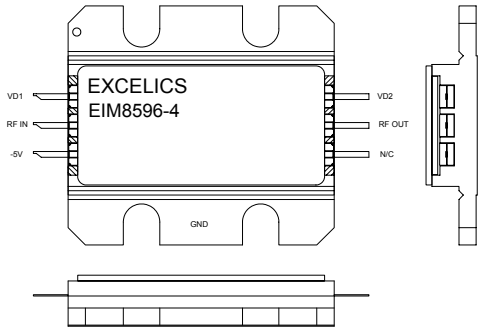
EIM8596-4

UPDATED DATE: 02/05/2008

8.5-9.6 GHz Multi-Stage Power Amplifier

FEATURES

- **8.50– 9.60GHz Operating Frequency Range**
- **35.5dBm Output Power at 1dB Compression**
- **28.0 dB Typical Power Gain @1dB gain compression**
- **-45dBc Typical OIM3 @ each tone Pout 22.5dBm**
- **Non-Hermetic Metal Flange Package**



APPLICATIONS

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

Caution! ESD sensitive device.

ELECTRICAL CHARACTERISTICS (Tb = 25 °C, 50 ohm, VD1=7V, VD2=10V, Vgg=-5V)

SYMBOL	PARAMETER/TEST CONDITIONS	MIN	TYP	MAX	UNITS
F	Operating Frequency Range	8.5		9.6	GHz
P1dB	Output Power at 1dB Gain Compression	34.5	35.5		dBm
G1dB	Gain @1dB gain compression	25	28		dB
OIMD3	Output 3rd Order Intermodulation Distortion @Δf=10MHz, Each Tone Pout 22.5dBm		-45		dBc
Input RL	Input Return Loss		-12	-8	dB
Output RL	Output Return Loss		-15	-10	dB
VD1	Drain Supply Voltage 1		7		V
VD2	Drain Supply Voltage 2		10		V
I_{DQ1}	Quiescent Drain Current 1		380		mA
I_{DQ2}	Quiescent Drain Current 2		1800	2000	mA
Vgg	Gate Supply Voltage		-5		V
Rth	Thermal Resistance		3.4		°C/W
Tb	Operating Base Plate Temperature	- 30		+ 80	ºC

Note: Turn on/off sequence is required:

---to turn on: apply -5V on both Vgg first, then +7V and +10V.

---to turn off: turn +7V and +10V off first, then turn -5V off

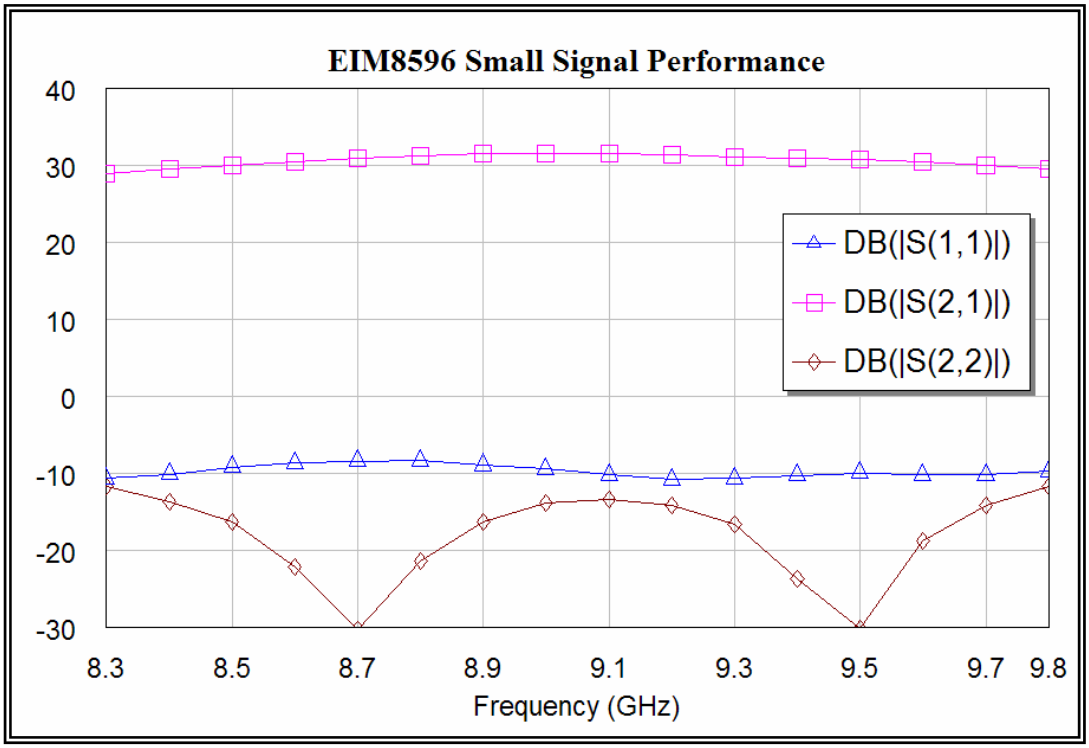
MAXIMUM RATINGS @25°C[1,2]

SYMBOL	CHARACTERISTIC	ABSOLUTE	CONTINUOUS [1,2]
V_{D1}	Drain Supply Voltage 1	12V	8V
V_{D2}	Drain Supply Voltage 2	14V	10V
V_{gg}	Gate Supply Voltage	-10V	-6 V
I_{gg}	Gate Current	150mA	50 mA
P_{IN}	Input Power	17dBm	@ 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	36.7W	30.9W

