Coaxial

Power Splitter/Combiner

ZMSC-4-2+

4 Way-0° 50Ω 0.002 to 20 MHz

Generic photo used for illustration purposes only

CASE STYLE: N24

Connectors	Model
SMA	ZMSC-4-2+
BRACKET (OPTION "B")	
BRACKET (OPTION "BR")	

+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	1W max.
Internal Dissipation	0.250W max.

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

Coaxial Connections

SUM PORT	S
PORT 1	1
PORT 2	2
PORT 3	3
PORT 4	4

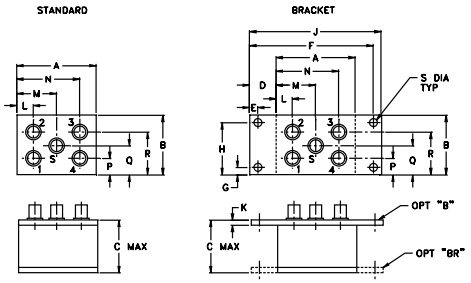
Features

- high isolation, 33 dB typ.
- rugged shielded case

Applications

- HF
- amateur radio

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J
1.50	1.13	1.00	.50	.155	2.345	.138	.987	2.50
38.10	28.70	25.40	12.70	3.94	59.56	3.51	25.07	63.50

K	L	M	N	P	Q	R	S	wt
.10	.32	.75	1.18	.31	.56	.81	.150	grams
2.54	8.13	19.05	29.97	7.87	14.22	20.57	3.81	45.0

Electrical Specifications

FREQ.* RANGE (MHz)	ISOLATION (dB)						INSERTION LOSS (dB) ABOVE 6.0 dB						PHASE UNBALANCE (Degrees)			AMPLITUDE UNBALANCE (dB)		
	L		M		U		L		M		U		L	M	U	L	M	U
f_L-f_U	Typ.	Min	Typ.	Min	Typ.	Min	Typ.	Max.	Typ.	Max.	Typ.	Max.	Max.	Max.	Max.	Max.	Max.	Max.
0.002-20	30	20	33	25	33	25	0.45	0.75	0.3	0.5	0.7	1.0	4	6	8	0.15	0.20	0.25

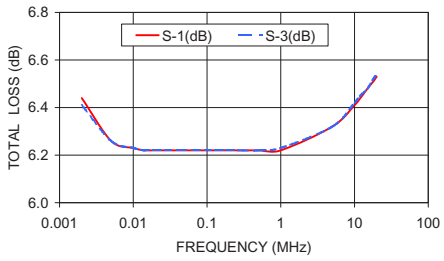
L = low range [f_L to 10 f_L] M = mid range [10 f_L to f_U/2] U= upper range [f_U/2 to f_U]
* At low range frequency band (f_L to 10 f_L), linearly derate maximum power by 13dB.

