



## Gallium Nitride 28V 60W, RF Power Transistor

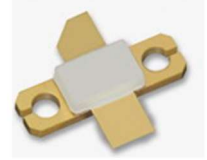
### Description

The GTAH42060GX is a 60W internally matched, GaN HEMT, designed for ultrawide RF CW or pulse applications under 4.2GHz. There is no guarantee of performance when it is used in applications designed outside of these frequencies.

- $V_{ds}=32V$ ,  $I_{dq}=130mA$ , signal: CW, with device soldered (Data up to 40V upon request)

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	Eff(%)
700	35.5	48.4	69.2	4.41	12.9	49
800	36	48.7	74.1	3.86	12.7	60
900	33.8	48.3	67.6	2.9	14.5	73
1000	35.4	47.1	51.3	2.22	11.7	72
1100	35.5	46.6	45.7	2.02	11.1	71
1200	35.2	46.9	49.0	2.23	11.7	69
1300	37.1	47.4	55.0	2.74	10.3	63
1400	36.1	47.6	57.5	3.02	11.5	60
1500	36.2	46.8	47.9	2.95	10.6	51
1600	36.4	47	50.1	3.49	10.6	45
1700	37	47.5	56.2	3.46	10.5	51
1800	37.2	47.8	60.3	3.45	10.6	55
1900	36.6	47.1	51.3	2.76	10.5	58
2000	37.6	46.7	46.8	2.97	9.1	49
2100	37.4	48.1	64.6	3.5	10.7	58
2200	37.5	47.2	52.5	3.37	9.7	49
2300	37.7	47.8	60.3	3.54	10.1	53
2400	37.8	48.7	74.1	4.27	10.9	54
2500	37.6	48.7	74.1	4.09	11.1	57
2600	35.8	48.4	69.2	3.76	12.6	57
2700	37.1	47.9	61.7	3.39	10.8	57
2800	36.5	47.9	61.7	3.23	11.4	60
2900	37.3	47.3	53.7	2.83	10	59
3000	36.7	46.5	44.7	2.45	9.8	57
3100	36.1	46.2	41.7	2.65	10.1	49
3200	36.5	46.1	40.7	2.9	9.6	44
3300	34.9	46.4	43.7	3.22	11.5	42
3400	33.6	46.5	44.7	3.25	12.9	43
3500	34.4	46.3	42.7	3.51	11.9	38
3600	34.7	47.1	51.3	4.03	12.4	40
3700	35.7	48	63.1	4.24	12.3	47
3800	35.2	48.1	64.6	4.01	12.9	50
3900	35.8	47.8	60.3	3.55	12	53
4000	34.7	46.6	45.7	2.74	11.9	52

### GTAH42060GX





**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 <sub>DSS</sub>	150	Vdc
Gate--Source Voltage	V <sub>GS</sub>	-10,+2	Vdc
Operating Voltage	V <sub>DD</sub>	40	Vdc
Maximum Forward Gate Current @ T <sub>C</sub> = 25°C	I <sub>Gmax</sub>	14.4	mA
Storage Temperature Range	T <sub>stg</sub>	-65 to +150	°C
Case Operating Temperature	T <sub>c</sub>	+150	°C
Operating Junction Temperature(See note 1)	T <sub>J</sub>	+225	°C
Total Device Power Dissipation (Derated above 25°C, see note 2)	P <sub>diss</sub>	80	W

Note: 1. Continuous operation at maximum junction temperature will affect MTTF  
2. Bias Conditions should also satisfy the following expression: P<sub>diss</sub> < (T<sub>J</sub> - T<sub>c</sub>) / R<sub>JC</sub> and T<sub>c</sub> = T<sub>case</sub>

**Table 2. Thermal Characteristics**

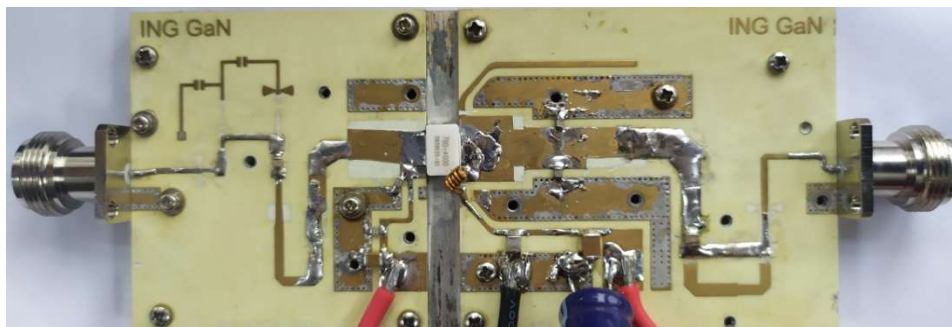
Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T <sub>C</sub> = 85°C, T <sub>J</sub> =200°C, RF CW operation	R <sub>θJC</sub>	2.5	C/W

