



MMIC COAXIAL

Power Splitter/Combiner **ZS4RKU-183-S+**

50Ω 4 Way-0° DC to 18 GHz SMA Female

KEY FEATURES

- Wide Bandwidth, DC to 18 GHz
- Excellent Isolation, 20 dB Typ. at 9 GHz
- Excellent Amplitude Unbalance, 0.3 dB Typ. at 9 GHz
- Good Phase Unbalance, 2 deg Typ. at 9 GHz

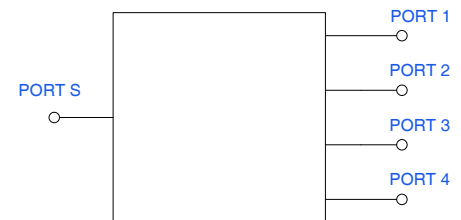
APPLICATIONS

- WIMAX
- ISM
- Test and Measurement
- Radar
- WLAN
- Satellite Communications
- LTE



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' ZS4RKU-183-S+ is a coaxial MMIC 4-way 0° splitter/combiner designed for wideband operation from DC to 18 GHz, supporting various applications that require high performance across a broad frequency range, including LTE bands, phased array radars, 5G, and instrumentation, among others. This model provides good isolation and low phase and amplitude unbalance in a rugged connector package. Manufactured using GaAs IPD technology, the ZS4RKU-183-S+ not only provides a repeatable performance but also a high level of ESD protection.

ELECTRICAL SPECIFICATIONS AT +25°C, Z₀ = 50Ω

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Frequency Range		DC		18	GHz
Insertion Loss (above 6 dB)	DC - 12	—	5	6.5	dB
	12 - 18	—	7	8.5	
Isolation	DC - 4	9	12	—	dB
	4 - 18	11	20	—	
Phase Unbalance (±)	DC - 4	—	0.3	4	Degree
	4 - 18	—	1.9	19	
Amplitude Unbalance (±)	DC - 4	—	0.1	0.6	dB
	4 - 18	—	0.2	1.2	
Return Loss (Port S)	DC - 4	—	10	—	dB
	4 - 18	—	10	—	
Return Loss (Port 1 to Port 4)	DC - 4	—	10	—	dB
	4 - 18	—	10	—	

ABSOLUTE MAXIMUM RATINGS¹

Operating Case Temperature		-55°C to +100°C
Storage Temperature		-55°C to +100°C
Input Power	as splitter ²	3.1 W at 25°C
	as combiner per port ²	0.6 W at 25°C

