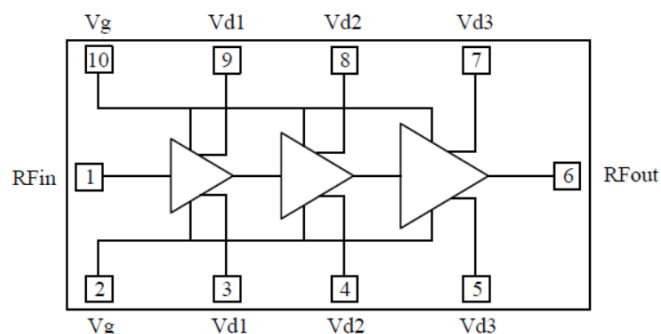


Overview

HXNM43002 is a 30W gallium nitride (GaN) RF power amplifier MMIC chip with an operating frequency of 7–13 GHz. This chip features high efficiency and high gain. It is primarily used in transceiver components, high-power solid-state transmitters, etc., and operates on a 28V power supply.

Features

- Small Signal Gain Typ.: 28dB
- Output Power Typ.: 44dBm
- Added Efficiency Typ.: 35%
- Biasing (V_d & V_g) : 28V, 300mA
- Operating Mode: CW
- Bare Die Size: 3.3mm*3.3mm*0.1mm



Absolute Maximum Ratings ¹($T_A=25^{\circ}\text{C}$)

Parameter	Symbol	Rating	Remarks
Drain Voltage	V_d	32V	
Drain Current	I_d	4A	
Gate Voltage	V_g	-10V	
Gate Current	I_g	NA	
Input Signal Power	P_{in}	30dBm	
Channel Operating Temp.	T_{ch}	225°C	
Sintering Temp.	T_m	310°C	1 min, N2 protection
Storage Temp.	T_{stg}	-55~175°C	

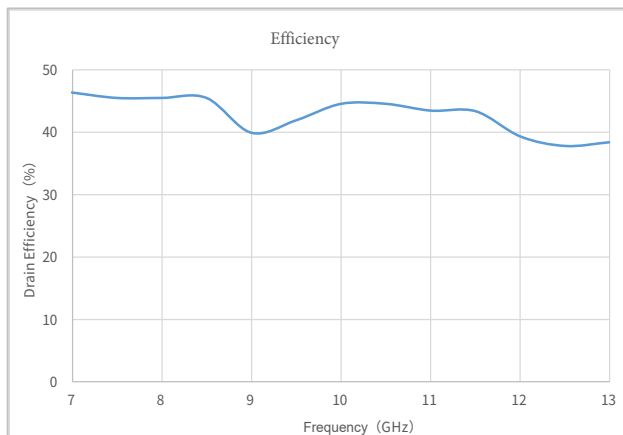
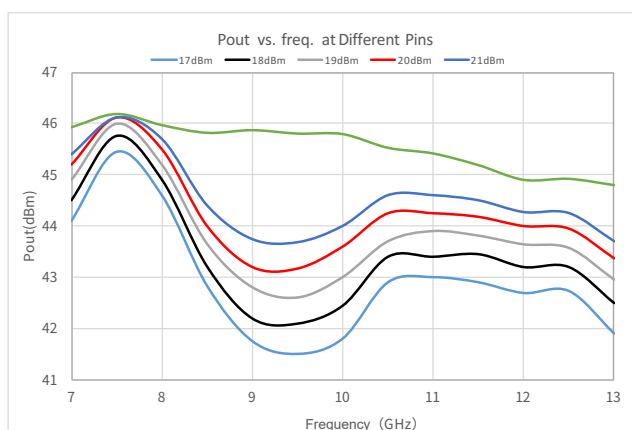
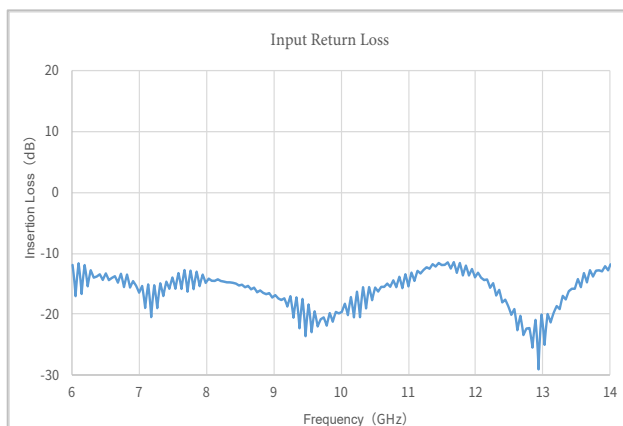
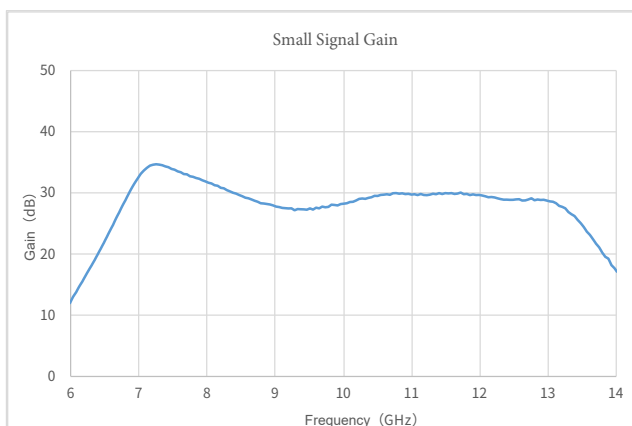
Note 1: Exceeding any of the above maximum limits may result in permanent damage.

