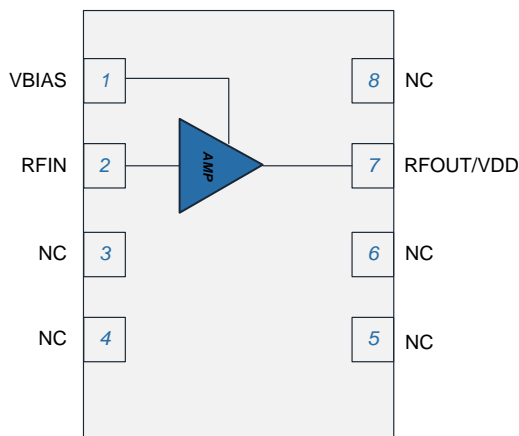


RFLA3022

Low Noise, High Linearity Amplifier
1500MHz to 3000MHz

RFMD's RFLA3022 is a Low Noise, High Linearity Amplifier housed in a 2.0mm x 2.0mm DFN package. The V_{BIAS} pin can be used to adjust bias current of the LNA. Noise figure of 0.45dB and an IIP3 of 21dBm make this component ideal for receiver input lineups. This module is internally matched to 50Ω on all RF ports but does require DC blocks and bias feed inductors.



Functional Block Diagram



Package: DFN, 8-pin,
2.0mm x 2.0mm

Features

- Frequency Range 1500MHz to 3000MHz
- Matched Internally, DC Blocks Required
- Gain = 17dB at 2GHz
- Noise Figure = 0.45dB at 2GHz
- Input IP3 = 21dBm at 2GHz
- Single +5V Supply
- Small 8-Pin, 2.0mm x 2.0mm DFN

Applications

- LTE, TD-LTE, 3G, and 2G Cellular Infrastructure Application
- PA Driver Amplifiers
- Low Noise, High Linearity Gain Block

Ordering Information

RFLA3022SQ	Sample bag with 25 pieces
RFLA3022SR	7" Reel with 100 pieces
RFLA3022TR7	7" Reel with 2500 pieces
RFLA3022PCK-410	1500MHz to 30000MHz PCBA with 5-piece sample bag

Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage (V_{DD})	5.5	V_{DC}
V_{BIAS} Voltage	+2	V_{DC}
DC Supply Current	200	mA
Power Dissipation	0.5	W
Max RF Input Power	TBD	dBm
Operating Temperature Range	-40 to +85	$^{\circ}C$
Storage Temperature Range	-40 to +150	$^{\circ}C$
ESD Rating - Human Body Model (HBM)	TBD	V
Moisture Sensitivity Level	TBD	



Caution! ESD sensitive device.



RFMD Green: RoHS status based on EU Directive 2011/65/EU (at time of this document revision), halogen free per IEC 61249-2-21, < 1000ppm each of antimony trioxide in polymeric materials and red phosphorus as a flame retardant, and <2% antimony in solder.

