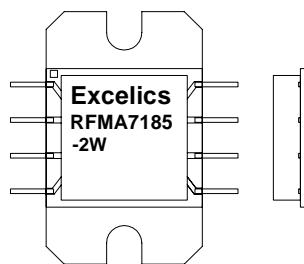


### FEATURES

- 7.10– 8.50GHz Operating Frequency Range
- 33dBm Output Power at 1dB Compression
- 30.0 dB Typical Power Gain @1dB gain compression
- -42dBc 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<sub>b</sub> = 25 °C, 50 ohm, V<sub>dd</sub>=10V, V<sub>gg</sub>=-5V)

SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
F	Operating Frequency Range	7.1		8.5	GHz
P <sub>1dB</sub>	Output Power at 1dB Gain Compression	32	33		dBm
G <sub>1dB</sub>	Gain @1dB gain compression	26.0	30.0		dB
OIMD <sub>3</sub>	Output 3 <sup>rd</sup> Order Intermodulation Distortion @Δf=10MHz, Each Tone Pout 22dBm		-42	-38	dBc
Input RL	Input Return Loss		-12	-6	dB
Output RL	Output Return Loss		-6		dB
I <sub>dd</sub>	Drain Current @small signal output power level		1350	1600	mA
V <sub>dd</sub>	Drain Supply Voltage		10		V
V <sub>gg</sub>	Gate Supply Voltage		-5		V
R <sub>th</sub>	Thermal Resistance		4	4.5	°C/W
T <sub>b</sub>	Operating Base Plate Temperature	- 30		+ 80	°C

### MAXIMUM RATINGS @25°C<sup>1,2</sup>

SYMBOL	CHARACTERISTIC	ABSOLUTE	CONTINUOUS <sup>1,2</sup>
V <sub>DD</sub>	Drain Supply Voltage	14V	10V
V <sub>GG</sub>	Gate Supply Voltage	-10V	-5.5 V
I <sub>DQ</sub>	Quiescent Drain Current	I <sub>dss</sub>	1.5A
I <sub>GG</sub>	Gate Current	150mA	50 mA
P <sub>IN</sub>	Input Power	8dBm	@ 3dB compression
T <sub>CH</sub>	Channel Temperature	175°C	150°C
T <sub>STG</sub>	Storage Temperature	-65/175°C	-65/150°C
P <sub>T</sub>	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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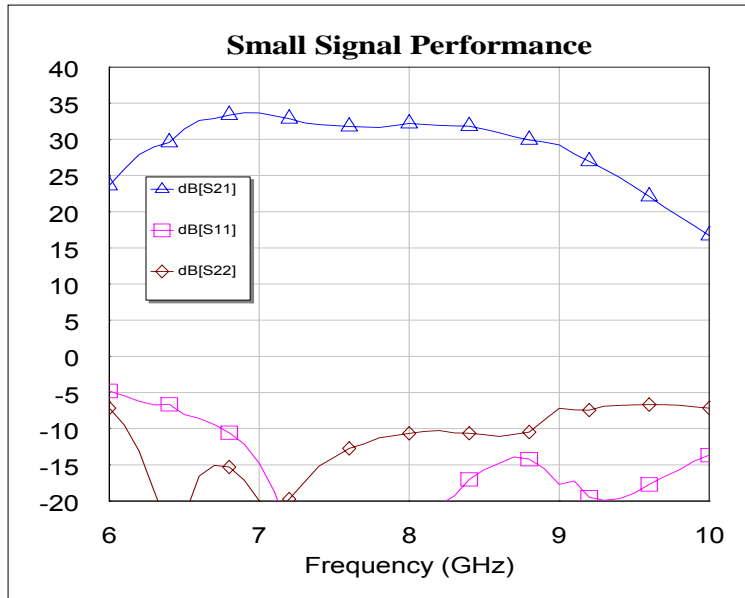
# RFMA7185-2W

