

Surface Mount

Power Splitter/Combiner

2 Way-0° 50Ω

1 to 550 MHz

SCP-2-1A+ SCP-2-1A



CASE STYLE: YY101

PRICE: \$10.45 ea. QTY(10-49)

Maximum Ratings

Operating Temperature -40°C to 85°C

Storage Temperature -55°C to 100°C

Power Input (as a splitter) 1W max.

Internal Dissipation 0.125W max.

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

Pin Connections

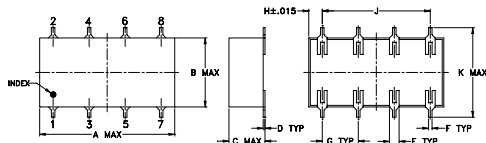
SUM PORT 1

PORT 1 5

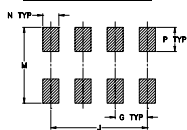
PORT 2 6

GROUND EXT. 2,3,4,7,8

Outline Drawing



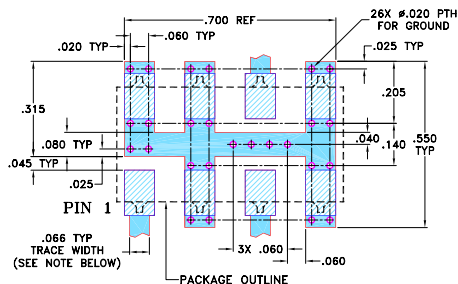
PCB Land Pattern

Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch)

A	B	C	D	E	F	G
.75	.38	.20	.010	.050	.020	.200
19.05	9.65	5.08	0.25	1.27	0.51	5.08
H	J	K	M	N	P	wt
.075	.600	.450	.470	.100	.150	grams
1.91	15.24	11.43	11.94	2.54	3.81	1.6

Demo Board MCL P/N: TB-50+ Suggested PCB Layout (PL-060)



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" ± .002". 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.
3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Features

- wideband, 1 to 550 MHz
- low insertion loss, 0.3 dB typ.
- good isolation, 25 dB typ.
- good amplitude unbalance, 0.05 dB typ.

Applications

- VHF/UHF
- communications receivers & transmitters
- instrumentation

+ RoHS compliant in accordance
with EU Directive (2002/95/EC)

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

Electrical Specifications

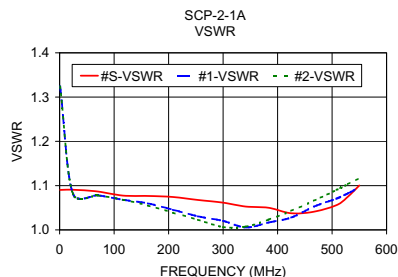
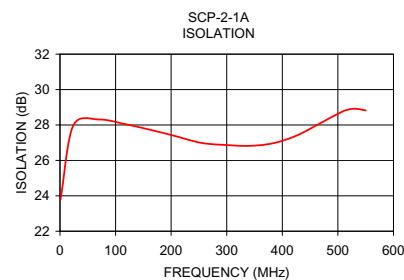
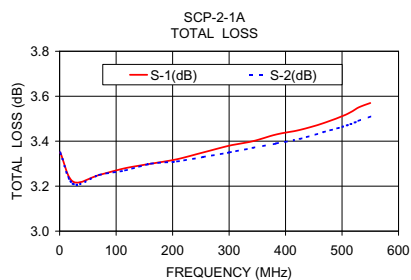
FREQ. RANGE (MHz)	ISOLATION (dB)			INSERTION LOSS (dB) ABOVE 3.0 dB			PHASE UNBALANCE (Degrees)			AMPLITUDE UNBALANCE (dB)								
	L	M	U	L	M	U	L	M	U	L	M	U						
	Typ. Min.	Typ. Min.	Typ. Min.	Typ. Max.	Typ. Max.	Typ. Max.	Max.	Max.	Max.	Max.	Max.	Max.						
f _L -f _U	25	20	25	20	25	20	0.3	0.6	0.3	0.6	0.7	1.3	2.0	2.0	3.0	0.15	0.2	0.4

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]