1. Permanent damage may occur if any of these limits are exceeded.

2. Measurements performed with one port energized and other ports terminated.





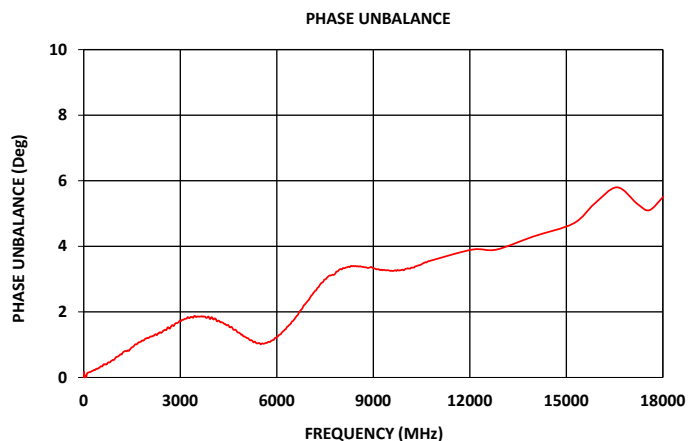
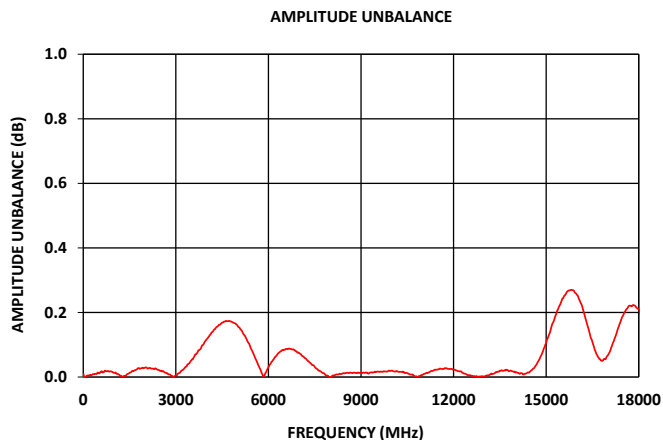
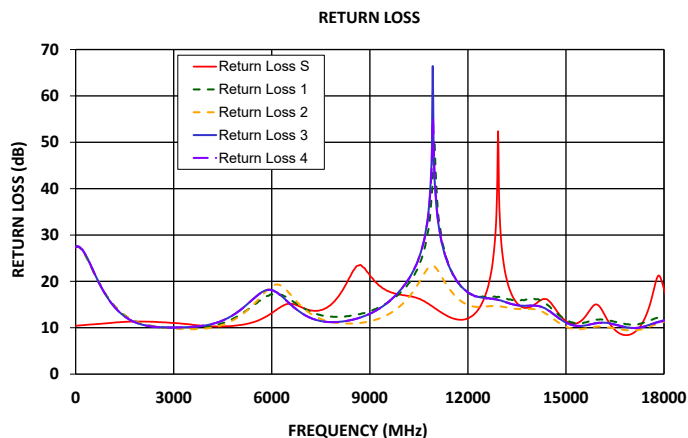
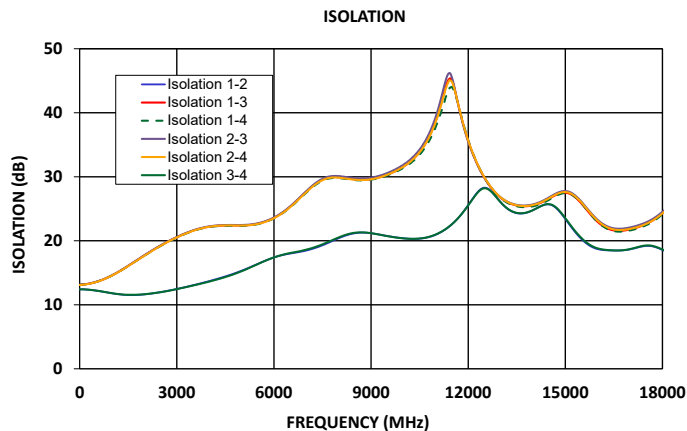
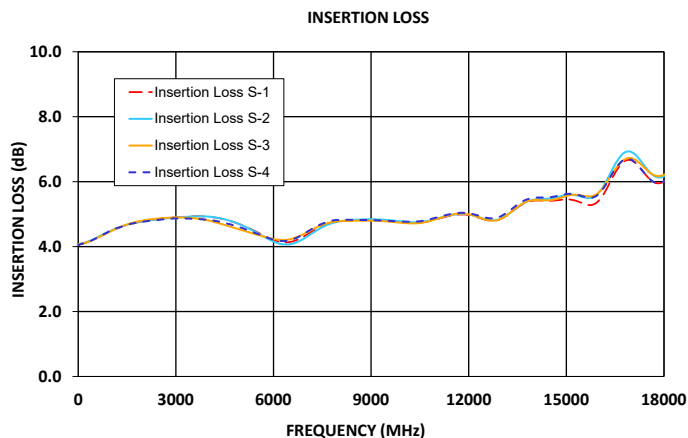
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50Ω 4 Way-0° DC to 18 GHz SMA Female

