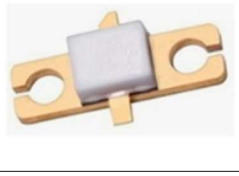
NME8001H GaN TRANSISTOR

Document Number: NME8001H
Preliminary Datasheet V1.0

Gallium Nitride 28V 10W, RF Power Transistor

NME8001H



Description

The NME8001H is a 10W, GaN HEMT, designed for multiple applications with frequencies up to 8GHz.

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

- Typical performance (on Innogration broadband band production fixture with device soldered)

NME8001H Vds=28V,Vgs=-2.47V,Idq=50mA, CW						
Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	Ids(mA)	Gain(dB)	Eff(%)
6400	34.13	40.93	12.4	1078	6.8	41.0
6500	33.65	41.12	12.9	1017	7.5	45.4
6600	34.02	41.38	13.7	980	7.4	50.1
6700	33.39	41.26	13.4	914	7.9	52.2
6800	33.42	40.89	12.3	831	7.5	52.8
6900	33.26	40.54	11.3	791	7.3	51.1
7000	33.46	40.16	10.4	760	6.7	48.8
7100	33.54	40.3	10.7	789	6.8	48.5
7200	33.47	40.31	10.7	812	6.8	47.2

• 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 (Not simultaneous, TC = 25°C unless otherwise noted)

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	Igmax	2.5	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

1. **Continuous operation at maximum junction temperature will affect MTTF**

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T_C= 85°C, T_J=200°C, DC Power Dissipation(See note 1)	$R_{\theta JC}$	8	C/W

1. **$R_{\theta JC\text{-}DC}$ is tested at only DC condition, it is related to the highest thermal resistor value among all test conditions. It might be differently lower in different RF operation conditions like CW signal ,pulsed RF signal etc.**

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}=2.5mA	V_{DSS}	150			V
Gate Threshold Voltage	V_{DS} = 28V, I_D = 2.5mA	V_{GS}(th)		-2.7		V
Gate Quiescent Voltage	V_{DS} =28V, I_{DS}=50mA, Measured in Functional Test	$V_{GS(Q)}$		-2.47		V

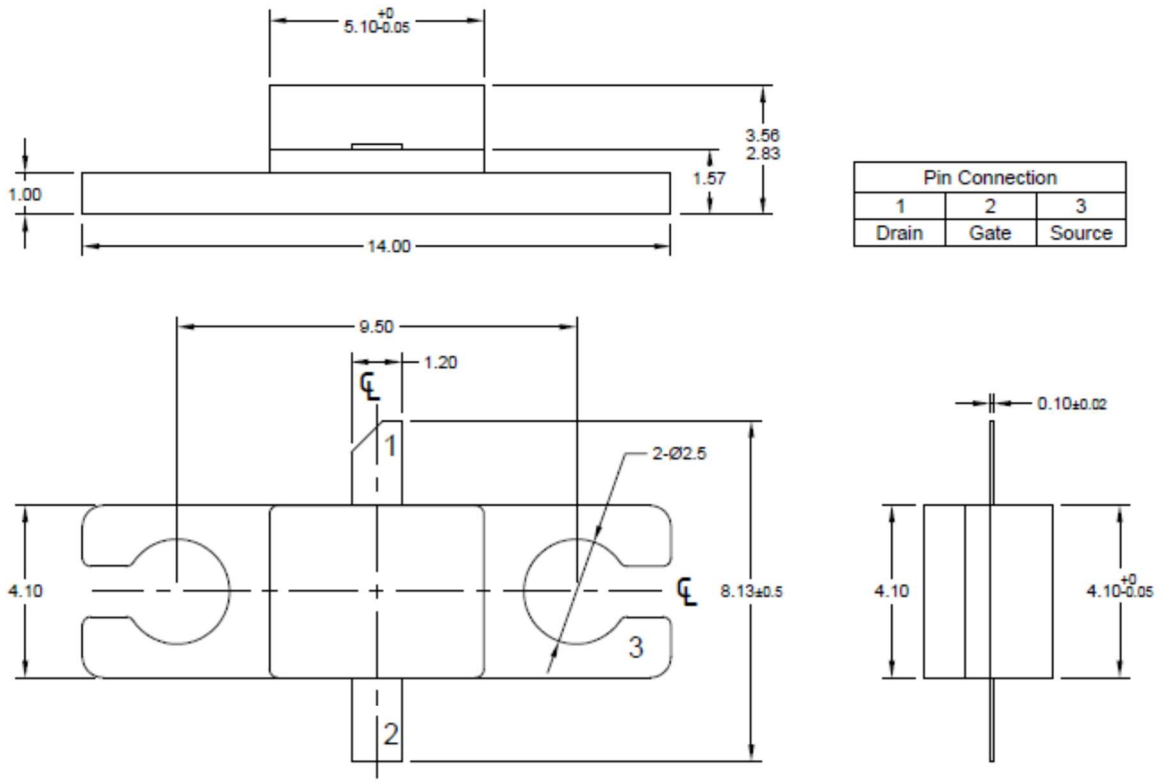
Typical performance

6.4-7.2GHz

Figure 3: Network analyzer output, S11 and S21（ VDS=28V VGS=-2.45V IDQ=50mA）

Package Outline

Flanged ceramic package; 2 leads



Pin Connection		
1	2	3
Drain	Gate	Source

Unit: mm
Tolerances(unless specified): x.x ±0.25
x.xx ±0.13

OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-MME					10/10/2016

Figure 1. Package Outline PKG-MME

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2023/2/28	**V1.0**	**Preliminary Datasheet**

Application data based on RXT-23-05

Notice

Specifications are subject to change without notice. Innogration believes the information within the data sheet to be reliable. Innogration makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose.
"Typical" parameter is the average values expected by Innogration 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.
Innogration 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 Innogration 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 Innogration and authorized distributors