



# RF2373

## Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	-0.5 to +6.0	V <sub>DC</sub>
Bias Voltage, V <sub>BIAS</sub>	≤V <sub>CC</sub>	V <sub>DC</sub>
Input RF Level	+15 (see note)	dBm
Current Drain, I <sub>CC</sub>	32	mA
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-40 to +150	°C



**Caution!** ESD sensitive device.

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NOTE: Exceeding any one or a combination of the above maximum rating limits may cause permanent damage. Input RF transients to +15dBm will not harm the device. For sustained operation at inputs ≥+10dBm, a small dropping resistor of 10Ω is recommended in series with the V<sub>CC</sub>.

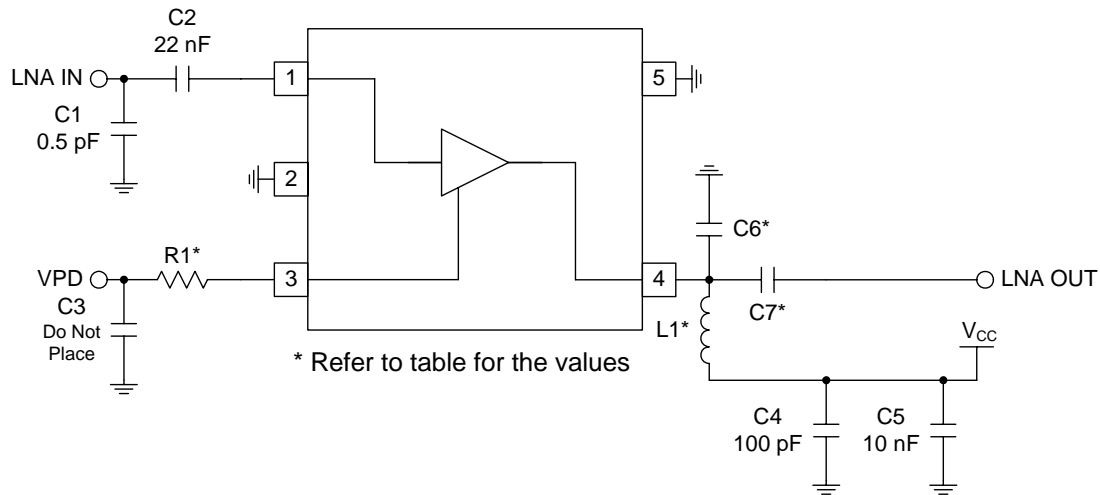
Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
<b>Overall</b>					25°C, V <sub>CC</sub> =3.3V, at typical frequencies unless otherwise specified
Supply Voltage (V <sub>CC</sub> )	2.7	3.3	5.0	V	V <sub>BIAS</sub> =0V
Bias Voltage (V <sub>BIAS</sub> )	2.7	3.3	5.0	V	
RF Frequency Range		800 to 2500		MHz	
Power Down Current			10	μA	
Isolation		23		dB	
Current Drain (LNA)	8	14	19	mA	
Current Drain (Driver)	12	18	23	mA	
IP2		55		dBm	
<b>Cellular Low Noise Amplifier</b>					I <sub>CC</sub> =10mA
Frequency	820	880	960	MHz	
Gain	19.5	21.5	23.5	dB	
Noise Figure		1.1	1.3	dB	
IIP3	-3	-1		dBm	
IP1dB	-13	-11		dBm	
Input VSWR		2.0	2.5		
Output VSWR		4.0	4.5		
<b>GPS Low Noise Amplifier</b>					I <sub>CC</sub> =10mA
Frequency		1575		MHz	
Gain	17.0	19.0	21.0	dB	
Noise Figure		1.1	1.3	dB	
IIP3	3	5		dBm	
IP1dB	-7	-5		dBm	
Input VSWR		1.7	2.2		
Output VSWR		1.6	2.1		
<b>PCS Low Noise Amplifier</b>					I <sub>CC</sub> =10mA
Frequency Range	1850	1920	1990	MHz	
Gain	16.0	18.0	20.0	dB	
Noise Figure		1.2	1.4	dB	
IIP3	4	6		dBm	
IP1dB	-7	-5		dBm	
Input VSWR		1.8	2.3		
Output VSWR		1.6	2.1		

