X3 Frequency Multiplier

RMK-3-812+

50Ω Output 5400 to 8100 MHz

Generic photo used for illustration purposes only

CASE STYLE: TT1224

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

Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	10, 20, 50, 100, 200
13"	500

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Input Power	17 dBm

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

Pin Connections

INPUT	1
OUTPUT	4
GROUND	2,3,5,6

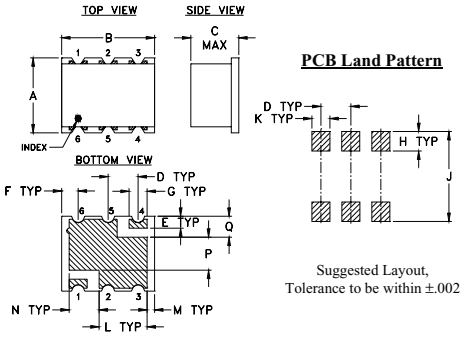
Features

- broadband
- high rejection F2, -40 dBc typ.; F4, -37 dBc typ.
- low cost
- aqueous washable

Applications

- synthesizers
- local oscillators
- satellite up and down converters

Outline Drawing

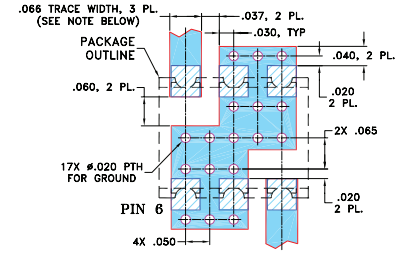


Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H
.25	.31	.16	.100	.040	.055	.060	.065
6.35	7.87	4.06	2.54	1.02	1.40	1.52	1.65

J	K	L	M	N	P	Q	wt.
.300	.060	.160	.025	.100	.110	.070	grams
7.62	1.52	4.06	0.64	2.54	2.79	1.78	0.16

Demo Board MCL P/N: TB-393
Suggested PCB Layout (PL-258)



NOTES: 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.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Electrical Specifications

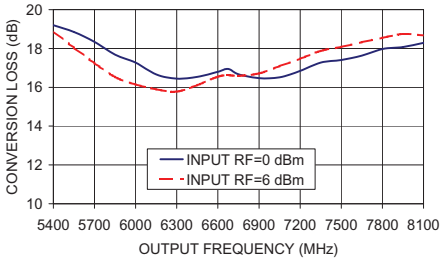
MULTIPLICATION FACTOR	FREQUENCY (MHz)		INPUT POWER (dBm)		CONVERSION LOSS (dB)		*HARMONIC OUTPUT (dBc)					
	F1 Input	F3 Output	Min.	Max.	Typ.	Max.	F1 Typ.	F1 Min.	F2 Typ.	F2 Min.	F4 Typ.	F4 Min.
3	1800-2700	5400-8100	0	6	16	21	6	-6	40	22	37	24

* Harmonics of input frequency below the power level of F3

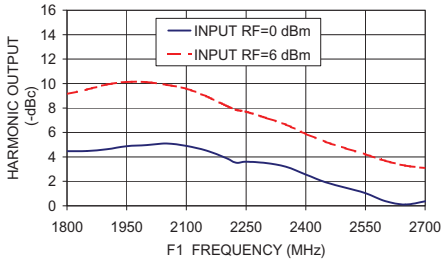
Typical Performance Data

	INPUT RF= 0 dBm				INPUT RF= 6 dBm			
Input Frequency (MHz)	Conversion Loss (dB)	Harmonic Output Below F3 (-dBc) F1	F2	F4	Conversion Loss (dB)	Harmonic Output Below F3 (-dBc) F1	F2	F4
1800.00	19.20	4.47	41.49	31.45	18.88	9.15	44.86	36.77
1850.00	18.85	4.48	41.84	30.87	18.04	9.52	45.65	37.45
1900.00	18.34	4.62	42.52	30.79	17.25	9.92	45.56	37.91
1950.00	17.68	4.87	42.58	31.34	16.53	10.13	44.19	38.13
2000.00	17.27	4.97	42.35	31.83	16.15	10.12	43.14	37.93
2050.00	16.66	5.10	41.50	33.16	15.90	9.90	42.10	37.65
2100.00	16.45	4.90	40.15	34.10	15.78	9.58	40.97	36.70
2150.00	16.54	4.52	38.86	34.71	16.11	8.96	39.75	35.59
2200.00	16.80	3.91	38.37	35.05	16.55	8.19	38.88	34.56
2225.00	16.95	3.53	38.00	35.44	16.62	7.85	38.52	34.41
2250.00	16.67	3.61	37.71	36.23	16.59	7.69	37.98	34.86
2300.00	16.47	3.50	37.32	37.24	16.71	7.20	37.03	36.50
2350.00	16.51	3.20	36.96	37.90	17.09	6.64	35.72	41.27
2400.00	16.85	2.55	36.30	38.28	17.47	5.88	34.55	50.85
2450.00	17.27	1.92	35.49	38.87	17.87	5.23	33.71	52.34
2500.00	17.41	1.48	34.82	38.99	18.08	4.71	33.41	43.83
2550.00	17.63	1.04	33.97	39.53	18.32	4.20	33.29	40.68
2600.00	17.97	0.38	33.17	39.71	18.55	3.68	33.34	39.35
2650.00	18.07	0.10	32.34	40.50	18.75	3.29	33.51	39.50
2700.00	18.29	0.37	31.44	41.26	18.67	3.09	34.59	39.79

