



Product Description

GRF1201 is a low-cost, logarithmic, average power detector IC LNA designed for cost-sensitive applications in the 100 to 6000 MHz frequency range.

It is operated from a supply voltage (V_{CC}) range of 2.7 to 5.0 volts and housed in a 1.5 x 1.5 x 0.5 mm 6-pin plastic DFN package. Consult with the GRF applications engineering team for additional performance data.

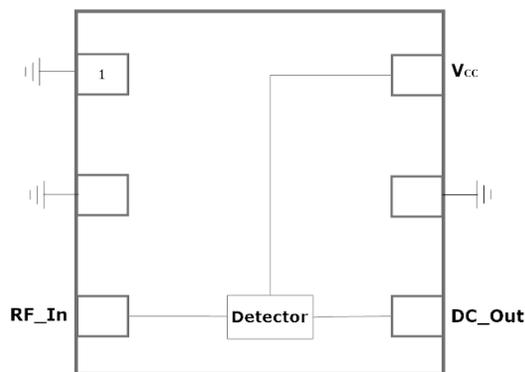
Features

Reference: 5.0V/7mA/2.0 GHz

- Detector Slope: 0.08 volts per dB (-20 to +20 dBm)
- Linear Logarithmic Power Detector
- Flexible bias voltage
- Minimal External Components
- Process: InGaP HBT

Applications

- High-volume, cost-sensitive logarithmic power detector applications



1.5 x 1.5 mm DFN-6



Released

GRF1201

Log Average Power Detector
0.1 to 6.0 GHz

Absolute Ratings:

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	V _{CC}	0	6.0	V
RF Input Power CW: (Load VSWR < 2:1; V _c : 5.0 volts)	P _{IN MAX}		TBD	dBm
Operating Temperature (Package Heat Sink)	T _{AMB}	-40	105	°C
Maximum Channel Temperature (MTTF > 10 ⁶ Hours)	T _{MAX}		170	°C
Electrostatic Discharge:				
Charged Device Model:	CDM	1000		V
Human Body Model:	HBM	500		V
Storage:				
Storage Temperature	T _{STG}	-65	150	°C
Moisture Sensitivity Level	MSL		1	--



Caution! ESD Sensitive Device

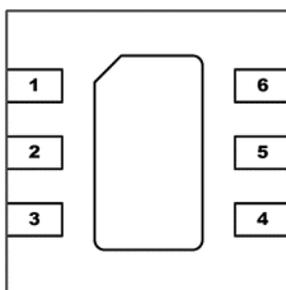


Exceeding Absolute Maximum Rating conditions may cause permanent damage to the device.

Note: For manufacturing information, see the Guerrilla-RF.com website for the following document located on the GRF1201 landing page: 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	NC/GND	Enable Voltage Input	No internal connection to die
2	NC/GND	No Connect or Ground	No internal connection to die
3	RF_In	Detector RF Input	An external DC blocking cap must be used.
4	DC_Out	Detector DC Output	DC couple to measure detected output power
5	NC/GND	No Connect or Ground	No internal connection to die
6	Vcc	Supply Voltage Input	Vcc must be applied through a choke to this pin
PKG BASE	GND	Ground	Provides DC and RF ground for detector, as well as thermal heat sink. Recommend multiple 8 mil vias beneath the package for optimal RF and thermal performance.



Released

GRF1201

Log Average Power Detector
0.1 to 6.0 GHz

Nominal Operating Parameters:

Parameter	Symbol	Specification			Unit	Condition
		Min.	Typ.	Max.		
Test Frequency (50 Ohm Source)	F _{TEST}		2.0		GHz	V _{CC} = 5.0V, T _A = 25 °C
DC Out (No RF Applied)	DC_Out		0.8		volts	
DC Out (-20 dBm RF Input Power)	DC_Out		1.0		volts	
DC Out (0 dBm RF Input Power)	DC_Out		2.6		volts	
DC Out (10 dBm RF Input Power)	DC_Out		3.5		volts	
DC Out (+20 dBm RF Input Power)	DC_Out		4.3		volts	
Detector Output Rise Time	T_Rise		200		ns	
Detector Output Fall Time	T_Fall		650		ns	
Supply Current	I _{CC}		7.0	9.0	mA	
Thermal Data						
Thermal Resistance: (Infra-Red Scan)	Q _{JC}		TBD		°C/W	On standard Evaluation Board
Channel Temperature @ +85 C Reference (Package heat sink)	T _{CHANNEL}		TBD		°C	V _{CC} : 5.0 V; I _{CCQ} : 7 mA; No RF; P _{DISS} : 35 mW