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
<b>W-CDMA Low Noise Amplifier</b>					
Frequency Range	1920	2045	2170	MHz	$I_{CC}=10\text{mA}$
Gain	15.5	17.5	19.5	dB	
Noise Figure		1.2	1.4	dB	
IIP3	6	8		dBm	
IP1dB	-3	-1		dBm	
Input VSWR		1.8	2.3		
Output VSWR		1.6	2.1		
<b>WLAN Low Noise Amplifier</b>					
Frequency	2400	2450	2500	MHz	$I_{CC}=10\text{mA}$
Gain	13.0	15.0	17.0	dB	
Noise Figure		1.3	1.5	dB	
IIP3	7.5	9.5		dBm	
P1dB	-5.5	-3.5		dBm	
Input VSWR		1.7	2.2		
Output VSWR		1.1	1.6		
<b>Cellular Driver</b>					
Frequency	820	880	960	MHz	$I_{CC}=18\text{mA}$
Gain	20.0	22.0	24.0	dB	
Noise Figure		1.2	1.4	dB	
OIP3	19	21		dBm	
OP1dB	9	11		dBm	
Input VSWR		2.0	2.5		
Output VSWR		4.0	4.5		
<b>PCS Driver</b>					
Frequency Range	1850	1920	1990	MHz	$I_{CC}=18\text{mA}$
Gain	16.5	18.5	20.5	dB	
Noise Figure		1.3	1.5	dB	
OIP3	21.5	23.5		dBm	
OP1dB	10.5	12.5		dBm	
Input VSWR		1.8	2.3		
Output VSWR		1.6	2.1		
<b>W-CDMA Driver</b>					
Frequency Range	1920	2045	2170	MHz	$I_{CC}=18\text{mA}$
Gain	15.0	17.5	20.0	dB	
Noise Figure		1.3	1.5	dB	
OIP3	23.5	25.5		dBm	
OP1dB	14.5	16.5		dBm	
Input VSWR		1.8	2.3		
Output VSWR		1.6	2.1		
<b>WLAN Driver</b>					
Frequency	2400	2450	2500	MHz	$I_{CC}=18\text{mA}$
Gain	13.5	15.5	17.5	dB	
Noise Figure		1.4	1.6	dB	
OIP3	23	25		dBm	
OP1dB	10	12		dBm	
Input VSWR		1.7	2.2		
Output VSWR		1.1	1.6		

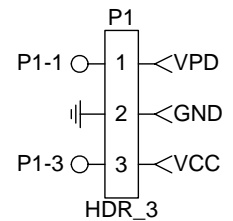
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Pin	Function	Description	Interface Schematic
1	RF IN	RF input pin. This pin is DC coupled.	
2	GND1	Ground connection. For best performance, keep traces physically short and connect immediately to ground plane.	
3	BIAS	This pin is used to control the bias current. An external resistor can be used to set the bias current for any $V_{BIAS}$ voltage. See table with evaluation board schematic.	
4	RF OUT	Amplifier output pin. This pin is an open-collector output. It must be biased to $V_{CC}$ through a choke or matching inductor. This pin is typically matched to $50\Omega$ with a shunt bias/matching inductor and series blocking/matching capacitor. Refer to application schematics.	
5	GND2	Ground connection. For best performance, keep traces physically short and connect immediately to ground plane.	