Typical Performance Data

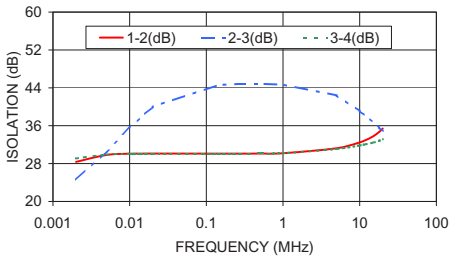
Freq. (MHz)	Total Loss[1] (dB)				Amp. Unbal. (dB)	Isolation (dB)			Phase Unbal. (deg.)	VSWR S	VSWR 1	VSWR 2	VSWR 3	VSWR 4
	S-1	S-2	S-3	S-4		1-2	2-3	3-4						
0.002	6.440	6.440	6.410	6.410	0.030	28.370	24.590	29.080	0.320	1.580	1.860	1.860	1.920	1.920
0.005	6.260	6.260	6.260	6.260	0.010	29.820	30.590	29.890	0.200	1.410	1.360	1.360	1.380	1.380
0.010	6.230	6.230	6.230	6.220	0.000	30.090	35.540	30.080	0.110	1.380	1.210	1.210	1.220	1.220
0.014	6.220	6.220	6.220	6.220	0.000	30.110	37.820	30.110	0.080	1.380	1.180	1.180	1.180	1.180
0.020	6.220	6.220	6.220	6.220	0.000	30.120	39.980	30.110	0.060	1.370	1.150	1.150	1.150	1.150
0.142	6.220	6.220	6.220	6.220	0.000	30.110	44.600	30.110	0.020	1.370	1.130	1.130	1.130	1.130
0.265	6.220	6.220	6.220	6.220	0.000	30.100	44.820	30.120	0.040	1.370	1.130	1.130	1.130	1.130
0.510	6.220	6.220	6.220	6.220	0.000	30.120	44.840	30.140	0.050	1.370	1.130	1.130	1.130	1.130
1.000	6.220	6.220	6.230	6.220	0.000	30.190	44.690	30.200	0.090	1.370	1.130	1.130	1.120	1.120
5.000	6.320	6.320	6.320	6.320	0.010	31.240	42.390	31.090	0.280	1.390	1.110	1.110	1.110	1.110
10.000	6.410	6.410	6.420	6.410	0.010	32.480	39.090	31.850	0.530	1.400	1.090	1.090	1.090	1.090
12.000	6.440	6.440	6.450	6.440	0.010	32.970	38.030	32.080	0.630	1.390	1.090	1.090	1.090	1.090
15.000	6.480	6.480	6.480	6.480	0.010	33.770	36.690	32.420	0.780	1.380	1.080	1.080	1.080	1.080
18.000	6.510	6.510	6.520	6.520	0.010	34.700	35.550	32.820	0.920	1.360	1.070	1.070	1.070	1.070
20.000	6.530	6.530	6.540	6.540	0.010	35.410	34.890	33.160	1.030	1.350	1.070	1.070	1.070	1.060

1. Total Loss = Insertion Loss + 6dB splitter loss.

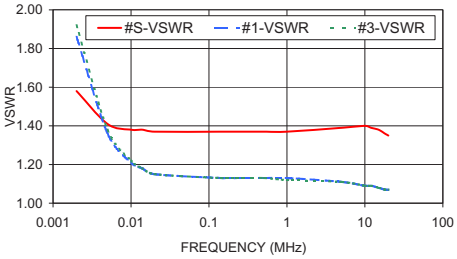
ZMSC-4-2+
TOTAL LOSS



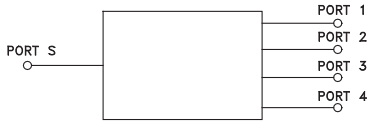
ZMSC-4-2+
ISOLATION



ZMSC-4-2+
VSWR



electrical schematic



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.
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4 Way-0° Power Splitter/Combiner ZMSC-4-2+

