

MAXIM

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

General Description

The MAX2654/MAX2655/MAX2656 high third-order intercept point (IP3), low-noise amplifiers (LNAs) are designed for applications in GPS, PCS, WLL, and satellite phone systems. The MAX2654/MAX2655/MAX2656 incorporate on-chip internal output matching to 50Ω, eliminating the need for external matching components. A shutdown feature in the MAX2654/MAX2655 reduces the operating current to 0.1μA, eliminating the need for an external supply switch.

The MAX2654 operates in the GPS frequency of 1575MHz with 15.1dB of gain, 1.5dB noise figure, and only consumes 5.8mA. The MAX2655 is designed with high-input IP3 to improve operation in cellular applications where the cellular power amplifier leaks into the GPS receiver. The MAX2656 is designed for PCS phone applications with 13.5dB of gain in high-gain mode and 0.8dB of gain in low-gain mode (selected by a logic control) and 1.9dB noise figure.

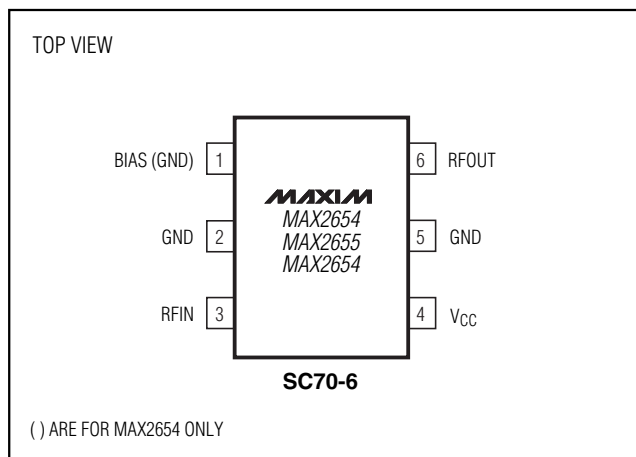
The IP3 of MAX2655/MAX2656 is adjustable by a single external bias resistor (R_{BIAS}), allowing supply current to be optimized for a specific application.

The MAX2654/MAX2655/MAX2656 operate from a +2.7V to +5.5V single supply and are available in the miniature 6-pin SC70 package.

Applications

GPS Receivers
GPS Receivers in Cell Phones
DCS/PCS Cell Phones
Satellite Phones
Wireless Local Loop

Pin Configuration



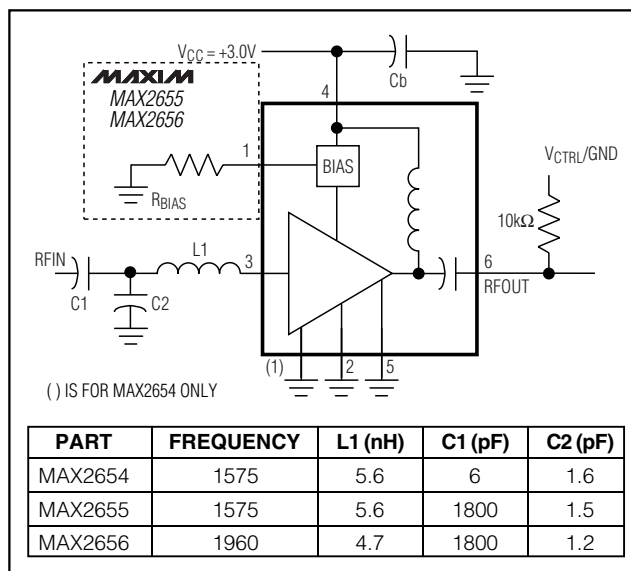
Features

- ◆ Low Noise Figure
 - MAX2654: 1.5dB at 1575MHz
 - MAX2655: 1.45dB at 1575MHz
 - MAX2656: 1.9dB at 1960MHz
- ◆ High Gain
 - MAX2654: 15.1dB at 1575MHz
 - MAX2655: 14.1dB at 1575MHz
 - MAX2656: 13.5dB at 1960MHz
- ◆ 12.7dB Gain Step (MAX2656 only)
- ◆ Integrated 50Ω Output Matching
- ◆ Variable IP3 Set by One Bias Resistor (MAX2655/MAX2656 only)
- ◆ 0.1μA Shutdown Mode (MAX2654/MAX2655 only)
- ◆ +2.7V to +5.5V Single-Supply Operation
- ◆ Ultra-Small 6-Pin SC70 Package

Ordering Information

PART	TEMP. RANGE	PIN-PACKAGE	SOT TOP-MARK
MAX2654EXT-T	-40°C to +85°C	6 SC70-6	AAI
MAX2655EXT-T	-40°C to +85°C	6 SC70-6	AAJ
MAX2656EXT-T	-40°C to +95°C	6 SC70-6	AAK

Typical Operating Circuit



1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

ABSOLUTE MAXIMUM RATINGS

V_{CC} to GND-0.3V to +6V
 RF Input Power+5dBm
 Continuous Power Dissipation (T_A = +70°C)
 6-Pin SC70 (derate 3.1mW/°C above +70°C).....245mW

Operating Temperature Range-40°C to +85°C
 Maximum Junction Temperature+150°C
 Storage Temperature.....-65°C to +150°C
 Lead Temperature (soldering, 10s)+300°C

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

DC ELECTRICAL CHARACTERISTICS

(V_{CC} = +2.7V to +5.5V, R_{BIAS} = 511Ω ±1%, T_A = -40°C to +85°C. No RF signal applied. RFIN is AC coupled and terminated to 50Ω. RFOUT is unconnected. Typical values are at V_{CC} = +3.0V, T_A = +25°C, unless otherwise noted.) (Note 1)

PARAMETER	CONDITIONS		MIN	TYP	MAX	UNIT
Supply Voltage			2.7		5.5	V
Operating Supply Current (MAX2654 only)	V _{RFOUT} = V _{CC}	T _A = +25°C		5.8	8.2	mA
		T _A = -40°C to +85°C			9.2	
	V _{RFOUT} = GND	T _A = +25°C		0.1	1.0	μA
		T _A = -40°C to +85°C			2.1	
Operating Supply Current (MAX2655 only)	V _{RFOUT} = V _{CC} T _A = +25°C	R _{BIAS} = 511Ω ±1%		8.3	10.0	mA
		R _{BIAS} = 698Ω ±1%		5.9		
		R _{BIAS} = 357Ω ±1%		10.1		
		R _{BIAS} = 511Ω ±1%, T _A = -40°C to +85°C			11.1	
	V _{RFOUT} = GND	T _A = +25°C		0.1	1.0	μA
		T _A = -40°C to +85°C			2.2	
Operating Supply Current (MAX2656 only)	V _{RFOUT} = GND T _A = +25°C	R _{BIAS} = 511Ω ±1%		11.5	15.2	mA
		R _{BIAS} = 715Ω ±1%		8.5		
		R _{BIAS} = 511Ω ±1%, T _A = +85°C		13.6		
	V _{RFOUT} = V _{CC}	T _A = +25°C		12.3		mA
		T _A = +85°C		14.6		
Input Logic High at V _{RFOUT}	(Note 2)		2.0			V
Input Logic Low at V _{RFOUT}	(Note 3)				0.6	V
Input Logic High Current at V _{RFOUT} (Note 4)	MAX2654/MAX2655				15.6	μA
	MAX2656				71	
Input Logic Low Current at V _{RFOUT} (Note 5)	MAX2654/MAX2655				1.0	μA
	MAX2656				-24	

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

MAX2654/MAX2655/MAX2656

AC ELECTRICAL CHARACTERISTICS (MAX2654)

(MAX2654 Evaluation Kit, $V_{CC} = +3.0V$, $P_{IN} = -30dBm$, $f_{IN} = 1575MHz$, $V_{RFOUT} = V_{CC}$ through a $10k\Omega$ resistor, $T_A = +25^\circ C$. Typical values are at $V_{CC} = +3.0V$, $T_A = +25^\circ C$, unless otherwise noted.) (Note 6)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Frequency Range (Note 7)		1400		1700	MHz
Gain	(Note 8)	12.7	15.1		dB
Gain Variation Over Temperature	$T_A = -40^\circ C$ to $+85^\circ C$		0.15	1.0	dB
Input Third-Order Intercept Point (Note 9)			-7.2		dBm
Input 1dB Compression Point			-18		dBm
Noise Figure (Note 10)			1.5	1.8	dB
Input Return Loss			9.7		dB
Output Return Loss			8.4		dB
Reverse Isolation			30		dB

AC ELECTRICAL CHARACTERISTICS (MAX2655)

(MAX2655 Evaluation Kit, $V_{CC} = +3.0V$, $P_{IN} = -30dBm$, $f_{IN} = 1575MHz$, $V_{RFOUT} = V_{CC}$ through a $10k\Omega$ resistor, $R_{BIAS} = 511\Omega \pm 1\%$, $T_A = +25^\circ C$. Typical values are at $V_{CC} = +3.0V$, $T_A = +25^\circ C$, unless otherwise noted.) (Note 6)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Frequency Range (Note 7)		1400		1700	MHz
Gain	(Note 8)	12.0	14.1		dB
Gain Variation Over Temperature	$T_A = -40^\circ C$ to $+85^\circ C$		0.6	1.1	dB
Input Third-Order Intercept Point (Note 9)	$R_{BIAS} = 511\Omega \pm 1\%$		+2.8		dBm
	$R_{BIAS} = 698\Omega \pm 1\%$		+2.2		
	$R_{BIAS} = 357\Omega \pm 1\%$		+3.8		
Input 1dB Compression Point			-12.2		dBm
Noise Figure (Note 10)			1.45	1.9	dB
Input Return Loss			16.1		dB
Output Return Loss			15.5		dB
Reverse Isolation			32		dB

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

AC ELECTRICAL CHARACTERISTICS (MAX2656)

(MAX2656 Evaluation Kit, $V_{CC} = +3.0V$, $P_{IN} = -30dBm$, $f_{IN} = 1960MHz$, $V_{RFOUT} = GND$ through a $12k\Omega$ resistor, $R_{BIAS} = 511\Omega \pm 1\%$, $T_A = +25^\circ C$. Typical values are at $V_{CC} = +3.0V$, $T_A = +25^\circ C$, unless otherwise noted.) (Note 6)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Operating Frequency Range (Note 7)		1800		2000	MHz
Gain, High-Gain Mode	(Note 11)	12	13.5		dB
Gain, Low-Gain Mode	(Note 12)		0.8		dB
Gain Variation Over Temperature	$T_A = -40^\circ C$ to $+85^\circ C$		0.3	1.2	dB
Gain Step			12.7		dB
Input Third-Order Intercept Point (Note 13)	$R_{BIAS} = 511\Omega \pm 1\%$		+1.5		dBm
	$R_{BIAS} = 715\Omega \pm 1\%$		-3		
	Low-gain mode (Note 12)		+7.2		
Input 1dB Compression Point	High-gain mode (Note 11)		-7.0		dBm
	Low-gain mode (Note 12)		-1.2		
Noise Figure (Note 10)	High-gain mode (Note 11)		1.9	2.4	dB
	Low-gain mode (Note 12)		10.8		
Input Return Loss	High-gain mode (Note 11)		14.4		dB
	Low-gain mode (Note 12)		19.3		
Output Return Loss	High-gain mode (Note 11)		10.7		dB
	Low-gain mode (Note 12)		7.3		
Reverse Isolation	High-gain mode (Note 11)		28		dB
	Low-gain mode (Note 12)		25		
Gain Step Response Time			3.2		μs

Note 1: Devices are production tested at $T_A = +25^\circ C$. Minimum and maximum values are guaranteed by design and characterization over temperature and supply voltages to ± 6 sigma.

