

Surface Mount Power Splitter/Combiner

3 Way-0° 50Ω 500 to 850 MHz

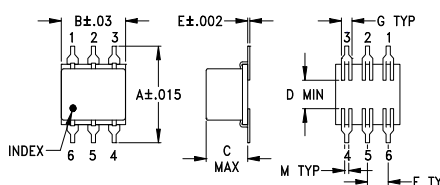
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	1W max.
Internal Dissipation	0.375W max.
Permanent damage may occur if any of these limits are exceeded.	

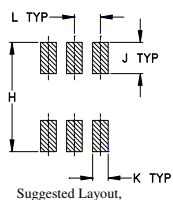
Pin Connections

SUM PORT	6
PORT 1	1
PORT 2	3
PORT 3	4
GROUND	2,5

Outline Drawing



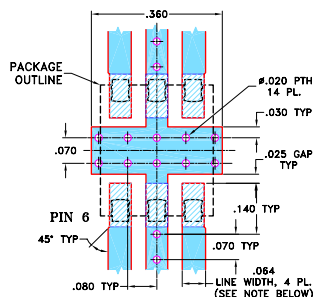
PCB Land Pattern



Outline Dimensions (inch mm)

A	B	C	D	E	F	G
.400	.31	.200	.10	.010	.100	.050
10.16	7.87	5.08	2.54	0.25	2.54	1.27
H	J	K	L	M		wt
.420	.120	.060	.100	.020		grams
10.67	3.05	1.52	2.54	0.51		0.55

Demo Board MCL P/N: TB-226 Suggested PCB Layout (PL-140)



- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B 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

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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Features

- low insertion loss, 0.7 dB typ.
- good isolation, 23 dB typ.
- J-leads for strain relief & excellent solderability

Applications

- UHF
- communication systems



Generic photo used for illustration purposes only

CASE STYLE: QQQ130

+RoHS Compliant

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

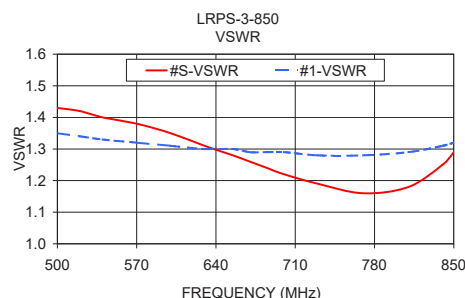
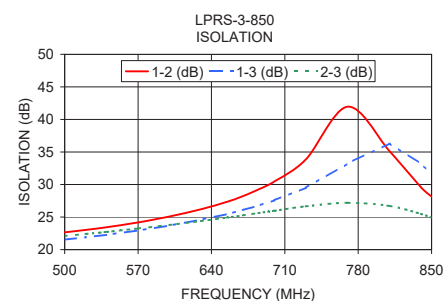
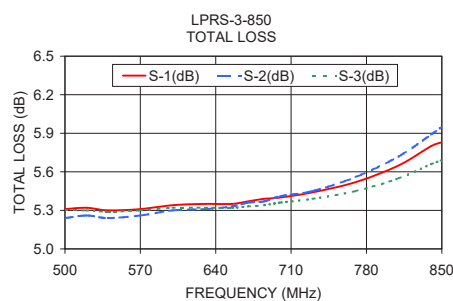
Electrical Specifications

FREQ. RANGE (MHz)	ISOLATION (dB)		INSERTION LOSS (dB) ABOVE 4.8 dB		PHASE UNBALANCE (Degrees)	AMPLITUDE UNBALANCE (dB)
f_L - f_U	Typ.	Min	Typ.	Max.	Max.	Max.
500-850	23	16	0.7	1.6	8	0.9

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					
500.00	5.31	5.24	5.30	0.08	22.65	21.54	22.09	0.35	1.43	1.35	1.30	1.35
520.00	5.32	5.26	5.30	0.07	23.03	21.90	22.41	0.29	1.42	1.34	1.29	1.34
540.00	5.30	5.24	5.29	0.06	23.44	22.28	22.73	0.40	1.40	1.33	1.28	1.32
570.00	5.31	5.26	5.30	0.05	24.18	22.94	23.24	0.45	1.38	1.32	1.27	1.31
600.00	5.34	5.30	5.32	0.05	25.09	23.70	23.79	0.54	1.35	1.31	1.26	1.29
630.00	5.35	5.31	5.32	0.03	26.20	24.60	24.38	0.69	1.31	1.30	1.25	1.27
655.00	5.35	5.33	5.32	0.03	27.35	25.46	24.93	0.79	1.28	1.30	1.24	1.26
670.00	5.37	5.36	5.33	0.04	28.21	26.08	25.26	0.88	1.26	1.29	1.24	1.25
685.00	5.39	5.37	5.34	0.05	29.25	26.76	25.62	0.99	1.24	1.29	1.23	1.25
700.00	5.40	5.41	5.36	0.05	30.46	27.58	25.97	1.10	1.22	1.29	1.23	1.24
730.00	5.44	5.45	5.39	0.06	33.85	29.49	26.65	1.39	1.19	1.28	1.23	1.23
770.00	5.52	5.56	5.45	0.11	41.96	33.24	27.20	1.76	1.16	1.28	1.23	1.21
810.00	5.65	5.72	5.55	0.17	35.11	36.31	26.71	2.31	1.18	1.29	1.24	1.20
840.00	5.80	5.89	5.66	0.23	29.55	33.17	25.47	2.69	1.25	1.31	1.26	1.20
850.00	5.83	5.95	5.69	0.25	28.14	31.70	24.92	2.83	1.29	1.32	1.27	1.20

