



# 1011GN-30E/EL/EP

30 Watts • 50 Volts • 128 $\mu$ s, 10%

1030-1090MHz

## E Class Earless Driver GaN Transistor – Key Features

- 1030-1090MHz • 30W Pulsed Output Power • 128 $\mu$ s-10% & 32 $\mu$ s-2% Pulsing
- Common Source • Class AB • 50V Bias Voltage
- >60% Efficiency Across the Frequency Band
- Extremely Compact Size
- 18.5 dB Typical Power Gain
- 0.3 dB Typical Excellent Gain Flatness
- IFF, Mode-S, TCAS Avionics Secondary Radars
- All gold metallization and eutectic die attach for highest reliability
- 50 $\Omega$  in/out lumped element very small footprint plug & play pallets available

## ABSOLUTE MAXIMUM RATINGS

### Maximum Power Dissipation

Device Dissipation @ 25°C                      55 W

### Maximum Voltage and Current

Drain-Source Voltage (VDSS)                      150 V

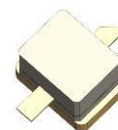
Gate-Source Voltage (VGS)                      -8 to +0 V

### Maximum Temperatures

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

Operating Junction Temperature                      +200 °C

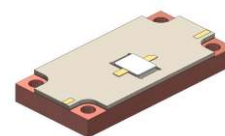
## CASE OUTLINE 55-QQP/QQ/Pallet Common Source



1011GN-30EL, 55-QQP Case  
(0.160"x0.230")



1011GN-30E, 55-QQ Case  
(0.160"x0.550")



1011GN-30EP Pallet  
(0.6"x1.2")

## ELECTRICAL CHARACTERISTICS @ 25°C

| Symbol           | Characteristics         | Test Conditions                                    | Min | Typ  | Max | Units |
|------------------|-------------------------|--|-----|------|-----|-------|
| P <sub>OUT</sub> | Output Power            | P <sub>IN</sub> =0.5W, Freq=1030-1090MHz           | 30  | 35   |     | W     |
| G <sub>P</sub>   | Power Gain              | P <sub>IN</sub> =0.5W, Freq=1030-1090MHz           | 17  | 18.5 |     | dB    |
| $\eta_D$         | Drain Efficiency        | P <sub>IN</sub> =0.5W, Freq=1030-1090MHz           | 60  | 65   |     | %     |
| Dr               | Droop                   | P <sub>IN</sub> =0.5W, Freq=1030-1090MHz           |     | 0.3  | 0.5 | dB    |
| VSWR-T           | Load Mismatch Tolerance | P <sub>OUT</sub> =50W, Freq=1090MHz, 32 $\mu$ s-2% |     |      | 5:1 |       |

- Bias Condition: V<sub>DD</sub>=+50V, I<sub>dq</sub>=40mA constant current (V<sub>GS</sub>= -2.0 ~ -4.5V typical)

## FUNCTIONAL CHARACTERISTICS @ 25°C

|                     |                       |  |  |  |     |    |
|---------------------|-----------------------|--|--|--|-----|----|
| I <sub>D(OFF)</sub> | Drain leakage current | V <sub>GS</sub> = -8V, V <sub>D</sub> = 150V |  |  | 4   | mA |
| I <sub>G(OFF)</sub> | Gate leakage current  | V <sub>GS</sub> = -8V, V <sub>D</sub> = 0V   |  |  | 0.5 | mA |

**Export Classification: EAR-99**



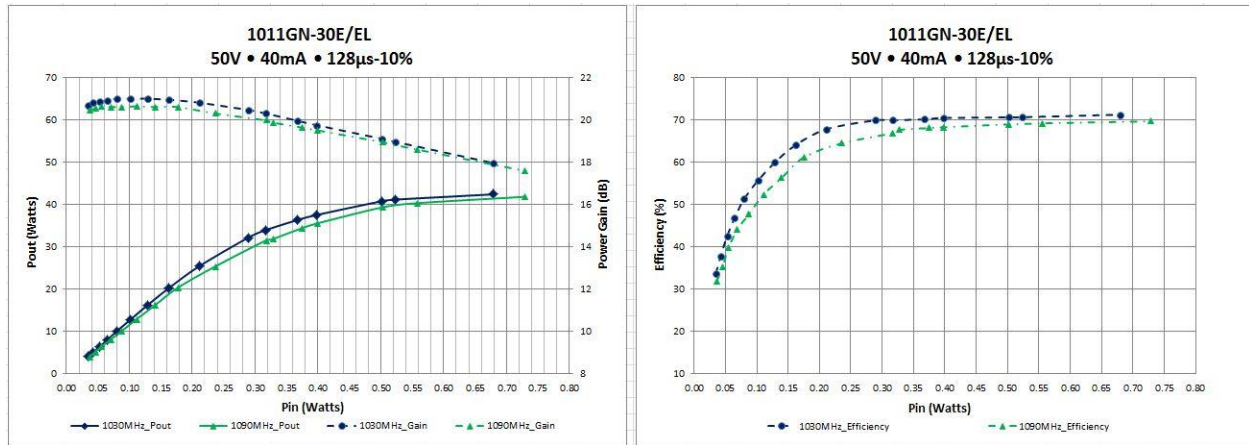
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## TYPICAL PERFORMANCE DATA UNDER 128 $\mu$ S, 10% Duty Cycle