TYPICAL PERFORMANCE GRAPHS AT +25°C





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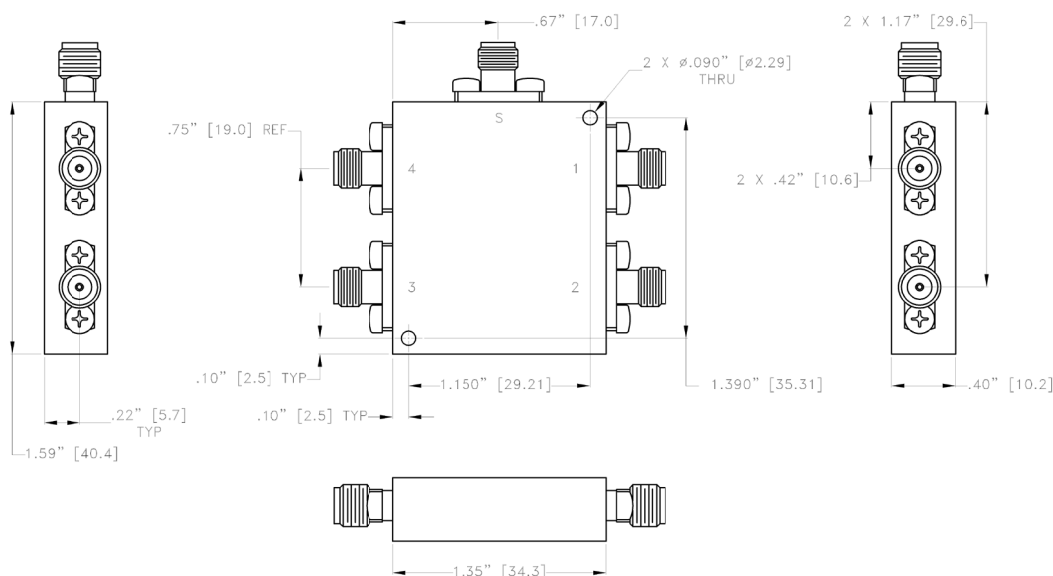
Power Splitter/Combiner **ZS4RKU-183-S+**

50Ω 4 Way-0° DC to 18 GHz SMA Female

COAXIAL CONNECTIONS

Function	Connector
Sum Port	SMA Female
Port 1 to Port 4	SMA Female

CASE STYLE DRAWING



Weight: .120 grams

Dimensions are in inches (mm). Tolerances: 2Pl. $\pm .060$ [1.52]; 3Pl. $\pm .015$ [.38]

PRODUCT MARKING*: ZS4RKU-183-S+

*Marking may contain other features or characters for internal lot control.





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Power Splitter/Combiner **ZS4RKU-183-S+**

50Ω 4 Way-0° DC to 18 GHz SMA Female

ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD

[CLICK HERE](#)

Performance Data & Graphs	Data
	Graphs
	S-Parameter (S5P Files) Data Set (.zip file)
Case Style	BBJ3731
RoHS Status	Compliant
Environmental Ratings	ENV28T19

