



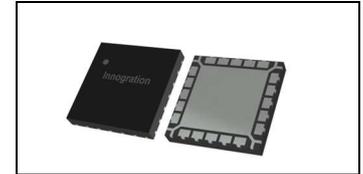
2.5-2.7GHz, 10W, 28V GaN PA Module

Description

The GMAH2527-10P4 is a 28V 10-watt peak power, integrated 2-stage Power Amplifier Module, designed for small cell applications, with frequencies from 2.5 to 2.7 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 Innegration, with complete pin to pin compatibility across all key 5G bands, N41/N78/N79.



To use it at lower drain voltage for fine power tuning, it can be used to replace 4-10W LDMOS or GaAs Doherty MCM with better performance

•Typical Performance of 1 Carrier WCDMA at various power supply (On Innegration fixture with device soldered):

VDS= 26V, Idq1=3mA, Idq2=25mA,Vpeak=-5V				
Pout=32dBm				
Freq (MHz)	Psat(dBm)	ACPR (dBc)	Gain(dB)	EFF (%)
2500	39.92	-29.3	31.3	49.2
2600	39.87	-32.5	31.7	48.1
2700	39.58	-30.8	30.7	46.2
VDS= 28V, Idq1=3mA, Idq2=25mA,Vpeak=-5V				
Pout=32dBm				
Freq (MHz)	Psat(dBm)	ACPR (dBc)	Gain(dB)	EFF (%)
2500	40.51	-32.0	31.9	47.4
2600	40.41	-35.9	32.5	46.5
2700	40.13	-33.5	31.4	45.1
VDS= 32V, Idq1=3mA, Idq2=25mA,Vpeak=-5V				
Pout=33dBm				
Freq (MHz)	Psat(dBm)	ACPR (dBc)	Gain(dB)	EFF (%)
2500	41.26	-29.5	32.0	46.9
2600	41.13	-33.4	33.2	46.3
2700	40.78	-31.8	32.2	45.0

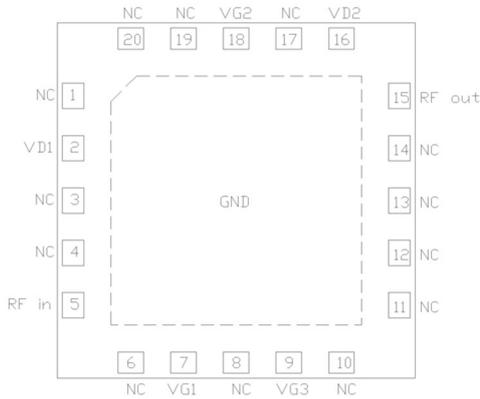
(1) WCDMA signal: 3GPP test model 1; 1 to 64 DPCH; Channel Bandwidth=3.84MHz,PAR =10.5 dB at 0.01 % probability on CCDF.

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

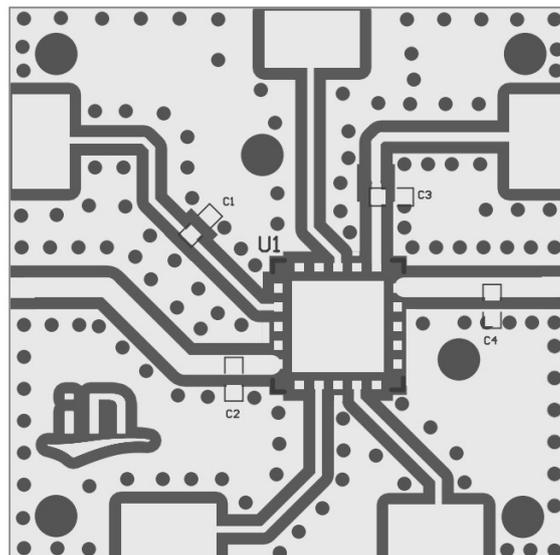
Table 1. Maximum Ratings

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	T_{stg}	-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 $T_c=87^\circ\text{C}, T_j=175^\circ\text{C}, \text{DC test}$	$R_{\theta JC}$	14	°C/W

