

## Features

- Frequency Range: 26-31GHz
- Pout: 34dBm @ 22dBm Pin
- PAE: 38 %
- Small Signal Gain: 16dB
- Bias: VD=20V IDQ=24mA
- Technology: 0.15 $\mu$ m GaN on SiC
- Lead-free and RoHS compliant
- Chip Dimensions: 2.05 x 1.0x 0.10mm

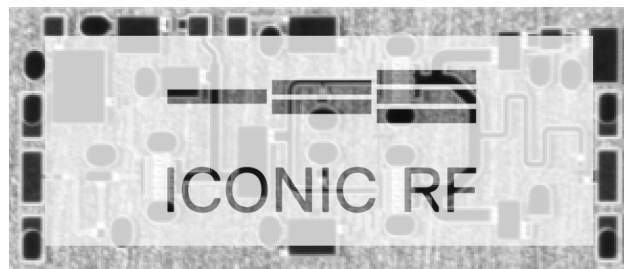
## Applications

- Satcom
- 5G
- Aerospace & Defense

## Description

ICONICRF's ICP2834 is a MMIC power amplifier fabricated in 0.15 $\mu$ m GaN SiC technology. ICP2834 operates from 26-31GHz with 34dBm output power, 38% PAE and 16dB small signal gain. ICP2637 is well suited to a variety of Satcom and 5G applications.

## Image



## Electrical Specifications

| Parameter                       | Conditions (1) | Min | Typ | Max | Units |
|---------------------------------|----------------|-----|-----|-----|-------|
| Frequency                       |                | 26  |     | 31  | GHz   |
| Output Power @ P <sub>sat</sub> | Pin=22dBm      |     | 34  |     | dBm   |
| PAE @ P <sub>sat</sub>          | Pin=22dBm      |     | 38  |     | %     |
