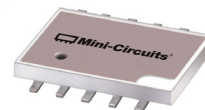


# Surface Mount Power Splitter/Combiner

## QBA-20W+ QBA-20W

2 Way-90° 50Ω 1500 to 2200 MHz



CASE STYLE: SM33

### Maximum Ratings

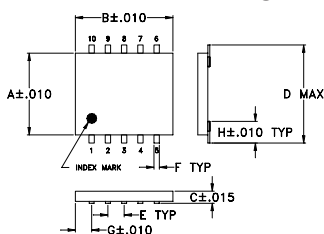
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C

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

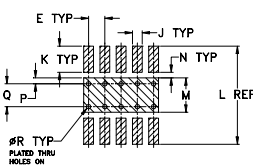
### Pin Connections

SUM PORT	1
PORT 1 (+90°)	10
PORT 2 (0°)	6
GROUND	2,3,4,7,8,9
50 OHM TERM EXTERNAL	5

### Outline Drawing



### PCB Land Pattern

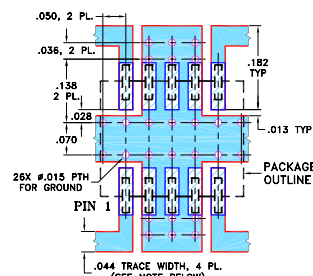


Suggested Layout,  
Tolerance to be within ±.002  
ADJACENT GROUND PINS SHALL BE CONNECTED  
TO EACH OTHER AND TO GROUND PAD

### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	
.250	.300	.050	.310	.050	.015	.050	.066	
6.35	7.62	1.27	7.87	1.27	0.38	1.27	1.68	
J	K	L	M	N	P	Q	R	wt
.030	.095	.330	.100	.020	.015	.070	.014	grams
0.76	2.41	8.38	2.54	0.51	0.38	1.78	0.36	0.2

### Demo Board MCL P/N: TB-115+ Suggested PCB Layout (PL-004)



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4550B WITH DIELECTRIC THICKNESS .020 ± .0015; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.  
■ DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
■ DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### 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-Circuit's 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-Circuit's website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)

### Features

- insertion loss, 0.45 dB typ.
- high power capability, 25W
- good isolation, 23 dB typ.
- ceramic body, good for heat dissipation
- solder plated leads for excellent solderability
- aqueous washable
- protected by U.S. Patent 5,534,830

### Applications

- PCS
- GSM
- GPS
- VSAT

### Electrical Specifications

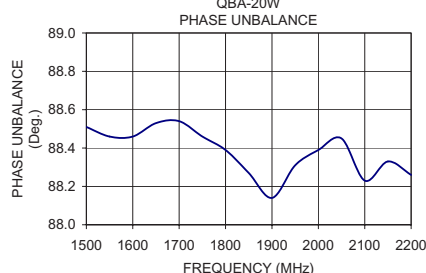
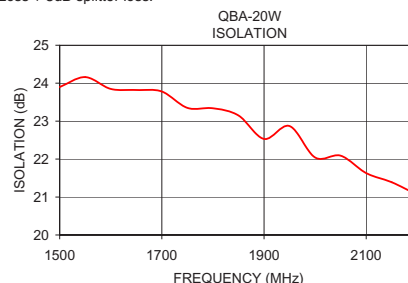
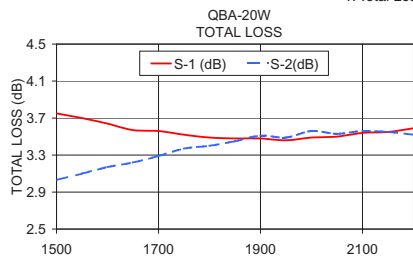
FREQ. RANGE (MHz)	ISOLATION (dB)		INSERTION LOSS <sup>1</sup> (dB) Avg. of Coupled Outputs ABOVE 3 dB			PHASE UNBALANCE (Degrees)	AMPLITUDE UNBALANCE (dB)	INPUT POWER <sup>2</sup> (W)
	Typ.	Min.	$f_L$	$f_U$	$\sigma$			
$f_L$ - $f_U$			$\bar{X}$	$\bar{X}$	$\sigma$	Max.	Max.	below 25°C
1500-2200	23	16	0.41	0.58	0.02	5.0	1.2	25

1. Includes test fixture losses.  
2. Derate linearly to 5W at 100°C  
Thermal compound may be applied to decrease body temperature. See application note AN-10-007

### Typical Performance Data

Frequency (MHz)	Total Loss <sup>1</sup> (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
1500.00	3.75	3.03	0.72	23.90	88.51	1.16	1.21	1.19
1550.00	3.70	3.10	0.60	24.16	88.46	1.16	1.20	1.21
1600.00	3.64	3.17	0.48	23.85	88.46	1.17	1.18	1.20
1650.00	3.57	3.22	0.34	23.82	88.53	1.17	1.18	1.22
1700.00	3.56	3.29	0.27	23.78	88.54	1.17	1.18	1.21
1750.00	3.52	3.37	0.16	23.35	88.46	1.17	1.19	1.21
1800.00	3.49	3.40	0.08	23.34	88.39	1.17	1.18	1.22
1850.00	3.48	3.45	0.03	23.15	88.27	1.18	1.16	1.21
1900.00	3.48	3.51	0.03	22.53	88.14	1.16	1.17	1.21
1950.00	3.46	3.49	0.03	22.87	88.31	1.17	1.18	1.22
2000.00	3.49	3.56	0.07	22.04	88.39	1.16	1.19	1.21
2050.00	3.50	3.53	0.03	22.09	88.45	1.17	1.18	1.24
2100.00	3.54	3.56	0.03	21.63	88.23	1.16	1.17	1.23
2150.00	3.55	3.55	0.00	21.39	88.33	1.16	1.18	1.24
2200.00	3.59	3.52	0.06	21.06	88.26	1.15	1.20	1.25

1. Total Loss = Insertion Loss + 3dB splitter loss.



### electrical schematic

