



AHEAD OF WHAT'S POSSIBLE™

LTC6431-20

Details of Data Sheet Revision

Overview of Datasheet Revision

LTC6431-20

ABSOLUTE MAXIMUM RATINGS

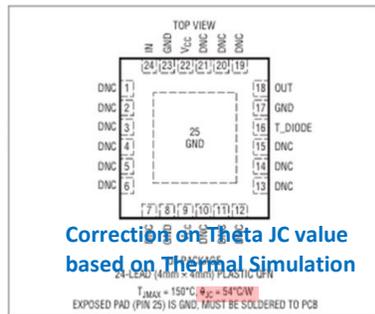
(Note 1)
 Total Supply Voltage (V_{CC} to GND).....5.5V
 Amplifier Output Current (+OUT)120mA
 RF Input Power, Continuous, 50 Ω (Note 2).....15dBm
 RF Input Power, 100 μ s Pulse, 50 Ω (Note 2)20dBm
 Operating Case Temperature Range

T_{CASE}-40°C to 85°C
 Storage Temperature Range-65°C to 150°C
 Junction Temperature (T_J).....150°C

Change Case Range:

-40C to 105C,

PIN CONFIGURATION



ORDER INFORMATION

Change Case Range:
-40C to 105C,

LEAD FREE FINISH	TAPE AND REEL	PART MARKING*	PACKAGE DESCRIPTION	TEMPERATURE RANGE
LTC6431AUF-20#PBF	LTC6431AUF-20#TRPBF	43120	24-Lead (4mm x 4mm) Plastic QFN	-40°C to 85°C T_{CASE}
LTC6431BIUF-20#PBF	LTC6431BIUF-20#TRPBF	43120	24-Lead (4mm x 4mm) Plastic QFN	-40°C to 85°C T_{CASE}

Consult LTC Marketing for parts specified with wider operating temperature ranges. *The temperature grade is identified by a label on the shipping container. Consult LTC Marketing for information on nonstandard lead based finish parts.

For more information on lead free part marking, go to: <http://www.linear.com/leadfree/>

For more information on tape and reel specifications, go to: <http://www.linear.com/tapeandreef/>

DC ELECTRICAL CHARACTERISTICS

The \bullet denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A = 25^\circ\text{C}$. $V_{CC} = 5\text{V}$, $Z_{SOURCE} = Z_{LOAD} = 50\Omega$. Typical measured DC electrical performance using Test Circuit A.

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_S	Operating Supply Range		\bullet 4.75	5.0	5.25	V
$I_{S(TOT)}$	Total Supply Current	All V_{CC} Pins Plus OUT	\bullet 75	93	113	mA
			\bullet 68		129	mA
$I_{S(OUT)}$	Total Supply Current to OUT Pin	Current to OUT	\bullet 55	75	95	mA
			\bullet 51		115	mA
I_{CC}	Current to V_{CC} Pin	Either V_{CC} Pin May Be Used	\bullet 15	18	21	mA
			\bullet 12.5		21.5	mA

AC ELECTRICAL CHARACTERISTICS

The \bullet denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A = 25^\circ\text{C}$ (Note 3). $V_{CC} = 5\text{V}$, $Z_{SOURCE} = Z_{LOAD} = 50\Omega$ unless otherwise noted. Measurements are performed using Test Circuit A, measuring from 50 Ω SMA to 50 Ω without de-embedding (Note 4).

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Frequency = 700 MHz						
S21	Power Gain	De-embedded to Package		20.8		dB
OIP3	Output Third-Order Intercept Point	$P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, A-Grade $P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, B-Grade		40.7 39.7		dBm
IM3	Third-Order Intermodulation	$P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, A-Grade $P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, B-Grade		-77.4 -75.4		dBc
HD2	Second Harmonic Distortion	$P_{OUT} = 6\text{dBm}$		-42.1		dBc
HD3	Third Harmonic Distortion	$P_{OUT} = 6\text{dBm}$		-60.7		dBc
P1dB	Output 1dB Compression Point			21.4		dBm
NF	Noise Figure	De-embedded to Package		3.2		dB
Frequency = 800MHz						
S21	Power Gain	De-embedded to Package		20.8		dB
OIP3	Output Third-Order Intercept Point	$P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, A-Grade $P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, B-Grade		39.2 38.2		dBm
IM3	Third-Order Intermodulation	$P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, A-Grade $P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, B-Grade		-74.4 -72.4		dBc
HD2	Second Harmonic Distortion	$P_{OUT} = 6\text{dBm}$		-40.5		dBc
HD3	Third Harmonic Distortion	$P_{OUT} = 6\text{dBm}$		-63.1		dBc
P1dB	Output 1dB Compression Point			21.3		dBm
NF	Noise Figure	De-embedded to Package		3.4		dB
Frequency = 900MHz						
S21	Power Gain	De-embedded to Package		20.8		dB
OIP3	Output Third-Order Intercept Point	$P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, A-Grade $P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, B-Grade		38.5 37.5		dBm
IM3	Third-Order Intermodulation	$P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, A-Grade $P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, B-Grade		-73.0 -71.0		dBc
HD2	Second Harmonic Distortion	$P_{OUT} = 6\text{dBm}$		-37.1		dBc
HD3	Third Harmonic Distortion	$P_{OUT} = 6\text{dBm}$		-60.4		dBc
P1dB	Output 1dB Compression Point			21.1		dBm
NF	Noise Figure	De-embedded to Package		3.7		dB
Frequency = 1000MHz						
S21	Power Gain	De-embedded to Package		20.8		dB
OIP3	Output Third-Order Intercept Point	$P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, A-Grade $P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, B-Grade		37.5 36.5		dBm
IM3	Third-Order Intermodulation	$P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, A-Grade $P_{OUT} = 2\text{dBm/Tone}$, $\Delta f = 1\text{MHz}$, B-Grade		-71.0 -69.0		dBc
HD2	Second Harmonic Distortion	$P_{OUT} = 6\text{dBm}$		-36.9		dBc
HD3	Third Harmonic Distortion	$P_{OUT} = 6\text{dBm}$		-55.1		dBc
P1dB	Output 1dB Compression Point			20.8		dBm
NF	Noise Figure	De-embedded to Package		3.8		dB