| Small Signal Gain               |                |     | 16  |     | dB    |
| Input Return Loss               |                |     | 10  |     | dB    |
| Output Return Loss              |                |     | 8   |     | dB    |

(1) Test conditions unless otherwise stated V<sub>D</sub>=20V, I<sub>DQ</sub>=24mA, V<sub>G</sub>~-1.84V typical, TA=25 °C, Pulse 100us Duty Cycle 10%

## Recommended operating conditions

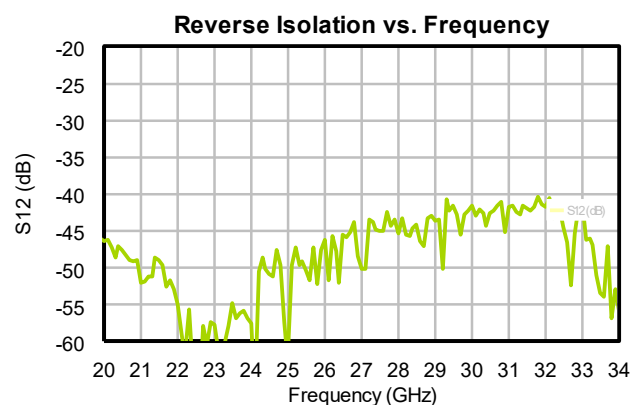
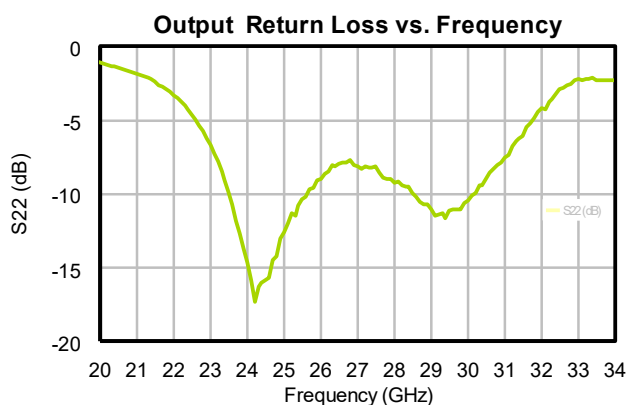
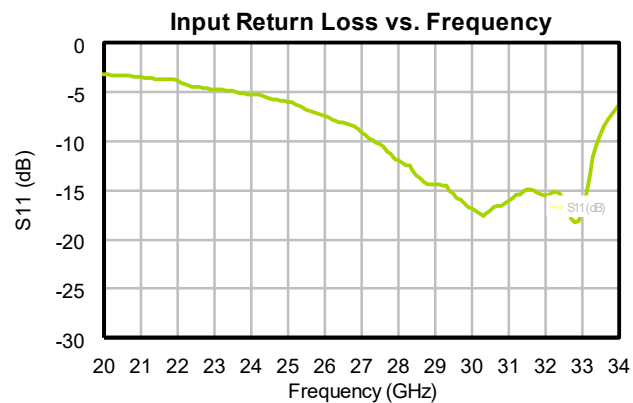
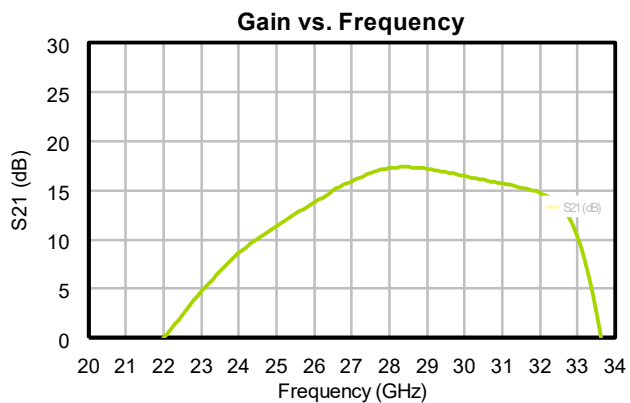
| Parameter                            | Value        |
|--------------------------------------|--------------|
| Drain Voltage ( $V_D$ )              | 20 V         |
| Drain Quiescent Current ( $I_{DQ}$ ) | 24mA         |
| Gate Voltage Range ( $V_G$ )         | -2 to -1.5V  |
| Operating Temp                       | -40 to +85°C |
|                                      |              |
|                                      |              |

