

Coaxial High Power Combiner

ZA3CS-450-9W-N

3 Way-0° 50Ω 100 to 450 MHz

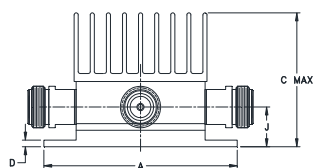
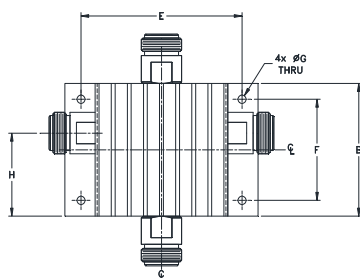
Maximum Ratings

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

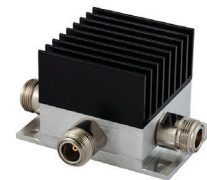
G	H	J	wt
.125	1.25	.600	grams
3.175	31.75	15.24	350

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

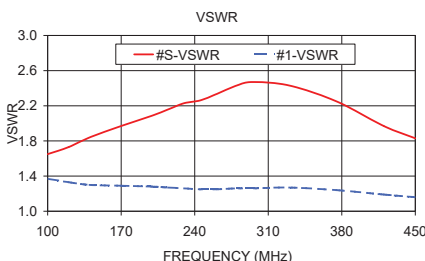
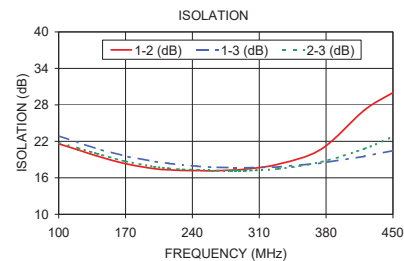
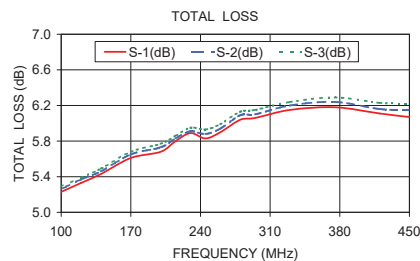
1. Over -55°C to +55°C. Derate linearly to 20% of rating at 90°C

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.
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/MCLStore/terms.jsp



www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

REV. OR
ECO-008153
ZA3CS-450-9W-N
HY/CP/PS
210701
Page 1 of 1

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

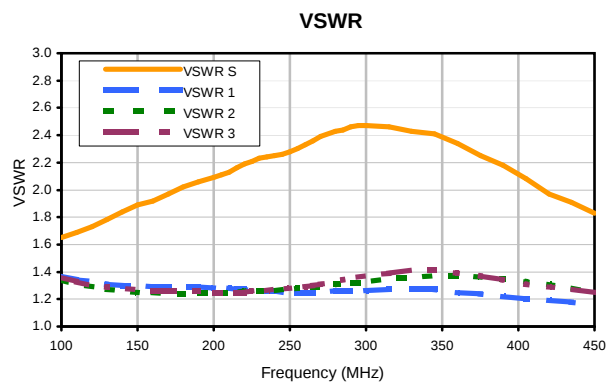
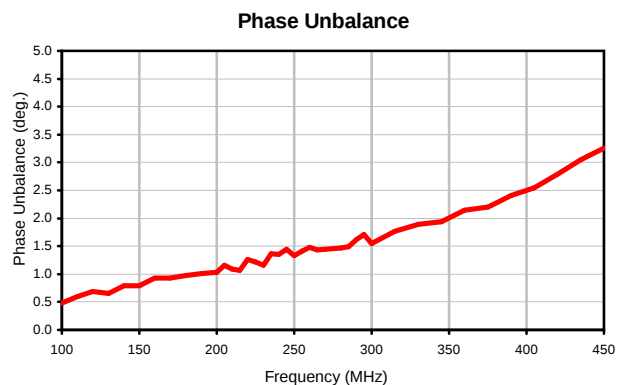
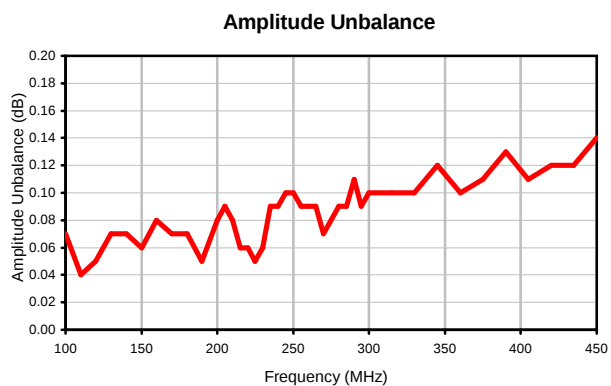
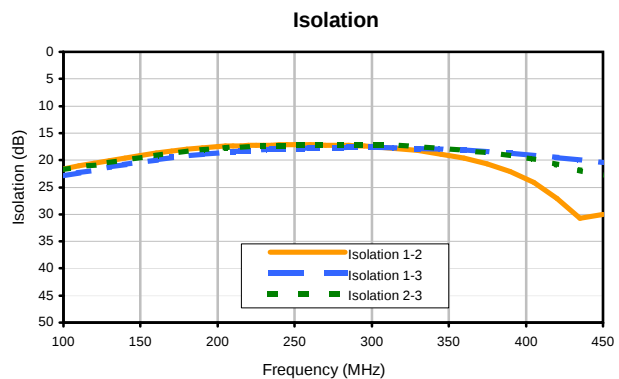
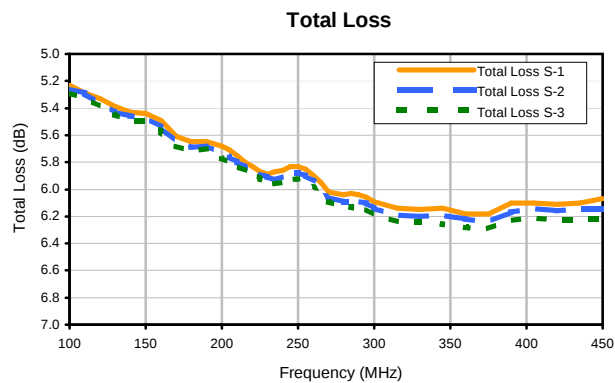
¹ Total Loss = Insertion Loss+ 4.8dB Splitter Loss