Note 1: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to any Absolute Maximum Rating condition for extended periods may affect device reliability and lifetime.

Note 2: Guaranteed by design and characterization. This parameter is not tested.

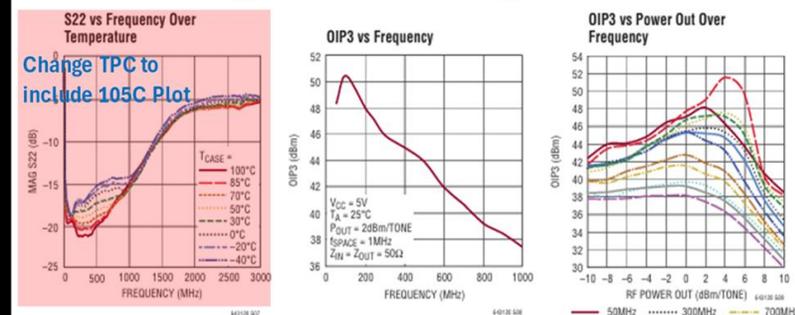
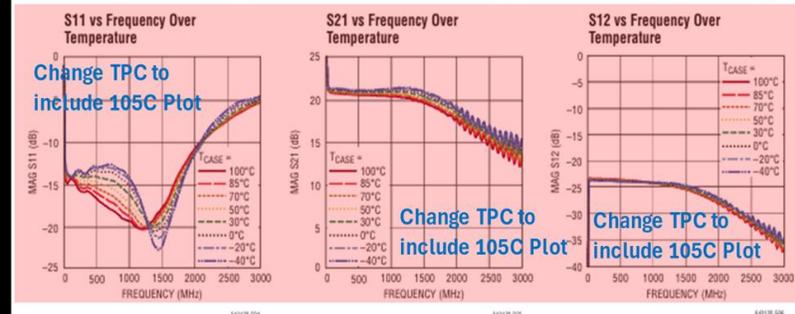
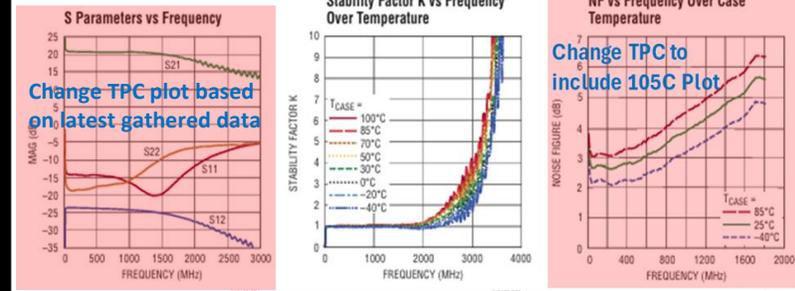
Note 3: The LTC6431-20 is guaranteed functional over the case operating temperature range of -40°C to 85°C.

Note 4: Small-signal parameters S and noise are de-embedded to the package pins, while large-signal parameters are measured directly from the circuit.

LTC6431-20

TYPICAL PERFORMANCE CHARACTERISTICS

$T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $Z_{SOURCE} = Z_{LOAD} = 50\Omega$ unless otherwise noted. Measurements are performed using Test Circuit A, measuring from 50 Ω SMA to 50 Ω without de-embedding (Note 4).



LTC6431-20

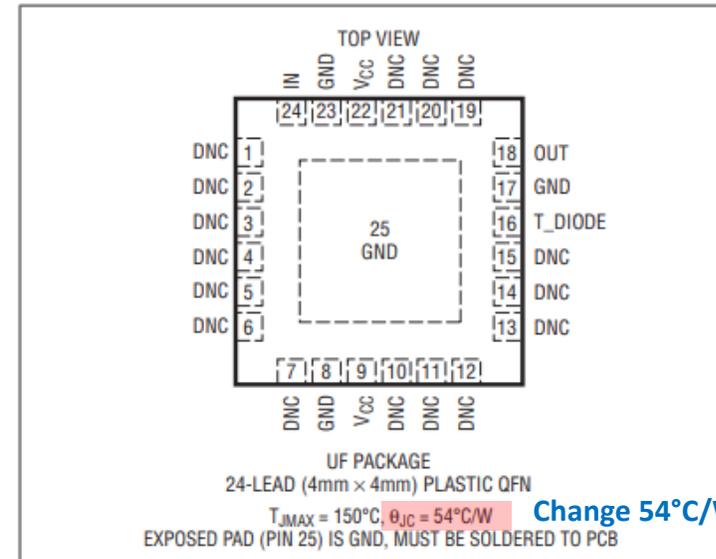
ABSOLUTE MAXIMUM RATINGS

(Note 1)