NOTES

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html



Coaxial 4 Way-0° Power Splitter/Combiner

ZS4RKU-183-S+

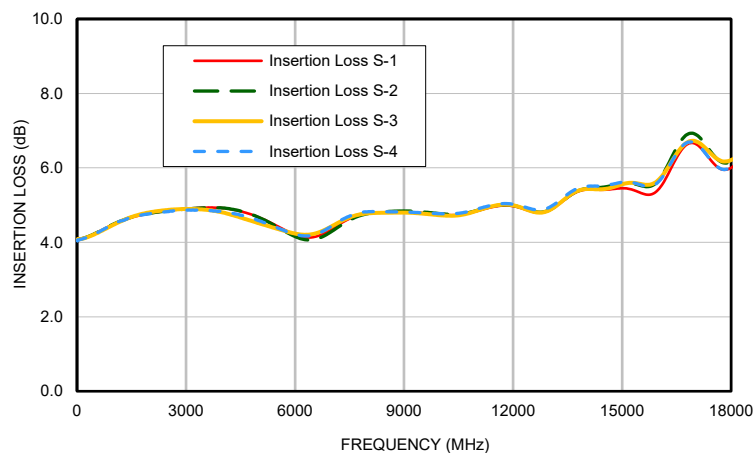
Typical Performance Data

FREQ. (MHz)	INSERTION LOSS ¹				AMP. UNBAL. (dB)	ISOLATION			PHASE UNBAL. (deg.)	FREQ. (MHz)	RETURN LOSS				
	(dB)					(dB)					(dB)				
	S-1	S-2	S-3	S-4		1-2	1-3	3-4			S	1	2	3	4
10	4.07	4.07	4.08	4.04	0.01	12.41	13.13	12.40	0.00	10	10.41	27.51	27.38	27.35	27.50
20	4.08	4.08	4.08	4.05	0.00	12.41	13.13	12.41	0.04	20	10.43	27.52	27.43	27.46	27.52
50	4.08	4.08	4.08	4.06	0.00	12.41	13.14	12.42	0.03	50	10.46	27.50	27.51	27.54	27.45
100	4.09	4.09	4.09	4.08	0.00	12.41	13.17	12.42	0.04	100	10.49	27.38	27.34	27.43	27.51
300	4.15	4.15	4.14	4.14	0.00	12.34	13.31	12.34	0.11	300	10.61	25.56	25.60	25.74	25.79
600	4.29	4.29	4.27	4.28	0.00	12.14	13.72	12.15	0.24	600	10.77	21.22	21.32	21.36	21.36
900	4.44	4.44	4.42	4.44	0.00	11.88	14.34	11.89	0.35	900	10.94	17.45	17.42	17.31	17.29
1200	4.57	4.57	4.56	4.57	0.01	11.65	15.15	11.67	0.47	1200	11.13	14.60	14.57	14.40	14.38
1500	4.67	4.67	4.68	4.67	0.01	11.52	16.08	11.56	0.57	1500	11.28	12.72	12.65	12.44	12.43
1800	4.74	4.75	4.77	4.74	0.01	11.54	17.06	11.58	0.66	1800	11.33	11.46	11.45	11.22	11.24
2100	4.79	4.80	4.82	4.78	0.00	11.68	18.04	11.70	0.75	2100	11.33	10.73	10.73	10.56	10.56
2400	4.84	4.83	4.86	4.82	0.00	11.90	18.96	11.90	0.83	2400	11.27	10.29	10.33	10.24	10.19
2700	4.87	4.87	4.88	4.85	0.01	12.16	19.80	12.14	0.93	2700	11.18	10.04	10.05	10.10	10.05
3000	4.90	4.90	4.90	4.87	0.01	12.47	20.55	12.44	1.03	3000	11.01	9.93	9.88	10.08	10.06
3300	4.92	4.92	4.89	4.87	0.00	12.81	21.21	12.78	1.14	3300	10.85	9.89	9.75	10.11	10.09
3600	4.93	4.93	4.87	4.86	0.00	13.18	21.73	13.12	1.22	3600	10.62	9.94	9.70	10.21	10.22
3900	4.93	4.93	4.82	4.83	0.00	13.56	22.11	13.49	1.28	3900	10.44	10.08	9.79	10.42	10.47
4000	4.92	4.92	4.80	4.82	0.00	13.70	22.19	13.62	1.29	4000	10.36	10.19	9.86	10.54	10.59
4500	4.83	4.84	4.67	4.73	0.01	14.44	22.39	14.34	1.31	4500	10.30	11.01	10.64	11.57	11.58
4800	4.75	4.75	4.58	4.65	0.00	14.94	22.39	14.85	1.30	4800	10.38	11.88	11.57	12.67	12.66
5100	4.63	4.63	4.48	4.55	0.01	15.53	22.42	15.45	1.30	5100	10.65	13.12	12.91	14.19	14.16
5400	4.49	4.48	4.40	4.43	0.02	16.17	22.57	16.13	1.32	5400	11.13	14.61	14.73	16.01	16.00
5700	4.34	4.31	4.31	4.32	0.03	16.82	22.94	16.80	1.36	5700	11.94	16.17	16.95	17.71	17.65
6000	4.21	4.16	4.24	4.22	0.05	17.39	23.58	17.40	1.46	6000	13.17	17.19	18.97	18.12	18.06
6300	4.13	4.07	4.20	4.17	0.06	17.81	24.52	17.86	1.60	6300	14.59	17.10	19.00	16.83	16.81
6600	4.16	4.09	4.25	4.23	0.07	18.09	25.76	18.17	1.76	6600	15.16	15.91	16.93	14.91	14.87
6900	4.30	4.23	4.37	4.37	0.07	18.36	27.20	18.49	1.95	6900	14.45	14.55	14.67	13.23	13.17
7200	4.48	4.42	4.53	4.55	0.06	18.75	28.56	18.90	2.12	7200	13.72	13.42	12.97	12.09	12.08