## Evaluation Board Schematic



Component	Cellular 900 MHz	GPS 1575 MHz	PCS 1950 MHz	W-CDMA 2140 MHz	WLAN 2450 MHz
L1 (nH)	3.9	2.7	2.7	2.7	2.2
C6 (pF)	4.3	1.5	0.5	DNP	DNP
C7 (pF)	2.0	1.2	1.0	1.0	1.0



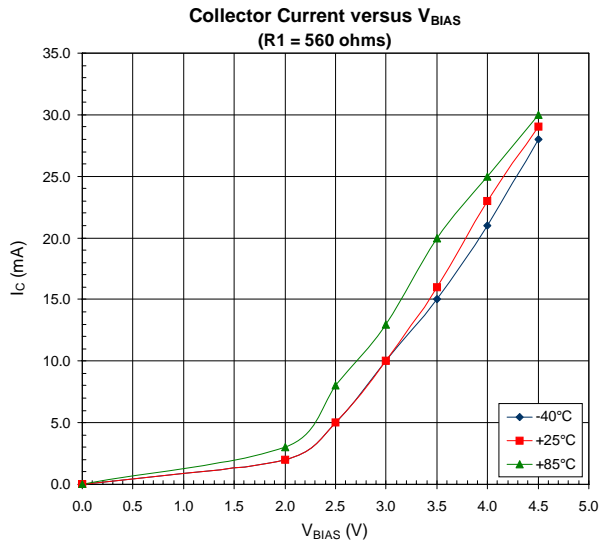
$V_{PD}$	$I_{CC}$				
	$R1 = 300 \Omega$	$R1 = 430 \Omega$	$R1 = 560 \Omega$	$R1 = 1 \text{ k}\Omega$	$R1 = 1.5 \text{ k}\Omega$
2.7	12	9	7	5	4
3.0	16	12	9	6	5
3.3	20	15	11	7	5
3.6	25	19	14	8	6
4.0	31	24	18	10	7
4.5	Over Limit	31	23	13	8
5.0	Over Limit	Over Limit	29	16	10

Note:  $V_{CC}$  set to 3.3 V.  $I_{CC}$  only slightly dependent on  $V_{CC}$ .

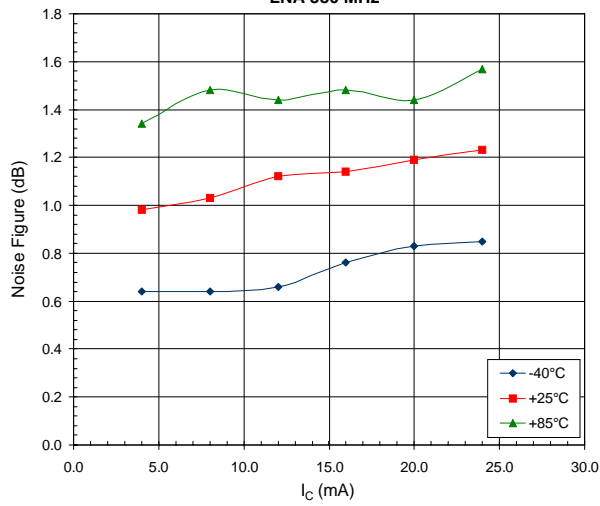
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This information pertains to the following charts.

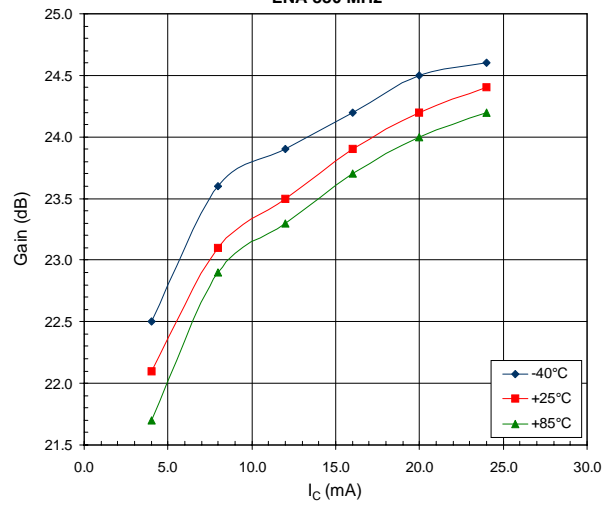
Test condition unless otherwise specified:  $V_{CC}=3.3V$ , use evaluation board for corresponding frequencies.



