

Coaxial High Power Combiner

ZA3CS-450-9W-N

3 Way-0° 50Ω 100 to 450 MHz

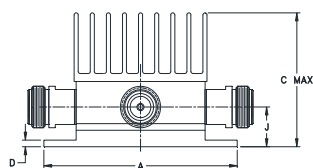
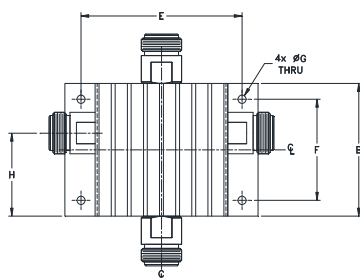
Maximum Ratings

Operating Temperature	-55°C to 90°C
Storage Temperature	-55°C to 100°C
Permanent damage may occur if any of these limits are	

Coaxial Connections

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

Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F
3.00	2.00	2.020	.100	2.500	1.525
76.20	50.80	51.31	2.54	63.50	38.74

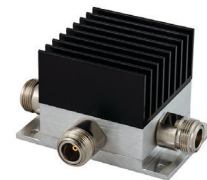
G	H	J	wt
.125	1.25	.600	grams
3.175	31.75	15.24	350

Features

- high power, up to 9W input power
- wideband, 100 to 450 MHz
- low insertion loss, 0.9 dB typ.

Applications

- VHF/UHF
- communication receivers & transmitters



Generic photo used for illustration purposes only

CASE STYLE: AX255-1

Connectors	Model
N-TYPE	ZA3CS-450-9W-N

High Power Combiner Electrical Specifications

FREQ. RANGE (MHz)	ISOLATION (dB)	INSERTION LOSS (dB) ABOVE 4.8 dB	PHASE UNBALANCE (Degrees)	AMPLITUDE UNBALANCE (dB)	POWER INPUT ¹ (W)
f_L - f_U	Typ. Min.	Typ. Max.	Typ. Max.	Typ. Max.	as combiner ² Max. as splitter Max.
100-450	22 15	0.9 1.8	2.5 8.0	0.2 0.7	9 12

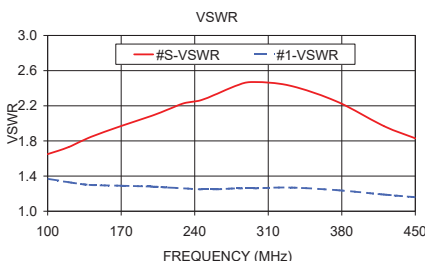
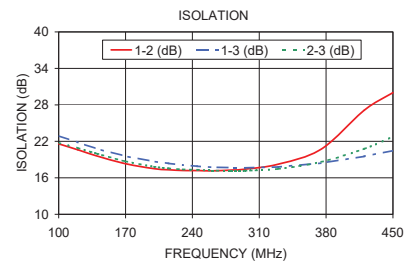
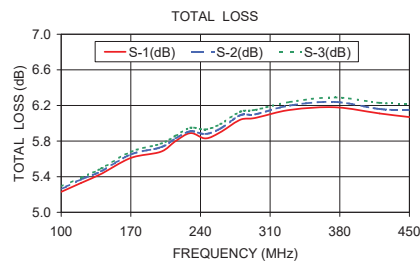
1. Over -55°C to +55°C. Derate linearly to 20% of rating at 90°C

2. As a combiner of non-coherent signals, max. power per port is power rating divided by number of ports.

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
	S-1	S-2	S-3		1-2	1-3	2-3					
100.00	5.23	5.26	5.29	0.07	21.59	22.92	21.77	0.48	1.65	1.37	1.34	1.36
120.00	5.33	5.37	5.39	0.05	20.61	21.81	20.89	0.69	1.73	1.33	1.29	1.30
140.00	5.43	5.46	5.49	0.07	19.60	20.78	19.99	0.79	1.84	1.30	1.26	1.28
170.00	5.61	5.65	5.68	0.07	18.32	19.56	18.71	0.93	1.97	1.29	1.24	1.26
200.00	5.68	5.73	5.77	0.08	17.50	18.69	17.82	1.03	2.09	1.28	1.25	1.25
215.00	5.80	5.83	5.86	0.06	17.32	18.38	17.56	1.07	2.16	1.27	1.25	1.25
230.00	5.89	5.91	5.95	0.06	17.21	18.10	17.39	1.16	2.23	1.26	1.26	1.26
245.00	5.83	5.88	5.93	0.10	17.19	17.91	17.32	1.44	2.26	1.25	1.27	1.27
260.00	5.90	5.94	5.99	0.09	17.15	17.74	17.19	1.48	2.33	1.25	1.28	1.29
280.00	6.04	6.09	6.13	0.09	17.27	17.68	17.16	1.47	2.43	1.26	1.31	1.33
295.00	6.06	6.10	6.15	0.09	17.42	17.65	17.17	1.71	2.47	1.26	1.32	1.36
330.00	6.15	6.20	6.24	0.10	18.25	17.79	17.48	1.89	2.43	1.27	1.36	1.41
375.00	6.18	6.24	6.29	0.11	20.73	18.43	18.62	2.20	2.25	1.24	1.36	1.37
420.00	6.11	6.16	6.23	0.12	27.12	19.54	20.78	2.79	1.97	1.19	1.31	1.29
450.00	6.07	6.15	6.22	0.14	30.02	20.48	22.77	3.26	1.83	1.16	1.25	1.25