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



electrical schematic



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REV. B
M151107
LRPS-3-850
DJ/TD/CP/AM
200610

3 Way-0° Power Splitter/Combiner

LRPS-3-850+

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 (:1)			
	S-1	S-2	S-3			1-2	1-3	2-3	S	1	2	3
40	6.00	6.12	6.10	0.12	0.51	12.82	11.47	11.21	2.88	4.91	5.05	5.24
50	5.68	5.80	5.80	0.13	0.58	13.11	11.53	11.24	2.45	4.07	4.19	4.42
75	5.34	5.47	5.49	0.15	0.72	14.29	12.27	11.93	1.99	2.98	3.06	3.30
100	5.22	5.35	5.39	0.17	0.78	15.49	13.21	12.89	1.82	2.44	2.50	2.71
125	5.16	5.29	5.35	0.19	0.82	16.51	14.15	13.89	1.72	2.12	2.16	2.34
150	5.13	5.26	5.34	0.20	0.77	17.33	15.00	14.84	1.67	1.92	1.95	2.10
175	5.12	5.25	5.32	0.20	0.78	18.00	15.77	15.70	1.63	1.78	1.80	1.93
200	5.11	5.24	5.33	0.21	0.78	18.55	16.47	16.51	1.61	1.68	1.69	1.80
225	5.11	5.24	5.33	0.21	0.79	18.99	17.07	17.21	1.59	1.61	1.61	1.70
250	5.11	5.24	5.33	0.21	0.77	19.40	17.63	17.84	1.57	1.55	1.54	1.63
275	5.12	5.24	5.33	0.21	0.76	19.73	18.12	18.41	1.56	1.50	1.49	1.57
300	5.12	5.24	5.33	0.21	0.77	20.05	18.59	18.92	1.55	1.46	1.45	1.52
325	5.13	5.25	5.34	0.20	0.76	20.34	19.00	19.35	1.54	1.43	1.41	1.48
350	5.14	5.25	5.34	0.20	0.72	20.63	19.40	19.75	1.53	1.41	1.38	1.44
375	5.15	5.25	5.34	0.20	0.70	20.89	19.76	20.08	1.52	1.38	1.35	1.41
400	5.15	5.26	5.34	0.19	0.68	21.17	20.14	20.40	1.50	1.36	1.33	1.38
425	5.16	5.27	5.35	0.18	0.63	21.44	20.48	20.65	1.50	1.35	1.31	1.36
450	5.17	5.27	5.35	0.18	0.65	21.75	20.82	20.89	1.48	1.33	1.29	1.34
475	5.18	5.27	5.35	0.17	0.62	22.07	21.18	21.09	1.47	1.32	1.27	1.32
500	5.19	5.28	5.35	0.16	0.62	22.40	21.52	21.29	1.45	1.31	1.26	1.30
525	5.20	5.29	5.36	0.15	0.60	22.82	21.95	21.50	1.44	1.29	1.24	1.28
550	5.21	5.30	5.35	0.14	0.57	23.21	22.32	21.65	1.42	1.28	1.23	1.27
575	5.23	5.30	5.36	0.13	0.55	23.73	22.79	21.85	1.40	1.27	1.22	1.25
600	5.24	5.31	5.36	0.11	0.50	24.23	23.21	21.96	1.38	1.26	1.20	1.24
625	5.25	5.32	5.36	0.10	0.58	24.91	23.77	22.18	1.36	1.25	1.19	1.23
650	5.27	5.34	5.36	0.09	0.70	25.64	24.33	22.31	1.34	1.24	1.18	1.22
675	5.29	5.35	5.36	0.07	0.85	26.57	25.01	22.55	1.31	1.23	1.17	1.21
700	5.30	5.36	5.36	0.06	1.02	27.67	25.81	22.73	1.28	1.22	1.16	1.19
725	5.33	5.39	5.37	0.06	1.17	29.09	26.71	22.97	1.25	1.21	1.15	1.18
750	5.35	5.41	5.38	0.06	1.34	31.05	27.89	23.16	1.21	1.20	1.14	1.17
775	5.38	5.45	5.39	0.07	1.62	33.80	29.17	23.40	1.18	1.19	1.13	1.16
800	5.42	5.48	5.40	0.08	2.03	38.74	31.07	23.58	1.15	1.18	1.13	1.15
825	5.47	5.54	5.43	0.11	2.46	52.16	33.06	23.70	1.12	1.18	1.13	1.14
850	5.52	5.60	5.46	0.14	3.00	41.16	35.39	23.72	1.12	1.17	1.13	1.12
875	5.59	5.68	5.51	0.17	3.53	33.90	35.93	23.51	1.14	1.17	1.13	1.11
900	5.69	5.79	5.57	0.22	4.23	29.44	33.33	23.14	1.19	1.18	1.14	1.10
925	5.81	5.92	5.66	0.26	5.03	26.36	30.25	22.44	1.27	1.19	1.16	1.09
950	5.97	6.09	5.78	0.31	5.90	23.82	27.29	21.57	1.37	1.21	1.18	1.08
975	6.17	6.32	5.94	0.38	6.92	21.71	24.87	20.46	1.50	1.24	1.20	1.07
1000	6.43	6.61	6.15	0.46	8.17	19.88	22.76	19.31	1.66	1.28	1.24	1.08

