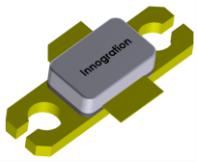
Gallium Nitride 28V 60W, RF Power Transistor

GTAH50060GX



Description

The GTAH50060GX is a 60W internally matched, high linear GaN HEMT, designed from 3.0 to 5.0GHz, especially 5G NR or LTE application, as well as either Pulse or CW application

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

- Typical CW and back off performance with device soldered

VdS= 28V， Idq=60mA， Vgs =-2.58V, CW

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff (%)	P1dB Gain (dB)	P3dB (dBm)	P3dB (W)	P3dB Eff (%)
3600	46.29	42.6	43.7	11.21	47.75	59.6	48.6
3700	46.4	43.6	43.6	11.57	47.93	62.1	48.8
3800	46.48	44.5	43.4	11.68	48.08	64.3	48.9
3900	46.67	46.4	44.9	11.92	48.23	66.5	50.3
4000	46.66	46.4	45.3	11.74	48.33	68.0	51.4
4100	46.74	47.3	47.2	11.62	48.33	68.1	52.9
4200	46.83	48.2	49.8	11.59	48.26	67.0	54.8
4300	46.47	44.3	49.3	11.32	47.91	61.9	54.1
4400	46.49	44.5	50.9	11.13	47.94	62.2	55.9
4500	46.44	44.1	51.9	11.16	47.89	61.5	56.9
4600	46.28	42.5	51.1	10.99	47.74	59.4	55.9

VdS= 28V， Idq=260mA， Vgs =-2.45V.1C-WCDMA Signal PAR = 10.8dB @ 0.01% Probability on CCDF.

Freq (MHz)	Pout (dBm)	CCDF (dB)	ACPR (dBc)	Gain (dB)	Efficiency (%)
3600	34.51	9.94	-45.3	13.0	13.1
3700	34.55	9.93	-45.9	13.5	13.0
3800	34.50	9.94	-45.8	13.6	12.6
3900	34.51	9.96	-46.1	13.7	12.6
4000	34.49	9.89	-45.4	13.6	12.7
4100	34.50	9.90	-45.4	13.5	13.1
4200	34.51	9.72	-45.8	13.4	13.7
4300	34.50	9.88	-45.7	13.2	14.2
4400	34.50	9.90	-45.7	13.1	14.6
4500	34.50	9.80	-45.9	13.1	14.9
4600	34.50	9.67	-45.7	12.9	15.0

Applications and Features

- Suitable for wireless communication infrastructure, wideband amplifier, EMC testing, ISM etc.
- High Efficiency and Linear Gain Operations
- Thermally Enhanced Industry Standard Package
- High Reliability Metallization Process
- Excellent thermal Stability and Excellent Ruggedness
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

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 (28V)
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

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	150	Vdc
Gate--Source Voltage	V_{GS}	-10,+2	Vdc
Operating Voltage	V_{DD}	36	Vdc
Maximum Forward Gate Current @ TC = 25°C	Igmax	14.4	mA
Storage Temperature Range	Tstg	-65 to +150	°C
Case Operating Temperature	T_C	+150	°C
Operating Junction Temperature(See note 1)	T_J	+225	°C

Note: 1. Continuous operation at maximum junction temperature will affect MTTF
2.Bias Conditions should also satisfy the following expression: Pdiss < (Tj – Tc) / RJC and Tc = Tcase

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T_C= 85°C, T_J=200°C, RF CW operation	$R_{\theta JC}$	2.0	C/W

Table 3. Electrical Characteristics (T_C = 25℃ unless otherwise noted)

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=-8V; I_{DS}=14.4mA	V_{DSS}	150			V
Gate Threshold Voltage	V_{DS} = 28V, I_D =14.4mA	V_{GS}(th)	-4		-2	V
Gate Quiescent Voltage	V_{DS} =28V, I_{DS}=180mA, Measured in Functional Test	$V_{GS(Q)}$		-2.5		V

