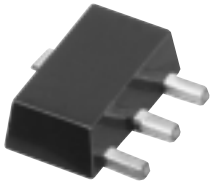
*Surface Mount*

# Monolithic Amplifiers

NEW!

**Gali-19 • Gali-29 • Gali-39**
**Gali-49 • Gali-59**

## 50Ω, Broadband, DC to 7 GHz



CASE STYLE : DF782

## Features

- miniature SOT-89 package
- frequency range, DC to 7 GHz
- up to 17.6 dBm typ. output power
- excellent package for heat dissipation, exposed metal bottom

## Applications

- cellular
- PCS
- communication receivers & transmitters

## Electrical Specifications @ 25°C

| | MODEL NO. | FREQ.▲ (GHz) | GAIN, dB Typical | | | | | | | | | MAXIMUM POWER, dBm at 7 GHz* | | | DYNAMIC RANGE at 2 GHz* | | VSWR (:1) Typ. | | | | MAXIMUM CURRENT RATING** | DC OPERATING POWER @ Pin 3*** | | | | THERMAL RESISTANCE | PRICE $ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | over frequency, GHz | | | | | | | | Min. @ 2 GHz | Output (1 dB Comp.) | | Input (no dmg.) | NF | IP3 | In | | Out | | | Current | Device Voltage | | | θjc, typ. | |
| | | $f_L$ - $f_U$ | 0.1 | 1 | 2 | 3 | 4 | 5 | 7 | 10 | | Typ. | Min. | | dB Typ. | dBm Typ. | DC-3 GHz | 3-$f_U$ GHz | DC-3 GHz | 3-$f_U$ GHz | I mA | (mA) | Typ | Min | Max | °C/W | Qty. (25) |
| LOW POWER | Gali-19 | DC-7 | 12.1 | 11.7 | 11.6 | 10.7 | 10.8 | 10.1 | 11.0 | 14.5 | 9.6 | 10.6 | 9.0 | 15 | 6.5 | 23.7 | 1.6 | 1.7 | 1.5 | 2.3 | 55 | 40 | 3.6 | 3.2 | 4.0 | 311 | 1.19 |
| | Gali-29 | DC-7 | 15.4 | 15.1 | 14.7 | 13.7 | 13.6 | 12.9 | 14.2 | 12.5 | 12.7 | 11.2 | 10.0 | 15 | 6.0 | 24.7 | 1.5 | 1.6 | 1.5 | 2.3 | 55 | 40 | 3.6 | 3.2 | 4.0 | 340 | 1.19 |
| | Gali-39 | DC-7 | 20.8 | 21.1 | 19.7 | 17.7 | 17.0 | 16.1 | 17.6 | 9.8 | 17.7 | 10.5 | 9.0 | 13 | 4.9 | 22.9 | 1.6 | 1.8 | 1.5 | 2.3 | 55 | 35 | 3.5 | 3.1 | 3.9 | 350 | 1.19 |
| MEDIUM POWER | Gali-49 | DC-5 | 14.0 | 13.7 | 13.6 | 13.7 | 13.3 | 13.1 | 10.7 | — | 11.5 | 16.4 | 15.0 | 20 | 5.5 | 33.3 | 1.7 | 1.2 | 1.5 | 1.4 | 85 | 65 | 5.0 | 4.5 | 5.4 | 171 | 1.79 |
| | Gali-59 | DC-5 | 20.6 | 19.7 | 18.3 | 16.7 | 15.4 | 14.0 | 10.2 | — | 16.3 | 17.6 | 16.5 | 13.0 | 4.3 | 33.3 | 1.6 | 1.5 | 1.5 | 1.7 | 85 | 65 | 4.8 | 4.3 | 5.2 | 209 | 1.79 |

▲ Low frequency cutoff determined by external coupling capacitors.

* For Pout @ 1dB compression, Gali-49,-59 at 2 GHz.
For IP3, Gali-49,-59 at 1 GHz.

** Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation.

***Reliability predictions and normal operating conditions are applicable at current specified.

$f_U$ is the upper frequency limit for each model as shown in the table.

## Maximum Ratings

| | |
|---|---|
| Operating Temperature | -45°C to 85°C |
| Storage Temperature | -65°C to 150°C |