**Table 3. Electrical Characteristics (T<sub>C</sub> = 25°C unless otherwise noted)**

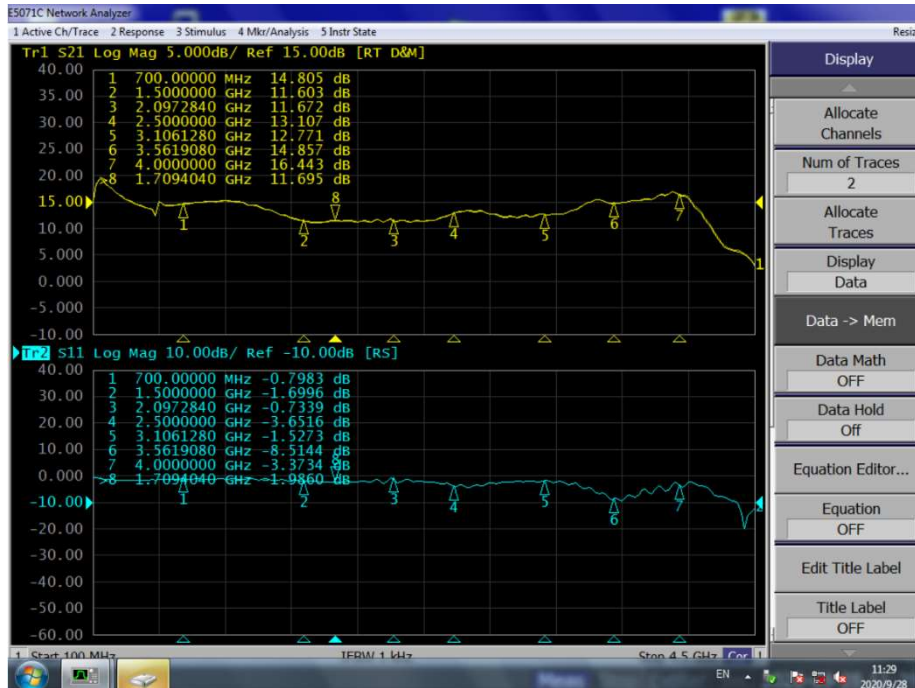
**DC Characteristics**

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>GS</sub> =-8V; I <sub>D</sub> =14.4mA	V <sub>DSS</sub>	150			V
Gate Threshold Voltage	V <sub>DS</sub> = 28V, I <sub>D</sub> =14.4mA	V <sub>GS(th)</sub>	-4	-	-2	V
Gate Quiescent Voltage	V <sub>DS</sub> =28V, I <sub>D</sub> =130mA, Measured in Functional Test	V <sub>GS(Q)</sub>		-2.38		V

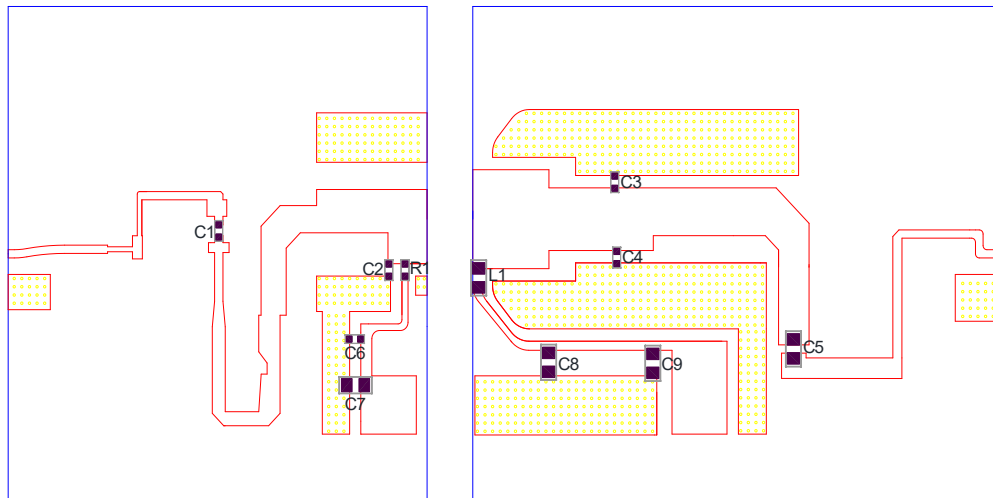
**Figure 1: Picture of 0.7-4GHz application circuit**



**Figure 2: Output of network analyzer S11, S21 Vgs=-2.4V, Vds=32V, Idq=130mA, input power=0dBm**



**Figure 3: Layout info and bill of materials for 0.7-4GHz application circuit**



Component	Description	Suggested Manufacturer
C1,C6	15pF	ATC600F
C2	0.5pF	ATC600F
C3,C4	0.2pF	ATC600F
C5	20pF	ATC800R
C7,C9	Ceramic multilayer capacitor, 10uF, 100V	10uF/100V
C8	20pF	ATC800B
R1	Chip Resistor, 30 Ω, .0603	
L1	线径 0.8mm, 绕径 1mm	
PCB	20mil thick, εr=3.48, Rogers RO4350B, 1 oz. copper	



