



## 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. Iccq.

The device is operated from a supply voltage ( $V_{CC}$ ) of 1.8 to 5.0 V with a selectable Iccq 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.

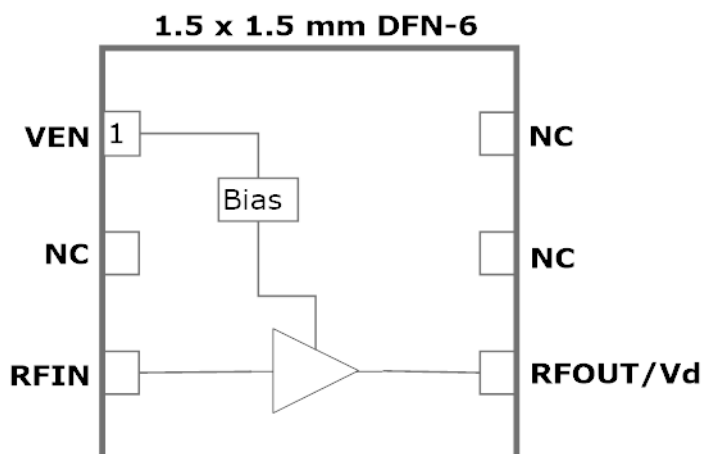
## Features

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





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Low-current LNA/Driver  
0.1–3.8 GHz

## Absolute Ratings:

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



**Caution!** ESD Sensitive Device

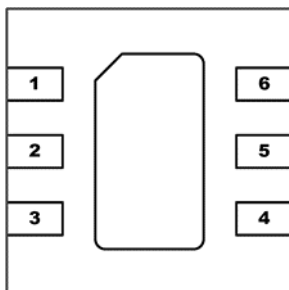


Exceeding Absolute Maximum Rating conditions may cause permanent damage to the device.

**Note:** For package dimensions and manufacturing information, see the [Guerrilla-RF.com](http://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 <sub>ENABLE</sub>	Enable Voltage Input	V <sub>ENABLE</sub> and series resistor set I <sub>DDQ</sub> . V <sub>ENABLE</sub> < =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 <sub>CC</sub> 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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## Nominal Operating Parameters:

Parameter	Symbol	Specification			Unit	Condition
		Min.	Typ.	Max.		
Test Frequency	$F_{TEST}$		1900		MHz	$V_{CC} = 3.3\text{ V}$ , $T_A = 25^\circ\text{C}$
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	$V_{CC}: 3.3\text{V}$ ; $V_{ENABLE}: 0.0\text{V}$
Thermal Data						
Thermal Resistance: (Estimated)	$\Theta_{JC}$		700		$^\circ\text{C/W}$	On standard Evaluation Board
Junction Temperature @ +85 C Reference (Package heat sink)	$T_{JUNCTION}$		120		$^\circ\text{C}$	$V_{CC}: 3.3\text{ V}$ ; $I_{CCQ}: 15\text{ mA}$ ; No RF; $P_{BISS}: 50\text{ mW}$