Reference Circuit of Test Fixture Assembly Diagram

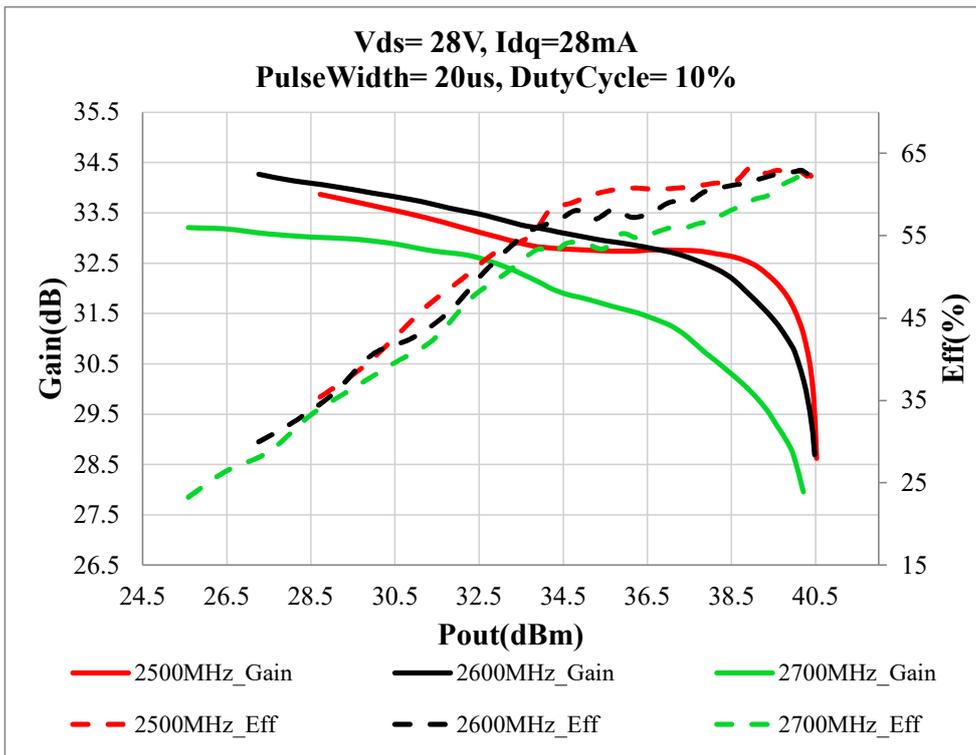




Component	Value	Description
U1	GMAH2527_10P4	PA (7*7mm)
C1、C3	12pF	ATC600S
C2	0.3pF	ATC600S
C4	0.4pF	ATC600S
other	10uF	TDK1206

