



Product Description

GRF2373 can serve as a low current, high gain LNA or linear driver tunable over 100 to 3800 MHz. It exhibits outstanding gain and NF with a typical bias condition of 3.3 volts and 15 mA. I_{ccq} .

The device is operated from a supply voltage (V_{cc}) of 1.8 to 5.0 V with a selectable I_{ccq} range of 10 to 25 mA for optimal efficiency and linearity.

Consult with the GRF applications engineering team for custom tuning/evaluation board data and device s-parameters.

Features

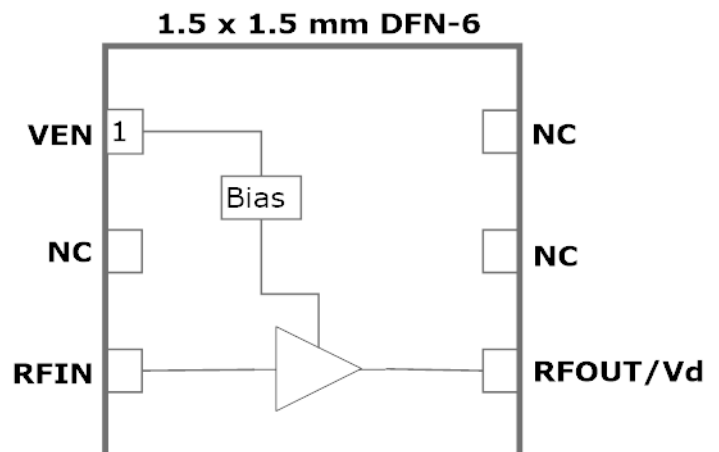
Reference: 3.3V/15mA/1900 MHz

- EVB NF: 1.3 dB
- Gain: 18.5 dB
- OP1dB: 13.5 dBm
- OIP3: 25.0

- Flexible Bias Voltage and Current
- Process: InGaP HBT

Applications

- Drones
- Small Cells and Cellular Repeaters
- Distributed Antenna Systems
- Set Top Boxes
- General Purpose Amplification
- VHF/UHF/900/2400 ISM



Absolute Ratings:

| Parameter | Symbol | Min. | Max. | Unit |
|--|-----------------------|------|------|------|
| Supply Voltage | V _{CC} | 0 | 5.5 | V |
| RF Input Power: (Load VSWR < 2:1; V _{CC} : 5.0 volts) | P _{IN MAX} | | 22 | dBm |
| Operating Temperature (Package Heat Sink) | T _{AMB} | -40 | 105 | °C |
| Maximum Junction Temperature (MTF > 10 ⁶ Hours) | T _{MAX} | | 150 | °C |
| Maximum Dissipated Power | P _{DISS MAX} | | 100 | mW |
| Electrostatic Discharge: | | | | |
| Charged Device Model: (TBD) | CDM | 1500 | | V |
| Human Body Model: (TBD) | HBM | 250 | | V |
| Storage: | | | | |
| Storage Temperature | T _{STG} | -65 | 150 | °C |
| Moisture Sensitivity Level | MSL | | TBD | -- |



Caution! ESD Sensitive Device



Exceeding Absolute Maximum Rating conditions may cause permanent damage to the device.

Note: For package dimensions and manufacturing information, see the Guerrilla-RF.com website for the following document located on the GRF2373 landing page (coming soon): **Manufacturing Note—MN-001 Product Tape and Reel, Solderability and Package Outline Specification.**

[Link to manufacturing note](#)

Pin Out (Top View)



Pin Assignments:

| Pin | Name | Description | Note |
|-------------|---------------------|----------------------|---|
| 1 | V _{ENABLE} | Enable Voltage Input | V _{ENABLE} and series resistor set I _{DDQ} . V _{ENABLE} < =0.2 volts disables device. On -die pull-down resistor will turn the part off if this node is allowed to float. |
| 2 | NC | No Connect or Ground | No internal connection to die |
| 3 | RF_In | LNA RF input | An external DC blocking cap must be used |
| 4 | RF_Out | LNA RF output | V _{CC} must be applied through a choke to this pin |
| 5 | NC | No Connect or Ground | No internal connection to die |
| 6 | NC | No Connect or Ground | No internal connection to die |
| PKG BASE | GND | Ground | Provides DC and RF ground for LNA, as well as thermal heat sink. Recommend multiple 8 mil vias beneath the package for optimal RF and thermal performance. Refer to evaluation board top layer graphic on schematic page. |