7500	4.64	4.60	4.67	4.71	0.04	19.29	29.55	19.44	2.25	7500	13.81	12.71	11.90	11.44	11.44
7800	4.74	4.72	4.75	4.80	0.02	19.95	29.94	20.09	2.35	7800	14.91	12.39	11.28	11.22	11.21
8100	4.79	4.79	4.79	4.83	0.00	20.60	29.86	20.71	2.38	8100	17.38	12.37	10.97	11.31	11.30
8400	4.81	4.82	4.79	4.82	0.01	21.08	29.65	21.17	2.40	8400	21.09	12.59	10.91	11.63	11.61
8700	4.81	4.84	4.80	4.82	0.02	21.26	29.54	21.31	2.37	8700	23.54	12.94	11.03	12.19	12.20
9000	4.81	4.84	4.80	4.81	0.03	21.18	29.63	21.19	2.33	9000	21.31	13.61	11.39	13.02	13.00
9300	4.80	4.83	4.79	4.80	0.03	20.94	29.97	20.91	2.30	9300	19.03	14.45	12.03	14.18	14.17
9600	4.78	4.81	4.76	4.79	0.03	20.67	30.52	20.65	2.28	9600	17.77	15.67	13.03	15.75	15.79
9900	4.76	4.78	4.74	4.77	0.02	20.44	31.29	20.44	2.27	9900	17.18	17.30	14.52	17.85	17.85
10200	4.73	4.76	4.72	4.77	0.02	20.31	32.31	20.32	2.28	10200	16.84	19.66	16.65	20.66	20.62
10500	4.74	4.76	4.73	4.78	0.02	20.33	33.87	20.36	2.31	10500	16.26	23.40	19.70	25.09	25.01
10800	4.79	4.80	4.79	4.84	0.02	20.60	36.31	20.63	2.34	10800	15.14	31.50	22.99	35.42	34.89
11100	4.87	4.88	4.88	4.92	0.02	21.18	40.29	21.23	2.40	11100	13.69	33.86	22.15	32.28	32.63
11400	4.94	4.96	4.96	4.99	0.02	22.16	45.21	22.19	2.40	11400	12.43	23.93	18.72	23.64	23.70
11700	4.99	5.01	5.01	5.04	0.02	23.61	41.13	23.60	2.50	11700	11.76	19.65	16.26	19.76	19.79
12000	4.97	4.99	4.99	5.02	0.02	25.57	35.59	25.53	2.50	12000	12.02	17.63	14.93	17.66	17.57
12300	4.89	4.91	4.91	4.95	0.02	27.66	31.75	27.56	2.50	12300	13.77	16.75	14.49	16.69	16.65
12600	4.81	4.82	4.81	4.88	0.01	28.17	29.04	28.10	2.50	12600	18.42	16.76	14.61	16.37	16.35
12900	4.82	4.83	4.82	4.90	0.01	26.62	27.18	26.62	2.50	12900	42.05	16.65	14.67	16.09	16.01
13200	4.98	4.99	4.99	5.07	0.01	25.05	26.05	25.09	2.60	13200	20.09	16.22	14.36	15.40	15.42
13500	5.20	5.22	5.22	5.29	0.01	24.31	25.51	24.35	2.80	13500	15.32	15.93	14.06	14.87	14.85
13800	5.37	5.39	5.39	5.46	0.02	24.39	25.40	24.41	2.90	13800	14.30	16.07	14.05	14.76	14.77
14000	5.42	5.44	5.43	5.50	0.03	24.78	25.54	24.79	3.00	14000	14.79	16.22	14.03	14.78	14.78
14400	5.41	5.47	5.43	5.51	0.06	25.67	26.32	25.69	3.30	14400	16.17	15.15	12.99	14.02	14.03
14700	5.43	5.52	5.47	5.56	0.09	25.17	27.13	25.28	3.40	14700	13.80	13.26	11.46	12.52	12.49
15000	5.45	5.59	5.56	5.62	0.13	23.40	27.50	23.54	3.40	15000	11.44	11.69	10.25	11.13	11.09
15300	5.41	5.58	5.60	5.60	0.17	21.39	26.82	21.53	3.30	15300	10.90	11.01	9.71	10.43	10.44
15600	5.30	5.51	5.55	5.52	0.21	19.79	25.20	19.95	3.30	15600	12.48	11.16	9.86	10.51	10.48
15900	5.33	5.57	5.60	5.55	0.23	18.86	23.44	18.99	3.20	15900	15.01	11.67	10.21	10.96	10.97
16200	5.71	5.97	5.92	5.89	0.25	18.54	22.19	18.61	3.00	16200	12.55	11.72	10.17	11.08	11.01
16500	6.27	6.54	6.38	6.38	0.27	18.48	21.62	18.50	2.90	16500	9.52	11.29	9.84	10.71	10.65
18000	6.00	6.16	6.21	6.01	0.16	18.57	24.33	18.63	2.60	18000	18.33	12.60	11.30	11.59	11.56