Typical performance

Figure 2: Small singal gain and return loss Vs Frequency

Vds=28V, Idq=180mA, input power=0dBm

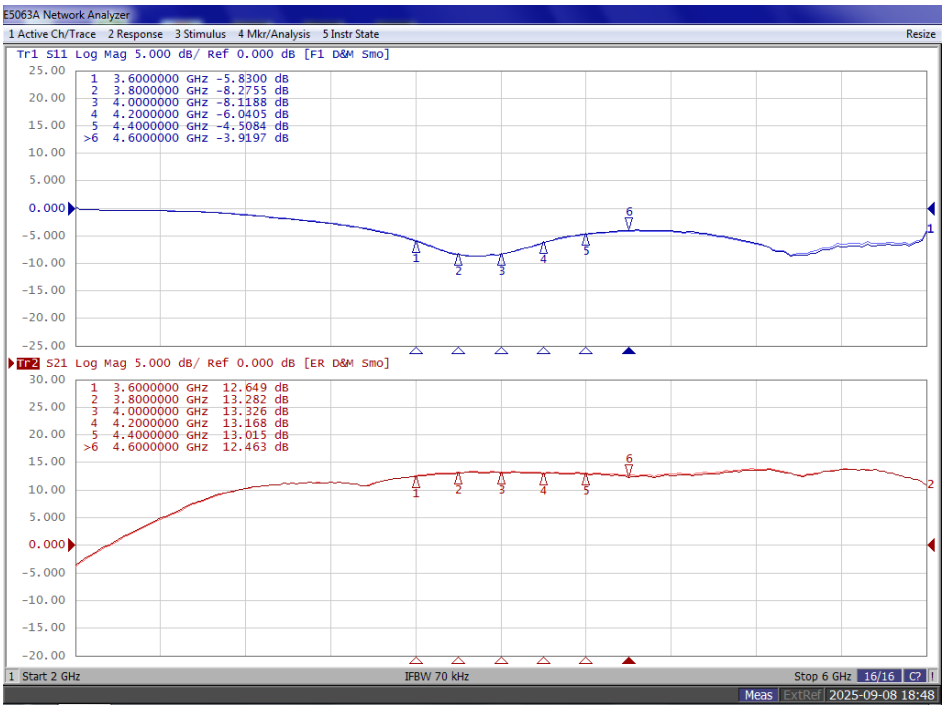


Figure 3: Power Gain， Efficiency as function of Pout across the band

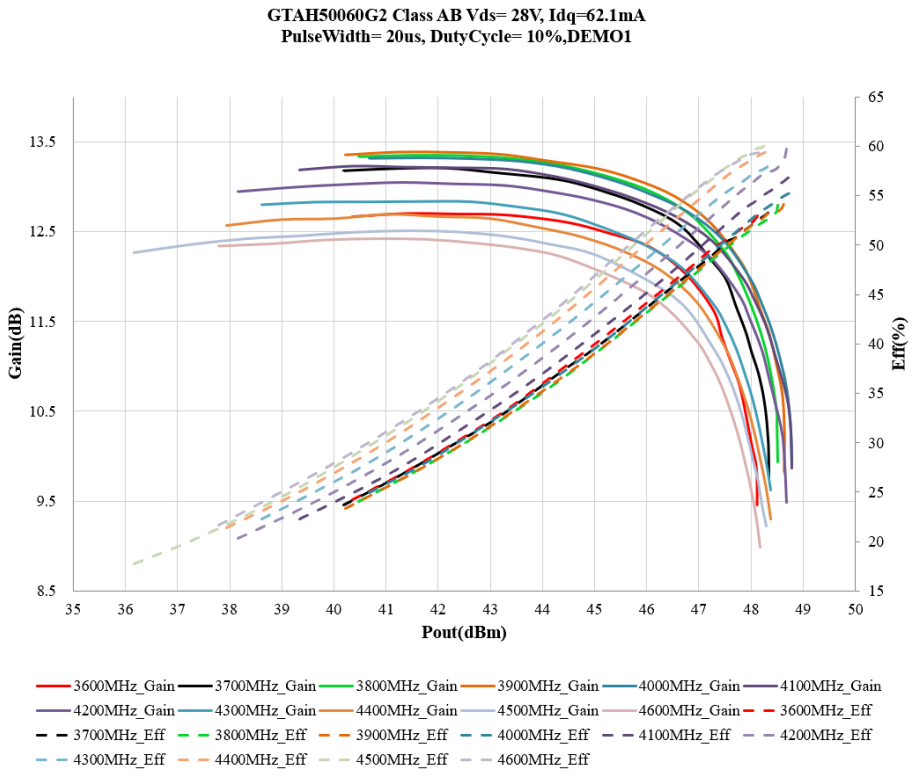
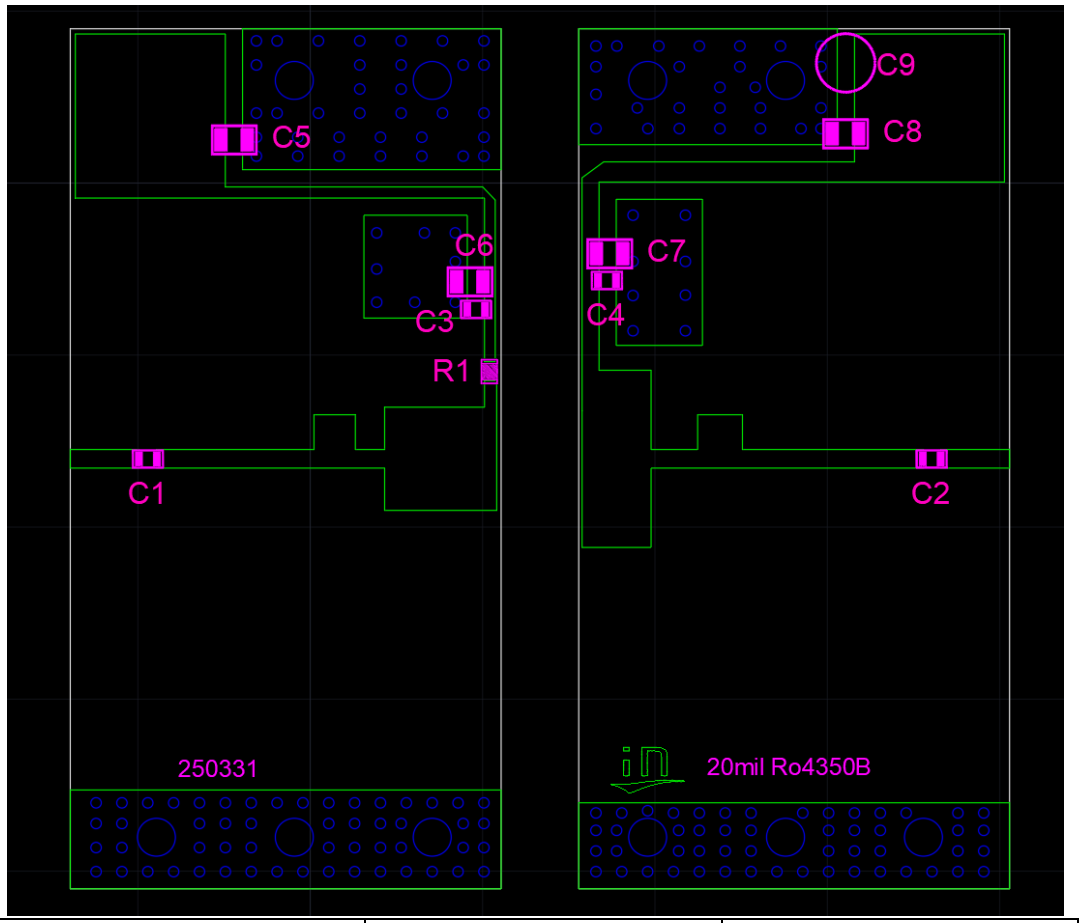


