

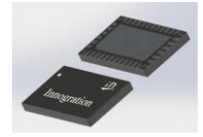


**GaN HEMT 28V, 5.8GHz 30W, RF Power Transistor**

**GTAH58030C6**

**Description**

The GTAH58030C6 is a 30W GaN HEMT, designed for ISM/RF Energy application within 5-6GHz Especially at 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.



It is positioned to be the cost reduction of its ceramic peer GTAH58030GX within 5-6GHz

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  
Vds = 28V, Idq = 30mA, CW

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff (%)	P1dB Gain (dB)	P3dB (dBm)	P3dB (W)	P3dB Eff (%)
5700	42.46	17.6	42.4	15.01	44.91	31.0	54
5800	42.31	17.0	44.3	15.39	45.05	32.0	57
5900	41.9	15.5	40.5	15.02	44.86	30.6	54

Recommended driver: ITEH58004C6( 28V LDMOS) or GTAH80004PD C6 (28V GaN)

**Applications**

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

**Important Note: Proper Biasing Sequence for GaN HEMT Transistors**

**Turning the device ON**

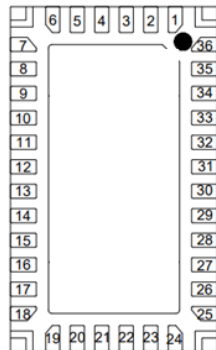
1. Set VGS to the pinch-off (VP) voltage, typically -5 V
2. Turn on VDS to nominal supply voltage
3. Increase VGS until IDS current is attained
4. Apply RF input power to desired level

**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
8,9,10,11,14,15,16,17	RF IN/Vgs	RF Input, Vgs bias
26,27,28,29,32,33,34,35	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.
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**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	$V_{DD}$	32	Vdc
Maximum gate current	$I_{gs}$	7.5	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 $P_{diss}=25\text{W}$	$R_{\theta JC}$	4.2	°C /W

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

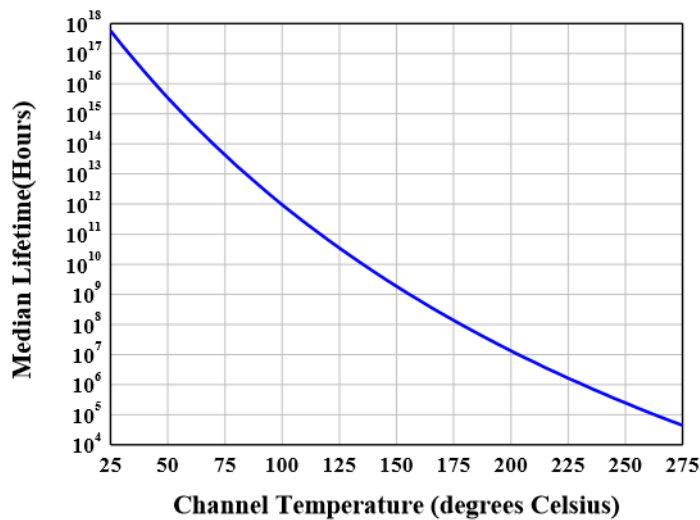
DC Characteristics (main path, measured on wafer prior to packaging)

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=-8\text{V}$ ; $I_{DS}=7.5\text{mA}$	$V_{DSS}$		200		V
Gate Threshold Voltage	$V_{DS}=10\text{V}$ , $I_D=7.5\text{mA}$	$V_{GS(th)}$	-4		-2	V
Gate Quiescent Voltage	$V_{DS}=28\text{V}$ , $I_{DS}=30\text{mA}$ , Measured in Functional Test	$V_{GS(Q)}$		-2.5		V

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	5.8GHz, $P_{out}=30\text{W}$ Pulsed CW All phase, No device damages	VSWR		10:1		

