



Gallium Nitride 28V, 280W, 1.1-1.7GHz RF Power Transistor

Description

The GTAH17280RC2 is a 280W, both input and output matched GaN HEMT, ideal for multiple applications from 1.1-1.7GHz, with leading performance. It can support CW, pulse or any modulated signal.

There is no guarantee of performance when this part is used outside of stated frequencies.

- Typical performance across 1.1-1.7GHz class AB application circuit with device soldered at 28V

GTAH17280RC2



GTAH17280RC2 VDS=28V VGS=-2.45V IDQ=120mA CW						
Freq(MHz)	Psat(dBm)	Psat(W)	IDS(A)	Pin(dBm)	Gain(dB)	Eff(%)
1100	54.85	305.5	18.33	40.02	14.83	59.52
1200	55.31	339.6	17.58	40.25	15.06	69.00
1300	54.35	272.3	15.18	40.29	14.06	64.06
1400	54.02	252.3	16.50	40.62	13.40	54.62
1500	54.29	268.5	17.54	40.45	13.84	54.68
1600	54.38	274.2	16.32	40.07	14.31	60.00
1700	54.05	254.1	14.13	40.70	13.35	64.22

Applications

- L band power amplifier
- GPS, Beidou jammer
- 1.5GHz LTE amplifier

Important Note: Proper Biasing Sequence for GaN HEMT Transistors

Turning the device ON

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

Turning the device OFF

- Turn RF power off
- Reduce VGS down to VP, typically -5 V
- Reduce VDS down to 0 V
- Turn off VGS

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}	32	Vdc
Maximum gate current	I _{gs}	73.5	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 = 25°C, at T _J =200°C	R _{θJC}	0.5	°C /W



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

DC Characteristics (measured on wafer prior to packaging)

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VGS=-8V; IDS=73.5mA	V _{DSS}		150		V
Gate Threshold Voltage	VDS =10V, ID = 73.5mA	V _{GS(th)}	-4		-2	V
Gate Quiescent Voltage	VDS =50V, IDS=300mA, Measured in Functional Test	V _{GS(Q)}		-2.6		V

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	1.2 GHz, Pout=280W Pulsed CW All phase, No device damages	VSWR		10:1		

Figure 3: Network analyzer output, S11 and S21 (VDS=28V VGS=-2.6V IDQ=300mA)