Electrical Specifications ($T_C=25^{\circ}\text{C}$, unless otherwise specified)

Symbol	Parameter	Test Conditions	Rating			Unit
			Min.	Typ.	Max.	
G	Small Signal Gain	$V_d=28\text{V}$ $I_{dq}=300\text{ mA}$ $F: 7\sim13\text{ GHz, CW}$	–	28	–	dB
G_p	Power Gain		–	18	–	dB
P_{out}	Output Psat		–	44	–	dBm
PAE	Power Added Efficiency		–	35	–	%

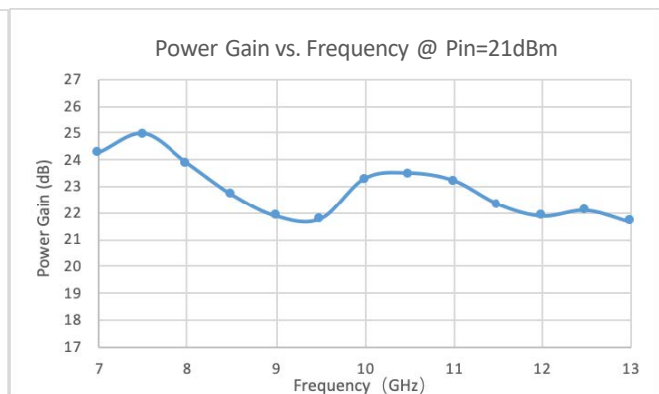
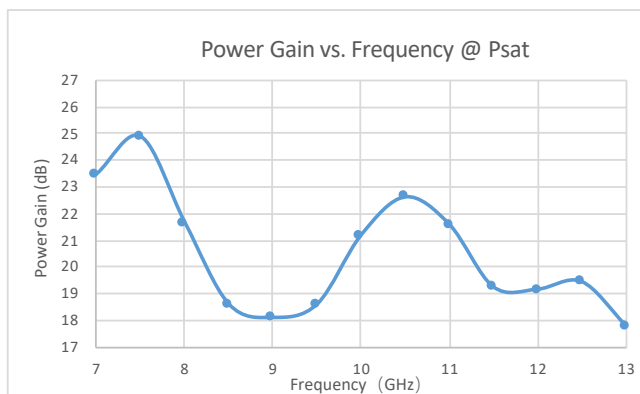