Note 2: Minimum DC voltage through a $10k\Omega$ resistor that sets the MAX2654/MAX2655 to operate in normal mode and MAX2656 in low-gain mode.

Note 3: Maximum DC voltage through a $10k\Omega$ resistor that sets the MAX2654/MAX2655 to operate in shutdown mode and MAX2656 in high-gain mode.

Note 4: DC current required when V_{RFOUT} is connected to V_{CC} through a $10k\Omega$ resistor.

Note 5: DC current required when V_{RFOUT} is connected to GND through a $10k\Omega$ resistor.

Note 6: Guaranteed by design and characterization to ± 3 sigma.

Note 7: The part has been characterized at the specified frequency range. Operation outside of this range is possible, but not guaranteed.

Note 8: Production tested at $T_A = +25^\circ C$.

Note 9: Measured with two input tones, $f_1 = 1570MHz$, $f_2 = 1580MHz$, both at $-30dBm$ per tone.

Note 10: Excludes PC board losses of $0.2dB$ for MAX2654/MAX2655 and $0.25dB$ for MAX2656.

Note 11: High-gain mode is set up by connecting R_{FOUT} to GND through a $12k\Omega$ resistor.

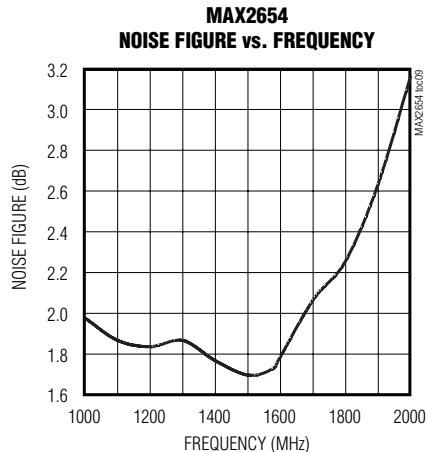
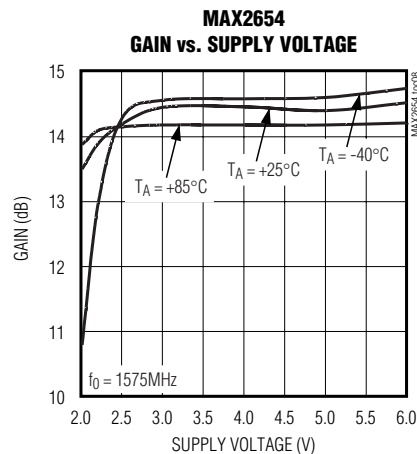
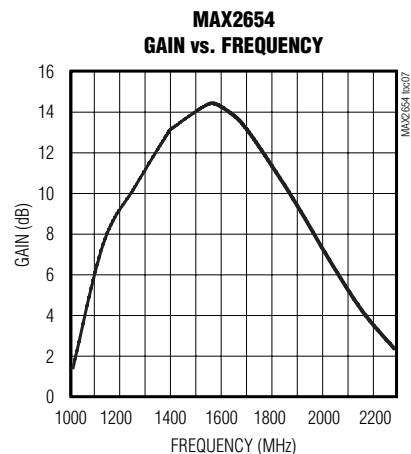
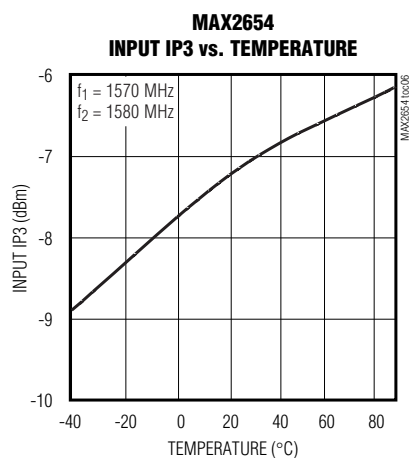
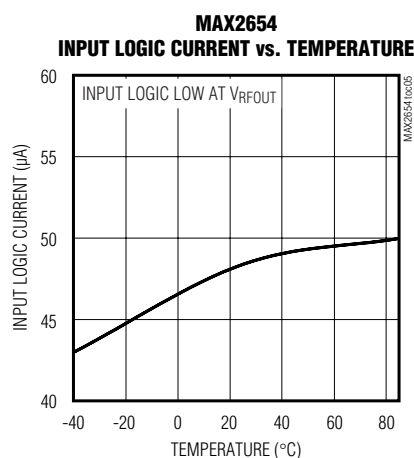
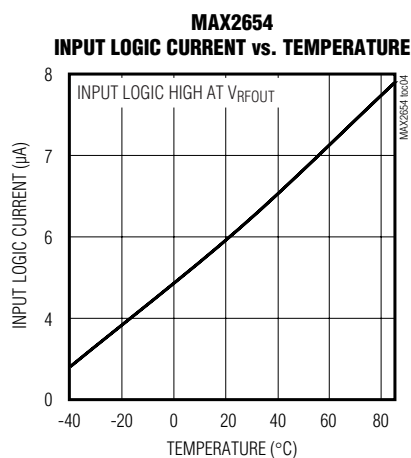
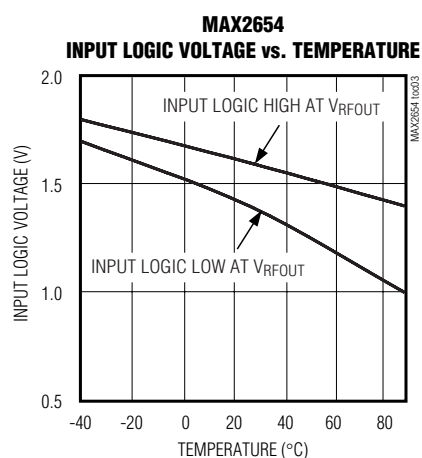
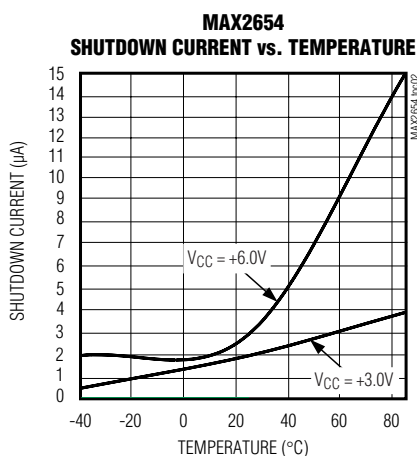
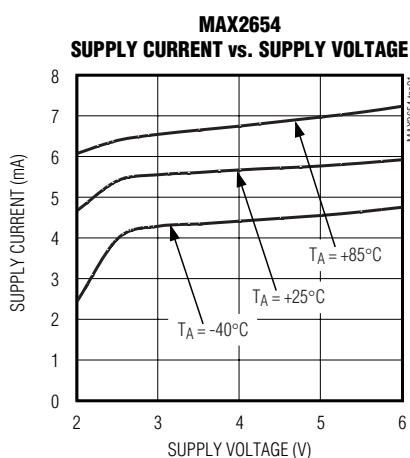
Note 12: Low-gain mode is set up by connecting R_{FOUT} to V_{CC} through a $12k\Omega$ resistor.

Note 13: Measured with two input tones, $f_1 = 1955MHz$, $f_2 = 1965MHz$, both at $-30dBm$ per tone.

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Typical Operating Characteristics

($P_{IN} = -30\text{dBm}$, input and output are terminated to 50Ω , $V_{CC} = +3.0\text{V}$, $T_A = +25^\circ\text{C}$, high-gain, low-gain mode is applicable only to the MAX2656, unless otherwise noted.)

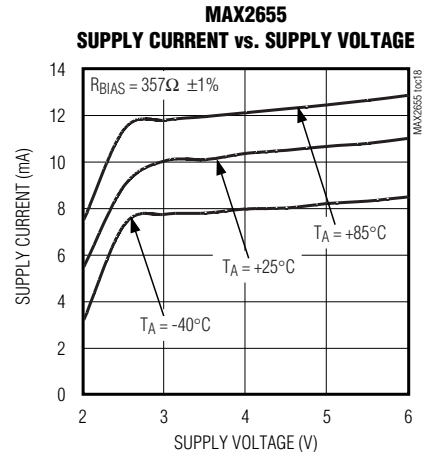
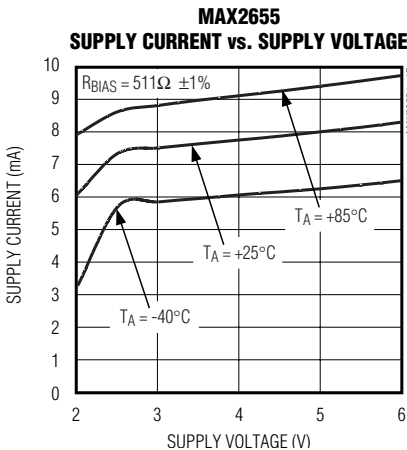
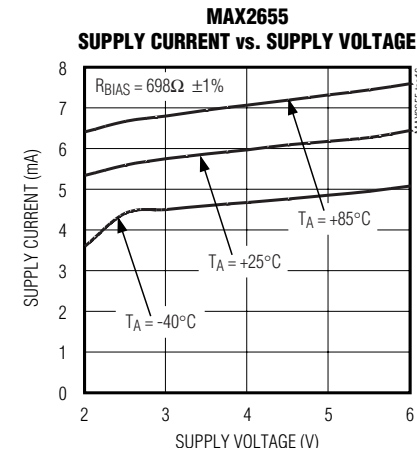
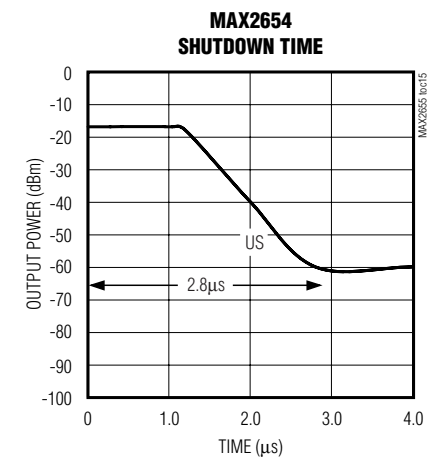
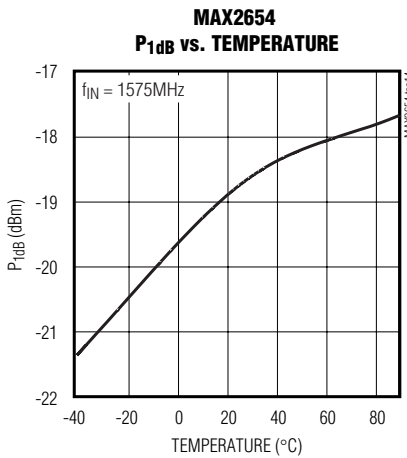
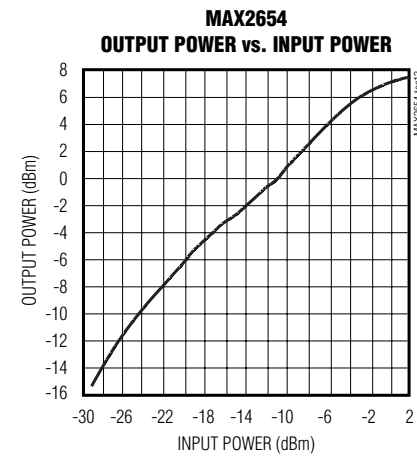
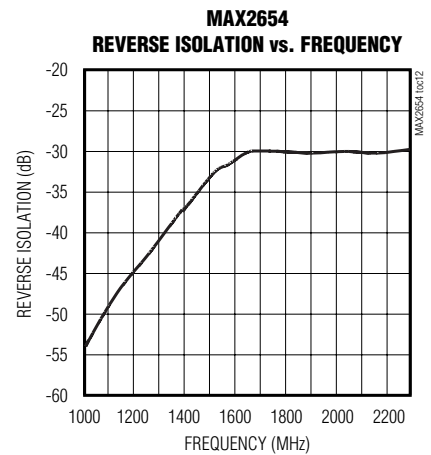
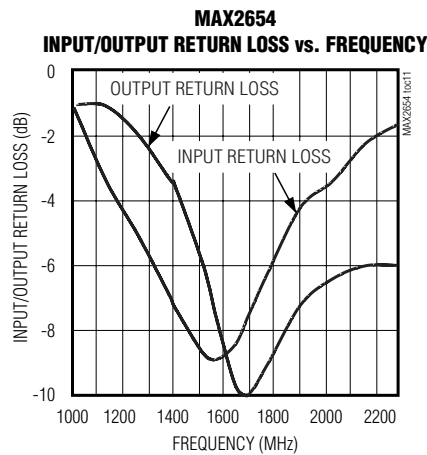
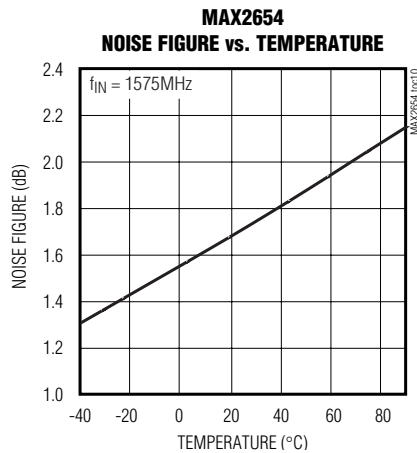