¹Total Loss = Insertion Loss + 4.8dB Splitter Loss

REV. X2
LRPS-3-850+
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3 Way-0° Power Splitter/Combiner

LRPS-3-850+

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 (:1)			
	S-1	S-2	S-3			1-2	1-3	2-3	S	1	2	3
40	5.99	6.08	6.07	0.08	0.83	12.74	11.41	11.10	2.85	4.93	5.01	5.20
50	5.67	5.77	5.77	0.10	1.07	13.03	11.47	11.15	2.44	4.08	4.16	4.39
75	5.31	5.45	5.49	0.18	1.31	14.24	12.24	11.92	2.00	2.98	3.09	3.34
100	5.17	5.34	5.38	0.21	1.17	15.48	13.19	12.92	1.81	2.44	2.54	2.75
125	5.12	5.28	5.32	0.20	1.20	16.56	14.16	13.92	1.71	2.13	2.19	2.37
150	5.11	5.24	5.32	0.20	1.41	17.43	15.05	14.88	1.67	1.94	1.97	2.12
175	5.11	5.23	5.32	0.21	1.54	18.14	15.87	15.79	1.65	1.81	1.83	1.97
200	5.10	5.23	5.32	0.22	1.58	18.68	16.57	16.59	1.63	1.72	1.73	1.85
225	5.10	5.23	5.31	0.20	1.66	19.10	17.14	17.26	1.61	1.65	1.64	1.74
250	5.11	5.22	5.31	0.20	1.89	19.44	17.66	17.84	1.60	1.59	1.57	1.66
275	5.12	5.22	5.32	0.21	2.04	19.73	18.11	18.36	1.59	1.54	1.51	1.61
300	5.11	5.22	5.32	0.21	2.13	20.01	18.54	18.85	1.58	1.50	1.48	1.56
325	5.11	5.22	5.31	0.20	2.21	20.27	18.92	19.26	1.56	1.46	1.45	1.51
350	5.11	5.22	5.30	0.19	2.33	20.55	19.30	19.64	1.55	1.43	1.41	1.46
375	5.12	5.22	5.31	0.19	2.45	20.81	19.66	19.98	1.54	1.40	1.38	1.43
400	5.12	5.22	5.31	0.18	2.54	21.11	20.04	20.31	1.52	1.38	1.36	1.41
425	5.13	5.23	5.31	0.18	2.59	21.36	20.36	20.55	1.51	1.37	1.34	1.38
450	5.13	5.22	5.30	0.17	2.64	21.65	20.68	20.78	1.50	1.35	1.32	1.35
475	5.14	5.23	5.30	0.16	2.72	21.93	21.00	20.95	1.49	1.34	1.29	1.33
500	5.15	5.23	5.30	0.15	2.79	22.23	21.31	21.12	1.47	1.32	1.27	1.31
525	5.16	5.24	5.30	0.14	2.86	22.62	21.69	21.32	1.45	1.31	1.26	1.30
550	5.17	5.24	5.29	0.13	2.92	23.01	22.04	21.52	1.43	1.29	1.24	1.28
575	5.17	5.24	5.29	0.12	2.92	23.52	22.50	21.76	1.41	1.28	1.22	1.26
600	5.18	5.24	5.29	0.10	2.90	24.03	22.91	21.94	1.39	1.26	1.21	1.25
625	5.19	5.25	5.28	0.09	2.89	24.76	23.48	22.22	1.36	1.25	1.20	1.23
650	5.20	5.26	5.28	0.08	2.87	25.52	24.05	22.41	1.33	1.24	1.19	1.22
675	5.21	5.27	5.27	0.06	2.78	26.50	24.75	22.70	1.30	1.22	1.17	1.21
700	5.23	5.28	5.27	0.05	2.65	27.62	25.52	22.90	1.27	1.22	1.16	1.19
725	5.25	5.30	5.28	0.05	2.57	29.09	26.40	23.17	1.24	1.21	1.16	1.18
750	5.27	5.33	5.28	0.05	2.39	31.07	27.51	23.41	1.21	1.20	1.15	1.17
775	5.30	5.36	5.30	0.06	2.18	33.84	28.71	23.68	1.18	1.19	1.14	1.16
800	5.33	5.39	5.31	0.08	1.98	38.82	30.39	23.91	1.14	1.19	1.13	1.15
825	5.37	5.43	5.32	0.11	1.83	50.75	32.04	24.06	1.11	1.18	1.13	1.13
850	5.42	5.49	5.35	0.14	1.68	40.47	33.78	24.12	1.11	1.18	1.13	1.12
875	5.49	5.57	5.39	0.18	1.50	33.57	34.12	23.91	1.13	1.18	1.14	1.11
900	5.58	5.67	5.45	0.22	1.22	29.17	32.14	23.48	1.19	1.18	1.15	1.10
925	5.70	5.80	5.53	0.27	1.26	26.15	29.57	22.71	1.26	1.20	1.16	1.09
950	5.85	5.96	5.65	0.32	1.67	23.64	26.86	21.76	1.37	1.22	1.18	1.08
975	6.04	6.18	5.80	0.38	2.13	21.57	24.61	20.59	1.49	1.25	1.21	1.08
1000	6.28	6.46	6.00	0.46	3.05	19.76	22.57	19.39	1.65	1.29	1.25	1.08