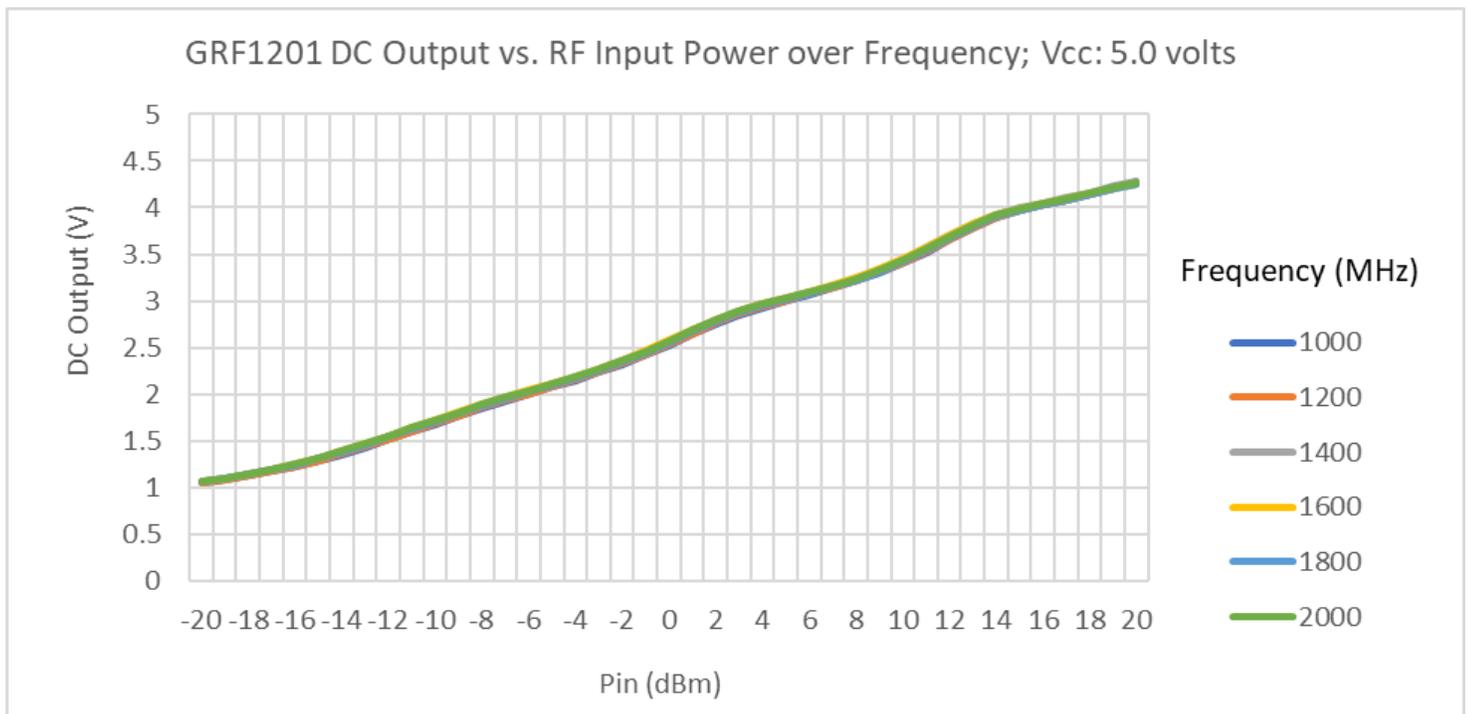