Typical Performance Data

Frequency (MHz)	Total Loss ¹ (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
1.00	3.35	3.35	0.00	23.78	0.02	1.09	1.32	1.32
24.00	3.22	3.21	0.00	27.98	0.00	1.09	1.08	1.08
70.00	3.25	3.25	0.00	28.31	0.05	1.09	1.08	1.08
116.00	3.28	3.27	0.01	28.06	0.07	1.08	1.07	1.07
162.00	3.30	3.30	0.01	27.73	0.11	1.08	1.06	1.05
208.00	3.32	3.31	0.01	27.37	0.14	1.07	1.05	1.04
254.00	3.35	3.33	0.02	26.99	0.16	1.07	1.03	1.02
300.00	3.38	3.35	0.02	26.87	0.17	1.06	1.02	1.01
341.67	3.40	3.37	0.03	26.82	0.19	1.05	1.01	1.01
383.33	3.43	3.39	0.03	26.97	0.19	1.05	1.02	1.02
425.00	3.45	3.41	0.04	27.39	0.20	1.04	1.03	1.04
466.67	3.48	3.44	0.05	28.07	0.21	1.04	1.05	1.07
508.33	3.52	3.47	0.05	28.76	0.18	1.06	1.07	1.09
529.17	3.55	3.49	0.06	28.92	0.17	1.08	1.08	1.10
550.00	3.57	3.51	0.06	28.82	0.18	1.10	1.10	1.12

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



electrical schematic



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IF/RF MICROWAVE COMPONENTS

For detailed performance specs
& shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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.

REV. A
M127604
SCP-2-1A
HY/TD/CP
100611

2 Way-0° Power Splitter/Combiner

SCP-2-1A+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = +25°C

FREQ. (MHz)	TOTAL LOSS ¹ (dB)		AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION (dB)	VSWR		
	S-1	S-2				S	(:1) 1	2
1	3.37	3.36	0.01	0.01	25.97	1.08	1.29	1.29
2	3.31	3.30	0.01	0.00	26.71	1.08	1.22	1.22
3	3.26	3.25	0.01	0.01	27.46	1.08	1.17	1.16
4	3.24	3.23	0.01	0.01	27.63	1.08	1.14	1.14
5	3.23	3.22	0.01	0.00	27.62	1.08	1.12	1.12
6	3.22	3.21	0.01	0.00	27.61	1.08	1.10	1.10
7	3.21	3.20	0.01	0.01	27.60	1.08	1.10	1.09
8	3.21	3.20	0.01	0.00	27.62	1.08	1.09	1.09
9	3.22	3.21	0.01	0.04	27.69	1.08	1.08	1.08
10	3.22	3.22	0.00	0.08	27.76	1.08	1.08	1.08
11	3.22	3.23	0.00	0.08	27.79	1.08	1.08	1.07
12	3.22	3.23	0.01	0.09	27.83	1.08	1.07	1.07
13	3.22	3.23	0.01	0.08	27.83	1.08	1.07	1.07
14	3.22	3.22	0.00	0.08	27.81	1.08	1.07	1.07
15	3.22	3.22	0.00	0.07	27.81	1.08	1.07	1.07
20	3.22	3.21	0.00	0.03	27.87	1.08	1.06	1.06
25	3.22	3.21	0.01	0.00	27.96	1.08	1.06	1.06
50	3.24	3.23	0.01	0.03	28.18	1.09	1.06	1.06
75	3.26	3.25	0.02	0.04	28.21	1.09	1.05	1.06
100	3.28	3.26	0.02	0.08	28.11	1.09	1.05	1.05
125	3.29	3.27	0.02	0.07	27.86	1.09	1.05	1.05
150	3.31	3.28	0.03	0.06	27.73	1.09	1.04	1.04
175	3.32	3.30	0.03	0.08	27.53	1.08	1.04	1.04
200	3.33	3.31	0.03	0.11	27.40	1.08	1.03	1.03
225	3.35	3.32	0.03	0.15	27.26	1.07	1.02	1.03
250	3.36	3.33	0.03	0.19	27.13	1.06	1.02	1.02
275	3.37	3.34	0.03	0.19	27.19	1.05	1.01	1.01
300	3.38	3.35	0.03	0.25	27.34	1.04	1.02	1.02
325	3.40	3.36	0.04	0.28	27.48	1.03	1.02	1.02
350	3.41	3.37	0.04	0.33	27.74	1.02	1.03	1.03
375	3.43	3.39	0.04	0.37	28.10	1.02	1.05	1.05
400	3.44	3.40	0.04	0.45	28.65	1.02	1.06	1.06
425	3.46	3.41	0.05	0.49	29.30	1.03	1.07	1.08
450	3.48	3.43	0.05	0.53	30.18	1.05	1.09	1.09
475	3.51	3.46	0.05	0.61	31.07	1.08	1.11	1.11
500	3.54	3.48	0.06	0.66	31.86	1.10	1.12	1.13
525	3.57	3.51	0.06	0.71	32.03	1.13	1.14	1.15
550	3.61	3.54	0.06	0.80	31.25	1.17	1.16	1.17
575	3.65	3.58	0.07	0.84	29.54	1.21	1.19	1.19
600	3.70	3.63	0.07	0.94	27.45	1.26	1.21	1.21
625	3.77	3.69	0.07	0.99	25.32	1.31	1.23	1.23
650	3.84	3.76	0.07	1.08	23.29	1.38	1.26	1.26
675	3.93	3.85	0.08	1.18	21.42	1.45	1.29	1.29
700	4.04	3.95	0.08	1.27	19.70	1.54	1.32	1.31
725	4.17	4.08	0.09	1.38	18.12	1.64	1.35	1.34
750	4.33	4.24	0.09	1.53	16.67	1.76	1.38	1.37
775	4.52	4.42	0.09	1.66	15.32	1.90	1.42	1.40
800	4.74	4.65	0.09	1.76	14.08	2.07	1.46	1.43
825	5.02	4.92	0.09	1.91	12.94	2.26	1.50	1.47
850	5.34	5.24	0.10	2.06	11.90	2.48	1.54	1.50
875	5.73	5.63	0.10	2.24	10.94	2.75	1.59	1.54
900	6.17	6.08	0.10	2.45	10.09	3.05	1.63	1.57

