



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

### Description

The GTAH27060GX is a 60W internally matched, GaN HEMT, designed for multiple applications, especially LTE/LTE-A/LTE-U from 700-3000MHz.

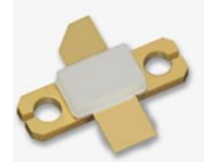
There is no guarantee of performance when this part is used in applications designed outside of these frequencies.

- Typical performance (on 0.7-2.6GHz wideband fixture with device soldered)

Vds=28V, Vgs=-2.46V, Idq=90mA, Test signal: CW

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	Ids(A)	Gain(dB)	Eff(%)
700	35.1	45.6	36	3.26	10.5	40
800	34	46.8	48	3.91	12.8	44
900	36.1	47.96	63	4.15	11.86	54
1000	33.8	48.2	66	3.97	14.4	59
1100	34.1	47.8	60	3.5	13.7	61
1200	33.6	47.7	59	3.53	14.1	60
1300	33.5	48	63	4.02	14.5	56
1400	33.6	48	63	3.8	14.4	59
1500	33.1	47.8	60	3.55	14.7	61
1600	34.2	48.6	72	4.35	14.4	59
1700	34.8	48.3	68	4.48	13.5	54
1800	35.6	48.3	68	4.23	12.7	57
1900	35.7	48.3	68	4.1	12.6	59
2000	35.9	48.2	66	3.96	12.3	60
2100	35.9	48.2	66	3.88	12.3	61
2200	35.8	48	63	3.74	12.2	60
2300	35.6	47.5	56	3.73	11.9	54
2400	34.1	47	50	3.12	12.9	57
2500	33.8	46.1	41	2.69	12.3	54
2600	32.9	45.6	36	1.93	12.7	67

### GTAH27060GX



### 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	$V_{DD}$	40	Vdc
Maximum Forward Gate Current @ $T_C = 25^{\circ}C$	$I_{gmax}$	14	mA
Storage Temperature Range	$T_{stg}$	-65 to +150	$^{\circ}C$
Case Operating Temperature	$T_c$	+150	$^{\circ}C$
Operating Junction Temperature(See note 1)	$T_J$	+200	$^{\circ}C$
Total Device Power Dissipation (Derated above 25 $^{\circ}C$ , see note 2)	$P_{diss}$	70	W

Note: 1. Continuous operation at maximum junction temperature will affect MTTF  
2. Bias Conditions should also satisfy the following expression:  $P_{diss} < (T_J - T_c) / R_{\theta JC}$  and  $T_c = T_{case}$

**Table 2. Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case $T_C = 85^{\circ}C, T_J = 200^{\circ}C, RF\ CW\ operation$	$R_{\theta JC}$	2.52	C/W

**Table 3. Electrical Characteristics** ( $T_C = 25^{\circ}C$  unless otherwise noted)

**DC Characteristics**

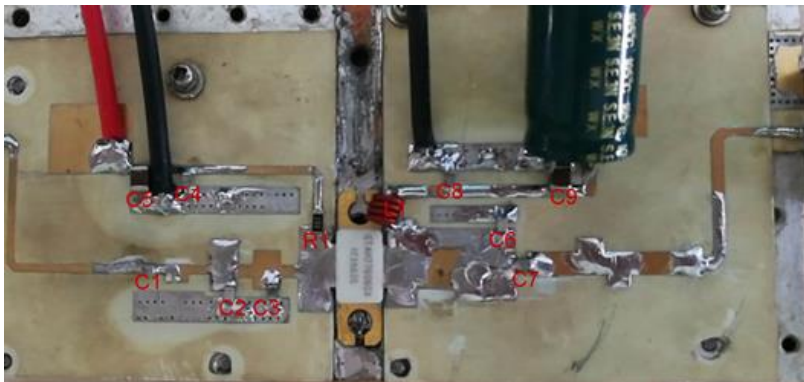
Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = -8V; I_{DS} = 14mA$	$V_{DSS}$	150			V
Gate Threshold Voltage	$V_{DS} = 28V, I_D = 14mA$	$V_{GS(th)}$		-2.7		V
Gate Quiescent Voltage	$V_{DS} = 28V, I_{DS} = 90mA,$ Measured in Functional Test	$V_{GS(Q)}$		-2.46		V

**Functional Tests (In 0.7-2.6 GHz wideband Production Test Fixture, 50 ohm system) :**  $V_{DD} = 28\ Vdc, I_{DQ} = 90\ mA, f = 2000\ MHz, CW\ signal$

Characteristic	Symbol	Min	Typ	Max	Unit
Power Gain	$G_p$		12.3		dB
Drain Efficiency @ $P_{out}$	$Eff$		60		%
Saturated Power	$P_{SAT}$	60	66		W
Input Return Loss	IRL		-7		dB
Mismatch stress at all phases (Device no damage)	VSWR		10:1		$\Psi$