| Frequency | P <sub>IN</sub> (W) | P <sub>OUT</sub> (W) | I <sub>D</sub> (A) | $\eta_D$ (%) | Gain (dB) | IRL (dB) | Power Droop (dB) |
|-----------|---------------------|----------------------|--------------------|--------------|-----------|----------|------------------|
| 1030 MHz  | 0.5                 | 40.7                 | 0.151              | 70           | 19.1      | -10.2    | 0.3              |
| 1090 MHz  | 0.5                 | 39.0                 | 0.150              | 68           | 18.9      | -11.0    | 0.2              |



## TYPICAL PERFORMANCE DATA UNDER 32 $\mu$ S, 2% Duty Cycle

| Frequency | P <sub>IN</sub> (W) | P <sub>OUT</sub> (W) | I <sub>D</sub> (A) | $\eta_D$ (%) | Gain (dB) | IRL (dB) | Power Droop (dB) |
|-----------|---------------------|----------------------|--------------------|--------------|-----------|----------|------------------|
| 1030 MHz  | 0.5                 | 41.5                 | .032               | 68           | 19.0      | -10.0    | 0.2              |
| 1090 MHz  | 0.5                 | 39.5                 | .032               | 65           | 18.9      | -10.2    | 0.2              |



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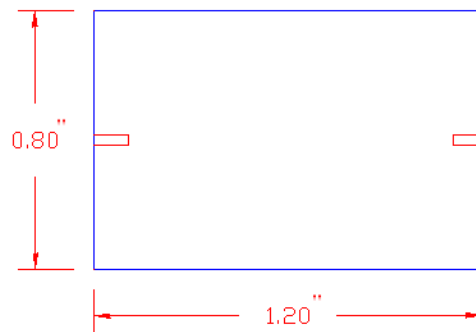
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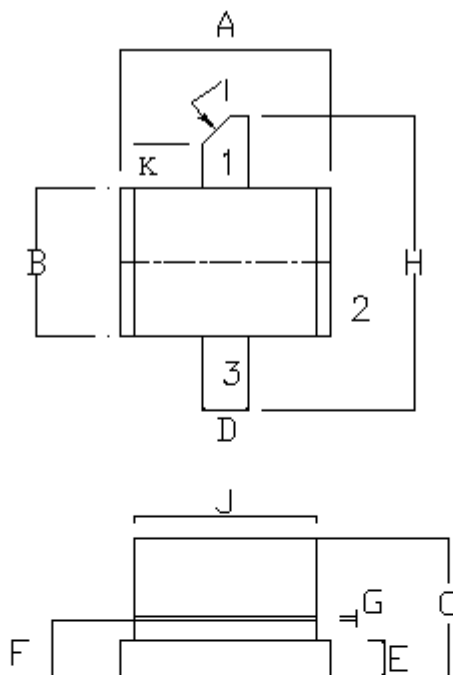
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### Test Fixture Overall Dimension



(Dimensions shown are in inches)