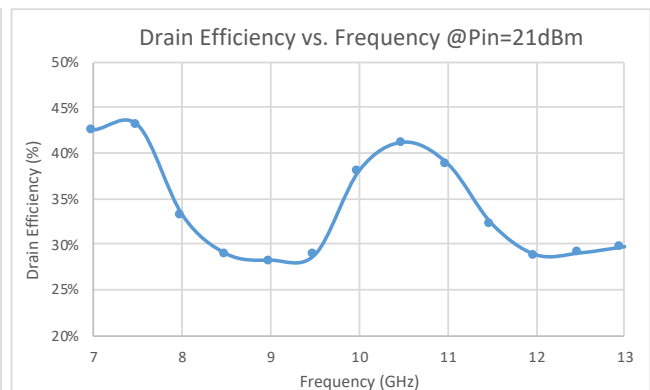
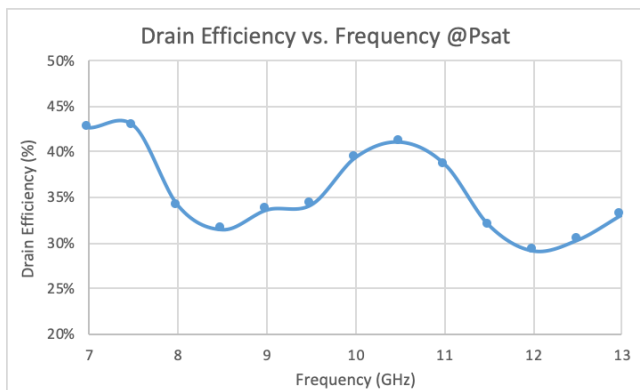
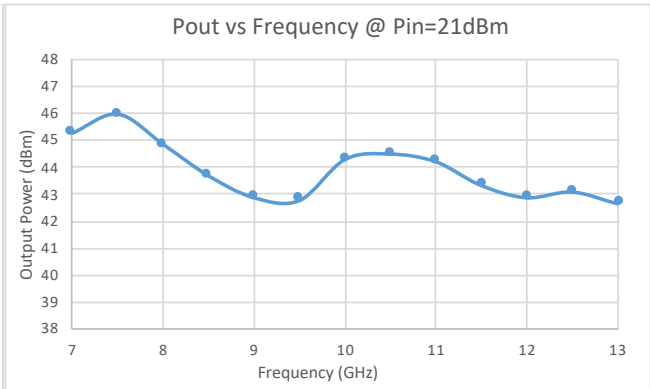
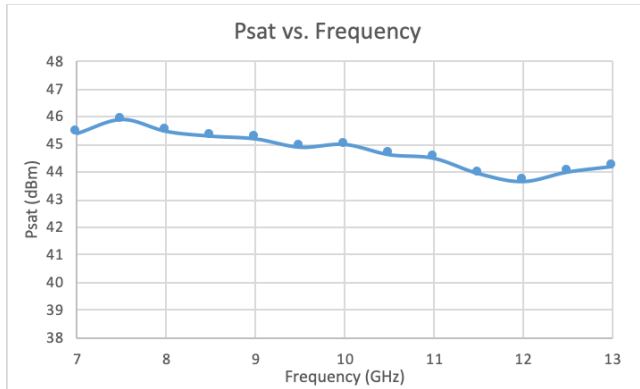
Performance Plots (Bare Die)

$V_{dd}=28\text{V}$, $I_{dq}=300\text{ mA}$, $V_{gs}=-2.7\text{V}$ (reference), Test Signal: CW



Performance Plots (Package, on RF35 PCB)

Vdd= 28V, Idq=300 mA, Vgs=-2.7V(reference), Test Signal: CW



Test Data (6.9-8.3GHz, VDS=28V, IDQ=300mA, CW)

