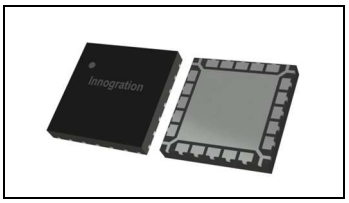
4.8-5.0GHz, 10W, 28V GaN PA Module



Description

The GMAH4850-10P4 is a 28V 10-watt peak power, integrated 2-stage Power Amplifier Module, designed for small cell applications, with frequencies from 4.8 to 5.0 GHz. The module is 50 Ω input and output , it requires minimal external components. The module offers a much smaller footprint than traditional discrete component solutions. The module incorporates a Doherty final stage delivering high power added efficiency, excellent linearity for the entire module at 1.2-1.6W average power according to normal 8-9dB back off.

This module is assembled in 7*7mm over molded plastic package, with complete thermally enhanced metal flange to dissipate heat effectively, while maintaining high RF performance. It is part of 5G small cell PA MCM family from Innogration, with complete pin to pin compatibility across all key 5G bands, N41/N78/N79.

•Typical Performance of 1 Carrier WCDMA (On Innogration fixture with device soldered):

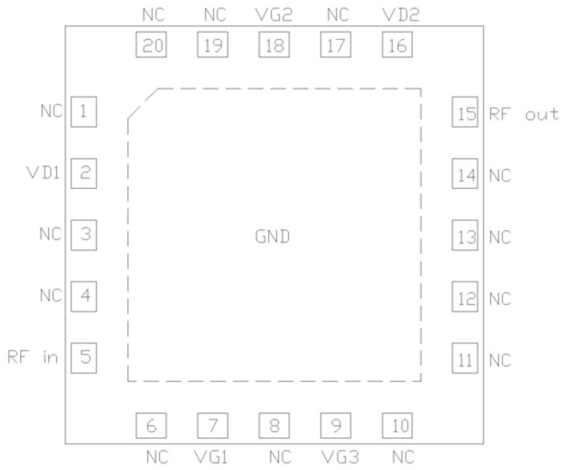
VDS= 28V, Idq1=6mA, Idq2=14mA,Vpeak=-3.6V					
Pout(dBm)	Freq (MHz)	Ppeak(dBm)	ACPR (dBc)	Gain(dB)	EFF (%)
32	4800	40.32	-27.0	30.7	40.9
	4900	40.07	-28.2	30.8	40.5
	5000	40.16	-27.1	30.3	41.0

- Note:
  (1) WCDMA signal: 3GPP test model 1; 1 to 64 DPCH; Channel Bandwidth=3.84MHz,PAR =10.5 dB at 0.01 % probability on CCDF.

Features

- Industry leading RF performance for N79 5G Small cell, for instance
- ✓ 4*400mW / 160MHz
- 50 Ω Input/output matched,
- Integrated Doherty Final and driver Stage
- 7x7 mm Surface Mount Package, full copper flange underneath for grounding and heat dissipation

Pin Configuration and Description （Top view）



NC	No connection
GND	Grounding
RF In	RF input
RF out	RF output
VG1	Gate bias for driver stage
VD1	Drain bias for driver stage
VG2	Gate bias for peak path
VD2	Drain bias for peak path
VG3	Gate bias for main path
VD3	Drain bias for main path

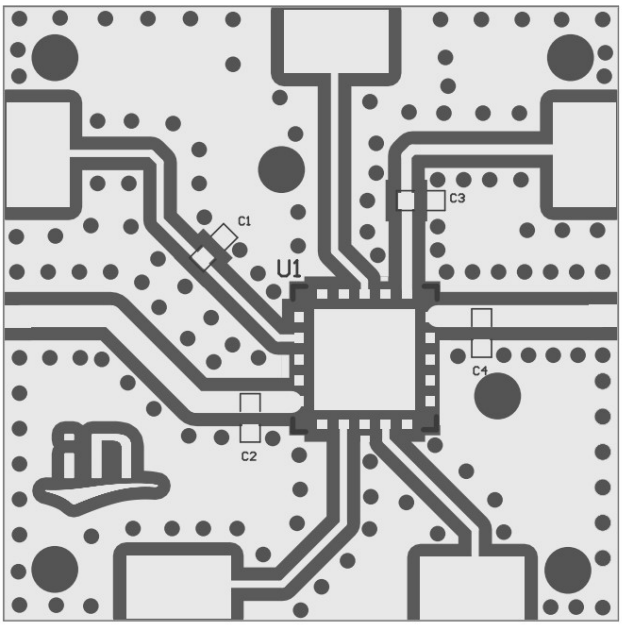
Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	150	Vdc
Gate--Source Voltage	V_{GS}	-10 to +2	Vdc
Operating Voltage	V_{DD}	+40	Vdc
Storage Temperature Range	Tstg	-65 to +150	°C
Case Operating Temperature	T_C	+150	°C
Operating Junction Temperature	T_J	+225	°C

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T_C= 87°C, T_J=175°C, DC test	$R_{\theta JC}$	14.5	°C/W

