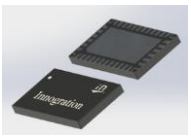
2.4-2.5GHz,2 stages, 30W, S band 28V GaN MMIC PA module

Description



The Y2MAH2425-30 is a 30-watt ,2 stage integrated Power Amplifier Module with high gain，high efficiency, designed for CW or linear back off applications, with frequencies from 2.4 to 2.5GHz. The module is 50 Ω input，and partially output matched and requires minimal external components, total effective size less than 3*1.5cm.

The module implements innovative MMIC concept, housed in cost effective 10*6mm plastic open cavity package.

- VDS= 28V ，Vgs-drive =-2.55V，IDQ-Driver =3 mA, Vgs-Final =-2.67V，IDQ-Final =35 mA，CW.

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
2400	45.73	37.40	33.16	45.98	39.61	77.25
2450	44.79	30.12	34.30	45.55	35.87	77.75
2500	44.18	26.21	33.66	45.04	31.89	77.23

Product Features

- Operating Frequency Range: 2.4-2.5GHz
- Operating Drain Voltage: +28 V (Up to 32V)
- 50 Ω Input, Output partially matched
- Psat: ≥30W @28V (CW)
- Power gain:>30dB
- Efficiency:>75%
- 6x10 mm Surface Mount Package and total design less than 3*1.5cm
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Applications

- 2450MHz ISM applications

Pin Configuration and Description

Pin No.	Symbol	Description
1	Vds-driver	
4	Vgs-driver	
6	RF in	
21,22	RF out/Vds-final	

29	Vgs-final	
32	Open	Must leave as open, No GND
3, 8-11,14-17,19,24,26-28,33-35	NC	No internal connection
2,5,7,12, 13,18,20,23,25, 30, 31,36 Package Base	GND	DC/RF Ground. Must be soldered to EVB ground plane over array of vias for thermal and RF performance. Solder voids under Pkg Base will result in excessive junction temperatures causing permanent damage.

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}	+36	Vdc
Input CW Power	RFin	16	dBm
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, FEA T_C= 25°C, 30W CW at 2.45GHz	$R_{\theta JC}$	5.3	°C/W

Table 3. Electrical Characteristics

Parameter	Condition	Min	Typ	Max	Unit
Frequency Range		2400		2500	MHz
Power Gain		31	32		dB
P_{OUT}	Pin=13dBm		45		dBm
Drain Efficiency @ P_{SAT}			75		%
Unless otherwise noted: TA = 25°C, V_{DD} =28 V, Pulse Width=20 us, Duty cycle=10%					

Load Mismatch of per Section (On Test Fixture, 50 ohm system): V_{DD} =28 V,

VSWR 10:1 at pulse CW Output Power @Pin=13Bm 2.45GHz	No Device Degradation

TYPICAL CHARACTERISTICS

Figure 1. Network analyzer output S11/S21 (Pin=0dBm)