1. Total Loss = Insertion Loss + 4.8dB splitter loss.



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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3 Way-0° Power Splitter/Combiner

ZA3CS-450-9W

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS ¹ (dB)			AMP. UNBAL. (dB)	ISOLATION (dB)			PHASE UNBAL. (deg.)	FREQ. (MHz)	VSWR (:1)			
	S-1	S-2	S-3		1-2	1-3	2-3			S	1	2	3
100.0	5.23	5.26	5.29	0.07	21.59	22.92	21.77	0.48	100.0	1.65	1.37	1.34	1.36
110.0	5.29	5.29	5.33	0.04	21.09	22.38	21.33	0.60	110.0	1.69	1.34	1.31	1.33
120.0	5.33	5.37	5.39	0.05	20.61	21.81	20.89	0.69	120.0	1.73	1.33	1.29	1.30
130.0	5.39	5.43	5.45	0.07	20.09	21.27	20.45	0.65	130.0	1.78	1.31	1.27	1.29
140.0	5.43	5.46	5.49	0.07	19.60	20.78	19.99	0.79	140.0	1.84	1.30	1.26	1.28
150.0	5.44	5.47	5.49	0.06	19.18	20.36	19.56	0.79	150.0	1.89	1.30	1.25	1.27
160.0	5.49	5.54	5.57	0.08	18.72	19.94	19.13	0.93	160.0	1.92	1.29	1.25	1.26
170.0	5.61	5.65	5.68	0.07	18.32	19.56	18.71	0.93	170.0	1.97	1.29	1.24	1.26
180.0	5.65	5.69	5.72	0.07	18.02	19.27	18.38	0.97	180.0	2.02	1.29	1.24	1.26
190.0	5.65	5.68	5.70	0.05	17.74	18.97	18.06	1.01	190.0	2.06	1.29	1.25	1.26
200.0	5.68	5.73	5.77	0.08	17.50	18.69	17.82	1.03	200.0	2.09	1.28	1.25	1.25
205.0	5.71	5.76	5.80	0.09	17.43	18.57	17.74	1.16	205.0	2.11	1.28	1.25	1.25
210.0	5.75	5.80	5.83	0.08	17.37	18.47	17.64	1.09	210.0	2.13	1.28	1.25	1.25
215.0	5.80	5.83	5.86	0.06	17.32	18.38	17.56	1.07	215.0	2.16	1.27	1.25	1.25
220.0	5.83	5.86	5.88	0.06	17.29	18.28	17.49	1.26	220.0	2.19	1.27	1.26	1.25
225.0	5.87	5.89	5.92	0.05	17.24	18.20	17.43	1.22	225.0	2.21	1.26	1.26	1.26
230.0	5.89	5.91	5.95	0.06	17.21	18.10	17.39	1.16	230.0	2.23	1.26	1.26	1.26
235.0	5.87	5.93	5.96	0.09	17.20	18.02	17.36	1.36	235.0	2.24	1.26	1.26	1.26
240.0	5.86	5.91	5.95	0.09	17.18	17.96	17.33	1.35	240.0	2.25	1.26	1.26	1.27
245.0	5.83	5.88	5.93	0.10	17.19	17.91	17.32	1.44	245.0	2.26	1.25	1.27	1.27
250.0	5.83	5.88	5.92	0.10	17.17	17.85	17.28	1.33	250.0	2.28	1.25	1.27	1.28
255.0	5.85	5.90	5.95	0.09	17.16	17.79	17.23	1.41	255.0	2.30	1.25	1.28	1.29
260.0	5.90	5.94	5.99	0.09	17.15	17.74	17.19	1.48	260.0	2.33	1.25	1.28	1.29
265.0	5.95	6.00	6.05	0.09	17.17	17.71	17.16	1.43	265.0	2.36	1.25	1.29	1.30
270.0	6.02	6.06	6.09	0.07	17.20	17.69	17.16	1.45	270.0	2.39	1.25	1.29	1.31
280.0	6.04	6.09	6.13	0.09	17.27	17.68	17.16	1.47	280.0	2.43	1.26	1.31	1.33
285.0	6.03	6.09	6.13	0.09	17.30	17.66	17.15	1.49	285.0	2.44	1.26	1.31	1.34
290.0	6.04	6.09	6.15	0.11	17.35	17.64	17.15	1.62	290.0	2.46	1.26	1.32	1.35
295.0	6.06	6.10	6.15	0.09	17.42	17.65	17.17	1.71	295.0	2.47	1.26	1.32	1.36
300.0	6.09	6.14	6.19	0.10	17.50	17.65	17.20	1.55	300.0	2.47	1.26	1.33	1.37
315.0	6.14	6.19	6.24	0.10	17.81	17.69	17.31	1.77	315.0	2.46	1.27	1.35	1.39
330.0	6.15	6.20	6.24	0.10	18.25	17.79	17.48	1.89	330.0	2.43	1.27	1.36	1.41
345.0	6.14	6.19	6.26	0.12	18.90	17.96	17.81	1.94	345.0	2.41	1.27	1.37	1.41
360.0	6.18	6.22	6.28	0.10	19.67	18.14	18.14	2.15	360.0	2.34	1.25	1.37	1.39
375.0	6.18	6.24	6.29	0.11	20.73	18.43	18.62	2.20	375.0	2.25	1.24	1.36	1.37
390.0	6.10	6.17	6.23	0.13	22.13	18.73	19.17	2.41	390.0	2.18	1.22	1.35	1.34
405.0	6.10	6.14	6.21	0.11	24.17	19.13	19.88	2.55	405.0	2.08	1.20	1.33	1.31
420.0	6.11	6.16	6.23	0.12	27.12	19.54	20.78	2.79	420.0	1.97	1.19	1.31	1.29
435.0	6.10	6.15	6.22	0.12	30.73	20.01	21.81	3.05	435.0	1.91	1.18	1.28	1.27
450.0	6.07	6.15	6.22	0.14	30.02	20.48	22.77	3.26	450.0	1.83	1.16	1.25	1.25