MAX2654/MAX2655/MAX2656

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Typical Operating Characteristics (continued)

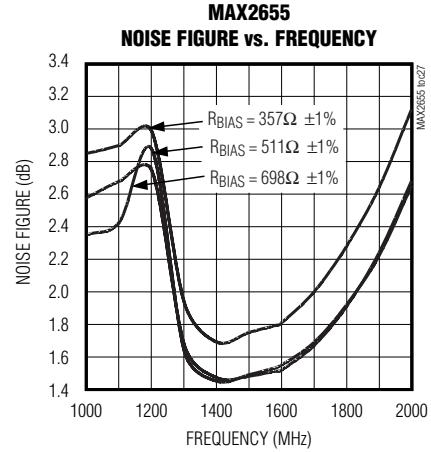
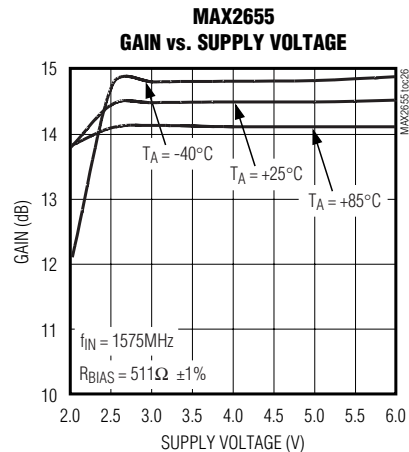
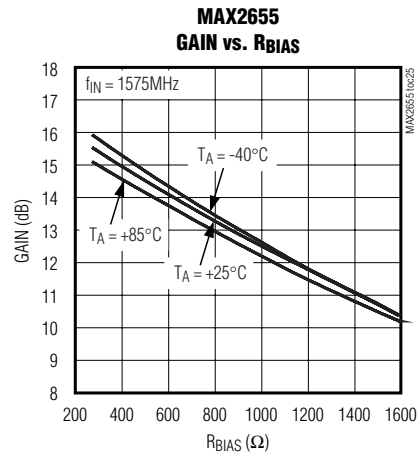
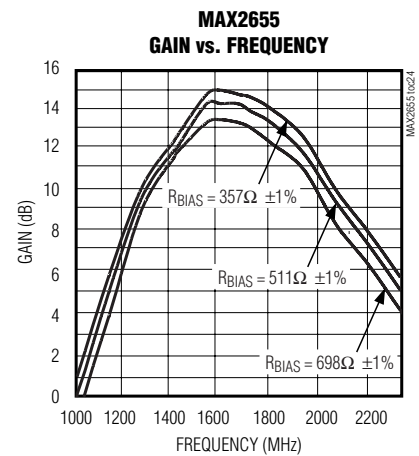
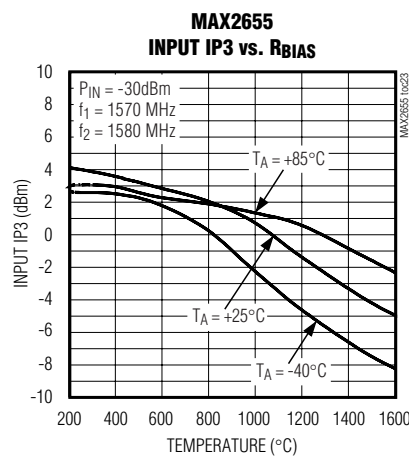
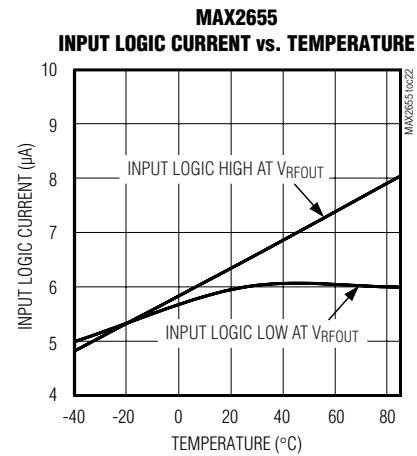
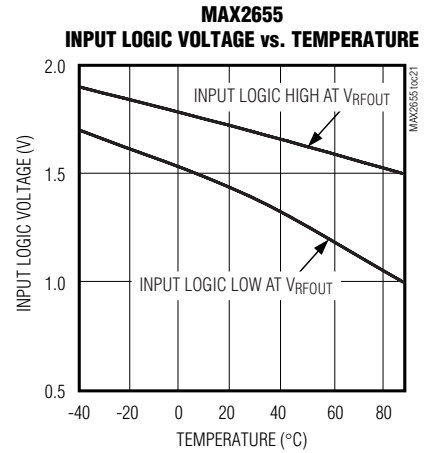
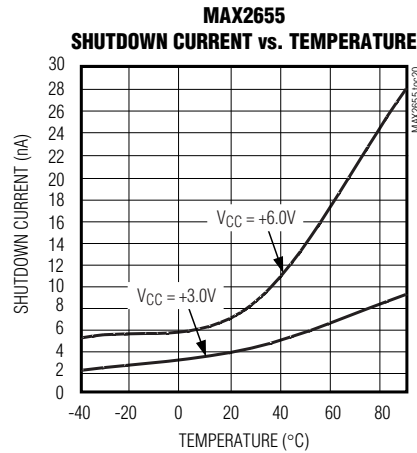
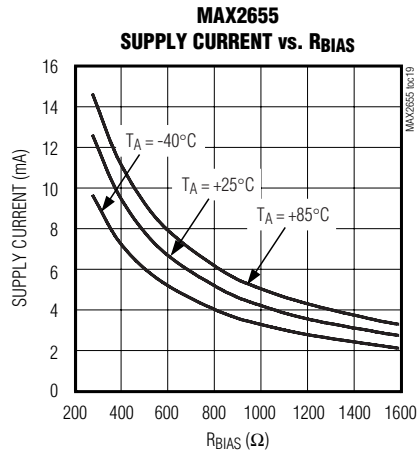
($P_{IN} = -30\text{dBm}$, input and output are terminated to 50Ω , $V_{CC} = +3.0\text{V}$, $T_A = +25^\circ\text{C}$, high-gain, low-gain mode is applicable only to the MAX2656, unless otherwise noted.)



1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Typical Operating Characteristics (continued)