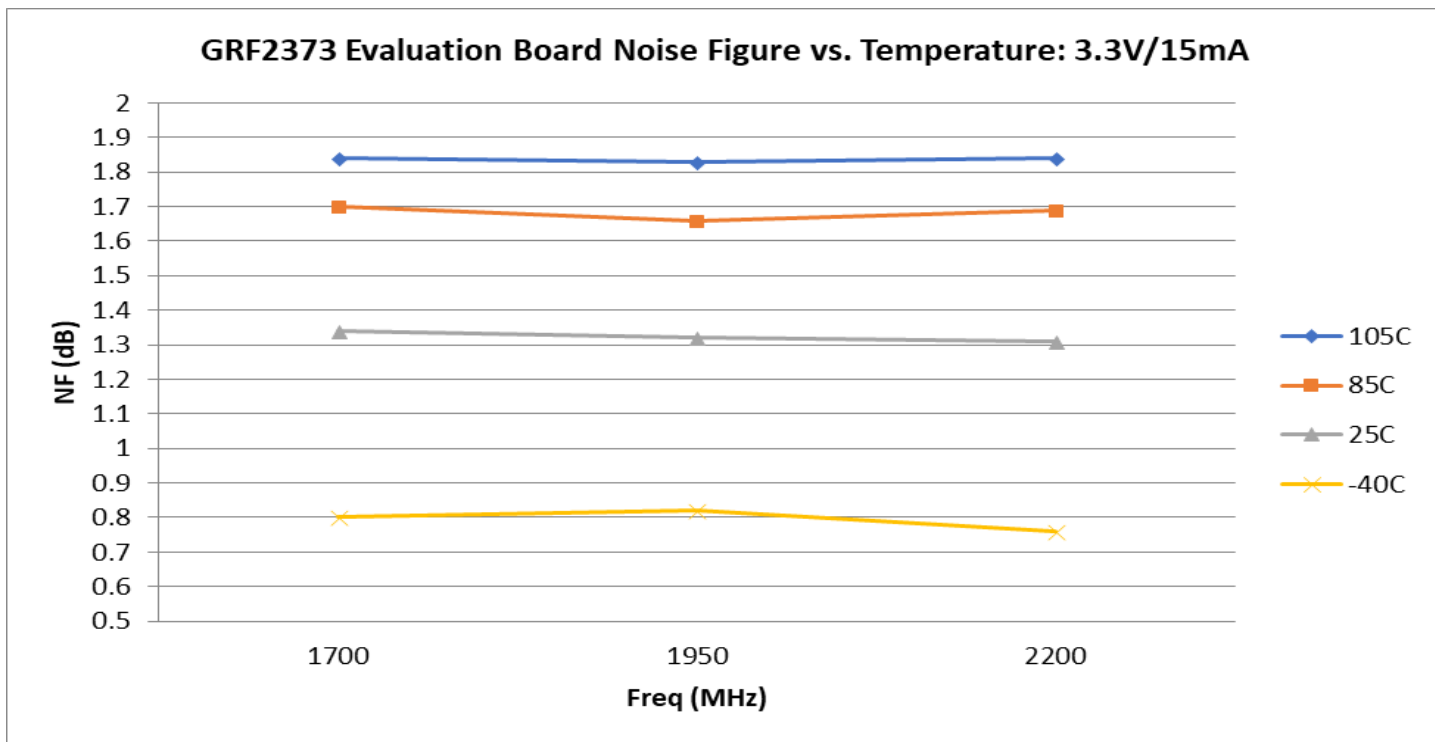