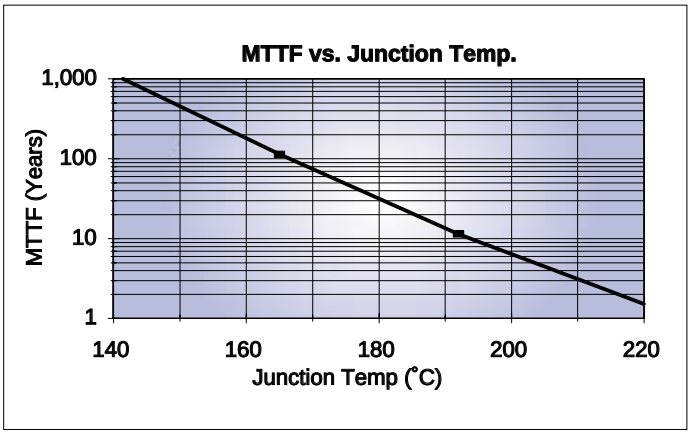
## Pin Configuration

| | |
|---|---|
| RF IN | 1 |
| RF OUT | 3 |
| DC | 3 |
| GND EXT. | 2 |

## Model Identification

| Model | Marking‡ |
|---|---|
| Gali-19 | 19 |
| Gali-29 | 29 |
| Gali-39 | 39 |
| Gali-49 | 49 |
| Gali-59 | 59 |

‡ Prefix letter (optional) designates assembly location. Suffix letters (optional) are for wafer identification.




REV. B
M89969
D60-1117.DOC
Gali-19 Q0201030
Gali-29 Q0201031
Gali-39 Q0201032
Gali-49 EC-9381/10
Gali-59 EC-9381/11
RS/TD/CP
031202

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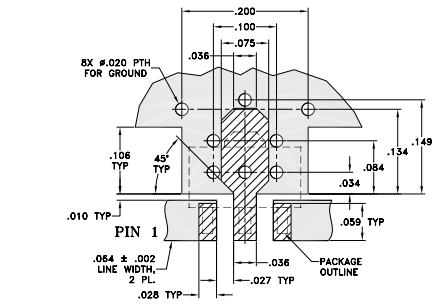
## Suggested Layout for PCB Pattern

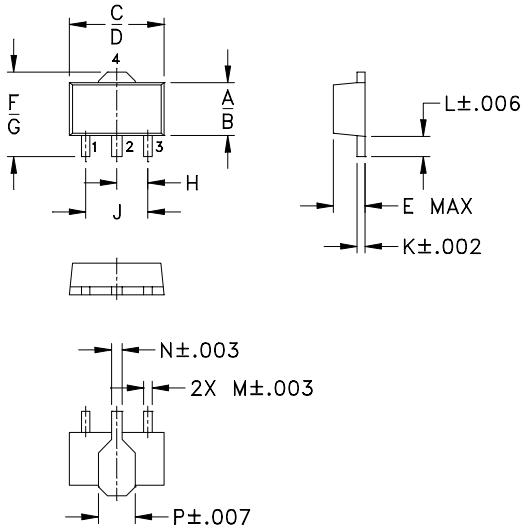



NOTE: TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS .030" ± .002". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

DENOTES PCB COPPER LAYOUT

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Outline Drawing

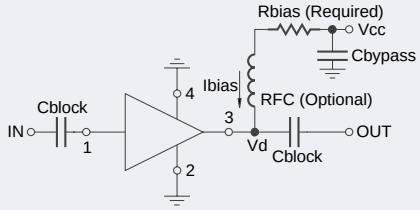



## Outline Dimensions (inch / mm)

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| .102 | .090 | .181 | .173 | .063 | .167 | .155 | .059 |
| 2.59 | 2.29 | 4.60 | 4.39 | 1.60 | 4.24 | 3.94 | 1.50 |

| J | K | L | M | N | P | wt. |
|---|---|---|---|---|---|---|
| .118 | .015 | .041 | .016 | .019 | .065 | grams |
| 3.00 | 0.38 | 1.04 | 0.41 | 0.48 | 1.65 | .2 |

## Typical Biasing Configuration




Test Board includes case, connectors, and components (in bold) soldered to PCB

### R BIAS

**"1%" Resistor Values (ohms) for Optimum Biasing of Gali Models**

| Vcc | Gali-19 | Gali-29 | Gali-39 | Gali-49 | Gali-59 |
|---|---|---|---|---|---|
| 7 | 88.7 | 88.7 | 107 | 34.0 | 36.5 |
| 8 | 113 | 113 | 133 | 48.7 | 51.1 |
| 9 | 137 | 137 | 162 | 64.9 | 64.9 |
| 10 | 162 | 162 | 191 | 80.6 | 80.6 |
| 11 | 187 | 187 | 221 | 95.3 | 97.6 |
| 12 | 215 | 215 | 249 | 110 | 113 |
| 13 | 237 | 237 | 280 | 127 | 127 |
| 14 | 261 | 261 | 309 | 143 | 143 |
| 15 | 287 | 287 | 340 | 158 | 158 |
| 16 | 309 | 316 | 365 | 174 | 174 |
| 17 | 332 | 340 | 392 | 187 | 191 |
| 18 | 357 | 365 | 422 | 205 | 205 |
| 19 | 383 | 392 | 453 | 221 | 221 |
| 20 | 412 | 412 | 475 | 237 | 237 |