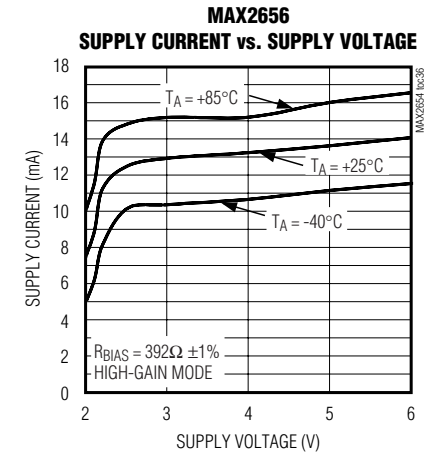
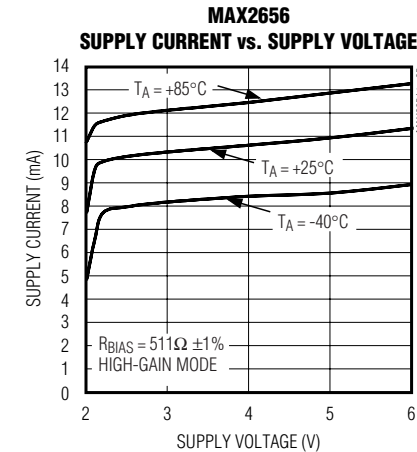
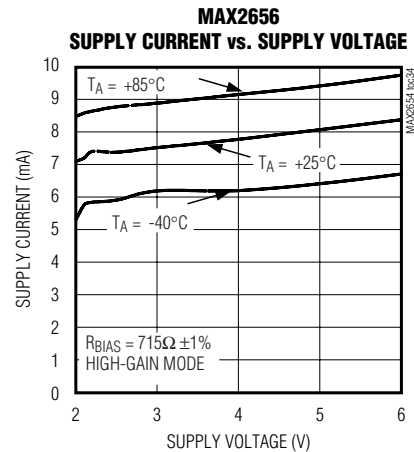
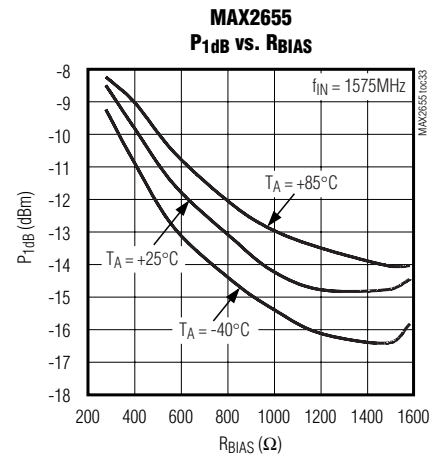
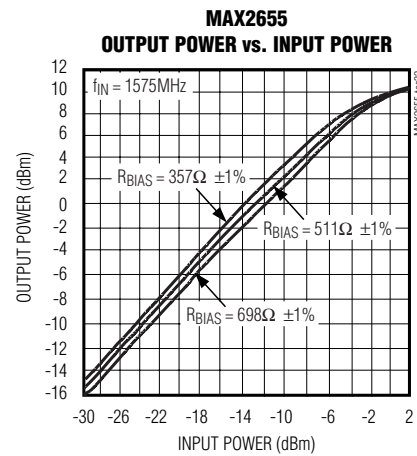
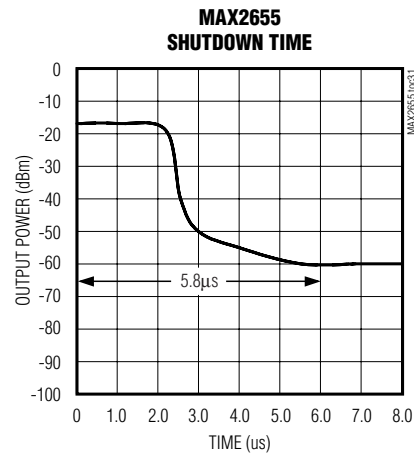
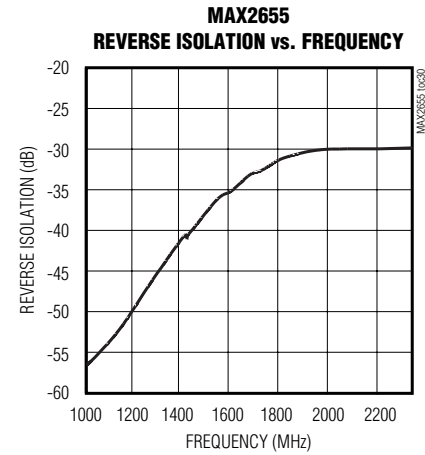
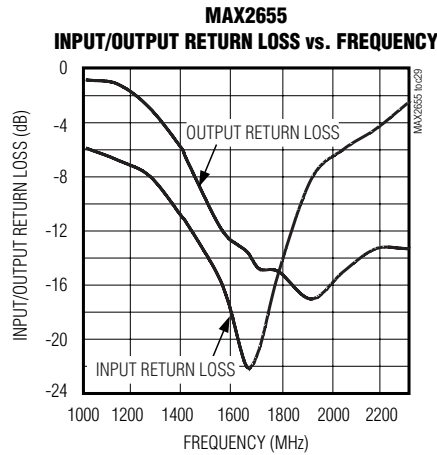
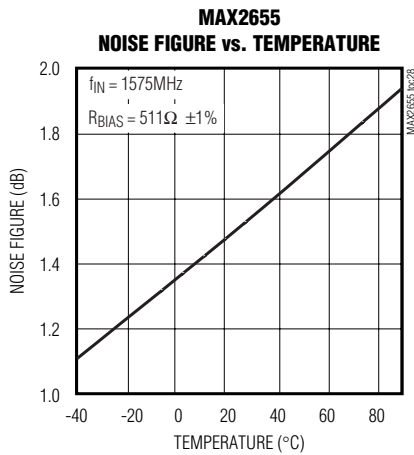
($P_{IN} = -30\text{dBm}$, input and output are terminated to 50Ω , $V_{CC} = +3.0\text{V}$, $T_A = +25^\circ\text{C}$, high-gain, low-gain mode is applicable only to the MAX2656, unless otherwise noted.)



1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Typical Operating Characteristics (continued)

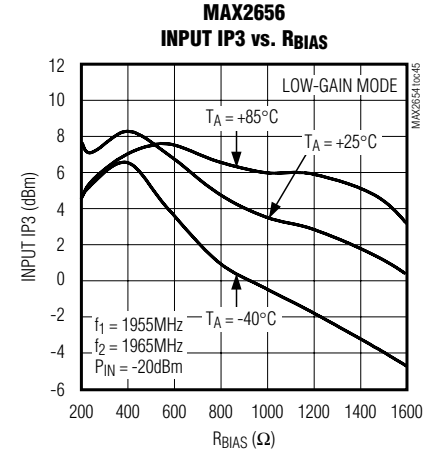
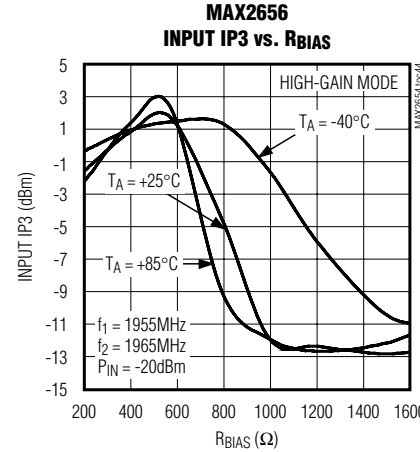
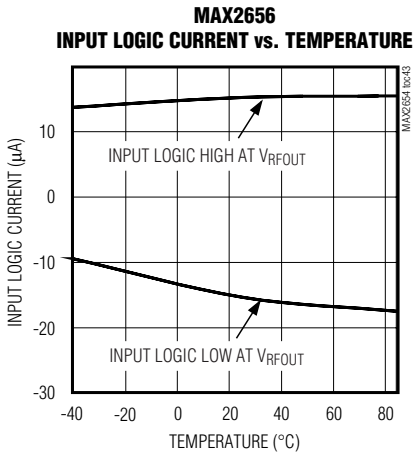
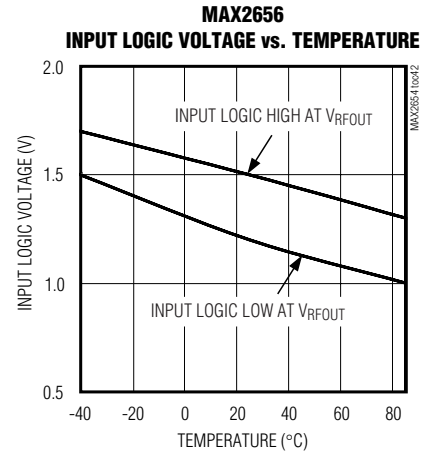
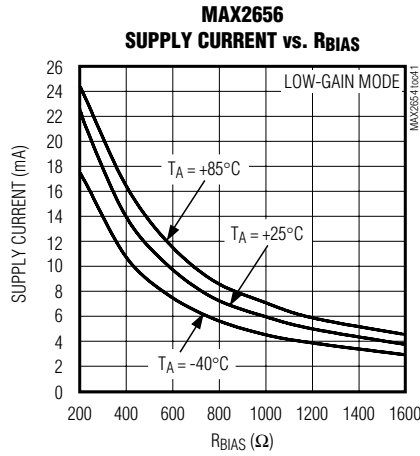
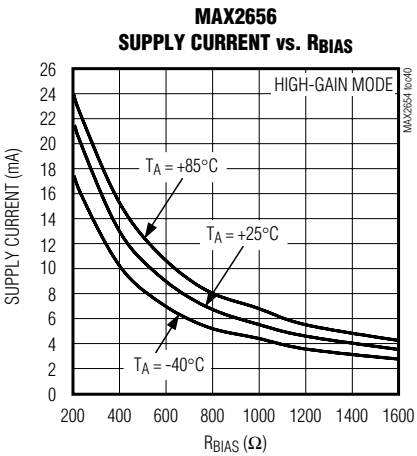
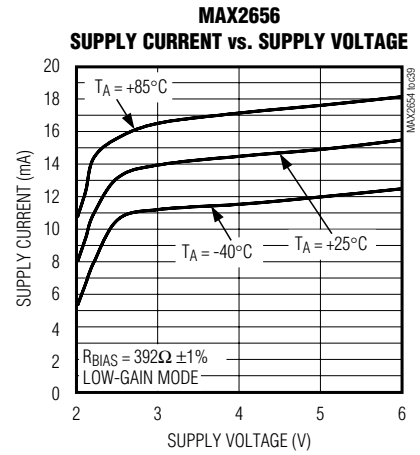
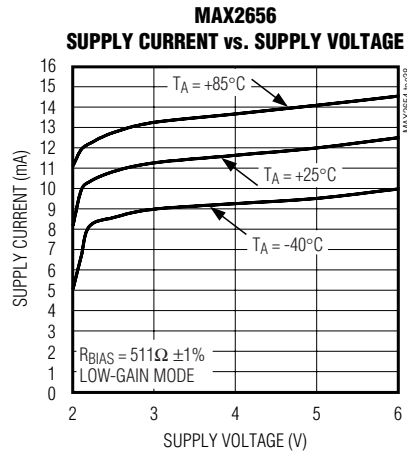
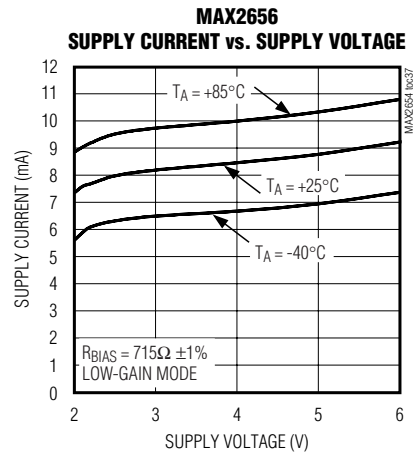
($P_{IN} = -30\text{dBm}$, input and output are terminated to 50Ω , $V_{CC} = +3.0\text{V}$, $T_A = +25^\circ\text{C}$, high-gain, low-gain mode is applicable only to the MAX2656, unless otherwise noted.)



1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Typical Operating Characteristics (continued)

