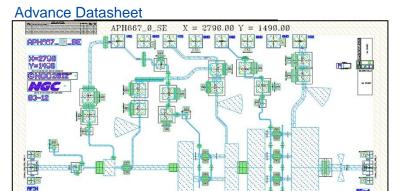
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X=2800 μm Y=1490 μm (See NOTE)

#### **Product Features**

◆ RF Frequency: 81 to 86 GHz

◆ Linear Gain: 14 dB typ.

◆ Psat: 23.5 dBm typ.

◆ Die Size: 4.17 sq. mm.

2 mil substrate

DC Power: 4 VDC @ 305 mA

# **Performance Characteristics (Ta = 25°C)**

Specification	Min	Тур	Max	Unit
Frequency	81		86	GHz
Linear Gain	15	18		dB
Input Return Loss	7	11		dB
Output Return Loss	8	12		dB
P1dB		TBD		dBm
Psat		23.5		dBm
Vd1=Vd1a, Vd2=Vd2a		4		V
Vg1=Vg1a		0		V
Vg2a=Vg2b		0		V
ld1+ld1a		135		mA
ld2+ld2a		180		mA

## **Applications**

- ◆FCC E-band Communication Systems @ 81-86 GHz Frequency Band
- ◆ Short Haul / High Capacity Links
- ◆ Enterprise Wireless LAN
- Wireless Fiber Replacement

# **Product Description**

The APH669\* is a Gallium Arsenide-based broadband, three-stage power device, designed for use in commercial digital radios and wireless LANs. It can be used as a Driver Amplifier as a companion to the APH667 or as a stand-alone amplifier.

### **NOTE**

Samples of the APH669 may have the product name "APH667\_SE" and be slightly different in size (2790X1490)

#### **Absolute Maximum Ratings (Ta = 25 C)**

Parameter	Min	Max	Unit
Vd1=Vd1a, Vd2=Vd2a		4.5	V
Vg1=Vg1a	-0.8	0.3	V
Vg2a=Vg2b	-0.8	0.3	V
ld1+ld1a		150	mA
ld2+ld2a		200	mA
Input Drive Level		16	dBm
Assy. Temperature		300	deg. C
(60 seconds)			

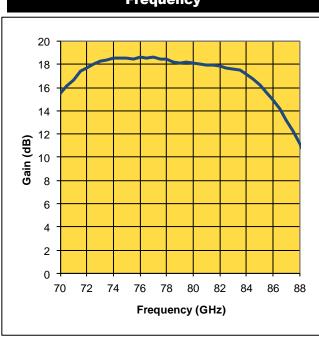
Note: The data contained in this document is for information only. Northrop Grumman reserves the right to change without notice the specifications, designs, prices or conditions of sale, as they apply to this product. The product represented by this datasheet is subject to U.S. Export Law as contained in the Export Administration Regulations (EAR).



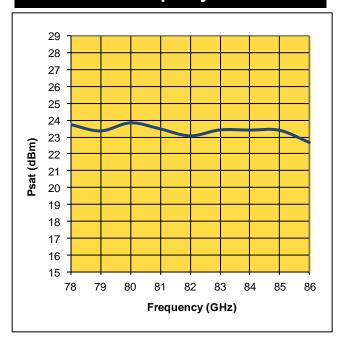
**Advance Datasheet** Revision: October 2012

## Measured (On-Wafer) Performance Characteristics (Typical Performance at 25°C) Vd = 4V, Id1 = 135 mA, Id2 = 177 mA

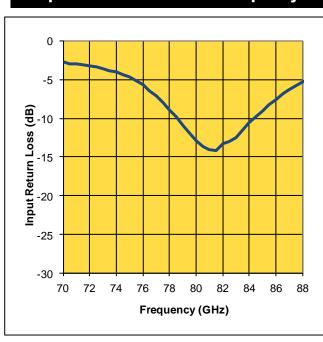




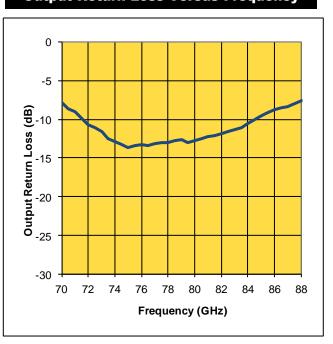
# Pulsed Power Output Power Versus **Frequency**



### **Input Return Loss Versus Frequency**



## **Output Return Loss Versus Frequency**



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# **Die Size and Bond Pad Locations** .2163µm .1563 µm. -1163 µm--763 µm- $X = 3400 \mu m \pm 25 \mu m$ $Y = 1400 \pm 25 \mu m$ DC Bond Pad = $100 \times 100 \pm 0.5 \mu m$ 1490 µm RF Bond Pad = $50 \times 50 \pm 0.5 \mu m$ GND Chip Thickness = $50 \pm 5 \mu m$ GND RFIN RFOUT **GND** 413 µm 412µm 2800 µm = 0.1uF **Suggested Bonding Arrangement** VD1 VG2 = 10 Ohms VD2 = 100 pFRF RF Output Input **RFIN ■**GND GND RFIN RFOUT GND GND Substrate Substrate

#### **Recommended Assembly Notes**

- 1. Bypass caps should be 100 pF ceramic (single-layer) placed no further than 30 mils from the amplifier.
- 2. Best performance obtained from use of <10 mil (long) by 3 by 0.5 mil ribbons on input and output.

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