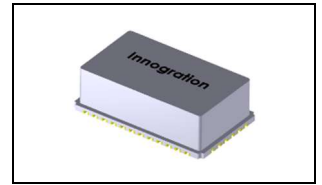




30MHz-1000MHz, 15W, 28V GaN PA Module

Description

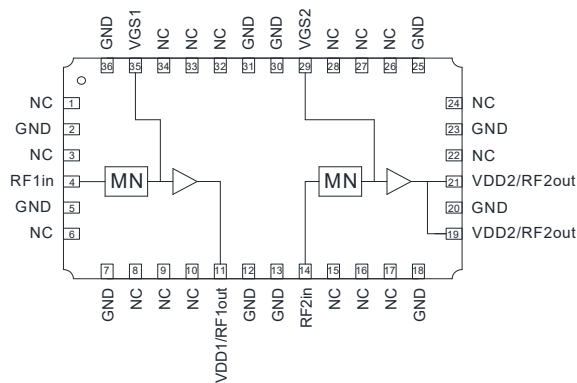
The GMAHR310-15T6 is a 15-watt peak power, integrated Power Amplifier Module, designed for broad band and broadcast applications, with frequencies from 30 to 1000 MHz. The module is 50 Ω input and requires minimal external components. The module offers a much smaller footprint than traditional discrete component solutions.



Product Features

- Operating Frequency Range: 30 - 1000 MHz
- Operating Drain Voltage: +28 V (Up to 32V)
- 50 Ω Input
- Gain at 5 W avg.: ≥ 30 dB
- Saturated Power: ≥ 41 dBm
- Single Ended Device
- 6x10 mm Surface Mount Package
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Pin Configuration and Description



Top View

Pin No.	Symbol	Description
11,19,21	VDD/RF OUT	Transistor 1 and transistor 2, Drain Bias & RF Output
29, 35	VGS	Transistor 1 and transistor 2, Gate Bias
4, 14	RF IN	Transistor 1 and transistor 2, RF Input
1, 3, 6, 8-10, 15-17, 22, 24, 26-28, 32-34	NC	No 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}	+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 $T_c=87^\circ\text{C}$, $T_j=175^\circ\text{C}$, DC test	$R_{\theta JC}$	TBD	°C/W

Table 3. ESD Protection Characteristics

Test Methodology	Class
Human Body Model(HBM) (JEDEC Standard JS-001-2012)	TBD
Charged Device Model (CDM) (JEDEC Standard JESD22-C101F)	TBD

Table 4. Electrical Characteristics

Parameter	Condition	Min	Typ	Max	Unit
Frequency Range		30		1000	MHz
Power Gain @ $P_{out}=5\text{W Avg.}$	Driver + Final Stage	30			dB
Gain flatness				4	dB
P3dB		41			dBm
Drain Efficiency@ $P_{out}=5\text{W Avg.}$		35			%

Unless otherwise noted: $T_A = 25^\circ\text{C}$, $V_{DD} = 28\text{ V}$, Pulse Width=20 us, Duty cycle=10%

Load Mismatch of per Section (On Test Fixture, 50 ohm system): $V_{DD}=28\text{ V}$, $I_{DQ}=50\text{ mA}$, $f = 1.0\text{ GHz}$

VSWR 10:1 at P3dB pulse CW Output Power	No Device Degradation
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Reference Circuit of Test Fixture Assembly Diagram