Total Supply Voltage (V_{CC} to GND).....	5.5V
Amplifier Output Current (+OUT)	120mA
RF Input Power, Continuous, 50Ω (Note 2).....	15dBm
RF Input Power, 100μs Pulse, 50Ω (Note 2)	20dBm
Operating Case Temperature Range (T_{CASE}).....	-40°C to 85°C
Storage Temperature Range	-65°C to 150°C
Junction Temperature (T_J)	150°C

Change 85°C to 105°C

PIN CONFIGURATION



ORDER INFORMATION

LEAD FREE FINISH	TAPE AND REEL	PART MARKING*	PACKAGE DESCRIPTION	TEMPERATURE RANGE
LTC6431AIUF-20#PBF	LTC6431AIUF-20#TRPBF	43120	24-Lead (4mm × 4mm) Plastic QFN	-40°C to 85°C T_{CASE} Change 85°C to 105°C
LTC6431BIUF-20#PBF	LTC6431BIUF-20#TRPBF	43120	24-Lead (4mm × 4mm) Plastic QFN	-40°C to 85°C T_{CASE} Change 85°C to 105°C

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Note 1: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to any Absolute Maximum Rating condition for extended periods may affect device reliability and lifetime.

Note 2: Guaranteed by design and characterization. This parameter is not tested.

Note 3: The LTC6431-20 is guaranteed functional over the case operating temperature range of -40°C to 85°C . **Change 85°C to 105°C**

Note 4: Small-signal parameters S and noise are de-embedded to the package pins, while large-signal parameters are measured directly from the circuit.

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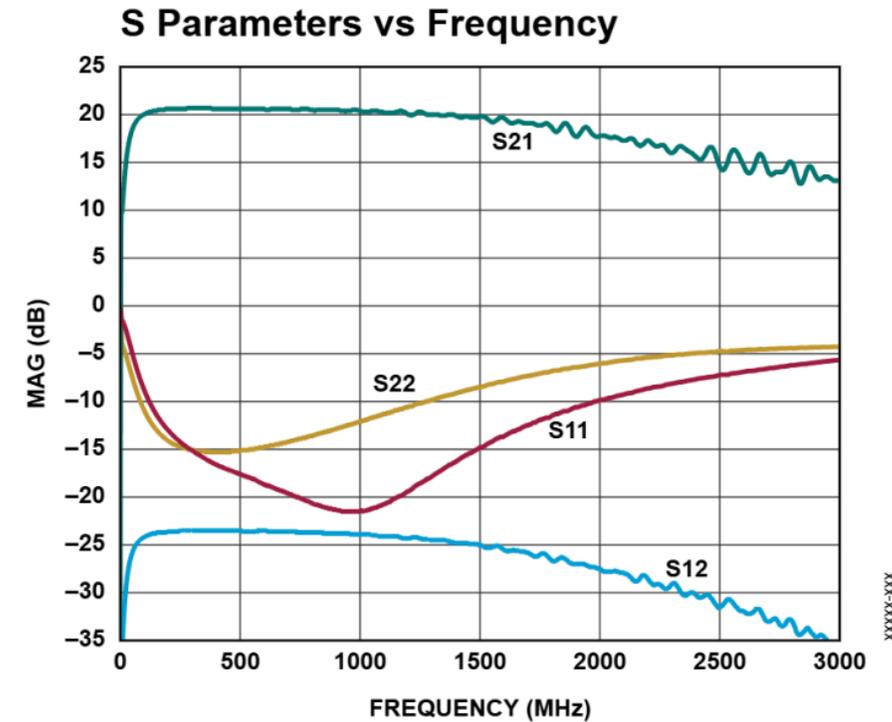
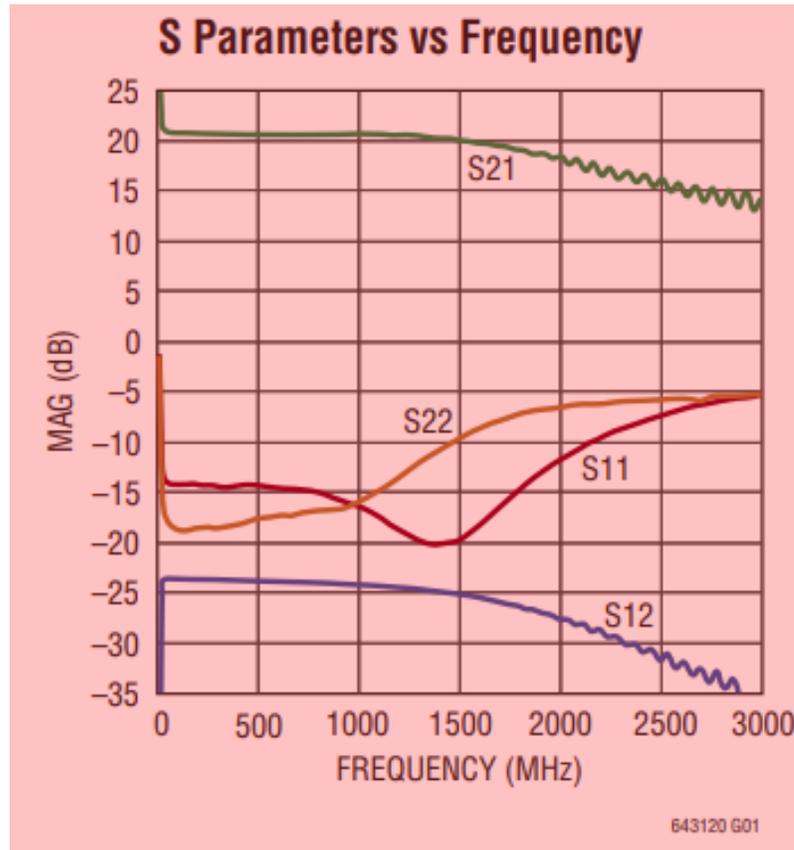