¹Total Loss = Insertion Loss + 4.8dB Splitter Loss

REV. X2
LRPS-3-850+
100624
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3 Way-0° Power Splitter/Combiner

LRPS-3-850+

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 (:1)			
	S-1	S-2	S-3			1-2	1-3	2-3	S	1	2	3
40	5.98	6.17	6.16	0.18	0.35	12.91	11.55	11.34	2.90	4.91	5.12	5.31
50	5.67	5.84	5.84	0.17	0.46	13.19	11.61	11.36	2.47	4.07	4.24	4.46
75	5.36	5.47	5.49	0.14	0.63	14.34	12.31	11.96	1.99	2.99	3.05	3.28
100	5.25	5.34	5.39	0.14	0.70	15.48	13.22	12.85	1.82	2.45	2.45	2.67
125	5.19	5.30	5.37	0.19	0.63	16.46	14.14	13.86	1.73	2.13	2.14	2.33
150	5.14	5.27	5.36	0.22	0.52	17.21	14.95	14.78	1.67	1.91	1.94	2.10
175	5.11	5.25	5.33	0.21	0.70	17.84	15.68	15.61	1.62	1.76	1.78	1.90
200	5.11	5.24	5.33	0.21	0.84	18.37	16.35	16.38	1.58	1.65	1.65	1.76
225	5.11	5.24	5.34	0.23	0.92	18.84	16.97	17.10	1.57	1.57	1.57	1.67
250	5.10	5.24	5.34	0.24	1.01	19.28	17.55	17.78	1.55	1.51	1.51	1.61
275	5.11	5.24	5.35	0.24	1.17	19.67	18.08	18.39	1.53	1.46	1.47	1.54
300	5.11	5.24	5.34	0.22	1.33	20.04	18.58	18.93	1.51	1.43	1.42	1.48
325	5.13	5.25	5.35	0.21	1.48	20.37	19.03	19.40	1.50	1.40	1.38	1.44
350	5.14	5.25	5.35	0.21	1.58	20.69	19.47	19.83	1.50	1.38	1.35	1.41
375	5.15	5.26	5.36	0.21	1.71	20.97	19.85	20.18	1.49	1.36	1.33	1.39
400	5.16	5.27	5.36	0.20	1.84	21.28	20.25	20.52	1.48	1.34	1.31	1.36
425	5.18	5.28	5.37	0.19	2.03	21.55	20.59	20.76	1.47	1.33	1.29	1.33
450	5.19	5.28	5.37	0.18	2.17	21.87	20.96	21.02	1.46	1.31	1.27	1.31
475	5.20	5.29	5.38	0.18	2.36	22.19	21.33	21.22	1.45	1.30	1.25	1.30
500	5.21	5.30	5.38	0.17	2.50	22.54	21.70	21.42	1.43	1.28	1.24	1.28
525	5.23	5.31	5.39	0.16	2.68	22.98	22.14	21.62	1.42	1.27	1.23	1.26
550	5.24	5.32	5.39	0.15	2.87	23.41	22.55	21.78	1.40	1.26	1.21	1.25
575	5.26	5.33	5.40	0.14	3.11	23.95	23.07	21.98	1.38	1.26	1.20	1.24
600	5.28	5.35	5.40	0.12	3.30	24.44	23.50	22.07	1.37	1.25	1.19	1.23
625	5.30	5.36	5.40	0.10	3.53	25.15	24.09	22.26	1.35	1.24	1.18	1.21
650	5.32	5.38	5.41	0.09	3.74	25.87	24.68	22.35	1.33	1.23	1.17	1.21
675	5.33	5.39	5.41	0.08	4.00	26.80	25.40	22.54	1.30	1.22	1.16	1.19
700	5.36	5.41	5.42	0.06	4.36	27.87	26.21	22.65	1.28	1.21	1.16	1.19
725	5.39	5.44	5.43	0.05	4.72	29.31	27.17	22.83	1.25	1.20	1.15	1.18
750	5.42	5.47	5.44	0.05	5.14	31.20	28.41	22.96	1.22	1.20	1.14	1.17
775	5.45	5.51	5.46	0.06	5.61	33.90	29.85	23.13	1.19	1.19	1.13	1.16
800	5.49	5.55	5.48	0.07	6.14	38.38	31.97	23.25	1.16	1.18	1.13	1.15
825	5.54	5.60	5.51	0.10	6.76	45.34	34.50	23.29	1.14	1.17	1.13	1.14
850	5.60	5.67	5.54	0.13	7.39	40.05	38.02	23.26	1.13	1.17	1.12	1.13
875	5.68	5.76	5.59	0.17	8.12	33.84	39.23	23.03	1.15	1.17	1.13	1.12
900	5.78	5.87	5.66	0.21	8.96	29.56	35.13	22.68	1.20	1.17	1.13	1.10
925	5.91	6.01	5.75	0.26	9.88	26.53	31.24	22.05	1.27	1.18	1.15	1.09
950	6.08	6.18	5.88	0.31	10.93	24.00	27.91	21.27	1.36	1.20	1.17	1.08
975	6.28	6.41	6.04	0.37	12.10	21.90	25.33	20.26	1.49	1.23	1.20	1.08
1000	6.55	6.71	6.25	0.46	13.52	20.06	23.13	19.19	1.64	1.26	1.23	1.08