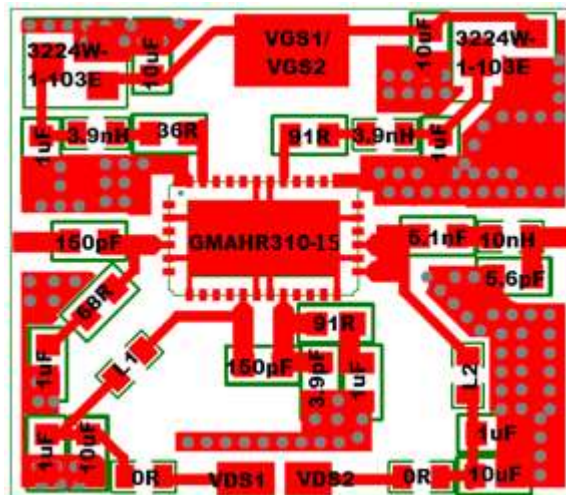


Figure 1. Test Circuit Component Layout

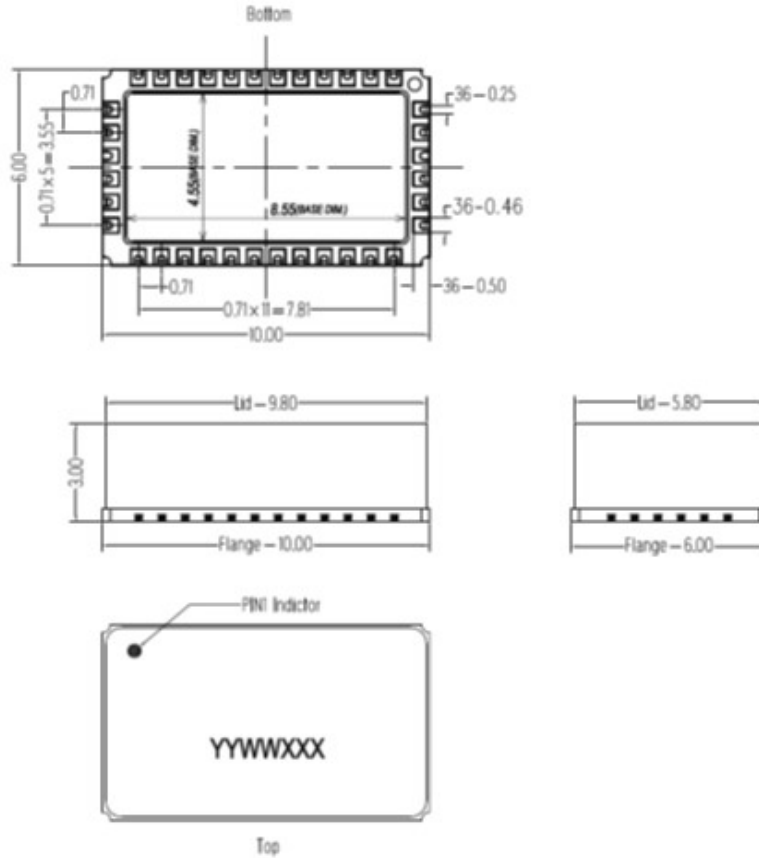
30-678MHz, $V_{DD1}=12\text{V}$, $I_{DQ1}=50\text{mA}$, $V_{DD2}=28\text{V}$, $I_{DQ2}=100\text{mA}$

L1, L2: Coil Inductor $\varnothing 0.5\text{ BN-61-2402 2turns}$



Package Dimensions Package Dimensions

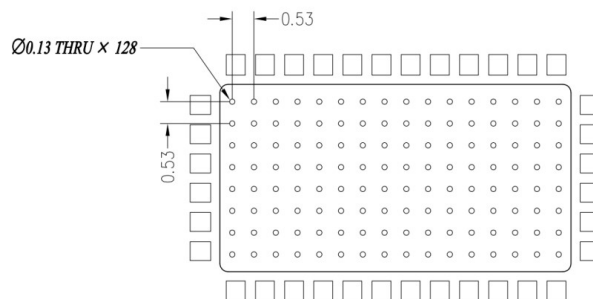
10*6 Ceramic QFN Package



Notes:

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

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 5. Document revision history

Date	Revision	Datasheet Status
2019/04/05	Rev 1.0	Preliminary Datasheet
2019/06/11	Rev 1.1	Preliminary Datasheet
2023/5/7	Rev 1.2	Add T6 suffix according to CQFN 10*6 used

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