



3.7-4.2GHz, 32V 300W, GaN Fully matched PA Module

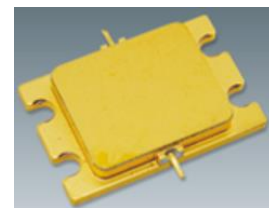
Description

The GMAH3742-300H2 is a 300-watt, single stage integrated Power Amplifier Module, designed for broad band applications, with frequencies from 3.7 to 4.2GHz.

The module is 50 Ω input/output matched and requires minimal external components.

The module implements multiple GaN active dice and its matching network within highly compact 24*17mm metal RF package with excellent capability for heat dissipation.

It is recommended to use it only for pulsed application



$V_{DS}=32V$, $I_{DQ}=300mA(V_{GS}=-2.6V)$, 20us, 10%

Freq (MHz)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)	P1dB Gain(dB)	P4dB (dBm)	P4dB (W)	P4dB Eff(%)
3700	55.51	356.0	54.5	11.18	55.52	356.4	54.7
3800	55.4	347.0	55.2	11.86	55.44	349.7	55.6
3900	55.13	326.2	54.8	13.57	55.26	335.8	55.3
4000	54.95	312.4	53.3	13.76	55.12	325.1	54.0
4100	54.86	306.2	52.1	13.39	55.01	317.3	52.8
4200	54.73	297.5	51.5	12.94	54.91	309.8	52.3

$V_{DS}=28V$, $I_{DQ}=300mA(V_{GS}=-2.6V)$, 20us, 10%

Freq (MHz)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)	P1dB Gain(dB)	P4dB (dBm)	P4dB (W)	P4dB Eff(%)
3700	54.56	285.8	55.6	10.88	54.65	292.1	56.0
3800	54.4	275.7	55.8	11.56	54.51	282.6	56.2
3900	54.08	255.9	55.0	13.17	54.3	269.3	55.7
4000	53.89	244.8	53.2	13.3	54.16	260.6	54.1
4100	53.8	239.8	52.1	12.94	54.07	255.4	53.1
4200	53.64	231.2	51.4	12.43	53.93	247.0	52.3

Product Features

- Operating Frequency Range: 3.7-4.2GHz
- Operating Drain Voltage(Recommended): +32V (28V with decreased power capability)
- 50 Ω Input/Output (External DC block capacitor needed)
- $P_{sat} \geq 300W$ (Pulse)
- Small signal gain: >12.5dB, Power gain: >10dB @300W
- Minimum P_{sat} efficiency: >50%
- 24*17 mm metal RF package
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Applications

- S band pulsed amplifier



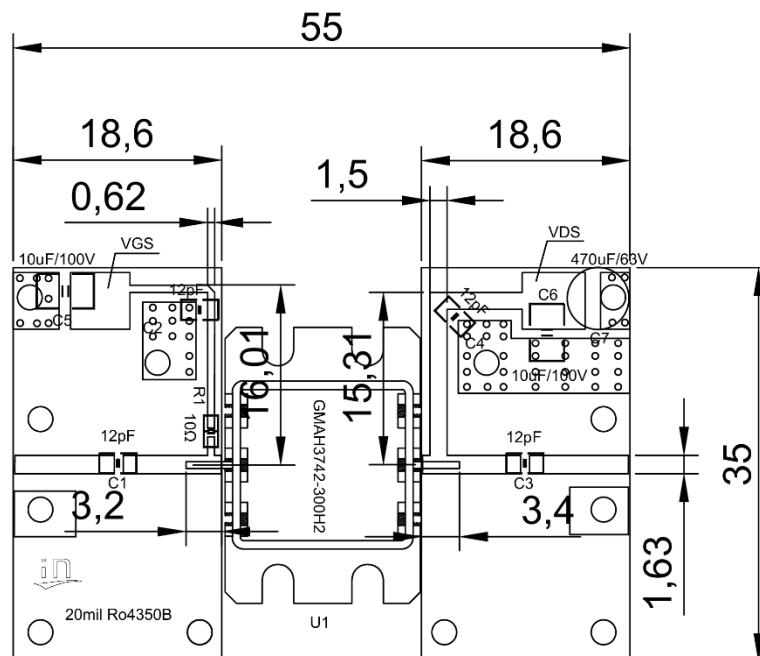
Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	150	Vdc
Gate--Source Voltage	V_{GS}	-10 to +2	Vdc
Operating Voltage	V_{DD}	+36	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 $T_c = 25^\circ\text{C}$, $P_{out} = 300\text{W}$, FEA	$R_{\theta JC}$	0.3	°C/W

Typical application circuit



Reference	Footprint	Value	Quantity
C1, C2, C3, C4	0805	12pF/250V	4
C5, C6	1210	10uF/100V	2
C7		470 uF/63V	1
R1	0603	10R	1
U1	H2	GMAH3742-300H2 ^{V7.1}	1