¹ Total Loss = Insertion Loss+ 3dB Splitter Loss

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SCP-2-1A+
100627
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2 Way-0° Power Splitter/Combiner

SCP-2-1A+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = -40°C

FREQ. (MHz)	TOTAL LOSS ¹ (dB)		AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION (dB)	VSWR		
	S-1	S-2				S	(:1) 1	2
1	3.51	3.50	0.01	0.03	21.31	1.15	1.51	1.51
2	3.47	3.46	0.01	0.03	23.83	1.11	1.39	1.39
3	3.42	3.41	0.01	0.02	26.35	1.08	1.30	1.30
4	3.39	3.38	0.01	0.02	27.25	1.08	1.27	1.27
5	3.36	3.36	0.01	0.03	27.64	1.07	1.24	1.24
6	3.34	3.33	0.01	0.03	27.78	1.07	1.23	1.23
7	3.32	3.31	0.01	0.02	27.70	1.07	1.21	1.21
8	3.30	3.29	0.01	0.01	27.62	1.07	1.19	1.19
9	3.29	3.29	0.00	0.04	27.57	1.07	1.18	1.18
10	3.28	3.28	0.00	0.07	27.51	1.08	1.17	1.17
11	3.27	3.28	0.01	0.09	27.46	1.08	1.16	1.16
12	3.26	3.27	0.01	0.10	27.41	1.08	1.14	1.15
13	3.25	3.26	0.01	0.09	27.34	1.08	1.14	1.14
14	3.24	3.25	0.01	0.07	27.26	1.08	1.13	1.13
15	3.24	3.24	0.00	0.05	27.20	1.08	1.12	1.12
20	3.22	3.22	0.00	0.01	27.04	1.08	1.09	1.10
25	3.21	3.20	0.00	0.05	26.93	1.08	1.08	1.08
50	3.20	3.19	0.01	0.14	26.55	1.10	1.05	1.06
75	3.21	3.20	0.01	0.21	26.62	1.11	1.05	1.04
100	3.21	3.20	0.01	0.32	26.90	1.10	1.05	1.03
125	3.22	3.20	0.01	0.45	26.80	1.09	1.03	1.02
150	3.23	3.21	0.02	0.53	26.32	1.10	1.02	1.03
175	3.24	3.22	0.01	0.62	25.94	1.11	1.03	1.03
200	3.25	3.24	0.01	0.74	26.06	1.11	1.03	1.03
225	3.26	3.25	0.01	0.86	26.36	1.09	1.02	1.03
250	3.27	3.24	0.02	0.99	26.30	1.08	1.01	1.02
275	3.27	3.26	0.01	1.07	26.17	1.07	1.02	1.01
300	3.28	3.26	0.02	1.19	26.34	1.07	1.03	1.02
325	3.29	3.28	0.02	1.34	26.84	1.05	1.03	1.03
350	3.30	3.28	0.02	1.47	27.44	1.03	1.04	1.04
375	3.31	3.29	0.02	1.60	27.80	1.01	1.05	1.05
400	3.32	3.30	0.02	1.78	28.24	1.00	1.06	1.06
425	3.34	3.31	0.03	1.91	29.01	1.02	1.08	1.08
450	3.35	3.33	0.03	2.03	30.02	1.05	1.09	1.09
475	3.37	3.35	0.03	2.19	30.58	1.08	1.11	1.11
500	3.40	3.37	0.03	2.33	30.64	1.11	1.12	1.12
525	3.43	3.39	0.03	2.46	30.24	1.14	1.14	1.14
550	3.46	3.42	0.04	2.64	29.19	1.18	1.16	1.17
575	3.50	3.46	0.04	2.78	27.48	1.23	1.19	1.19
600	3.55	3.51	0.04	2.93	25.66	1.28	1.21	1.22
625	3.61	3.56	0.04	3.11	23.89	1.34	1.23	1.24
650	3.67	3.63	0.04	3.33	22.13	1.41	1.26	1.27
675	3.77	3.72	0.05	3.47	20.42	1.49	1.29	1.29
700	3.86	3.81	0.05	3.64	18.85	1.58	1.32	1.32
725	3.99	3.93	0.05	3.86	17.40	1.69	1.35	1.34
750	4.14	4.08	0.06	4.09	16.05	1.81	1.39	1.37
775	4.33	4.27	0.06	4.31	14.76	1.97	1.43	1.40
800	4.55	4.49	0.06	4.49	13.57	2.14	1.46	1.44
825	4.81	4.75	0.06	4.72	12.49	2.35	1.50	1.47
850	5.12	5.06	0.06	4.99	11.48	2.59	1.55	1.50
875	5.50	5.45	0.06	5.24	10.55	2.89	1.60	1.54
900	5.94	5.89	0.05	5.51	9.71	3.24	1.65	1.57