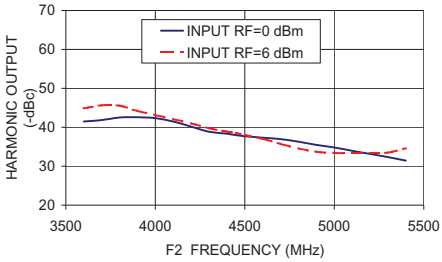
RMK-3-812+
CONVERSION LOSS



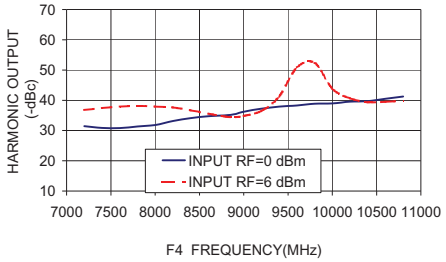
RMK-3-812+
HARMONIC OUTPUT F1



RMK-3-812+
HARMONIC OUTPUT F2



RMK-3-812+
HARMONIC OUTPUT F4



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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Frequency Multiplier (Tripler) RMK-3-812+

Typical Performance Data

Test Conditions: RF Input Power = 0 dBm @ +25°C

FREQUENCY (MHz)				CONVERSION LOSS (dB)	HARMONIC OUTPUT* (-dBc)		
X1 OUTPUT	X2 OUTPUT	X3 OUTPUT	X4 OUTPUT	X3 OUTPUT	X1 OUTPUT	X2 OUTPUT	X4 OUTPUT
1800	3600	5400	7200	18.73	3.01	52.77	34.47
1823	3645	5468	7290	18.26	3.12	53.55	34.77
1845	3690	5535	7380	18.08	3.13	55.11	35.02
1868	3735	5603	7470	18.04	3.11	53.94	35.76
1890	3780	5670	7560	17.76	3.18	55.19	36.59
1913	3825	5738	7650	17.65	3.27	59.46	37.35
1935	3870	5805	7740	17.77	2.91	56.85	38.18
1958	3915	5873	7830	17.73	2.88	55.67	38.69
1980	3960	5940	7920	17.07	3.44	56.26	41.08
2003	4005	6008	8010	16.77	3.49	57.25	42.37
2025	4050	6075	8100	16.66	3.43	58.47	40.02
2048	4095	6143	8190	16.62	3.35	60.04	42.80
2070	4140	6210	8280	16.25	3.56	56.27	46.85
2093	4185	6278	8370	16.05	3.64	55.03	47.13
2115	4230	6345	8460	16.44	3.22	54.83	46.55
2138	4275	6413	8550	16.49	3.09	56.14	47.83
2160	4320	6480	8640	16.09	3.29	59.51	52.22
2183	4365	6548	8730	15.95	3.25	56.94	59.60
2205	4410	6615	8820	15.93	3.30	52.76	61.42
2228	4455	6683	8910	15.88	3.16	53.63	66.91
2250	4500	6750	9000	15.61	3.32	55.79	60.01
2273	4545	6818	9090	15.63	3.17	55.93	59.07
2295	4590	6885	9180	16.24	2.56	55.97	54.07
2318	4635	6953	9270	16.52	2.25	52.15	54.15
2340	4680	7020	9360	16.38	2.17	52.16	54.43
2363	4725	7088	9450	16.06	2.35	53.34	50.01
2385	4770	7155	9540	16.10	2.19	54.15	49.22
2408	4815	7223	9630	15.99	2.19	50.98	50.93
2430	4860	7290	9720	16.00	2.13	48.37	51.12
2453	4905	7358	9810	16.11	2.08	48.37	48.24
2475	4950	7425	9900	16.80	1.35	49.59	47.26
2498	4995	7493	9990	17.38	0.81	48.50	47.46
2520	5040	7560	10080	17.30	0.84	45.15	47.74
2543	5085	7628	10170	16.72	1.18	46.55	46.11
2565	5130	7695	10260	16.93	0.91	46.89	44.73
2588	5175	7763	10350	17.28	0.41	46.42	44.52
2610	5220	7830	10440	17.16	0.34	44.43	45.78
2633	5265	7898	10530	17.03	0.36	45.67	44.35
2655	5310	7965	10620	17.10	0.18	47.08	44.03
2678	5355	8033	10710	17.45	-0.19	45.53	45.37
2700	5400	8100	10800	17.83	-0.54	44.26	45.20

* Harmonic Output below power level of X3 Output.