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Low-current LNA/Driver
0.1–3.8 GHz

Nominal Operating Parameters:

| Parameter | Symbol | Specification | | | Unit | Condition |
|---|-----------------------|---------------|-------|------|------|--|
| | | Min. | Typ. | Max. | | |
| Test Frequency | F _{TEST} | | 1900 | | MHz | V _{CC} = 3.3 V, T _A = 25 °C |
| Gain | S ₂₁ | | 18.5 | | dB | |
| Evaluation Board Noise Figure | NF | | 1.3 | | dB | |
| Output 3rd Order Intercept | OIP3 | | 25.0 | | dBm | -5.0 dBm P _{OUT} per tone at 2 MHz Spacing (1899 and 1901 MHz) |
| Output 1dB Compression Point | OP1dB | | 13.5 | | dBm | |
| Switching Rise Time | T _{RISE} | | 200 | | ns | |
| Switching Fall Time | T _{FALL} | | 100 | | ns | |
| Supply Current | I _{CC} | | 15 | | mA | |
| Enable Current | I _{ENABLE} | | 3.0 | | mA | |
| Disabled Mode | | | | | | |
| Leakage Current | I _{LEAKAGE} | | < 1.0 | | uA | V _{CC} : 3.3V; V _{ENABLE} : 0.0V |
| Thermal Data | | | | | | |
| Thermal Resistance: (Estimated) | Θ _{JC} | | 700 | | °C/W | On standard Evaluation Board |
| Junction Temperature @ +85 C Reference (Package heat sink) | T _{JUNCTION} | | 120 | | °C | V _{CC} : 3.3 V; I _{CCQ} : 15 mA; No RF; P _{BISS} : 50 mW |