¹ Total Loss = Insertion Loss+ 3dB Splitter Loss

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2 Way-0° Power Splitter/Combiner

SCP-2-1A+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = +85°C

FREQ. (MHz)	TOTAL LOSS ¹ (dB)		AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION (dB)	VSWR		
	S-1	S-2				S	(:1) 1	2
1	3.30	3.29	0.01	0.03	28.66	1.08	1.19	1.19
2	3.28	3.28	0.01	0.04	29.30	1.08	1.16	1.15
3	3.26	3.26	0.00	0.05	29.93	1.07	1.12	1.12
4	3.26	3.25	0.00	0.04	30.12	1.07	1.11	1.11
5	3.26	3.26	0.00	0.03	30.17	1.07	1.11	1.11
6	3.26	3.26	0.00	0.02	30.21	1.07	1.10	1.10
7	3.26	3.26	0.00	0.02	30.23	1.07	1.10	1.10
8	3.26	3.26	0.00	0.01	30.27	1.07	1.10	1.10
9	3.27	3.27	0.00	0.04	30.37	1.07	1.10	1.09
10	3.28	3.28	0.01	0.09	30.47	1.07	1.10	1.09
11	3.28	3.29	0.01	0.10	30.54	1.07	1.10	1.09
12	3.28	3.29	0.01	0.11	30.61	1.07	1.10	1.09
13	3.28	3.29	0.01	0.11	30.65	1.07	1.10	1.09
14	3.28	3.29	0.01	0.10	30.67	1.07	1.10	1.09
15	3.28	3.29	0.01	0.09	30.70	1.07	1.10	1.09
20	3.28	3.28	0.00	0.09	30.93	1.07	1.10	1.09
25	3.29	3.28	0.00	0.06	31.23	1.07	1.10	1.09
50	3.31	3.31	0.01	0.18	32.41	1.07	1.10	1.08
75	3.34	3.33	0.01	0.28	32.25	1.07	1.10	1.09
100	3.35	3.34	0.01	0.38	31.05	1.08	1.08	1.10
125	3.37	3.36	0.02	0.47	30.10	1.08	1.08	1.10
150	3.39	3.37	0.02	0.59	30.14	1.08	1.08	1.08
175	3.40	3.38	0.02	0.69	30.34	1.07	1.07	1.08
200	3.41	3.39	0.02	0.77	29.97	1.06	1.07	1.07
225	3.43	3.41	0.02	0.85	29.14	1.06	1.05	1.06
250	3.44	3.42	0.02	0.93	28.59	1.05	1.04	1.05
275	3.46	3.44	0.02	1.03	28.74	1.04	1.04	1.04
300	3.47	3.44	0.03	1.09	29.01	1.04	1.04	1.04
325	3.49	3.46	0.03	1.18	28.95	1.03	1.05	1.04
350	3.51	3.47	0.04	1.25	28.86	1.03	1.04	1.04
375	3.53	3.49	0.04	1.34	29.11	1.03	1.05	1.05
400	3.55	3.50	0.04	1.35	29.74	1.03	1.06	1.06
425	3.57	3.52	0.05	1.44	30.61	1.05	1.08	1.07
450	3.60	3.55	0.05	1.52	31.51	1.07	1.09	1.09
475	3.63	3.57	0.05	1.58	32.62	1.08	1.11	1.11
500	3.66	3.60	0.06	1.64	34.15	1.10	1.12	1.12
525	3.69	3.63	0.06	1.70	35.31	1.13	1.14	1.14
550	3.74	3.67	0.07	1.73	34.75	1.16	1.16	1.16
575	3.79	3.71	0.07	1.80	32.50	1.20	1.18	1.18
600	3.84	3.76	0.08	1.86	29.74	1.24	1.20	1.20
625	3.91	3.83	0.08	1.90	27.10	1.29	1.23	1.23
650	3.98	3.90	0.08	1.93	24.67	1.35	1.25	1.25
675	4.08	3.99	0.09	1.97	22.55	1.42	1.28	1.28
700	4.19	4.10	0.09	2.01	20.65	1.50	1.31	1.30
725	4.32	4.23	0.10	2.01	18.94	1.59	1.34	1.33
750	4.49	4.39	0.10	1.99	17.37	1.70	1.37	1.36
775	4.68	4.58	0.10	1.97	15.95	1.83	1.40	1.39
800	4.92	4.82	0.10	2.00	14.64	1.99	1.44	1.42
825	5.20	5.10	0.10	1.98	13.46	2.17	1.48	1.45
850	5.54	5.43	0.11	1.91	12.36	2.38	1.52	1.49
875	5.93	5.82	0.11	1.89	11.38	2.62	1.56	1.53
900	6.39	6.28	0.11	1.82	10.50	2.90	1.61	1.56

