

High Power Combiner

ZB4CS-870-10W

4 Way-0° 50Ω 570 to 870 MHz

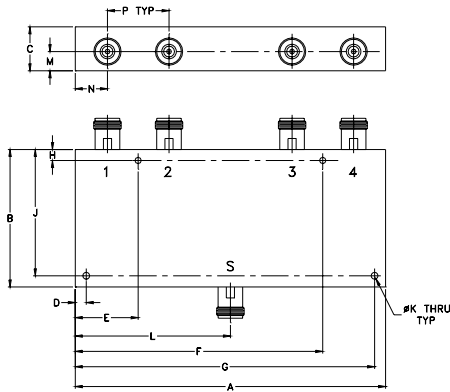
Maximum Ratings

Operating Temperature	-55°C to 90°C
Storage Temperature	-55°C to 100°C
DC Current	600 A (150mA for each port)
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

Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H
7.06	3.13	1.00	.250	1.430	5.630	6.810	.250
179.32	79.50	25.40	6.35	36.32	143.00	172.97	6.35

J	K	L	M	N	P	wt
2.875	.156	3.53	.44	.73	1.40	grams
73.03	3.96	89.66	11.18	18.54	35.56	810

Features

- high power, up to 10W input power
- low insertion loss, 0.3 dB typ.
- high isolation, 28 dB typ.
- good sum-port VSWR, 1.1 typ.
- good VSWR at ports 1-4, 1.15 typ.

Applications

- tv broadcast
- UHF

High Power Combiner Electrical Specifications

FREQ. RANGE (MHz)	ISOLATION (dB)		INSERTION LOSS (dB) ABOVE 6.0 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.
570-870	28	20	0.35	0.8	0.6	3.0	0.1	0.3	10	20

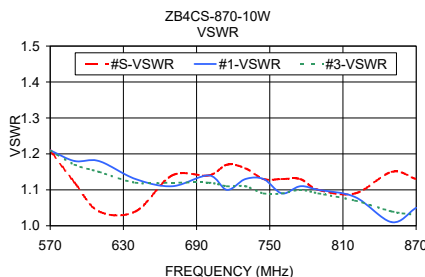
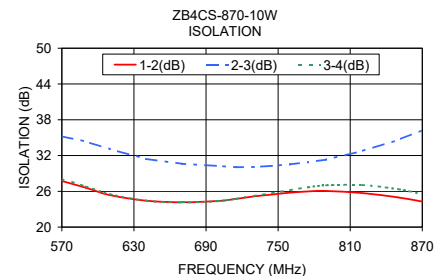
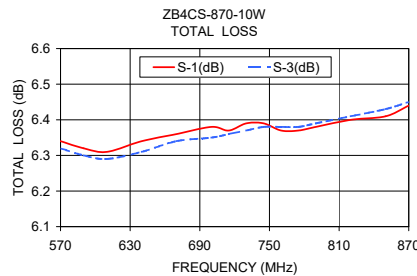
1. Over -55°C to +55°C. Derate linearly to 20% of rating at 90°C

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

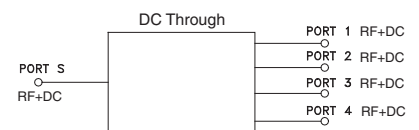
Typical Performance Data

Freq. (MHz)	Total Loss ¹ (dB)				Amp. Unbal. (dB)	Isolation (dB)			Phase Unbal. (deg.)	VSWR S	VSWR 1	VSWR 2	VSWR 3	VSWR 4
	S-1	S-2	S-3	S-4		1-2	2-3	3-4						
570.00	6.34	6.36	6.32	6.31	0.05	27.74	35.22	28.08	0.61	1.21	1.21	1.19	1.21	1.22
590.00	6.32	6.34	6.30	6.29	0.05	26.60	34.35	26.81	0.65	1.12	1.18	1.16	1.17	1.16
610.00	6.31	6.34	6.29	6.29	0.05	25.37	33.07	25.51	0.64	1.04	1.18	1.16	1.15	1.15
640.00	6.34	6.37	6.31	6.30	0.07	24.43	31.43	24.43	0.63	1.04	1.13	1.11	1.12	1.15
670.00	6.36	6.39	6.34	6.32	0.06	24.17	30.62	24.13	0.65	1.14	1.11	1.09	1.12	1.14
700.00	6.38	6.41	6.35	6.34	0.07	24.38	30.25	24.34	0.64	1.14	1.14	1.11	1.12	1.12
715.00	6.37	6.41	6.36	6.34	0.06	24.73	30.04	24.75	0.67	1.17	1.10	1.10	1.11	1.09
730.00	6.39	6.42	6.37	6.36	0.07	25.15	30.09	25.23	0.71	1.16	1.13	1.13	1.11	1.09
745.00	6.39	6.42	6.38	6.36	0.06	25.47	30.27	25.69	0.67	1.13	1.13	1.09	1.09	1.10
760.00	6.37	6.42	6.38	6.35	0.07	25.78	30.53	26.21	0.71	1.13	1.09	1.11	1.09	1.10
775.00	6.37	6.42	6.38	6.36	0.07	25.98	30.89	26.68	0.71	1.13	1.11	1.10	1.10	1.11
790.00	6.38	6.43	6.39	6.36	0.07	26.06	31.32	27.01	0.76	1.10	1.10	1.06	1.09	1.11
820.00	6.40	6.45	6.41	6.39	0.07	25.70	32.76	27.06	0.80	1.09	1.08	1.05	1.07	1.07
850.00	6.41	6.47	6.43	6.39	0.07	24.97	34.63	26.35	0.91	1.15	1.01	1.07	1.04	1.04
870.00	6.44	6.51	6.45	6.42	0.09	24.28	36.25	25.50	0.91	1.13	1.05	1.01	1.03	1.01