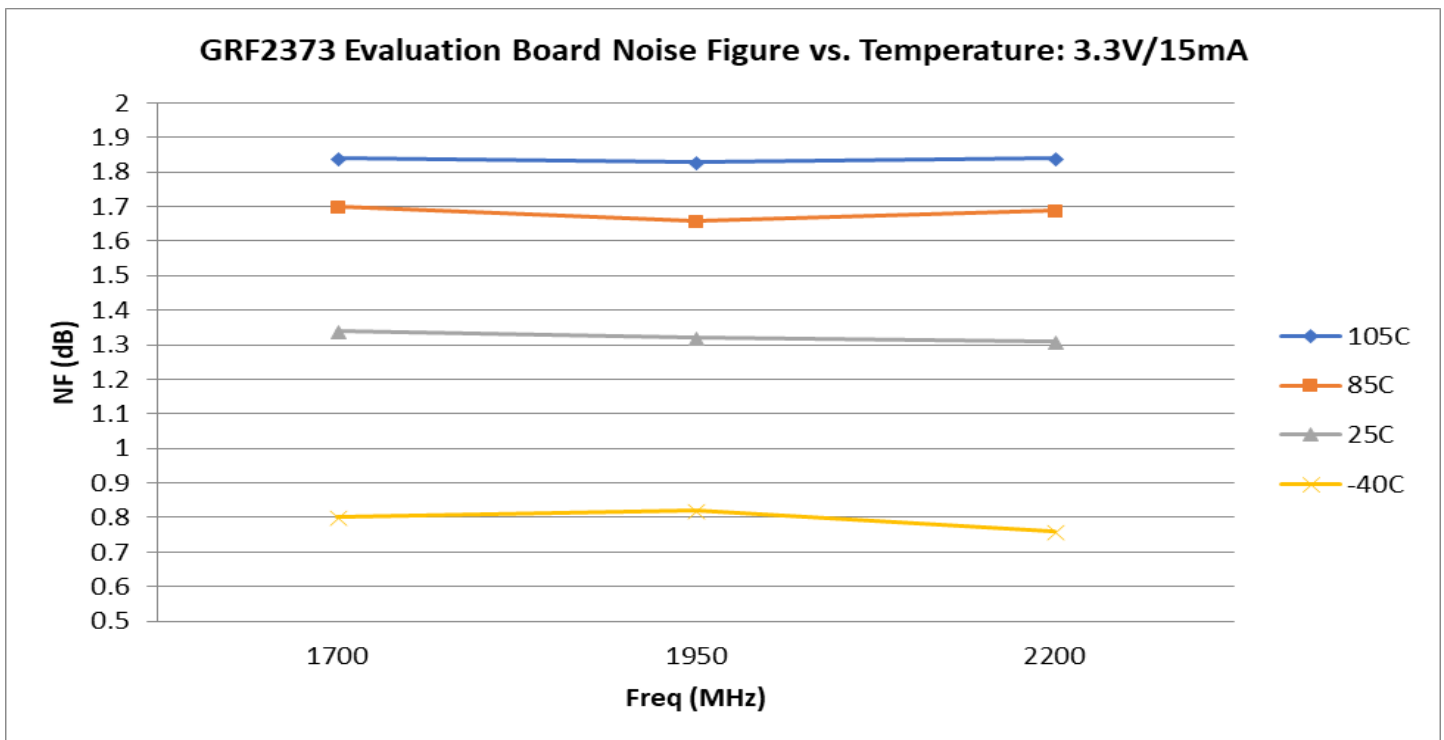