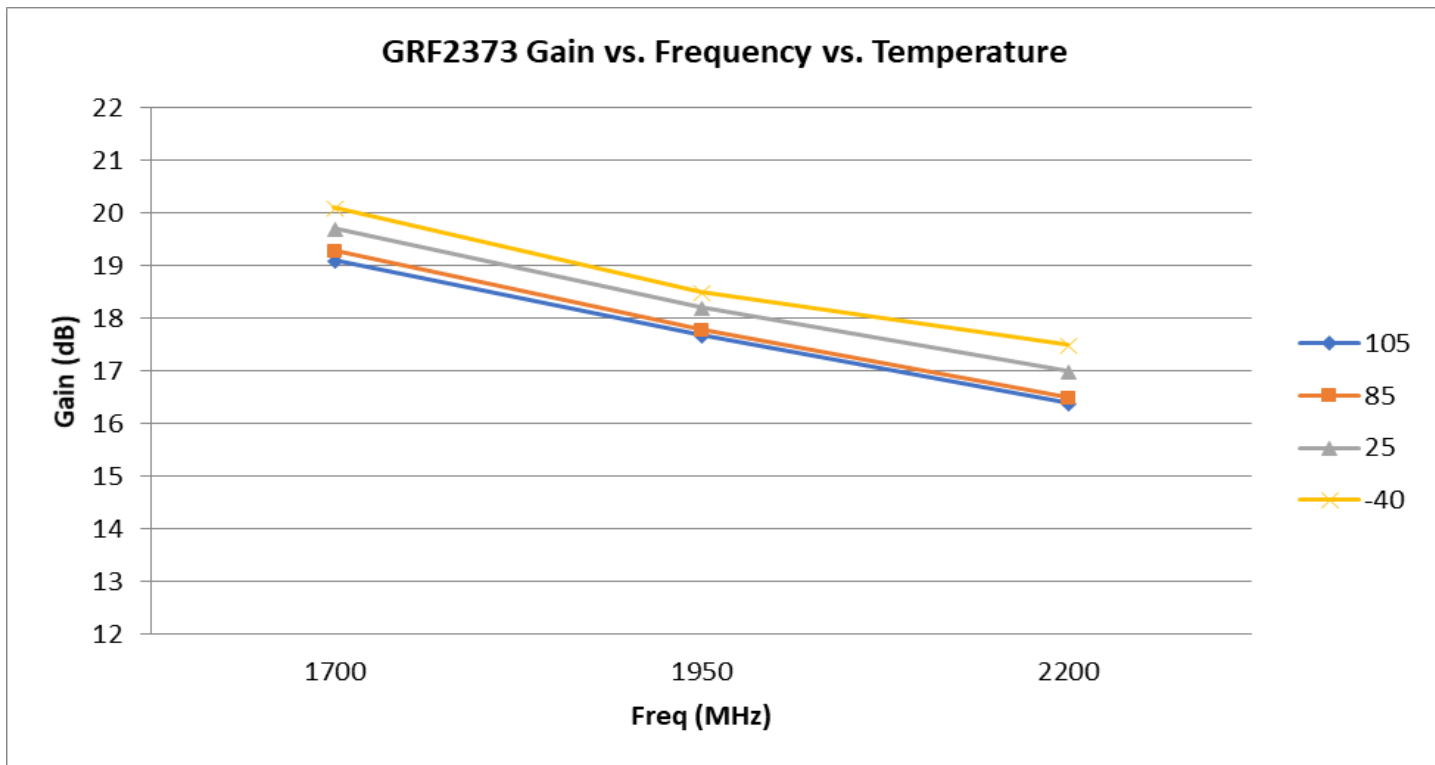