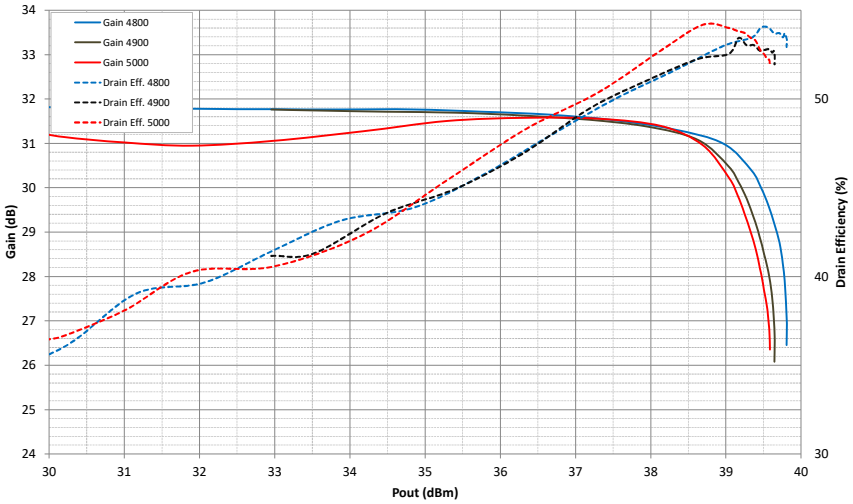
Reference Circuit of Test Fixture Assembly Diagram



Component	Value	Description
U1	GMAH4850_10P4	PA (7*7mm)
C1、C3	3.9pF	ATC600S
C2	--	N/A
C4	0.2pF	ATC600S
other	10uF	TDK1206
PCB	20mils	RO4350B

TYPICAL CHARACTERISTICS

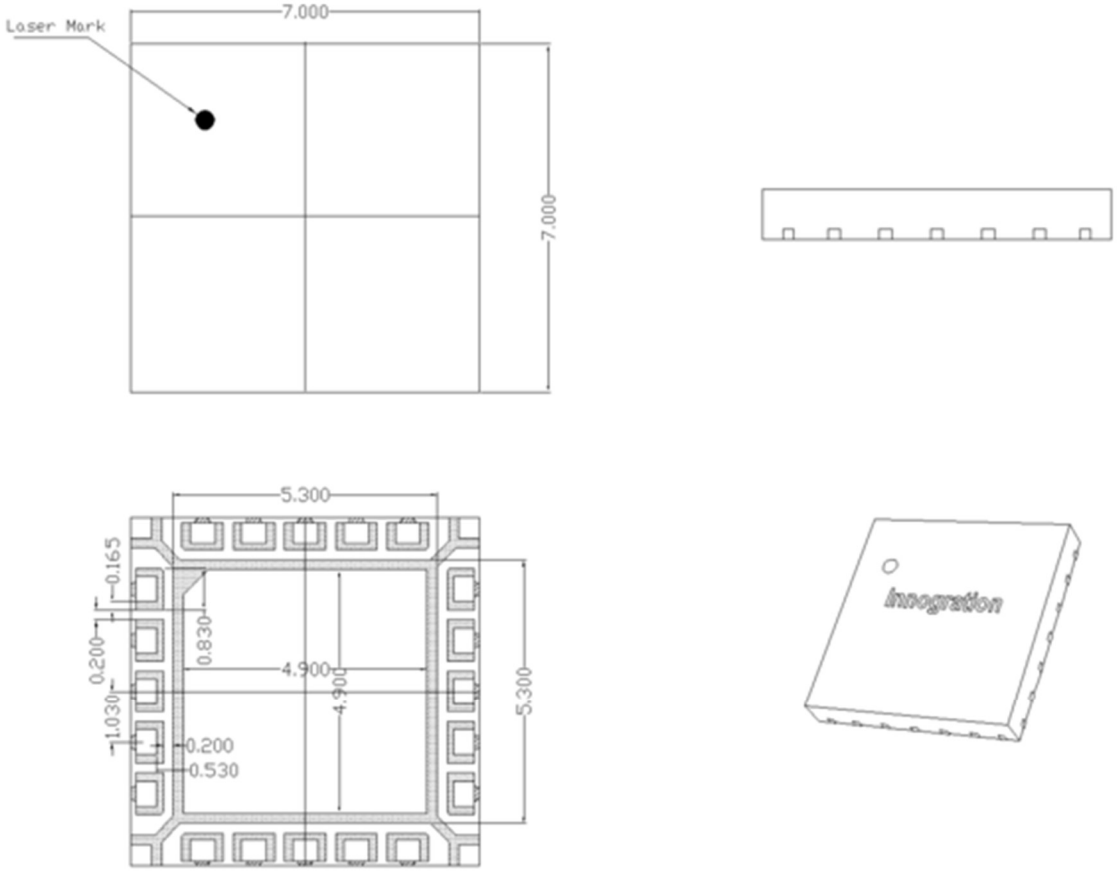
Figure 1. Power Gain and Drain Efficiency as Function of Pulse Output Power



VDS= 28V, Idq1=6mA, Idq2=14mA,Vpeak=-3.6V					
Freq (MHz)	P1(dBm)	P1 Gain(dB)	P5dB(dBm)	P5dB(W)	EFF (%)
4800	39.07	30.8	39.81	9.6	53.3
4900	38.83	30.8	39.64	9.2	52.5
5000	38.87	30.6	39.58	9.2	52.1

Figure 2. Network analyzer output S11/S21

Package Dimensions



Revision history

Table 3. Document revision history

Date	Revision	Datasheet Status
2020/6/1	Rev 1.0	Objective Datasheet
2020/7/16	Rev 1.0	Preliminary Datasheet
2021/10/18	Rev 1.1	Modify according to finalized 7*7mm package
2021/12/28	Rev 1.2	Modify according to last assembly result

Application data based on HJ-20-13/21-19

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