¹ Total Loss = Insertion Loss+ 3dB Splitter Loss

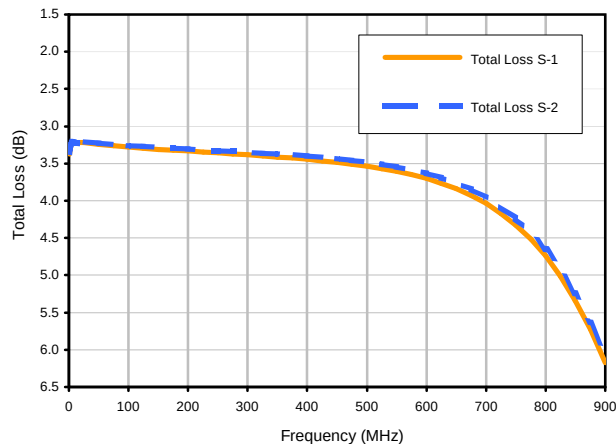
REV. X2
SCP-2-1A+
100627
Page 3 of 3

2 Way-0° Power Splitter/Combiner

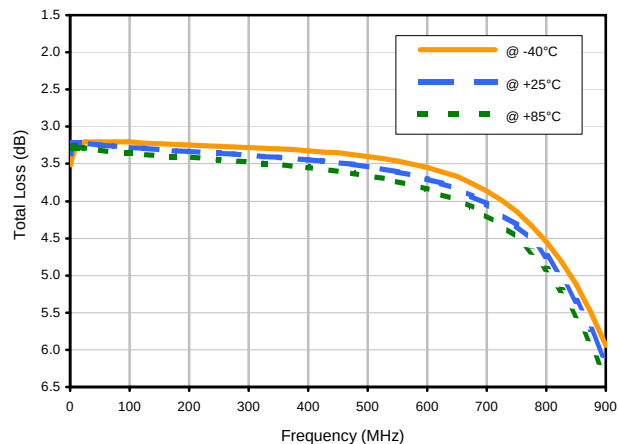
SCP-2-1A+

Typical Performance Curves

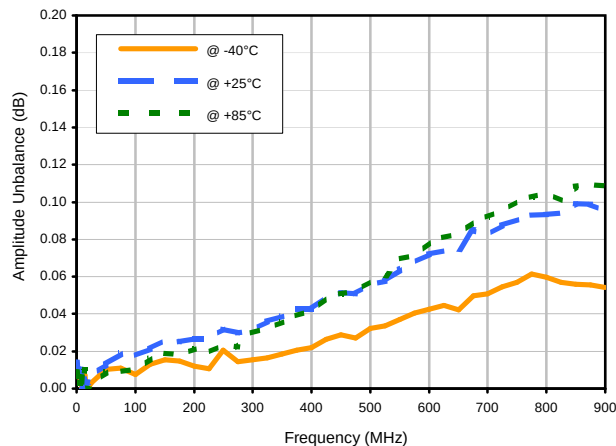
Total Loss



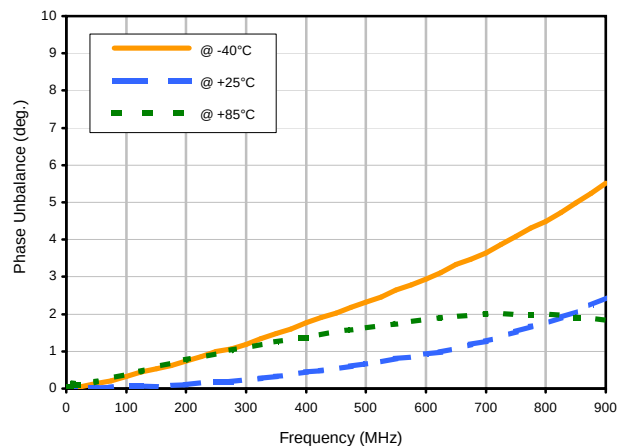