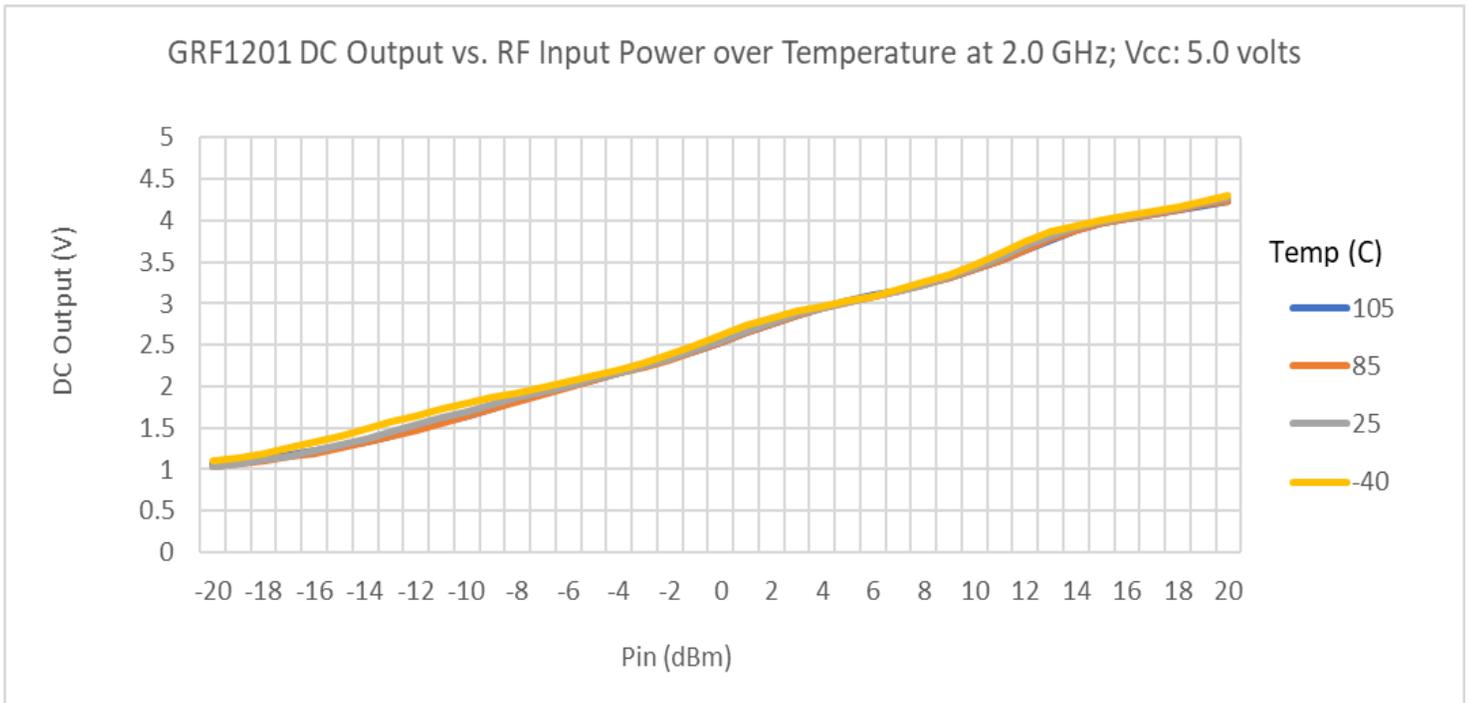