TYPICAL CHARACTERISTICS

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

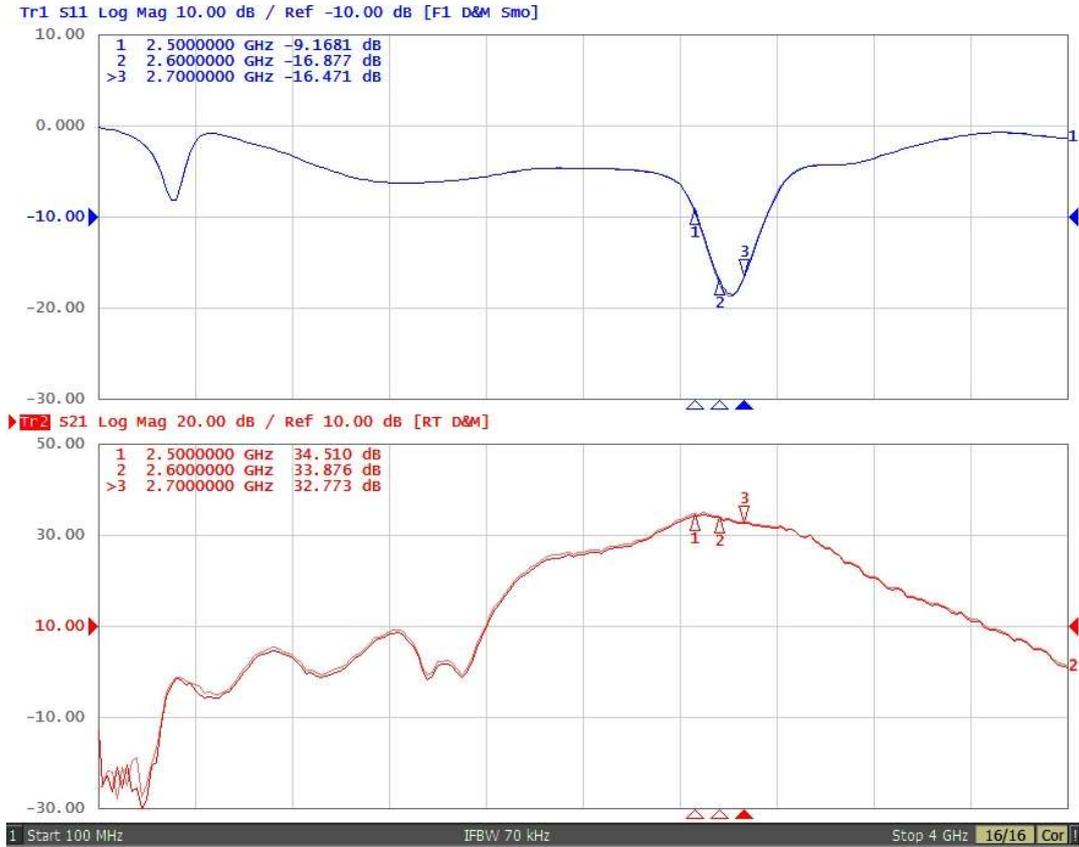


V_{DS} = 28V, I_{dq1} = 3mA, I_{dq2} = 25mA, V_{peak} = -5V

Freq (MHz)	P1 (dBm)	P1 Gain (dB)	P5dB (dBm)	P5dB (W)	EFF (%)
2500	33.58	32.88	40.51	11.3	61.2
2600	33.40	33.28	40.41	11.0	62.2
2700	33.68	32.22	40.13	10.3	62.0

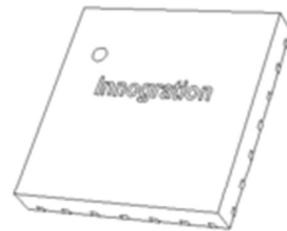
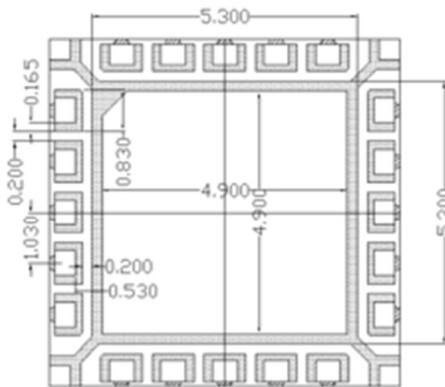
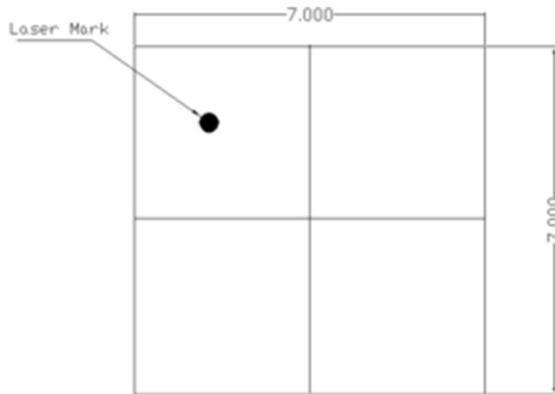


Figure 2. Network analyzer output S11/S21





Package Dimensions





Revision history

Table 3. Document revision history

Date	Revision	Datasheet Status
2020/11/5	Rev 1.0	Preliminary datasheet creation
2021/10/18	Rev 1.1	Modify according to finalized 7*7mm package
2021/12/2	Rev 1.2	Modify according to last assembly result
2021/12/13	Rev 1.3	Define Psat at P3dB with retest result

Application data based on HJ-20-22/21-17

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