

## Non-Catalog Model

# Frequency Mixer

## Level 7 (LO Power +7 dBm)

# GRA-3

### Important Note

This is a non-catalog model and can be manufactured on specific request. Pricing and delivery information can be supplied upon request.



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**CASE STYLE : D09**

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		Min.	Typ.	Max.	Units
<b>Frequency</b>	<b>LO</b> (fL to fU)	0.025		200	MHz
	<b>RF</b> (fL to fU)	0.025		200	MHz
	<b>IF</b>	0		200	MHz
<b>Conversion Loss</b>	<b>mid band</b>		4.8	7.5	dB
	<b>Total Range</b>			8.5	dB
<b>LO-RF Isolation</b>	<b>Low Range</b>	50	60		dB
	<b>Mid Range</b>	35	45		dB
	<b>Upper Range</b>	25	35		dB
<b>LO-IF Isolation</b>	<b>Low Range</b>	35	45		dB
	<b>Mid Range</b>	30	40		dB
	<b>Upper Range</b>	20	30		dB
<b>1 dB Comp. Input Power</b>			+1		dBm

**Notes:** Low Range = [fL to 10fL]  
mid band = [2fL to fU/2]

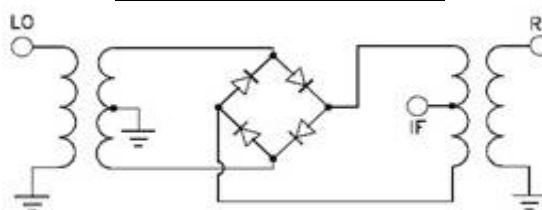
Mid Range = [10fL to fU/2]

Upper Range = [fU/2 to fU]

MAXIMUM RATINGS	
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

PIN CONNECTIONS	
LO	1
RF	6
IF	4
GROUND	2, 3, 5

### Electrical Schematics



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## Typical Performance Data

RF (MHz)	LO (MHz)	CONVERSION LOSS (dB)			LO (MHz)	LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)		
		@LO (dBm)				@LO (dBm)		@LO (dBm)		
		+4	+7	+10		+7	+10	+4	+7	+10
0.03	30.0	7.21	6.94	6.77	0.03	61.7	58.7	56.6	57.1	53.3
0.04	30.0	6.05	5.80	5.65	0.04	57.7	55.4	54.0	54.3	51.4
0.05	30.1	5.74	5.52	5.37	0.05	56.7	54.6	53.3	53.6	51.1
0.10	30.1	5.32	5.16	4.95	0.10	55.4	53.5	52.6	52.4	50.4
0.20	30.2	5.21	4.98	4.86	0.20	55.0	53.3	52.5	52.0	50.2
0.50	30.5	5.14	4.92	4.82	0.50	54.6	53.1	52.3	51.9	50.1
1.00	31.0	5.00	4.82	4.72	1.00	53.9	53.2	52.2	51.8	50.5
2.00	32.0	4.95	4.77	4.67	2.00	53.8	53.1	52.2	51.4	50.6
5.00	35.0	4.94	4.76	4.66	5.00	54.2	53.4	52.4	52.0	51.0
10.00	40.0	5.00	4.81	4.69	10.00	54.4	53.7	52.7	52.4	51.3
20.00	50.0	5.11	4.87	4.75	20.00	54.5	53.7	52.8	51.6	50.5
38.48	68.5	5.19	4.96	4.84	38.48	54.6	53.3	52.3	51.1	48.5
50.00	80.0	5.16	4.94	4.84	50.00	54.8	53.5	52.5	50.0	47.5
69.25	99.2	5.10	4.90	4.78	69.25	54.4	53.5	52.8	47.7	45.8
84.63	54.6	5.07	4.86	4.78	84.63	54.1	53.3	52.5	45.3	44.1
100.00	70.0	4.95	4.81	4.73	100.00	53.9	53.6	53.0	43.5	42.7
123.09	93.1	5.02	4.87	4.81	123.09	55.2	55.3	55.0	40.9	40.6
153.85	123.9	5.11	4.96	4.89	153.85	52.3	53.0	52.9	38.7	38.0
176.93	146.9	5.30	5.19	5.10	176.93	47.7	49.5	51.1	37.8	38.8
200.00	170.0	5.37	5.28	5.21	200.00	43.9	45.6	47.5	36.2	38.3

