# 1011GN-250V

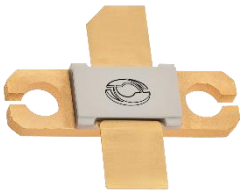
250 Watts • 50 Volts • 32us, 2%

1030-1090MHz

## GaN Transistor – Key Features

- 1030-1090MHz • 250W Pulsed Output Power • 32µS, 2% Pulsing
- Common Source • Class AB • 50$V_{DD}$ Bias Voltage
- >70% Efficiency Across the Frequency Band
- Compact Size
- 20.5 dB Typical Power Gain
- 0.1 dB Typical Excellent Gain Flatness
- IFF, Mode-S, DME, TACAN, TCAS, Avionics Secondary Radars
- All gold metallization and eutectic die attach for highest reliability

## CASE OUTLINES
## 55-QP
## Common Source



**0.230" x 0.800"**

## ABSOLUTE MAXIMUM RATINGS

**Maximum Power Dissipation**

Device Dissipation @ 25°C 460 W

**Maximum Voltage and Current**

Drain-Source Voltage ($V_{DSS}$) 125 V

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

**Maximum Temperatures**

Storage Temperature (TSTG) -55 to +125° C

Operating Junction Temperature +200° C

## ELECTRICAL CHARACTERISTICS @ 25°C

| Symbol | Characteristics | Test Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| Pout | Output Power | Pin=2.5W, Freq=1030,1090MHz | 250 | 280 | | W |
| Gp | Power Gain | Pin=2.5W, Freq=1030,1090MHz | 20 | 20.5 | | dB |
| ηd | Drain Efficiency | Pin=2.5W, Freq=1030,1090MHz | 60 | 75 | | % |
| Dr | Droop | Pin=2.5W, Freq=1030,1090MHz | | 0.14 | 0.5 | dB |
| VSWR-T | Load Mismatch Tolerance | Po=250W, Freq=1030MHz,32µS-2% | | | 5:1 | |
| Θjc | Thermal Resistance | 32us, 2% duty cycle | | | 0.68 | °C/W |

- Bias Condition: Vdd=+50V, Idq=60mA constant current (Vgs= -2.0 ~ -4.5V typical)

## FUNCTIONAL CHARACTERISTICS @ 25°C

| | | | | | | |
|---|---|---|---|---|---|---|
| $I_{D(Off)}$ | Drain leakage current | $V_{GS}$ = -8V, $V_D$ = 125V | | | 12 | mA |
| $I_{G(Off)}$ | Gate leakage current | $V_{GS}$ = -8V, $V_D$ = 0V | | | 4 | mA |

***Export Classification: EAR-99***

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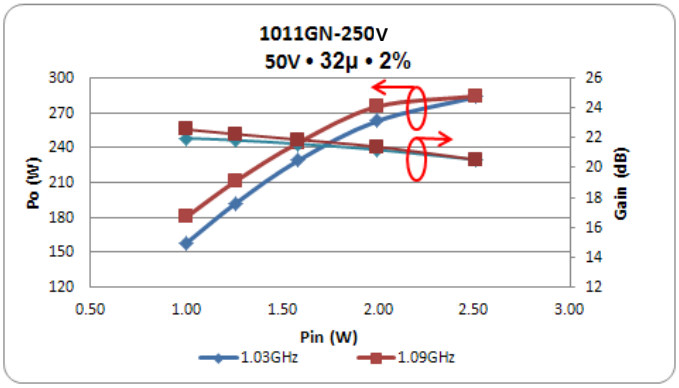
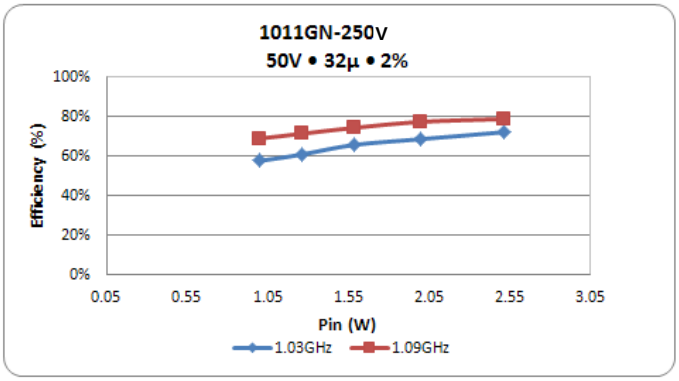
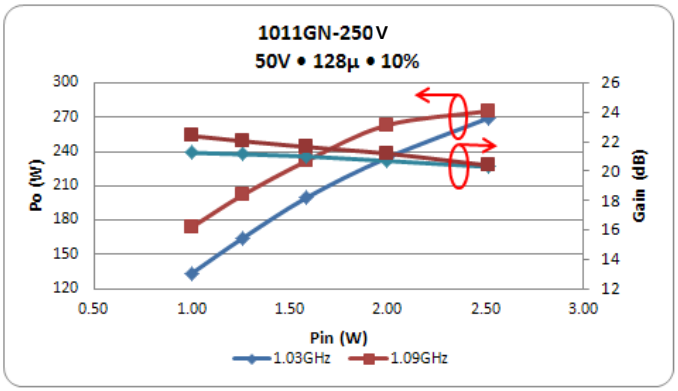
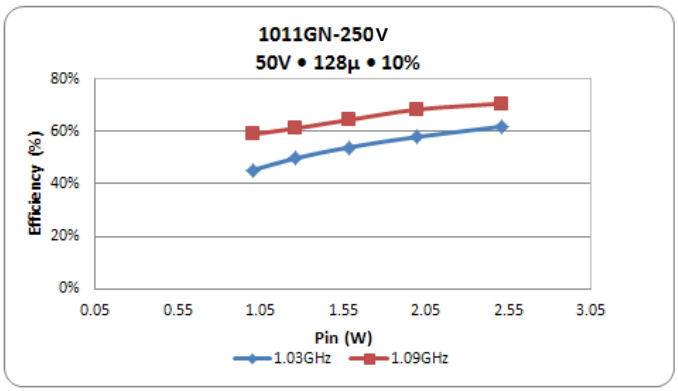
## TYPICAL BROAD BAND PERFORMACE DATA (32µ-2%)