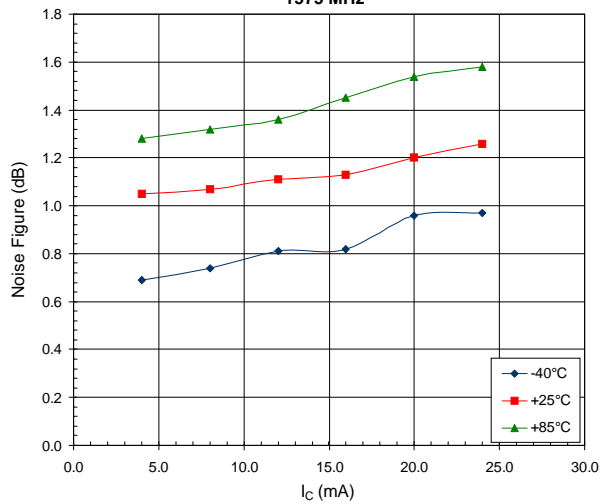
**Noise Figure versus Collector Current  
LNA 880 MHz**



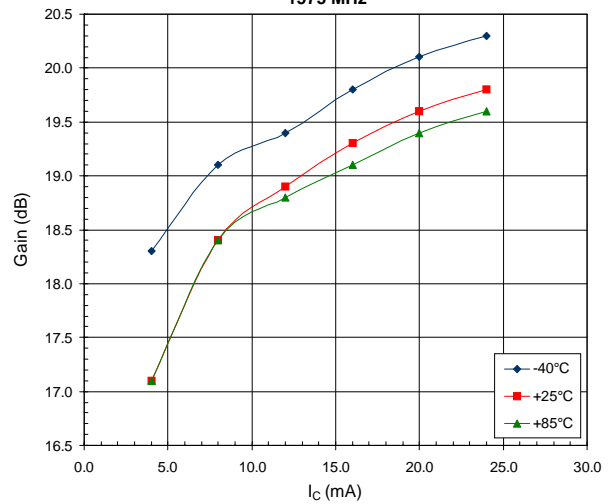
**Gain versus Collector Current  
LNA 880 MHz**



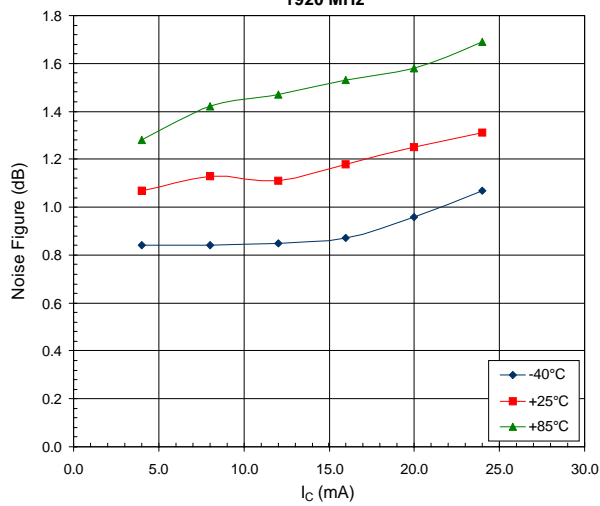
**Noise Figure versus Collector Current  
1575 MHz**



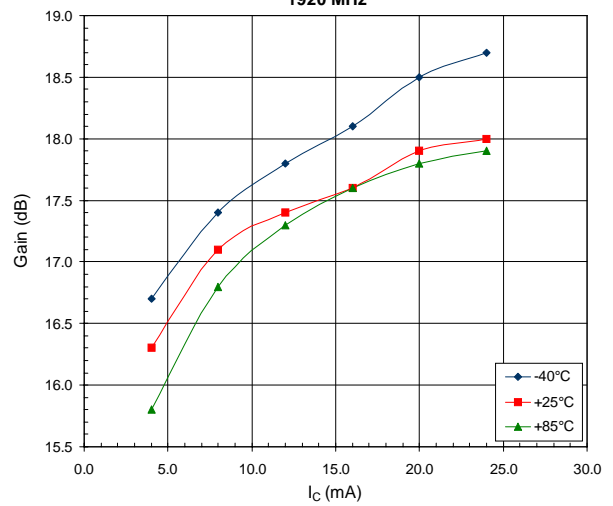
**Gain versus Collector Current  
1575 MHz**