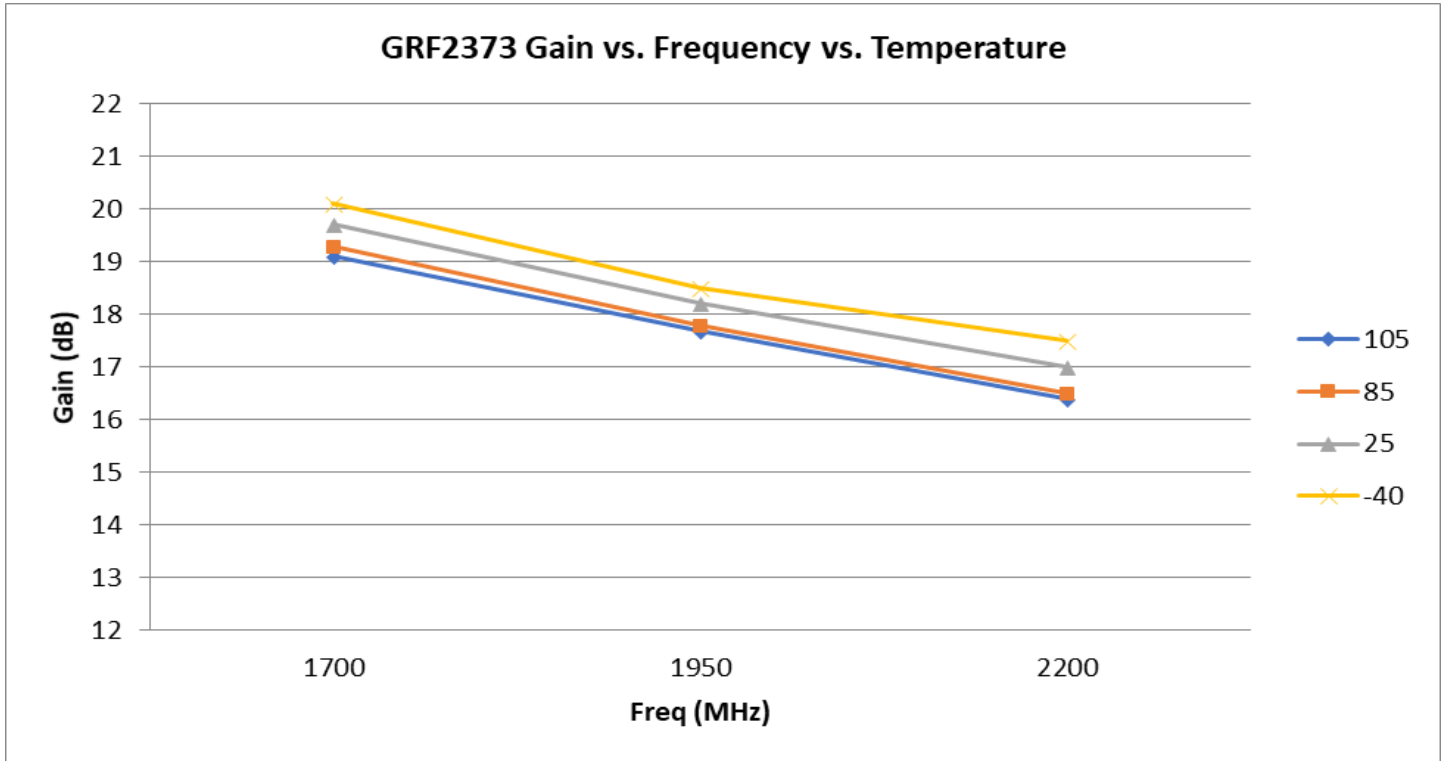