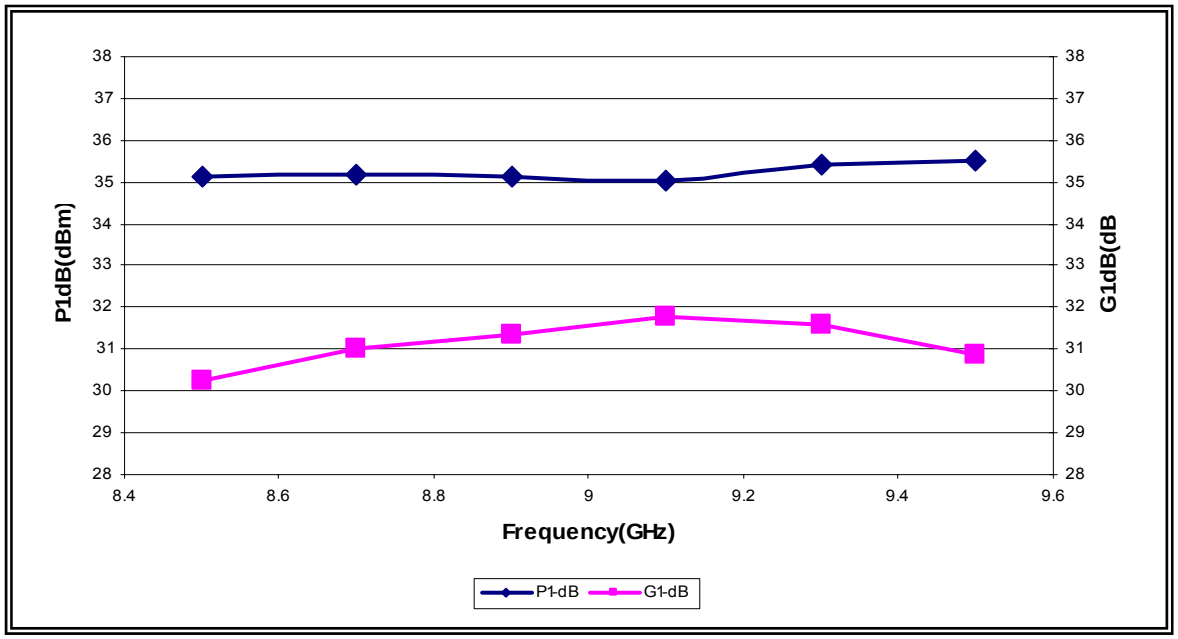
Notes: 1. Operating the device beyond any of the above rating may reduce MTTF and cause permanent damage.
2. Bias conditions must also satisfy the following equation Vdd*Idd < $(T_{CH} - Tb)/R_{TH}$

Typical Performance:

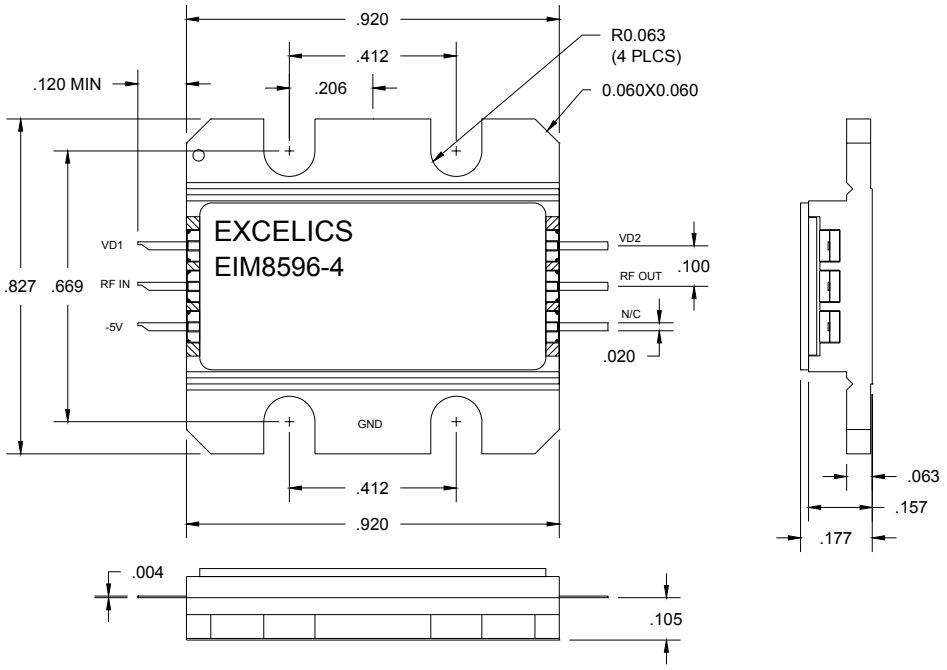
1. Small Signal Performance (@V_{d1} = 7V, V_{d2} = 10V, I_{d1} = 400mA, I_{d2} = 1800mA)



2. P1-dB & G1-dB (@V_{d1} = 7V, V_{d2} = 10V, I_{d1} = 400mA, I_{d2} = 1800mA)



Package Dimension and Pin Assignment



Dimensions are in inches
* NC: No connection inside the package

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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 +7V and +10V.
   ---to turn off: turn +7V and +10V off first, then turn -5V off
3. **Recommended External Bias Circuit and Internal Block Diagram**