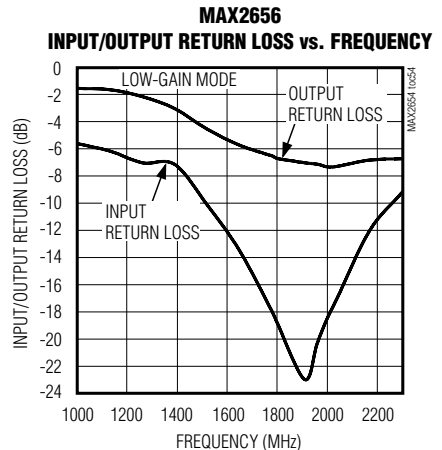
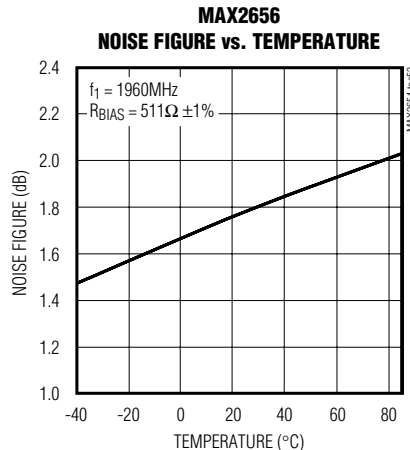
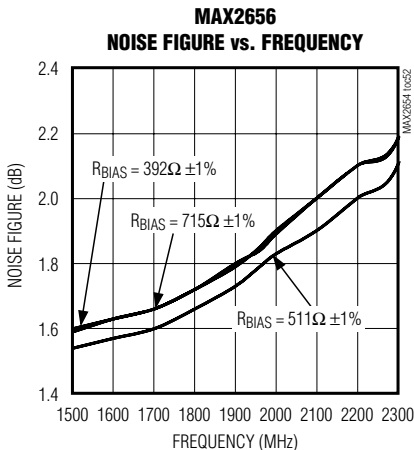
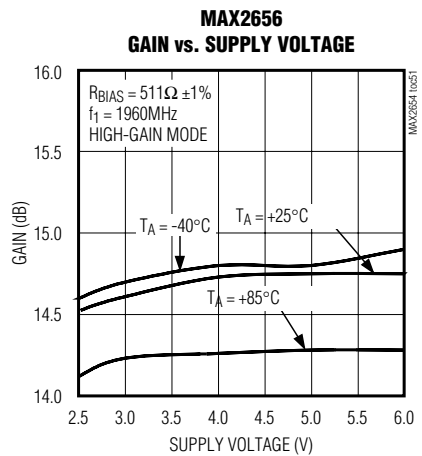
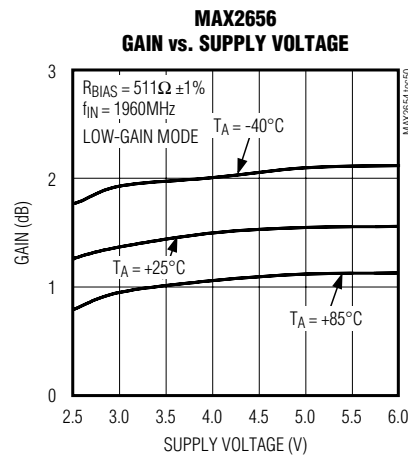
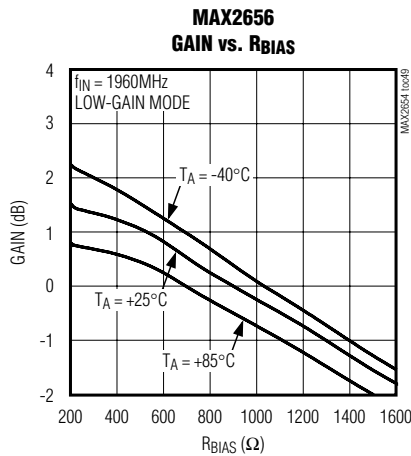
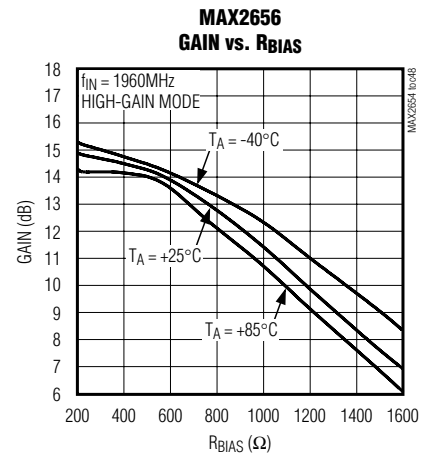
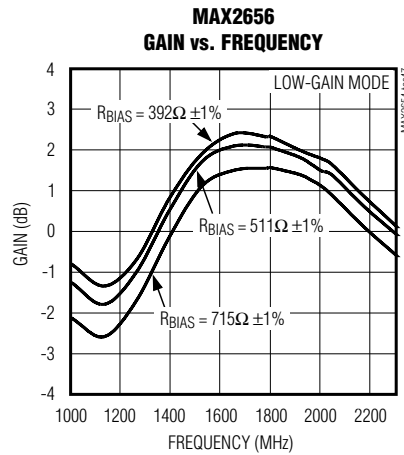
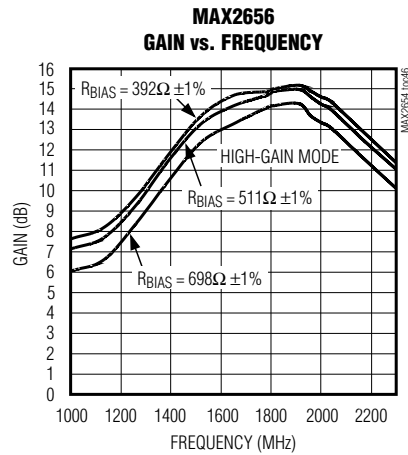
($P_{IN} = -30\text{dBm}$, input and output are terminated to 50Ω , $V_{CC} = +3.0\text{V}$, $T_A = +25^\circ\text{C}$, high-gain, low-gain mode is applicable only to the MAX2656, unless otherwise noted.)



1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Typical Operating Characteristics (continued)

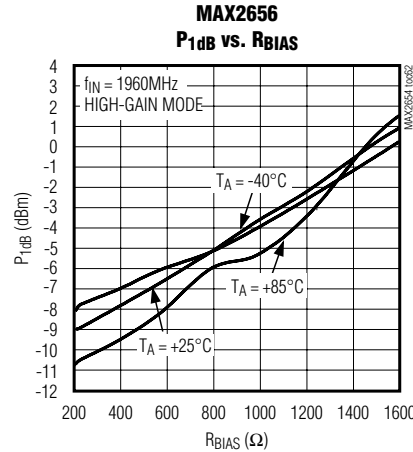
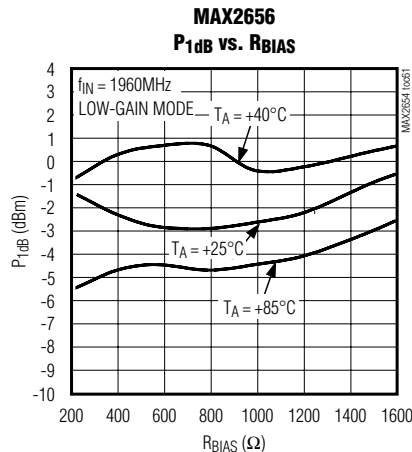
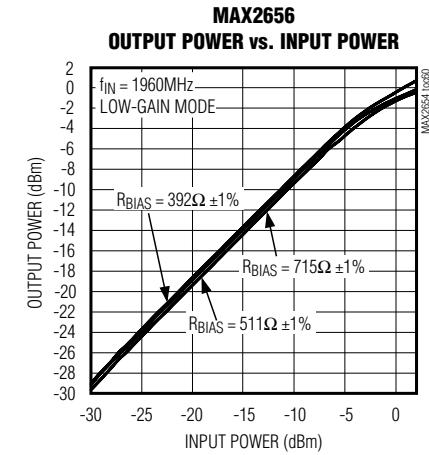
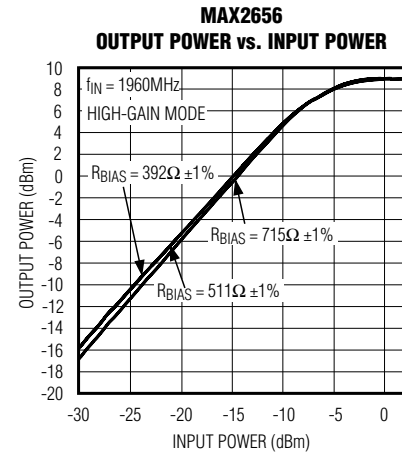
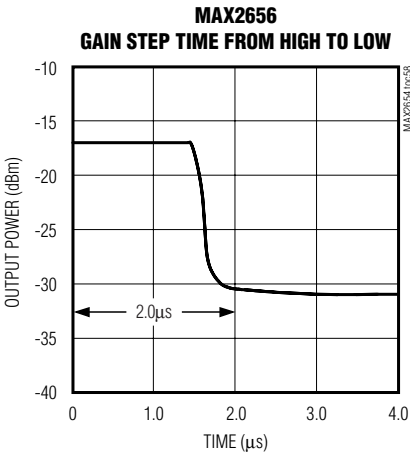
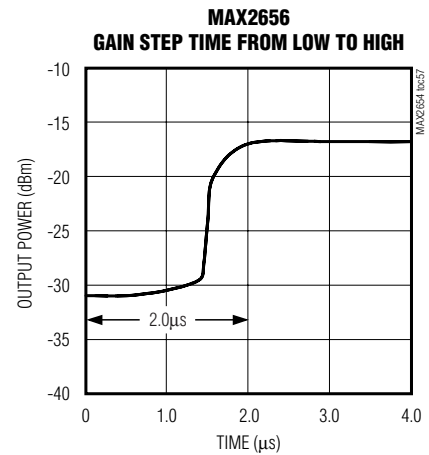
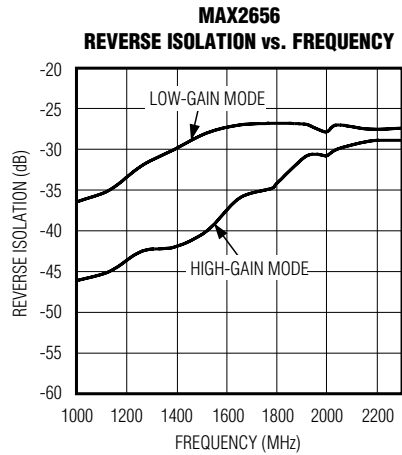
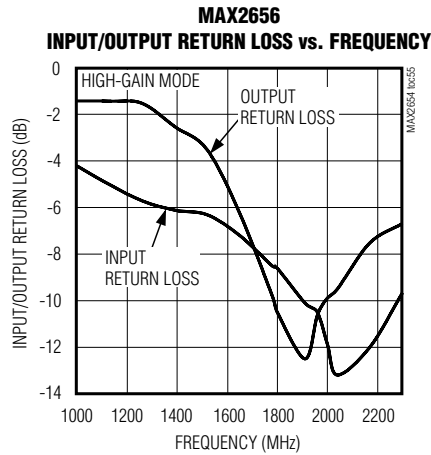
($P_{IN} = -30\text{dBm}$, input and output are terminated to 50Ω , $V_{CC} = +3.0\text{V}$, $T_A = +25^\circ\text{C}$, high-gain, low-gain mode is applicable only to the MAX2656, unless otherwise noted.)



1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Typical Operating Characteristics (continued)

($P_{IN} = -30\text{dBm}$, input and output are terminated to 50Ω , $V_{CC} = +3.0\text{V}$, $T_A = +25^\circ\text{C}$, high-gain, low-gain mode is applicable only to the MAX2656, unless otherwise noted.)



1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Pin Description

PIN		NAME	DESCRIPTION
MAX2654	MAX2655/ MAX2656		
1	—	GND	Ground. Connect to the PC board ground plane through a 0.017in width by 0.035in length line.
2, 5	2, 5	GND	Ground. Connect to the PC board ground plane with as low an inductance path as possible.
—	1	BIAS	Bias Control. Connect a resistor R_{BIAS} from BIAS to GND. R_{BIAS} sets IP3 and supply current.
3	3	RFIN	Amplifier Input. Requires a DC blocking capacitor and external matching components.
4	4	VCC	Supply Voltage. Bypass to ground with an appropriate capacitor as close to the IC as possible. Refer to MAX2654/MAX2655/MAX2656 EV kits for capacitor values.
6	6	RFOUT	RF Output. Incorporates an internal DC blocking capacitor. RFOUT is internally matched to 50 Ω . DC bias on this pin selects gain-mode (MAX2656) or shutdown mode (MAX2654/MAX2655) (see <i>Applications Information</i>).

Detailed Description

The MAX2654/MAX2655/MAX2656 are low-noise amplifiers designed for applications in GPS receivers, satellite and PCS phones. The MAX2655/MAX2656 feature variable IP3s, adjusted by a single external bias resistor. Another feature of the MAX2654/MAX2655 is a power shutdown control mode, eliminating the need for an external supply switch. The MAX2656 features a high- and low-gain control mode selected by an external logic control.

