MMIC SURFACE MOUNT

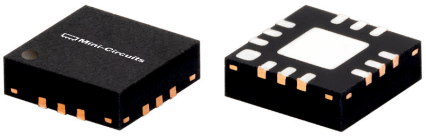
Low Noise Amplifier

TSS-14252LN+

50Ω 1427 to 2570 MHz Shutdown Feature

THE BIG DEAL

- Ultra-Low Noise Figure, Typ. 0.8 dB
- High P1dB, Typ. +15.8 dBm
- High OIP3, Typ. +27.9 dBm
- High Input Power Handling, Max +21 dBm
- Shutdown Feature
- Single Supply Voltage, +3.3 V
- 3x3 mm 12-Lead QFN-Style Package

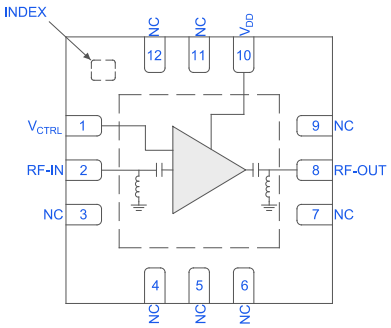


Generic photo used for illustration purposes only

APPLICATIONS

- 5G MIMO Radio Systems
- Satellite Communications
- Radar, EW, and ECM Defense Systems

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

The TSS-14252LN+ is a pHEMT-based wideband, ultra-low noise MMIC amplifier with high IP3, flat gain, and voltage-controlled shutdown capability. Operating from 1427 to 2570 MHz, this amplifier features typical 0.8 dB noise figure, 35.1 dB gain, +15.8 dBm P1dB, and +27.9 dBm OIP3. This combination of characteristics makes it ideal for sensitive receiver applications. The device is internally DC blocked and a DC path to ground is present at the RF input and output ports for ESD protection. TSS-14252LN+ operates on a single +3.3 V supply and comes in a small, low profile, 3x3 mm QFN-style package for ease of integration into dense circuit board layouts.

KEY FEATURES

Features	Advantages
Ultra-Low Noise Figure, Typ. 0.8 dB	Operating from a single supply, this ultra-low noise MMIC enables low system noise figure performance, without the need for complicated discrete-based solutions.
High Gain, Typ. 35.1 dB	The MMIC amplifier's high gain enables fewer system components in receiver signal chains.
Shutdown Feature	A voltage-controlled shutdown feature allows the part to be quickly disabled to conserve power when not in use.
3x3 mm 12-Lead QFN-Style Package	Small footprint saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB. Industry standard packaging allows for ease of assembly in high volume manufacturing processes.

Low Noise Amplifier TSS-14252LN+

50Ω 1427 to 2570 MHz Shutdown Feature

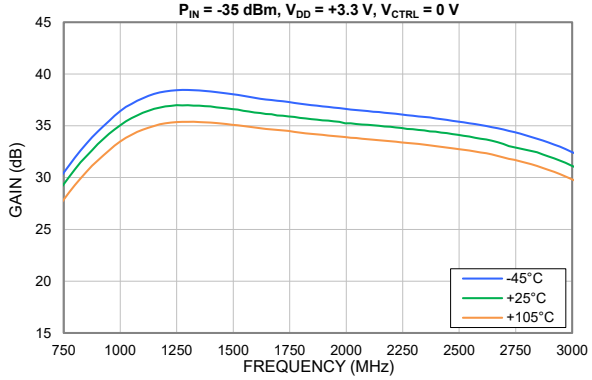
ELECTRICAL SPECIFICATIONS[1] AT 25°C, V_{DD} = +3.3 V

Parameter	Condition (MHz)	Amplifier – ON (V_{CTRL} = 0 V) Min.	Typ.	Max.	Amplifier – OFF (V_{CTRL} = +1.5 V) Typ.	Units
Frequency Range		1427		2570	1427 – 2570	MHz
Gain	1427	34.8	36.7		-46.5	dB
	2020	33.2	35.1		-34.4	
	2570	32.0	33.7		-29.0	
Input Return Loss	1427		19			dB
	2020		20			
	2570		20			
Output Return Loss	1427		20			dB
	2020		15			
	2570		18			
Isolation	1427-2570		53		35	dB
Output Power at 1dB Compression (P1dB)	1427		+15.1			dBm
	2020		+15.8			
	2570		+14.9			
Output Third-Order Intercept Point (P_{OUT} = 0dBm/Tone)	1427		+27.6			dBm
	2020		+27.9			
	2570		+26.7			
Noise Figure	1427		0.9			dB
	2020		0.8			
	2570		0.9			
ON Time (50% V_{CTRL} to 90% RF)			100.4			ns
RISE Time (10% RF to 90% RF)			52.8			ns
FALL Time (90% RF to 10% RF)			16.6			ns
OFF Time (50% V_{CTRL} to 10% RF)			22.6			ns
Device Operating Voltage (V_{DD})		+3	+3.3	+3.5	+3.3	V
Device Operating Current (I_{DD})[2]			64	75	0	mA
Device Control Voltage (V_{CTRL})			0		+1.5	V
Device Control Current (I_{CTRL})			3		4	mA
DC Current Variation vs. Temperature[3]			-16.7			µA/°C
DC Current Variation vs. Voltage[4]			41.2			µA/mV

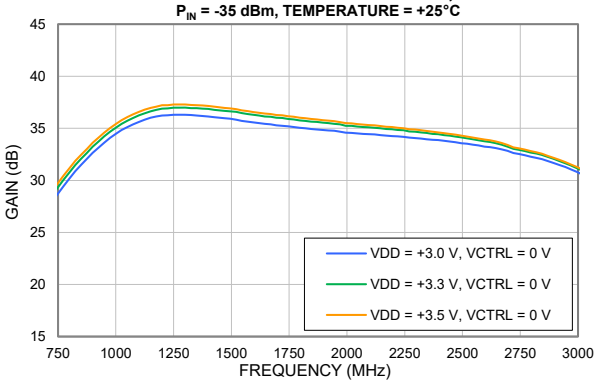
1. Tested on Mini-Circuits Characterization Test Board TB-TSS14252C+. See Figure 2. Board loss de-embedded to the device.
2. Current at P_{IN} = -35 dBm.
3. (Current at +105°C - Current at -45°C) / (+150°C)
4. (Current at +3.5 V - Current at +3.0 V) / (+0.5 V)

TYPICAL PERFORMANCE GRAPHS

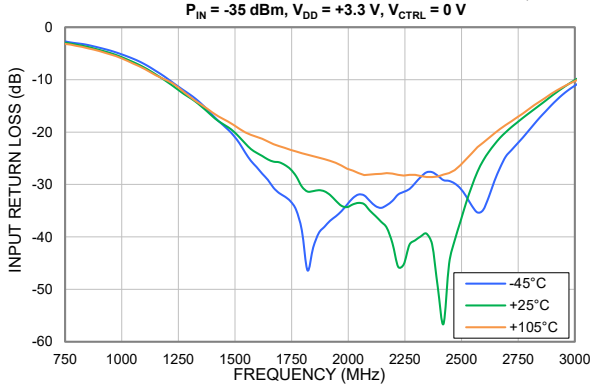
GAIN vs. TEMPERATURE,
P_{IN} = -35 dBm, V_{DD} = +3.3 V, V_{CTRL} = 0 V



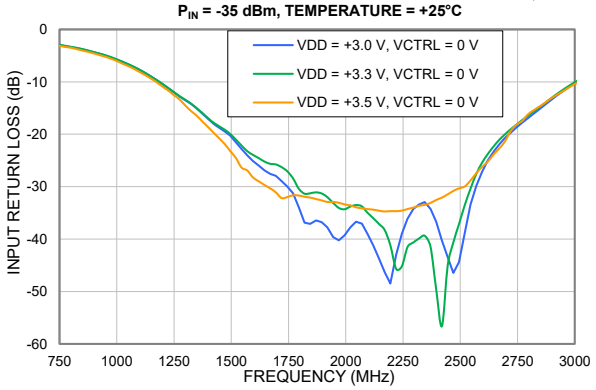
GAIN vs. DEVICE VOLTAGE,
P_{IN} = -35 dBm, TEMPERATURE = +25°C



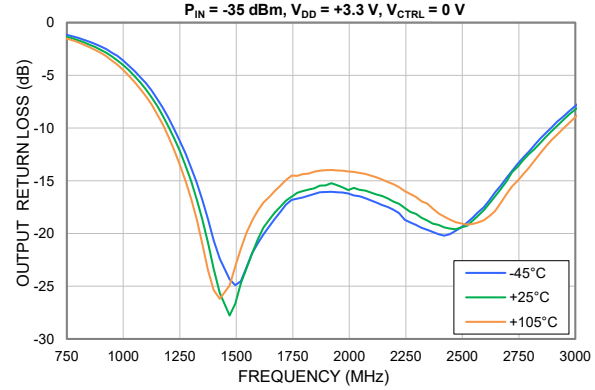
INPUT RETURN LOSS vs.TEMPERATURE,
P_{IN} = -35 dBm, V_{DD} = +3.3 V, V_{CTRL} = 0 V



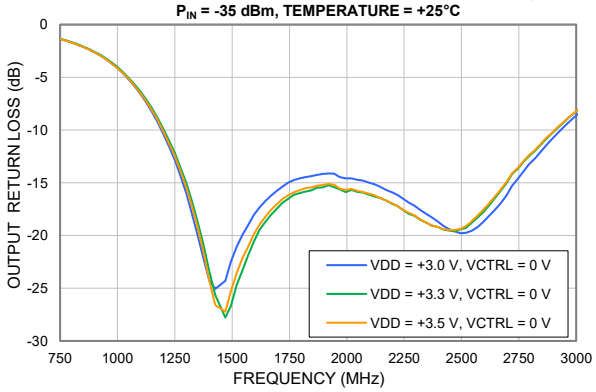
INPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -35 dBm, TEMPERATURE = +25°C



OUTPUT RETURN LOSS vs. TEMPERATURE,
P_{IN} = -35 dBm, V_{DD} = +3.3 V, V_{CTRL} = 0 V



OUTPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -35 dBm, TEMPERATURE = +25°C