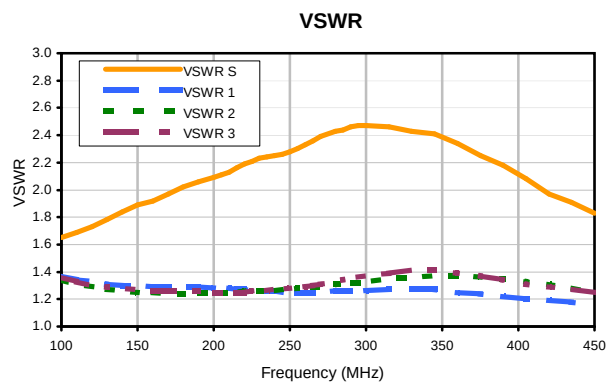
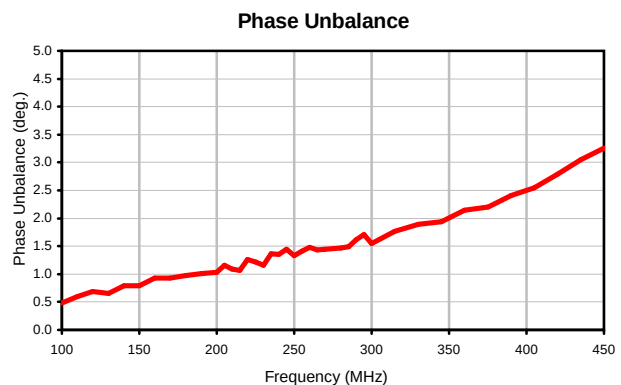
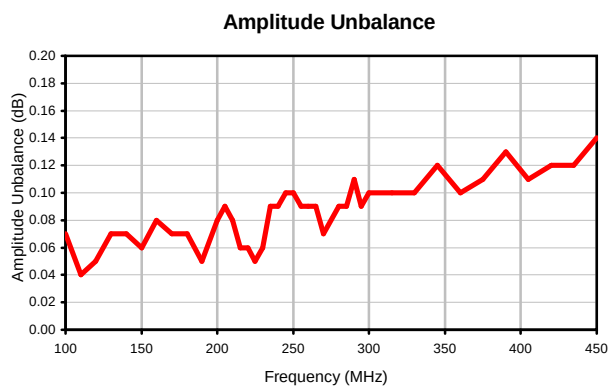
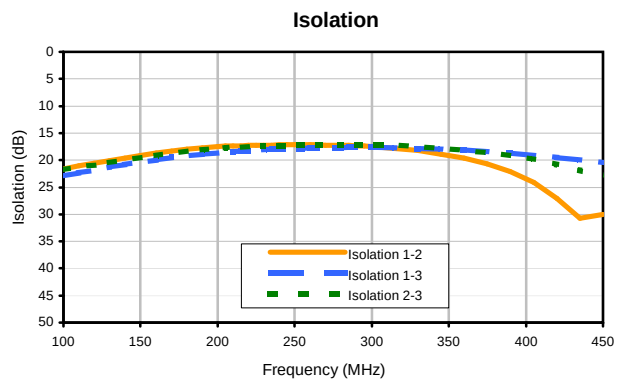
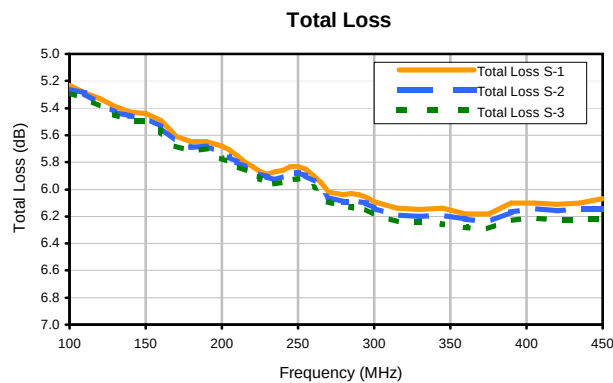
¹ Total Loss = Insertion Loss+ 4.8dB Splitter Loss