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GRF2373 Evaluation Board Data (3.3V/15mA)



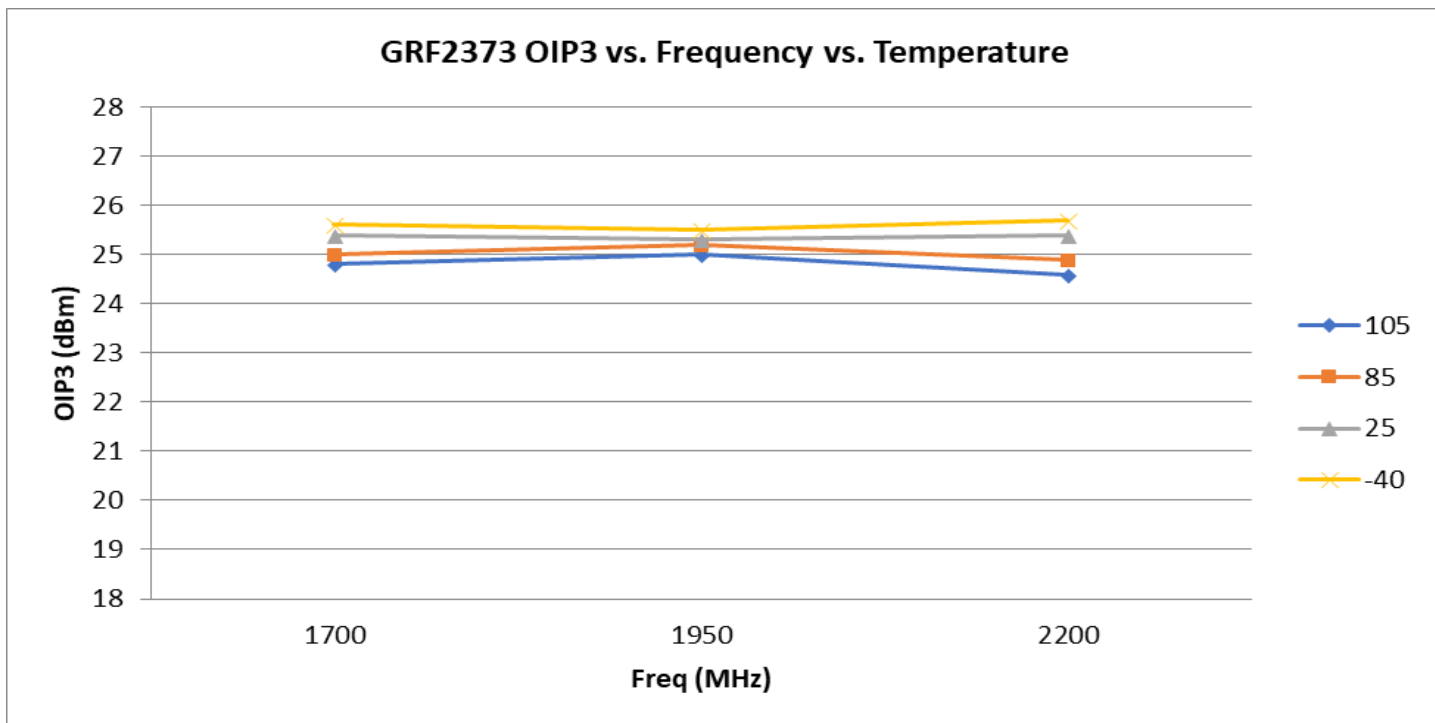
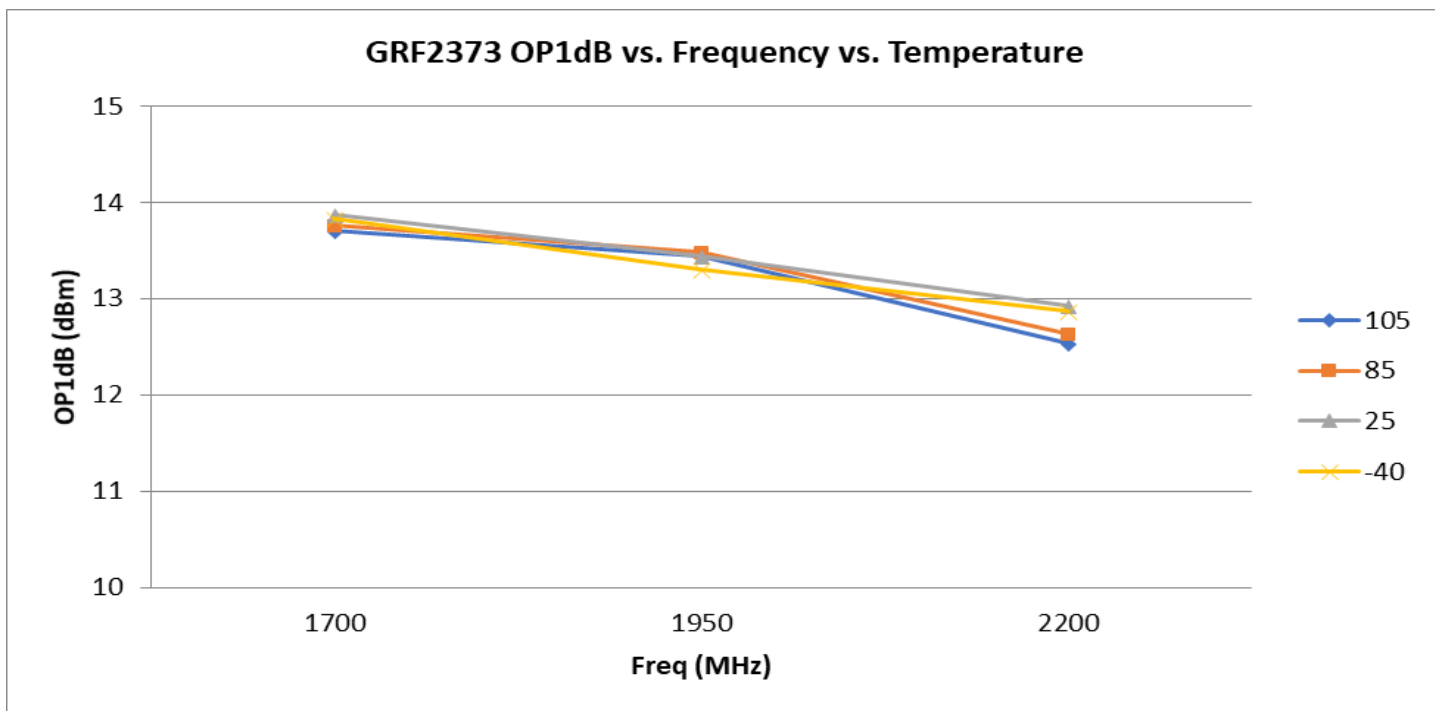