Total Loss S-1 vs. TEMPERATURE



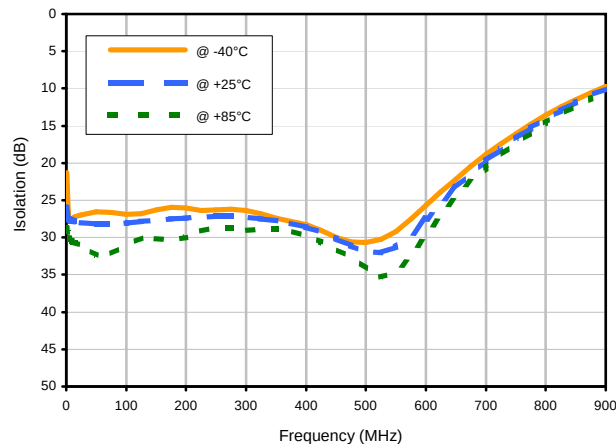
Amplitude Unbalance vs. TEMPERATURE



Phase Unbalance vs. TEMPERATURE



Isolation 1-2 vs. TEMPERATURE



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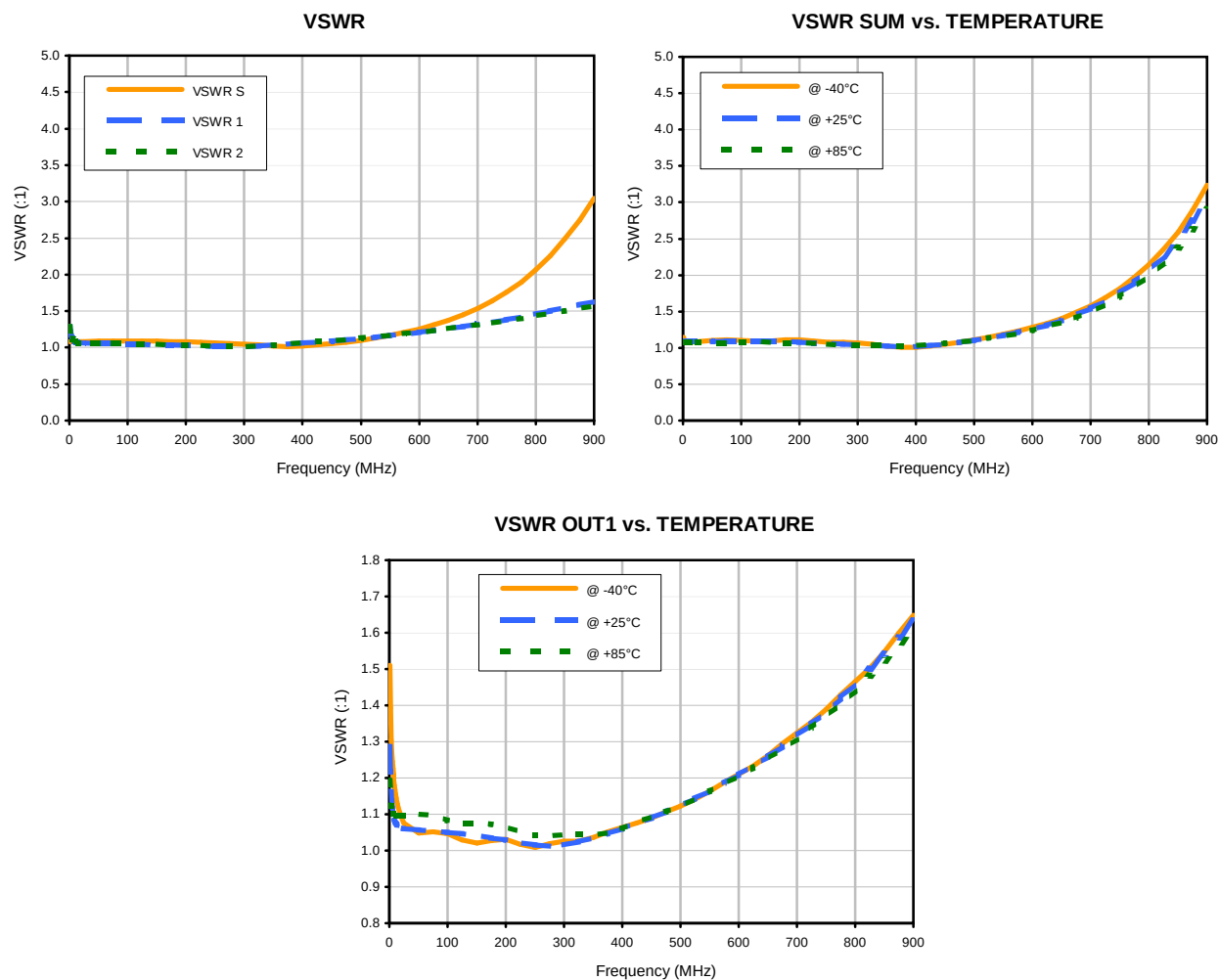
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2 Way-0° Power Splitter/Combiner