UPDATED 05/08/08

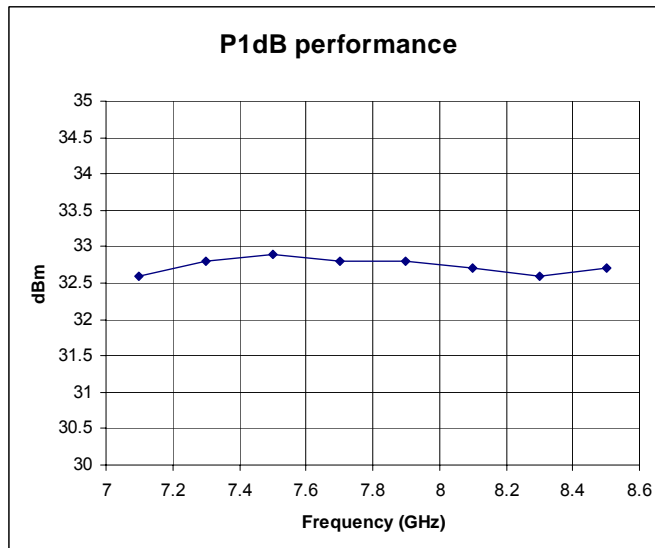
## 7.10 – 8.50 GHz Power Amplifier MMIC

### TYPICAL PERFORMANCE

#### 1. Small Signal Performance (@V<sub>DD</sub>= 10V, V<sub>GG</sub>= -5V)



#### 2. P1dB Performance (@V<sub>DD</sub>= 10V, V<sub>GG</sub>= -5V)



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# RFMA7185-2W

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## 7.10 – 8.50 GHz Power Amplifier MMIC

### S-Parameter

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

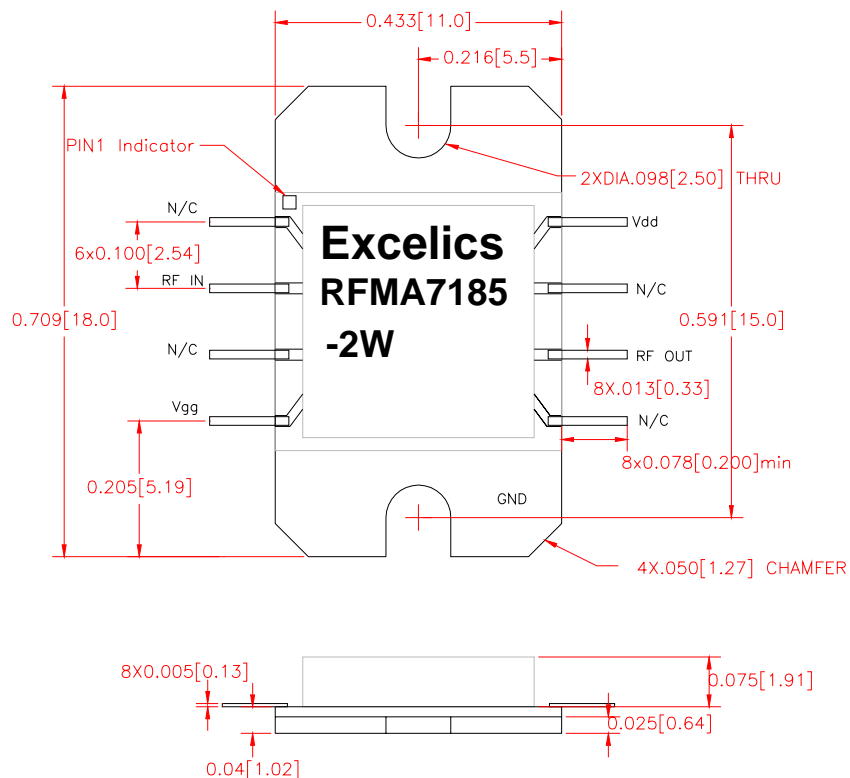
Frequency GHz	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
6.60	0.37	-161.40	42.72	39.43	0.0015	-36.03	0.15	-56.89
6.64	0.37	-168.56	43.34	23.91	0.0014	165.85	0.16	-70.62
6.72	0.33	178.70	44.83	-4.09	0.0017	-115.06	0.18	-93.92
6.80	0.30	163.45	46.54	-32.86	0.0016	-143.12	0.17	-115.19
6.88	0.26	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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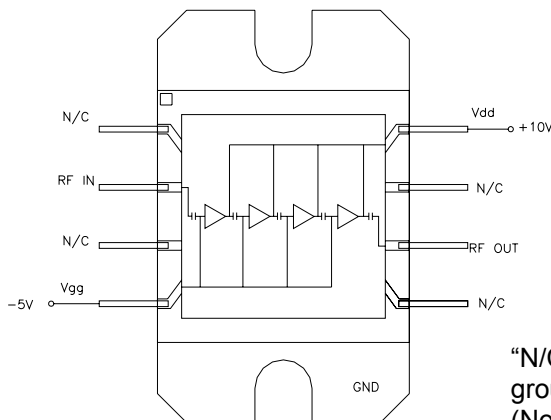
### Package Dimension and Pin Assignment



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)

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# RFMA7185-2W

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## 7.10 – 8.50 GHz Power Amplifier MMIC

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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