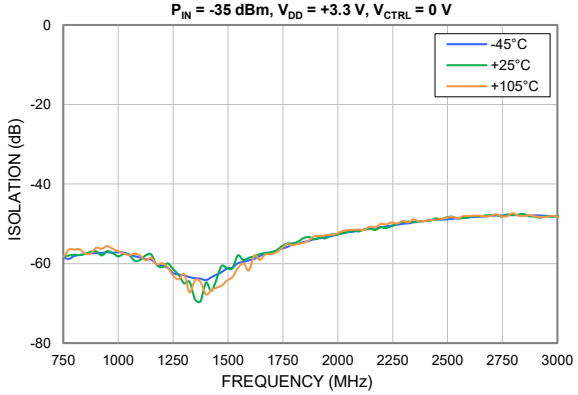


Low Noise Amplifier TSS-14252LN+

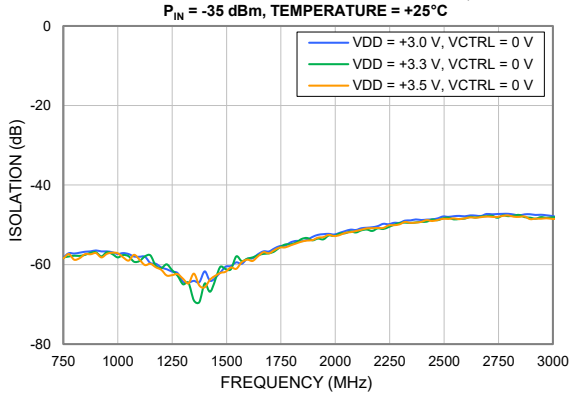
50Ω 1427 to 2570 MHz Shutdown Feature

TYPICAL PERFORMANCE GRAPHS

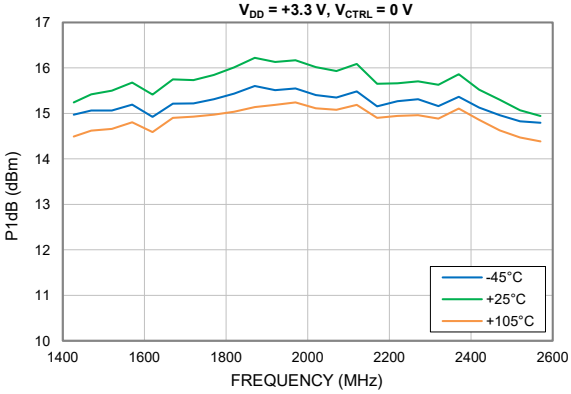
ISOLATION vs.TEMPERATURE,
P_{IN} = -35 dBm, V_{DD} = +3.3 V, V_{CTRL} = 0 V



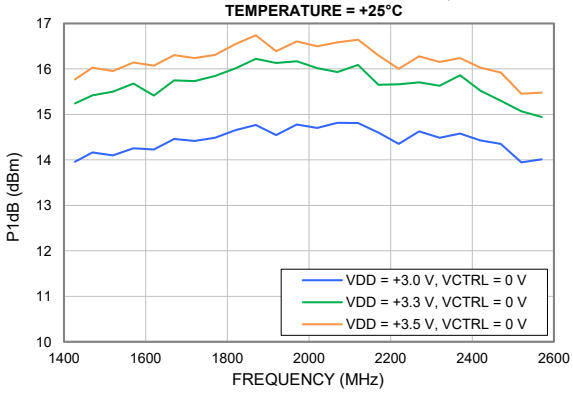
ISOLATION vs. DEVICE VOLTAGE,
P_{IN} = -35 dBm, TEMPERATURE = +25°C



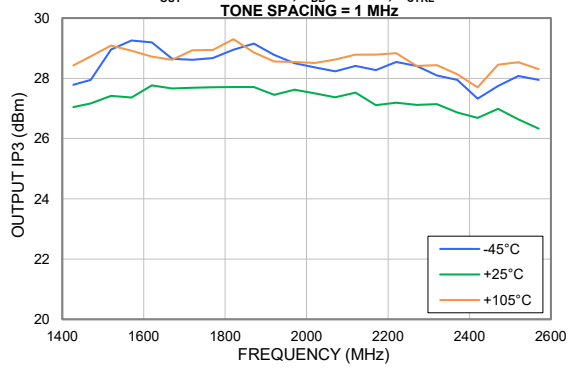
P1dB vs. TEMPERATURE,
V_{DD} = +3.3 V, V_{CTRL} = 0 V



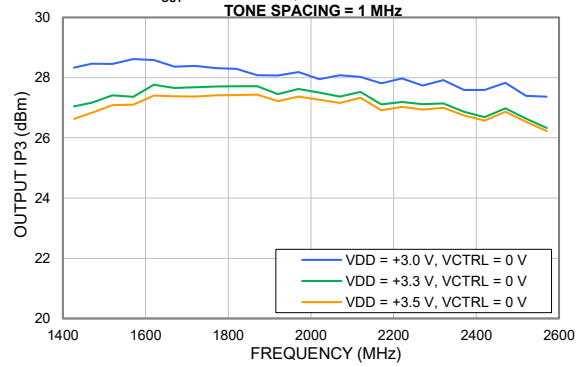
P1dB vs. DEVICE VOLTAGE,
TEMPERATURE = +25°C



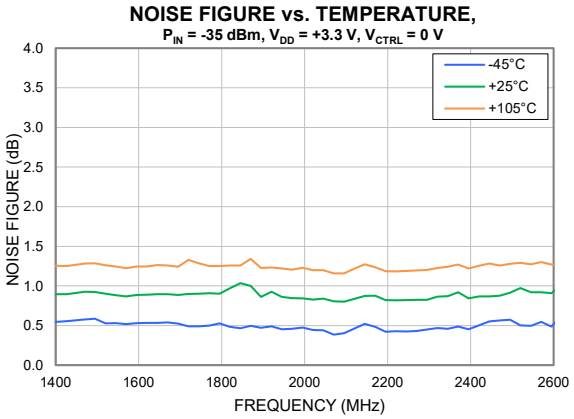
OUTPUT IP3 vs. TEMPERATURE,
P_{OUT} = 0 dBm/TONE, V_{DD} = +3.3 V, V_{CTRL} = 0 V
TONE SPACING = 1 MHz

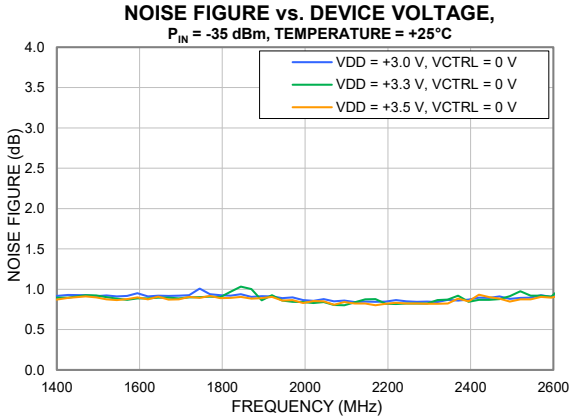


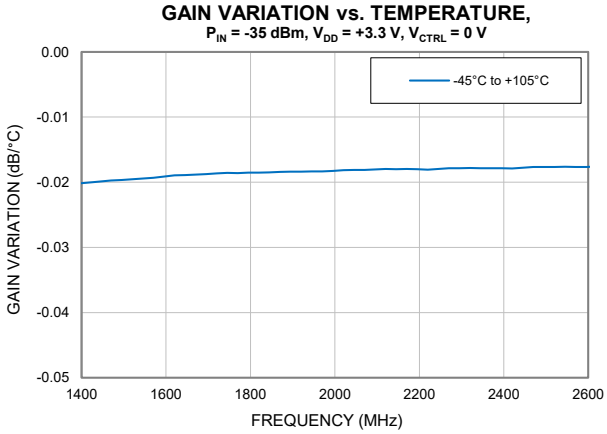
OUTPUT IP3 vs. DEVICE VOLTAGE,
P_{OUT} = 0 dBm/TONE, TEMPERATURE = +25°C
TONE SPACING = 1 MHz



TYPICAL PERFORMANCE GRAPHS







ABSOLUTE MAXIMUM RATINGS[5]

Parameter	Ratings
Operating Temperature	-45°C to +105°C
Storage Temperature	-65°C to +150°C
Junction Temperature[6]	+150°C
Total Power Dissipation	0.63 W
Input Power (CW), V_{DD} = +3.3 V V_{CTRL} = 0 V:	 +21 dBm
DC Voltage at V_{DD} V_{CTRL} = 0 V: V_{CTRL} = +1.5 V:	 +5 V +5 V
DC Current I_{DD} V_{CTRL} = 0 V: V_{CTRL} = +1.5 V:	 150 mA 20 mA
DC Voltage at V_{CTRL} V_{DD} = +3.3 V:	 +5 V
DC Current I_{CTRL} V_{DD} = +3.3 V:	 10 mA

5. Permanent damage may occur if any of these limits are exceeded. Maximum ratings are not intended for continuous normal operation.
6. Peak temperature on top of Die.

CONTROL VOLTAGE (V_{CTRL})

Amplifier State	Min.	Typ.	Max.	Units
Amplifier – ON	0	0	+0.2	V
Amplifier – OFF	+1	+1.5	+5	V

THERMAL RESISTANCE

Parameter	Ratings
Thermal Resistance (Θ_{JC})[7]	71.9°C/W

7. Θ_{JC}= (Hot Spot Temperature on Die - Temperature at Ground Lead)/Dissipated Power

ESD RATING

	Class	Voltage Range	Reference Standard
HBM	1A	250 V to < 500 V	ANSI/ESDA/JEDEC JS-001-2023
CDM	C3	≥ 1000 V	ANSI/ESDA/JEDEC JS-002-2022

ESD HANDLING PRECAUTION: This device is designed to be Class 1A for HBM. Static charges may easily produce potentials higher than this with improper handling and can discharge into DUT and damage it. As a preventive measure Industry standard ESD handling precautions should be used at all times to protect the device from ESD damage.