Input and Output Ports

The MAX2654/MAX2655/MAX2656 incorporate on-chip matching networks to 50 Ω at the output ports, eliminating the need for external matching components. (For MAX2655, a shunt inductor is recommended for best output return loss. Refer to the MAX2655 EV kit schematic.) The MAX2654/MAX2655/MAX2656 require simple matching networks at the input ports. The values of these matching components are recommended in the *Typical Operating Circuit*.

Variable IP3

The IP3 of MAX2655 and MAX2656 is adjusted through an external resistor (R_{BIAS}). Tables 1 and 2 summarize the values of R_{BIAS} for different IP3s for MAX2655 and MAX2656.

Gain-Step Control (MAX2656)

The DC bias voltage at RFOUT of the MAX2656 serves as a gain-step control input. When the applied DC volt-

Table 1. R_{BIAS} vs. IP3 for MAX2655

R_{BIAS} (Ω)	IP3 (dBm)	I_{CC} (mA)
698	+2.2	5.8
357	+3.8	10.1

Table 2. R_{BIAS} vs. IP3 for MAX2656

R_{BIAS} (Ω)	IP3 (dBm)	I_{CC} (mA)
715	-3.0	8.5
511	+1.5	11.5

age at RFOUT through a 10k Ω resistor is less than +0.6V, the device is in high-gain mode. When the applied DC voltage is greater than +2.0V, the device gain is attenuated by 13dB. A standard logic output can be applied as shown in the *Typical Operating Circuit*.

Shutdown-Enable (MAX2654/MAX2655)

The DC bias voltage at RFOUT of the MAX2654/MAX2655 serves as a shutdown enable input. When the applied DC voltage at RFOUT through a 10k Ω resistor is less than +0.6V, the device is in shutdown mode. When the DC voltage is greater than +2.0V, the device is enabled.

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Applications Information

Input Matching

For optimum performance, input matching is required. The MAX2654/MAX2655/MAX2656 require a simple LC matching network. The *Typical Operating Circuit* shows the recommended input matching networks. These values are optimized for best simultaneous gain, noise figure, and return loss performance. To aid in the design of the matching network for other frequencies, Tables 3 to 12 list typical device S parameters for various biases, and Tables 13 to 19 list typical device noise parameters.

Layout Issues

A properly designed PC board is essential to any RF-microwave circuit. Use controlled impedance lines on all high-frequency inputs and outputs. Bypass V_{CC} with decoupling capacitors located close to the device. For long V_{CC} lines, it may be necessary to add addi-

tional decoupling capacitors. Locate these additional capacitors further away from the device package. Proper grounding of the GND pins is essential. If the PC board uses a topside RF ground, connect it directly to all GND pins. For a board where the ground plane is not on the component layer, the best technique is to connect the GND pins to the board with a multiple vias close to the package.

For MAX2654, connect Pin1 to the PC board ground plane through a 0.017in width by 0.035in length line.

Chip Information

TRANSISTOR COUNT: 135
(Same for MAX2654, MAX2655, MAX2656)

Table 3. MAX2654 Typical Scattering Parameters, $V_{CC} = +3.0V$, $T_A = +25^{\circ}C$

FREQ. (MHz)	S11 MAG	S11 PHASE (Degrees)	S21 MAG	S21 PHASE (Degrees)	S12 MAG	S12 PHASE (Degrees)	S22 MAG	S22 PHASE (Degrees)
1000	0.89385	-74.912	1.2528	-82.605	0.002753	170.8	0.90701	-47.453
1100	0.80001	-97.884	2.0362	-104.54	0.002910	-130.71	0.878	-54.904
1200	0.73938	-104.55	2.5475	-117.79	0.005752	-125.12	0.83831	-63.446
1300	0.72262	-109.59	3.1159	-132.32	0.008972	-135.01	0.77334	-72.44
1400	0.7281	-114.65	3.4788	-146.86	0.01348	-124.91	0.67495	-82.018
1500	0.73978	-120.58	3.9157	-164.15	0.016427	-137.27	0.55261	-89.081
1575	0.74196	-119.99	3.8846	-172.96	0.020271	-137.19	0.46295	-86.402
1600	0.74377	-125.96	3.8651	179.29	0.021794	-143.89	0.43268	-89.301
1620	0.74343	-122.43	3.8653	-179.83	0.022595	-141.19	0.41893	-84.53
1700	0.74872	-131.39	3.7082	163.93	0.025757	-151.95	0.37494	-83.039
1800	0.73694	-136.12	3.2889	151.43	0.028723	-159.76	0.37623	-75.376
1900	0.72495	-140.5	2.8909	144.75	0.032248	-166.26	0.39672	-74.117
2000	0.71031	-143.68	2.5973	137.69	0.035033	-172.96	0.41935	-76.724
2100	0.70624	-145.83	2.3705	134.96	0.040913	-175.76	0.41706	-79.974
2200	0.70128	-148.39	2.1802	132.27	0.042424	-177.68	0.42505	-82.499
2300	0.68799	-150.21	2.1075	128.83	0.04447	178.79	0.41968	-85.106

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Table 4. MAX2655 Typical Scattering Parameters at $R_{BIAS} = 511\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQ. (MHz)	S11 MAG	S11 PHASE (Degrees)	S21 MAG	S21 PHASE (Degrees)	S12 MAG	S12 PHASE (Degrees)	S22 MAG	S22 PHASE (Degrees)
1000	0.59723	-79.498	0.91247	-34.897	0.001646	-99.959	0.88117	119.82
1100	0.59068	-83.632	1.5336	-45.588	0.001988	-51.718	0.83976	103.15
1200	0.5904	-87.65	2.3117	-61.383	0.004163	-82.928	0.76535	81.178
1300	0.58711	-92.428	3.2473	-83.97	0.009779	-84.17	0.6117	52.977
1400	0.57106	-94.34	3.5861	-101.87	0.011201	-86.383	0.50664	20.5
1500	0.57768	-98.258	4.3458	-123.9	0.014933	-97.965	0.34119	-28.685
1575	0.5781	-103.91	4.4302	-144.19	0.019118	-105.2	0.25507	-71.998
1600	0.57857	-104.48	4.4008	-145.38	0.021184	-104.74	0.2367	-80.898
1620	0.57926	-105.5	4.4007	-152.89	0.021729	-109.4	0.22368	-95.033
1700	0.58239	-105.06	4.2803	-163.13	0.025452	-113.29	0.18985	-127.47
1800	0.58188	-108.51	3.9687	-177.21	0.033166	-119.88	0.14956	-160.12
1900	0.58208	-112.6	3.6829	171.11	0.040325	-130.27	0.10041	176.36
2000	0.57675	-117.04	3.3552	161.3	0.04621	-137.07	0.051383	164.53
2100	0.57434	-121.08	3.0813	153.88	0.05145	-145.65	0.012452	-134.07
2200	0.56774	-125.61	2.8336	148.07	0.057267	-149.16	0.047711	-71.583
2300	0.55458	-130.74	2.6639	143.06	0.065198	-162.21	0.08445	-72.804

Table 5. MAX2655 Typical Scattering Parameters at $R_{BIAS} = 698\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQ. (MHz)	S11 MAG	S11 PHASE (Degrees)	S21 MAG	S21 PHASE (Degrees)	S12 MAG	S12 PHASE (Degrees)	S22 MAG	S22 PHASE (Degrees)
1000	0.62911	-82.450	0.7970	-31.488	0.003002	-104.85	0.88535	119.82
1100	0.62089	-87.005	1.3504	-42.208	0.002523	-50.324	0.84118	103.08
1200	0.61345	-91.280	2.0452	-58.035	0.006107	-69.38	0.76587	80.942
1300	0.60597	-95.939	2.909	-80.743	0.007511	-83.194	0.61307	52.718
1400	0.58802	-98.286	3.2138	-99.165	0.009273	-87.97	0.50978	20.058
1500	0.59164	-102.20	3.9422	-121.36	0.015381	-93.01	0.34549	-30.318
1575	0.5791	-103.91	4.0102	-144.19	0.019118	-105.2	0.25507	-71.998
1600	0.58714	-105.34	3.9948	-143.14	0.019579	-106.65	0.24268	-82.625
1620	0.57926	-105.5	3.9947	-152.89	0.021729	-109.4	0.22368	-95.033
1700	0.58676	-108.86	3.9023	-161.16	0.024241	-112.37	0.19587	-128.98
1800	0.5838	-111.82	3.6272	-175.31	0.03086	-123.02	0.15783	-162.20
1900	0.58607	-116.03	3.3953	172.74	0.035557	-125.05	0.11288	173.18
2000	0.57619	-120.26	3.0665	162.89	0.044106	-139.82	0.062055	157.77
2100	0.57242	-124.54	2.8205	155.08	0.049281	-144.9	0.010666	179.03
2200	0.56566	-129.00	2.6196	148.86	0.05691	-150.75	0.035549	-70.369
2300	0.54936	-133.16	2.4634	144.01	0.062178	-160.01	0.072149	-70.836

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

MAX2654/MAX2655/MAX2656

Table 6. MAX2655 Typical Scattering Parameters at $R_{BIAS} = 357\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQ. (MHz)	S11 MAG	S11 PHASE (Degrees)	S21 MAG	S21 PHASE (Degrees)	S12 MAG	S12 PHASE (Degrees)	S22 MAG	S22 PHASE (Degrees)
1000	0.56876	-75.638	1.0228	-38.37	0.001432	-136.5	0.8844	119.99
1100	0.57354	-79.615	1.7113	-48.788	0.002037	-47.677	0.83949	103.13
1200	0.5752	-83.616	2.5583	-64.464	0.003745	-50.552	0.76395	81.134
1300	0.57611	-88.862	3.5894	-86.844	0.009650	-90.04	0.61396	53.171
1400	0.56217	-90.251	3.9229	-104.69	0.010893	-89.806	0.51183	21.274
1500	0.57443	-94.617	4.739	-126.43	0.016353	-96.328	0.33751	-27.732
1575	0.5791	-103.91	4.4302	-144.19	0.019118	-105.2	0.25507	-71.998
1600	0.57728	-97.916	4.7639	-148.03	0.021107	-101.47	0.23015	-78.116
1620	0.57926	-105.5	4.4247	-152.89	0.021729	-109.4	0.22368	-95.033
1700	0.58263	-101.81	4.6153	-165.15	0.027176	-110.56	0.18109	-124.28
1800	0.58172	-104.76	4.2503	-179.13	0.03404	-122.93	0.14227	-156.86
1900	0.59021	-109.2	3.9613	169.66	0.038478	-129.77	0.093038	179.75
2000	0.58544	-113.89	3.5876	159.82	0.047157	-138.47	0.042695	170.54
2100	0.57845	-118.56	3.2684	152.7	0.051896	-148.68	0.01988	-102.15
2200	0.56916	-123.03	3.0232	147.26	0.059345	-152.11	0.056446	-73.103
2300	0.55644	-128.01	2.8345	142.19	0.068672	-160.17	0.089954	-74.995