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## Typical Performance Data

RF/LO (MHz)	RF VSWR (:1)			LO VSWR (:1)			IF (MHz)	IF VSWR (:1)			LO/RF (MHz)	max. DC output (mV)	DC Offset (mV)
	@LO (dBm)			@LO (dBm)				@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10		+4	+7	+10	+7		
5.00	1.28	1.16	1.09	1.39	2.06	2.93	5.00	1.53	1.42	1.33	0.03	-227.8	0.96
10.00	1.29	1.17	1.09	1.38	2.04	2.90	10.00	1.54	1.43	1.33	0.03	-237.3	1.02
16.14	1.29	1.17	1.09	1.36	2.01	2.83	16.14	1.55	1.44	1.34	0.05	-248.9	1.03
20.00	1.29	1.16	1.09	1.34	1.99	2.80	20.00	1.55	1.44	1.34	0.10	-255.2	1.01
27.29	1.28	1.16	1.08	1.39	2.05	2.85	27.29	1.55	1.45	1.35	0.50	-258.7	1.02
38.43	1.27	1.15	1.08	1.43	2.08	2.86	38.43	1.57	1.46	1.36	2.00	-256.8	1.02
44.00	1.27	1.15	1.07	1.42	2.07	2.86	44.00	1.58	1.47	1.37	5.00	-253.4	1.00
50.00	1.26	1.14	1.07	1.42	2.07	2.84	50.00	1.59	1.49	1.39	10.00	-256.8	0.99
60.71	1.25	1.13	1.06	1.41	2.05	2.80	60.71	1.62	1.52	1.42	20.00	-253.0	0.98
77.43	1.23	1.11	1.06	1.41	2.02	2.77	77.43	1.67	1.57	1.47	38.48	-249.2	0.98
94.14	1.21	1.10	1.06	1.42	2.02	2.77	94.14	1.73	1.63	1.53	53.86	-257.1	1.07
100.00	1.20	1.09	1.06	1.42	2.02	2.75	100.00	1.76	1.65	1.55	69.25	-254.5	1.11
110.86	1.18	1.09	1.08	1.44	2.03	2.75	110.86	1.81	1.70	1.61	84.63	-257.0	1.21
122.00	1.17	1.08	1.09	1.45	2.03	2.76	122.00	1.87	1.75	1.64	100.00	-257.9	1.33
138.71	1.16	1.09	1.12	1.47	2.05	2.74	138.71	1.99	1.85	1.76	115.40	-255.2	1.28
149.86	1.15	1.11	1.14	1.51	2.07	2.72	149.86	2.05	1.92	1.81	130.78	-249.2	1.29
166.57	1.15	1.13	1.17	1.53	2.11	2.76	166.57	2.16	2.01	1.91	153.85	-254.9	1.35
177.71	1.16	1.15	1.20	1.56	2.13	2.79	177.71	2.24	2.08	1.98	169.24	-255.8	1.58
188.86	1.17	1.18	1.23	1.59	2.14	2.82	188.86	2.31	2.16	2.05	184.62	-255.3	1.77
200.00	1.19	1.21	1.25	1.61	2.15	2.80	200.00	2.39	2.24	2.11	200.00	-253.6	1.72

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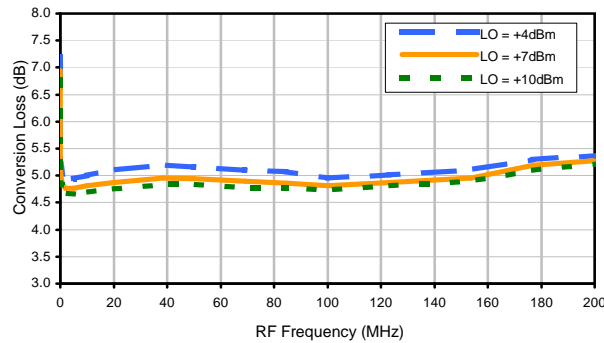