1. Total Loss = Insertion Loss + 6dB 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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4 Way-0° Power Splitter/Combiner ZB4CS-870-10W

Typical Performance Data

FREQ. (MHz)	TOTAL LOSS ¹				AMP. UNBAL. (dB)	ISOLATION			PHASE UNBAL. (deg.)	FREQ. (MHz)	VSWR				
	S-1	S-2	S-3	S-4		1-2	2-3	3-4			S	1	2	3	4
570.0	6.34	6.36	6.32	6.31	0.05	27.74	35.22	28.08	0.61	570.0	1.21	1.21	1.19	1.21	1.22
580.0	6.32	6.35	6.30	6.29	0.06	27.21	34.80	27.46	0.65	580.0	1.16	1.20	1.18	1.19	1.19
590.0	6.32	6.34	6.30	6.29	0.05	26.60	34.35	26.81	0.65	590.0	1.12	1.18	1.16	1.17	1.16
600.0	6.32	6.34	6.30	6.29	0.05	25.94	33.73	26.12	0.66	600.0	1.08	1.18	1.15	1.16	1.16
610.0	6.31	6.34	6.29	6.29	0.05	25.37	33.07	25.51	0.64	610.0	1.04	1.18	1.16	1.15	1.15
620.0	6.32	6.34	6.30	6.29	0.06	24.90	32.42	25.00	0.66	620.0	1.01	1.15	1.14	1.14	1.15
630.0	6.33	6.36	6.30	6.29	0.07	24.63	31.87	24.64	0.69	630.0	1.01	1.12	1.11	1.12	1.14
640.0	6.34	6.37	6.31	6.30	0.07	24.43	31.43	24.43	0.63	640.0	1.04	1.13	1.11	1.12	1.15
650.0	6.35	6.37	6.32	6.31	0.07	24.28	31.06	24.26	0.63	650.0	1.09	1.15	1.13	1.12	1.15
660.0	6.36	6.38	6.33	6.32	0.06	24.20	30.79	24.16	0.70	660.0	1.13	1.14	1.12	1.12	1.15
670.0	6.36	6.39	6.34	6.32	0.06	24.17	30.62	24.13	0.65	670.0	1.14	1.11	1.09	1.12	1.14
680.0	6.36	6.39	6.35	6.33	0.06	24.14	30.56	24.09	0.73	680.0	1.13	1.11	1.11	1.12	1.13
690.0	6.39	6.42	6.35	6.34	0.08	24.23	30.37	24.19	0.63	690.0	1.12	1.14	1.13	1.12	1.13
700.0	6.38	6.41	6.35	6.34	0.07	24.38	30.25	24.34	0.64	700.0	1.14	1.14	1.11	1.12	1.12
705.0	6.37	6.41	6.36	6.33	0.07	24.46	30.17	24.44	0.66	705.0	1.16	1.13	1.09	1.11	1.11
710.0	6.36	6.40	6.36	6.34	0.07	24.61	30.09	24.59	0.63	710.0	1.17	1.11	1.09	1.11	1.10
715.0	6.37	6.41	6.36	6.34	0.06	24.73	30.04	24.75	0.67	715.0	1.17	1.10	1.10	1.11	1.09
720.0	6.38	6.42	6.37	6.34	0.07	24.87	30.06	24.91	0.64	720.0	1.17	1.10	1.12	1.11	1.09
725.0	6.38	6.42	6.38	6.35	0.08	25.00	30.04	25.07	0.69	725.0	1.17	1.11	1.13	1.11	1.09
730.0	6.39	6.42	6.37	6.36	0.07	25.15	30.09	25.23	0.71	730.0	1.16	1.13	1.13	1.11	1.09
735.0	6.39	6.42	6.38	6.36	0.06	25.26	30.13	25.38	0.71	735.0	1.15	1.14	1.12	1.10	1.09
740.0	6.39	6.42	6.37	6.35	0.07	25.37	30.17	25.58	0.76	740.0	1.13	1.14	1.10	1.10	1.09
745.0	6.39	6.42	6.38	6.36	0.06	25.47	30.27	25.69	0.67	745.0	1.13	1.13	1.09	1.09	1.10
750.0	6.38	6.42	6.38	6.35	0.06	25.56	30.37	25.90	0.64	750.0	1.12	1.11	1.09	1.09	1.10
755.0	6.37	6.42	6.38	6.35	0.07	25.64	30.47	26.03	0.66	755.0	1.13	1.10	1.10	1.09	1.10
760.0	6.37	6.42	6.38	6.35	0.07	25.78	30.53	26.21	0.71	760.0	1.13	1.09	1.11	1.09	1.10
765.0	6.38	6.43	6.38	6.35	0.08	25.85	30.71	26.35	0.72	765.0	1.13	1.09	1.12	1.10	1.11
770.0	6.37	6.42	6.39	6.35	0.07	25.93	30.83	26.52	0.68	770.0	1.13	1.10	1.11	1.10	1.11
775.0	6.37	6.42	6.38	6.36	0.07	25.98	30.89	26.68	0.71	775.0	1.13	1.11	1.10	1.10	1.11
780.0	6.38	6.43	6.39	6.36	0.06	26.05	31.03	26.81	0.78	780.0	1.12	1.12	1.08	1.10	1.11
785.0	6.39	6.43	6.39	6.36	0.07	26.04	31.16	26.98	0.76	785.0	1.11	1.11	1.06	1.10	1.11
790.0	6.38	6.43	6.39	6.36	0.07	26.06	31.32	27.01	0.76	790.0	1.10	1.10	1.06	1.09	1.11
800.0	6.39	6.43	6.39	6.37	0.07	25.96	31.75	27.12	0.75	800.0	1.08	1.07	1.09	1.09	1.10
810.0	6.40	6.45	6.40	6.38	0.07	25.85	32.27	27.12	0.81	810.0	1.07	1.06	1.09	1.08	1.08
820.0	6.40	6.45	6.41	6.39	0.07	25.70	32.76	27.06	0.80	820.0	1.09	1.08	1.05	1.07	1.07
830.0	6.40	6.46	6.41	6.38	0.07	25.51	33.50	26.94	0.92	830.0	1.12	1.08	1.02	1.05	1.06
840.0	6.41	6.47	6.42	6.39	0.08	25.27	33.99	26.70	0.84	840.0	1.15	1.05	1.06	1.04	1.05
850.0	6.41	6.47	6.43	6.39	0.07	24.97	34.63	26.35	0.91	850.0	1.15	1.01	1.07	1.04	1.04
860.0	6.42	6.49	6.44	6.40	0.08	24.59	35.39	25.94	0.84	860.0	1.13	1.04	1.05	1.03	1.02
870.0	6.44	6.51	6.45	6.42	0.09	24.28	36.25	25.50	0.91	870.0	1.13	1.05	1.01	1.03	1.01