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## GRF2373 Evaluation Board Data (3.3V/15mA)



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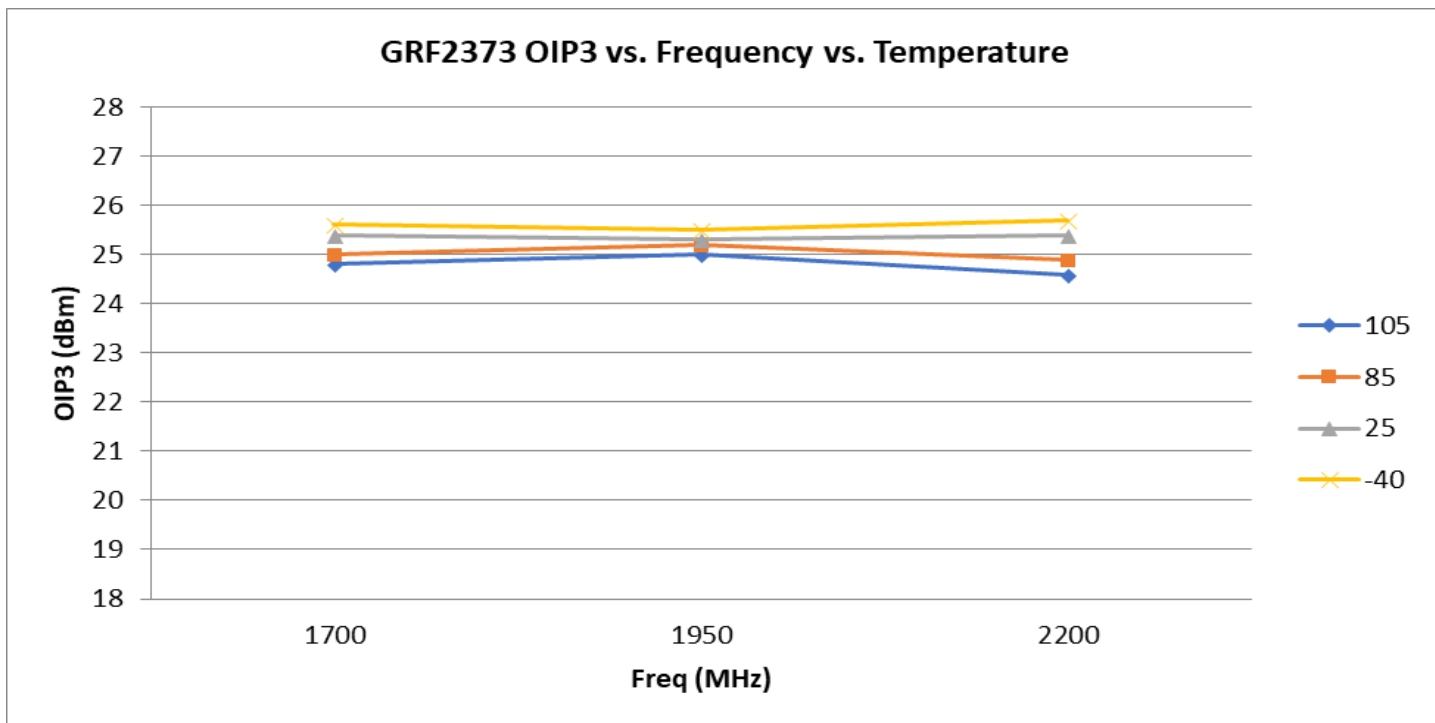
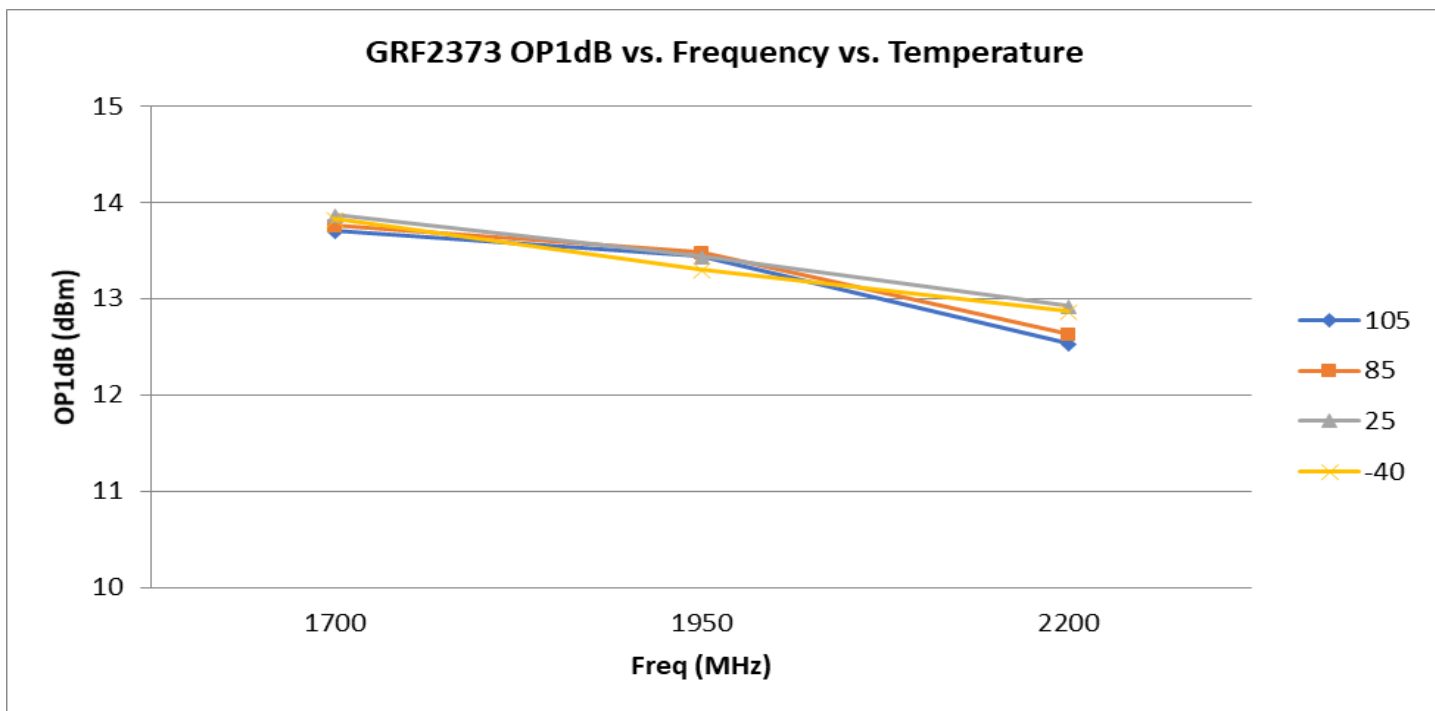


