

most widely used

49E D ■ 8068811 0001213 568 ■ SCC

Frequency Mixers

LEVEL 7 (+7dBm LO, up to +1dBm RF)

SCIENTIFIC/ MINI-CIRCUITS

Models

T-74-09-01

SAM-2 TFM-2
SYM-2 ZEM-2B
TFM-2P* ZFM-2
TSM-2 ZLW-2



computer-automated performance data

typical production unit / for data of other models consult factory

mixer conversion loss and isolation

RF MHz	LO MHz	Conversion Loss (dB)			Isolation L-R (dB)			Isolation L-I (dB)		
		LO +4dBm	LO +7dBm	LO +10dBm	LO +4dBm	LO +7dBm	LO +10dBm	LO +4dBm	LO +7dBm	LO +10dBm
1.000	31.00	7.65	7.23	7.05	> 64.00	> 67.00	> 70.00	> 64.00	> 67.00	> 70.00
2.000	32.00	6.99	6.50	6.38	> 64.00	> 67.00	> 70.00	> 64.00	> 67.00	> 70.00
5.000	35.00	6.14	5.80	5.68	> 64.00	> 67.00	> 70.00	> 64.00	> 67.00	> 70.00
10.000	40.00	6.01	5.62	5.47	> 64.00	> 67.00	> 70.00	> 64.00	> 67.00	> 70.00
20.000	50.00	6.10	5.68	5.51	> 64.00	> 67.00	> 70.00	> 64.00	> 67.00	> 70.00
50.000	80.00	5.94	5.58	5.44	> 64.00	61.94	60.30	> 64.00	63.74	61.51
100.000	70.00	5.88	5.53	5.39	56.03	54.33	53.23	55.98	54.76	53.55
167.340	137.34	5.89	5.57	5.44	50.05	48.65	48.08	48.75	47.61	47.01
233.870	203.87	6.02	5.72	5.54	46.08	45.10	44.88	43.82	43.03	43.10
300.400	270.40	5.74	5.45	5.37	43.14	42.56	42.56	40.29	40.00	40.23
366.940	336.94	6.01	5.73	5.58	40.77	40.45	40.57	37.73	37.57	38.18
466.740	436.74	6.15	5.82	5.66	38.41	38.33	38.72	33.78	34.32	35.36
500.000	470.00	6.05	5.72	5.56	38.98	38.80	39.09	33.83	34.40	34.86
599.810	569.81	6.34	6.02	5.78	38.50	37.43	36.87	32.71	32.81	32.88
666.340	636.34	6.54	6.11	5.88	38.54	37.94	37.43	31.60	31.57	31.51
799.410	769.41	7.07	6.27	5.92	35.96	36.06	36.24	29.94	29.67	29.67
832.680	802.68	7.29	6.46	6.03	35.29	35.22	35.39	28.80	28.79	28.42
899.210	869.21	7.77	7.00	6.39	34.14	33.77	33.77	26.59	26.14	25.92
932.480	902.48	8.11	7.37	6.84	33.72	33.17	33.14	25.85	25.03	24.52
1000.000	969.00	8.20	7.63	7.18	33.25	32.49	32.14	24.75	23.59	22.58