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS[1] (dB)				AMP. UNBAL. (dB)	ISOLATION (dB)			PHASE UNBAL. (deg.)
	S-1	S-2	S-3	S-4		1-2	2-3	3-4	
0.002	6.44	6.44	6.41	6.41	0.03	28.37	24.59	29.08	0.32
0.003	6.33	6.33	6.32	6.31	0.02	29.18	27.09	29.52	0.27
0.004	6.29	6.28	6.28	6.28	0.01	29.60	29.02	29.76	0.23
0.005	6.26	6.26	6.26	6.26	0.01	29.82	30.59	29.89	0.20
0.006	6.25	6.25	6.24	6.24	0.00	29.94	31.89	29.96	0.16
0.007	6.24	6.24	6.24	6.24	0.00	30.00	33.01	30.01	0.15
0.008	6.23	6.23	6.23	6.23	0.00	30.05	33.97	30.04	0.13
0.009	6.23	6.23	6.23	6.23	0.00	30.08	34.81	30.06	0.12
0.010	6.23	6.23	6.23	6.22	0.00	30.09	35.54	30.08	0.11
0.012	6.22	6.22	6.22	6.22	0.00	30.10	36.81	30.10	0.09
0.014	6.22	6.22	6.22	6.22	0.00	30.11	37.82	30.11	0.08
0.016	6.22	6.22	6.22	6.22	0.00	30.11	38.66	30.11	0.07
0.018	6.22	6.22	6.22	6.22	0.00	30.11	39.39	30.12	0.07
0.020	6.22	6.22	6.22	6.22	0.00	30.12	39.98	30.11	0.06
0.142	6.22	6.22	6.22	6.22	0.00	30.11	44.60	30.11	0.02
0.265	6.22	6.22	6.22	6.22	0.00	30.10	44.82	30.12	0.04
0.387	6.22	6.22	6.22	6.22	0.00	30.11	44.85	30.12	0.04
0.510	6.22	6.22	6.22	6.22	0.00	30.12	44.84	30.14	0.05
0.632	6.22	6.22	6.22	6.22	0.00	30.14	44.81	30.15	0.06
0.755	6.22	6.22	6.22	6.22	0.00	30.15	44.75	30.17	0.07
0.877	6.22	6.22	6.22	6.22	0.00	30.17	44.73	30.18	0.08
1.000	6.22	6.22	6.23	6.22	0.00	30.19	44.69	30.20	0.09
2.000	6.25	6.25	6.25	6.25	0.00	30.42	44.31	30.41	0.14
3.000	6.27	6.27	6.27	6.27	0.00	30.70	43.76	30.65	0.18
4.000	6.29	6.29	6.30	6.30	0.00	30.97	43.09	30.88	0.23
5.000	6.32	6.32	6.32	6.32	0.01	31.24	42.39	31.09	0.28
6.000	6.34	6.34	6.34	6.34	0.01	31.49	41.67	31.27	0.33
7.000	6.36	6.36	6.36	6.36	0.01	31.74	40.96	31.43	0.38
8.000	6.37	6.37	6.38	6.38	0.01	31.99	40.30	31.58	0.43
9.000	6.39	6.39	6.40	6.40	0.01	32.24	39.67	31.72	0.48
10.000	6.41	6.41	6.42	6.41	0.01	32.48	39.09	31.85	0.53
11.000	6.42	6.42	6.43	6.43	0.01	32.73	38.54	31.96	0.58
12.000	6.44	6.44	6.45	6.44	0.01	32.97	38.03	32.08	0.63
13.000	6.45	6.45	6.46	6.46	0.01	33.23	37.56	32.19	0.67
14.000	6.46	6.46	6.47	6.47	0.01	33.49	37.10	32.30	0.72
15.000	6.48	6.48	6.48	6.48	0.01	33.77	36.69	32.42	0.78
16.000	6.49	6.49	6.50	6.50	0.01	34.06	36.28	32.55	0.83
17.000	6.50	6.50	6.51	6.51	0.01	34.37	35.90	32.68	0.87
18.000	6.51	6.51	6.52	6.52	0.01	34.70	35.55	32.82	0.92
19.000	6.52	6.52	6.53	6.53	0.01	35.04	35.21	32.98	0.98
20.000	6.53	6.53	6.54	6.54	0.01	35.41	34.89	33.16	1.03

FREQ. (MHz)	VSWR (:1)				
	S	1	2	3	4
0.002	1.58	1.86	1.86	1.92	1.92
0.003	1.47	1.57	1.58	1.61	1.61
0.004	1.43	1.44	1.44	1.46	1.46
0.005	1.41	1.36	1.36	1.38	1.38
0.006	1.40	1.31	1.31	1.32	1.32
0.007	1.39	1.27	1.27	1.28	1.28
0.008	1.39	1.25	1.25	1.25	1.25
0.009	1.38	1.23	1.23	1.23	1.23
0.010	1.38	1.21	1.21	1.22	1.22
0.012	1.38	1.19	1.19	1.19	1.19
0.014	1.38	1.18	1.18	1.18	1.18
0.016	1.37	1.17	1.17	1.17	1.17
0.018	1.37	1.16	1.16	1.16	1.16
0.020	1.37	1.15	1.15	1.15	1.15
0.142	1.37	1.13	1.13	1.13	1.13
0.265	1.37	1.13	1.13	1.13	1.13
0.387	1.37	1.13	1.13	1.13	1.13
0.510	1.37	1.13	1.13	1.13	1.13
0.632	1.37	1.13	1.13	1.13	1.13
0.755	1.37	1.13	1.13	1.13	1.12
0.877	1.37	1.13	1.13	1.12	1.12
1.000	1.37	1.13	1.13	1.12	1.12
2.000	1.38	1.12	1.12	1.12	1.12
3.000	1.38	1.12	1.12	1.12	1.12
4.000	1.39	1.11	1.11	1.11	1.11
5.000	1.39	1.11	1.11	1.11	1.11
6.000	1.39	1.11	1.11	1.11	1.11
7.000	1.40	1.10	1.10	1.10	1.10
8.000	1.40	1.10	1.10	1.10	1.10
9.000	1.40	1.10	1.10	1.10	1.10
10.000	1.40	1.09	1.09	1.09	1.09
11.000	1.39	1.09	1.09	1.09	1.09
12.000	1.39	1.09	1.09	1.09	1.09
13.000	1.39	1.08	1.09	1.08	1.08
14.000	1.39	1.08	1.08	1.08	1.08
15.000	1.38	1.08	1.08	1.08	1.08
16.000	1.38	1.08	1.08	1.08	1.07
17.000	1.37	1.07	1.07	1.07	1.07
18.000	1.36	1.07	1.07	1.07	1.07
19.000	1.36	1.07	1.07	1.07	1.07
20.000	1.35	1.07	1.07	1.07	1.06