¹Total Loss = Insertion Loss + 4.8dB Splitter Loss

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LRPS-3-850+
100624
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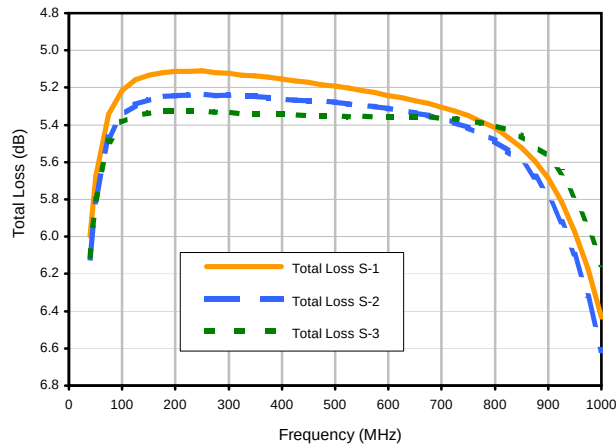


3 Way-0° Power Splitter/Combiner

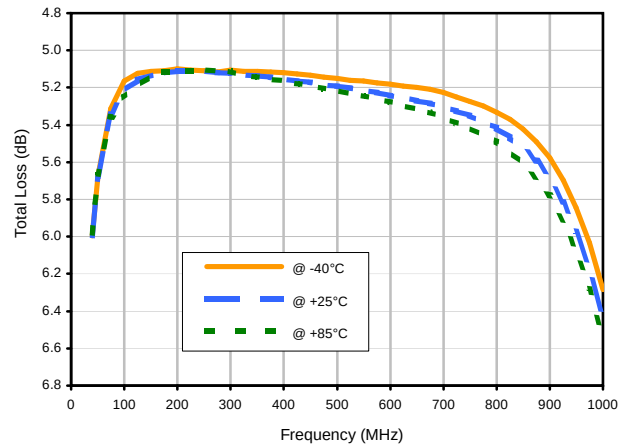
LRPS-3-850+

Typical Performance Curves

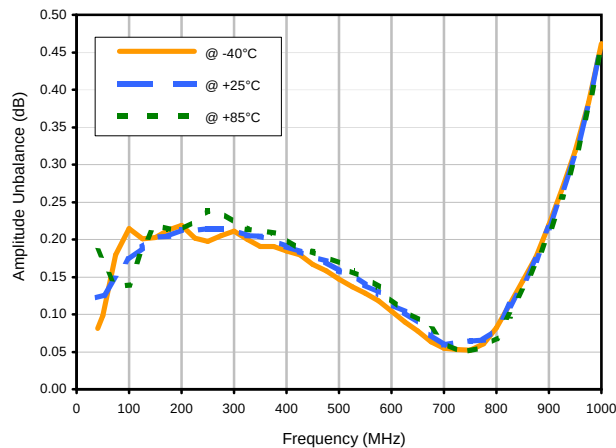
Total Loss



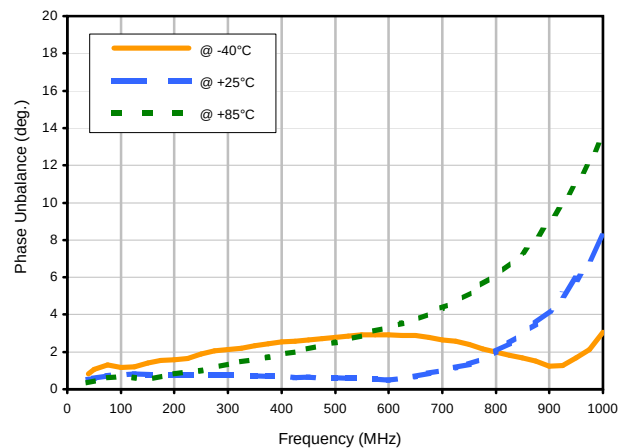