MSL RATING

Moisture Sensitivity: MSL1 in accordance with IPC/JEDEC J-STD-020E /JEDEC J-STD-033C

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50Ω 1427 to 2570 MHz Shutdown Feature

FUNCTIONAL DIAGRAM

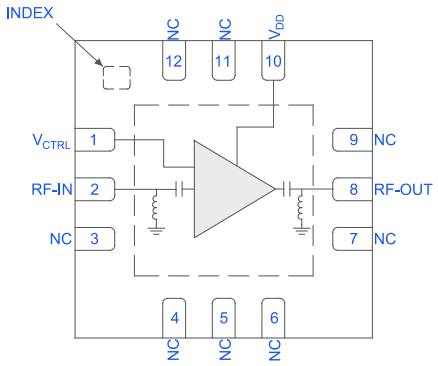

Figure 1. TSS-14252LN+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Application Description (Refer to Figure 2)
V_{CTRL}	1	DC Input Pad connects to control voltage port V_{CTRL}.
RF-IN	2	RF-IN Pad connects to RF Input port.
RF-OUT	8	RF-OUT Pad connects to RF Output port.
V_{DD}	10	DC Input Pad connects to voltage input port V_{DD}.
NC	3-7,9,11	Not used internally. Connected to ground on test board.
NC[8]	12	Do not connect to ground on PCB. Pad is used internally.
GND	Paddle, INDEX	Connects to ground.

8. Pin 12 is used internally within the package. Connecting this Pin externally can cause permanent damage to the device.

CHARACTERIZATION TEST BOARD

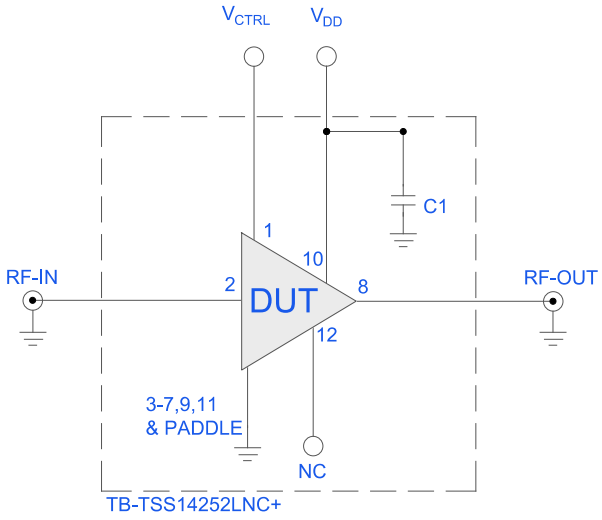

Figure 2. TSS-14252LN+ Characterization and Application Circuit.

Electrical Parameters and Conditions
Gain, Return Loss, Output Power at 1dB Compression (P1dB), Output IP3 (OIP3), and Noise Figure measured using N5242A PNA-X microwave network analyzer.

Conditions:
1) Gain and Return Loss: P_{IN} = -35 dBm
2) Output IP3 (OIP3): Two tones, spaced 1 MHz apart, 0 dBm/Tone at output.
3) V_{DD} = +3.3 V

Component	Value	Size	Part Number	Manufacturer
C1	1 µF	0402	GRM155C81E105KE11D	Murata

Power ON/Power OFF Sequence:
Caution: Permanent damage to the device will occur if the Power ON and Power OFF sequences are not followed.

POWER ON:
1) Set V_{DD} to +3.3 V
2) Turn on V_{DD}
3) Set V_{CTRL} to 0 V
4) Turn on V_{CTRL}
5) Apply RF Signal.

POWER OFF:
1) Turn off RF Signal.
2) Turn off V_{CTRL}
3) Turn off V_{DD}

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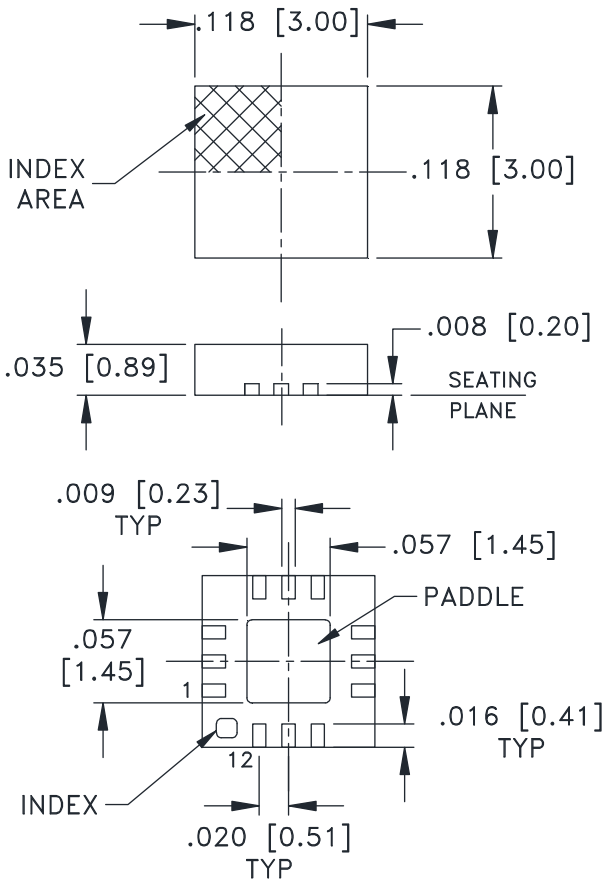
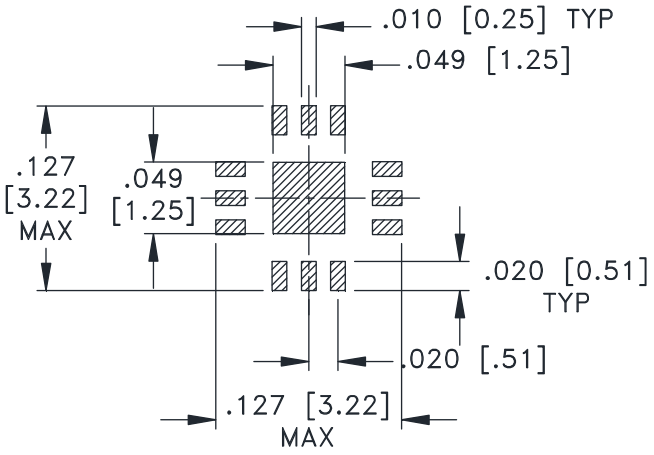
CASE STYLE DRAWING



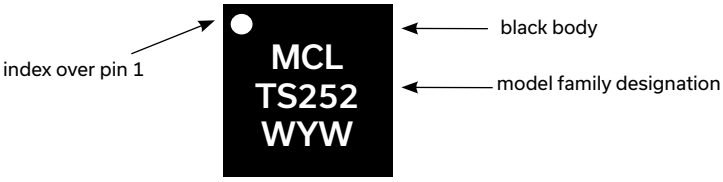
PCB Land Pattern



SUGGESTED LAYOUT,
TOLERANCE TO BE WITHIN ±.002

Weight: .02 Grams
Dimensions are in inches [mm]. Tolerances in inches: 2 Pl. ±.01; 3 Pl.±.004

PRODUCT MARKING



Marking may contain other features or characters for internal lot control

Low Noise Amplifier TSS-14252LN+

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ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASHBOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file)
Case Style	DQ1225 Plastic package, exposed paddle, Lead Finish: Matte-Tin
RoHS Status	Compliant
Tape & Reel **Standard quantities available on reel**	F66 7" reels with 20, 50, 100, 200, 500, 1K, 2K, or 3K devices
Suggested Layout for PCB Design	PL-806
Evaluation Board	TB-TSS14252LNC+ Gerber File
Environmental Ratings	ENV08T1

NOTES

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.

B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.