Table 7. MAX2656 Typical Scattering Parameters, High-Gain Mode, at $R_{BIAS} = 511\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQ. (MHz)	S11 MAG	S11 PHASE (Degrees)	S21 MAG	S21 PHASE (Degrees)	S12 MAG	S12 PHASE (Degrees)	S22 MAG	S22 PHASE (Degrees)
1000	0.63142	-73.825	2.4002	-129.06	0.004147	-162.52	0.87308	-41.315
1100	0.59051	-78.03	2.3671	-134.38	0.006135	-171.89	0.85424	-46.229
1200	0.56752	-81.06	2.6326	-135.42	0.007461	-167.15	0.83104	-52.424
1300	0.55826	-83.912	3.1307	-140.07	0.007440	-164.59	0.79537	-59.678
1400	0.56002	-87.34	3.5568	-147.38	0.007593	-150.02	0.73564	-67.835
1500	0.57586	-91.116	4.2531	-158.4	0.010095	-155.76	0.65006	-75.902
1600	0.5864	-96.435	4.4809	-171.35	0.014417	-152.43	0.54267	-81.344
1700	0.58857	-101.08	4.6783	177.69	0.016613	-151.45	0.45374	-84.916
1800	0.59955	-104.86	4.7700	166.1	0.020609	-148.24	0.35275	-85.393
1900	0.61044	-111.2	4.7424	154.87	0.027411	-153.76	0.27393	-74.748
1960	0.61106	-114.86	4.4121	147.65	0.030933	-160.6	0.2662	-65.175
2000	0.60275	-117.39	4.4603	142.14	0.031396	-160.69	0.27338	-58.225
2100	0.5816	-122.38	3.9604	134.23	0.038737	-171.08	0.31122	-52.379
2200	0.56282	-126.82	3.6073	129.18	0.040865	-174.7	0.34011	-51.974
2300	0.53861	-129.73	3.4632	125.01	0.046903	177.28	0.3558	-51.606

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Table 8. MAX2656 Typical Scattering Parameters, High-Gain Mode, at $R_{BIAS} = 715\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQ. (MHz)	S11 MAG	S11 PHASE (Degrees)	S21 MAG	S21 PHASE (Degrees)	S12 MAG	S12 PHASE (Degrees)	S22 MAG	S22 PHASE (Degrees)
1000	0.65417	-76.577	2.0972	-126.37	0.004827	-157.3	0.87164	-41.347
1100	0.61223	-81.359	2.0662	-132.14	0.007646	-176.69	0.85387	-46.243
1200	0.58803	-85.416	2.3137	-133.26	0.006931	176.19	0.83157	-52.222
1300	0.57284	-88.662	2.7587	-138.05	0.008049	-179.37	0.79484	-59.365
1400	0.57177	-92.515	3.1439	-145.48	0.009242	-170.62	0.7368	-67.732
1500	0.57713	-96.934	3.7542	-157.21	0.01181	-160.49	0.65204	-75.241
1600	0.56974	-101.32	3.8899	-168.44	0.013005	-171.4	0.56417	-80.603
1700	0.58537	-105.27	4.2754	179.89	0.015009	-169.91	0.45972	-86.097
1800	0.58777	-109.47	4.3029	167.18	0.019254	-164.09	0.35674	-85.284
1900	0.59151	-115.49	4.2368	156.26	0.024689	-158.71	0.28461	-75.109
1960	0.5879	-118.67	4.1202	149.05	0.029772	-167.86	0.27526	-66.353
2000	0.58103	-120.91	4.0174	143.56	0.03169	-172.44	0.28076	-60.399
2100	0.56299	-125.3	3.5892	135.43	0.036496	-176.25	0.3117	-54.613
2200	0.5465	-129.47	3.2602	130.49	0.038616	176.92	0.33593	-53.21
2300	0.52688	-132.31	3.1497	126.01	0.044776	169.97	0.353	-52.387

Table 9. MAX2656 Typical Scattering Parameters, High-Gain Mode, at $R_{BIAS} = 392\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQ. (MHz)	S11 MAG	S11 PHASE (Degrees)	S21 MAG	S21 PHASE (Degrees)	S12 MAG	S12 PHASE (Degrees)	S22 MAG	S22 PHASE (Degrees)
1000	0.61065	-72.856	2.5553	-131.54	0.006128	-171.3	0.87014	-41.226
1100	0.57072	-76.554	2.5192	-136.87	0.005300	-159.81	0.85598	-46.123
1200	0.55098	-79.353	2.8016	-137.78	0.006555	-160.42	0.83153	-52.211
1300	0.54175	-81.962	3.318	-142.29	0.004925	-157.18	0.79761	-59.51
1400	0.54805	-84.946	3.7332	-149.1	0.006003	-166.66	0.73996	-67.659
1500	0.56671	-88.907	4.4738	-160.26	0.011463	-150.77	0.65201	-76.141
1600	0.58825	-93.587	4.7762	-172.86	0.013282	-145.52	0.53975	-82.014
1700	0.59684	-100.54	4.9302	173.74	0.018755	-145.57	0.43867	-82.87
1800	0.58878	-104.67	4.8003	164.29	0.021457	-151.64	0.37327	-83.035
1900	0.5977	-109.52	4.8936	154.68	0.027487	-153.88	0.28342	-76.068
1960	0.60772	-112.82	4.5669	146.91	0.03057	-160.36	0.26886	-66.794
2000	0.59892	-115.77	4.654	141.44	0.033049	-161.14	0.27694	-59.226
2100	0.58053	-121.04	4.1382	133.34	0.03994	-167.55	0.31279	-52.821
2200	0.56181	-125.41	3.7644	128.16	0.04132	-175.02	0.34147	-52.217
2300	0.54051	-128.62	3.6083	123.89	0.046646	178.72	0.35893	-51.898

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

MAX2654/MAX2655/MAX2656

Table 10. MAX2656 Typical Scattering Parameters, Low-Gain Mode, at $R_{BIAS} = 511\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQ. (MHz)	S11 MAG	S11 PHASE (Degrees)	S21 MAG	S21 PHASE (Degrees)	S12 MAG	S12 PHASE (Degrees)	S22 MAG	S22 PHASE (Degrees)
1000	0.56358	-88.715	0.84051	-149.67	0.015297	175.13	0.86855	-40.123
1100	0.52923	-92.674	0.75901	-155.8	0.018278	170.71	0.84663	-44.76
1200	0.51343	-96.676	0.778	-154.98	0.021931	171.79	0.81629	-50.425
1300	0.5009	-101.52	0.87339	-157.54	0.027437	166.27	0.77769	-56.827
1400	0.49349	-106.63	0.94312	-162.15	0.032736	164.54	0.71373	-63.478
1500	0.4779	-111.82	1.0788	-170.23	0.040246	156.47	0.63017	-68.924
1600	0.46179	-115.8	1.0969	-179.61	0.046081	148.9	0.54487	-70.976
1700	0.45273	-118.92	1.1205	171.9	0.048446	143.14	0.48753	-71.609
1800	0.44199	-121.58	1.0946	163.88	0.050701	135.71	0.43529	-69.697
1900	0.4371	-124.48	1.0608	159.43	0.050819	133.61	0.40827	-65.547
1960	0.4417	-125.66	1.0466	155.48	0.053261	128.84	0.3992	-64.245
2000	0.43465	-127.43	1.0571	152.57	0.051961	126.55	0.39624	-63.625
2100	0.42839	-129.89	1.0048	147.54	0.053704	124.59	0.40737	-59.963
2200	0.42111	-132.42	0.96251	144.32	0.055581	121.96	0.42112	-59.523
2300	0.41587	-134.52	0.98483	140.56	0.06043	122.24	0.4279	-59.786

Table 11. MAX2656 Typical Scattering Parameters, Low-Gain Mode, at $R_{BIAS} = 715\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQ. (MHz)	S11 MAG	S11 PHASE (Degrees)	S21 MAG	S21 PHASE (Degrees)	S12 MAG	S12 PHASE (Degrees)	S22 MAG	S22 PHASE (Degrees)
1000	0.6056	-88.657	0.75982	-146.06	0.015889	178.42	0.86446	-40.165
1100	0.5702	-93.113	0.68752	-152.25	0.017232	171.4	0.84454	-44.793
1200	0.55247	-97.548	0.70776	-151.47	0.021948	170.96	0.81898	-50.576
1300	0.53571	-102.64	0.80000	-153.99	0.025791	167.82	0.77568	-56.997
1400	0.52488	-107.75	0.86782	-159.15	0.031885	165.39	0.71084	-63.637
1500	0.5104	-113.16	0.99703	-167.72	0.040072	153.19	0.6273	-68.898
1600	0.49122	-116.88	1.0021	-177.05	0.043433	146.52	0.55193	-71.01
1700	0.4807	-120.74	1.0431	174.8	0.045797	137.82	0.47844	-73.067
1800	0.46643	-123.25	1.0207	166.35	0.048667	132.14	0.42493	-69.56
1900	0.46269	-126.4	0.99176	161.64	0.048765	128.39	0.40306	-65.393
1960	0.47755	-125.65	0.92385	157.45	0.05108	127.14	0.38593	-64.729
2000	0.45517	-129.51	0.98886	154.71	0.051638	122.9	0.39072	-63.064
2100	0.44712	-131.82	0.93888	149.53	0.052747	121.07	0.39978	-59.492
2200	0.44352	-134.29	0.90581	146.34	0.052671	122.67	0.41386	-59.001
2300	0.43357	-136.57	0.92722	142.19	0.057307	116.37	0.42251	-59.433

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Table 12. MAX2656 Typical Scattering Parameters, Low-Gain Mode, at $R_{BIAS} = 392\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQ. (MHz)	S11 MAG	S11 PHASE (Degrees)	S21 MAG	S21 PHASE (Degrees)	S12 MAG	S12 PHASE (Degrees)	S22 MAG	S22 PHASE (Degrees)
1000	0.53264	-88.293	0.88824	-152.39	0.016235	-178.61	0.86648	-40.242
1100	0.50072	-91.951	0.7982	-158.26	0.017245	173.56	0.84349	-44.872
1200	0.48919	-95.727	0.81624	-157.63	0.021876	174.25	0.81736	-50.593
1300	0.47763	-100.56	0.9124	-159.79	0.024819	169.5	0.77697	-56.992
1400	0.46996	-105.52	0.97835	-164.35	0.031537	165.94	0.7125	-63.162
1500	0.45962	-110.53	1.1147	-172.07	0.039354	157.02	0.63149	-68.884
1600	0.44558	-114.16	1.1435	179.16	0.043858	150.97	0.54309	-71.323
1700	0.43752	-117.82	1.1673	170.03	0.048587	142.5	0.48004	-70.756
1800	0.42628	-120.34	1.1355	162.29	0.051739	135.63	0.44669	-68.481
1900	0.42389	-123.02	1.1015	157.68	0.053776	132.1	0.41378	-66.261
1960	0.43163	-123.7	1.3169	152.69	0.052288	130.37	0.39665	-64.55
2000	0.42186	-126.21	1.0881	150.97	0.053244	125	0.39825	-63.294
2100	0.41708	-128.29	1.0382	146.08	0.055868	126.22	0.40867	-59.626
2200	0.41316	-131.21	0.98792	143.08	0.055845	123.81	0.4238	-59.446
2300	0.40531	-132.94	1.0068	139.47	0.061111	121.9	0.42905	-59.37