| Frequency | Pin (W) | Pout (W) | Id (mA) | RL (dB) | Nd (%) | G (dB) | Droop (dB) |
|---|---|---|---|---|---|---|---|
| **1030 MHz** | 2.5 | 284 | .20 | -8.0 | 72 | 20.5 | 0.12 |
| **1090 MHz** | 2.5 | 283 | .18 | -12.0 | 78 | 20.5 | 0.12 |




## Critical Performance @ Pin = 2.5W (34dBm)

| Freq (GHz) | Test Condition | Po (W) | Gain (dB) | Eff (%) | Droop (dB) |
|---|---|---|---|---|---|
| 1.030 | 32µS – 2% | 283 | 20.5 | 72 | .12 |
| 1.030 | 128µS – 10% | 269 | 20.3 | 62 | .30 |
| | | | | | |
| 1.090 | 32µS – 2% | 284 | 20.5 | 78 | .12 |
| 1.090 | 128µS – 10% | 275 | 20.7 | 71 | .30 |

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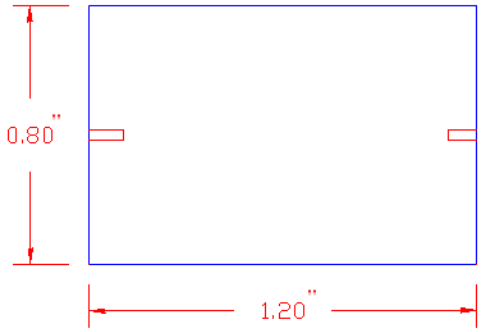
## Test Fixture Overall Dimension




(Dimensions shown are in inches)

**Test Fixture available upon request**

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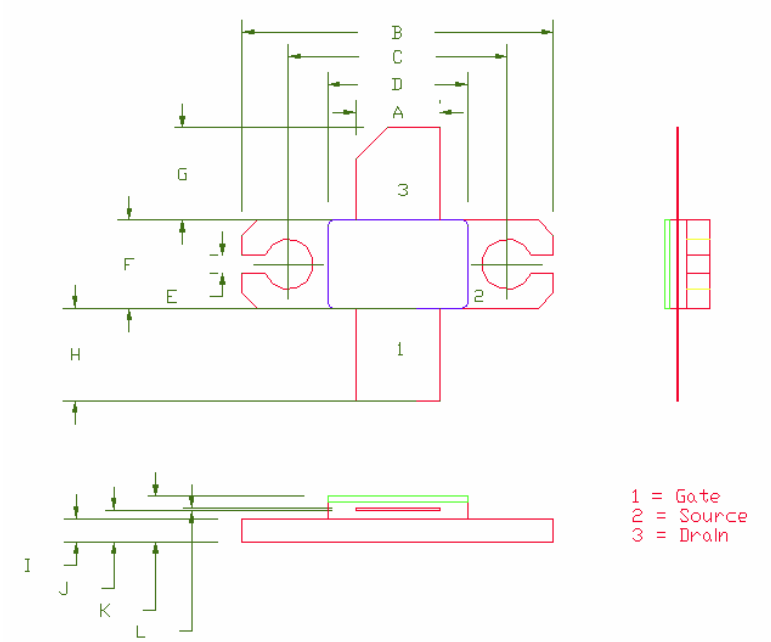
## 55-QP PACKAGE DIMENSION




| Dimension | Min (mil) | Min (mm) | Max (mil) | Max (mm) |
|---|---|---|---|---|
| A | 210 | 5.33 | 220 | 5.59 |
| B | 795 | 20.19 | 805 | 20.45 |
| C | 557 | 14.15 | 567 | 14.40 |
| D | 255 | 6.48 | 365 | 9.27 |
| E | 40 | 1.02 | 45 | 1.14 |
| F | 225 | 5.72 | 235 | 5.97 |
| G | 252 | 6.40 | 278 | 7.06 |
| H | 252 | 6.40 | 278 | 7.06 |
| I | 60 | 1.52 | 65 | 1.65 |
| J | 74 | 1.88 | 90 | 2.29 |
| K | 113 | 2.87 | 144 | 3.66 |
| L | 3 | 0.08 | 6 | 0.15 |

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***Revision History***

| Revision Level / Date | Para. Affected | Description |
|---|---|---|
| 0.1 / 18 Dec. 2018 | - | Initial Preliminary Release |
| 2.0 | All Pages | Packaging Change to 55-QP |