## Package Outline

Flanged ceramic package; 2 leads

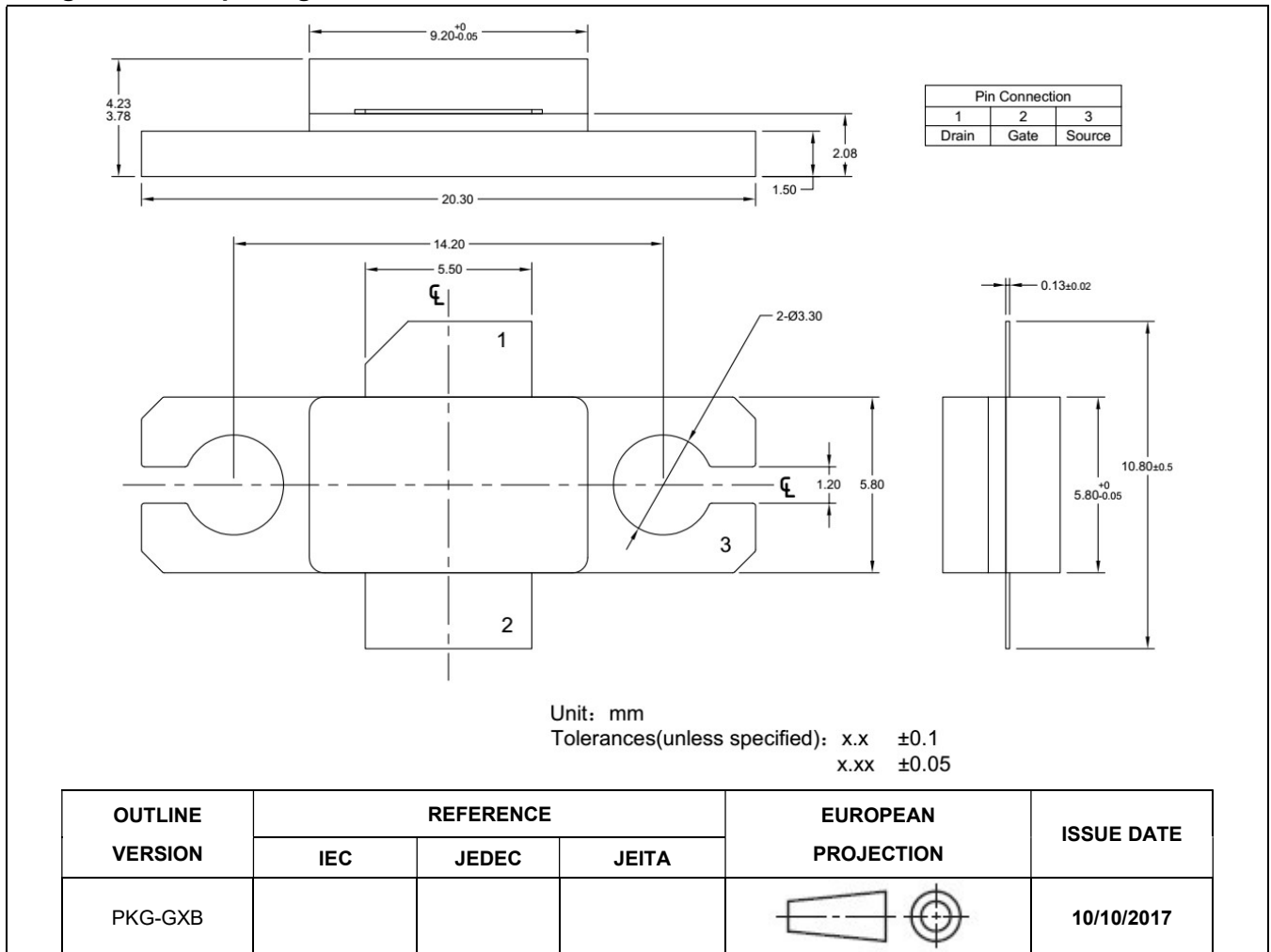


Figure 1. Package Outline PKG-G2E



## Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2020/10/9	V1.0	Preliminary Datasheet Creation

Application data based on ZL-20-20

### Notice

Specifications are subject to change without notice. Innogrations believes the information within the data sheet to be reliable. Innogrations makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose.

“Typical” parameter is the average values expected by Innogrations in quantities and are provided for information purposes only. It can and do vary in different applications and related performance can vary over time. All parameters should be validated by customer’s technical experts for each application.

Innogrations products are not designed, intended or authorized for use as components in applications intended for surgical implant into the body or to support or sustain life, in applications in which the failure of the Innogrations product could result in personal injury or death or in applications for planning, construction, maintenance or direct operation of a nuclear facility.

For any concerns or questions related to terms or conditions, please check with Innogrations and authorized distributors

Copyright © by Innogrations (Suzhou) Co.,Ltd.