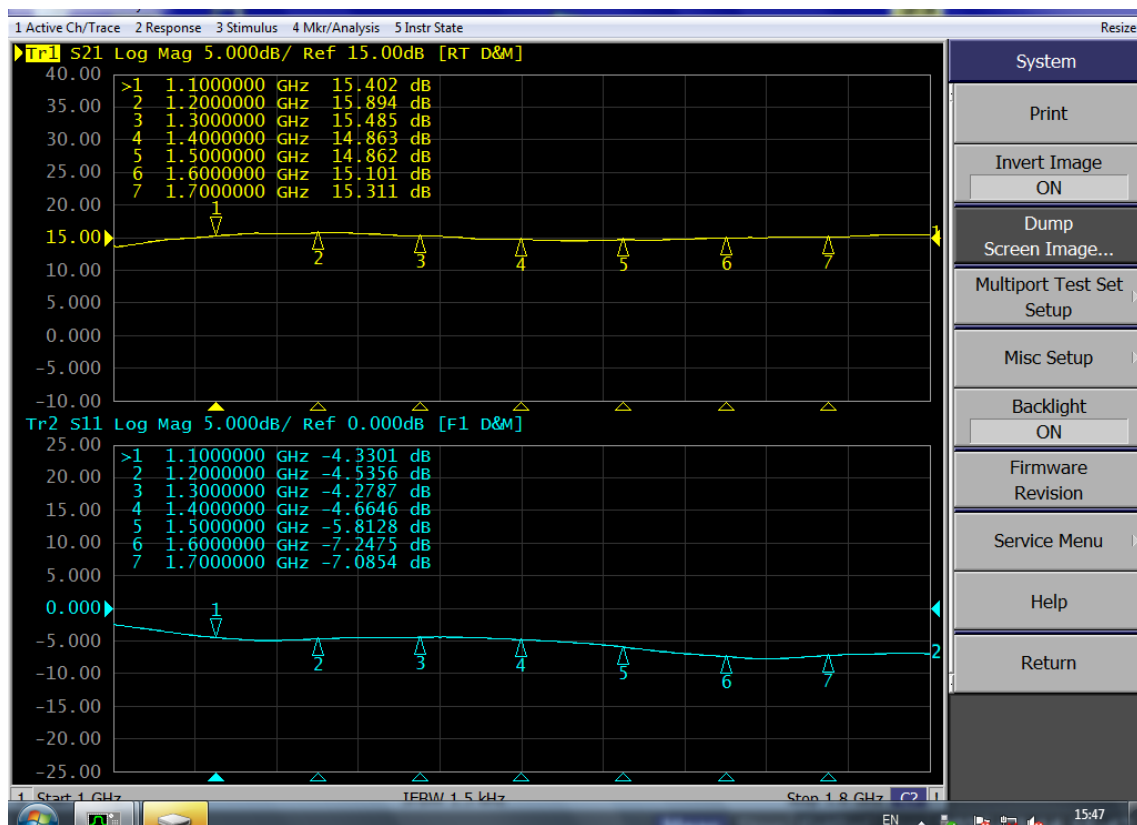


Figure 4: Picture of application board 1.1-1.7GHz class AB

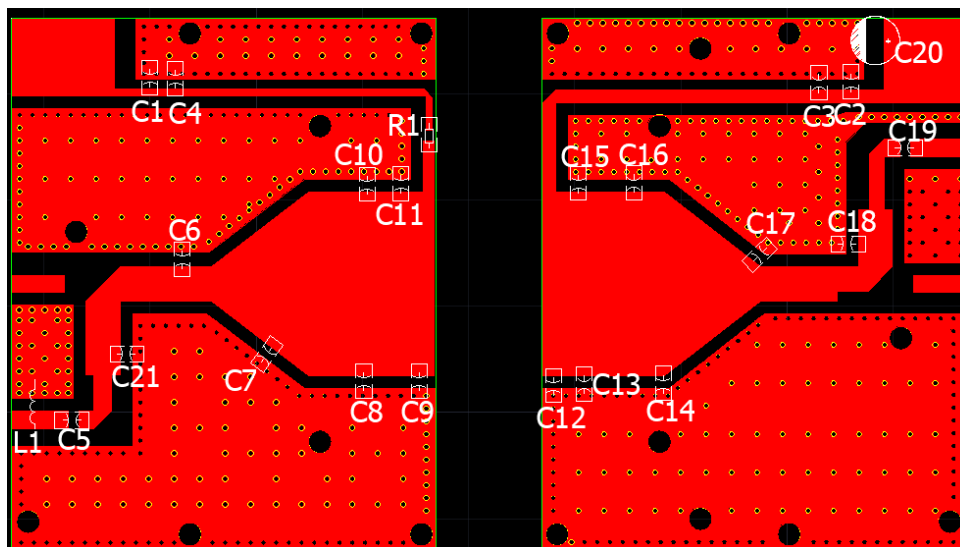


Table 4. Bill of materials of application board (PCB layout upon request)

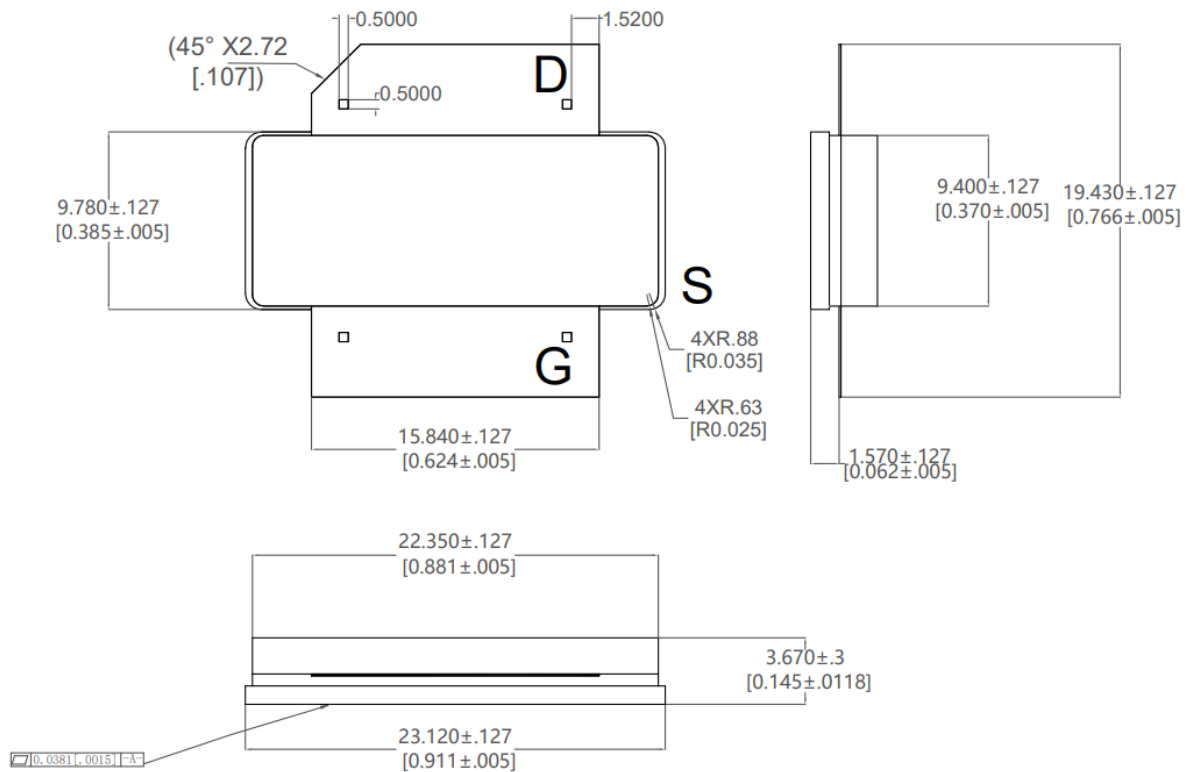
Component	Description	Suggested Manufacturer
C1,C2	10uF/100V-1210	Ceramic multilayer capacitor
C3	120pF	BJYN MQ301111
C4	200pF	BJYN MQ301111
C5	30pf	BJYN MQ301111
C6,C13	2.4pF	BJYN MQ301111
C7,C8	3pF	BJYN MQ301111
C9,C11	3.6pF	BJYN MQ301111
C10	2pF	BJYN MQ301111
C12	3.3pF	BJYN MQ301111
C14,C16	1pF	BJYN MQ301111
C15	3.9pF	BJYN MQ301111
C17	2.7pF	BJYN MQ301111
C18	1.5pF	BJYN MQ301111
C19	24pF	BJYN.MQ101111
C20	470uF/63V	Electrolytic Capacitor
C21	0.8pF	BJYN MQ301111
R1	18 Ω -1206	Chip Resistor
L1	1mm wire, 3mm innerdiameter, 3turns	DIY
PCB	Rogers 4350B	



Package Outline

Flangeless ceramic package;

INP-688-2-EL (C2)



OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-C2					09/27/2018



Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2025/2/17	V1.0	Preliminary Datasheet Creation

Application data based on: TC-25-08

Notice

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