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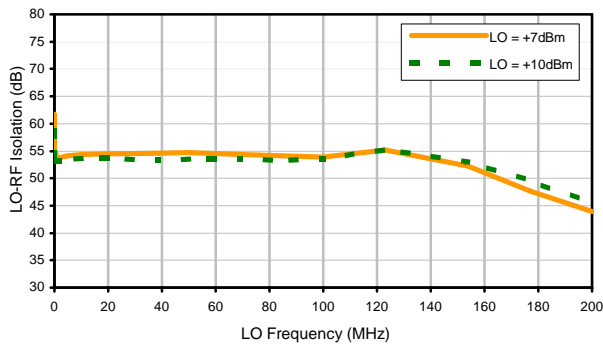


## Typical Performance Curves

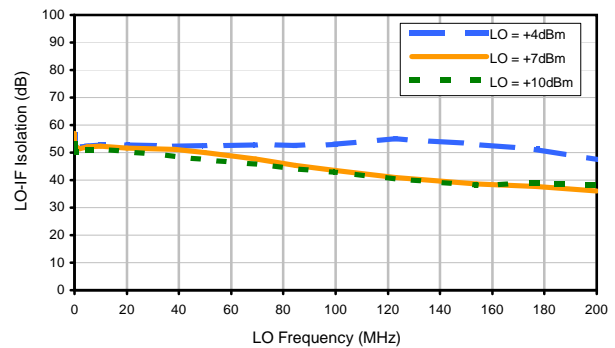
Conversion Loss



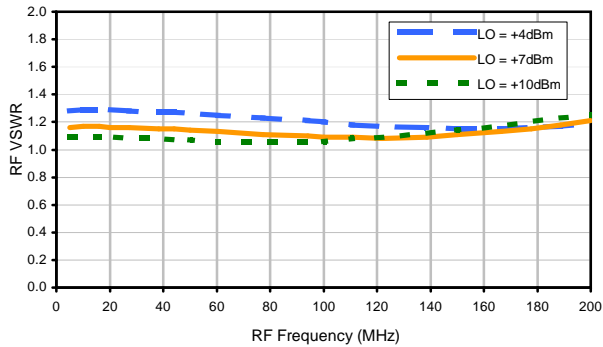
LO-RF Isolation



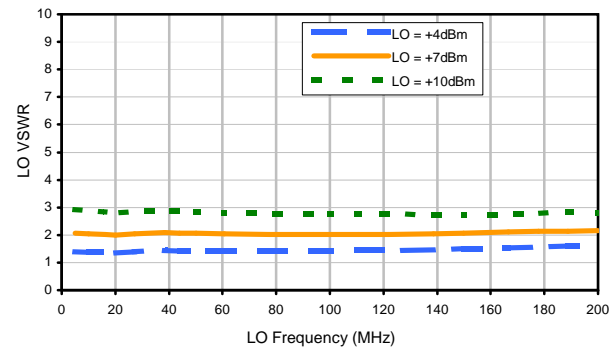
LO-IF Isolation



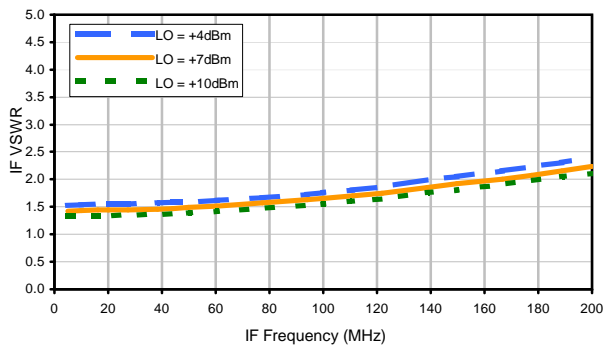
RF VSWR



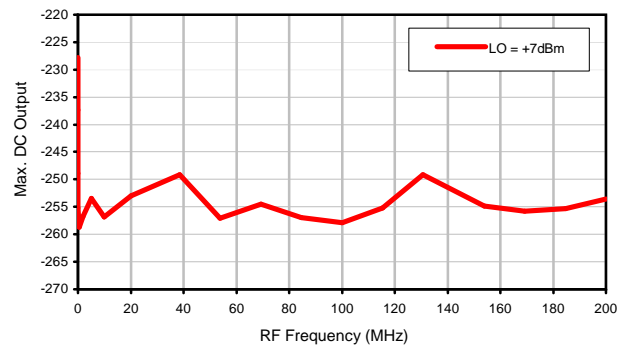
LO VSWR



IF VSWR



Max. DC Output



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