REV. X2
ZA3CS-450-9W
100627
Page 1 of 1

3 Way-0° Power Splitter/Combiner

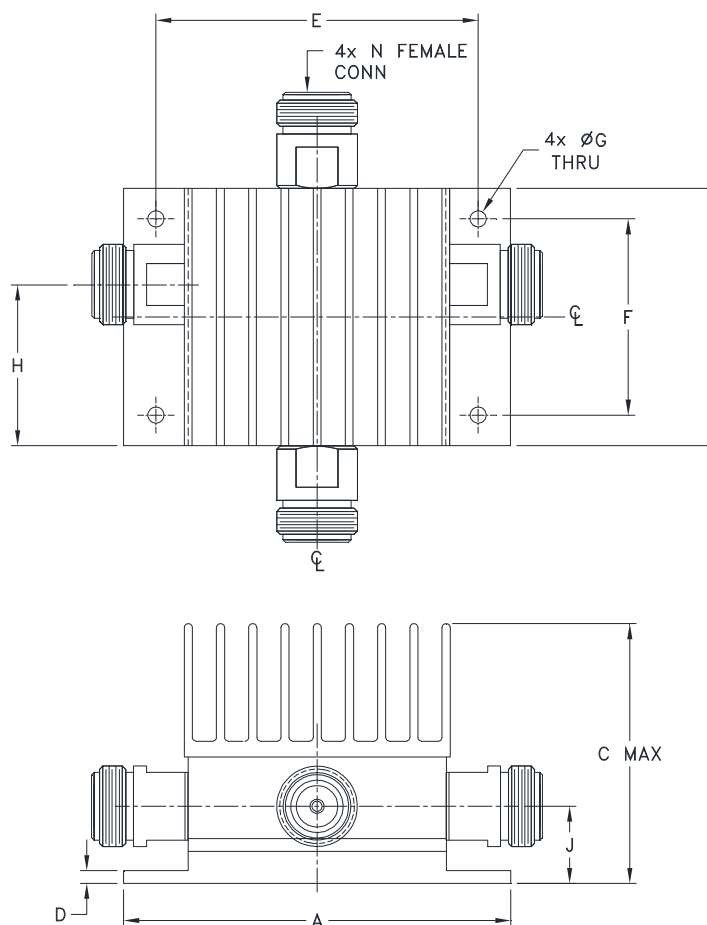
ZA3CS-450-9W

Typical Performance Curves



REV. X2
ZA3CS-450-9W
100627
Page 1 of 1

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.



INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified



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 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