0.2	20.4	41.5	
2700	33.0	32.9	32.4	0.3	19.9	28.7	
2900	26.4	26.3	29.4	0.3	19.9	27.8	
3100	29.6	30.0	36.5	0.3	20.5	38.5	
3300	52.2	46.4	36.5	0.3	20.1	30.0	
3500	41.1	38.2	38.5	0.3	19.9	27.9	
3700	35.4	34.3	40.1	0.3	20.5	31.7	
3900	28.2	27.4	38.0	0.3	20.1	28.3	
4100	31.8	30.7	46.2	0.3	19.8	27.1	
4300	31.5	29.7	43.0	0.3	20.5	27.1	
4500	25.2	25.0	50.5	0.3	20.2	26.1	
4700	29.8	28.9	47.9	0.4	19.8	26.2	
4900	33.0	30.3	42.8	0.4	20.5	25.1	
5100	25.5	24.9	36.6	0.4	20.3	26.3	
5300	32.1	29.7	45.1	0.3	19.7	29.0	
5500	32.8	28.9	34.3	0.3	20.3	25.4	
5700	28.1	27.2	30.5	0.4	20.2	25.9	
5900	37.7	32.2	36.9	0.4	19.7	29.7	
6100	30.3	28.9	30.2	0.5	20.3	26.0	
6300	32.1	31.7	28.0	0.4	20.3	25.9	
6500	30.8	28.2	28.7	0.4	19.9	27.3	
6700	24.5	23.5	27.4	0.5	20.2	25.7	
6900	23.4	23.1	28.5	0.4	20.5	26.5	
7100	32.1	27.2	30.2	0.5	19.8	27.5	
7300	29.6	32.8	31.2	0.4	19.9	27.0	
7500	27.2	26.5	30.3	0.5	20.5	25.3	
7700	28.6	25.8	28.3	0.6	19.7	24.9	
7900	32.9	29.7	34.8	0.6	19.7	30.0	
8100	27.8	26.4	27.6	0.4	20.1	23.6	
8300	25.8	24.8	23.8	0.4	19.3	21.6	
8500	28.1	28.2	31.9	0.6	19.4	31.2	
8700	29.8	28.2	24.7	0.6	20.1	23.9	

Outline Dimensions



Dimensions are in inches, [mm] shown for convenience.
Tolerances on 2-pl decimals: $\pm .03$. 3-pl decimals: $\pm .015$.