



RFMA7185

UPDATED 10/06/04

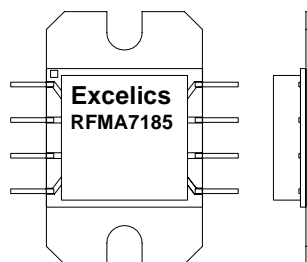
7.10 – 8.50 GHz Power Amplifier MMIC

FEATURES

- 7.10– 8.50GHz Operating Frequency Range
- 32.5dBm Output Power at 1dB Compression
- 30.0 dB Typical Power Gain @1dB gain compression
- -45dBc Typical OIM3 @ each tone Pout 22dBm

APPLICATIONS

- Point-to-point and point-to-multipoint radio
- Military Radar Systems



Caution! ESD sensitive device.

ELECTRICAL CHARACTERISTICS (T_b = 25 °C, 50 ohm, V_{dd}=10V, V_{gg}=-5V)

SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
F	Operating Frequency Range	7.1		8.5	GHz
P _{1dB}	Output Power at 1dB Gain Compression	31.5	32.5		dBm
G _{1dB}	Gain @1dB gain compression	26.0	30.0		dB
OIMD3	Output 3 rd Order Intermodulation Distortion @Δf=10MHz, Each Tone Pout 22dBm	-42	-45		dBc
Input RL	Input Return Loss		-12	-6	dB
Output RL	Output Return Loss		-6		dB
I _{dd}	Drain Current @small signal output power level		1350	1500	mA
V _{dd}	Drain Supply Voltage		10		V
V _{gg}	Gate Supply Voltage		-5		V
R _{th}	Thermal Resistance		4	4.5	°C/W
T _b	Operating Base Plate Temperature	- 30		+ 80	°C

MAXIMUM RATINGS @25°C^{1,2}

SYMBOL	CHARACTERISTIC	ABSOLUTE	CONTINUOUS ^{1,2}
V _{DD}	Drain Supply Voltage	14V	10V
V _{GG}	Gate Supply Voltage	-10V	-5.5 V
I _{DQ}	Quiescent Drain Current	I _{dss}	1.5A
I _{GG}	Gate Current	150mA	50 mA
P _{IN}	Input Power	8dBm	@ 3dB compression
T _{CH}	Channel Temperature	175°C	150°C
T _{STG}	Storage Temperature	-65/175°C	-65/150°C
P _T	Total Power Dissipation	30W	15W

Notes:

1. Operating the device beyond any of the above rating may reduce MTTF and cause permanent damage.

2. Bias conditions must also satisfy the following equation $V_{dd} \cdot I_{dd} < (T_{CH} - T_b) / R_{TH}$

Specifications are subject to change without notice.