## Absolute Maximum Ratings

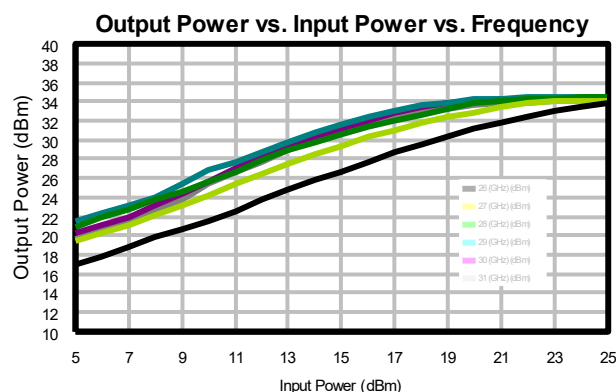
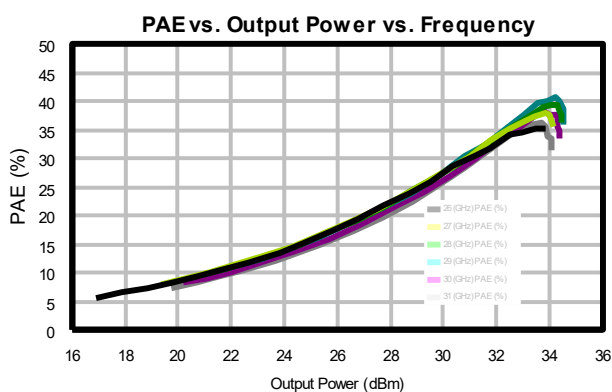
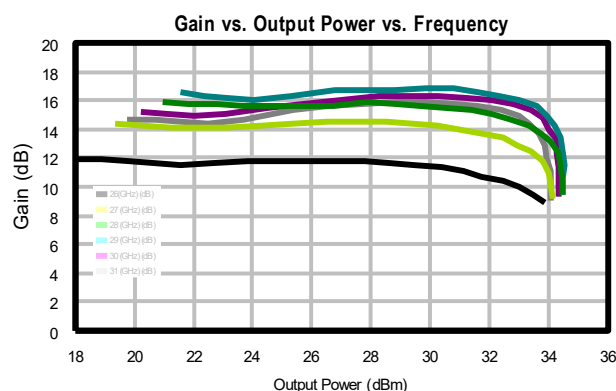
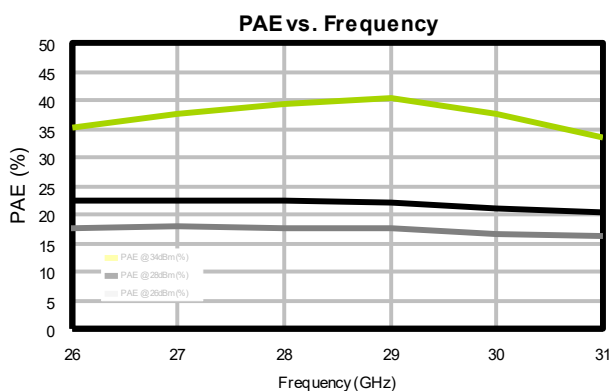
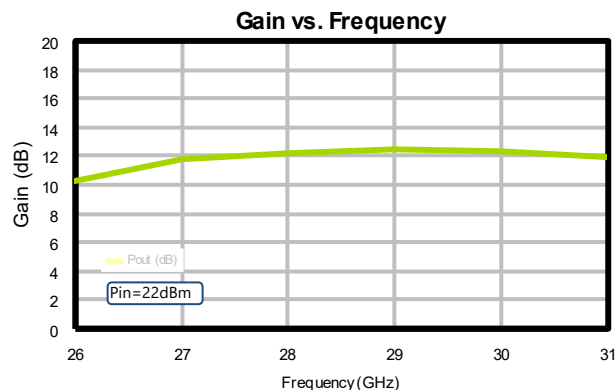
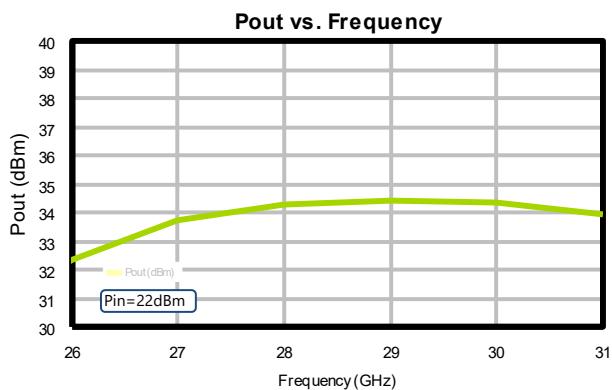
| Parameter                    | Absolute Maximum |
|------------------------------|------------------|
| Drain Voltage ( $V_{DG}$ )   | 24V              |
| Gate Voltage Range ( $V_G$ ) | -5V to 0V        |
| Gate Current ( $I_G$ )       |                  |
| Power Dissipation (CW)       |                  |
| CW Input Power               | +25dBm           |
| Channel Temperature          | 275°C            |
| Storage Temperature          | -65°C to +150°C  |

Exceeding any one or combination of these limits may cause permanent damage to this device.  
ICONIC RF does not recommend sustained operation near these survivability limits.