**Noise Figure versus Collector Current  
1920 MHz**

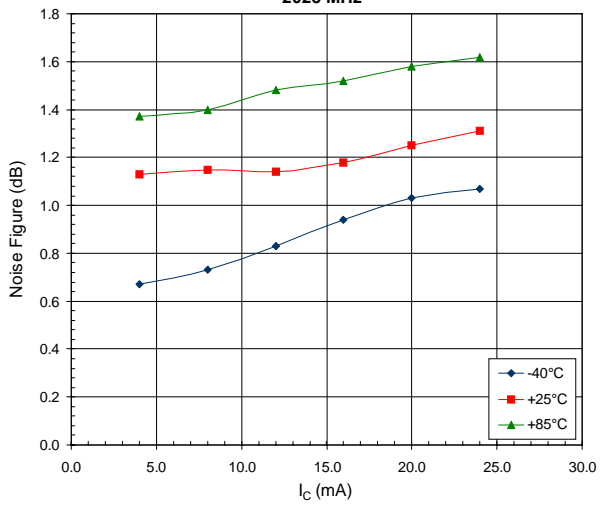


**Gain versus Collector Current  
1920 MHz**

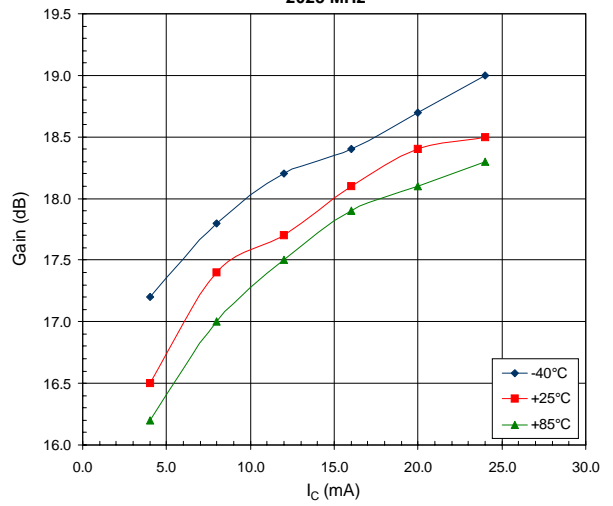


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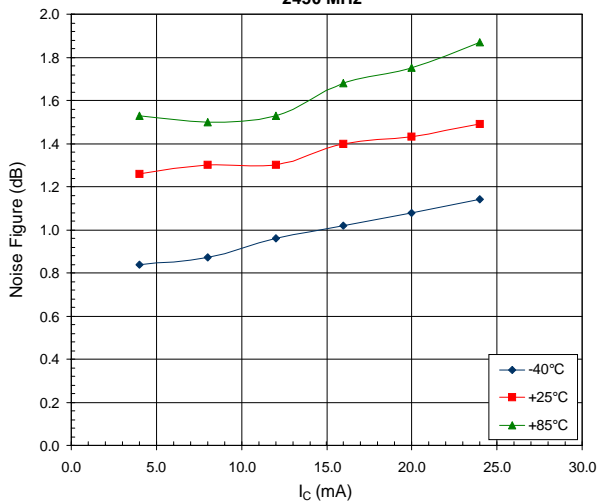
Noise Figure versus Collector Current  
2025 MHz



Gain versus Collector Current  
2025 MHz



Noise Figure versus Collector Current  
2450 MHz



Gain versus Collector Current  
2450 MHz

