

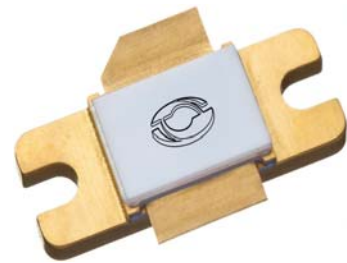
# 1214GN-280LV

280 Watts - 50 Volts, 3ms, 30%  
Broad Band 1200 - 1400 MHz

## GENERAL DESCRIPTION

The 1214GN-280LV is an internally matched, COMMON SOURCE, class AB GaN on SiC HEMT transistor capable of providing over 15.5dB gain, 280 Watts of pulsed RF output power at 3ms pulse width, 30% duty factor across the 1200 to 1400 MHz band. The transistor has internal pre-match for optimal performance. This hermetically sealed transistor is designed for L-Band Radar applications. It utilizes gold metallization and eutectic attach to provide highest reliability and superior ruggedness.

## CASE OUTLINE 55-KR Common Source



## ABSOLUTE MAXIMUM RATINGS

### Maximum Power Dissipation

Device Dissipation @ 25°C 500 W

### Maximum Voltage and Current

Drain-Source Voltage ( $V_{DSS}$ ) 150 V

Gate-Source Voltage ( $V_{GS}$ ) -8 to +0 V

### Maximum Temperatures

Storage Temperature ( $T_{STG}$ ) -55 to +125 °C

Operating Junction Temperature +250 °C

## ELECTRICAL CHARACTERISTICS @ 25°C

| Symbol        | Characteristics         | Test Conditions                      | Min  | Typ | Max  | Units |
|---------------|-------------------------|--------------------------------------|------|-----|------|-------|
| Pout          | Output Power            | Pout=280W, Freq=1200, 1300, 1400 MHz | 280  |     |      | W     |
| Gp            | Power Gain              | Pout=280W, Freq=1200, 1300, 1400 MHz | 15.5 | 16  |      | dB    |
| $\eta_d$      | Drain Efficiency        | Pout=280W, Freq=1200, 1300, 1400 MHz | 53   | 58  |      | %     |
| Dr            | Droop                   | Pout=280W, Freq=1200, 1300, 1400 MHz |      |     | 1.0  | dB    |
| VSWR-T        | Load Mismatch Tolerance | Pout=280W, Freq=1200 MHz             |      |     | 3:1  |       |
| $\Theta_{jc}$ | Thermal Resistance      | Pulse Width=3mS, Duty=30%            |      |     | 0.45 | °C/W  |

- Bias Condition: Vdd=+50V, Idq=100mA average current ( $V_{gs} = -2.0 \sim -4.5V$ ) with constant gate Bias

## FUNCTIONAL CHARACTERISTICS @ 25°C

|              |                                |                            |     |  |    |    |
|--------------|--------------------------------|----------------------------|-----|--|----|----|
| $I_{D(Off)}$ | Drain leakage current          | $V_{gs} = -8V, V_D = 50V$  |     |  | 24 | mA |
| $I_{G(Off)}$ | Gate leakage current           | $V_{gs} = -8V, V_D = 0V$   |     |  | 16 | mA |
| $BV_{DSS}$   | Drain-source breakdown voltage | $V_{gs} = -8V, I_D = 46mA$ | 150 |  |    | V  |

- DC parameters pass/failure criteria will be revised after mass production DC parameters distributions have been determined.