Frequency Multiplier (Tripler) RMK-3-812+

Typical Performance Data

Test Conditions: RF Input Power = 0 dBm @ -40°C

FREQUENCY (MHz)				CONVERSION LOSS (dB)	HARMONIC OUTPUT* (-dBc)		
X1 OUTPUT	X2 OUTPUT	X3 OUTPUT	X4 OUTPUT	X3 OUTPUT	X1 OUTPUT	X2 OUTPUT	X4 OUTPUT
1800	3600	5400	7200	19.73	0.40	43.26	26.64
1823	3645	5468	7290	19.27	0.52	43.96	26.73
1845	3690	5535	7380	18.66	0.93	47.98	27.87
1868	3735	5603	7470	18.57	0.94	48.85	29.70
1890	3780	5670	7560	18.19	1.05	48.90	30.12
1913	3825	5738	7650	18.31	0.88	56.40	30.81
1935	3870	5805	7740	18.60	0.35	51.89	32.80
1958	3915	5873	7830	18.70	0.16	50.10	33.28
1980	3960	5940	7920	17.72	1.05	58.04	34.73
2003	4005	6008	8010	17.51	1.03	55.83	36.53
2025	4050	6075	8100	17.17	1.22	58.36	36.33
2048	4095	6143	8190	16.83	1.46	60.24	38.63
2070	4140	6210	8280	16.40	1.77	55.82	40.79
2093	4185	6278	8370	16.09	2.00	56.94	40.35
2115	4230	6345	8460	16.64	1.44	59.69	40.80
2138	4275	6413	8550	16.80	1.20	57.34	41.40
2160	4320	6480	8640	16.30	1.50	57.34	43.93
2183	4365	6548	8730	16.15	1.43	58.85	47.81
2205	4410	6615	8820	15.96	1.61	53.94	45.42
2228	4455	6683	8910	15.62	1.69	56.35	48.22
2250	4500	6750	9000	15.07	2.07	56.12	55.28
2273	4545	6818	9090	15.01	1.97	54.38	53.22
2295	4590	6885	9180	15.83	1.17	55.29	55.11
2318	4635	6953	9270	16.40	0.62	51.94	56.28
2340	4680	7020	9360	16.21	0.67	52.57	52.46
2363	4725	7088	9450	15.67	1.10	52.22	50.64
2385	4770	7155	9540	15.63	1.05	53.74	50.46
2408	4815	7223	9630	15.13	1.45	49.61	51.67
2430	4860	7290	9720	14.75	1.74	48.34	47.19
2453	4905	7358	9810	14.80	1.71	50.17	44.58
2475	4950	7425	9900	15.82	0.64	49.44	44.68
2498	4995	7493	9990	16.59	-0.13	45.06	44.88
2520	5040	7560	10080	16.45	-0.09	42.31	44.05
2543	5085	7628	10170	15.72	0.36	45.38	43.21
2565	5130	7695	10260	16.04	-0.06	43.88	42.31
2588	5175	7763	10350	16.43	-0.56	40.56	41.65
2610	5220	7830	10440	16.06	-0.36	39.88	41.78
2633	5265	7898	10530	15.88	-0.25	40.18	40.41
2655	5310	7965	10620	16.00	-0.43	42.93	39.43
2678	5355	8033	10710	16.55	-1.01	37.82	40.33
2700	5400	8100	10800	17.10	-1.41	36.82	39.25

* Harmonic Output below power level of X3 Output.

Frequency Multiplier (Tripler) RMK-3-812+

Typical Performance Data

Test Conditions: RF Input Power = 0 dBm @ +85°C

FREQUENCY (MHz)				CONVERSION LOSS (dB)	HARMONIC OUTPUT* (-dBc)		
X1 OUTPUT	X2 OUTPUT	X3 OUTPUT	X4 OUTPUT	X3 OUTPUT	X1 OUTPUT	X2 OUTPUT	X4 OUTPUT
1800	3600	5400	7200	19.30	4.23	54.78	36.96
1823	3645	5468	7290	18.86	4.32	55.17	37.96
1845	3690	5535	7380	18.85	4.21	56.17	37.78
1868	3735	5603	7470	18.81	4.20	52.40	38.55
1890	3780	5670	7560	18.66	4.15	53.63	39.43
1913	3825	5738	7650	18.47	4.32	56.94	40.47
1935	3870	5805	7740	18.51	4.04	56.58	41.66
1958	3915	5873	7830	18.44	4.00	54.75	40.62
1980	3960	5940	7920	17.94	4.39	54.21	45.28
2003	4005	6008	8010	17.71	4.36	55.63	46.59
2025	4050	6075	8100	17.64	4.26	54.62	43.79
2048	4095	6143	8190	17.72	4.06	57.59	46.80
2070	4140	6210	8280	17.49	4.15	56.51	50.52
2093	4185	6278	8370	17.44	4.12	56.04	54.29
2115	4230	6345	8460	17.75	3.79	54.51	53.36
2138	4275	6413	8550	17.79	3.66	56.52	51.79
2160	4320	6480	8640	17.55	3.71	59.39	56.39
2183	4365	6548	8730	17.48	3.59	61.70	62.45
2205	4410	6615	8820	17.56	3.54	54.48	60.81
2228	4455	6683	8910	17.64	3.29	53.55	61.17
2250	4500	6750	9000	17.56	3.31	55.90	58.32
2273	4545	6818	9090	17.69	3.06	57.33	60.03
2295	4590	6885	9180	18.23	2.51	52.74	62.43
2318	4635	6953	9270	18.39	2.30	55.30	60.17
2340	4680	7020	9360	18.28	2.12	52.00	57.09
2363	4725	7088	9450	18.10	2.14	48.57	54.49
2385	4770	7155	9540	18.11	2.02	49.93	55.24
2408	4815	7223	9630	18.09	1.93	51.24	55.11
2430	4860	7290	9720	18.23	1.79	47.61	51.72
2453	4905	7358	9810	18.32	1.76	45.49	49.50
2475	4950	7425	9900	18.81	1.24	49.38	50.39
2498	4995	7493	9990	19.16	0.91	48.19	51.49
2520	5040	7560	10080	19.04	0.95	45.37	50.90
2543	5085	7628	10170	18.55	1.20	47.73	48.49
2565	5130	7695	10260	18.74	0.93	47.58	47.91
2588	5175	7763	10350	19.00	0.54	48.68	48.90
2610	5220	7830	10440	18.96	0.37	47.06	50.62
2633	5265	7898	10530	18.98	0.25	46.04	48.48
2655	5310	7965	10620	19.05	0.09	50.86	47.76
2678	5355	8033	10710	19.41	-0.51	42.50	49.20
2700	5400	8100	10800	19.70	-0.50	46.49	50.19