mixer VSWR

φ detection

freq. MHz	VSWR, RF port			VSWR, LO port			VSWR, IF port			Freq. (MHz)	max. DC output mV	DC offset mV
	LO +4dBm	LO +7dBm	LO +10dBm	LO +4dBm	LO +7dBm	LO +10dBm	LO +4dBm	LO +7dBm	LO +10dBm			
5.001	1.26	1.30	1.34	1.77	2.70	4.33	1.43	1.24	1.09	1.000	-230.07	+ .09
10.000	1.12	1.15	1.20	1.71	2.63	3.91	1.44	1.25	1.10	2.000	-234.86	+ .09
20.000	1.04	1.07	1.15	1.76	2.77	3.95	1.43	1.25	1.10	5.000	-240.18	+ .08
50.000	1.02	1.06	1.15	1.69	2.55	3.74	1.44	1.25	1.11	20.000	-240.24	+ .09
100.000	1.06	1.07	1.14	1.63	2.41	3.37	1.45	1.27	1.13	50.000	-236.50	+ .09
155.760	1.09	1.09	1.14	1.61	2.37	3.24	1.49	1.31	1.18	100.000	-238.59	+ .08
200.000	1.12	1.11	1.14	1.54	2.29	3.18	1.54	1.36	1.23	161.970	-242.90	+ .06
306.520	1.18	1.16	1.16	1.53	2.20	2.95	1.66	1.48	1.35	200.000	-243.36	+ .02
366.820	1.21	1.18	1.17	1.52	2.16	2.89	1.75	1.57	1.44	290.750	-246.83	+ .11
427.130	1.23	1.20	1.18	1.52	2.13	2.83	1.84	1.66	1.53	322.940	-237.61	+ .11
500.000	1.26	1.22	1.21	1.55	2.06	2.74	1.97	1.77	1.66	387.330	-224.03	+ .01
547.740	1.28	1.23	1.22	1.53	2.13	2.70	2.04	1.88	1.78	451.720	-223.29	+ .22
608.040	1.30	1.26	1.24	1.50	2.09	2.65	2.02	1.87	1.77	500.000	-229.56	+ .23
668.340	1.34	1.29	1.27	1.51	2.09	2.65	2.07	1.90	1.81	580.490	-229.04	+ .37
728.650	1.38	1.34	1.32	1.56	2.04	2.69	2.08	1.91	1.83	644.880	-207.44	+ .48
788.950	1.44	1.40	1.38	1.61	2.13	2.69	2.07	1.91	1.82	709.270	-196.52	+ 1.06
849.260	1.51	1.47	1.46	1.63	2.19	2.70	2.02	1.86	1.77	773.660	-188.54	+ .83
909.560	1.58	1.55	1.54	1.67	2.24	2.78	1.93	1.77	1.68	838.040	-187.28	+ .49
969.860	1.68	1.66	1.66	1.74	2.28	2.85	1.81	1.66	1.57	902.430	-173.88	+ .72
1000.000	1.75	1.72	1.72	1.77	2.30	2.89	1.74	1.60	1.51	934.630	-171.49	+ .76
										1000.000	-178.52	+ .64

Measurements at RF & LO Power +7 dBm
* PHASE POSITIVE

1 to 1000 MHz

Mini-Circuits

ULTRA-REL™ MIXERS
5-YR. GUARANTEE*

00-03

T-74-09-01

mixer harmonic intermodulation

(relative to desired IF output)

RF CAL	0	1	2	3	4	5	6	7	8	9	10
0 > 90	-	14	29	23	42	25	43	53	57	65	72
1 > 90	20	-	29	12	34	25	47	35	42	57	57
2 > 90	76	52	40	58	40	58	41	50	48	66	53
3 > 90	86	46	49	50	49	53	49	52	48	58	57
4 > 90	84	73	73	65	62	66	59	66	55	65	70
5 > 90	85	77	76	84	63	64	60	59	60	59	68
6 > 90	85	78	79	78	82	79	79	76	75	74	79
7 > 90	85	79	78	77	79	82	80	81	80	79	78
8 > 90	86	79	80	79	78	78	> 84	> 84	> 82	> 82	81
9 > 90	85	79	79	80	79	78	> 84	> 84	> 82	> 83	> 82
10 > 90	86	79	79	79	79	80	79	78	> 84	> 84	> 82
	0	1	2	3	4	5	6	7	8	9	10

Harmonic LO Order

test conditions: RF=500.100 MHz INPUT P. = -3.98DBM
LO=470.010 MHz INPUT P. = +6.86DBM
IF=30.090 MHz IF AMPLIT. = -10.31 DBM