Released

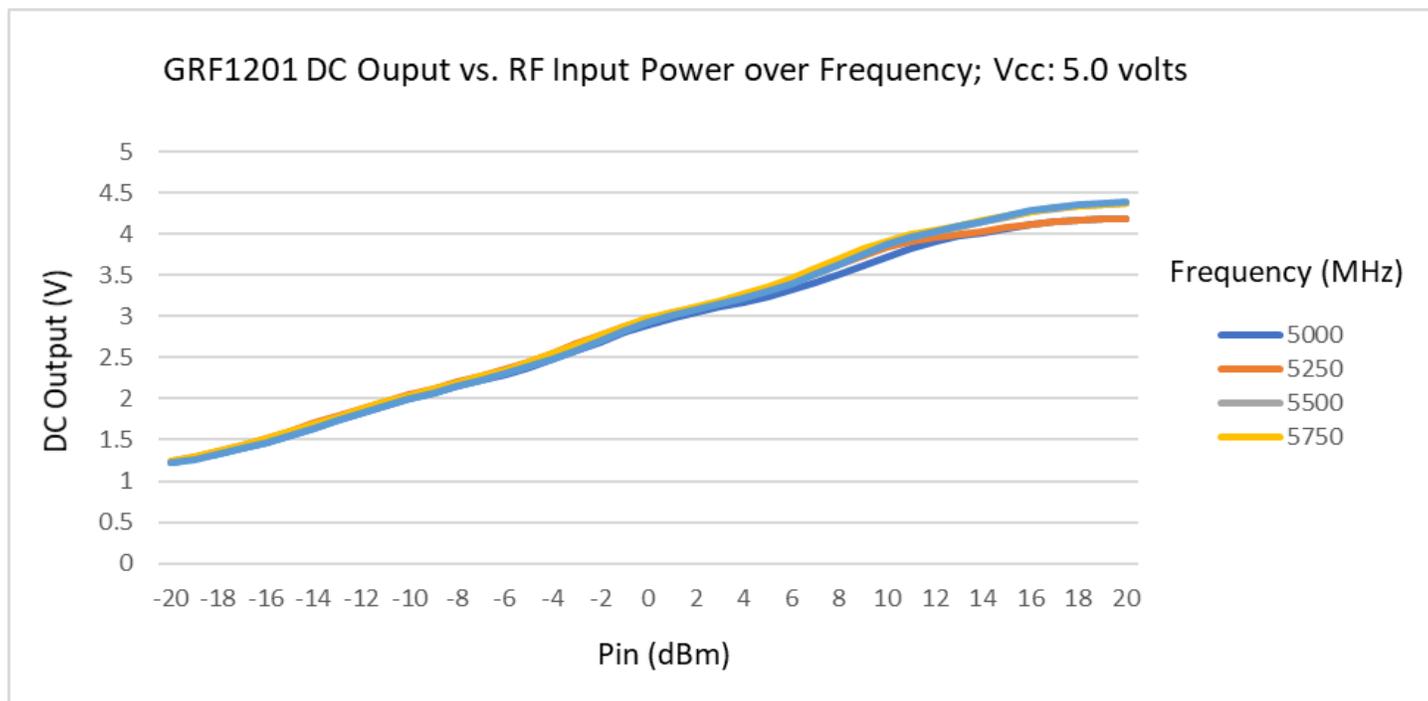
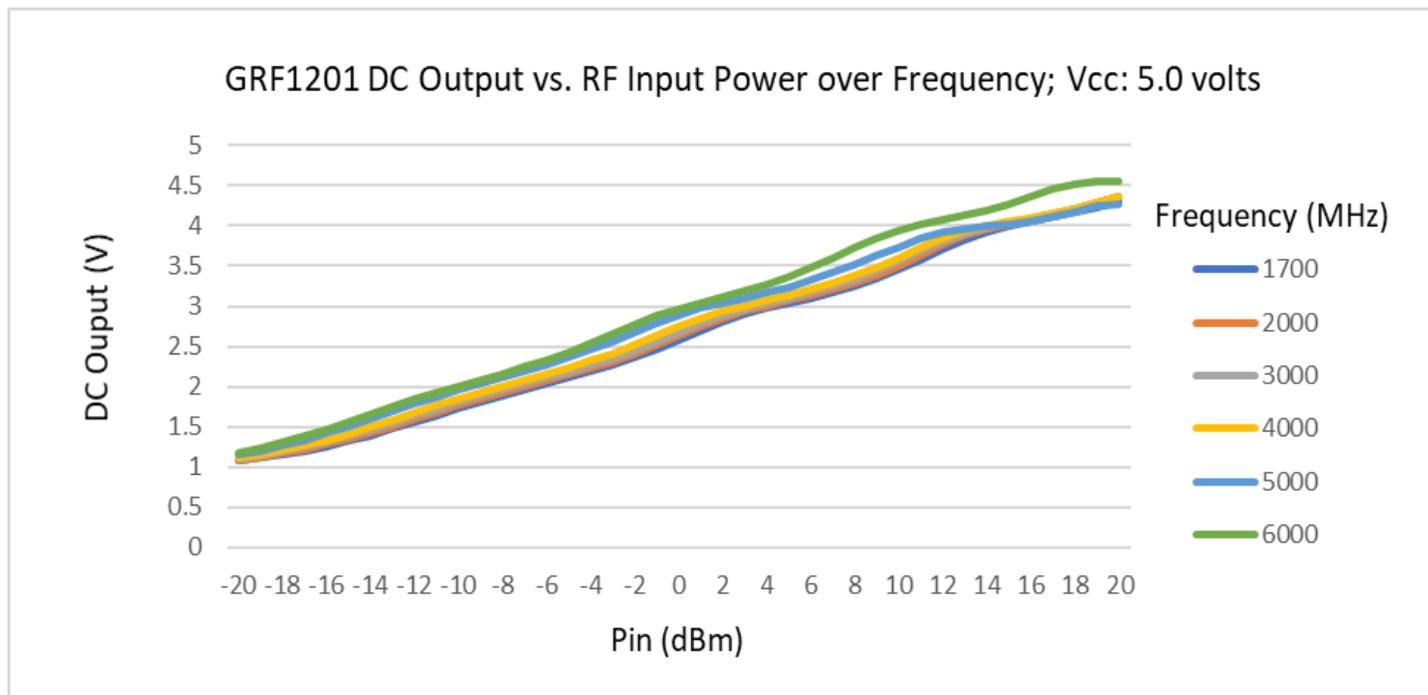
GRF1201