Figure 4: Picture and Bill of materials of application circuit

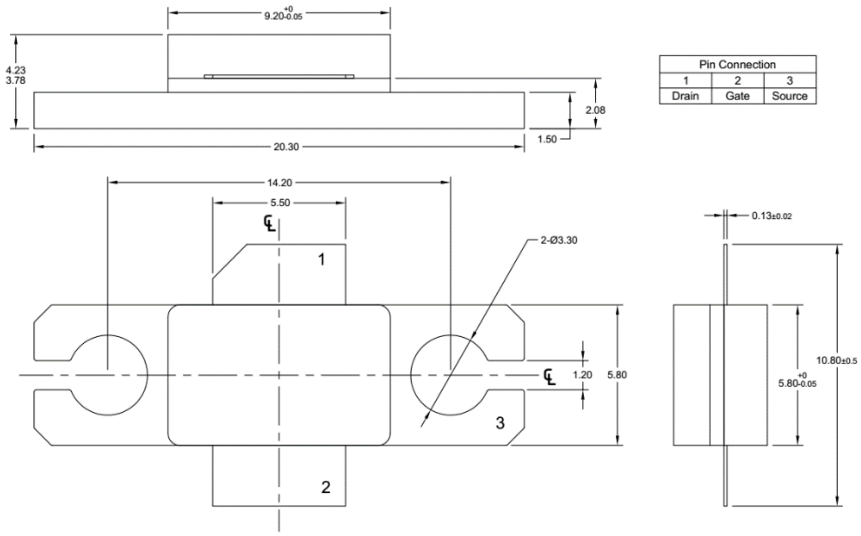
(Layout Gerber file upon request，20mils RO4350B)



Component	Value	Quantity
C1、 C2、C3、 C4	8.2pF	4
C5、C6、 C7、C8	10uF/63V	4
C9	470uF/63V	1
R1	10Ω	1

Package Outline

Flanged ceramic package; 2 leads



OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-GXB					10/10/2017

Figure 1. Package Outline PKG-G2E

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2025/9/9	**V1.0**	**Preliminary Datasheet Creation**

Application data based on ZYX-25-39

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