For more information www.linear.com/LTC6431-20

5

LTC6431-20

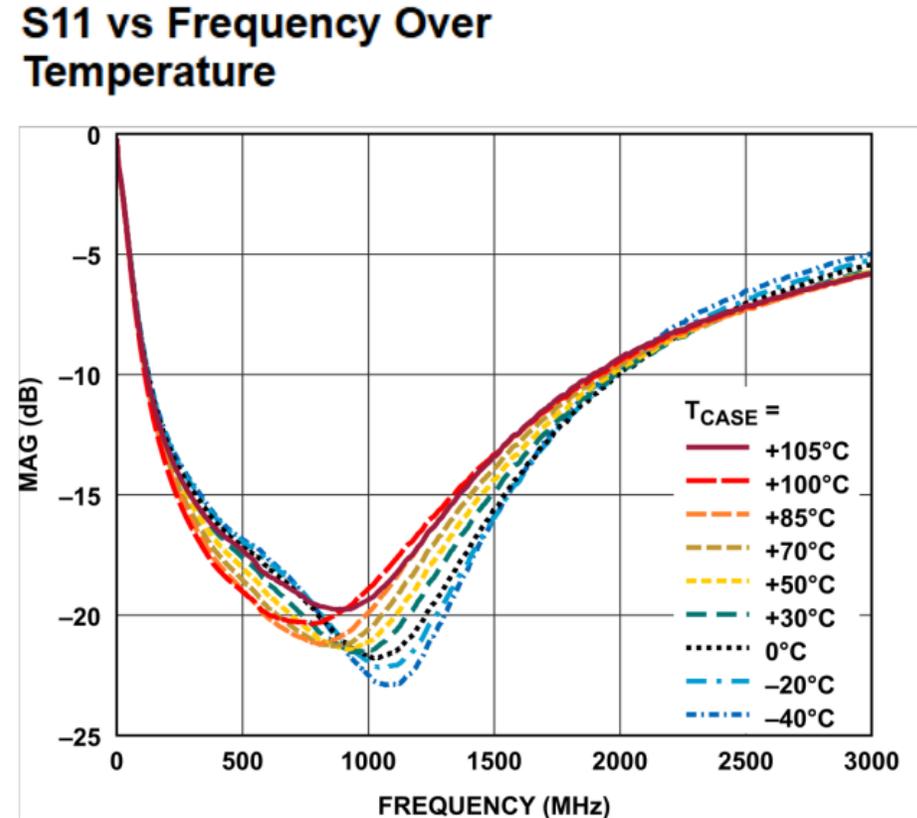
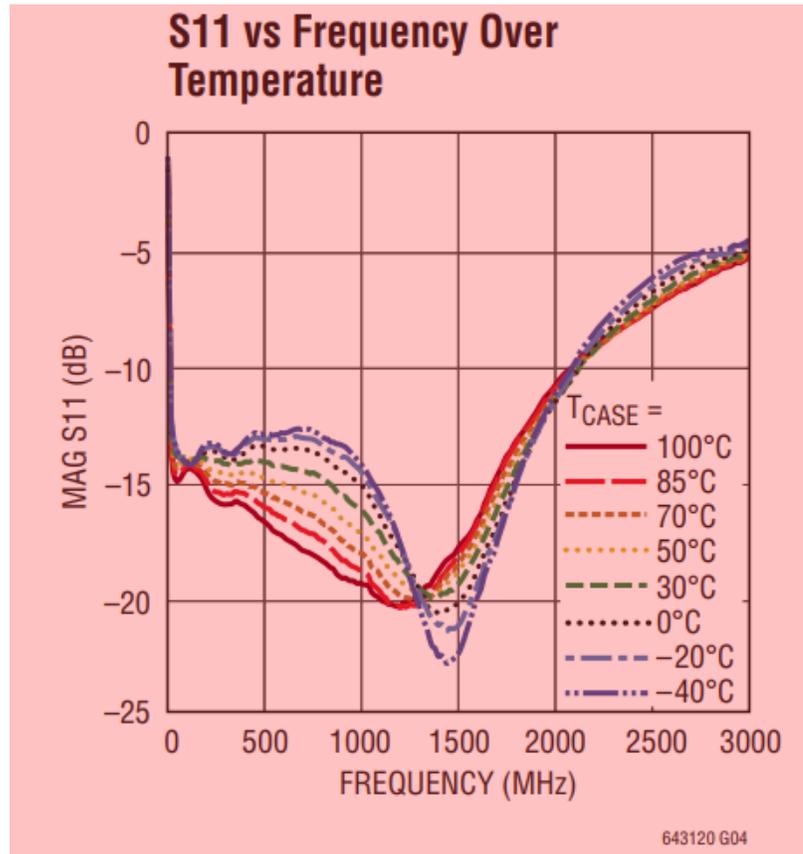
TYPICAL PERFORMANCE CHARACTERISTICS $T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $Z_{SOURCE} = Z_{LOAD} = 50\Omega$ unless otherwise noted. Measurements are performed using Test Circuit A, measuring from 50Ω SMA to 50Ω without de-embedding (Note 4).