Frequency Multiplier (Tripler) RMK-3-812+

Typical Performance Data

Test Conditions: RF Input Power = 6 dBm @ +25°C

FREQUENCY (MHz)				CONVERSION LOSS (dB)	HARMONIC OUTPUT* (-dBc)		
X1 OUTPUT	X2 OUTPUT	X3 OUTPUT	X4 OUTPUT	X3 OUTPUT	X1 OUTPUT	X2 OUTPUT	X4 OUTPUT
1800	3600	5400	7200	17.42	8.63	55.51	34.18
1823	3645	5468	7290	16.85	8.83	54.77	34.54
1845	3690	5535	7380	17.22	8.42	58.29	34.85
1868	3735	5603	7470	16.96	8.61	52.93	35.80
1890	3780	5670	7560	16.78	8.52	54.71	35.68
1913	3825	5738	7650	16.51	8.74	58.89	36.82
1935	3870	5805	7740	16.55	8.45	54.54	38.29
1958	3915	5873	7830	16.33	8.52	54.58	36.31
1980	3960	5940	7920	15.85	8.83	53.50	40.34
2003	4005	6008	8010	15.73	8.66	52.62	43.70
2025	4050	6075	8100	15.78	8.48	51.71	40.12
2048	4095	6143	8190	15.88	8.34	52.06	44.10
2070	4140	6210	8280	15.62	8.43	53.20	50.54
2093	4185	6278	8370	15.79	8.16	52.60	53.62
2115	4230	6345	8460	16.09	7.81	49.33	59.60
2138	4275	6413	8550	15.92	7.86	51.87	54.50
2160	4320	6480	8640	15.80	7.76	55.20	57.45
2183	4365	6548	8730	15.97	7.37	55.76	53.81
2205	4410	6615	8820	16.16	7.21	52.32	54.59
2228	4455	6683	8910	16.18	7.03	52.62	50.26
2250	4500	6750	9000	16.16	7.02	51.85	49.47
2273	4545	6818	9090	16.50	6.60	51.32	53.83
2295	4590	6885	9180	16.93	6.14	51.64	52.45
2318	4635	6953	9270	16.76	6.19	50.29	50.51
2340	4680	7020	9360	16.70	5.96	48.88	50.26
2363	4725	7088	9450	16.73	5.77	47.58	47.82
2385	4770	7155	9540	16.89	5.55	47.38	47.87
2408	4815	7223	9630	16.74	5.56	47.30	48.51
2430	4860	7290	9720	16.82	5.40	45.53	46.50
2453	4905	7358	9810	17.10	5.19	45.12	45.77
2475	4950	7425	9900	17.56	4.72	46.10	47.96
2498	4995	7493	9990	17.54	4.71	46.20	47.89
2520	5040	7560	10080	17.19	4.89	43.98	46.14
2543	5085	7628	10170	16.83	4.93	44.93	45.42
2565	5130	7695	10260	17.17	4.62	44.38	45.80
2588	5175	7763	10350	17.18	4.47	44.88	47.73
2610	5220	7830	10440	16.97	4.47	43.80	47.75
2633	5265	7898	10530	17.31	4.04	44.34	45.93
2655	5310	7965	10620	17.62	3.62	43.67	46.02
2678	5355	8033	10710	17.76	3.55	41.54	48.63
2700	5400	8100	10800	17.75	3.57	42.99	47.89

* Harmonic Output below power level of X3 Output.

Frequency Multiplier (Tripler) RMK-3-812+

Typical Performance Data

Test Conditions: RF Input Power = 6 dBm @ -40°C

FREQUENCY (MHz)				CONVERSION LOSS (dB)	HARMONIC OUTPUT* (-dBc)		
X1 OUTPUT	X2 OUTPUT	X3 OUTPUT	X4 OUTPUT	X3 OUTPUT	X1 OUTPUT	X2 OUTPUT	X4 OUTPUT
1800	3600	5400	7200	16.25	8.54	54.27	35.30
1823	3645	5468	7290	15.77	8.72	54.46	34.91
1845	3690	5535	7380	16.02	8.35	61.87	35.28
1868	3735	5603	7470	15.78	8.51	58.38	35.35
1890	3780	5670	7560	15.58	8.40	58.39	34.95
1913	3825	5738	7650	15.36	8.54	73.74	36.08
1935	3870	5805	7740	15.35	8.30	64.42	37.22
1958	3915	5873	7830	15.13	8.36	63.55	35.88
1980	3960	5940	7920	14.53	8.82	65.42	39.07
2003	4005	6008	8010	14.36	8.72	59.34	40.36
2025	4050	6075	8100	14.39	8.60	60.31	36.95
2048	4095	6143	8190	14.37	8.59	59.80	40.11
2070	4140	6210	8280	13.99	8.79	56.10	43.57
2093	4185	6278	8370	14.10	8.59	55.41	44.53
2115	4230	6345	8460	14.35	8.29	52.55	44.46
2138	4275	6413	8550	14.10	8.42	52.55	45.41
2160	4320	6480	8640	13.85	8.42	55.67	48.42
2183	4365	6548	8730	13.92	8.09	55.01	54.03
2205	4410	6615	8820	14.05	7.94	50.29	52.76
2228	4455	6683	8910	13.99	7.78	54.10	51.91
2250	4500	6750	9000	13.87	7.85	59.72	54.66
2273	4545	6818	9090	14.23	7.40	55.01	55.13
2295	4590	6885	9180	14.66	6.92	57.57	49.52
2318	4635	6953	9270	14.49	7.00	55.21	51.11
2340	4680	7020	9360	14.42	6.85	53.21	58.16
2363	4725	7088	9450	14.53	6.63	50.60	57.99
2385	4770	7155	9540	14.78	6.42	53.04	56.19
2408	4815	7223	9630	14.61	6.45	51.55	63.16
2430	4860	7290	9720	14.67	6.29	47.19	59.35
2453	4905	7358	9810	14.99	6.00	47.47	51.08
2475	4950	7425	9900	15.59	5.40	48.89	52.07
2498	4995	7493	9990	15.65	5.27	48.59	52.97
2520	5040	7560	10080	15.35	5.31	44.49	48.68
2543	5085	7628	10170	14.92	5.45	46.10	44.62
2565	5130	7695	10260	15.25	5.10	46.33	44.61
2588	5175	7763	10350	15.26	5.02	47.64	45.69
2610	5220	7830	10440	14.87	5.17	46.68	45.13
2633	5265	7898	10530	15.15	4.87	46.14	43.86
2655	5310	7965	10620	15.45	4.47	48.51	44.40
2678	5355	8033	10710	15.67	4.22	43.17	46.99
2700	5400	8100	10800	15.51	4.58	47.05	45.92