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Revised October 2004



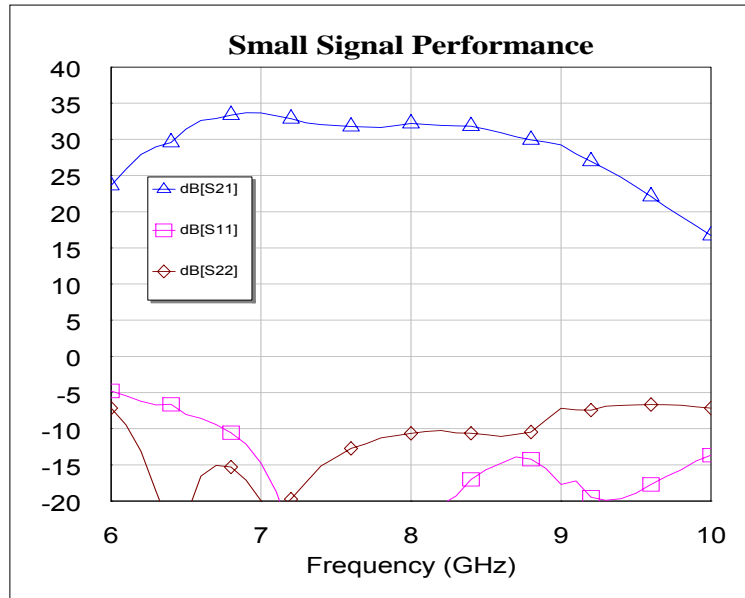
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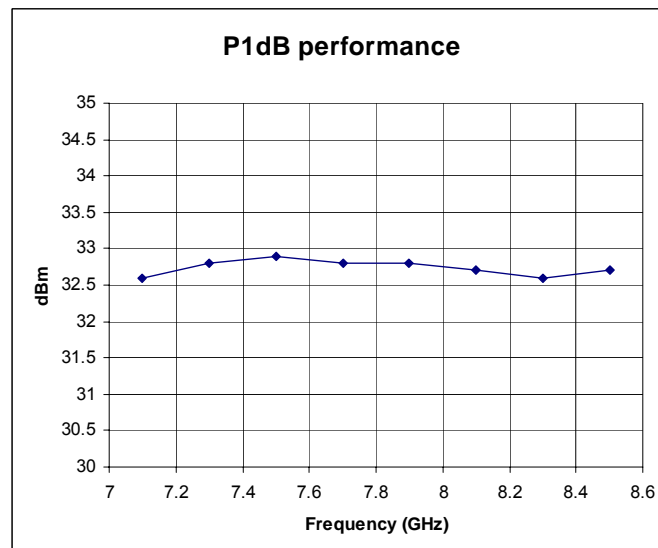
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TYPICAL PERFORMANCE

1. Small Signal Performance (@V_{DD}= 10V, V_{GG}= -5V)



2. P1dB Performance (@V_{DD}= 10V, V_{GG}= -5V)



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S-Parameter

Vdd=10V, Vgg=-5V, Idd=1400mA

Frequency GHz	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
6.60	0.37	-161.40	42.72	39.43	0.0015	-36.03	0.15	-56.89
6.64	0.37	-168.56	43.34	23.91	0.0014	165.85	0.16	-70.62
6.72	0.33	178.70	44.83	-4.09	0.0017	-115.06	0.18	-93.92
6.80	0.30	163.45	46.54	-32.86	0.0016	-143.12	0.17	-115.19
6.88	0.26	149.69	48.59	-59.99	0.0023	63.13	0.14	-130.23
6.96	0.20	131.90	48.48	-89.10	0.0012	-106.62	0.11	-137.38
7.04	0.15	112.59	47.75	-116.48	0.0004	-71.12	0.10	-135.06
7.12	0.10	98.40	45.77	-142.81	0.0012	74.50	0.09	-117.72
7.20	0.06	79.35	43.93	-167.57	0.0004	-55.78	0.10	-109.81
7.28	0.03	53.57	41.86	169.21	0.0003	175.49	0.13	-111.77
7.36	0.01	-21.99	40.54	147.51	0.0007	6.02	0.16	-117.87
7.44	0.03	-92.23	39.46	125.93	0.0011	-44.70	0.18	-125.79
7.52	0.05	-114.12	39.41	104.16	0.0010	42.49	0.21	-135.26
7.60	0.05	-133.87	38.77	82.15	0.0009	-140.01	0.23	-145.59
7.68	0.06	-143.28	39.02	60.47	0.0005	137.07	0.25	-155.62
7.76	0.07	-154.02	38.30	39.83	0.0015	179.62	0.26	-168.71
7.84	0.07	-156.83	38.97	19.84	0.0019	-17.52	0.27	179.74
7.92	0.07	-160.75	39.55	-2.65	0.0004	-166.71	0.29	166.23
8.00	0.07	-160.18	40.72	-25.41	0.0013	72.81	0.29	151.84
8.08	0.07	-157.45	40.19	-49.74	0.0014	9.16	0.30	138.66
8.16	0.09	-157.84	40.22	-72.70	0.0023	121.94	0.30	121.29
8.24	0.10	-157.80	39.80	-94.56	0.0026	100.54	0.31	105.00
8.32	0.11	-162.94	39.33	-117.62	0.0013	164.20	0.30	85.62
8.40	0.14	-168.71	39.02	-141.78	0.0019	71.06	0.29	69.82
8.48	0.16	-178.97	37.74	-165.59	0.0002	-138.16	0.29	52.41
8.56	0.18	169.86	35.77	170.68	0.0004	151.16	0.28	33.35
8.64	0.19	155.02	34.10	147.99	0.0022	90.78	0.29	18.83
8.72	0.20	145.00	32.82	125.53	0.0014	90.09	0.29	1.74
8.80	0.19	128.23	31.32	103.10	0.0022	-115.01	0.30	-13.94
8.88	0.18	112.00	30.56	80.61	0.0035	-35.73	0.34	-25.37
8.96	0.13	107.83	30.19	55.49	0.0019	-99.22	0.43	-45.99
9.00	0.13	114.64	28.96	41.72	0.0017	-79.80	0.44	-59.01