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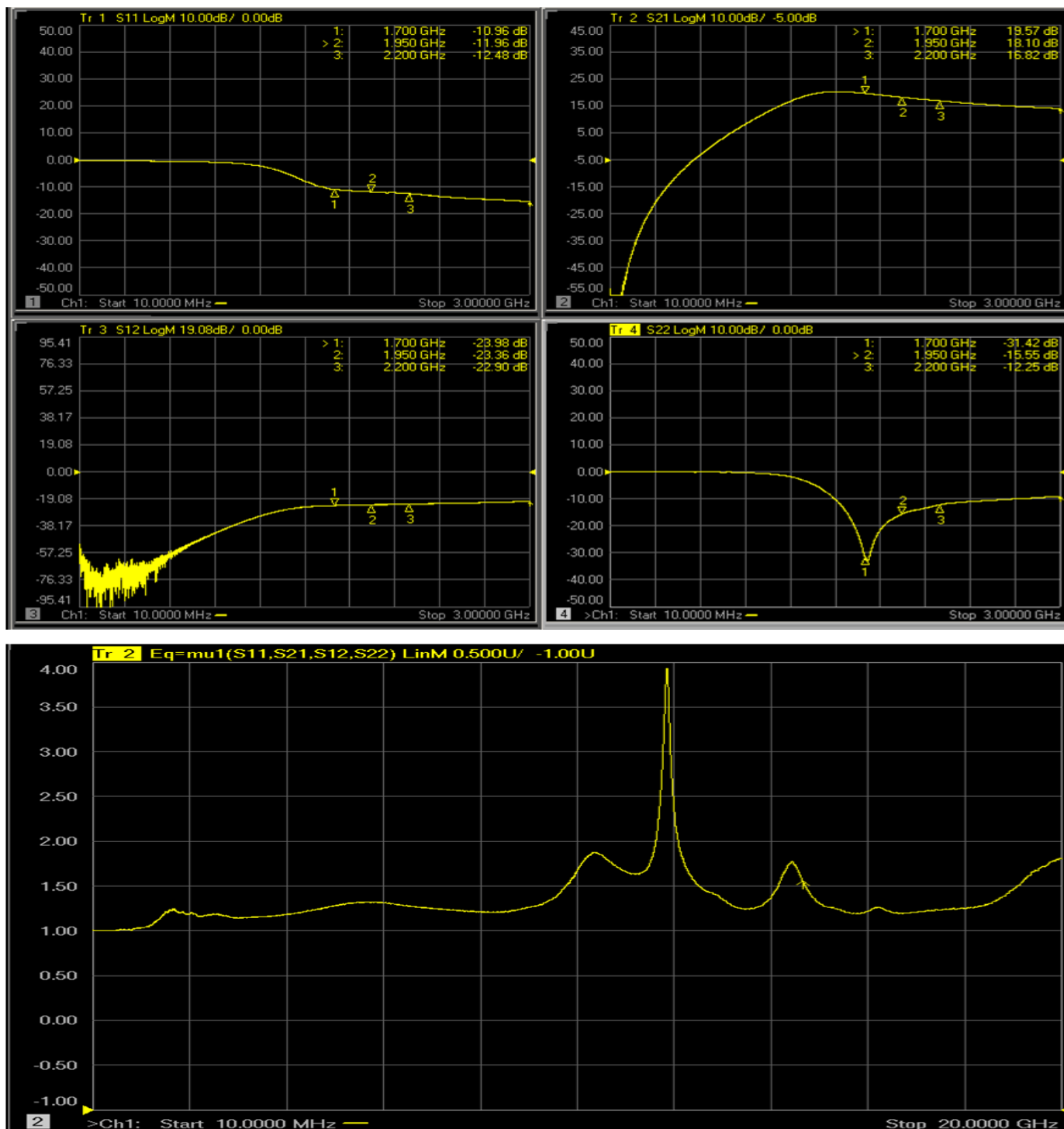
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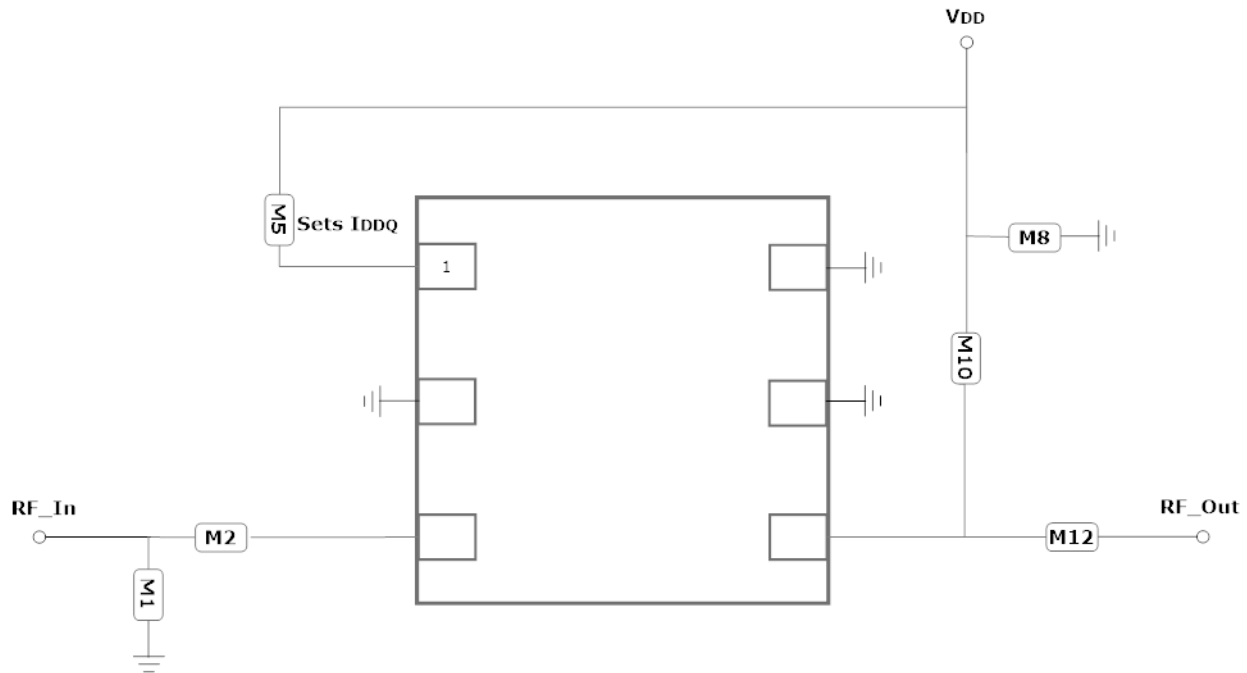