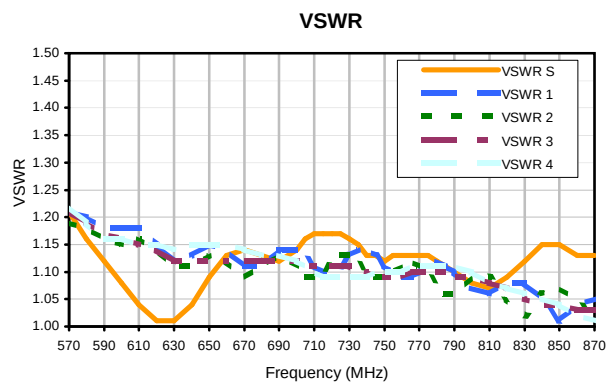
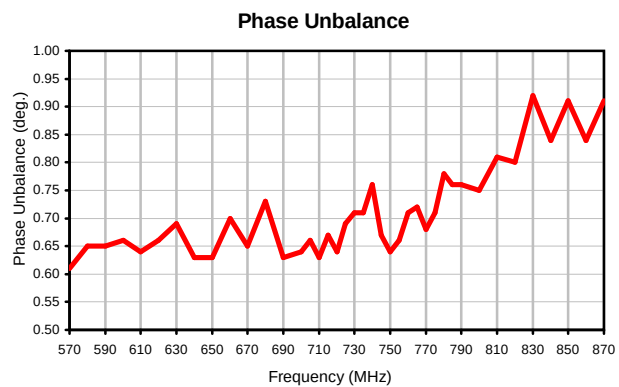
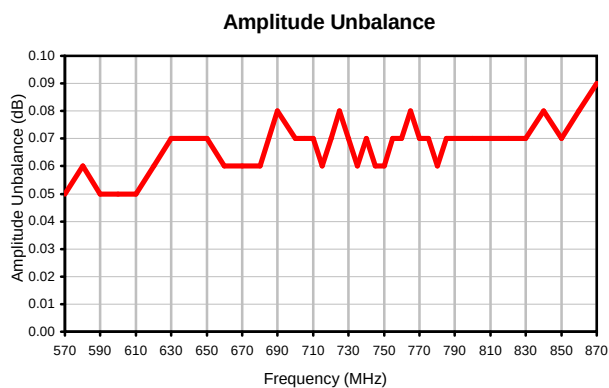
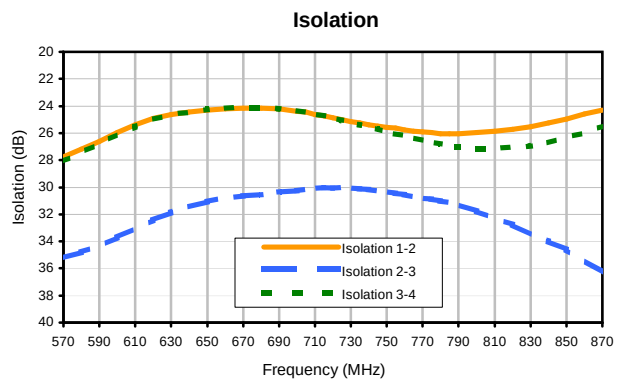
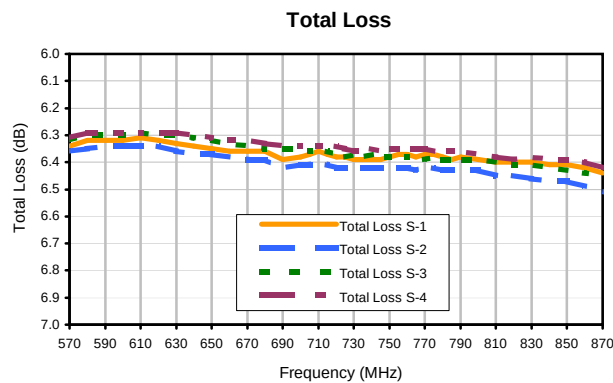
¹ Total Loss = Insertion Loss+ 6dB Splitter Loss