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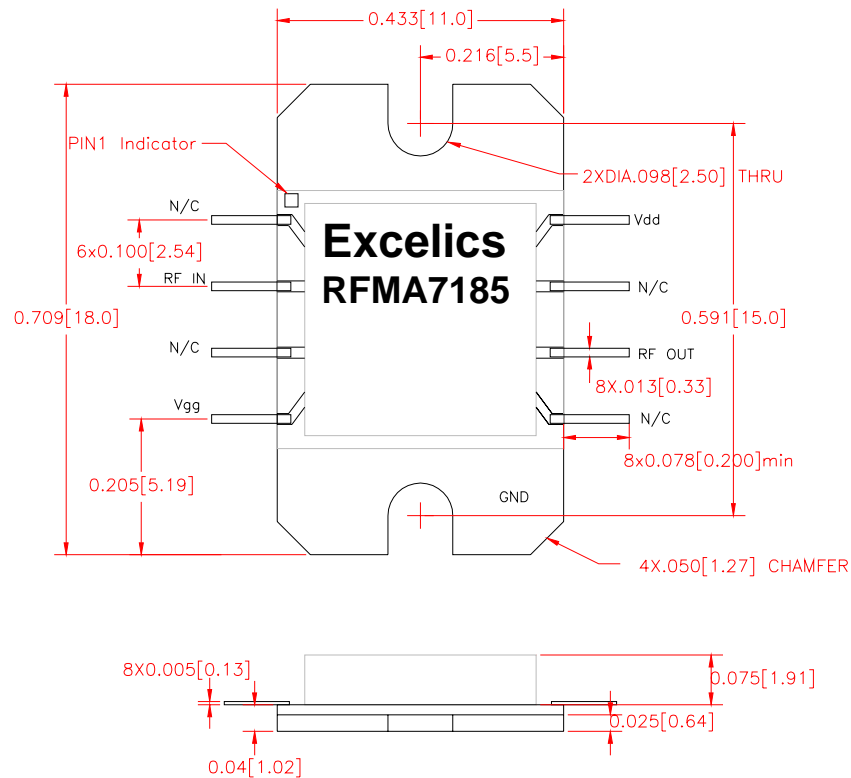
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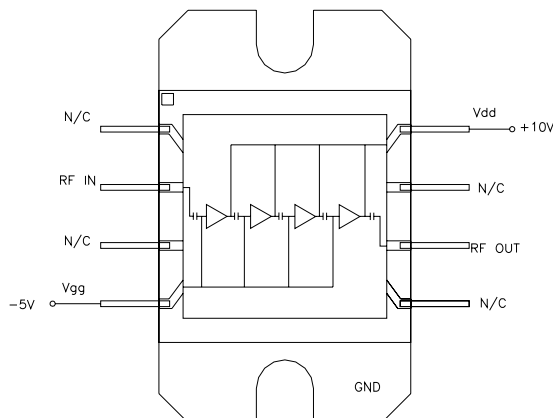
Package Dimension and Pin Assignment



Dimensions are in inches [mm]

Application Note

1. The package should be screwed onto a good heat sink and ground
2. Turn on/off sequence is required:
 - to turn on: apply -5V first, then +10V.
 - to turn off: turn +10V off first, then turn -5V off
3. Recommended Bias Circuit and Internal Block Diagram



"N/C" pins on package can be either grounded or left open.
(No connection inside of package)