Change the TPC plot based on latest gathered bench data.

LTC6431-20

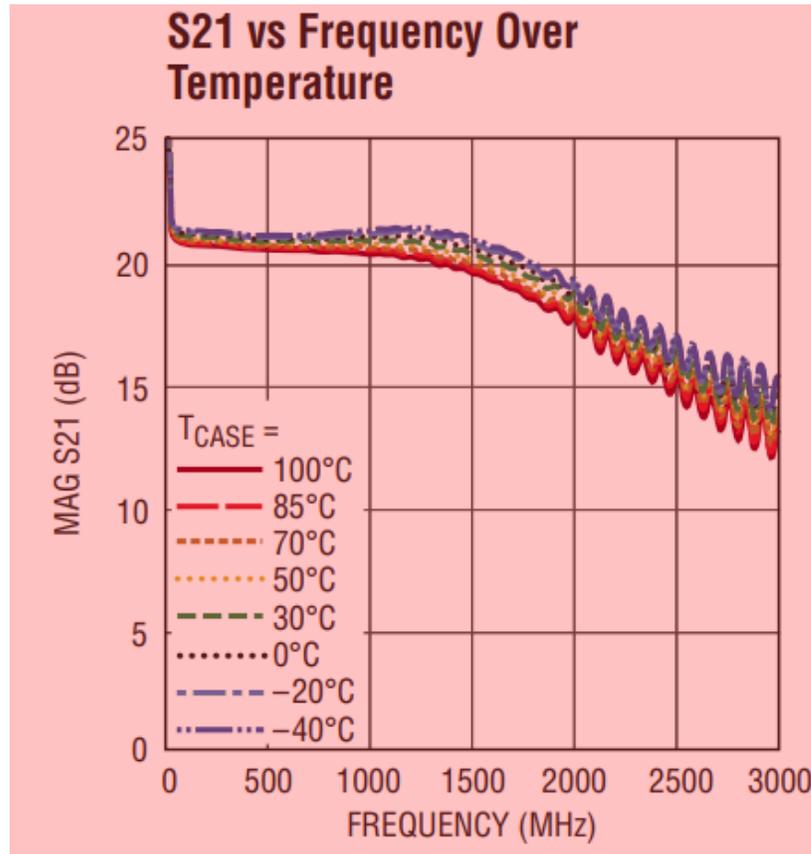
TYPICAL PERFORMANCE CHARACTERISTICS $T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $Z_{SOURCE} = Z_{LOAD} = 50\Omega$ unless otherwise noted. Measurements are performed using Test Circuit A, measuring from 50Ω SMA to 50Ω without de-embedding (Note 4).



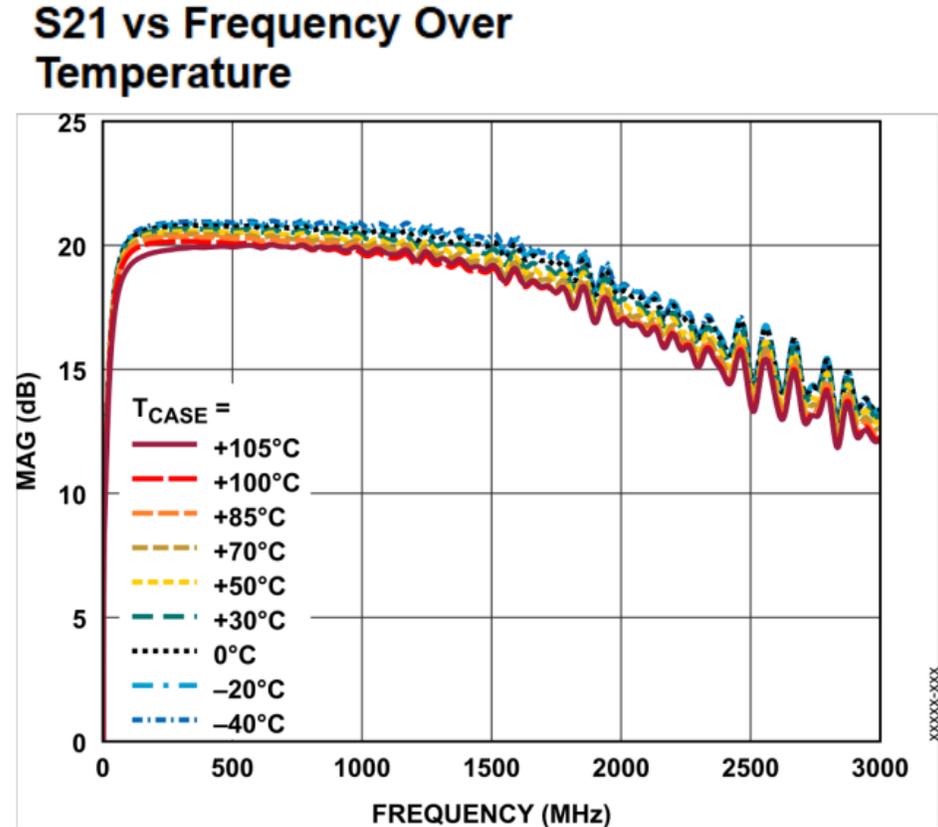
Change the TPC plot to add 105C plot based on customer requirement.