* Harmonic Output below power level of X3 Output.

Frequency Multiplier (Tripler) RMK-3-812+

Typical Performance Data

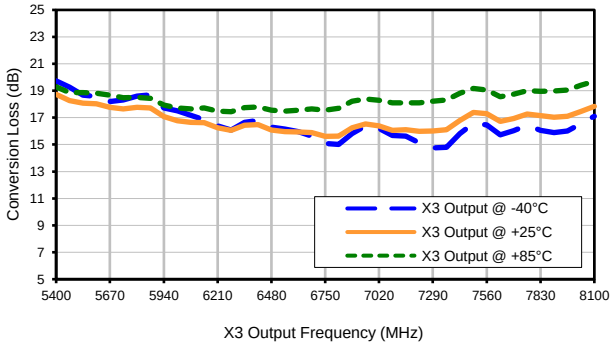
Test Conditions: RF Input Power = 6 dBm @ +85°C

FREQUENCY (MHz)				CONVERSION LOSS (dB)	HARMONIC OUTPUT* (-dBc)		
X1 OUTPUT	X2 OUTPUT	X3 OUTPUT	X4 OUTPUT	X3 OUTPUT	X1 OUTPUT	X2 OUTPUT	X4 OUTPUT
1800	3600	5400	7200	19.21	8.19	53.94	32.72
1823	3645	5468	7290	18.58	8.38	53.21	33.31
1845	3690	5535	7380	19.00	8.03	56.26	33.65
1868	3735	5603	7470	18.72	8.18	50.13	35.29
1890	3780	5670	7560	18.67	8.04	49.85	36.29
1913	3825	5738	7650	18.46	8.21	53.06	37.68
1935	3870	5805	7740	18.49	7.92	51.81	40.46
1958	3915	5873	7830	18.40	7.83	49.49	39.07
1980	3960	5940	7920	18.06	8.01	49.97	45.06
2003	4005	6008	8010	18.03	7.74	50.66	50.93
2025	4050	6075	8100	18.11	7.52	49.34	46.01
2048	4095	6143	8190	18.28	7.33	49.63	59.67
2070	4140	6210	8280	18.11	7.34	51.61	51.04
2093	4185	6278	8370	18.35	7.05	54.08	56.06
2115	4230	6345	8460	18.65	6.72	50.18	49.77
2138	4275	6413	8550	18.55	6.69	51.58	46.38
2160	4320	6480	8640	18.45	6.58	54.02	48.07
2183	4365	6548	8730	18.58	6.19	54.87	46.06
2205	4410	6615	8820	18.79	5.95	51.45	46.98
2228	4455	6683	8910	18.80	5.80	50.48	45.19
2250	4500	6750	9000	18.73	5.88	52.08	43.82
2273	4545	6818	9090	19.07	5.47	51.00	45.90
2295	4590	6885	9180	19.47	4.99	48.64	45.01
2318	4635	6953	9270	19.27	5.09	49.25	43.98
2340	4680	7020	9360	19.11	4.86	47.86	44.98
2363	4725	7088	9450	19.16	4.55	44.71	43.56
2385	4770	7155	9540	19.27	4.40	47.16	43.92
2408	4815	7223	9630	19.10	4.42	46.23	45.31
2430	4860	7290	9720	19.19	4.33	44.04	44.62
2453	4905	7358	9810	19.48	4.14	43.52	44.76
2475	4950	7425	9900	19.90	3.72	45.30	46.79
2498	4995	7493	9990	19.84	3.75	44.07	48.05
2520	5040	7560	10080	19.53	3.86	42.24	47.42
2543	5085	7628	10170	19.25	3.82	42.68	46.66
2565	5130	7695	10260	19.64	3.38	42.11	47.26
2588	5175	7763	10350	19.65	3.32	42.97	49.48
2610	5220	7830	10440	19.50	3.18	40.97	49.95
2633	5265	7898	10530	19.87	2.81	40.53	47.81
2655	5310	7965	10620	20.17	2.33	40.15	47.57
2678	5355	8033	10710	20.41	1.82	36.61	48.68
2700	5400	8100	10800	20.42	2.42	39.78	49.96

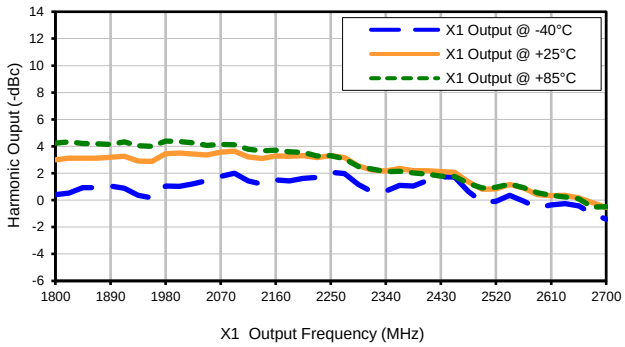
* Harmonic Output below power level of X3 Output.