**Figure 2: Median Lifetime vs. Channel Temperature**





### Typical performance

Figure 3: Network analyzer output S11/S21; Vds=28V, Idq=120mA, Pin=0dBm

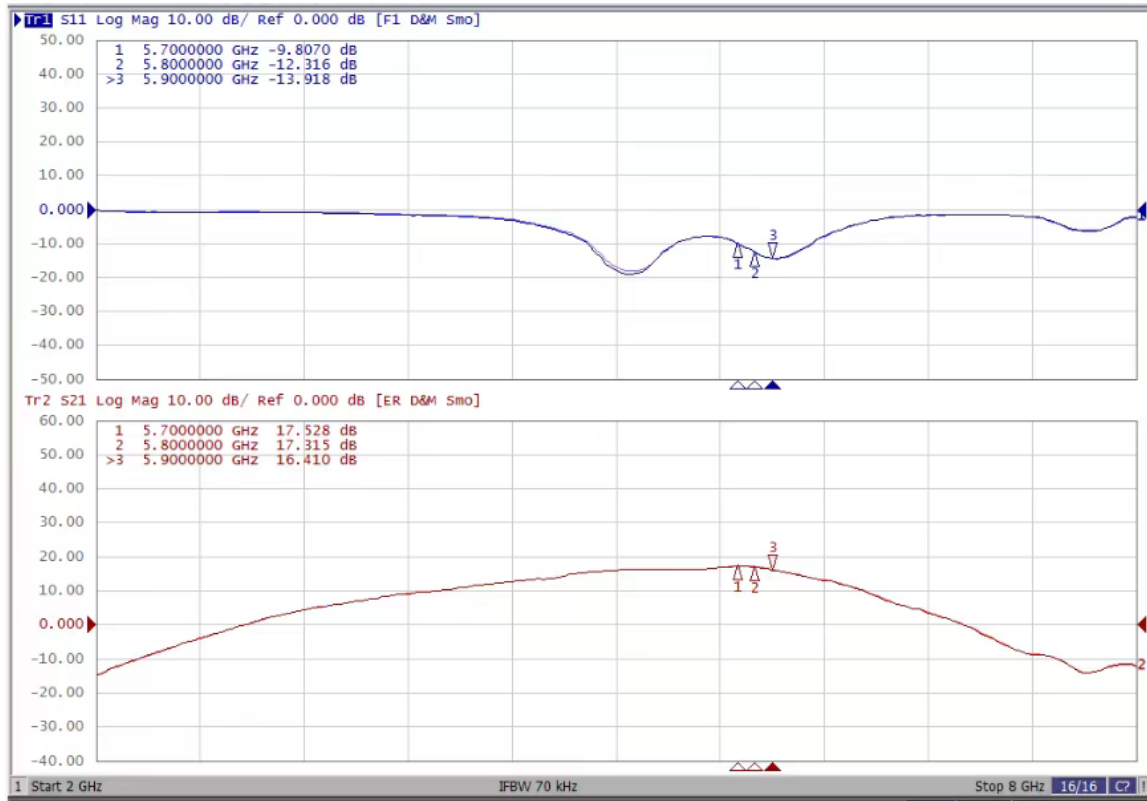


Figure 4: Efficiency and power gain as function of Pout (CW) Vds=28V, Idq=30mA

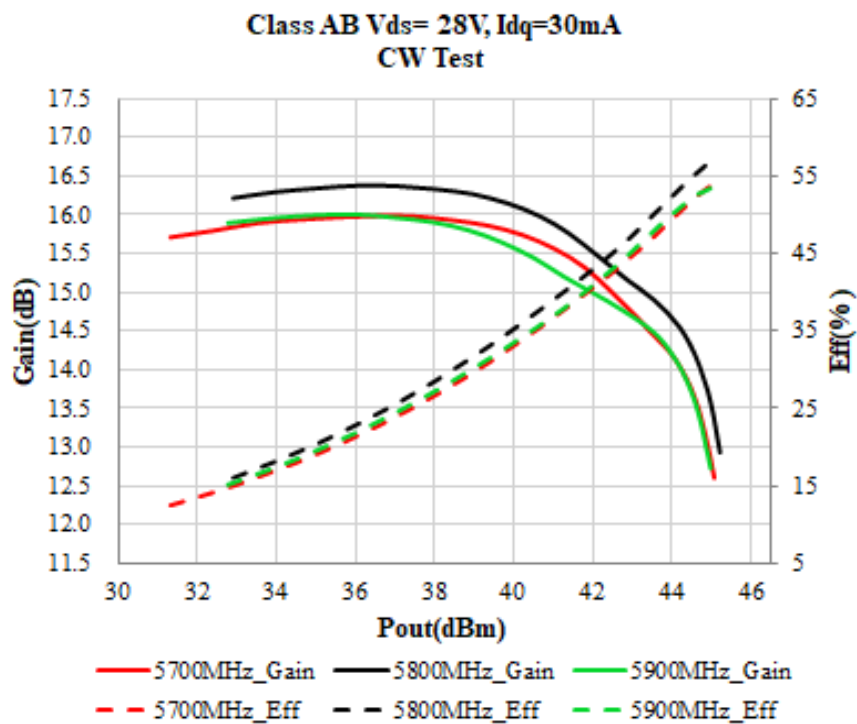
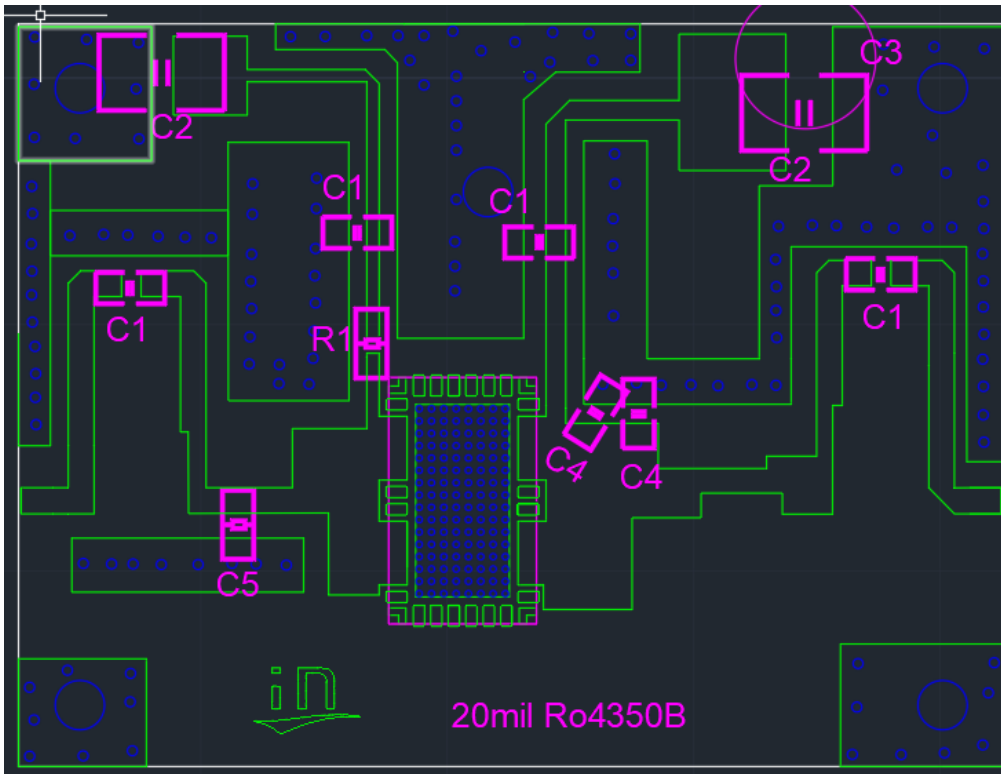