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4 Way-0° Power Splitter/Combiner

ZB4CS-870-10W

Typical Performance Curves



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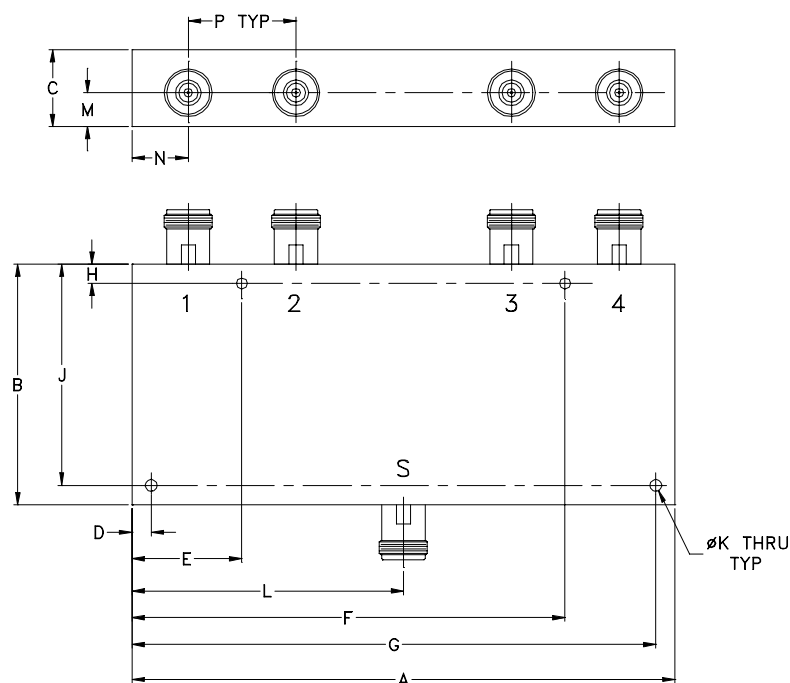
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Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
Z689	7.06 (179.32)	3.13 (79.50)	1.00 (25.40)	.250 (6.35)	1.430 (36.32)	5.630 (143.00)	6.810 (172.97)	.250 (6.35)	2.875 (73.03)	.156 (3.96)	3.53 (89.66)	.44 (11.18)	.73 (18.54)

CASE#	P	WT.GRAMS
Z689	1.40 (35.56)	810

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

Notes:

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



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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