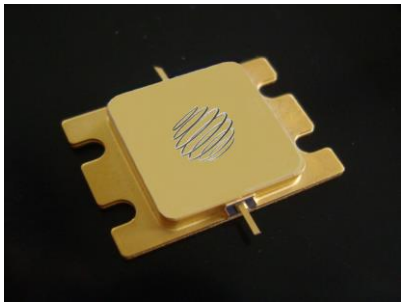
NoleTec
Microwave Electronics

## Product Datasheet NGN1214H1S-M50

NGN1214H1S-M50 is a Gallium Nitride RF power tranistor internally matched to 50Ω. It is developed for high power amplifiers and it is ideal for pulsed radar applications. This transistor has hermetically sealed package to enable use in applications with high reliability requirements.



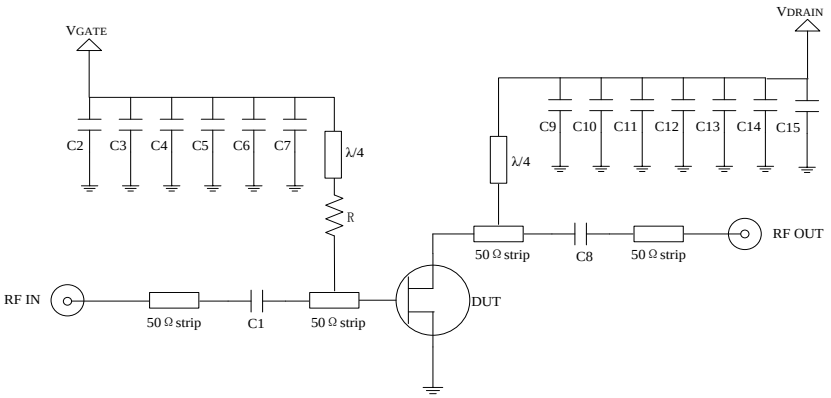
Features
- 50W output power
- 17 dB power gain
- 50Ω input and output impedance
- 65% power added efficiency

| Characteristics | Symbol | Min. | Typ. | Max. | Units | Conditions |
|---|---|---|---|---|---|---|
| **DC Characteristics** | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | | -3.0 | | VDC | $V_{DS}$ = 10 V, $I_D$ = 5.2 mA |
| Gate Quiescent Voltage | $V_{GS(Q)}$ | | -2.8 | | VDC | $V_{DS}$ = 50 V, $I_D$ = 50 mA |
| Saturated Drain Current[2] | $I_{DS}$ | | 5.2 | | A | $V_{DS}$ = 6.0 V, $V_{GS}$ = 2.0 V |
| **RF Characteristics** | (VDD= 50V, Tc = 25°C, F = 1.2-1.4 GHz, IDQ = 50mA, Pulse duration = 250µs/10%) | | | | | |
| Gain | $G_{LS}$ | | 17 | | dB | Pin= 30 dBm |
| Power | $P_{SAT}$ | | 50 | | W | Pin= 30 dBm |
| Input Return Loss | S11 | | -10 | | dB | Pin= 10 dBm |
| PAE | η | - | 65 | - | % | Pin= 30 dBm |
| Output Mismatch | VSWR | | | 5:1 | ψ | |

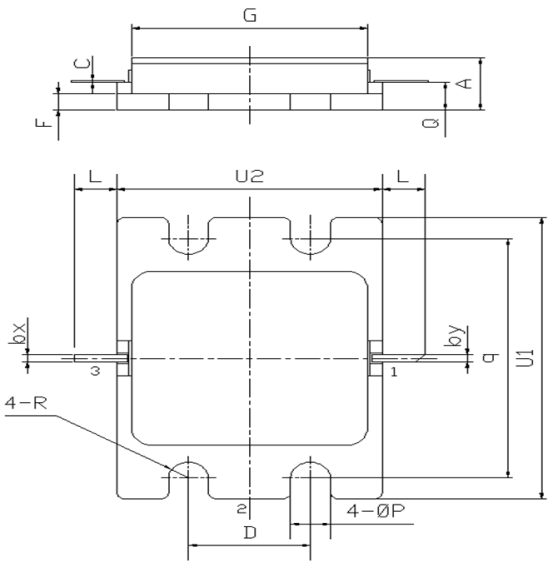
| Maximum Ratings | Symbol | Rating | Units | Conditions |
|---|---|---|---|---|
| **Parameter** | | | | |
| Drain-Source Voltage | $V_{DSS}$ | 150 | V | 25°C |
| Gate-Source Voltage | $V_{GS}$ | -10, +2 | V | 25°C |
| Storage temperature | $T_{STG}$ | -65 - 150 | °C | |
| Operating Junction Temperature | TJ | 225 | °C | |
| Maximum Drain Current | $I_{DMAX}$ | 3.2 | A | 25°C |
| Maximum Forwad Gate Current | $I_{GMAX}$ | 5.2 | mA | 25°C |
| Duty cycle | DC | 10 | % | |

Subject to change without notice.

**Evalutation Circuit**




| Pos. | Descr. |
|---|---|
| R | 10 Ω |
| C1,C7,C8,C9 | 10 pF |
| C2,C3,C13,C14 | 1 µF |
| C4, C12 | 10 nF |
| C5, C11 | 33 pF |
| C6, C10 | 1 nF |
| C15 | 220 µF |
| PCB RO5880 | $\varepsilon_r$=3.66 |




| Item | Measure mm | |
|---|---|---|
| | Min | Max |
| A | 4.05 | 4.5 |
| bx | 0.55 | 0.65 |
| by | 0.55 | 0.65 |
| C | 0.05 | 0.15 |
| D | 7.85 | 8.15 |
| F | 1.2 | 1.6 |
| L | 2.85 | 3.15 |
| G | 15.35 | 15.65 |
| ØP | 2.45 | 2.75 |
| Q | 2.25 | 2.55 |
| q | 20.2 | 20.6 |
| R | 1.15 | 1.45 |
| U1 | 23.8 | 24.2 |
| U2 | 17.2 | 17.6 |

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