Issue June 2013

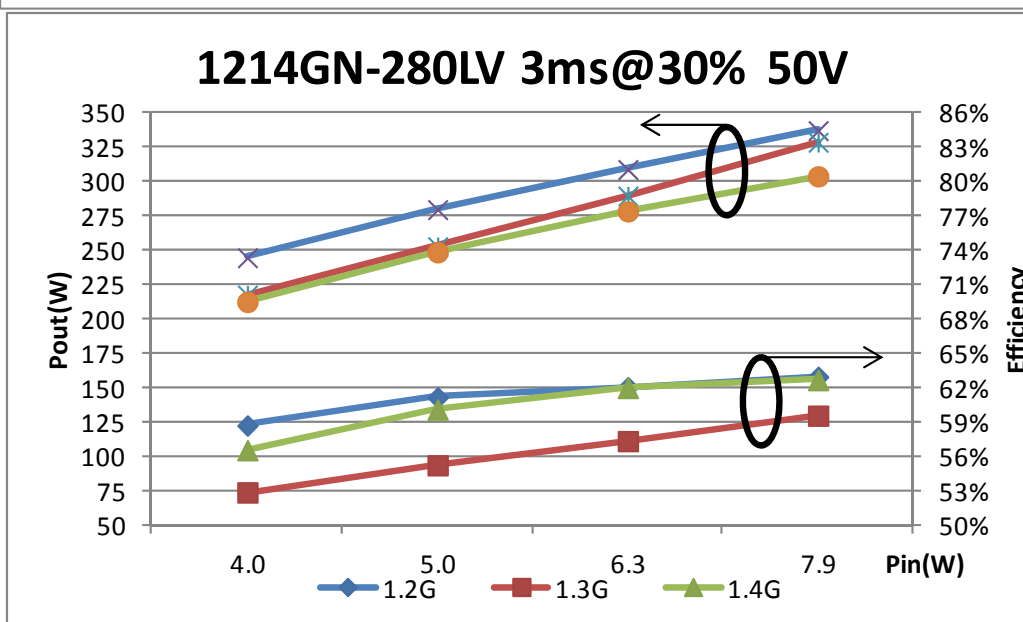
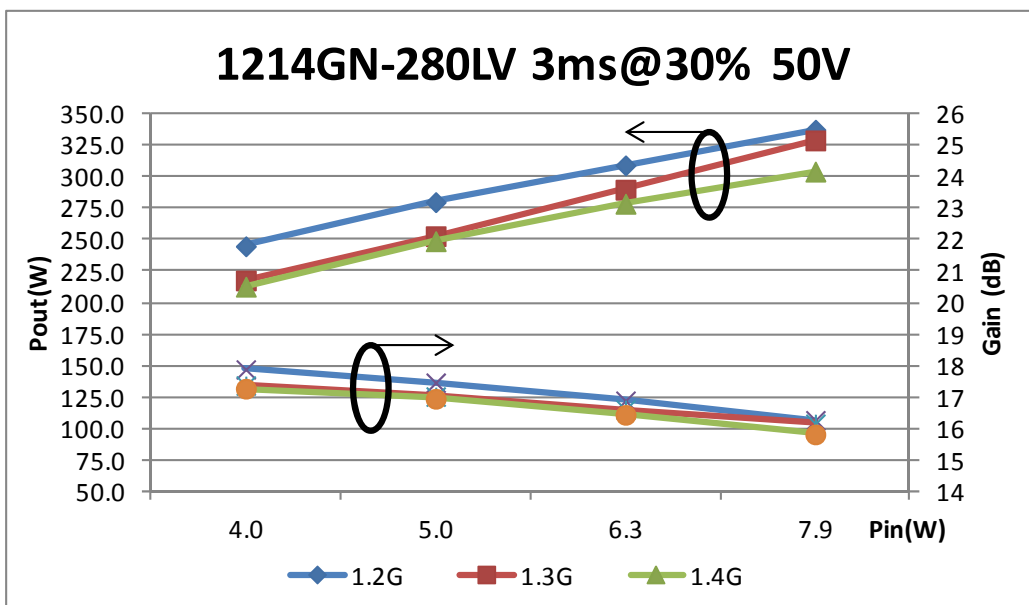
**EXPORT CLASSIFICATION: EAR 99**

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## Typical Performance Data

| Freq(GH) | Pin (W) | Pout (W) | Id (A) | RL (dB) | Eff(%) | G (dB) | Droop (dB) |
|----------|---------|----------|--------|---------|--------|--------|------------|
| 1.2      | 7.9     | 337      | 3.3    | -8      | 63%    | 16.28  | 0.6        |
| 1.3      | 7.9     | 329      | 3.4    | -13.4   | 59.6%  | 16.17  | 0.75       |
| 1.4      | 7.9     | 304      | 3.0    | -8.5    | 62.7%  | 15.83  | 0.7        |



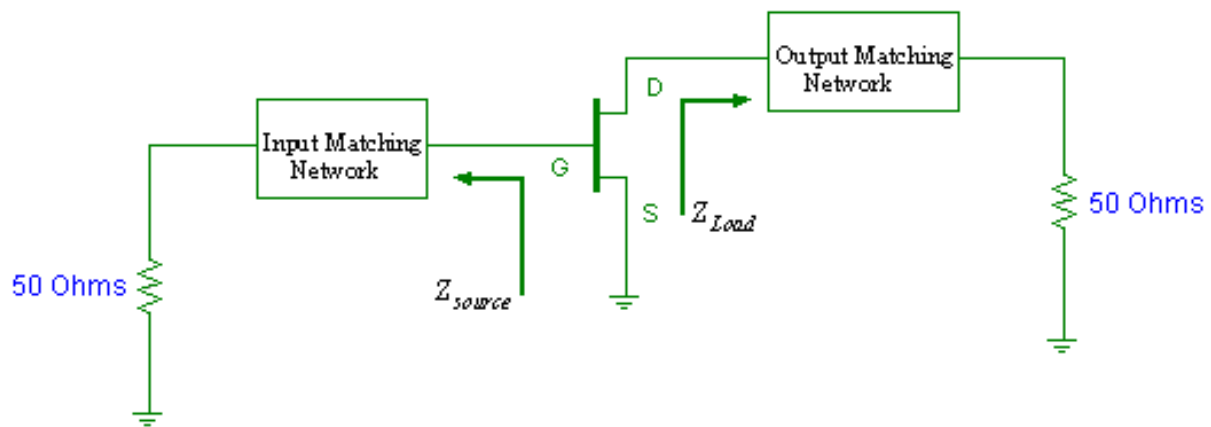
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### Transistor Impedance Information



Note:  $Z_{in}$  is looking into the input circuit;  
 $Z_{Load}$  is looking into the output circuit.

