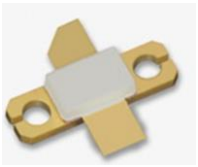
Gallium Nitride 28V 30W, RF Power Transistor

Description

The GTAH35030GX is a 30W internally matched, GaN HEMT, designed for multiple applications, especially sub-6GHz MC-GSM/WCDMA/LTE/LTE-A from 800-3800MHz.

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

GTAH35030GX



- Typical performance (on wide band fixture with device soldered)

V_{DD}=28V I_{DQ}=23mA, CW.

Frequency(MHz)	P_{OUT} (W)	Efficiency (%)	Gp (dB)
1350	22	64	14.2
1450	22	64	15.3
1550	23	68	15.3
1650	22	67	14.9
1750	22	68	15.1
1850	20	61	14.0

- Typical performance (on wide band fixture with device soldered)

V_{DD}=28V I_{DQ}=23mA, CW.

Frequency(MHz)	P_{SAT} (W)	Efficiency (%)	G_P (dB)
2700	38	59	13.0
3000	39	67	14.0
3300	42	65	13.8
3500	36	62	13.1

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 @ Tc = 25°C	Igmax	7	mA
Storage Temperature Range	Tstg	-65 to +150	°C
Case Operating Temperature	T_c	+150	°C
Operating Junction Temperature(See note 1)	T_J	+200	°C
Total Device Power Dissipation (Derated above 25°C, see note 2)	Pdiss	35	W

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	RθJC	5.04	C/W

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

DC Characteristics

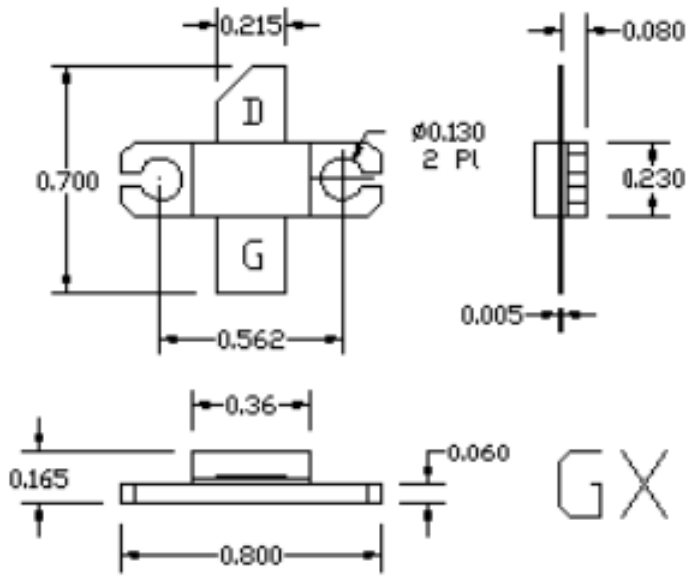
Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=-8V; I_{DS}=7mA	V_{DSS}		160		V
Gate Threshold Voltage	V_{DS} = 28V, I_D = 7 mA	V_{GS}(th)		-2.7		V
Gate Quiescent Voltage	V_{DS} =28V, I_{DS}=350mA, Measured in Functional Test	$V_{GS(Q)}$		-2.27		V

Functional Tests (In 3.6-3.8Ghz Production fixture, 50 ohm system) : V_{DD} = 28 Vdc, I_{DQ} = 350 mA, f = 3600 MHz, WCDMA signal, Pout=6W.

Characteristic	Symbol	Min	Typ	Max	Unit
Power Gain	Gp		16		dB
Drain Efficiency @ P_{out}	Eff		35		%
Saturated Power by CCDF test	P_{SAT}	30			W
Input Return Loss	IRL		-7		dB
Mismatch stress at all phases (Device no damage)	VSWR		10:1		Ψ

Package Outline

Flanged ceramic package; 2 leads



Tolerance .XX +/-0.01 .XXX +/-.005 inches

OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-G2E					03/12/2013

Figure 1. Package Outline PKG-G2E

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2017/5/22	V1.0	Preliminary Datasheet Creation
2017/6/20	V1.1	Maximum rating and specs modified
2017/7/27	V1.2	Maximum rating and DC specs specified, RF production data added

Notice