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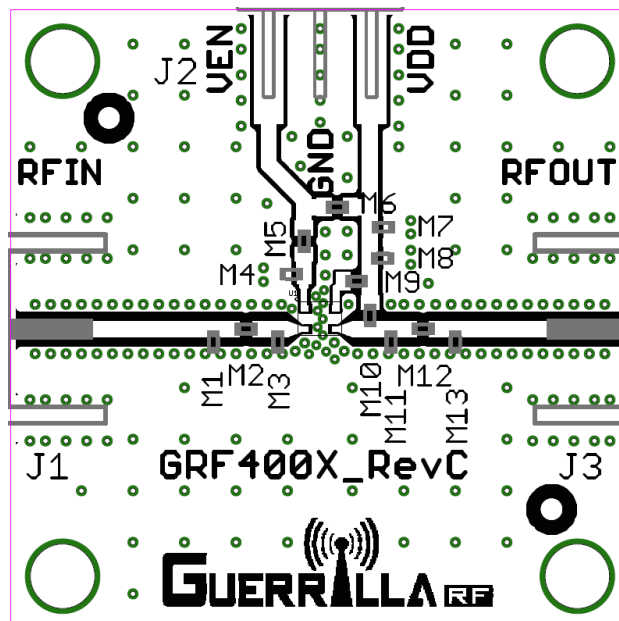
## GRF2373 Evaluation Board S-Pars and Stability Mu Factor: (1.7 to 2.2 GHz Match)