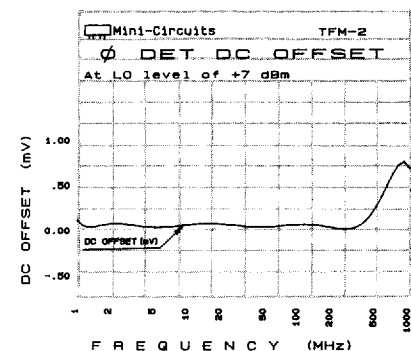
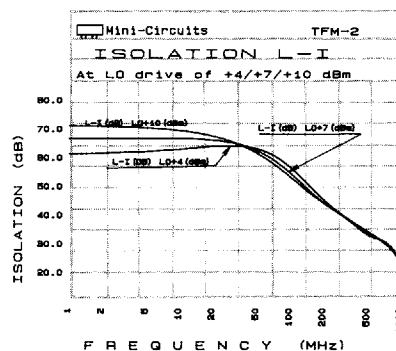
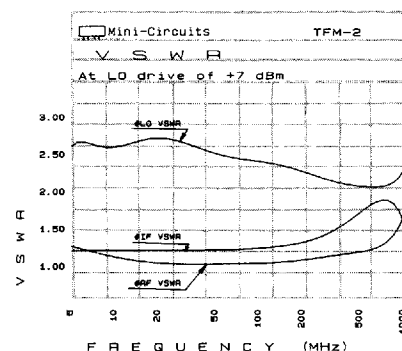
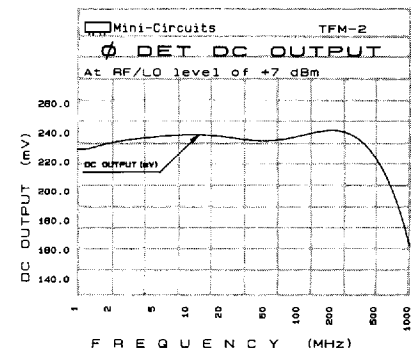
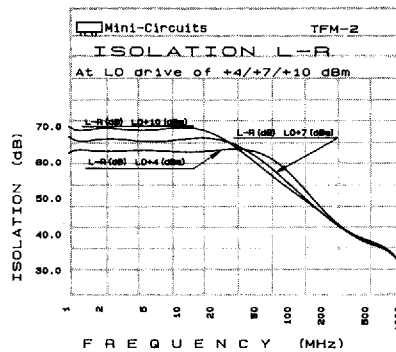
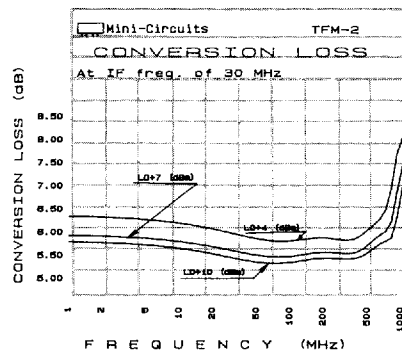
RF CAL	0	1	2	3	4	5	6	7	8	9	10
0 > 81	-	5	19	11	28	14	31	32	47	61	58
1 > 81	19	-	32	12	30	24	44	35	36	59	49
2 > 81	65	48	> 72	48	64	47	58	54	63	60	65
3 > 81	66	70	65	> 72	64	68	64	72	68	68	66
4 > 81	69	> 74	> 74	> 72	> 72	> 72	> 72	> 74	> 73	68	69
5 > 81	68	68	> 74	74	> 72	> 72	> 72	> 72	> 74	> 74	67
6 > 81	69	69	68	> 74	> 74	> 72	> 72	> 72	> 72	> 74	> 74
7 > 81	69	68	67	69	73	74	> 72	> 72	> 72	> 72	> 74
8 > 81	69	70	69	68	68	> 74	> 74	> 72	> 72	> 72	> 72
9 > 81	69	69	69	69	69	68	> 74	> 74	> 72	> 72	> 72
10 > 80	69	69	70	70	69	69	68	> 74	> 74	> 72	> 72
	0	1	2	3	4	5	6	7	8	9	10

Harmonic LO Order

test conditions: RF=500.100 MHz INPUT P. = -13.94DBM
LO=470.010 MHz INPUT P. = +6.86DBM
IF=30.090MHz IF=AMPLIT. = -20.22 DBM

typical performance curves

(production unit)



In Stock...Immediate Delivery