SCP-2-1A+

Typical Performance Curves



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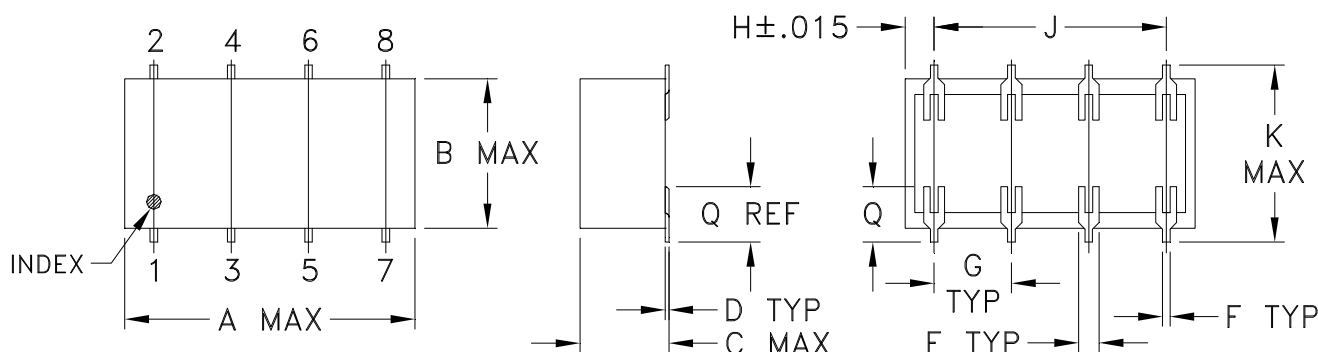
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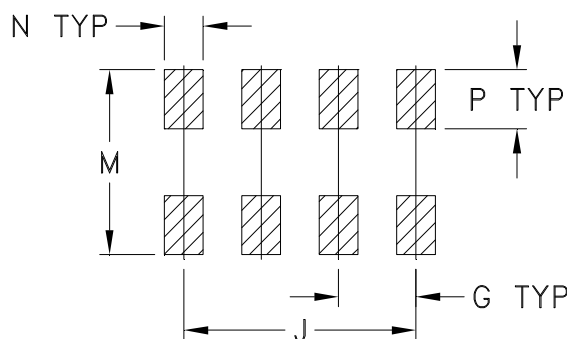


Outline Dimensions

YY101
YY109
YY161



PCB Land Pattern



Suggested Layout
Tolerance to be within $\pm .002$

CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	WT. GRAM S
YY101*			.20 (5.08)							.450 (11.43)	--	.470 (11.94)				1.6
YY109*	.75 (19.05)	.38 (9.65)	.20 (5.08)	.010 (0.25)	.050 (1.27)	.020 (0.51)	.200 (5.08)	.075 (1.91)	.600 (15.24)	.720 (18.29)	--	.740 (18.80)	.100 (2.54)	.150 (3.81)	.148 (3.76)	1.6
YY161			.28 (7.11)							.450 (11.43)	--	.470 (11.94)				1.6