Note: Mu factor  $\geq 1.0$  implies unconditional stability.



GRF2373 Application Schematic



GRF2373 Evaluation Board Assembly Diagram





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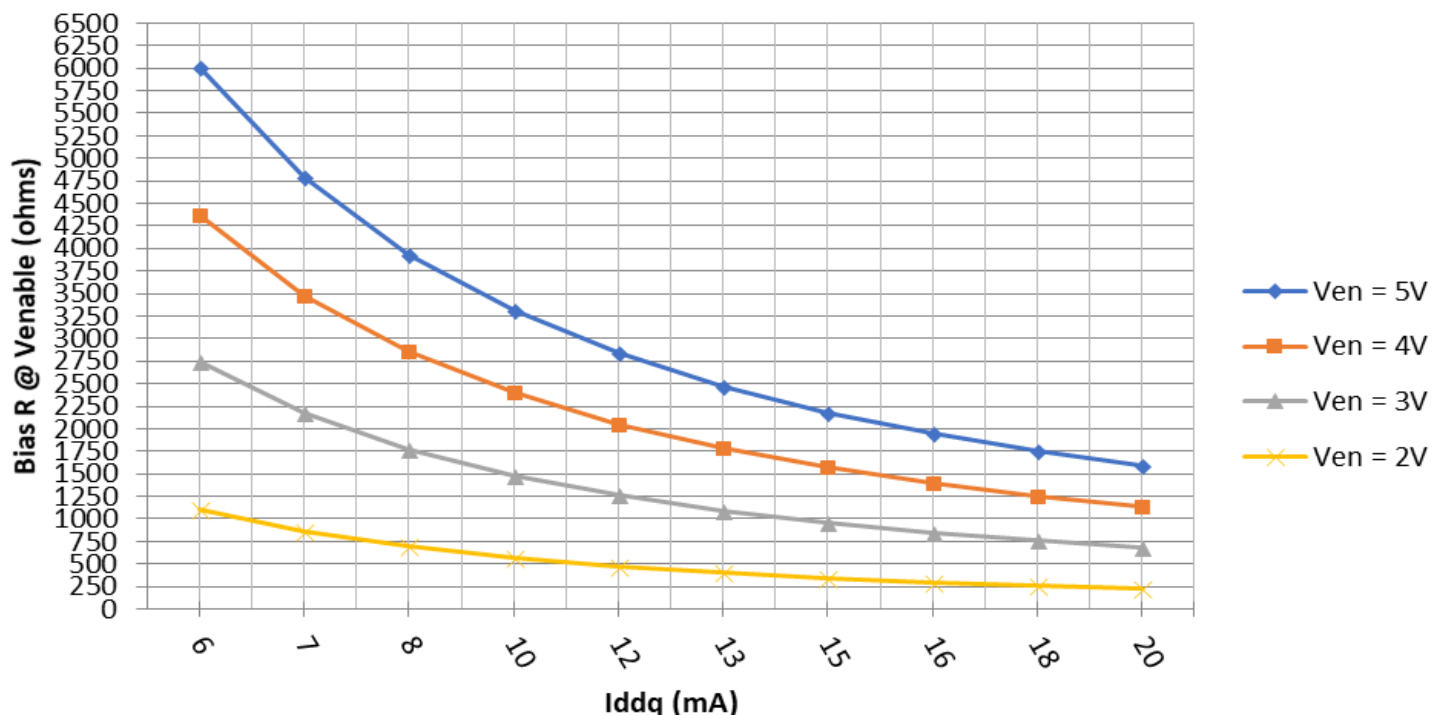
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GRF2373 Standard Evaluation Board BOM: (1.7 to 2.2 GHz Tune; Vdd = Venable = 3.3V; Iddq: 15 mA)

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	—	—	—	—	—

GRF2373 w/Vdd = 5.0V: Required Bias R @ Venable vs. Iddq





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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.

Information in this datasheet is specific to the Guerrilla RF, Inc. ("Guerrilla RF") product identified.

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