Typical Performance Curves

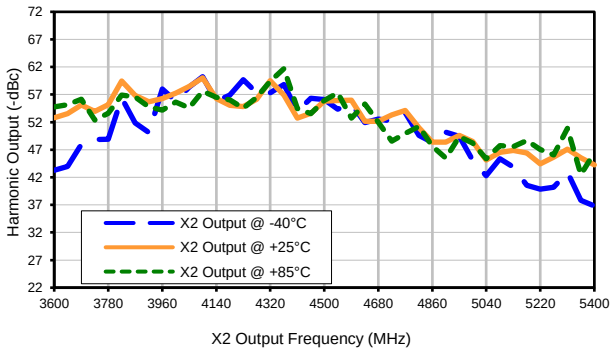
Conversion Loss X3 Output @ RF IN =0dBm



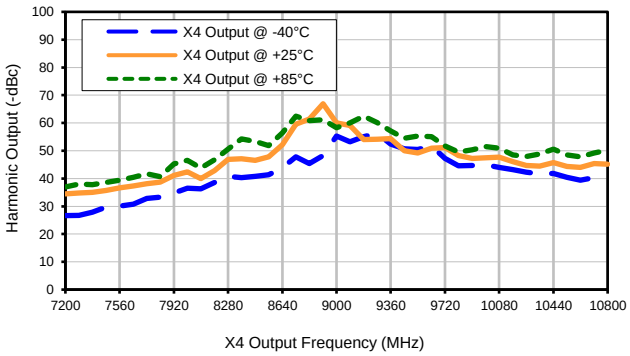
Harmonic X1 Output @ RF IN =0dBm



Harmonic X2 Output @ RF IN =0dBm

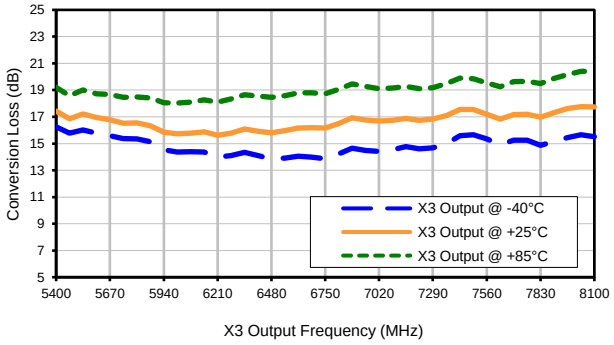


Harmonic X4 Output @ RF IN =0dBm

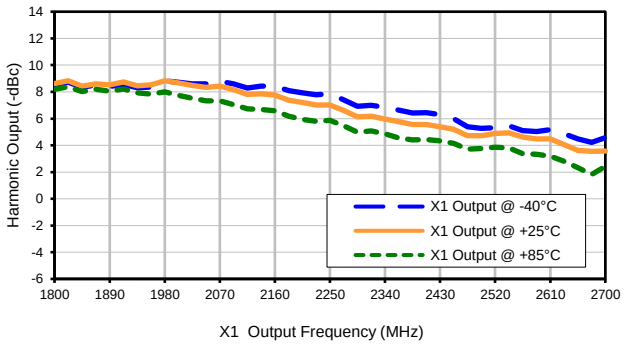


Typical Performance Curves

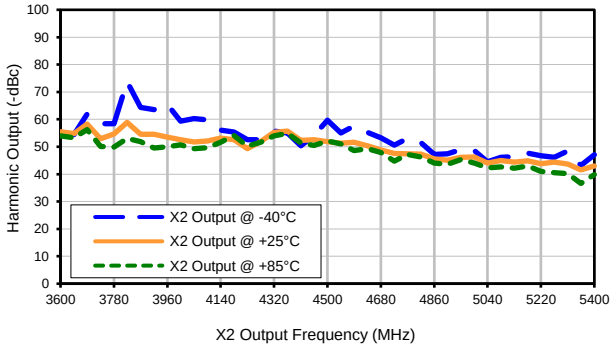
Conversion Loss X3 Output @ RF IN=6dBm



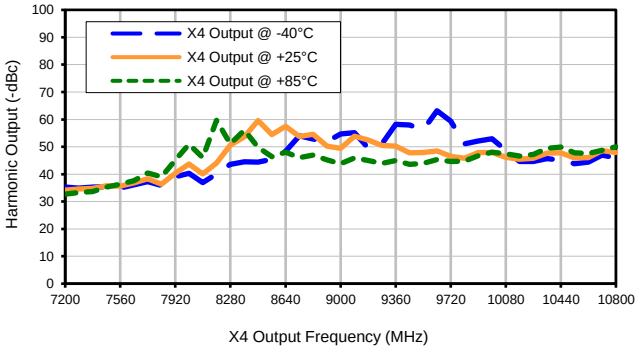
Harmonic X1 Output @ RF IN=6dBm



Harmonic X2 Output @ RF IN=6dBm



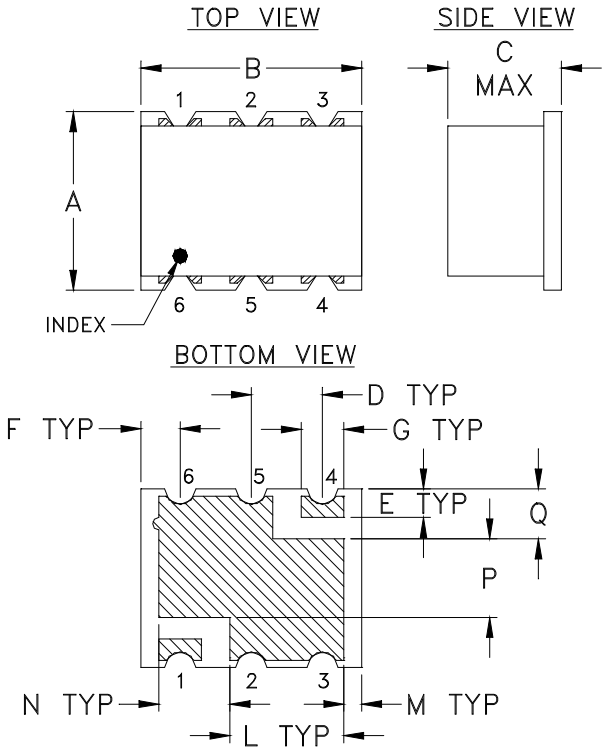
Harmonic X4 Output @ RF IN=6dBm



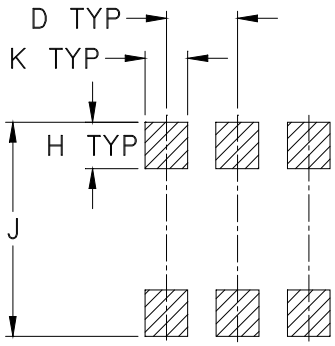