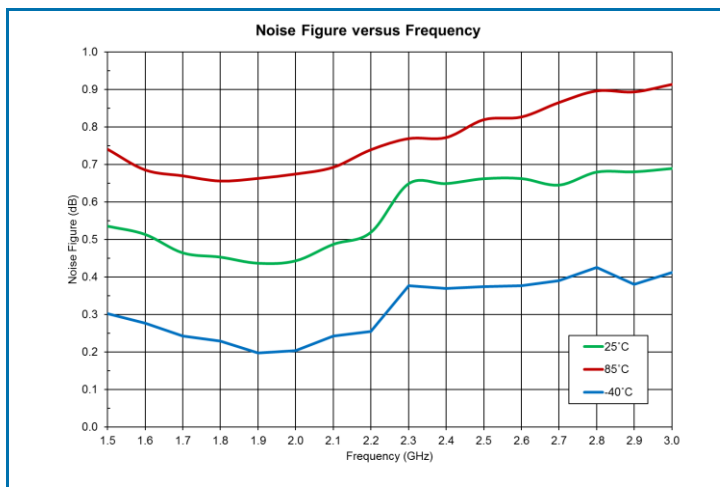
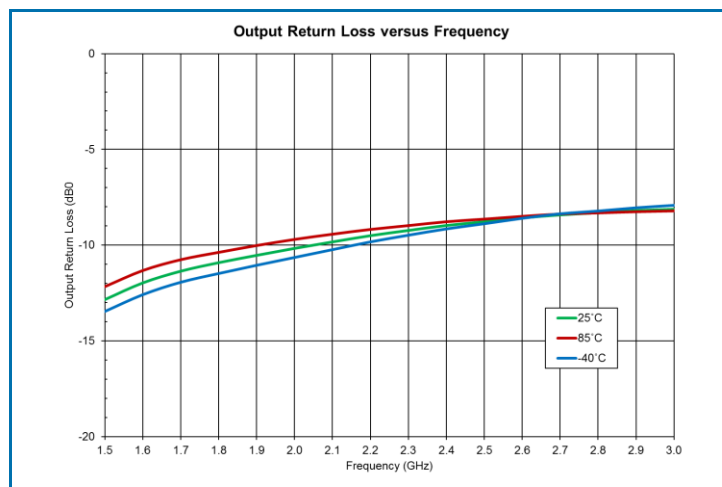
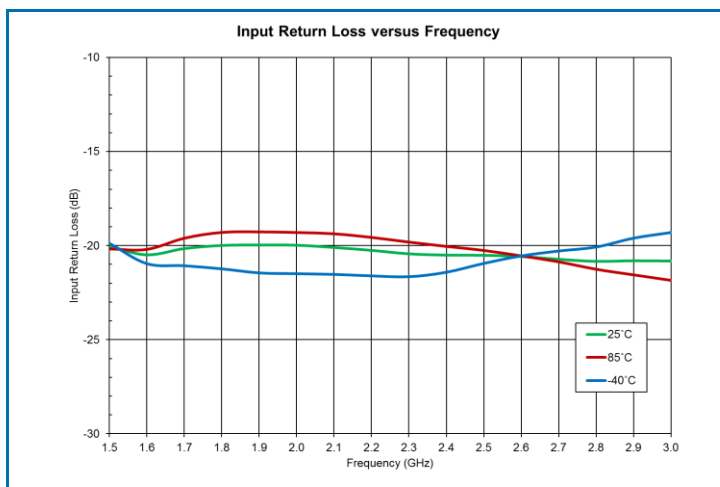
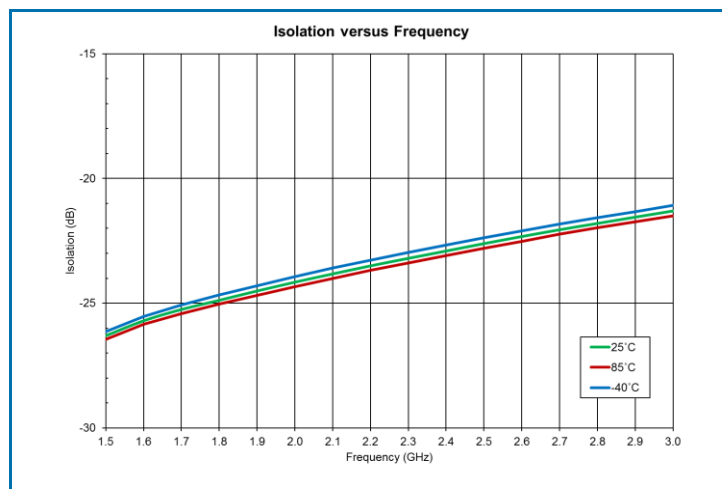
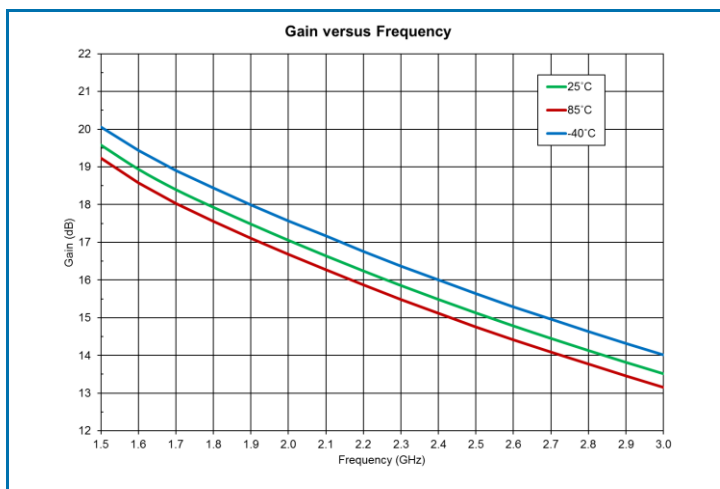
Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