[1] Total Loss = Insertion Loss+ 6dB Splitter Loss

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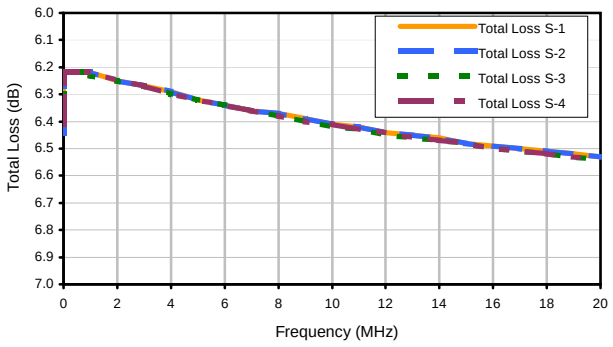
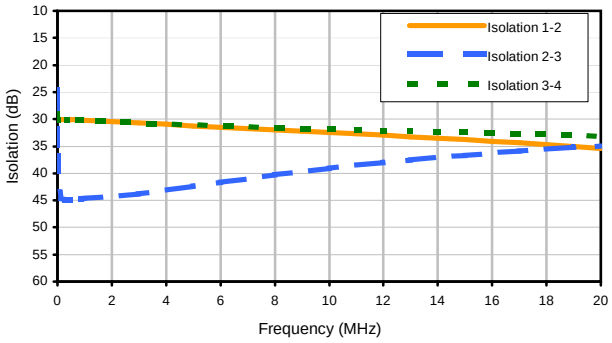
4 Way-0° Power Splitter/Combiner ZMSC-4-2+