Total Loss S-1 vs. TEMPERATURE



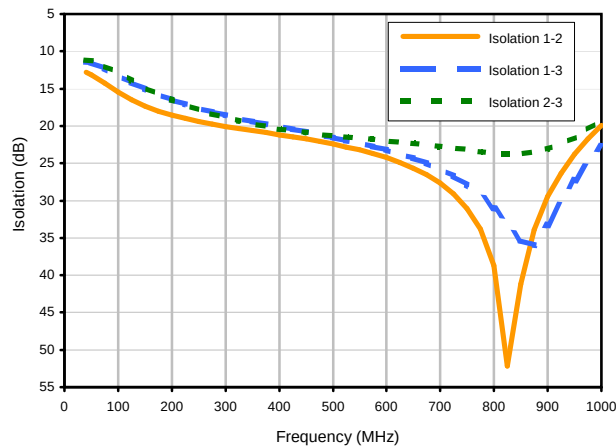
Amplitude Unbalance vs. TEMPERATURE



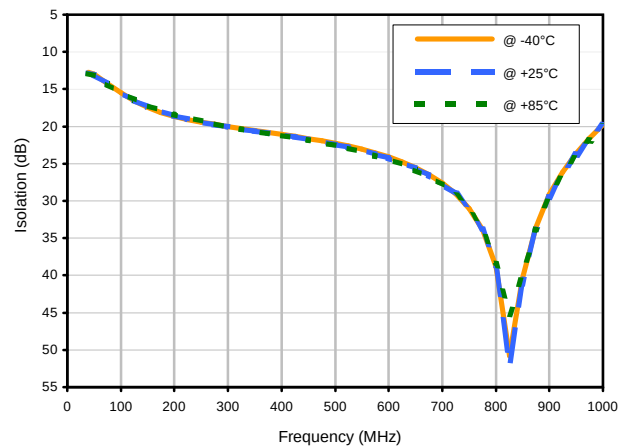
Phase Unbalance vs. TEMPERATURE



Isolation



Isolation 1-2 vs. TEMPERATURE



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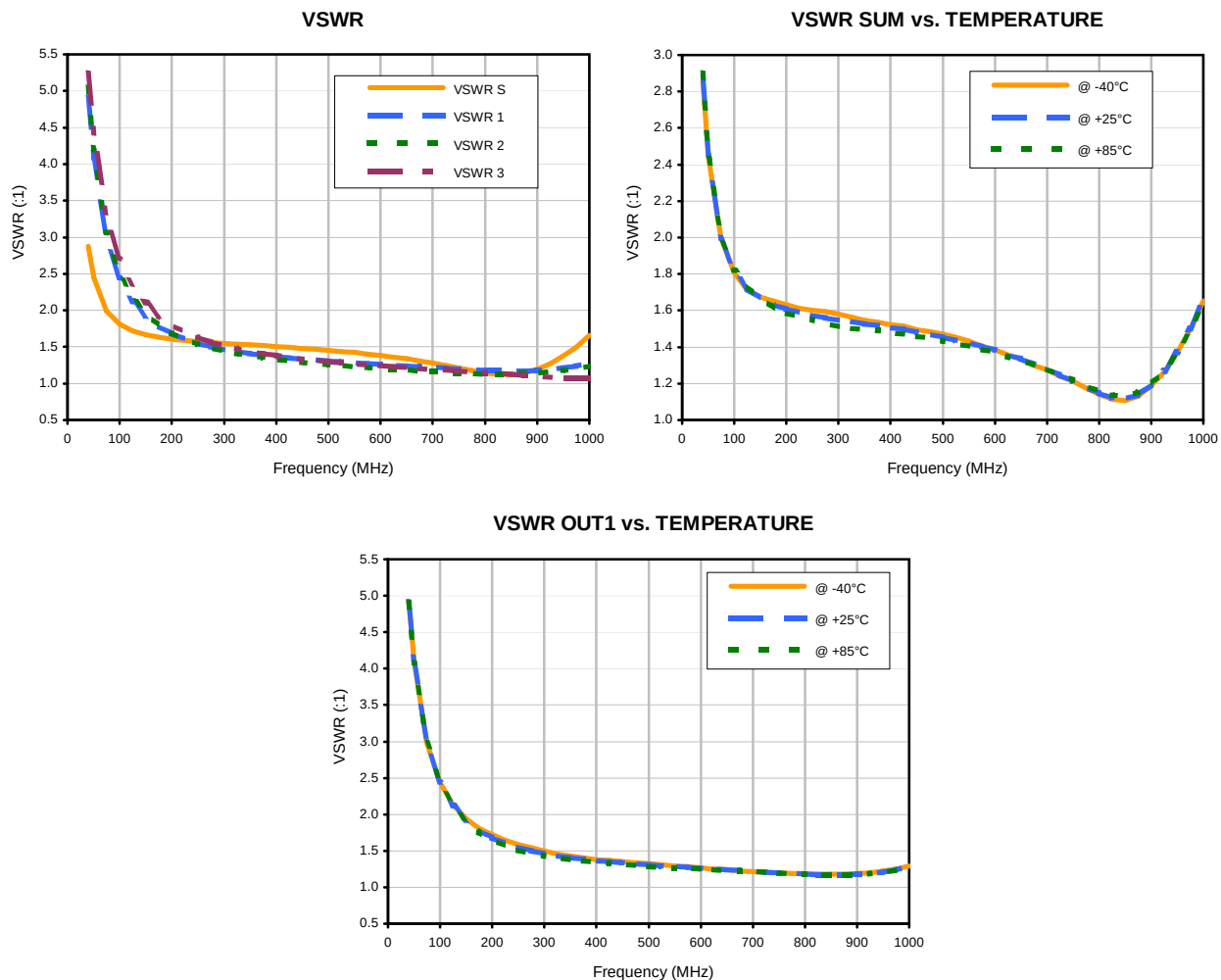
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Typical Performance Curves



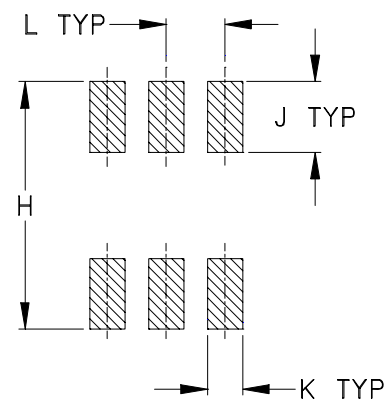