C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html

Typical Performance Data

Definitions:
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: V_{DD} = +3.3 V, I_{DD} = 67 mA, V_{CTRL} = +0 V @ Temperature = +45°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	Stability		FREQ	IP-3 Output			1dB Comp. Output
									P_{OUT} = 0 dBm/Tone	P_{OUT} = +3 dBm/Tone	P_{OUT} = +6 dBm/Tone	
(MHz)	(dB)	(dB)	(dB)	(dB)	(dB)	K	Measure	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
1325	38.45	63.40	13.62	15.18	0.54	8.38	1.00	1427	27.79	29.39	32.22	14.97
1350	38.41	63.67	14.55	16.83	0.56	8.81	1.00	1470	27.95	29.59	32.68	15.06
1375	38.37	63.80	15.59	18.64	0.56	9.11	1.01	1520	28.96	30.63	32.88	15.06
1400	38.33	64.14	16.73	20.65	0.55	9.62	1.01	1570	29.26	30.84	32.38	15.19
1427	38.26	63.35	17.89	22.40	0.55	8.92	1.01	1620	29.20	30.49	31.67	14.93
1470	38.12	62.18	19.56	24.35	0.58	7.96	1.00	1670	28.65	29.97	31.53	15.22
1495	38.06	61.24	20.73	24.90	0.59	7.25	1.00	1720	28.62	30.02	31.99	15.22
1520	37.98	61.02	22.16	24.53	0.53	7.12	1.00	1770	28.68	30.10	31.96	15.31
1545	37.89	59.89	23.91	23.21	0.53	6.32	0.99	1820	28.95	30.36	32.24	15.44
1570	37.81	59.60	25.48	21.85	0.52	6.18	0.99	1870	29.15	30.39	31.45	15.60
1595	37.71	59.16	26.66	20.92	0.53	5.94	0.99	1920	28.78	29.90	30.95	15.51
1620	37.62	58.80	27.94	20.10	0.54	5.75	0.98	1970	28.50	29.69	31.10	15.55
1645	37.54	58.13	29.12	19.36	0.53	5.37	0.98	2020	28.37	29.51	30.97	15.40
1670	37.48	57.45	30.62	18.63	0.54	4.99	0.98	2070	28.23	29.45	31.36	15.35
1695	37.42	57.20	31.64	17.94	0.52	4.89	0.97	2120	28.42	29.63	31.44	15.49
1720	37.36	56.71	32.31	17.25	0.49	4.63	0.97	2170	28.27	29.49	31.51	15.16
1745	37.31	56.22	33.21	16.81	0.49	4.42	0.97	2220	28.55	29.74	31.57	15.27
1770	37.21	55.82	34.88	16.69	0.50	4.26	0.96	2270	28.42	29.45	30.81	15.31
1795	37.13	55.15	38.77	16.57	0.53	3.98	0.96	2320	28.10	29.24	31.03	15.16
1820	37.06	55.00	46.40	16.42	0.49	3.96	0.96	2370	27.95	29.03	30.73	15.36
1845	37.00	54.54	42.04	16.26	0.46	3.77	0.96	2420	27.33	28.53	30.77	15.13
1870	36.94	54.30	39.25	16.10	0.50	3.69	0.96	2470	27.75	29.03	31.84	14.96
1895	36.88	53.78	38.06	16.07	0.47	3.51	0.95	2520	28.08	29.30	31.59	14.83
1920	36.82	53.63	36.90	16.04	0.49	3.48	0.95	2570	27.95	29.13	31.48	14.79
1945	36.76	53.31	36.07	16.10	0.45	3.39	0.95					
1970	36.71	53.13	35.08	16.11	0.46	3.34	0.95					
1995	36.65	52.66	33.82	16.21	0.47	3.18	0.95					
2020	36.58	52.45	32.60	16.39	0.44	3.14	0.95					
2045	36.53	52.09	31.92	16.46	0.44	3.04	0.95					
2070	36.47	52.00	32.08	16.65	0.39	3.03	0.95					
2095	36.42	51.61	33.13	16.85	0.40	2.93	0.95					
2120	36.36	51.49	34.11	17.08	0.46	2.91	0.95					
2145	36.32	51.24	34.46	17.30	0.52	2.85	0.95					
2170	36.26	50.94	33.94	17.48	0.48	2.78	0.95					
2195	36.21	50.86	33.12	17.74	0.42	2.77	0.95					
2220	36.17	50.64	31.91	18.08	0.43	2.72	0.95					
2245	36.09	50.45	31.40	18.69	0.42	2.70	0.95					
2270	36.03	50.23	30.87	18.96	0.43	2.66	0.95					
2295	35.98	50.01	29.74	19.18	0.45	2.61	0.95					
2320	35.92	49.88	28.56	19.46	0.47	2.59	0.95					
2345	35.87	49.64	27.68	19.65	0.46	2.55	0.95					
2370	35.80	49.49	27.65	19.87	0.49	2.53	0.95					
2395	35.73	49.32	28.32	20.08	0.45	2.50	0.95					
2420	35.66	49.08	29.17	20.20	0.50	2.45	0.95					
2445	35.57	48.99	29.32	20.07	0.55	2.45	0.95					
2470	35.49	48.96	29.81	19.75	0.56	2.46	0.95					
2495	35.41	48.91	30.76	19.41	0.57	2.47	0.95					
2520	35.33	48.75	32.24	18.97	0.50	2.45	0.94					
2545	35.25	48.62	34.03	18.51	0.50	2.43	0.94					
2570	35.17	48.54	35.33	17.97	0.54	2.42	0.94					
2595	35.09	48.31	34.88	17.51	0.49	2.38	0.94					
2620	34.98	48.30	32.39	16.83	0.64	2.39	0.94					
2645	34.88	48.17	29.35	16.09	0.60	2.38	0.93					
2670	34.77	48.15	26.80	15.48	0.55	2.39	0.93					
2695	34.65	48.01	24.67	14.75	0.53	2.37	0.93					
2720	34.51	47.91	23.45	14.07	0.61	2.36	0.92					
2745	34.38	47.89	22.26	13.40	0.58	2.37	0.92					
2770	34.25	47.85	21.07	12.79	0.70	2.37	0.92					

Typical Performance Data

Definitions:
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: V_{DD} = +3.3 V, I_{DD} = 66 mA, V_{CTRL} = +0 V @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	Stability		FREQ	IP-3 Output			1dB Comp. Output
									P_{OUT} = 0 dBm/Tone	P_{OUT} = +3 dBm/Ton	P_{OUT} = +6 dBm/Ton	
(MHz)	(dB)	(dB)	(dB)	(dB)	(dB)	K	Measure	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
1325	36.94	64.59	14.18	16.76	0.89	11.71	1.00	1427	27.05	27.62	29.86	15.24
1350	36.94	69.01	15.06	18.69	0.90	19.65	1.01	1470	27.17	27.77	29.89	15.42
1375	36.89	69.43	15.99	20.88	0.89	20.93	1.01	1520	27.42	28.08	30.13	15.50
1400	36.87	64.75	16.98	23.35	0.90	12.36	1.01	1570	27.37	28.00	30.07	15.68
1427	36.78	66.73	17.92	25.66	0.90	15.85	1.01	1620	27.77	28.42	30.32	15.41
1470	36.68	60.65	19.09	27.78	0.93	7.96	1.00	1670	27.66	28.28	29.98	15.75
1495	36.62	61.12	19.94	26.68	0.92	8.49	1.00	1720	27.69	28.29	30.01	15.73
1520	36.58	61.17	21.00	24.71	0.90	8.56	1.00	1770	27.71	28.30	29.94	15.85
1545	36.45	57.93	22.16	23.31	0.88	5.99	0.99	1820	27.71	28.29	29.89	16.01
1570	36.38	59.13	23.23	21.88	0.87	6.92	0.99	1870	27.71	28.27	29.73	16.22
1595	36.29	58.52	23.95	20.55	0.89	6.51	0.99	1920	27.45	27.99	29.52	16.13
1620	36.23	58.19	24.56	19.45	0.89	6.31	0.98	1970	27.63	28.20	29.68	16.17
1645	36.14	57.64	25.21	18.72	0.90	6.03	0.98	2020	27.50	28.00	29.37	16.02
1670	36.11	57.30	25.64	18.02	0.90	5.76	0.98	2070	27.37	27.87	29.39	15.93
1695	36.01	57.18	25.76	17.46	0.89	5.74	0.97	2120	27.53	28.02	29.41	16.09
1720	35.99	56.69	26.28	16.89	0.90	5.47	0.97	2170	28.27	27.60	29.10	15.65
1745	35.90	55.64	27.08	16.51	0.90	4.87	0.97	2220	27.20	27.68	29.17	15.66
1770	35.85	54.94	28.43	16.14	0.91	4.51	0.96	2270	27.12	27.61	29.05	15.71
1795	35.77	54.89	30.40	15.98	0.90	4.52	0.96	2320	27.15	27.59	29.12	15.63
1820	35.72	54.45	31.35	15.83	0.97	4.32	0.96	2370	26.87	27.35	28.85	15.86
1845	35.65	53.57	31.27	15.73	1.03	3.95	0.96	2420	26.69	27.14	28.76	15.52
1870	35.61	53.30	31.09	15.47	1.00	3.86	0.95	2470	26.99	27.43	29.04	15.30
1895	35.54	53.90	31.31	15.44	0.86	4.14	0.96	2520	26.64	27.09	28.68	15.07
1920	35.50	53.46	32.01	15.24	0.93	3.95	0.95	2570	26.33	26.82	28.93	14.94
1945	35.44	53.65	33.10	15.43	0.86	4.09	0.96					
1970	35.38	52.67	34.07	15.62	0.85	3.68	0.95					
1995	35.24	52.81	34.31	15.89	0.84	3.80	0.96					
2020	35.24	52.19	33.80	15.66	0.83	3.55	0.95					
2045	35.18	52.12	33.51	15.86	0.84	3.55	0.95					
2070	35.12	51.68	33.75	15.93	0.81	3.40	0.95					
2095	35.10	51.92	34.98	16.13	0.80	3.51	0.95					
2120	35.05	51.38	36.01	16.30	1.04	3.34	0.95					
2145	34.99	51.19	37.11	16.45	0.87	3.28	0.95					
2170	34.93	51.54	38.27	16.68	0.88	3.44	0.96					
2195	34.90	50.89	41.23	16.98	0.82	3.22	0.96					
2220	34.84	51.05	45.69	17.19	0.82	3.30	0.96					
2245	34.80	50.56	45.22	17.57	0.82	3.16	0.96					
2270	34.71	49.98	41.49	17.96	0.82	2.99	0.95					
2295	34.68	49.55	40.66	18.14	0.82	2.87	0.95					
2320	34.61	49.44	39.90	18.50	0.86	2.86	0.95					
2345	34.55	49.53	39.37	18.76	0.87	2.90	0.96					
2370	34.47	49.40	41.42	19.07	0.92	2.89	0.96					
2395	34.43	49.26	49.57	19.20	0.84	2.86	0.96					
2420	34.36	49.21	56.63	19.42	0.87	2.87	0.96					
2445	34.29	48.66	45.10	19.53	0.87	2.72	0.96					
2470	34.20	48.84	40.62	19.61	0.88	2.80	0.96					
2495	34.13	48.36	37.08	19.43	0.91	2.68	0.96					
2520	34.05	48.19	33.49	19.28	0.97	2.65	0.95					
2545	33.95	48.64	30.37	18.78	0.92	2.80	0.96					
2570	33.86	48.52	27.58	18.30	0.92	2.79	0.96					
2595	33.76	48.44	25.46	17.79	0.91	2.78	0.96					
2620	33.68	48.00	23.79	17.13	1.02	2.67	0.95					
2645	33.57	48.18	22.37	16.46	1.02	2.75	0.95					
2670	33.42	47.90	21.09	15.80	1.02	2.69	0.95					
2695	33.25	47.83	20.03	15.08	0.97	2.70	0.95					
2720	33.03	47.72	19.06	14.19	0.96	2.70	0.95					
2745	32.93	48.22	18.19	13.67	1.07	2.85	0.95					
2770	32.82	47.64	17.31	13.02	1.06	2.68	0.95					