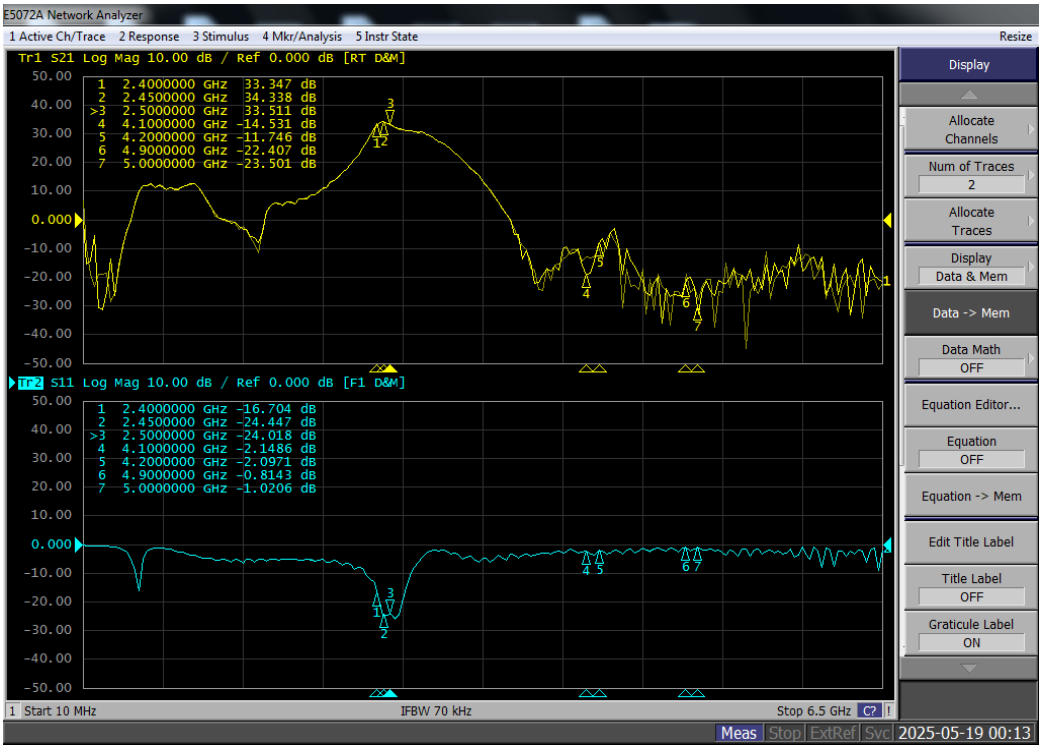
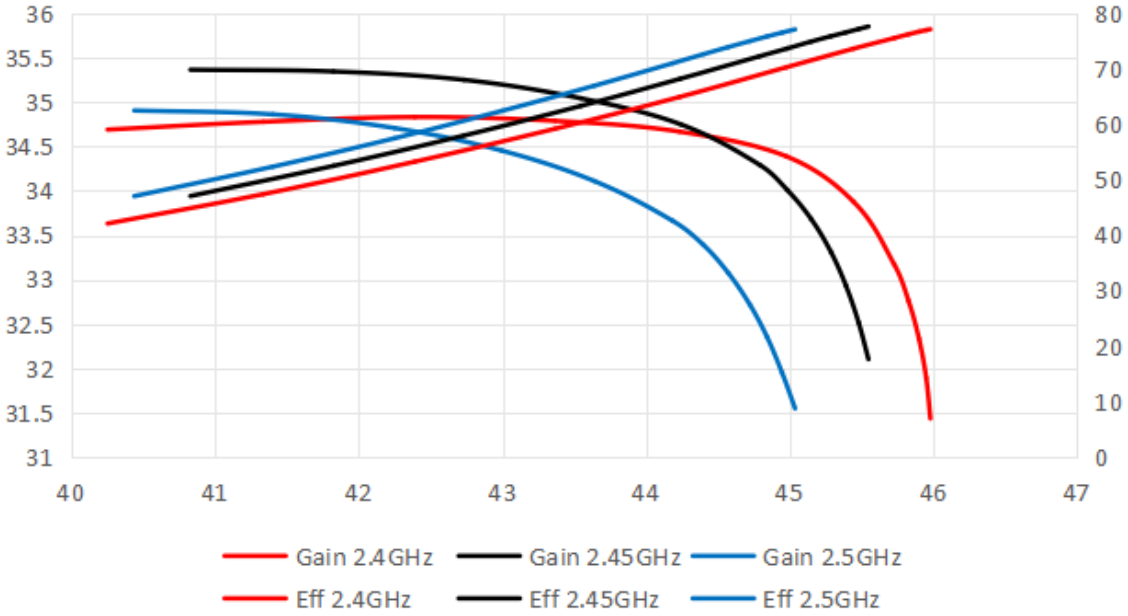
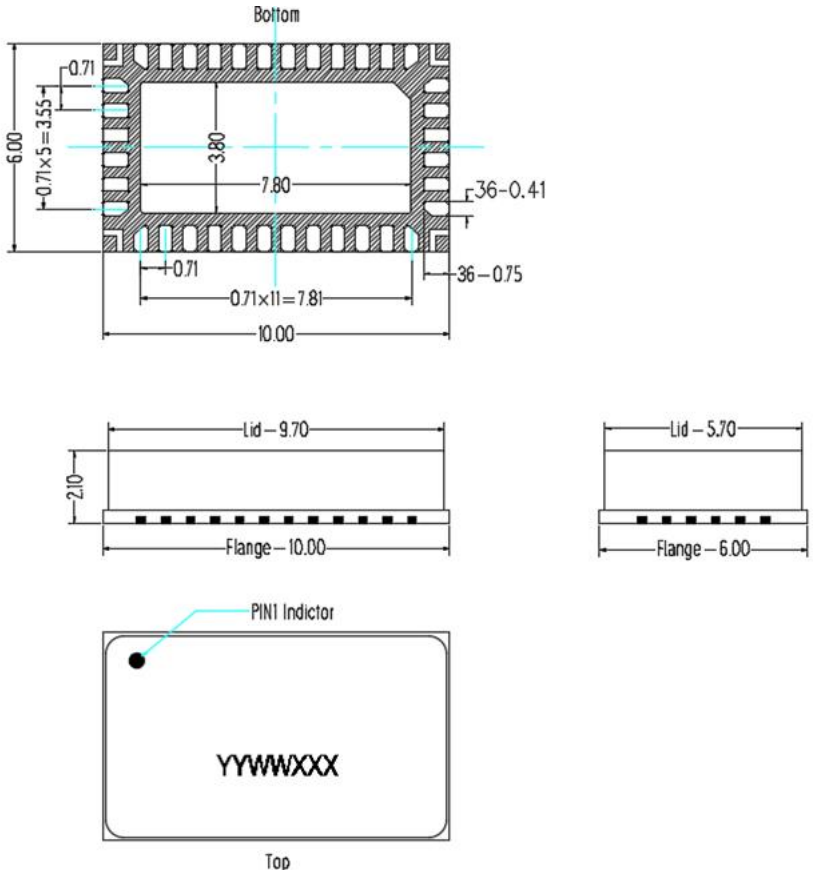


Figure 3. Power Gain and, efficiency Vs Pout



Package Dimensions

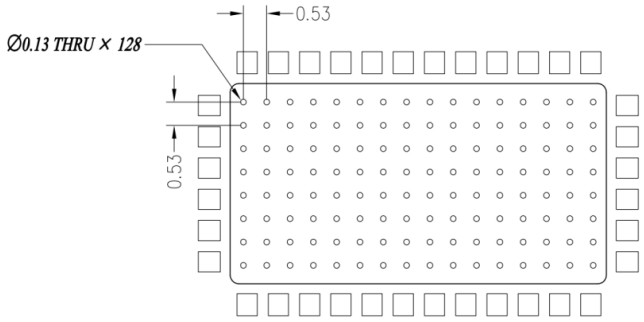
10*6 Plastic Package



Notes:

1. All dimensions are in mm;
2. The tolerances unless specified are ±0.2mm.

Mounting Footprint Pattern



Notes:

1. All dimensions are in mm;
2. Vias are required under the backside paddle of this device for proper RF/DC grounding and thermal dissipation. ALL vias are PTH to ground.

Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2025/5-19	Rev 1.0	Advanced Datasheet Creation
2026/2/9	Rev 1.1	Add Rth info

Application data based on LWH-25-17

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