TYPICAL CHARACTERISTICS

Figure 1. Network analyzer output S11/S21 (Pin=0dBm), Vds=32V, Idq=1A

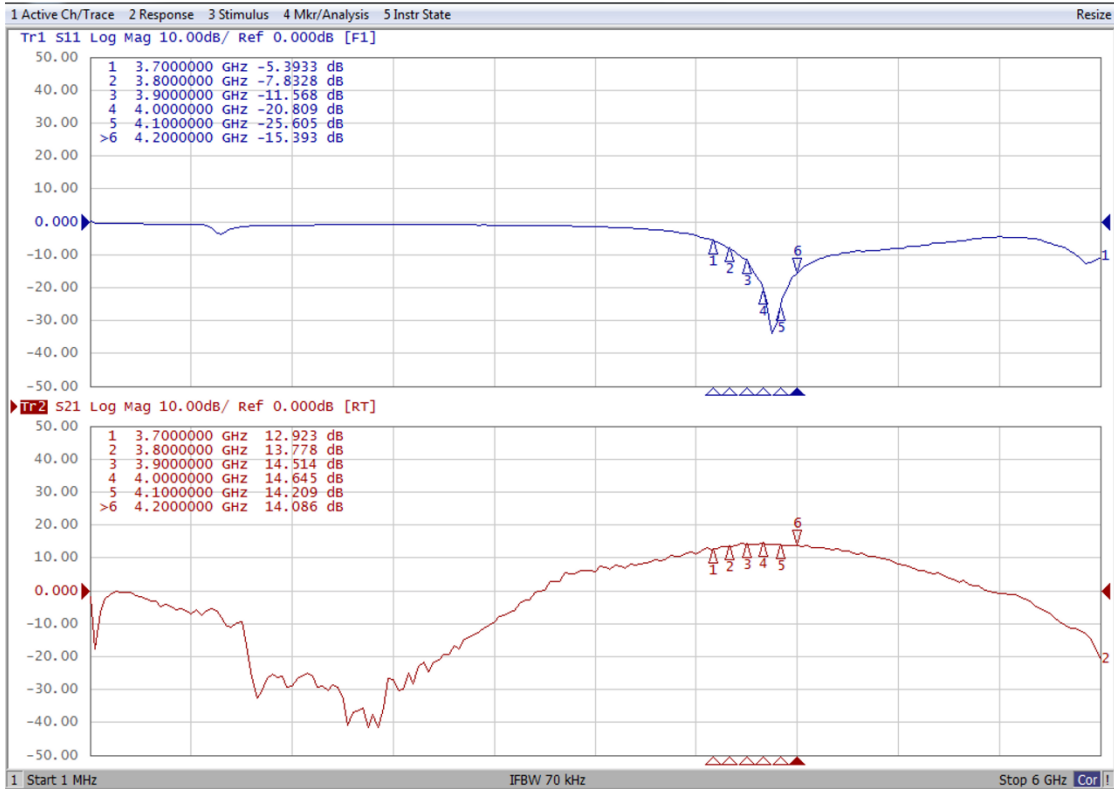


Figure 2. Power Gain, Efficiency as function of Pout at 32V