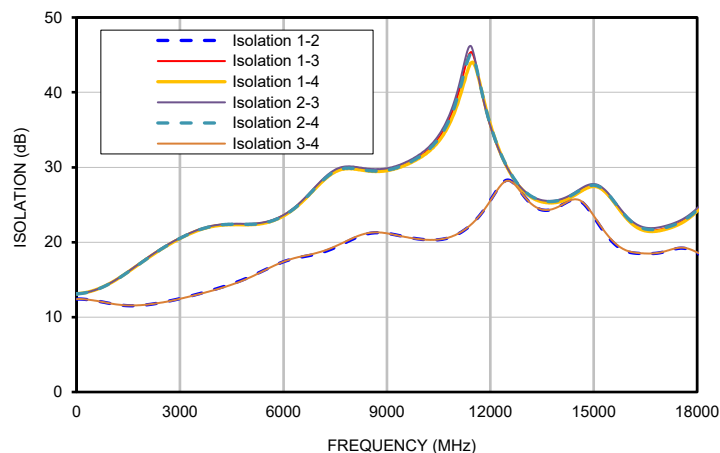
¹Insertion loss is loss above theoretical loss (6dB)

Typical Performance Curves

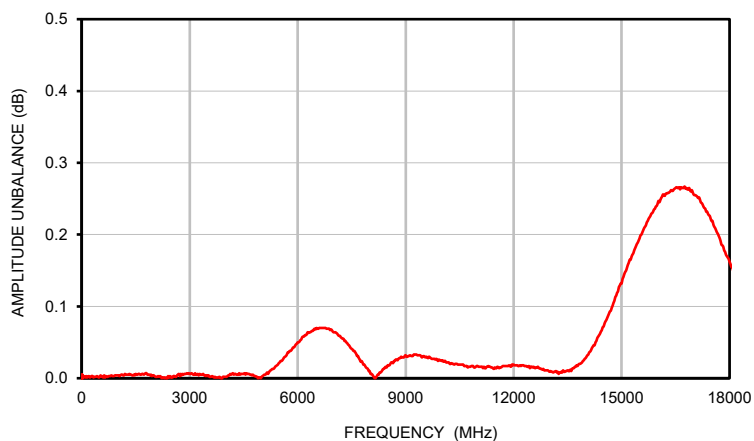
INSERTION LOSS



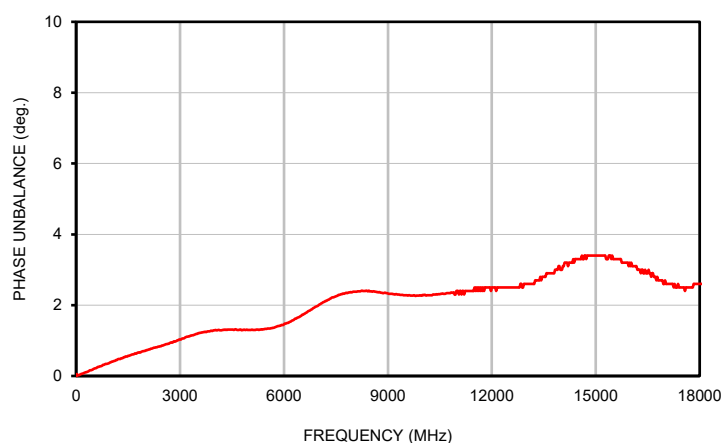
ISOLATION



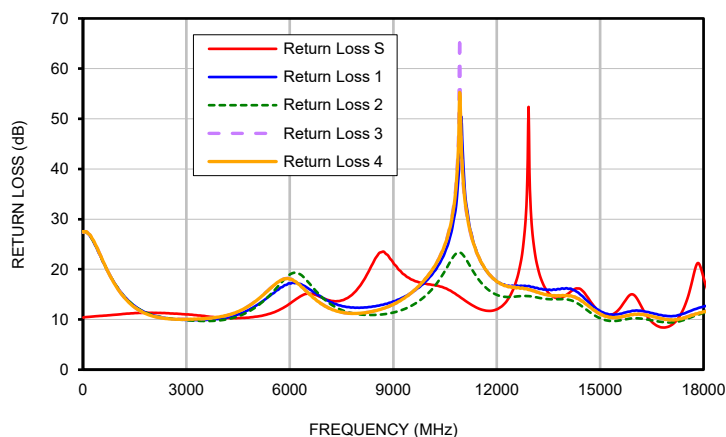
AMPLITUDE UNBALANCE



PHASE UNBALANCE

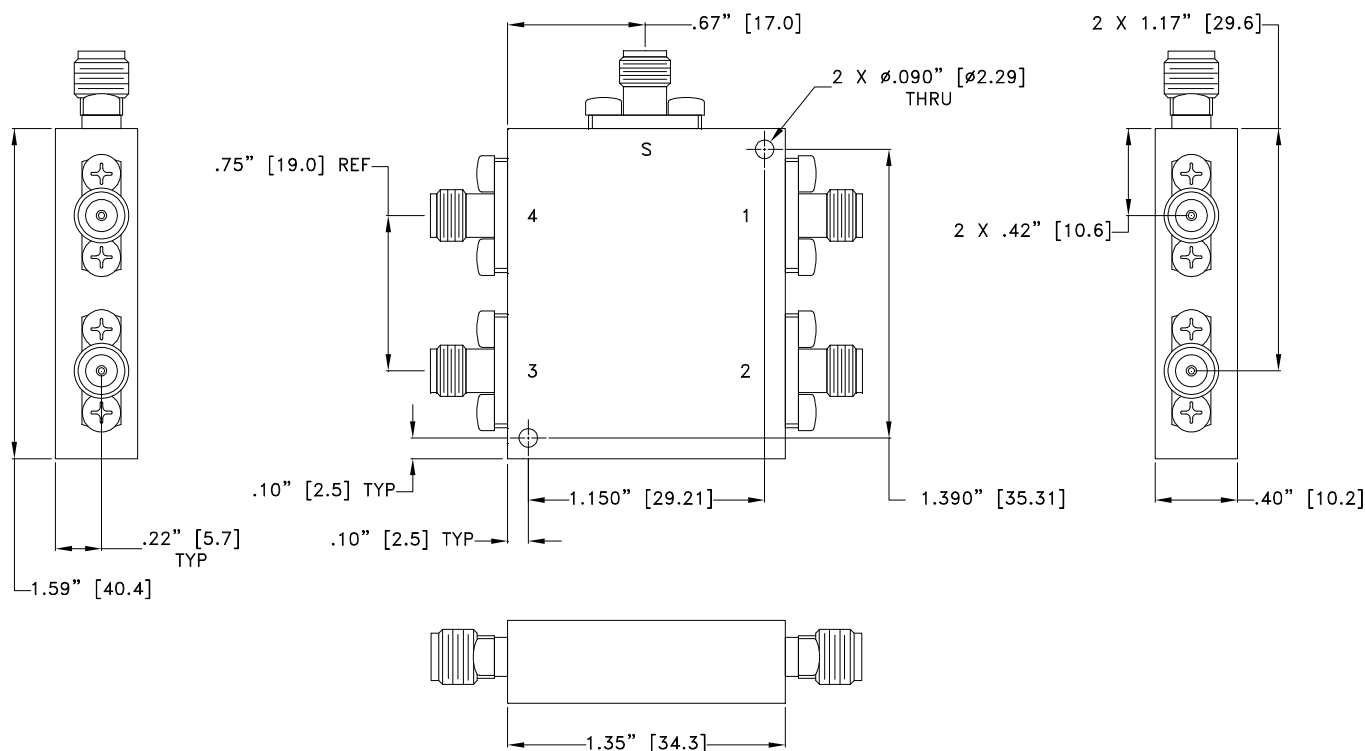


RETURN LOSS



Outline Dimensions

BBJ3731



Dimensions are in inches [mm]. Tolerances: 2 Pl. ± 0.060 [1.52]; 3 Pl. ± 0.015 [0.38]

Notes:

1. Case material: Brass alloy.
2. Case Finish: Case & Cover of the units –Gold plating.
3. Unit Weight: 120 grams.
4. Refer to the individual model data sheet for the type of connectors available.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS





All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I
Connector Durability	500 mating/unmating cycles	MIL-PRF-39012E, PARAGRAPH 4.6.12