Log Average Power Detector
0.1 to 6.0 GHz

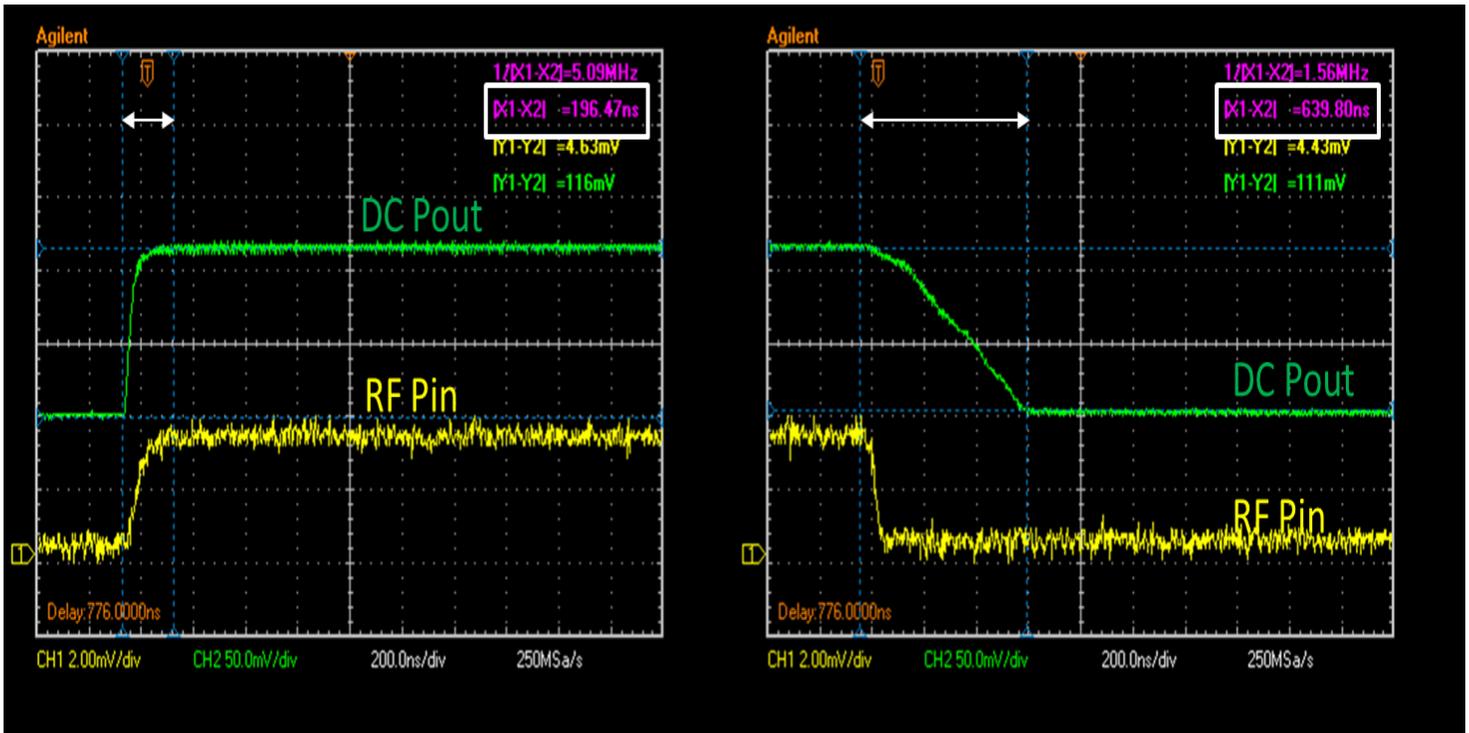
GRF1201 Evaluation Board Data:



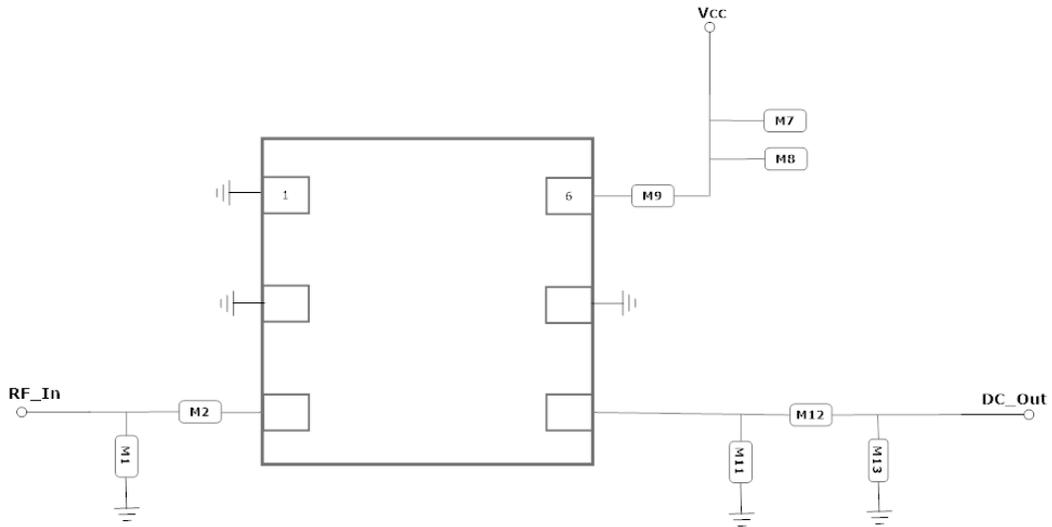
GRF1201 Evaluation Board Data:



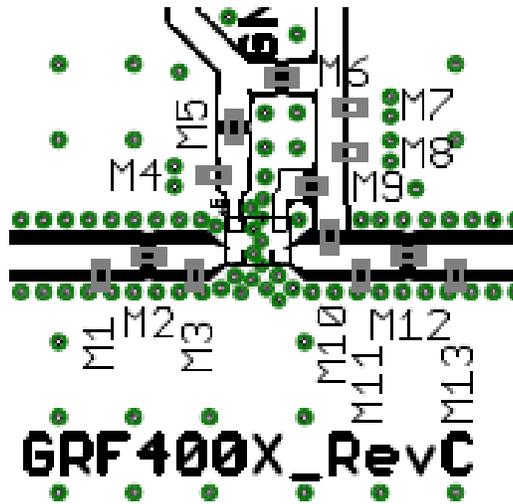
GRF1201 Evaluation Board Data:



GRF1201 Detector Rise and Fall Times:



GRF1201 Application Schematic



GRF1201 Evaluation Board Assembly Drawing



Released

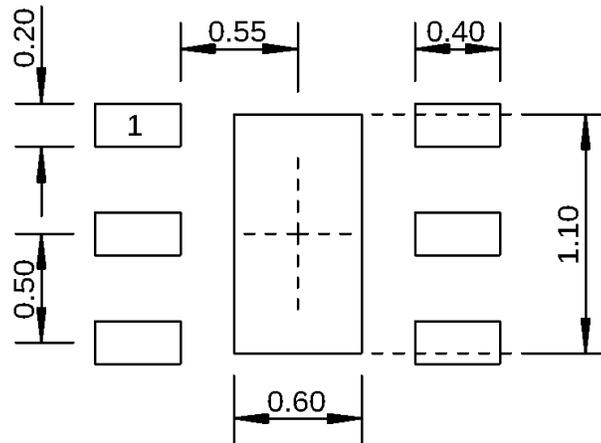
GRF1201

Log Average Power Detector
0.1 to 6.0 GHz

GRF1201 Evaluation Board BOM: All Bands

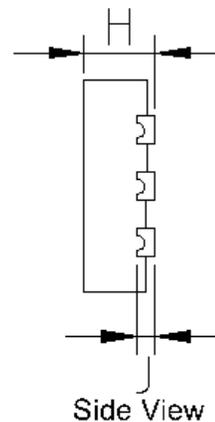
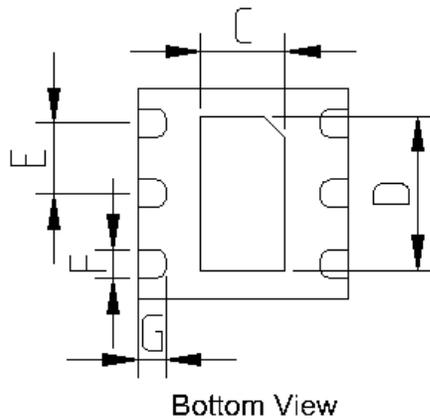
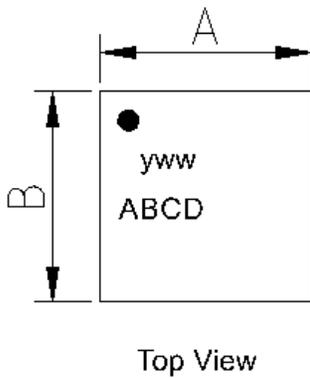
Component	Type	Manufacturer	Family	Value	Package Size	Substitution
M1	Resistor	Various	5%	68 ohms	0402	ok
M2 (0.4 to 2.0 GHz)*	Capacitor	Murata	GRM	100 pF	0402	ok
M2 (2.0 to 5.0 GHz)*	Capacitor	Murata	GRM	10 pF	0402	ok
M2 (5.0 to 6.0 GHz)*	Capacitor	Murata	GRM	2.0 pF	0402	ok
M7	Capacitor	Murata	GRM	0.1 uF	0402	ok
M8	Capacitor	Murata	GRM	100 pF	0402	ok
M9	Resistor (Jumper)	Various	—	0 Ohm	0402	ok
M11	Capacitor	Murata	GRM/GJM	100 pF	0402	ok
M12	Resistor (Jumper)	Various	—	0 Ohm	0402	ok
M13	Resistor	Various	—	10k ohms	0402	ok

* Note: M2 value is flexible and only needs to be a good RF short at the frequencies of interest. All other BOM components are not frequency dependent.