**Figure 1: Photo of test fixture and bill of materials (PCB layout upon request)**

Rogers RO4350B , Thickness 20Mils



C1,C4,C7,C8	27PF	ATC600F
C2	0.4PF	ATC600F
C3	1.5PF	ATC600F
C6	0.7PF	ATC600F
C5,C9	10UF	10UF/50V
R1	10 $\Omega$	1206
L1	4 Turns	D=3mm



## Package Outline

Flanged ceramic package; 2 leads

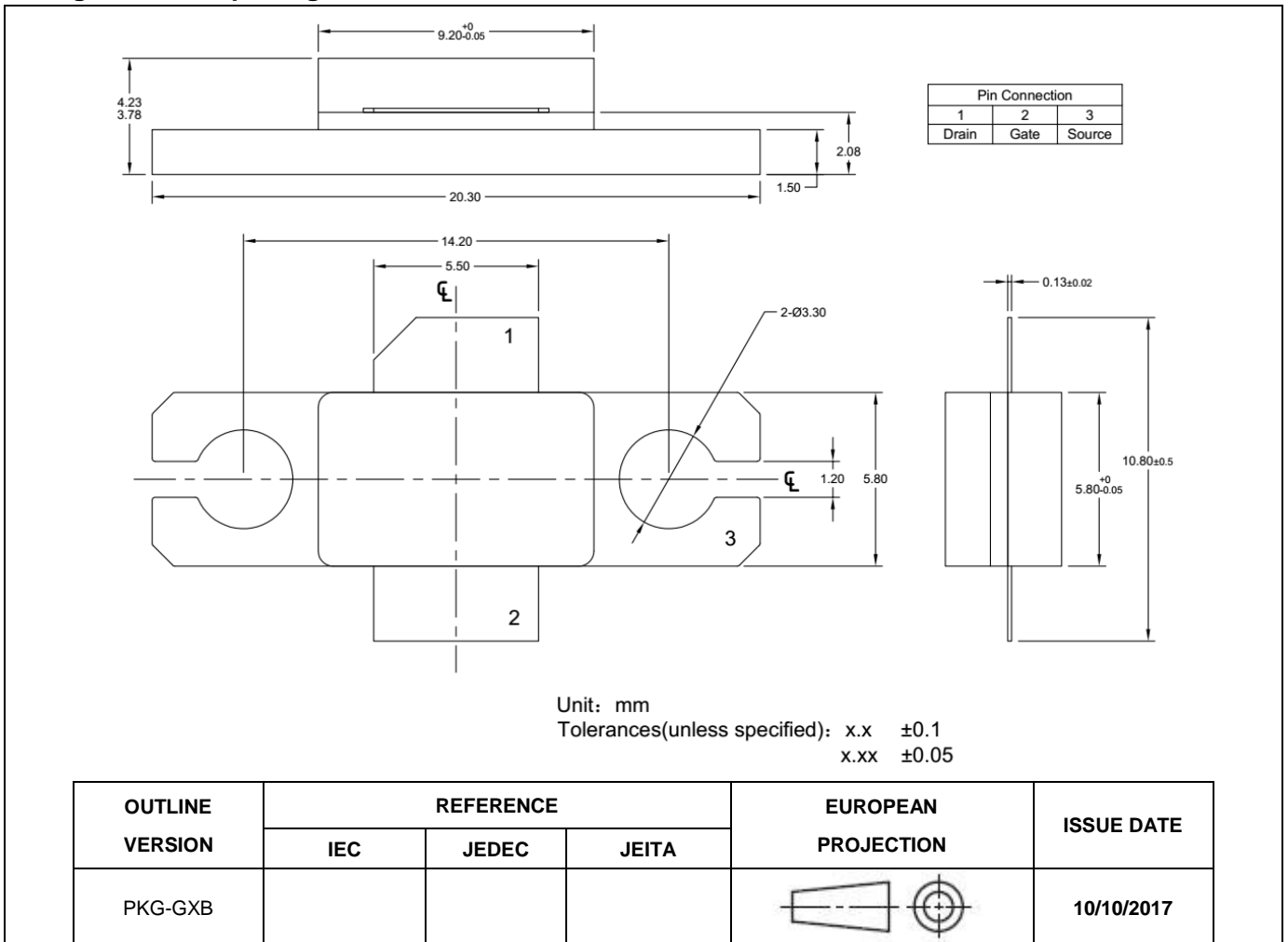


Figure 1. Package Outline PKG-G2E



## Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2017/9/28	V1.0	Preliminary Datasheet Creation

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