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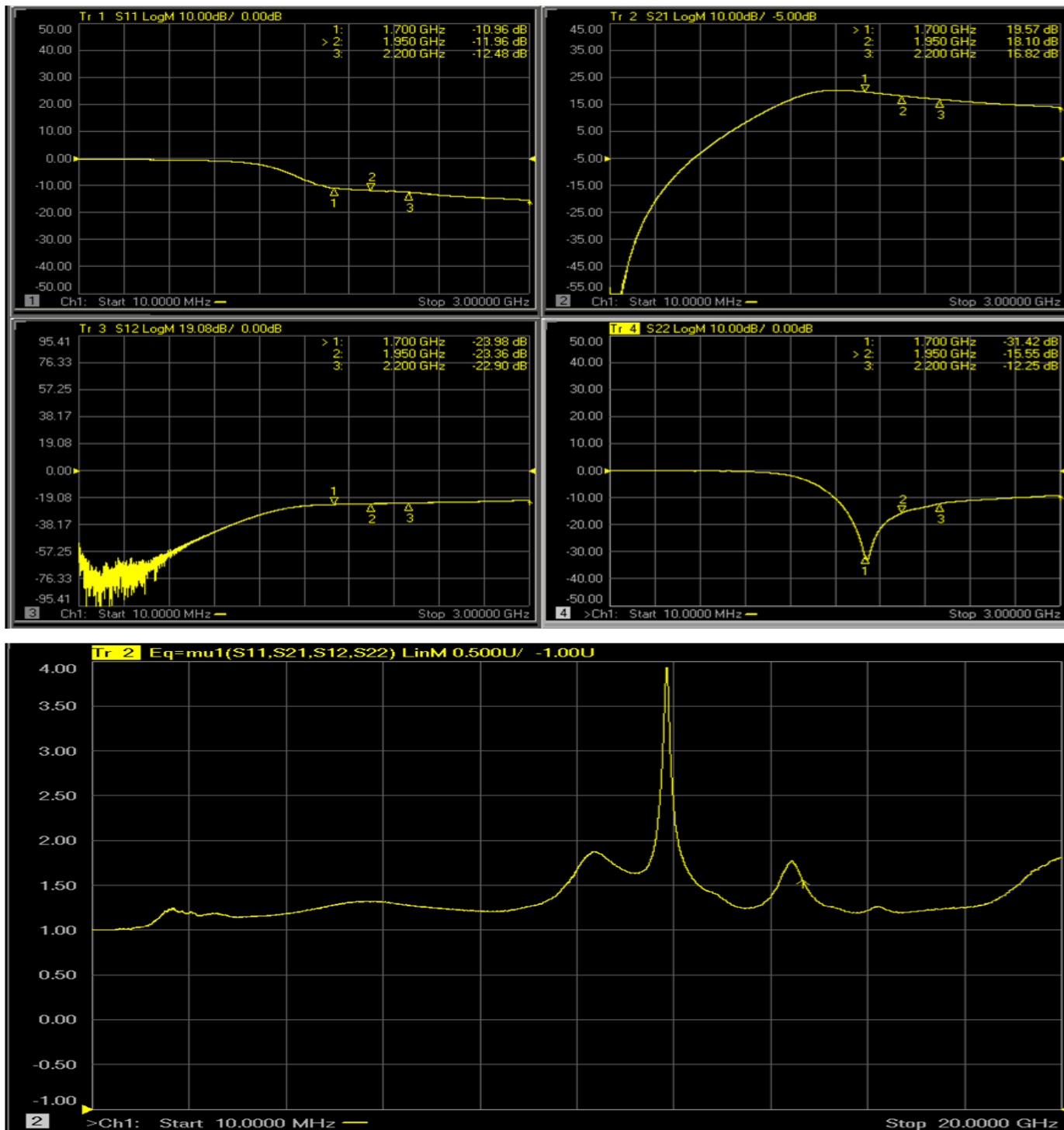
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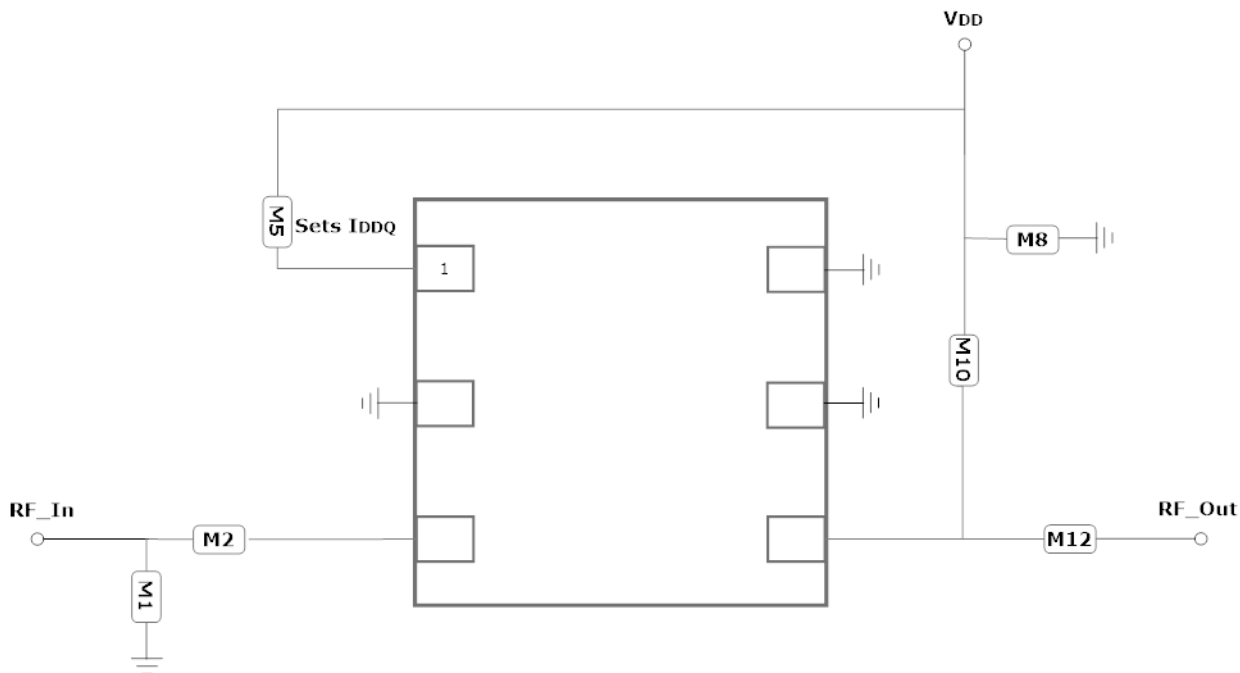
GRF2373 Evaluation Board Data (3.3V/15mA)