Typical Performance Data

Definitions:
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: V_{DD} = +3.3 V, I_{DD} = 65 mA, V_{CTRL} = +0 V @ Temperature = +105°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	Stability		FREQ	IP-3 Output			1dB Comp. Output
									P_{OUT} = 0 dBm/Tone	P_{OUT} = +3 dBm/Tone	P_{OUT} = +6 dBm/Tone	
(MHz)	(dB)	(dB)	(dB)	(dB)	(dB)	K	Measure	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
1325	35.39	67.25	14.03	18.66	1.25	19.11	1.02	1427	28.43	28.37	29.67	14.49
1350	35.37	64.11	14.75	21.02	1.26	13.40	1.02	1470	28.73	28.62	30.10	14.62
1375	35.35	64.66	15.50	23.49	1.27	14.62	1.02	1520	29.09	29.36	30.32	14.66
1400	35.31	67.77	16.27	25.36	1.26	21.69	1.02	1570	28.92	29.31	29.91	14.80
1427	35.26	66.53	17.04	26.20	1.25	20.13	1.01	1620	28.72	29.04	29.43	14.59
1470	35.16	65.54	18.03	24.93	1.28	16.46	1.01	1670	28.62	28.79	29.45	14.90
1495	35.11	64.29	18.66	23.14	1.28	14.34	1.00	1720	28.94	29.01	29.89	14.93
1520	35.05	63.38	19.42	21.43	1.26	13.00	1.00	1770	28.94	29.03	29.83	14.97
1545	34.98	61.11	20.08	19.92	1.24	10.10	0.99	1820	29.30	29.35	30.15	15.04
1570	34.91	59.96	20.53	18.76	1.22	8.90	0.99	1870	28.86	29.11	29.42	15.14
1595	34.85	61.74	20.88	17.83	1.25	11.08	0.99	1920	28.56	28.73	29.03	15.19
1620	34.78	57.94	21.30	17.07	1.25	7.16	0.98	1970	28.54	28.66	29.21	15.24
1645	34.71	59.08	21.81	16.56	1.26	8.27	0.98	2020	28.51	28.58	29.11	15.11
1670	34.66	57.70	22.29	15.97	1.26	7.00	0.97	2070	28.62	28.56	29.36	15.08
1695	34.60	57.62	22.67	15.47	1.24	6.96	0.97	2120	28.79	28.74	29.50	15.19
1720	34.56	57.13	23.03	14.93	1.33	6.59	0.97	2170	28.27	28.67	29.54	14.90
1745	34.52	56.10	23.37	14.51	1.29	5.89	0.96	2220	28.84	28.79	29.50	14.94
1770	34.42	55.12	23.70	14.54	1.25	5.33	0.96	2270	28.41	28.42	28.85	14.96
1795	34.35	55.37	24.03	14.38	1.25	5.52	0.96	2320	28.44	28.32	29.06	14.89
1820	34.28	54.96	24.31	14.32	1.26	5.33	0.96	2370	28.14	28.03	28.69	15.11
1845	34.23	54.79	24.61	14.15	1.26	5.23	0.95	2420	27.70	27.52	28.65	14.86
1870	34.18	54.09	24.90	14.04	1.34	4.86	0.95	2470	28.46	28.14	29.60	14.63
1895	34.13	53.06	25.17	14.00	1.23	4.35	0.95	2520	28.53	28.31	29.27	14.47
1920	34.07	53.16	25.51	13.98	1.23	4.43	0.95	2570	28.31	28.07	29.11	14.38
1945	34.01	52.85	25.89	14.02	1.22	4.32	0.95					
1970	33.96	52.80	26.38	14.04	1.20	4.31	0.95					
1995	33.91	52.47	26.97	14.12	1.23	4.20	0.95					
2020	33.86	51.85	27.38	14.17	1.20	3.93	0.95					
2045	33.81	51.59	27.84	14.26	1.20	3.84	0.95					
2070	33.76	51.50	28.18	14.35	1.16	3.82	0.95					
2095	33.72	51.41	28.12	14.51	1.16	3.82	0.95					
2120	33.67	51.57	28.02	14.67	1.31	3.91	0.95					
2145	33.62	50.72	27.98	14.87	1.27	3.58	0.95					
2170	33.57	50.90	27.81	15.11	1.24	3.68	0.95					
2195	33.52	50.01	27.94	15.32	1.18	3.37	0.95					
2220	33.46	50.12	28.15	15.61	1.18	3.43	0.95					
2245	33.40	49.68	28.32	15.98	1.19	3.30	0.95					
2270	33.35	49.90	28.15	16.25	1.20	3.40	0.96					
2295	33.30	49.32	28.18	16.54	1.20	3.22	0.96					
2320	33.24	49.64	28.38	16.95	1.23	3.35	0.96					
2345	33.19	48.90	28.56	17.17	1.24	3.12	0.96					
2370	33.12	49.45	28.58	17.64	1.27	3.34	0.96					
2395	33.05	49.25	28.49	18.09	1.22	3.30	0.97					
2420	32.97	49.11	28.10	18.39	1.25	3.28	0.97					
2445	32.91	48.97	27.82	18.67	1.28	3.25	0.97					
2470	32.84	48.79	27.26	18.93	1.26	3.21	0.97					
2495	32.76	48.50	26.35	19.05	1.28	3.14	0.97					
2520	32.68	48.25	25.18	19.16	1.29	3.07	0.97					
2545	32.60	48.62	24.03	19.09	1.27	3.23	0.97					
2570	32.52	48.09	22.89	18.95	1.30	3.07	0.97					
2595	32.44	48.02	22.02	18.74	1.27	3.06	0.97					
2620	32.35	47.97	21.13	18.35	1.25	3.07	0.97					
2645	32.24	47.94	20.27	17.86	1.23	3.09	0.97					
2670	32.11	48.14	19.40	17.09	1.34	3.19	0.98					
2695	31.95	48.04	18.64	16.28	1.33	3.18	0.98					
2720	31.81	47.62	17.95	15.54	1.34	3.06	0.97					
2745	31.72	48.11	17.23	15.00	1.34	3.24	0.98					
2770	31.58	48.11	16.46	14.37	1.35	3.25	0.98					

Typical Performance Data

Definitions:
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: V_{DD} = +3.3 V, I_{DD} = 52 mA, V_{CTRL} = +0 V @ Temperature = +25°C

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	Stability		FREQ	IP-3 Output			1dB Comp. Output
									P_{OUT} = 0 dBm/Tone	P_{OUT} = +3 dBm/Ton	P_{OUT} = +6 dBm/Ton	
(MHz)	(dB)	(dB)	(dB)	(dB)	(dB)	K	Measure	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
1325	36.27	64.53	14.24	17.95	0.91	12.79	1.01	1427	28.33	28.61	28.67	13.96
1350	36.23	64.09	15.12	19.97	0.92	12.15	1.01	1470	28.46	28.70	28.66	14.16
1375	36.18	64.41	16.11	22.19	0.91	12.87	1.01	1520	28.45	28.64	28.24	14.10
1400	36.14	61.71	17.14	24.23	0.92	9.56	1.01	1570	28.62	28.78	28.53	14.25
1427	36.07	64.11	18.15	25.06	0.93	12.82	1.01	1620	28.58	28.67	27.96	14.23
1470	35.96	62.07	19.40	24.30	0.93	10.17	1.00	1670	28.36	28.40	27.81	14.46
1495	35.91	60.54	20.28	22.47	0.91	8.62	1.00	1720	28.39	28.42	27.84	14.41
1520	35.83	60.36	21.50	21.09	0.92	8.46	0.99	1770	28.31	28.31	27.71	14.49
1545	35.72	59.44	22.81	19.94	0.91	7.78	0.99	1820	28.29	28.28	27.64	14.65
1570	35.64	59.80	24.06	19.02	0.92	8.12	0.99	1870	28.08	28.03	27.33	14.77
1595	35.56	58.54	25.10	18.02	0.95	7.03	0.98	1920	28.07	28.02	27.54	14.55
1620	35.50	58.42	25.98	17.32	0.91	7.04	0.98	1970	28.19	28.12	27.51	14.78
1645	35.43	57.38	26.91	16.74	0.92	6.23	0.98	2020	27.95	27.86	27.35	14.70
1670	35.38	56.67	27.57	16.21	0.92	5.80	0.97	2070	28.08	28.05	27.73	14.81
1695	35.28	56.70	27.91	15.78	0.92	5.86	0.97	2120	28.02	27.93	27.43	14.81
1720	35.24	55.94	28.94	15.35	0.93	5.38	0.97	2170	28.27	27.77	27.50	14.60
1745	35.18	55.35	29.99	14.99	1.01	5.06	0.96	2220	27.97	27.95	27.80	14.35
1770	35.13	55.21	31.27	14.75	0.94	4.99	0.96	2270	27.74	27.69	27.43	14.63
1795	35.06	54.40	33.95	14.59	0.92	4.59	0.96	2320	27.92	27.89	27.81	14.49
1820	35.01	54.04	36.88	14.45	0.92	4.43	0.95	2370	27.59	27.55	27.51	14.58
1845	34.94	54.11	37.12	14.36	0.94	4.50	0.95	2420	27.59	27.59	27.89	14.43
1870	34.89	53.76	36.43	14.25	0.91	4.35	0.95	2470	27.83	27.82	28.03	14.35
1895	34.84	53.04	36.78	14.16	0.91	4.02	0.95	2520	27.40	27.38	27.71	13.94
1920	34.80	52.52	37.75	14.11	0.91	3.82	0.95	2570	27.37	27.44	28.38	14.01
1945	34.76	52.35	39.62	14.14	0.89	3.76	0.95					
1970	34.68	52.27	40.24	14.46	0.90	3.77	0.95					
1995	34.58	52.45	39.29	14.59	0.87	3.90	0.95					
2020	34.56	52.01	37.75	14.59	0.86	3.72	0.95					
2045	34.50	51.59	36.68	14.72	0.88	3.58	0.95					
2070	34.47	51.21	37.07	14.80	0.85	3.44	0.95					
2095	34.45	51.30	39.04	14.98	0.86	3.50	0.95					
2120	34.42	50.86	41.16	15.14	0.84	3.34	0.95					
2145	34.35	50.73	43.75	15.38	0.85	3.33	0.95					
2170	34.30	50.61	46.32	15.67	0.84	3.31	0.95					
2195	34.26	50.33	48.47	15.89	0.85	3.23	0.95					
2220	34.22	49.75	42.96	16.13	0.87	3.05	0.95					
2245	34.19	49.85	38.95	16.52	0.85	3.10	0.95					
2270	34.12	49.49	36.13	16.89	0.84	3.01	0.95					
2295	34.07	49.50	34.26	17.18	0.85	3.04	0.95					
2320	34.01	48.95	33.40	17.59	0.84	2.88	0.95					
2345	33.95	48.89	32.95	17.92	0.87	2.88	0.95					
2370	33.91	48.65	34.24	18.28	0.86	2.82	0.96					
2395	33.87	48.79	36.68	18.66	0.87	2.89	0.96					
2420	33.81	48.69	40.23	19.07	0.89	2.88	0.96					
2445	33.74	48.62	43.48	19.39	0.89	2.88	0.96					
2470	33.66	48.39	46.46	19.61	0.91	2.83	0.96					
2495	33.58	47.90	44.41	19.78	0.88	2.71	0.96					
2520	33.52	48.00	38.74	19.75	0.89	2.75	0.96					
2545	33.44	47.83	33.40	19.55	0.90	2.73	0.96					
2570	33.36	47.76	29.82	19.21	0.93	2.72	0.96					
2595	33.25	47.86	27.16	18.72	0.90	2.77	0.96					
2620	33.19	47.63	25.02	18.15	0.93	2.72	0.96					
2645	33.10	47.68	23.35	17.59	0.95	2.76	0.96					
2670	32.98	47.77	21.94	16.97	0.95	2.81	0.96					
2695	32.84	47.27	20.73	16.24	0.96	2.68	0.96					
2720	32.63	47.36	19.68	15.31	0.97	2.74	0.96					
2745	32.53	47.28	18.72	14.62	0.99	2.72	0.96					
2770	32.40	47.24	17.82	13.93	1.02	2.72	0.96					