Nominal Operating Parameters

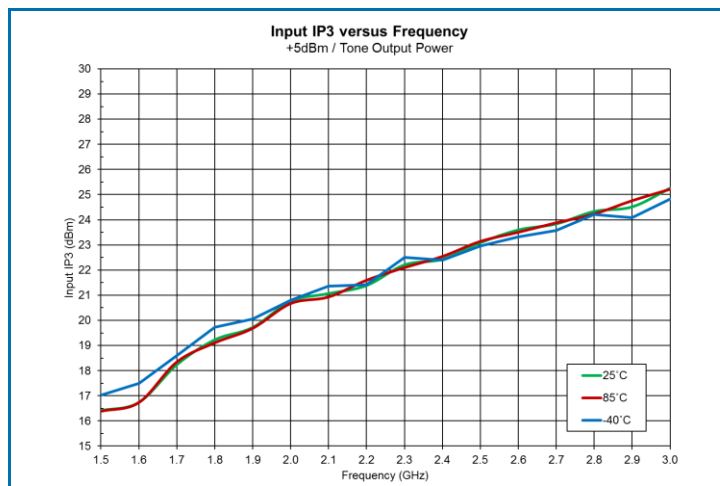
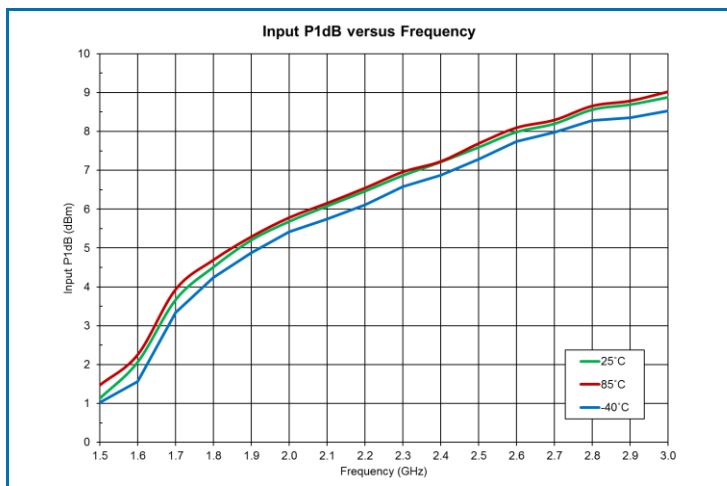
Parameter	Specification			Unit	Condition
	Min	Typ	Max		
LNA Performance					Temp = 25$^{\circ}C$, V_{DD} = 5V, I_{DD} = 60mA at Frequency = 2000MHz, Standard Application Circuit
Frequency Range	1500		3000	MHz	
Gain		17		dB	
Noise Figure ¹		0.45		dB	De-embedded input EVB loss
Input P1dB		5.5		dBm	
Input IP3		21		dBm	Output power +5dBm / tone
Input Return Loss		-20		dB	
Output Return Loss		-10		dB	
Supply Voltage	4.75	5	5.25	V	5V operation
Thermal Resistance		55		$^{\circ}C/W$	Measured to backside of the IC at 85 $^{\circ}C$, 60mA, 5V
Operating Junction Temperature			TBD	$^{\circ}C$	Tj for greater than 1e06 hours operating life
Current		60		mA	5V operation

Note: 1. Noise Figure is measured on RFLA3022 EVB and input EVB line loss is de-embedded.

