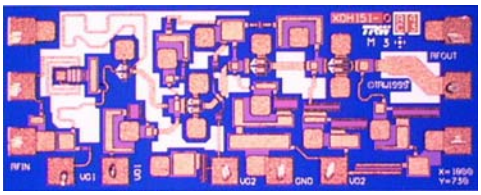
XDH151
57 - 65 GHz X2 Multiplier

Product Datasheet

Revision: May 2007



X=1800 µm Y=730 µm

Applications

- Short Haul / High Capacity Links
- Wireless LANs

Features

- X2 Active Multiplier
- Input frequency: 28.5 to 32.5 GHz
- Output frequency: 57 to 65 GHz
- Conversion Gain: 0 - 10 dB
- RF Input Power: 0 dBm
- Die Size: 1.3 sq. mm

Product Description

The XDH151 is a monolithic HEMT multiplier designed for use in commercial digital radios and wireless LANs. To ensure rugged and reliable operation, HEMT devices are fully passivated. Both bond pad and backside metallization are Ti/Au, which is compatible with conventional die attach, thermocompression, and thermosonic wire bonding assembly techniques.

Performance Characteristics (T_{OP} = 25°C)

Specification	Min	Typ	Max	Unit
Input Frequency	28.5		32.5	GHz
Output Frequency	57		65	GHz
Input Power		0		dBm
Output Power	0		10	dBm
Vd1		3		V
Id1		1		mA
Vd2		5		V
Id2		127		mA
Vg1		-0.5		V
Vg2		0		V

Absolute Maximum Ratings (T_{OP} = 25°C)

Parameter	Min	Max	Unit
Vd1		5.5	V
Id1		20	mA
Vd2		5.5	V
Id2		160	mA
Vg1	-1	+0.3	V
Vg2	-1	+0.3	V
Input Drive Level		5	dBm
Assy. Temperature (60 seconds)		300	° C

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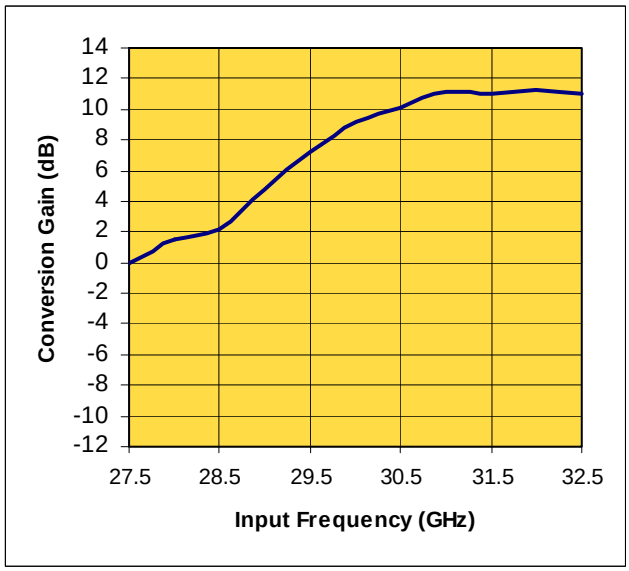
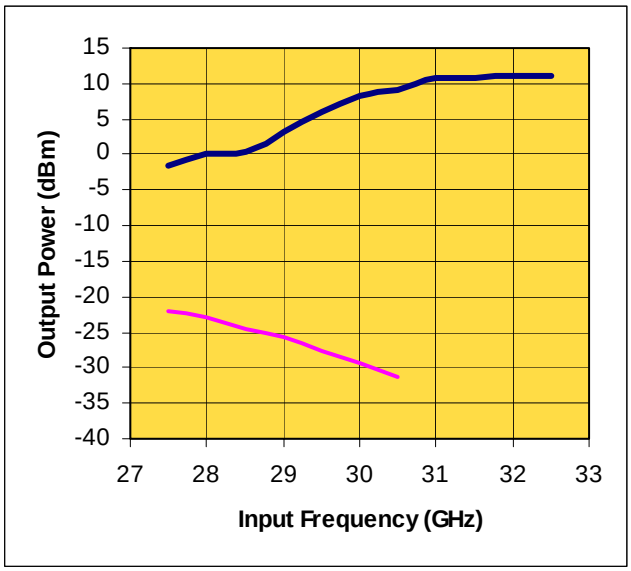
Measured Performance Characteristics (T_{OP} = 25°C)
RF Input = 0 dBm

Conversion Gain



Output Power



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Measured Performance Characteristics (T_{OP} = 25°C)
RF Input = 0 dBm

Freq (GHz)	S11 Mag	S11 Ang	S21 Mag	S21 Ang	S12 Mag	S12 Ang	S22 Mag	S22 Ang
20.0	0.99	45.27	0.01	-121.28	0.003	-169.51	0.71	-166.06
21.0	0.99	41.47	0.02	-121.99	0.001	-60.30	0.65	-171.24
22.0	0.98	38.39	0.02	-139.93	0.002	166.65	0.61	-175.07
23.0	0.98	35.18	0.02	-151.85	0.002	125.70	0.57	-178.28
24.0	0.97	31.41	0.03	-166.71	0.002	136.39	0.54	179.55
25.0	0.94	27.06	0.03	-176.07	0.002	-158.10	0.51	177.48
26.0	0.89	22.67	0.04	163.37	0.002	-54.97	0.49	175.77
27.0	0.80	20.60	0.05	134.62	0.003	-150.92	0.48	173.46
28.0	0.72	24.93	0.05	98.52	0.001	121.57	0.48	171.78
29.0	0.72	29.21	0.04	69.53	0.004	-98.00	0.48	170.09
30.0	0.72	31.06	0.03	48.82	0.004	101.94	0.47	167.62
31.0	0.73	33.88	0.02	34.25	0.004	145.63	0.48	163.50
32.0	0.75	36.99	0.01	-1.92	0.006	-174.39	0.49	158.83
33.0	0.82	38.97	0.00	62.99	0.007	133.28	0.49	153.46
34.0	0.88	38.40	0.01	103.66	0.005	153.22	0.48	148.92
35.0	0.94	36.44	0.03	88.70	0.002	157.10	0.48	141.59
36.0	0.97	33.38	0.07	59.91	0.005	115.26	0.48	133.36
37.0	1.02	30.36	0.16	17.49	0.007	168.17	0.46	125.13
38.0	1.02	27.96	0.31	-38.40	0.002	179.00	0.44	116.91
39.0	1.01	26.27	0.46	-99.41	0.002	152.98	0.42	108.03
40.0	1.02	24.27	0.51	-148.99	0.009	-106.80	0.38	98.50
41.0	1.02	22.74	0.54	171.18	0.006	110.72	0.34	87.61
42.0	1.05	21.30	0.60	138.51	0.008	-43.36	0.31	76.94
43.0	1.06	20.19	0.66	104.97	0.019	119.78	0.27	68.66
44.0	1.06	18.64	0.69	73.04	0.012	-39.02	0.24	57.69
45.0	1.04	16.31	0.71	43.27	0.015	-170.99	0.22	44.13
46.0	1.06	15.10	0.79	19.04	0.042	17.37	0.20	32.66
47.0	1.03	13.84	0.80	-15.84	0.032	156.39	0.16	-5.44
48.0	1.04	11.44	0.74	-41.45	0.018	-29.51	0.11	-33.78
49.0	1.04	11.29	0.72	-65.15	0.010	111.65	0.13	-49.93
50.0	1.03	10.04	0.67	-85.72	0.012	-53.01	0.10	-79.31

Die Size and Bond Pad Locations