Typical Performance Curves

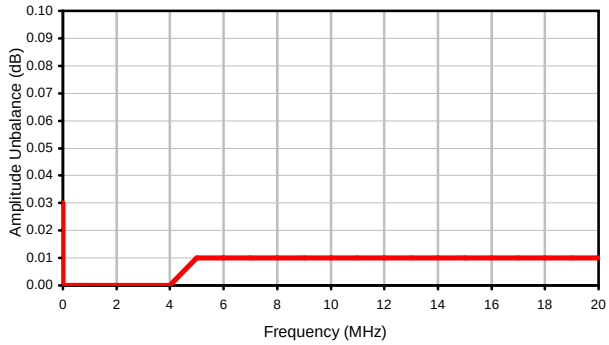
Total Loss



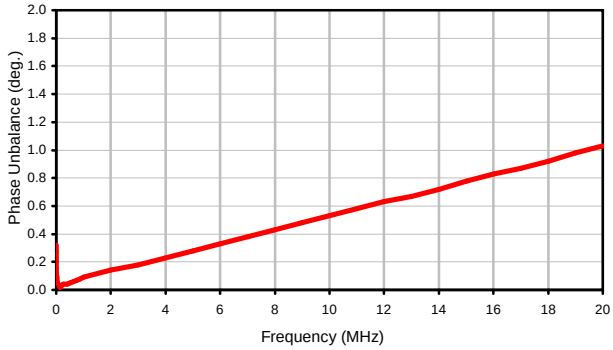
Isolation



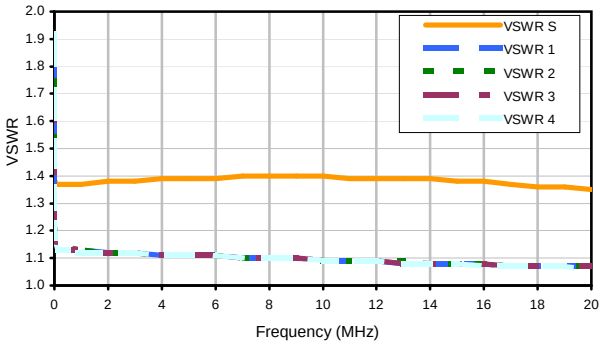
Amplitude Unbalance



Phase Unbalance



VSWR



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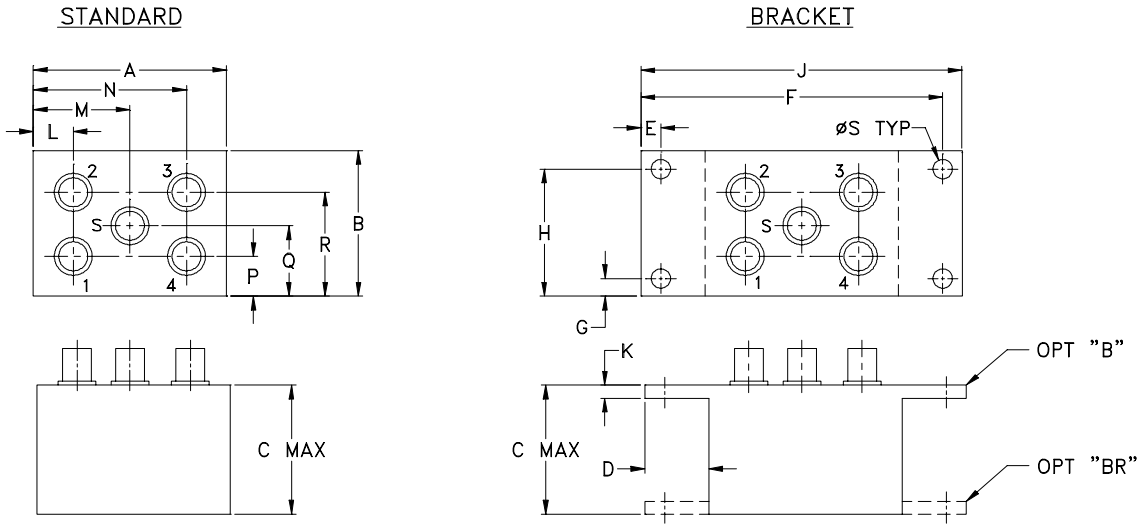
Case Style N

N24
N27

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
N24	1.50 (38.10)	1.13 (28.70)	1.00 (25.40)	.50 (12.70)	.155 (3.94)	2.345 (59.56)	.138 (3.51)	.987 (25.07)	2.50 (63.50)	.10 (2.54)	.32 (8.13)	.75 (19.05)	1.18 (29.97)
N27	2.25 (57.15)	1.38 (35.05)	1.24 (31.50)		.150 (3.81)	3.100 (78.74)		1.238 (31.45)	3.25 (82.55)		.48 (12.19)	1.13 (28.70)	1.78 (45.21)

CASE#	P	Q	R	S	WT. GRAMS
N24	.31 (7.87)	.56 (14.22)	.81 (20.57)	.150 (3.81)	45.0
N27	.36 (9.14)	.69 (17.53)	1.01 (25.65)		92.0

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.

   For Non-RoHS Case Styles: Yellow hexavalent chrome based conversion coating.
   Due to transition from non-RoHS to RoHS, models will be supplied with either case style finish until the non-RoHS case inventory is depleted.
3. Mounting bracket available on request. For bracket mounted on connector end add suffix B to part number and add $5.00 to unit cost. For bracket mounted on the rear, add suffix BR to part number and add $1.50 to unit cost.

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Mini-Circuits

Environmental Specifications ENV28

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 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
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

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