Dimensions in millimeters

1.5 mm DFN-6 Suggested PCB Footprint (Top View)



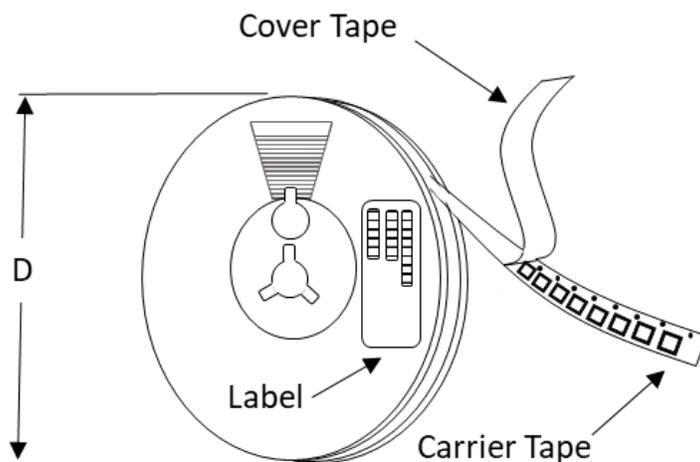
Dimensions (MM)	
A	1.5 +/- 0.050
B	1.5 +/- 0.050
C	.6 +/- 0.050
D	1.1 +/- 0.050
E	.5 Bsc
F	.2 +/- 0.050
G	.2 +/- 0.050
H	.45 +/- 0.050
J	.12 Ref.

1.5 mm DFN-6 Package Dimensions

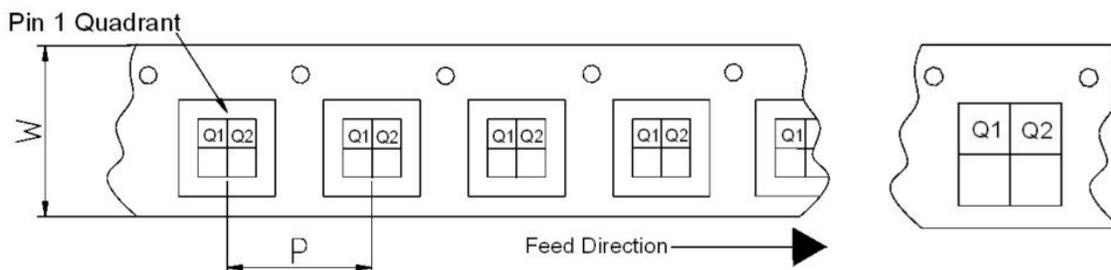
Tape and Reel Information:

Guerrilla RF's Tape and Reel specification complies with the Electronics Industries Association (EIA) standards for 'Embossed Carrier Tape of Surface Mount Components for Automatic Handling'. Reference EIA-481. See the table on the following page for Tape and Reel specifications along with units per reel.

Devices are loaded with pins down into the carrier pocket with protective cover tape, wound into a plastic reel. Each reel will be packaged in a cardboard box. There will be product labels on the reel, the protective ESD bag and the outside surface of the box.



Tape and Reel Packaging with Reel Diameter Noted (D)



Carrier Tape Width (W), Pitch (P), Feed Direction and Pin 1 Quadrant Information



Released

GRF1201

Log Average Power Detector
0.1 to 6.0 GHz

Tape and Reel Specification and Device Package Information Table

Package				Carrier Tape			Reel	
Type	Dimensions (mm)	Leads	Weight (mg)	Width (W) (mm)	Pocket Pitch (P) (mm)	Pin 1 Quadrant	Diameter (D) (inches)	Units per Reel
QFN	2.0 x 2.0 x 0.50	12	7	8	4	Q1	7	2500
QFN	3.0 x 3.0 x 0.85	16	24	12	8	Q1	7	1500
DFN	1.5 x 1.5 x 0.45	6	4	8	4	Q1	7	2500
DFN	2.0 x 2.0 x 0.75	8	12	8	4	Q1	7	2500
LFM	3.5 x 3.5 x 0.75	See note	TBD	12	8	Q2	7	1500
LFM	4.0 x 4.0 x 0.75	See note	TBD	12	8	Q2	7	1500

Note: Lead count may vary. Reference applicable product data sheet



Released

GRF1201

Log Average Power Detector
0.1 to 6.0 GHz

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.