Typical Performance Data

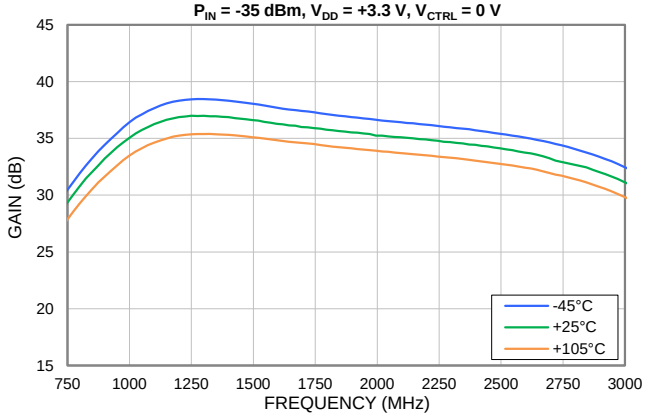
Definitions:
Input Return Loss = -S11 (dB)
Gain(Power Gain) = S21 (dB)
Reverse Isolation = -S12 (dB)
Output Return Loss = -S22 (dB)

TEST CONDITIONS: V_{DD} = +3.3 V, I_{DD} = 72 mA, V_{CTRL} = +0 V @ Temperature = +25°C

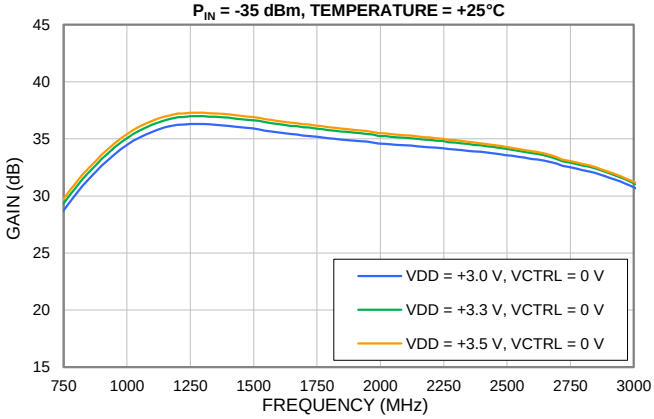
FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Noise Figure	Stability		FREQ	IP-3 Output			1dB Comp. Output
									P_{OUT} = 0 dBm/Tone	P_{OUT} = +3 dBm/Ton	P_{OUT} = +6 dBm/Ton	
(MHz)	(dB)	(dB)	(dB)	(dB)	(dB)	K	Measure	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
1325	37.25	64.74	15.59	17.27	0.86	12.47	1.00	1427	26.63	27.26	29.31	15.77
1350	37.23	62.28	16.50	19.25	0.86	8.83	1.01	1470	26.84	27.45	29.41	16.03
1375	37.18	65.25	17.61	21.59	0.87	12.75	1.01	1520	27.09	27.75	29.69	15.95
1400	37.16	65.69	18.68	24.21	0.87	13.67	1.01	1570	27.10	27.72	29.61	16.14
1427	37.07	63.63	19.90	26.61	0.89	10.94	1.01	1620	27.41	28.09	29.98	16.07
1470	36.95	62.14	21.79	27.22	0.91	9.21	1.00	1670	27.38	28.00	29.68	16.31
1495	36.91	61.82	23.20	25.29	0.90	9.06	1.00	1720	27.37	27.99	29.72	16.24
1520	36.84	60.73	24.50	23.57	0.88	7.92	0.99	1770	27.42	28.02	29.68	16.31
1545	36.73	61.06	26.36	22.13	0.87	8.47	0.99	1820	27.42	28.02	29.66	16.55
1570	36.65	59.38	26.92	21.07	0.88	7.00	0.99	1870	27.44	28.02	29.55	16.74
1595	36.57	58.76	28.26	19.86	0.90	6.50	0.98	1920	27.21	27.77	29.30	16.39
1620	36.49	59.07	28.98	18.94	0.88	6.80	0.98	1970	27.37	27.96	29.48	16.61
1645	36.41	57.90	29.68	18.23	0.91	5.98	0.98	2020	27.26	27.78	29.21	16.50
1670	36.37	56.89	30.33	17.55	0.87	5.34	0.97	2070	27.16	27.66	29.16	16.58
1695	36.27	57.17	31.10	17.06	0.87	5.57	0.97	2120	27.33	27.84	29.25	16.64
1720	36.24	56.35	32.19	16.52	0.90	5.11	0.97	2170	28.27	27.43	28.90	16.30
1745	36.16	55.71	31.99	16.19	0.89	4.76	0.96	2220	27.03	27.51	28.95	16.00
1770	36.10	55.67	31.64	15.90	0.92	4.77	0.96	2270	26.94	27.46	28.88	16.28
1795	36.02	55.15	31.69	15.70	0.89	4.53	0.96	2320	26.99	27.46	28.91	16.16
1820	35.97	54.69	31.93	15.51	0.89	4.32	0.96	2370	26.74	27.24	28.65	16.24
1845	35.90	54.22	32.09	15.45	0.90	4.15	0.96	2420	26.57	27.04	28.51	16.03
1870	35.85	53.96	32.36	15.28	0.88	4.03	0.96	2470	26.87	27.34	28.81	15.92
1895	35.79	53.85	32.62	15.21	0.89	4.01	0.95	2520	26.54	27.01	28.45	15.46
1920	35.73	53.24	32.93	15.11	0.90	3.77	0.95	2570	26.23	26.74	28.42	15.48
1945	35.68	53.10	32.92	15.18	0.86	3.73	0.95					
1970	35.59	52.54	33.08	15.56	0.86	3.56	0.95					
1995	35.49	52.83	33.39	15.67	0.83	3.73	0.95					
2020	35.47	52.58	33.57	15.58	0.85	3.61	0.95					
2045	35.40	52.02	33.94	15.78	0.85	3.43	0.95					
2070	35.35	51.85	34.13	15.89	0.81	3.38	0.95					
2095	35.32	51.55	34.29	16.03	0.84	3.29	0.95					
2120	35.28	51.23	34.39	16.20	0.82	3.20	0.95					
2145	35.21	50.88	34.59	16.45	0.82	3.11	0.95					
2170	35.15	50.86	34.73	16.66	0.80	3.13	0.95					
2195	35.11	50.78	34.67	16.94	0.82	3.11	0.95					
2220	35.05	50.79	34.68	17.20	0.83	3.15	0.95					
2245	35.01	50.13	34.58	17.55	0.82	2.95	0.95					
2270	34.92	50.09	34.26	17.85	0.82	2.97	0.95					
2295	34.88	49.88	33.99	18.09	0.82	2.92	0.95					
2320	34.80	49.28	33.66	18.48	0.82	2.75	0.95					
2345	34.74	49.50	33.47	18.76	0.82	2.84	0.95					
2370	34.66	49.43	33.11	19.05	0.88	2.85	0.96					
2395	34.61	49.26	32.54	19.18	0.85	2.81	0.96					
2420	34.54	48.82	32.09	19.39	0.93	2.71	0.95					
2445	34.47	49.04	31.47	19.49	0.90	2.79	0.96					
2470	34.38	48.79	30.81	19.50	0.88	2.74	0.96					
2495	34.29	48.48	30.32	19.38	0.85	2.68	0.95					
2520	34.21	48.52	29.96	19.11	0.88	2.71	0.95					
2545	34.11	48.38	28.81	18.65	0.88	2.69	0.95					
2570	34.02	48.57	27.44	18.13	0.91	2.77	0.95					
2595	33.92	48.36	26.25	17.57	0.89	2.72	0.95					
2620	33.84	48.14	25.25	16.95	0.93	2.67	0.95					
2645	33.73	48.21	23.88	16.33	0.92	2.72	0.95					
2670	33.58	48.07	22.72	15.67	0.94	2.71	0.95					
2695	33.40	47.91	21.39	14.96	0.93	2.69	0.95					
2720	33.18	48.00	19.41	14.12	0.97	2.76	0.94					
2745	33.08	48.02	18.17	13.58	0.98	2.76	0.95					
2770	32.95	47.75	17.49	12.95	1.01	2.69	0.94					