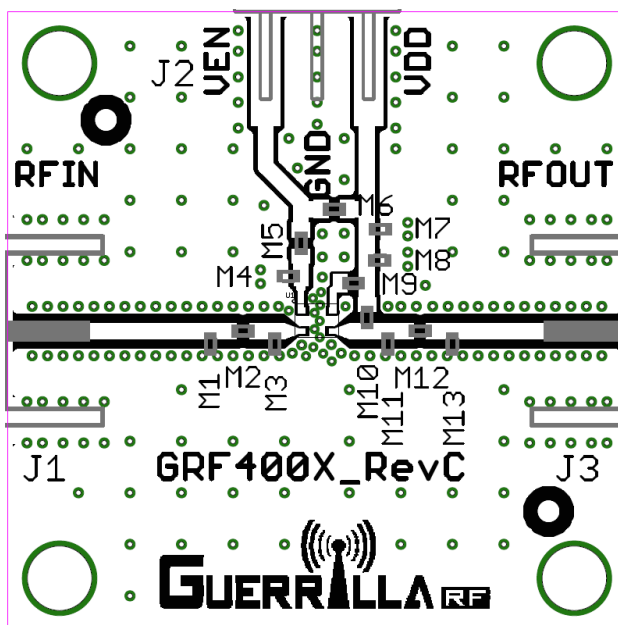
GRF2373 Evaluation Board S-Pars and Stability Mu Factor: (1.7 to 2.2 GHz Match)