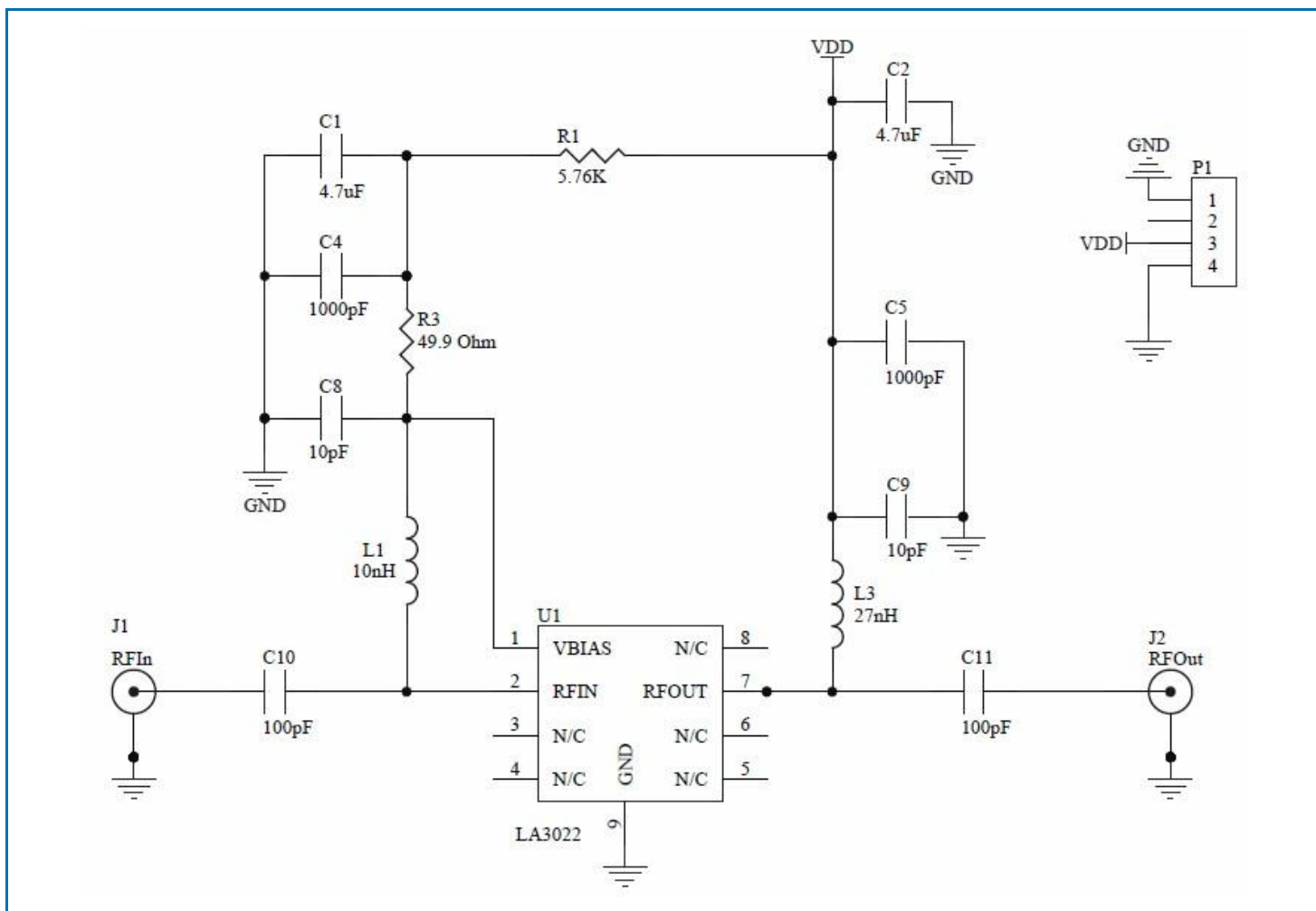
Typical Performance: $V_{DD} = 5V$, $I_{DD} = 60mA$



