

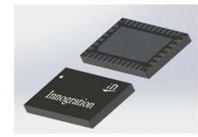


GaN HEMT 28V, 5.8GHz 8W, RF Power Transistor

GTAH58008C6

Description

The GTAH58008C6 is a 8W GaN HEMT, designed for ISM/RF Energy application around 5.8GHz. The transistor is available in a highly cost effective 10*6mm, surface mount, QFN package with 100% production test to ensure the quality and consistency. It can be used in CW, Pulse and any other modulation modes.



There is no guarantee of performance when this part is used in applications designed outside of these frequencies.

- Typical Class AB RF Performance with device soldered through high density and plated grounding vias
CW, Vds=28V, Idq=10mA

Freq (MHz)	Pin (dBm)	Pout (dBm)	Power Gain (W)	Eff (%)
5100-5900	24	39	15	60

Applications

- C band power amplifier
- ISM/RF Energy power amplifier

Important Note: Proper Biasing Sequence for GaN HEMT Transistors

Turning the device ON

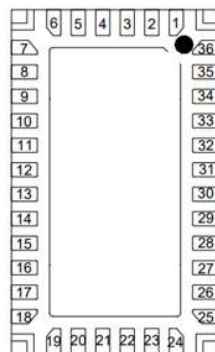
1. Set VGS to the pinch--off (VP) voltage, typically -5 V
2. Turn on VDS to nominal supply voltage
3. Increase VGS until IDS current is attained
4. Apply RF input power to desired level

Turning the device OFF

1. Turn RF power off
2. Reduce VGS down to VP, typically -5 V
3. Reduce VDS down to 0 V
4. Turn off VGS

Figure 1: Pin Connection definition

Transparent top view (Backside grounding for source)



Pin No.	Symbol	Description
8,9,10,11	RF IN/Vgs	RF Input, Vgs bias
32,33,34,35	RF OUT/VDD	RFOutput, Drain bias
Rest Pins and Package Base	GND	DC/RF Ground. Must be soldered directly to heatsink or copper coin for CW application.

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V _{DSS}	+150	Vdc



Gate--Source Voltage	V_{GS}	-8 to +0.5	Vdc
Operating Voltage	V_{DD}	36	Vdc
Maximum gate current	I_{gs}	2	mA
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 by FEA $T_c = 85^\circ\text{C}$, at $P_{diss} = 5\text{W}$	$R_{\theta JC}$	10	°C /W

Table 3. Electrical Characteristics (TA = 25°C unless otherwise noted)

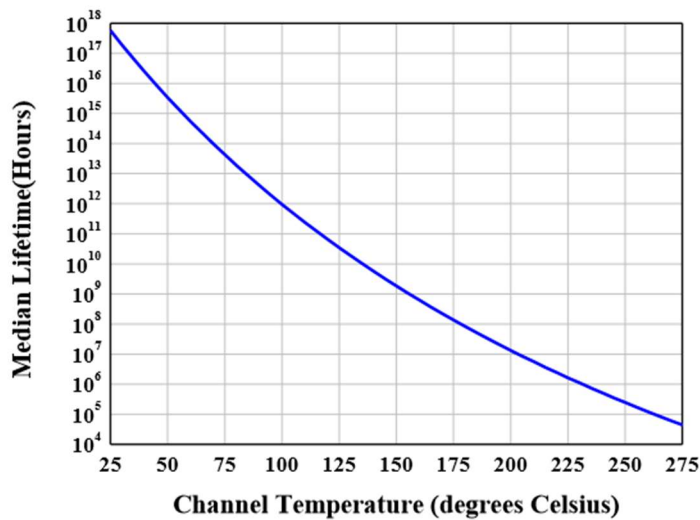
DC Characteristics (main path, measured on wafer prior to packaging)

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = -8\text{V}$; $I_{DS} = 2\text{mA}$	V_{DSS}		200		V
Gate Threshold Voltage	$V_{DS} = 10\text{V}$, $I_D = 2\text{mA}$	$V_{GS(th)}$	-4		-2	V
Gate Quiescent Voltage	$V_{DS} = 28\text{V}$, $I_{DS} = 10\text{mA}$, Measured in Functional Test	$V_{GS(Q)}$		-2.5		V

Ruggedness Characteristics

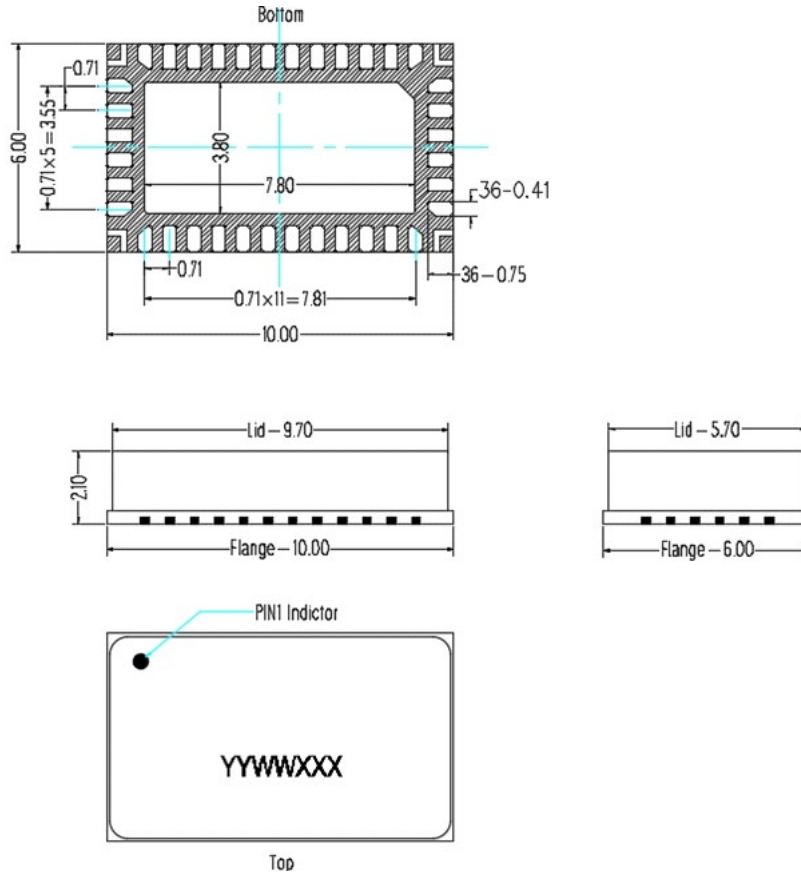
Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	5.8GHz, $P_{out} = 8\text{W}$ Pulsed CW All phase, No device damages	VSWR		10:1		

Figure 2: Median Lifetime vs. Channel Temperature





10*6 Plastic Package



Notes:

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

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2024/4/26	V1.0	Preliminary Datasheet Creation

Application data based on: ZYX-24-

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