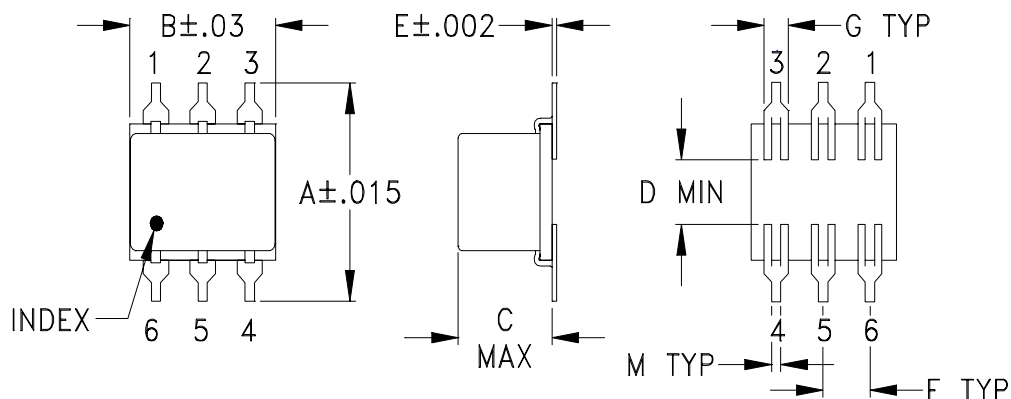
Case Style

QQQ

Outline Dimensions

QQQ130 (non-waterproof)
QQQ828 (washable)

PCB Land Pattern



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

CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT, GRAM
QQQ130	.400 (10.16)	.31 (7.87)	.200 (5.08)	.10 (2.54)	.010 (.25)	.100 (2.54)	.050 (1.27)	.420 (10.67)	.120 (3.05)	.060 (1.52)	.100 (2.54)	.020 (.51)	.55
QQQ828			.050 (1.27)										.20