Typical Performance: $V_{DD} = 5V$, $I_{DD} = 60mA$



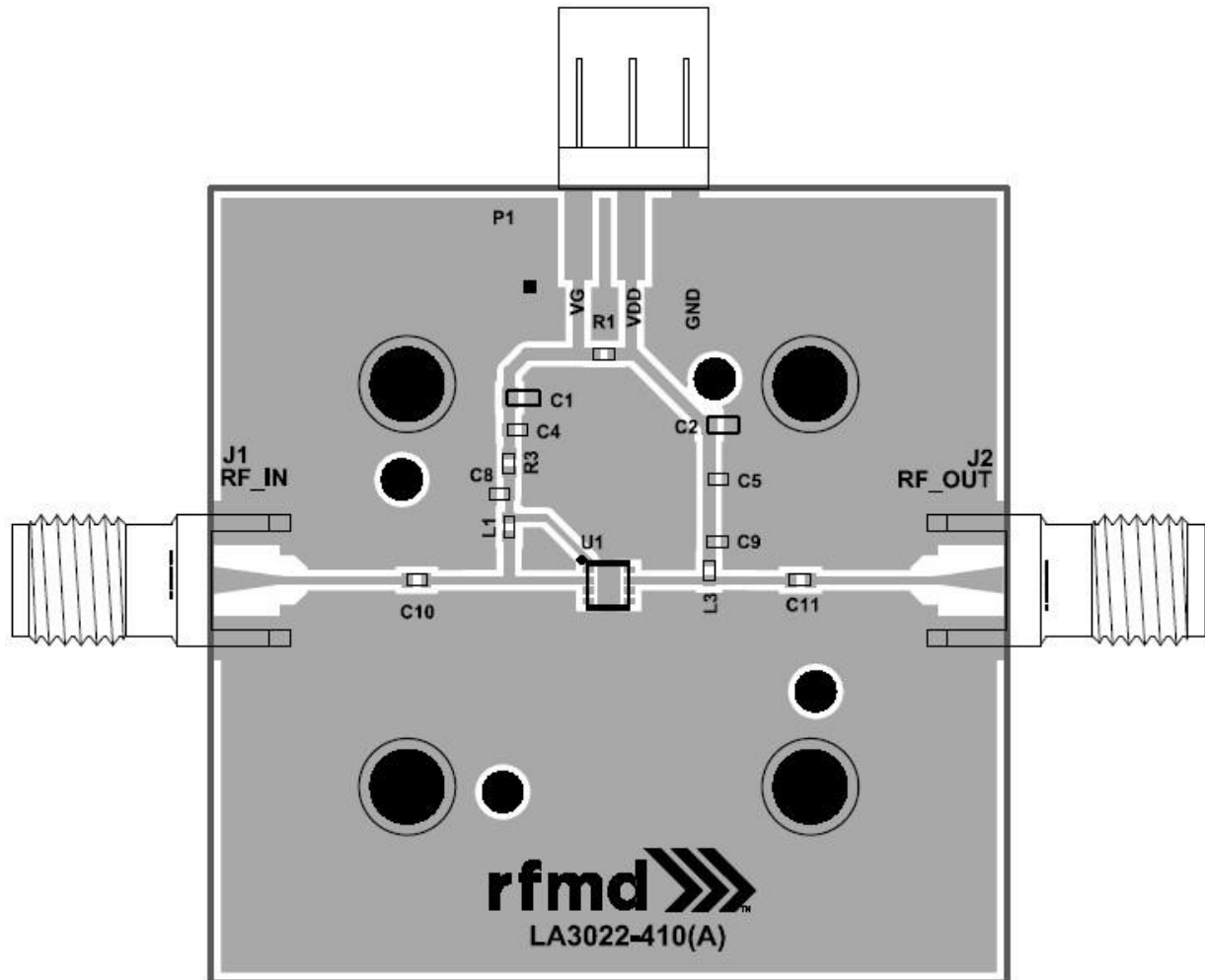
Evaluation Board Schematic 1500MHz to 3000MHz Application Circuit



Evaluation Board Bill of Materials (BOM) 1500MHz to 3000MHz Application Circuit

Description	Reference Designator	Manufacturer	Manufacturer's P/N
RFLA3022(A) Evaluation Board			
LNA	U1	RFMD	RFLA3022
CAP, 4.7μF, 10%, 6.3V, X5R, 0603	C1-C2	Murata Electronics	GRM188R60J475KE19D
CAP, 1000pF, 10%, 50V, X7R, 0402	C4-C5	Murata Electronics	GRM155R71H102KA01D
CAP, 10pF, 5%, 50V, 0402	C8-C9	Murata Electronics	GRM1555C1H100JZ01D
CAP, 100pF, 5%, 50V, 0402	C10-C11	Murata Electronics	GRM1555C1H101J201D
CONN, SMA, END LNCH, RND PIN, 0.039"	J1-J2	Gigalane Co., LTD	PSF-S01-002
IND, 10nH, 5%, M/L, 0402	L1	Toko Inc.	LL1005-FHL 10NJ
IND, 27nH, 0402	L3	Coilcraft	0402HP-27
CONN, HDR, ST, PLRZD, 3-PIN, 0.100"	P1	ITW Pancon	MPSS100-3-C
RES, 5.76K, 1%, 1/16W, 0402	R1	Panasonic Industrial Sales	ERJ-2RKF5761X
RES, 49.9Ω, 1%, 1/16W, 0402	R3	Panasonic Industrial Sales	ERJ-2RKF49R9X