Case Style TT

TT1224

Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L
TT1224	.25 (6.35)	.31 (7.87)	.16 (4.06)	.100 (2.54)	.040 (1.02)	.055 (1.40)	.060 (1.52)	.065 (1.65)	.300 (7.62)	.060 (1.52)	.160 (4.06)

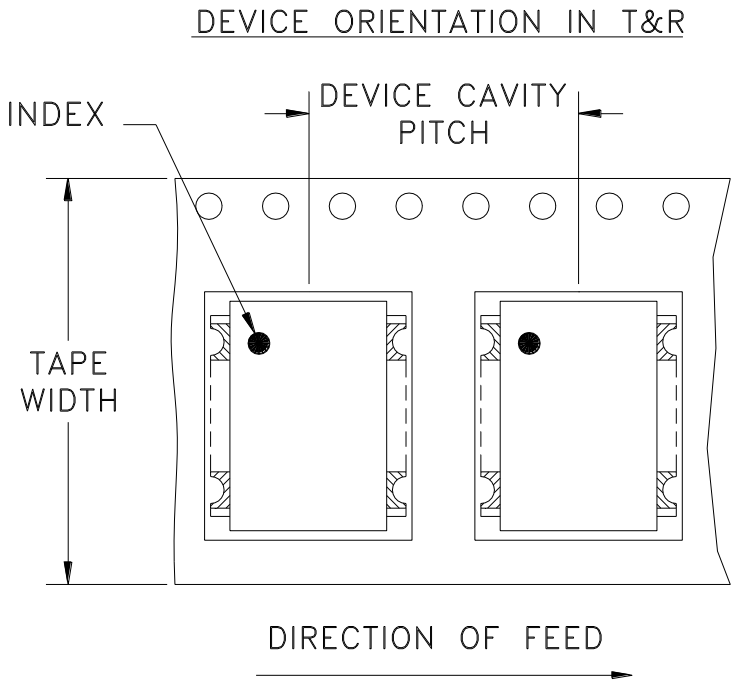
CASE #	M	N	P	Q	WT. GRAM
TT1224	.025 (.64)	.100 (2.54)	.110 (2.79)	.070 (1.78)	.16

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

Notes:

1. Case material: Plastic.
2. Termination: 2-10 µ inch (.05-.25 microns) Gold over 100-300 µ inch (2.54-7.62 microns) Nickel plate

Tape & Reel Packaging TR-F2



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel See note
16	12	7	10
			20
			50
			100
			200
		13	500