Note: Mu factor ≥ 1.0 implies unconditional stability.



GRF2373 Application Schematic



GRF2373 Evaluation Board Assembly Diagram



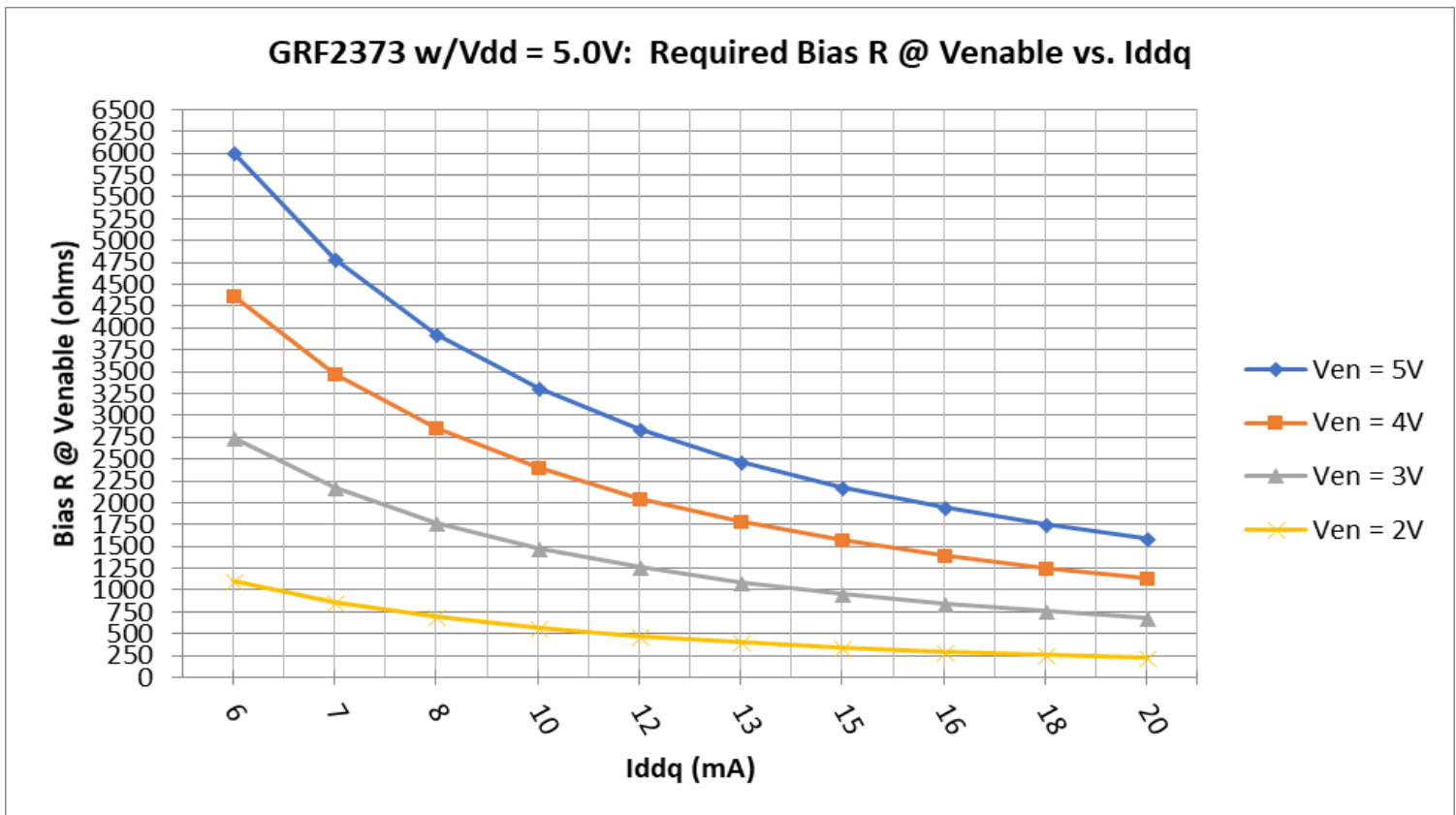
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GRF2373 Standard Evaluation Board BOM: (1.7 to 2.2 GHz Tune; Vdd = Venable = 3.3V; Iddq: 15 mA)

| Component | Type | Manufacturer | Family | Value | Package Size | Substitution |
|------------------|--------------|--------------|---------|--------|--------------|--------------|
| M1 | Inductor | Murata | LQG | 5.1 nH | 0402 | Ok |
| M2 | Capacitor | Murata | GJM | 3.0 pF | 0402 | Ok |
| M5 (Sets Iddq) | Resistor | Various | 5% | — | 0402 | Ok |
| M8 | Capacitor | Murata | GRM | 0.1 uF | 0402 | Ok |
| M10 | Inductor | Murata | LQG | 3.0 nH | 0402 | Ok |
| M12 | Capacitor | Murata | GJM/GRM | 1.5 pF | 0402 | Ok |
| Evaluation Board | GRF400X_RevC | — | — | — | — | — |





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| Data Sheet Release Status: | Notes |
|----------------------------|---|
| Advance | S-parameter and NF data based on EM simulations for the fully packaged device using foundry supplied transistor s-parameters. Linearity estimates based on device size, bias condition and experience with related devices. |
| Preliminary | All data based on evaluation board measurements in the Guerrilla RF Applications Lab. |
| Released | All data based on device qualification data. Typically, this data is nearly identical to the data found in the preliminary version. Max and min values for key RF parameters are included. |

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JONHON

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