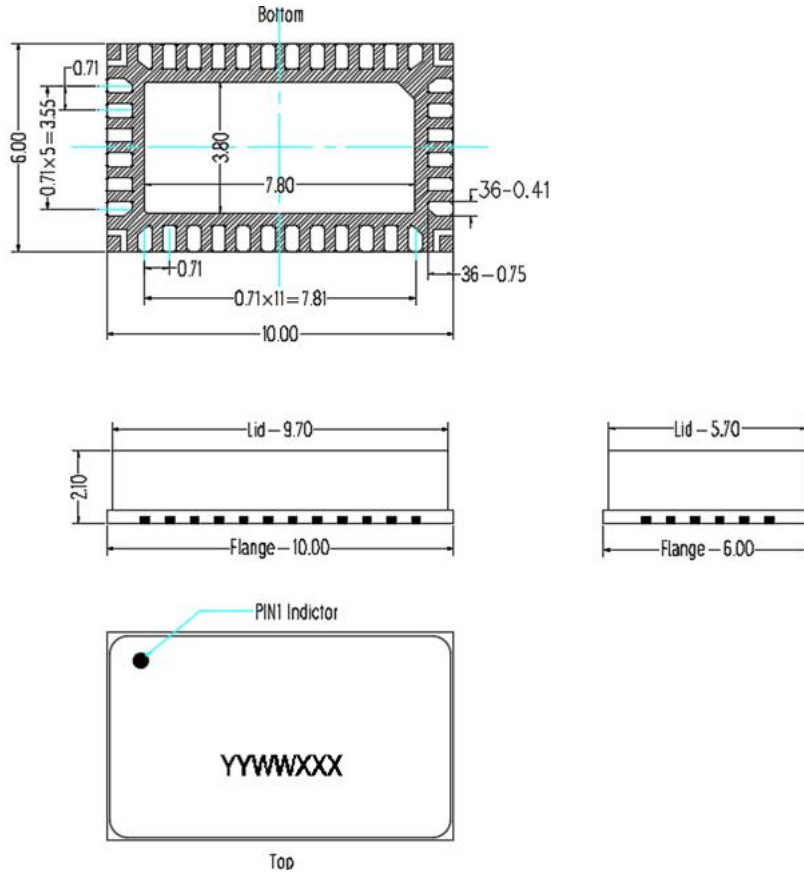
Table 4. Bill of materials of application board (PCB layout upon request, RO4350B 20mils)



Component	Value	Quantity
C1	3.9pF	4
C2	10uF/63V	2
R1	10 ohm	1
C3	470uF	1
C4	0.1pF	2
C5	0.2pF	1



10\*6 Plastic Package



Notes:

1. All dimensions are in mm;
2. The tolerances unless specified are  $\pm 0.2$ mm.

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2024/3/7	V1.0	Preliminary Datasheet Creation
2025/10/14	V1.1	Highlight its target band only within 5-6GHz

Application data based on: ZYX-24-05

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