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

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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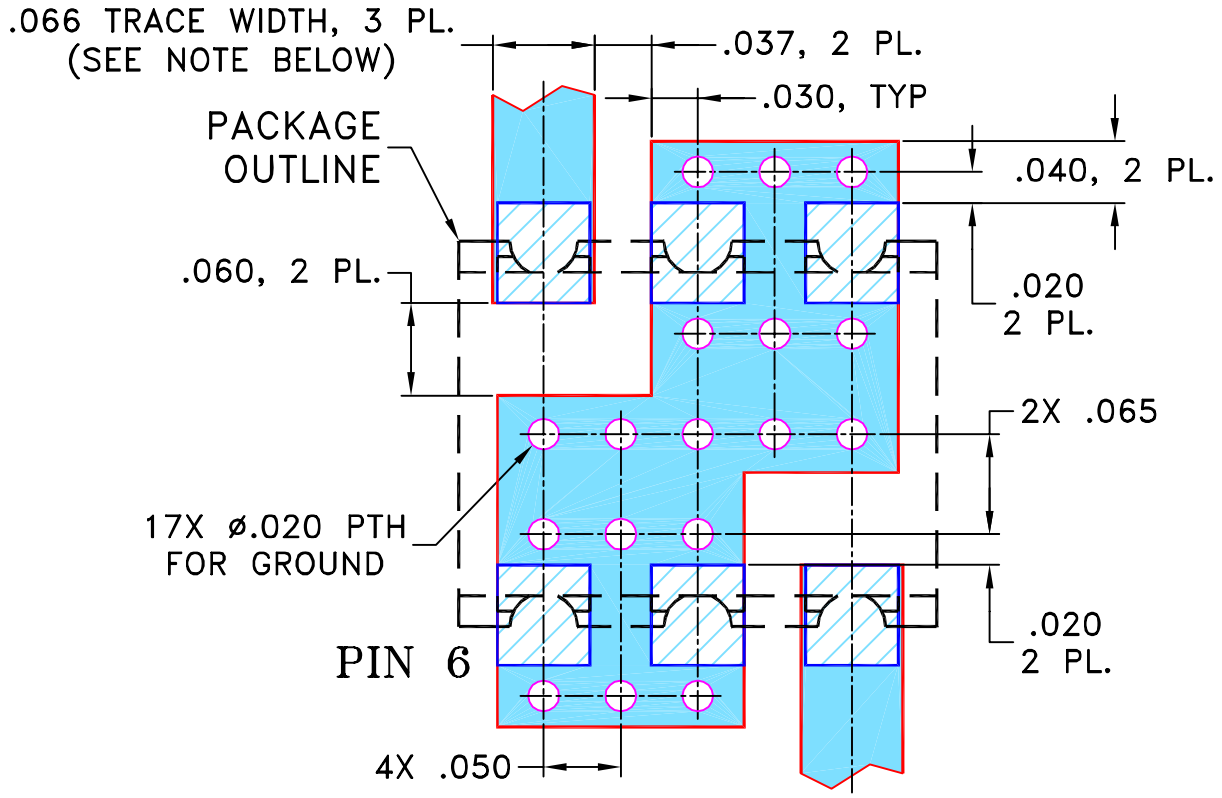
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M108897	NEW RELEASE	01/04/07	AV	DJ

SUGGESTED MOUNTING CONFIGURATION FOR TT1224 CASE STYLE "rv" PIN CONNECTION



NOTES:
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.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	AV	12/14/06
TOLERANCES ON:	CHECKED	IL	01/04/07
2 PL DECIMALS ±	APPROVED	DJ	01/04/07
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

ASHEETA1.DWG REV:A DATE:01/12/95

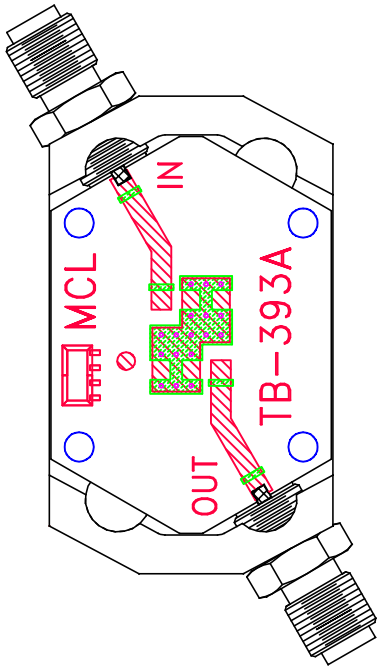
Mini-Circuits®
13 Neptune Avenue
Brooklyn NY 11235

PL, rv, TT1224, RMK-3-662+, TB-393

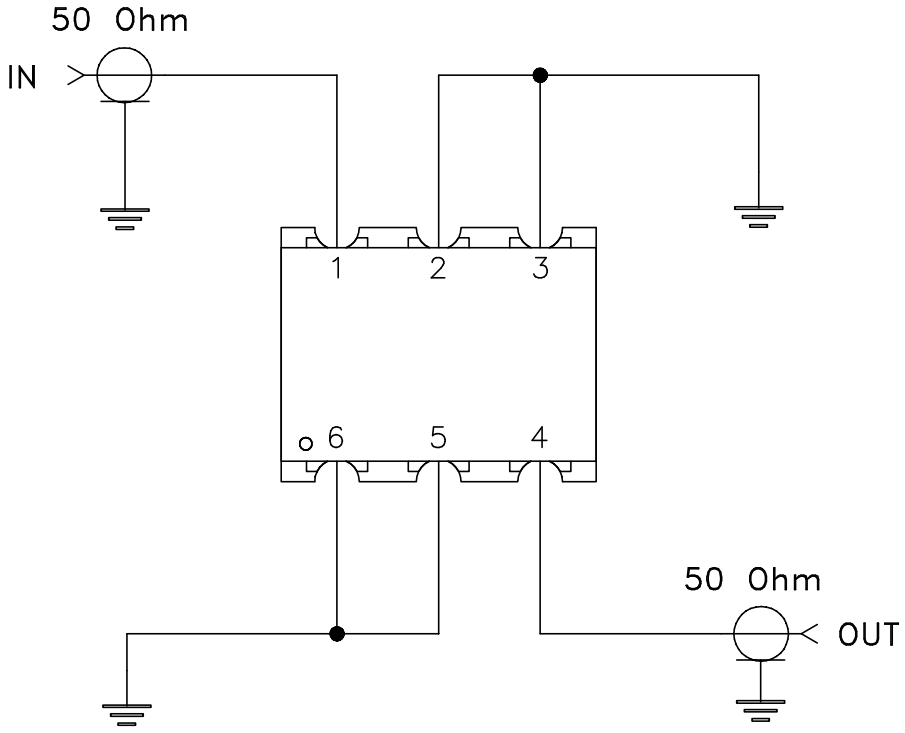
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-258	OR

FILE:	SCALE:	SHEET:
98PL258	8:1	1 OF 1

Evaluation Board and Circuit



TB-393



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

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Environmental Specifications ENV02T1

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