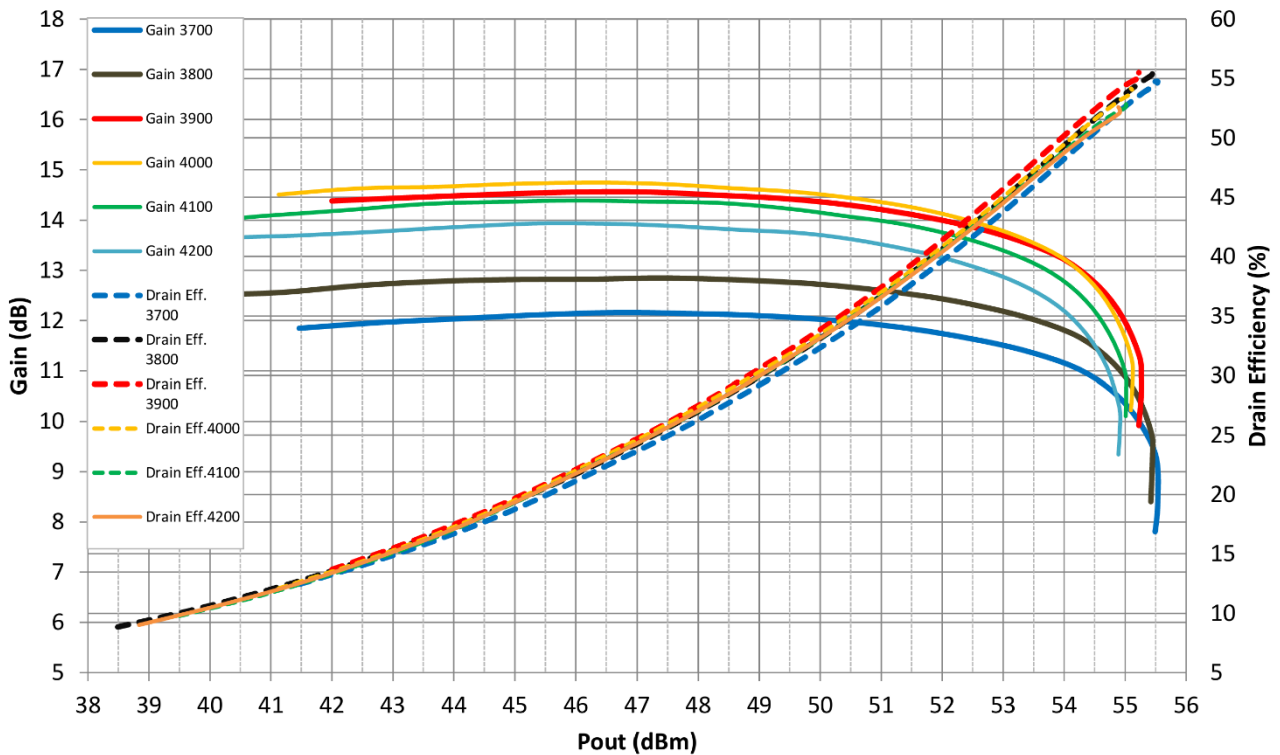
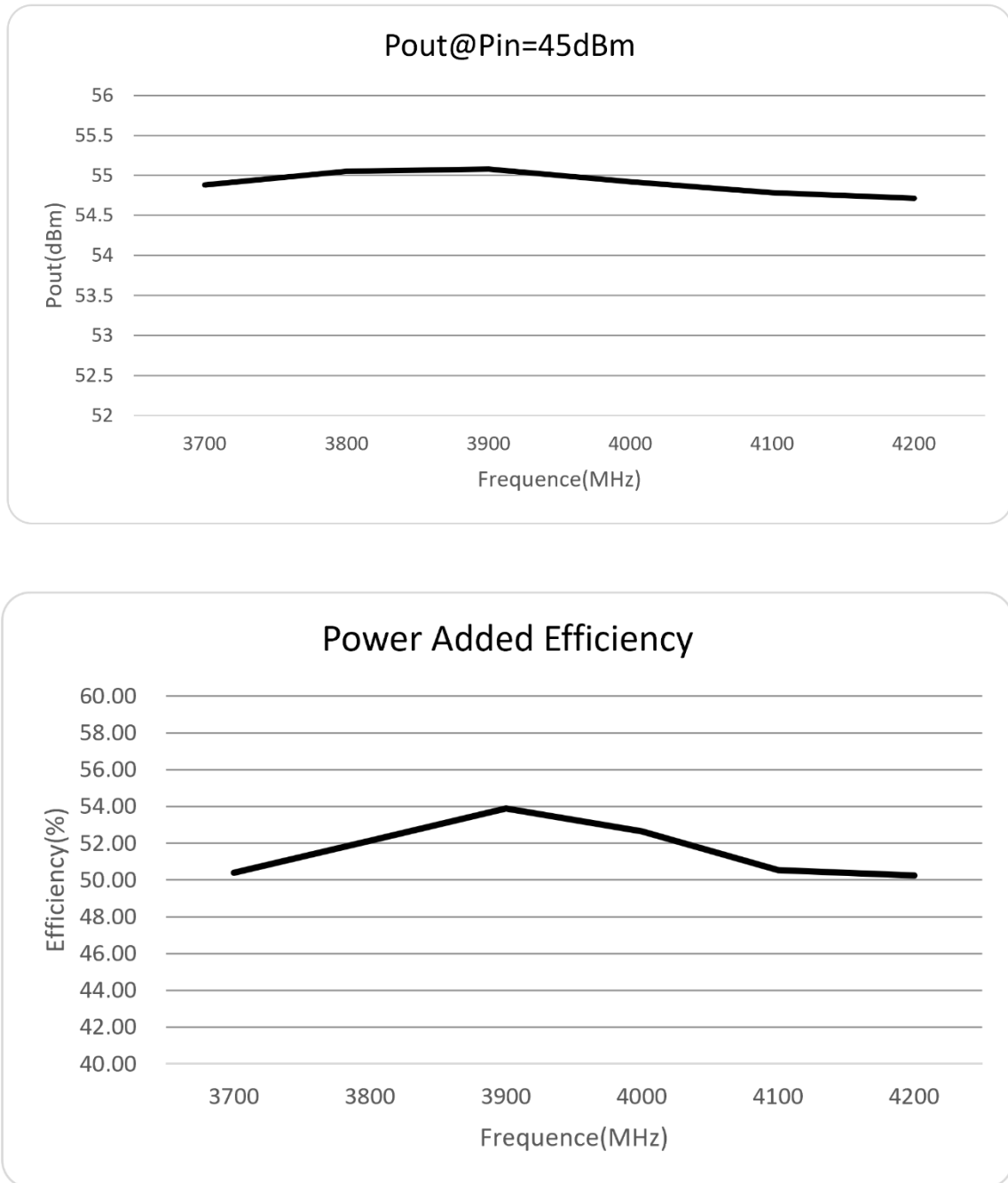
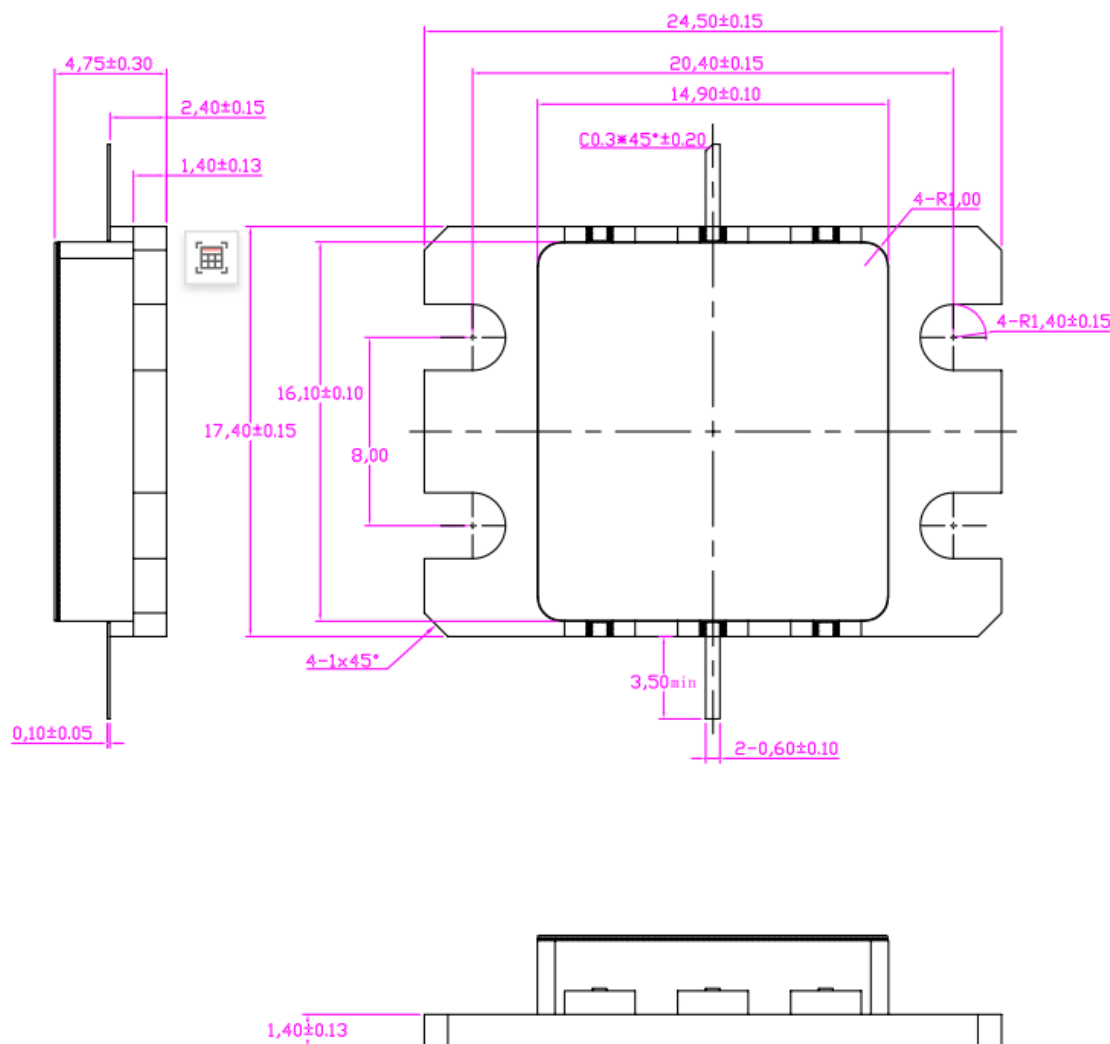




Figure 3. Pout and Efficiency at fixed input 45dBm



Package Dimensions (Unit:mm)



Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2025/12/26	Rev 1.0	Preliminary Datasheet

Application data based on ZBB-25-27

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