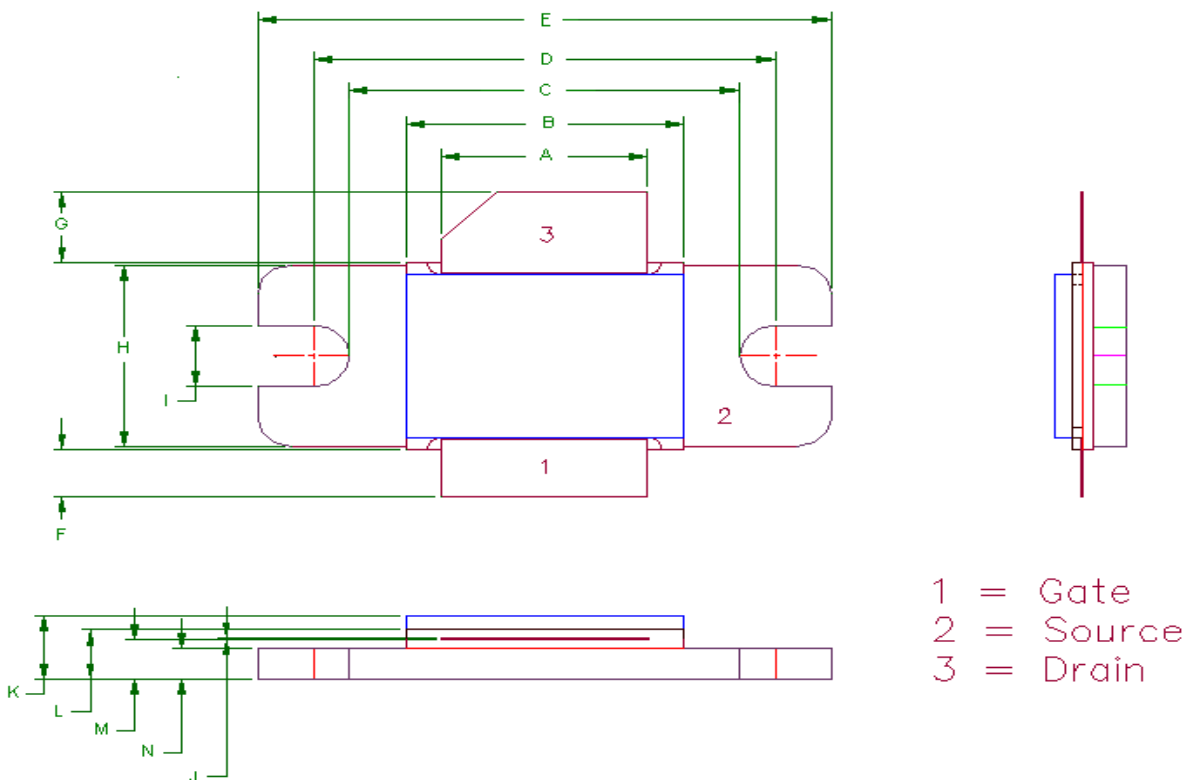
| Impedance Data |                |                |
|----------------|----------------|----------------|
| Freq (GHz)     | Zs             | ZI             |
| 1.2            | 1.475 - j1.674 | 2.22 + j0.093  |
| 1.3            | 1.437 - j0.81  | 2.199 - j0.153 |
| 1.4            | 1.451 + j0.038 | 1.703 - j0.144 |

**Please call the representative for detailed circuit configuration.**

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## 55-KR PACKAGE DIMENSION



| Dimension | Min (mil) | Min (mm) | Max (mil) | Max (mm) |
|-----------|-----------|----------|-----------|----------|
| A         | 370       | 9.40     | 372       | 9.44     |
| B         | 498       | 12.65    | 500       | 12.7     |
| C         | 700       | 17.78    | 702       | 17.83    |
| D         | 830       | 21.08    | 832       | 21.13    |
| E         | 1030      | 26.16    | 1032      | 26.21    |
| F         | 101       | 2.56     | 102       | 2.59     |
| G         | 151       | 3.84     | 152       | 3.86     |
| H         | 385       | 9.78     | 387       | 9.83     |
| I         | 130       | 3.30     | 132       | 3.35     |
| J         | 003       | .076     | 004       | 0.10     |
| K         | 135       | 3.43     | 137       | 3.48     |
| L         | 105       | 2.67     | 107       | 2.72     |
| M         | 085       | 2.16     | 86        | 2.18     |
| N         | 065       | 1.65     | 66        | 1.68     |



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#### Revision History

| Revision Level / Date | Para. Affected | Description                 |
|-----------------------|----------------|-----------------------------|
| 0.1 / 12 June 2013    | -              | Initial Preliminary Release |

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