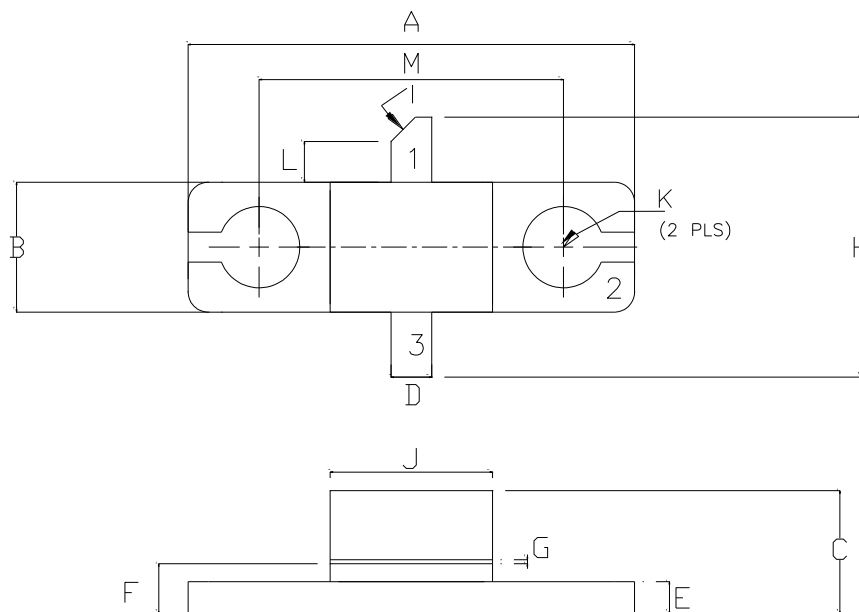
**Test Fixture available upon request**

**55-QQP PACKAGE DIMENSION**


| Dim | Millimeter | Tol | Inches | Tol  |
|-----|------------|-----|--------|------|
| A   | 5.84       | .25 | .230   | .010 |
| B   | 4.06       | .25 | .160   | .010 |
| C   | 3.17       | .05 | .125   | .002 |
| D   | 1.27       | .13 | .050   | .005 |
| E   | 1.02       | .13 | .040   | .005 |
| F   | 1.57       | .13 | .062   | .005 |
| G   | .130       | .02 | .005   | .001 |
| H   | 8.12       | .25 | .320   | .010 |
| I   | 45°        | 5°  | 45°    | 5°   |
| J   | 5.08       | .25 | .200   | .010 |
| K   | 1.40       | .13 | .055   | .005 |

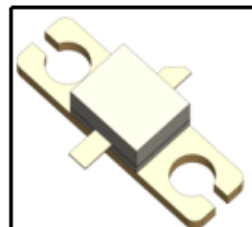
**PIN 1: DRAIN**  
**PIN 2: SOURCE**  
**PIN 3: GATE**



**55-QQ PACKAGE DIMENSION**


| Dim | Millimeter | Tol   | Inches   | Tol   |
|-----|------------|-------|----------|-------|
| A   | 13.970     | 0.250 | 0.550    | 0.010 |
| B   | 4.570      | 0.250 | 0.160    | 0.010 |
| C   | 3.860      | 0.330 | 0.152    | 0.013 |
| D   | 1.270      | 0.130 | 0.050    | 0.005 |
| E   | 1.020      | 0.130 | 0.040    | 0.005 |
| F   | 1.700      | 0.130 | 0.067    | 0.005 |
| G   | 0.130      | 0.025 | 0.005    | 0.001 |
| H   | 8.130      | 0.250 | 0.320    | 0.010 |
| I   | 45°        | 5°    | 45°      | 5°    |
| J   | 5.080      | 0.250 | 0.200    | 0.010 |
| K   | 2.54 DIA   | 0.130 | .100 DIA | 0.005 |
| L   | 1.270      | 0.130 | 0.050    | 0.005 |
| M   | 9.530      | 0.130 | 0.375    | 0.005 |

**PIN 1: DRAIN**  
**PIN 2: SOURCE**  
**PIN 3: GATE**





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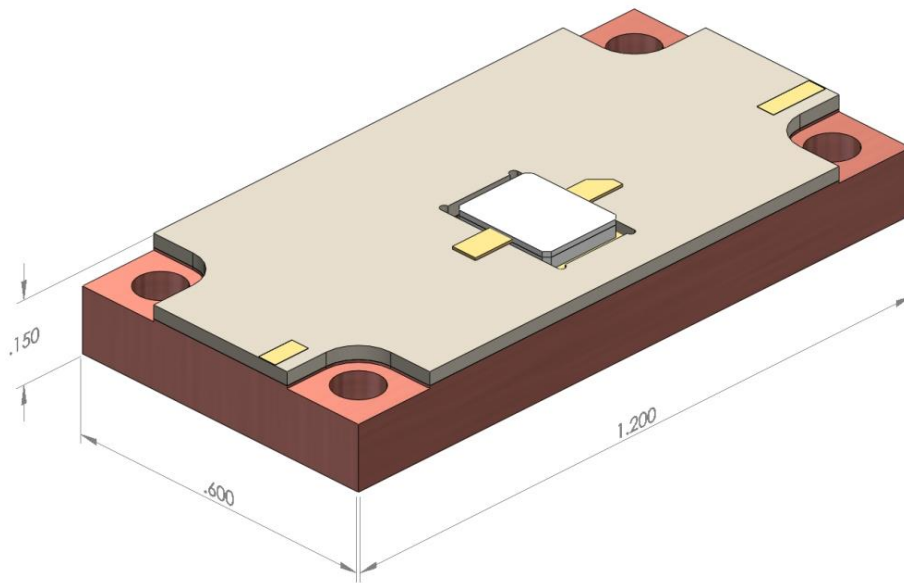
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**1011GN-30EP OVERALL PALLET DIMENSION**



Dimensions: Length=1.2" X Width=0.6"x Height=0.150"



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## Revision History

| Revision Level / Date  | Para. Affected | Description                 |
|------------------------|----------------|-----------------------------|
| 0.1 / 21 February 2017 | -              | Initial Preliminary Release |

Specifications are subject to change. Consult [www.microsemi.com](http://www.microsemi.com) for local sales and technical support contacts.