Typical Performance Curves

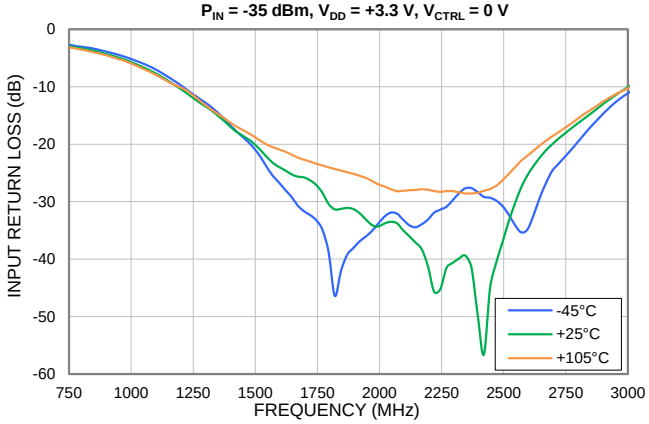
GAIN vs. TEMPERATURE,
P_{IN} = -35 dBm, V_{DD} = +3.3 V, V_{CTRL} = 0 V



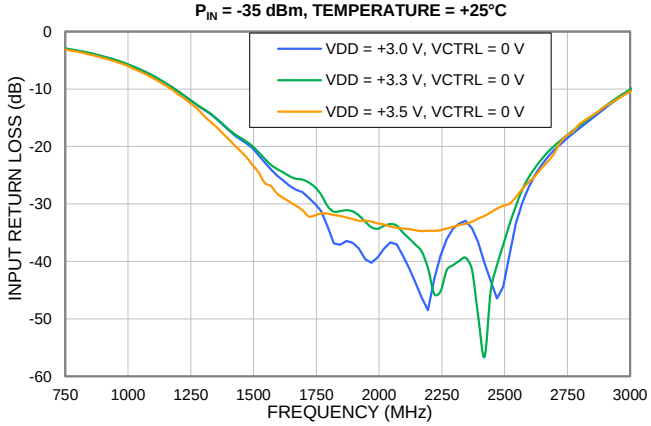
GAIN vs. DEVICE VOLTAGE,
P_{IN} = -35 dBm, TEMPERATURE = +25°C



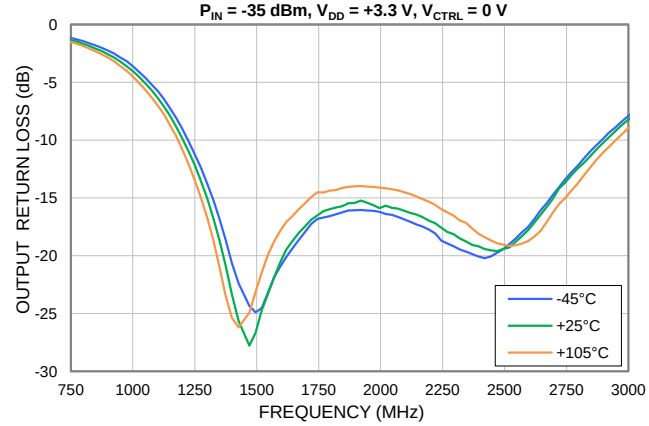
INPUT RETURN LOSS vs.TEMPERATURE,
P_{IN} = -35 dBm, V_{DD} = +3.3 V, V_{CTRL} = 0 V



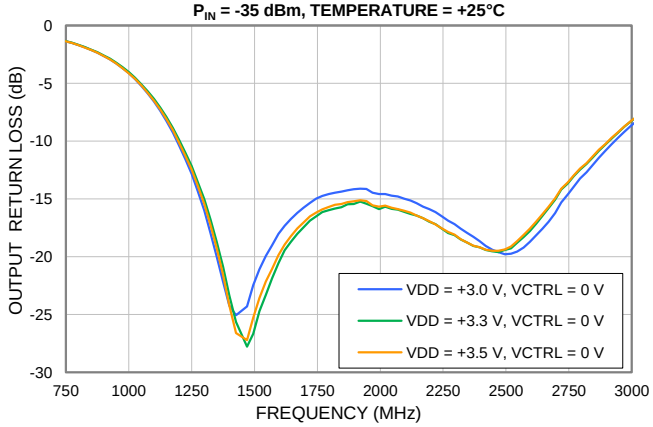
INPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -35 dBm, TEMPERATURE = +25°C



OUTPUT RETURN LOSS vs. TEMPERATURE,
P_{IN} = -35 dBm, V_{DD} = +3.3 V, V_{CTRL} = 0 V

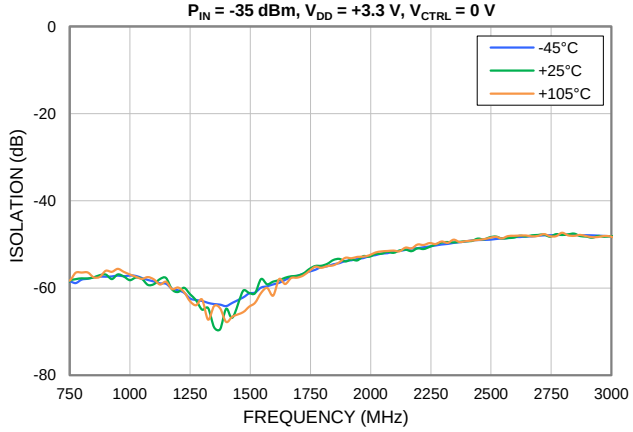


OUTPUT RETURN LOSS vs. DEVICE VOLTAGE,
P_{IN} = -35 dBm, TEMPERATURE = +25°C

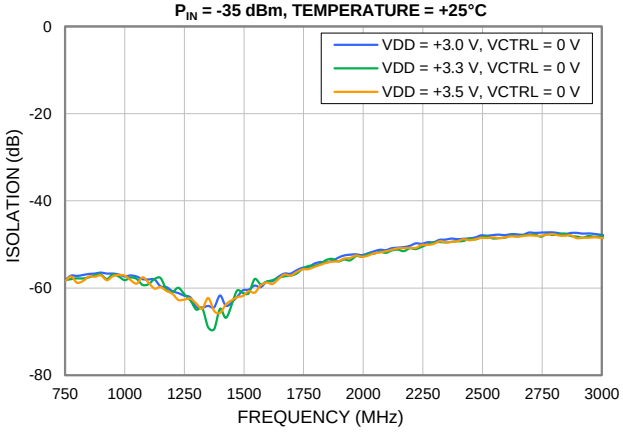


Typical Performance Curves

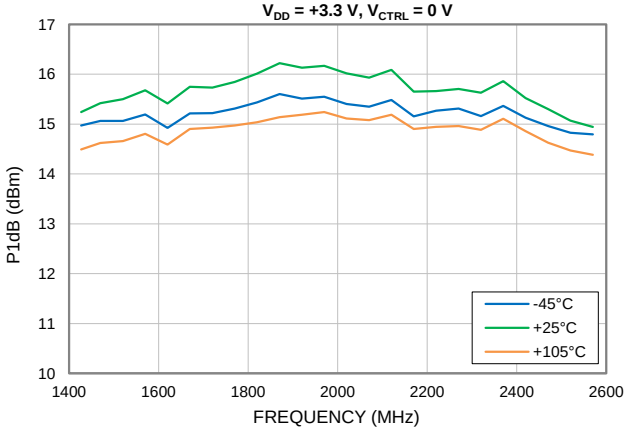
ISOLATION vs.TEMPERATURE,
P_{IN} = -35 dBm, V_{DD} = +3.3 V, V_{CTRL} = 0 V



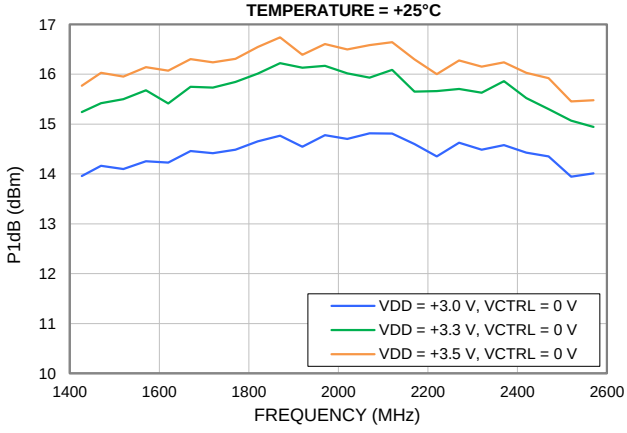
ISOLATION vs. DEVICE VOLTAGE,
P_{IN} = -35 dBm, TEMPERATURE = +25°C



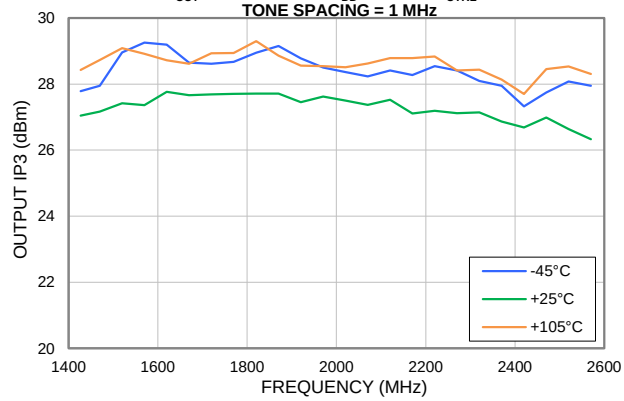
P1dB vs. TEMPERATURE,
V_{DD} = +3.3 V, V_{CTRL} = 0 V