This datasheet, including the information contained in it, is provided by Guerrilla RF as a service to its customers and may be used for informational purposes only by the customer. Guerrilla RF assumes no responsibility for errors or omissions on this datasheet or the information contained herein. Information provided is believed to be accurate and reliable, however, no responsibility is assumed by Guerrilla RF for its use, nor for any infringement of patents, or other rights of third parties, resulting from its use. Guerrilla RF assumes no liability for any datasheet, datasheet information, materials, products, product information, or other information provided hereunder, including the sale, distribution, reproduction or use of Guerrilla RF products, information or materials.

No license, whether express, implied, by estoppel, by implication or otherwise is granted by this datasheet for any intellectual property of Guerrilla RF, or any third party, including without limitation, patents, patent rights, copyrights, trademarks and trade secrets. All rights are reserved by Guerrilla RF.

All information herein, products, product information, datasheets, and datasheet information are subject to change and availability without notice. Guerrilla RF reserves the right to change component circuitry, recommended application circuitry and specifications at any time without prior notice. Guerrilla RF may further change its datasheet, product information, documentation, products, services, specifications or product descriptions at any time, without notice. Guerrilla RF makes no commitment to update any materials or information and shall have no responsibility whatsoever for conflicts, incompatibilities, or other difficulties arising from any future changes.

GUERRILLA RF INFORMATION, PRODUCTS, PRODUCT INFORMATION, DATASHEETS AND DATASHEET INFORMATION ARE PROVIDED "AS IS" AND WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE, INCLUDING FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, PERFORMANCE, QUALITY OR NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT; ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED. GUERRILLA RF DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. GUERRILLA RF SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING BUT NOT LIMITED TO ANY SPECIAL, INDIRECT, INCIDENTAL, STATUTORY, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THE MATERIALS OR INFORMATION, WHETHER OR NOT THE RECIPIENT OF MATERIALS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Customers are solely responsible for their use of Guerrilla RF products in the Customer's products and applications or in ways which deviate from Guerrilla RF's published specifications, either intentionally or as a result of design defects, errors, or operation of products outside of published parameters or design specifications. Customers should include design and operating safeguards to minimize these and other risks. Guerrilla RF assumes no liability or responsibility for applications assistance, customer product design, or damage to any equipment resulting from the use of Guerrilla RF products outside of stated published specifications or parameters.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [RF Detector](#) category:

Click to view products by [Guerrilla RF](#) manufacturer:

Other Similar products are found below :

[HMC439QS16GTR](#) [HMC7447-SX](#) [MACP-010562-TR1000](#) [R451075000](#) [2085-6013-13](#) [2085-6010-00](#) [32-2018-BU](#) [32-3033-BU](#) [32-3203-BU](#) [AD8361ARMZ-REEL](#) [LT5534ESC6#TRPBF](#) [AD8361ARM-REEL7](#) [AD8314ARMZ-REEL](#) [AD8311ACBZ-P7](#) [AD8312ACBZ-P7](#) [AD8313ARMZ-REEL7](#) [AD8314ACPZ-RL7](#) [AD8314ARMZ](#) [AD8314ARMZ-REEL7](#) [AD8315ARMZ](#) [AD8317ACPZ-R7](#) [AD8319ACPZ-R7](#) [AD8361ARMZ](#) [AD8361ARMZ-REEL7](#) [AD8362ARUZ-REEL7](#) [AD8363ACPZ-R7](#) [AD8302ARUZ-RL7](#) [ADL5906ACPZN-R7](#) [ADL5500ACBZ-P7](#) [ADL5502ACBZ-P7](#) [ADL5504ACBZ-P7](#) [ADL5505ACBZ-P7](#) [ADL5506ACBZ-R7](#) [ADL5506WACBZ-R7](#) [ADL5513ACPZ-R7](#) [ADL5903ACPZN-R7](#) [ADL5903SCPZN-R7](#) [ADL6010ACPZN-R2](#) [ADL6010SCPZN](#) [ADL6010SCPZN-R7](#) [ADL6010SCPZN-R2](#) [ADL6012ACPZN](#) [ADL5511ACPZ-R7](#) [ADL5904ACPZN-R7](#) [ADL5910ACPZN-R7](#) [ADL5920ACPZ](#) [HMC1021LP4E](#) [HMC1120LP4E](#) [HMC1120LP4ETR](#) [HMC439QS16G](#)