REV. X2
ZA3CS-450-9W
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3 Way-0° Power Splitter/Combiner

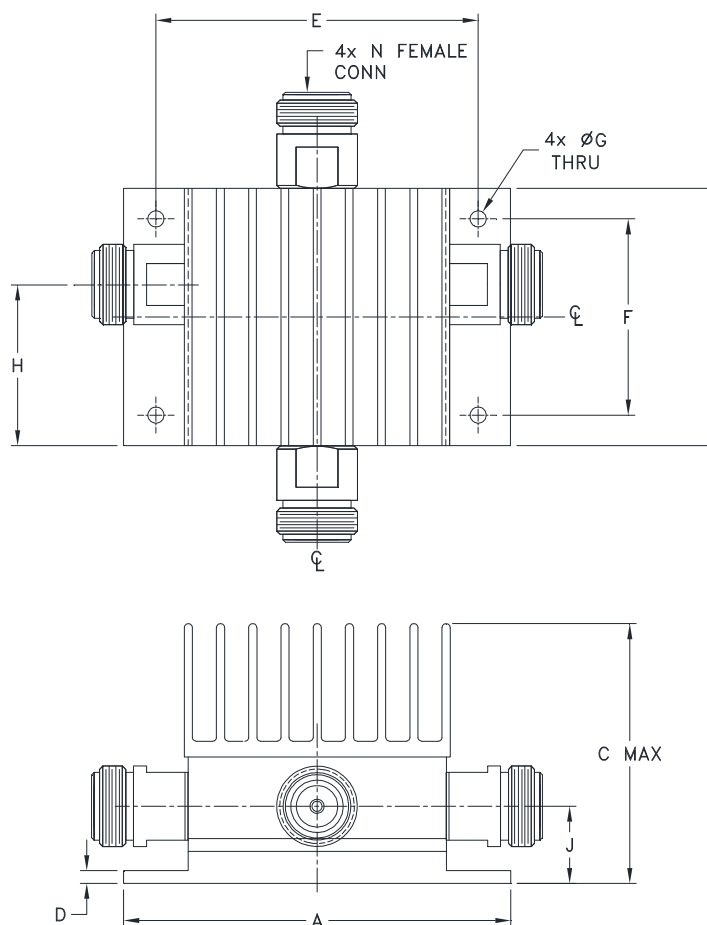
ZA3CS-450-9W

Typical Performance Curves



REV. X2
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100627
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Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	WT. GRAMS
AX255-1	3.00 (76.28)	2.00 (50.80)	2.020 (51.30)	.100 (2.54)	2.500 (63.50)	1.525 (38.74)	.125 (3.175)	1.25 (31.7)	.600 (15.24)	350

Dimensions are in inches (mm). Tolerances: 2 Pl. ± 0.03 ; 3 Pl. ± 0.015

Notes:

1. Case material: Aluminum alloy.
2. Case Finish:
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Heat sink finish: Black anodize.



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Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 90° 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