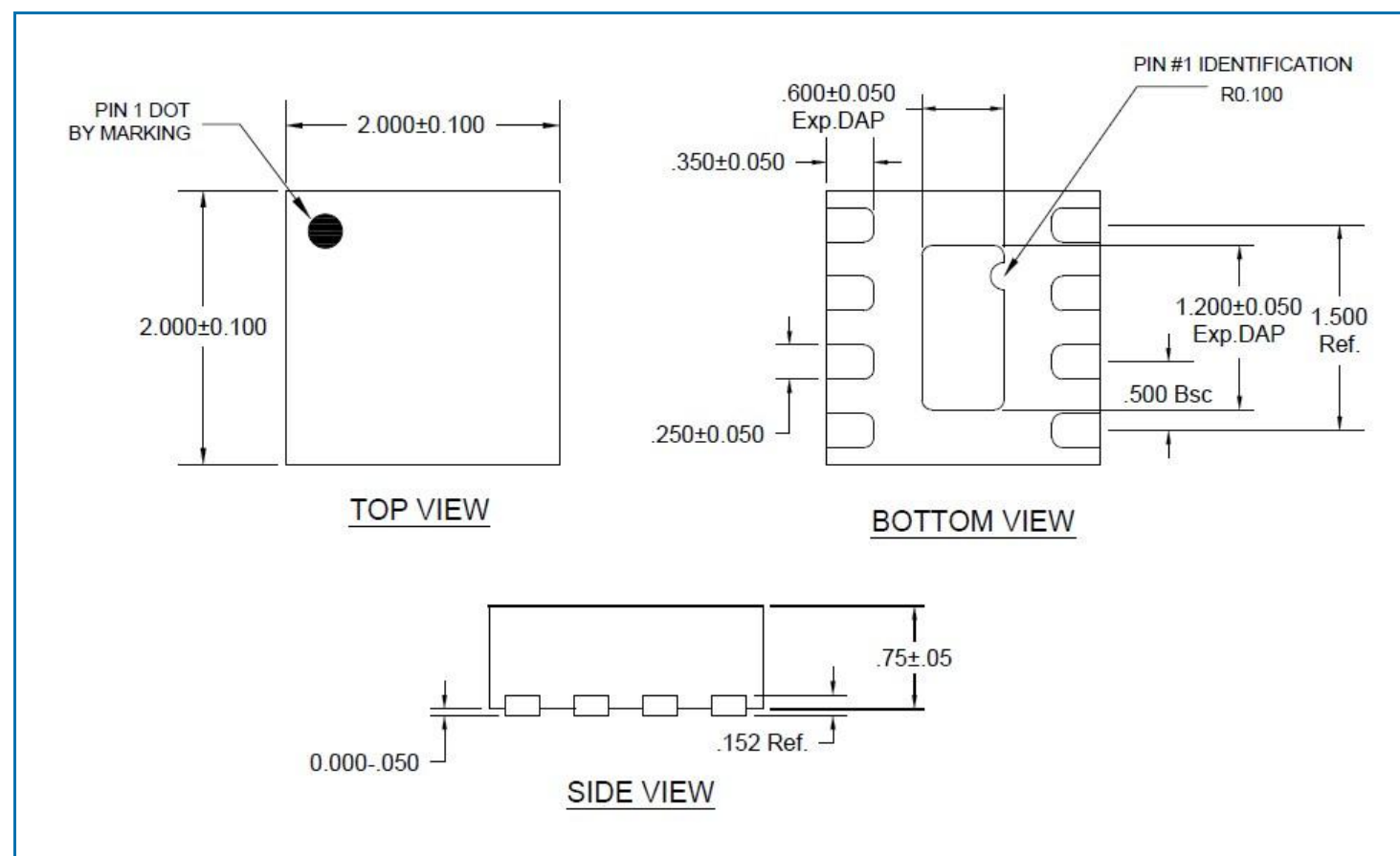
Evaluation Board Assembly Drawing 1500MHz to 3000MHz Application Circuit



Pin Names and Descriptions

Pin	Name	Description
1	VBIAS	Active Bias Input
2	RFIN	RF Input
3	NC	No Internal Connection: EVB can be ground or no connect
4	NC	No Internal Connection: EVB can be ground or no connect
5	NC	No Internal Connection: EVB can be ground or no connect
6	NC	No Internal Connection: EVB can be ground or no connect
7	RFOUT / VDD	RF Out and VDD Supply
8	NC	No Internal Connection: EVB can be ground or no connect
EPAD	GND	DC and RF Ground: Must be soldered to EVB ground plane over a bed of vias for thermal and RF performance. Solder / epoxy voids under the EPAD will result in excessive junction temperature causing permanent damage.

Package Outline Drawing (Dimensions in millimeters)



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