LTC6431-20

TYPICAL PERFORMANCE CHARACTERISTICS $T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $Z_{SOURCE} = Z_{LOAD} = 50\Omega$ unless otherwise noted. Measurements are performed using Test Circuit A, measuring from 50Ω SMA to 50Ω without de-embedding (Note 4).



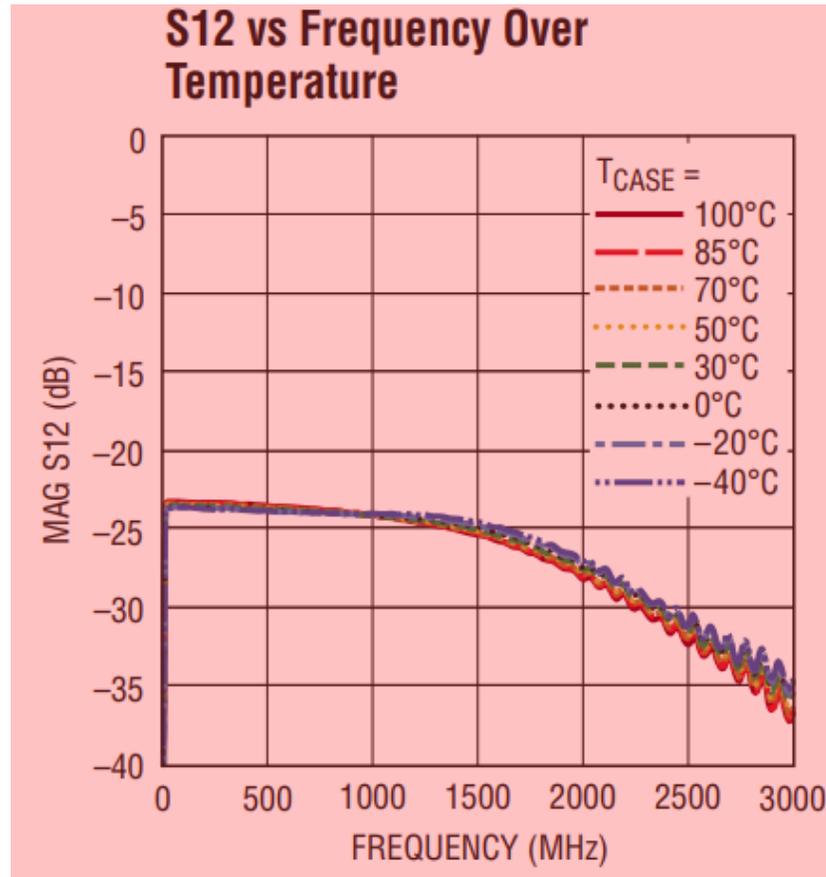
643120 G05



Change the TPC plot to add 105C plot based on customer requirement.

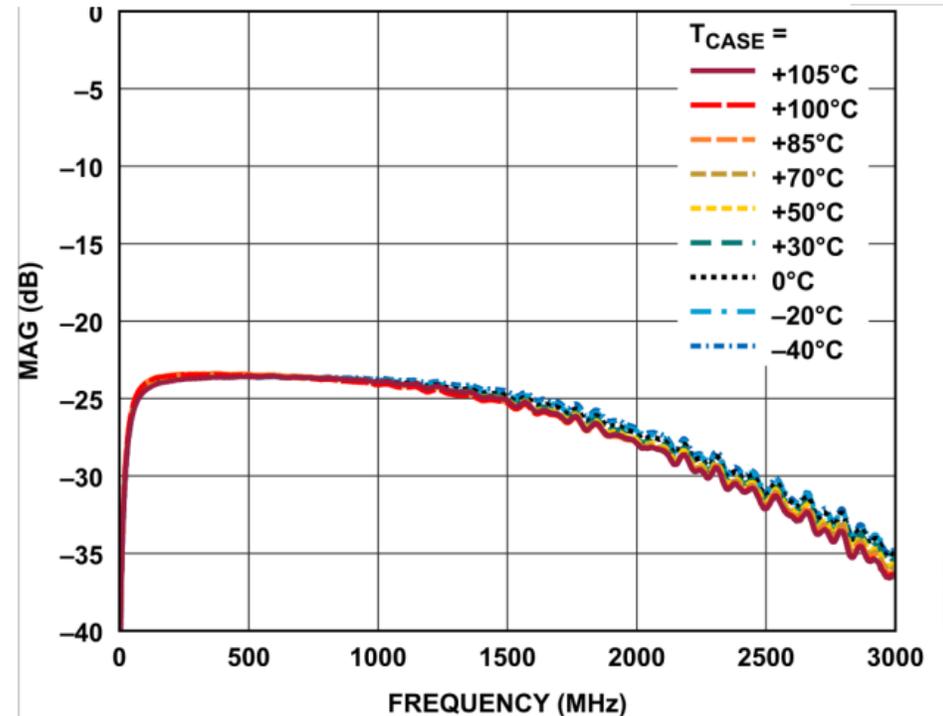
LTC6431-20

TYPICAL PERFORMANCE CHARACTERISTICS $T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $Z_{SOURCE} = Z_{LOAD} = 50\Omega$ unless otherwise noted. Measurements are performed using Test Circuit A, measuring from 50Ω SMA to 50Ω without de-embedding (Note 4).