Freq (GHz)	Pout(dBm)	Pin(dBm) @45dBm	Gain (dB)@45dBm	I(A)@45dBm	效率 (%) @45dBm
6.9	45	22.03	22.97	2.67	42.30
7.3	45	15	30	2.56	44.12
7.6	45	15.7	29.3	2.82	40.05
8	45	20.67	24.33	3.35	33.71
8.3	45	23.7	21.3	3.58	31.55

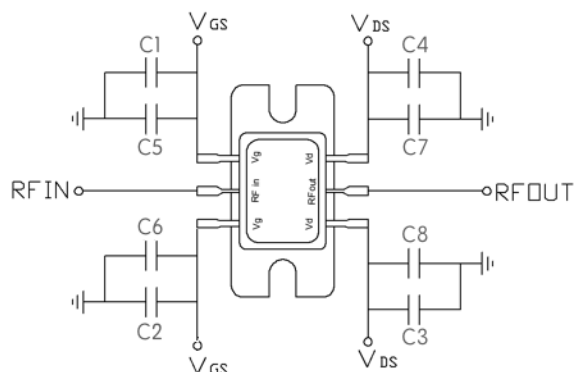
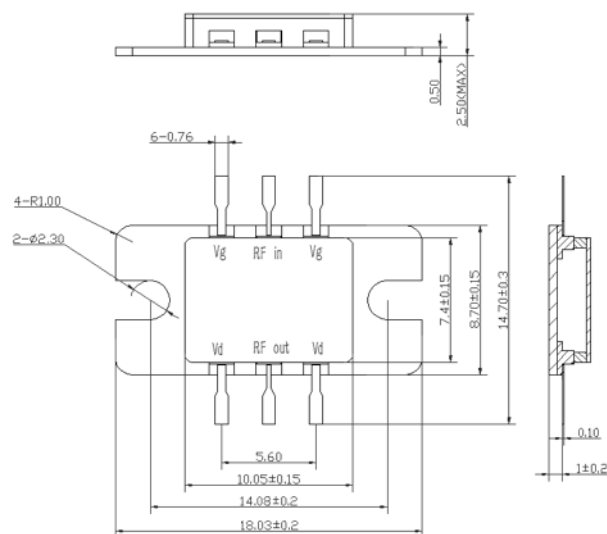
Input / Output Definition

Bonding Pad	Function (Example)	Equivalent Schematic (Example)
RFin	RF signal input terminal, connected to an external 50-ohm system, a DC blocking capacitor is required if there is an external DC current applied to this pad.	
RFout	RF signal output terminal, connected to an external 50-ohm system, no DC blocking capacitor required.	
VG	Amplifier Gate bias, external 100pF and 1000pF capacitors required.	
VD	Amplifier Drain bias, external 100pF and 1000pF capacitors required.	
GND	Bottom of chip needs to be in good contact with both RF and DC ground.	

Ordering Information

Part No.	Package	Marking
HXNM43002	Metal Package	NM43002
HXNM43002-DIE	Bare Die	N/A

Package Size (mm)



Designator	C1, C2, C3, C4	C5, C6, C7, C8
Typical value	10uF	10nF

Notice

1. The metal package is a K8.7-3 hermetically sealed metal housing. Soldering the housing to the substrate is strongly recommended to enhance RF grounding and heat dissipation. For pulse applications where heat dissipation requirements are not high, M2 screws can be used for assembly with a torque of 0.3 N·m.
2. This product is an electrostatic discharge (ESD) sensitive device. Take precautions against ESD during storage and use. Ensure proper grounding during use.
3. When applying power, strictly follow the negative-to-positive sequence. When powering on, apply the gate voltage first, then the drain voltage. When powering off, turn off the drain voltage first, then the gate voltage.
4. Pay attention to heat dissipation during use. The recommended operating temperature is no more than 85°C.