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .01$; 3 Pl. $\pm .005$

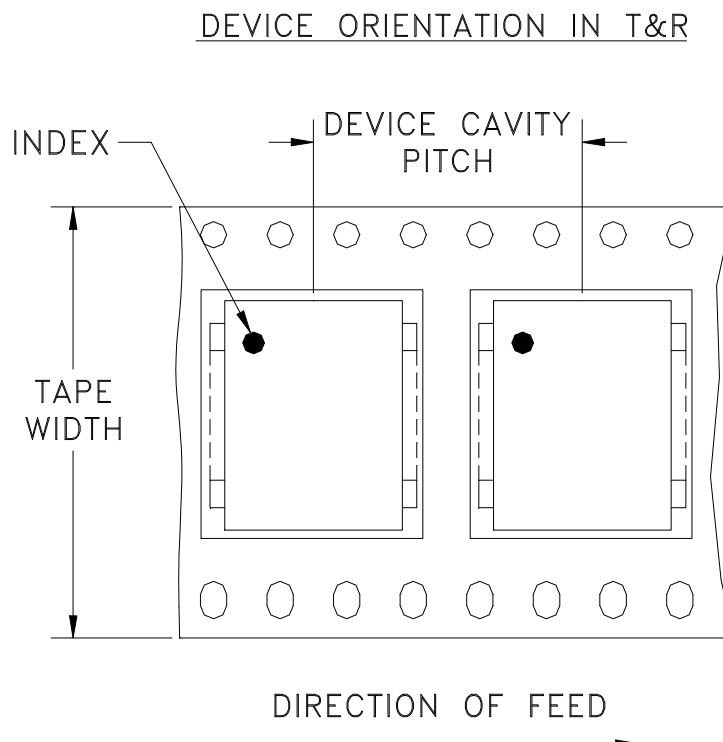
Notes:

- Case material: Plastic.
- Termination finish:
For RoHS Case Styles: Tin plate over Nickel plate.
For RoHS-5 Case Styles: Tin-Lead plate.
- Special Tolerances: Termination thickness $\pm .003$ inch.
- * Denotes: For SCM mixers, long termination version (case YY109) is available upon request, consult factory. To order short termination version (case YY101) add -NL suffix.



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Tape & Reel Packaging TR-F5



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
32	16	13	500

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf



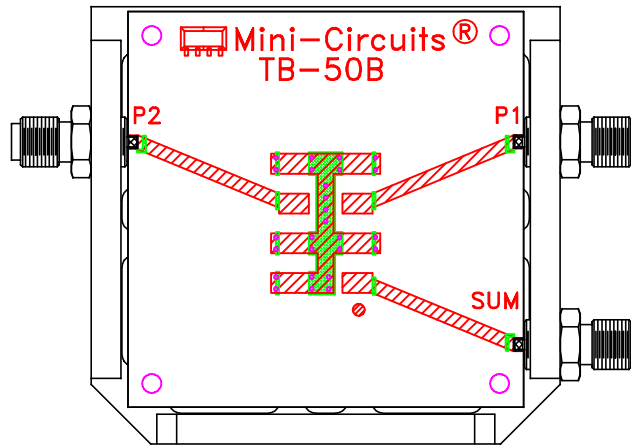
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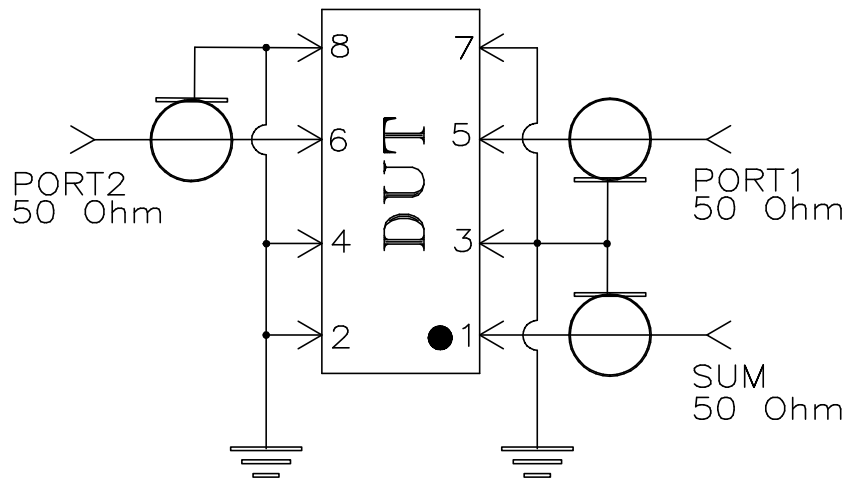
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Evaluation Board and Circuit



TB-50+



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.030 inch.

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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	-40° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
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	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215