643120 G06

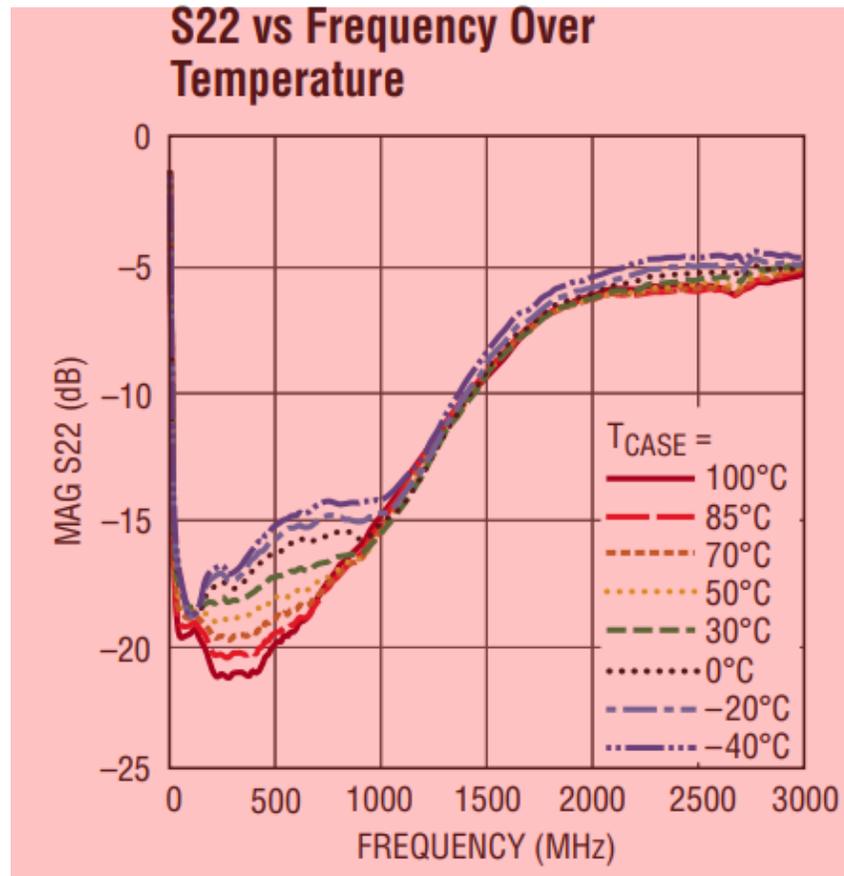
S12 vs Frequency Over Temperature



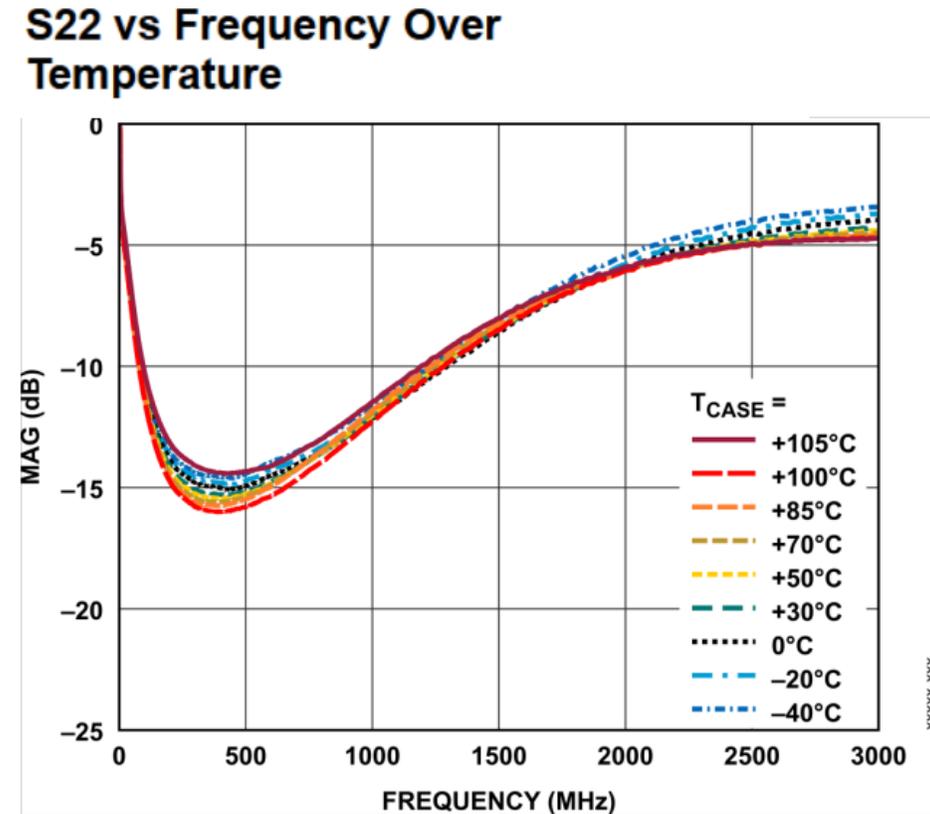
Change the TPC plot to add 105C plot based on customer requirement.