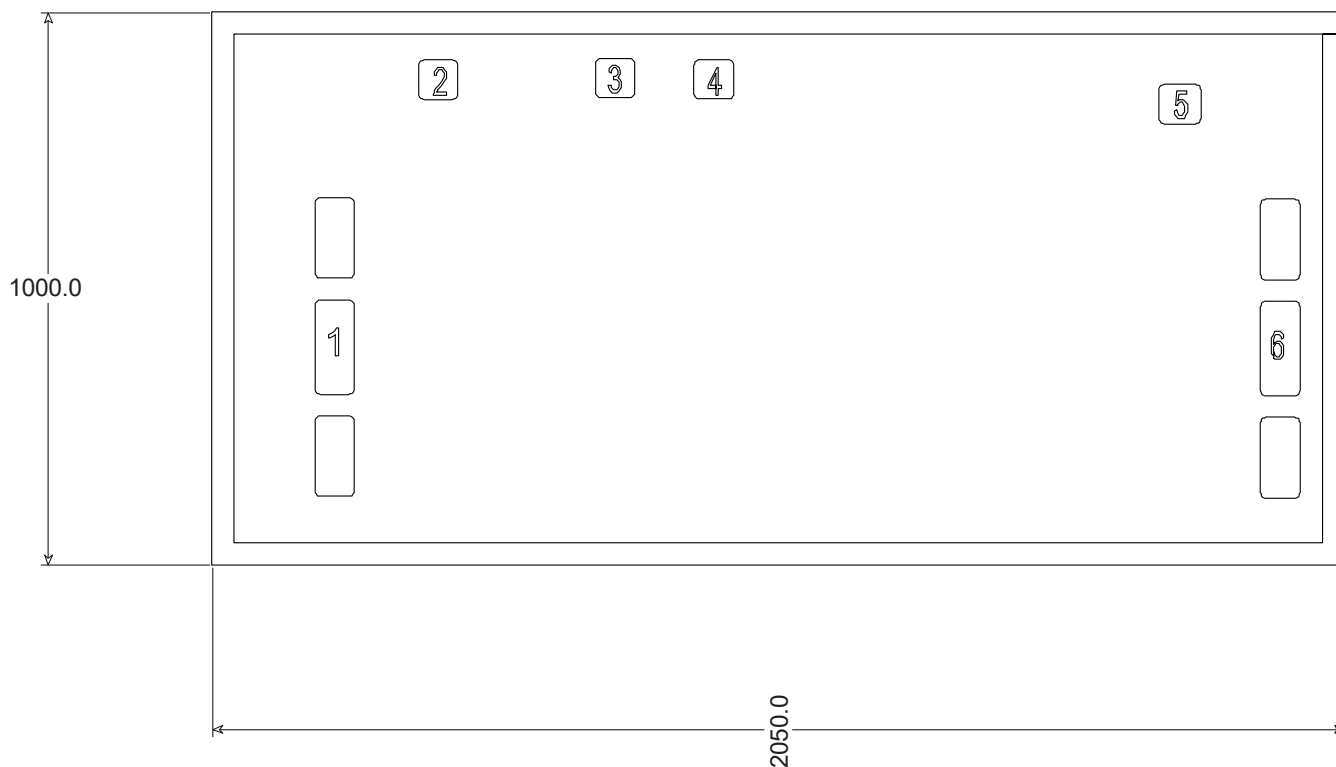
Typical Small Signal Data | Test Conditions unless otherwise stated |  $V_D=20V$ ,  $I_D=24mA$ ,  $T_A=25^\circ C$ , CW



Typical Large Signal Data | Test Conditions |  $V_D=20V$ ,  $I_D=24mA$ ,  $T_A=25^\circ C$ , Pulse 100us Duty Cycle 10%



## Mechanical drawing



Units: um

Thickness: 100um

Backside is RF and DC ground

| Pad No | Pad Size | Function | Description                                        |
|--------|----------|----------|----------------------------------------------------|
| 1      | 70x170   | RFIN     | DC blocked and 50ohm matched                       |
| 2      | 70x70    | VG1      | Gate voltage, decoupling and bypass caps required  |
| 3      | 70x70    | VD1      | Drain voltage, decoupling and bypass caps required |
| 4      | 70x70    | VG2      | Gate voltage, decoupling and bypass caps required  |
| 5      | 70x170   | VD2      | Drain voltage, decoupling and bypass caps required |
| 6      | 70x170   | RFOUT    | DC blocked and 50ohm matched                       |
|        |          |          |                                                    |
|        |          |          |                                                    |

## Bias-Up Procedure

1. Set  $V_G = -5V$
2. Set  $V_D$  to 20V
3. Adjust  $V_G$  positive until  $I_D$  quiescent is 24mA
4. Limit  $I_D$  to 1A
5. Apply RF Signal

## Bias-down Procedure

1. Turn off  $R_F$
2. Turn off  $V_D$ , allow drain capacitor to discharge
3. Turn off  $V_G$ .

## Assembly Guidance

Die attach of component using adhesive

- Vacuum collets are preferred method of pickup
- Silver sintered epoxy is recommended

## Interconnect assembly Notes

- Ball Bonding is preferred technique
- Force, time and ultrasonic parameters are critical
- Aluminum wire bonding is not recommended
- Bond Wire diameter of 1mil is recommended

## Handling Procedures

Please observe the following precautions to avoid damage:

## Static Sensitivity

Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

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ICONIC RF Ltd, Innovation Factory, 385 Springfield Road, Belfast, BT12 7DG, United Kingdom

Web: [WWW.ICONICRF.COM](http://WWW.ICONICRF.COM)  
Email: [INFO@ICONICRF.COM](mailto:INFO@ICONICRF.COM)