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

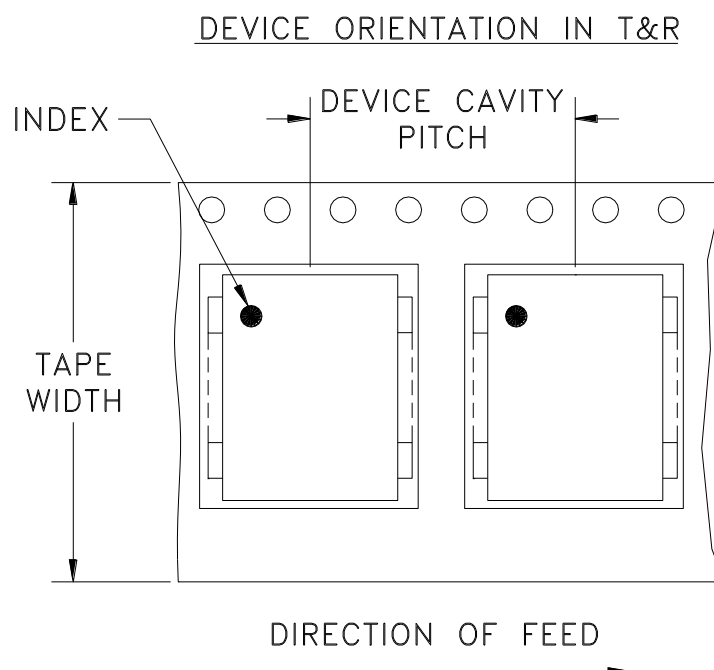
Notes:

- Case material: Ceramic.
- Termination finish:
 - For RoHS Case Styles: Tin plate over Nickel plate.
 - For RoHS-5 Case Styles: Tin-Lead plate.



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Tape & Reel Packaging TR-F10



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
24	16	7	10,20,50,100
		13	200,500

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

Note: Please consult individual model data sheet to determine device per reel availability.



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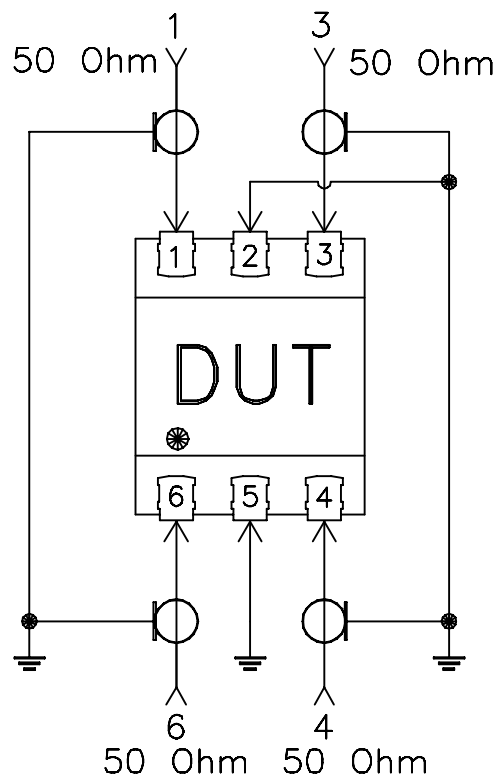
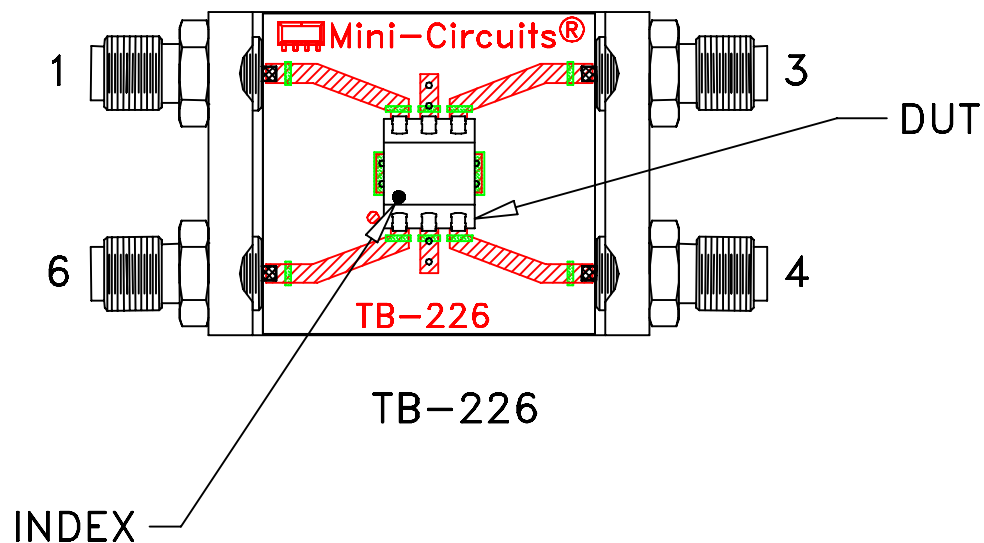
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Evaluation Board and Circuit

For Pin Connections refer to Data Sheet of the DUT



Notes:

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

Schematic Diagram

 **Mini-Circuits®**



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