LTC6431-20

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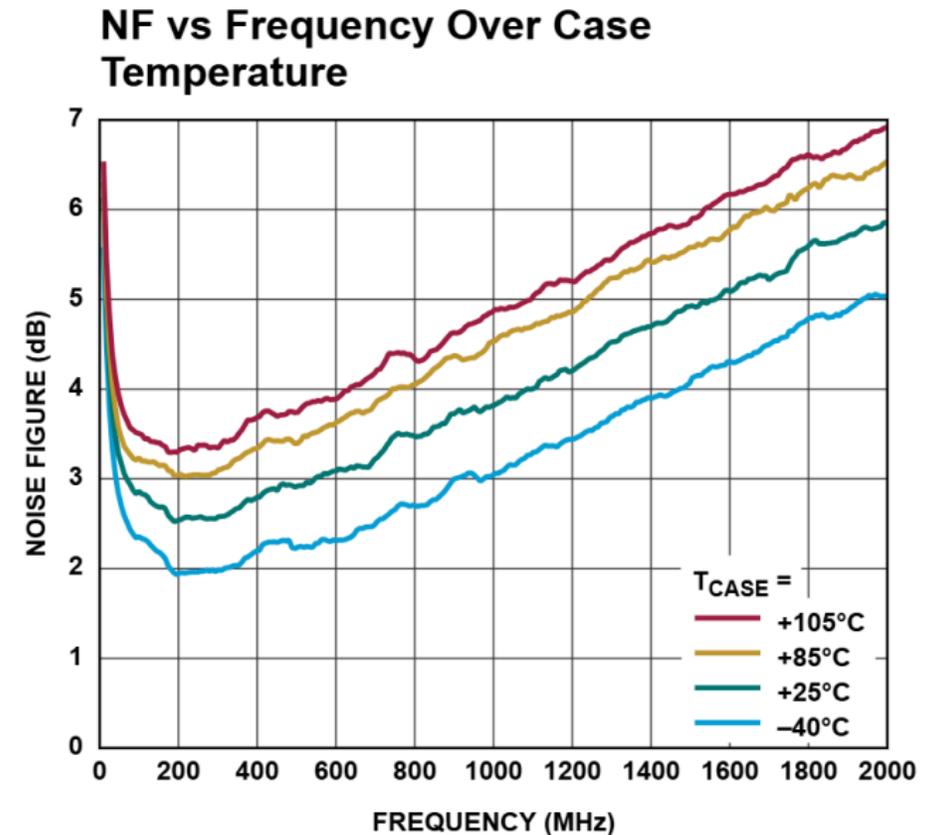
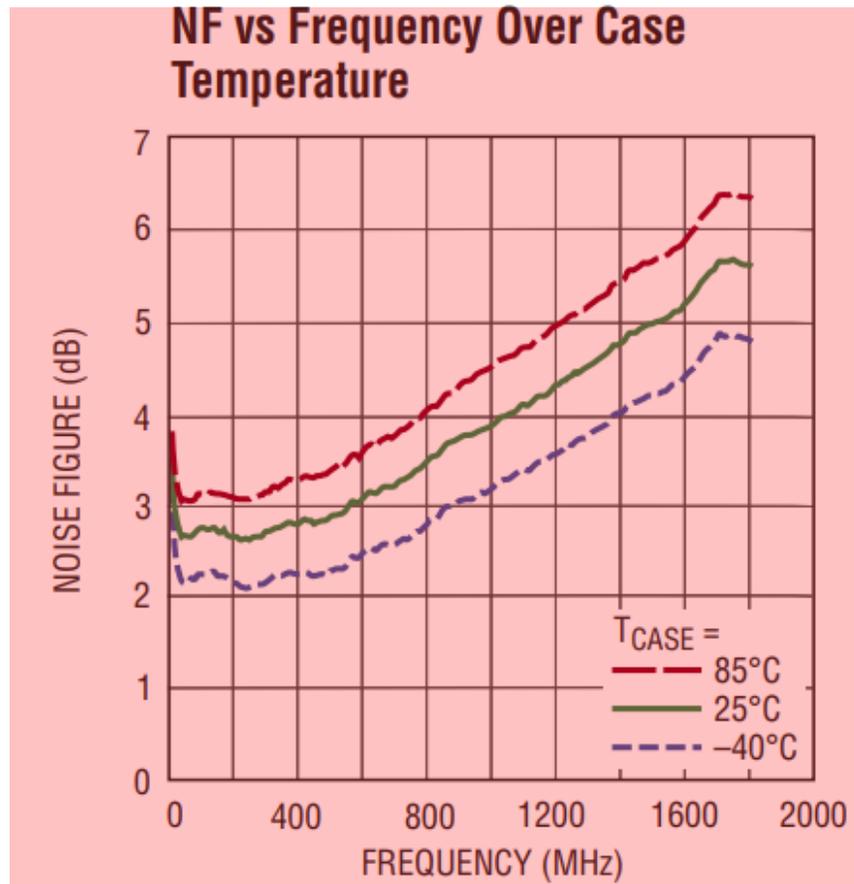
643120 G07



Change the TPC plot to add 105C plot based on customer requirement.

LTC6431-20

TYPICAL PERFORMANCE CHARACTERISTICS $T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $Z_{SOURCE} = Z_{LOAD} = 50\Omega$ unless otherwise noted. Measurements are performed using Test Circuit A, measuring from 50Ω SMA to 50Ω without de-embedding (Note 4).



Change the TPC plot to add 105C plot based on customer requirement.