Table 13. MAX2654 Typical Noise Parameters, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQUENCY (MHz)	NF _{MIN} (dB)	$ \Gamma_{opt} $	Γ_{opt} (ANGLE)	R _N (Ω)
1000	0.979185	0.325805	63.6899	65.3207
1100	1.00543	0.311346	70.7686	60.4145
1200	1.0429	0.299983	78.5972	55.7724
1300	1.09161	0.291978	87.1956	51.3341
1400	1.15308	0.288025	96.5545	47.0509
1500	1.22964	0.289009	106.565	42.8944
1575	1.29821	0.29339	114.342	39.8666
1600	1.32323	0.295542	116.952	38.8794
1620	1.34399	0.297509	119.036	38.0995
1700	1.4328	0.307178	127.265	35.0936
1800	1.55051	0.321605	136.997	31.7107
1900	1.66007	0.334857	145.771	28.9489
2000	1.74337	0.343223	153.463	26.9638
2100	1.79294	0.345512	160.179	25.7497
2200	1.81624	0.343289	166.128	25.1452
2300	1.82749	0.339207	171.504	24.9322

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

MAX2654/MAX2655/MAX2656

Table 14. MAX2655 Typical Noise Parameters, $R_{BIAS} = 511\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQUENCY (MHz)	NF _{MIN} (dB)	$ \Gamma_{opt} $	Γ_{opt} (ANGLE)	R _N (Ω)
1000	1.07078	0.20268	58.6096	61.4167
1100	1.1004	0.185133	66.3785	57.7698
1200	1.14332	0.17169	75.3428	54.4141
1300	1.20144	0.163399	85.5832	51.241
1400	1.27902	0.161846	96.8769	48.1459
1500	1.38209	0.168551	108.539	45.0343
1575	1.47957	0.179266	116.958	42.6584
1600	1.51609	0.183813	119.635	41.8603
1620	1.54671	0.187747	121.72	41.2213
1700	1.67956	0.205317	129.542	38.6947
1800	1.85425	0.227554	138.264	35.7715
1900	2.00371	0.243698	146.235	33.4173
2000	2.09593	0.249742	153.934	31.8644
2100	2.13004	0.246809	161.641	31.1189
2200	2.13006	0.239032	169.387	31.0069
2300	2.12127	0.230293	177.009	31.3045

Table 15. MAX2655 Typical Noise Parameters, $R_{BIAS} = 357\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQUENCY (MHz)	NF _{MIN} (dB)	$ \Gamma_{opt} $	Γ_{opt} (ANGLE)	R _N (Ω)
1000	1.09982	0.148395	58.9284	58.1506
1100	1.12955	0.133791	67.8012	55.2392
1200	1.17248	0.12367	78.2767	52.5393
1300	1.23093	0.119347	90.2698	49.9446
1400	1.30945	0.122497	103.037	47.3479
1500	1.4141	0.134308	115.29	44.6485
1575	1.513	0.148721	123.496	42.522
1600	1.54997	0.154421	126.008	41.7955
1620	1.58092	0.159239	127.94	41.2099
1700	1.71459	0.179965	135.058	38.8633
1800	1.88848	0.205269	142.995	36.1035
1900	2.03494	0.223676	150.524	33.8713
2000	2.12324	0.231506	158.139	32.4267
2100	2.1538	0.230145	166.018	31.7928
2200	2.15105	0.223842	174.051	31.7989
2300	2.14016	0.216468	181.947	32.2145

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Table 16. MAX2655 Typical Noise Parameters, $R_{BIAS} = 698\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQUENCY (MHz)	NF _{MIN} (dB)	$ \Gamma_{opt} $	Γ_{opt} (ANGLE)	R _N (Ω)
1000	1.07022	0.252072	59.5039	63.9045
1100	1.09989	0.232117	66.7513	59.6017
1200	1.1435	0.216167	74.9793	55.6721
1300	1.2025	0.205039	84.2738	52.0034
1400	1.28093	0.200132	94.5649	48.4913
1500	1.38483	0.202967	105.469	45.0448
1575	1.48313	0.210624	113.637	42.4731
1600	1.52003	0.214164	116.293	41.62
1620	1.551	0.217306	118.382	40.9407
1700	1.68587	0.231911	126.349	38.2818
1800	1.86477	0.251081	135.356	35.2455
1900	2.01955	0.2649	143.506	32.8111
2000	2.1163	0.269182	151.19	31.186
2100	2.15311	0.264831	158.724	30.3614
2200	2.15452	0.255836	166.217	30.161
2300	2.14655	0.246007	173.591	30.3681

Table 17. MAX2656 Typical Noise Parameters, $R_{BIAS} = 511\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQUENCY (MHz)	NF _{MIN} (dB)	$ \Gamma_{opt} $	Γ_{opt} (ANGLE)	R _N (Ω)
1000	1.19551	0.169443	44.0607	63.6454
1100	1.25513	0.160031	50.0233	61.2689
1200	1.36496	0.157156	53.9632	60.0078
1300	1.41944	0.139411	55.9695	58.3406
1400	1.42267	0.116105	64.9694	55.1066
1500	1.46779	0.104328	78.4081	52.1186
1600	1.54085	0.100413	92.5998	49.5511
1700	1.62591	0.100408	105.865	47.3525
1800	1.71232	0.101354	117.69	45.5365
1900	1.79336	0.101439	128.291	44.1212
1960	1.83815	0.100789	134.246	43.4616
2000	1.86641	0.10007	138.099	43.0969
2100	1.93225	0.0974895	147.452	42.4256
2200	1.99354	0.0942623	156.495	42.0541
2300	2.05347	0.0909155	165.19	41.9247

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Table 18. MAX2656 Typical Noise Parameters, $R_{BIAS} = 392\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

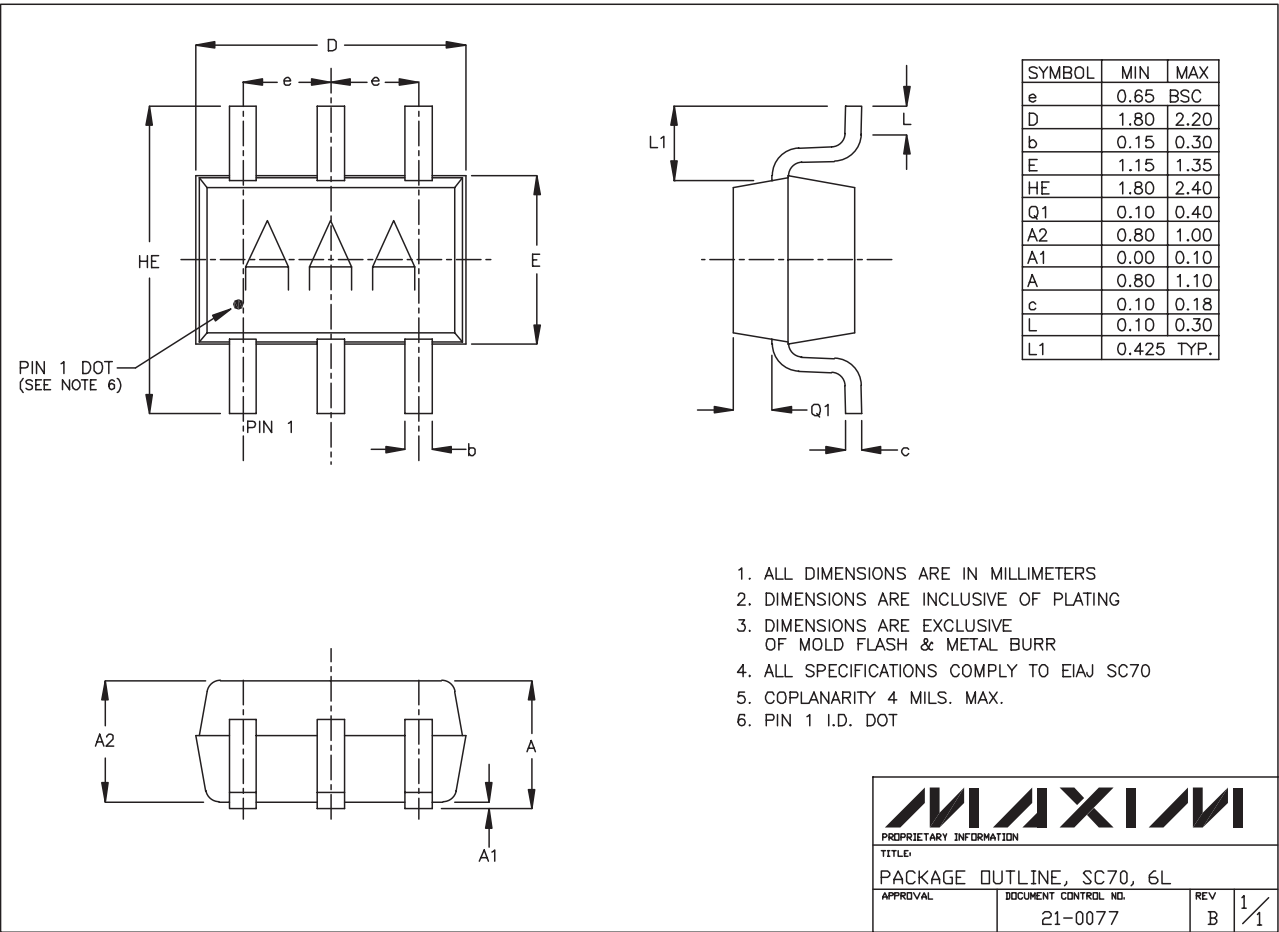
FREQUENCY (MHz)	NF _{MIN} (dB)	$ \Gamma_{opt} $	Γ_{opt} (ANGLE)	R _N (Ω)
1000	1.25828	0.127169	43.4181	60.0914
1100	1.31712	0.119749	49.6564	58.328
1200	1.42071	0.118918	53.0395	57.6261
1300	1.47047	0.102868	54.249	56.3473
1400	1.47793	0.0808445	65.2714	53.4808
1500	1.52693	0.0714433	82.9841	50.8759
1600	1.60271	0.07102	101.079	48.6601
1700	1.68966	0.0747457	116.687	46.766
1800	1.77731	0.0790839	129.705	45.2077
1900	1.85912	0.082153	141.03	44.0114
1960	1.90423	0.0831517	147.358	43.4686
2000	1.93266	0.0834911	151.457	43.177
2100	1.99887	0.0834491	161.414	42.6749
2200	2.06055	0.0826143	171.004	42.457
2300	2.12098	0.081456	180.109	42.4679

Table 19. MAX2656 Typical Noise Parameters, $R_{BIAS} = 715\Omega \pm 1\%$, $V_{CC} = +3.0V$, $T_A = +25^\circ C$

FREQUENCY (MHz)	NF _{MIN} (dB)	$ \Gamma_{opt} $	Γ_{opt} (ANGLE)	R _N (Ω)
1000	1.13783	0.224059	45.2905	68.1525
1100	1.2001	0.212085	51.1614	64.8648
1200	1.32167	0.206499	55.7433	62.7276
1300	1.38403	0.186443	58.447	60.5143
1400	1.38075	0.161577	66.0016	56.8728
1500	1.42109	0.147473	76.7421	53.4273
1600	1.49177	0.140468	88.2322	50.4268
1700	1.57596	0.137104	99.3829	47.8521
1800	1.66249	0.134825	109.699	45.7189
1900	1.74421	0.131957	119.148	44.0357
1960	1.78956	0.129654	124.484	43.2336
2000	1.81821	0.12787	127.937	42.78
2100	1.88506	0.122729	136.303	41.9037
2200	1.94729	0.117055	144.391	41.3473
2300	2.00801	0.111392	152.221	41.0509

1575MHz/1900MHz Variable-IP3 Low-Noise Amplifiers

Package Information



SC70, 6LEPS