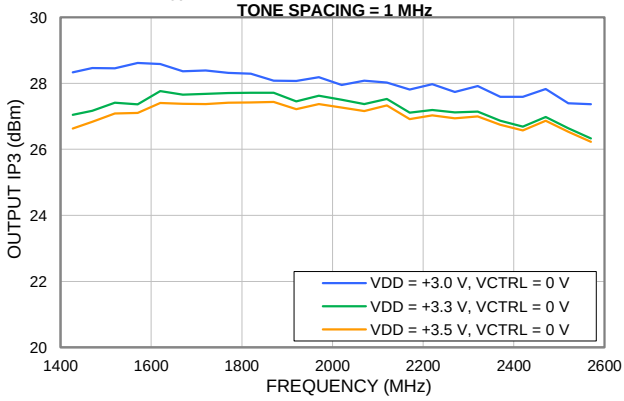
P1dB vs. DEVICE VOLTAGE,
TEMPERATURE = +25°C



OUTPUT IP3 vs. TEMPERATURE,
P_{OUT} = 0 dBm/TONE, V_{DD} = +3.3 V, V_{CTRL} = 0 V
TONE SPACING = 1 MHz

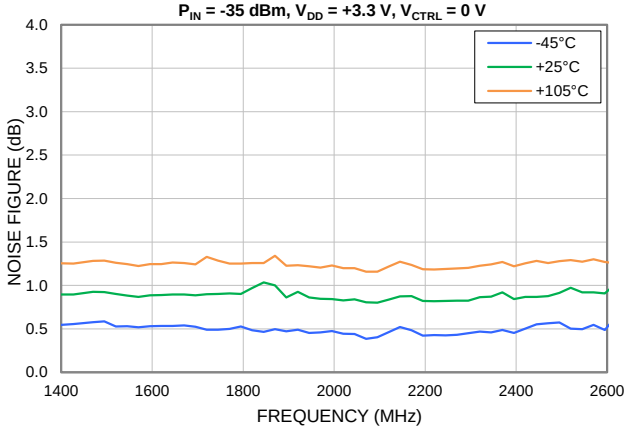


OUTPUT IP3 vs. DEVICE VOLTAGE,
P_{OUT} = 0 dBm/TONE, TEMPERATURE = +25°C
TONE SPACING = 1 MHz

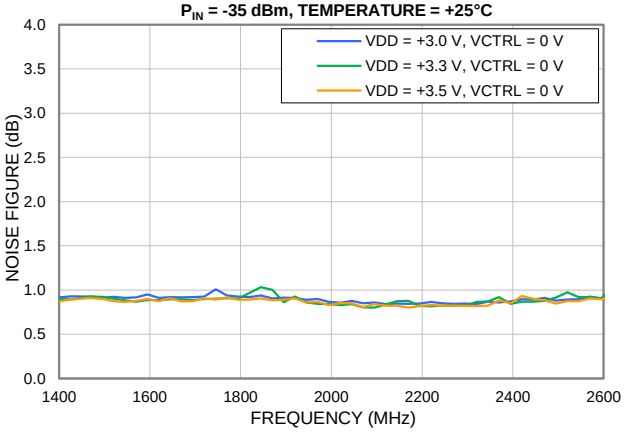


Typical Performance Curves

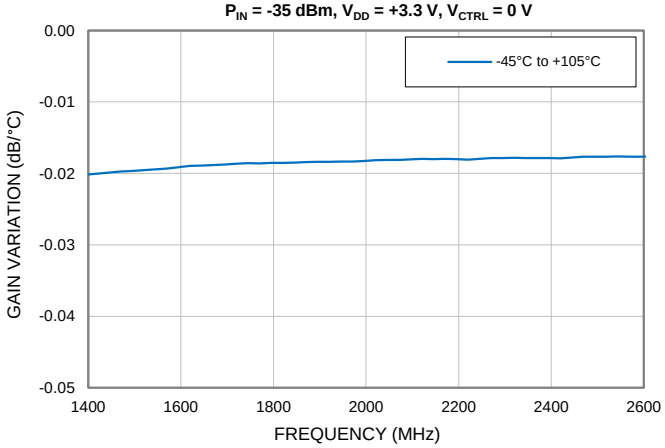
NOISE FIGURE vs. TEMPERATURE,
P_{IN} = -35 dBm, V_{DD} = +3.3 V, V_{CTRL} = 0 V



NOISE FIGURE vs. DEVICE VOLTAGE,
P_{IN} = -35 dBm, TEMPERATURE = +25°C



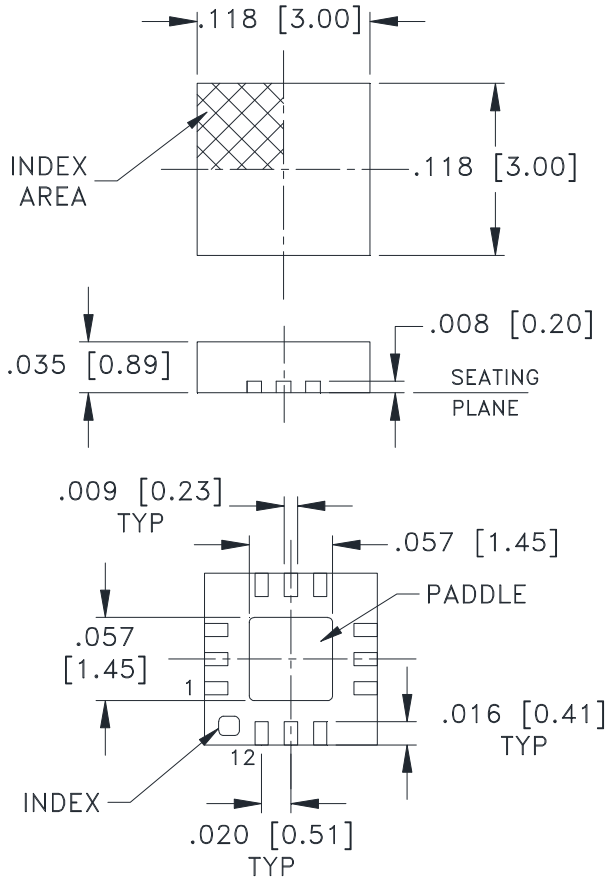
GAIN VARIATION vs. TEMPERATURE,
P_{IN} = -35 dBm, V_{DD} = +3.3 V, V_{CTRL} = 0 V

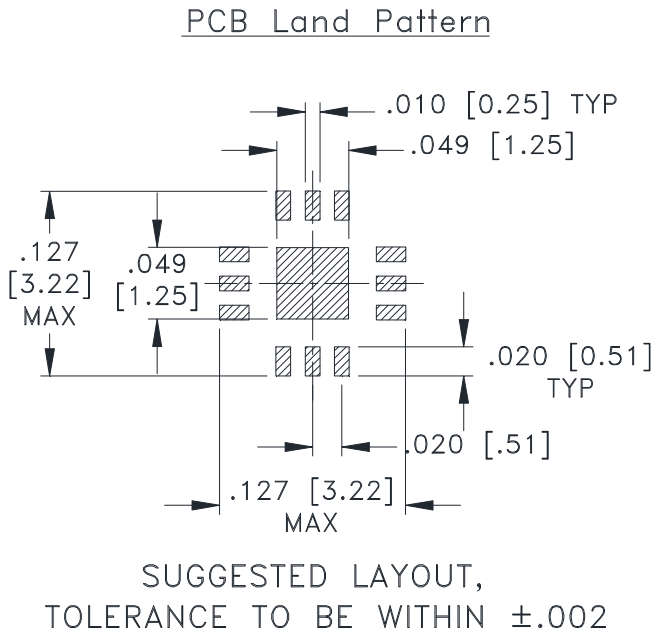


Case Style DQ

DQ1225

Outline Dimensions





Weight: .02 Grams

Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3 Pl. ± .004

Notes:

1. Case material: Plastic.
2. Termination finish:
   - For RoHS Case Styles: Tin-Silver alloy plate over Nickel barrier or Matte-Tin. All models, (+) suffix. See Data sheet.
   - For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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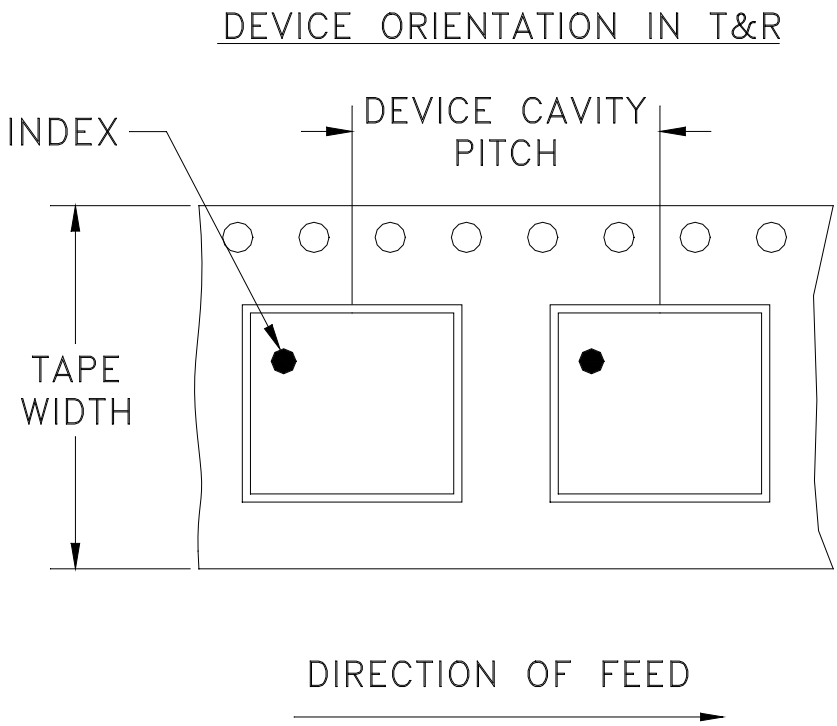
Mini-Circuits ISO 9001 & ISO 14001 Certified

Tape & Reel Packaging TR-F66



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note	
8	4	7	Small quantity standard	20
				50
				100
				200
				500
		7	Standard	1000, 2000, 3000

Note: Please consult individual model data sheet to determine device per reel availability.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

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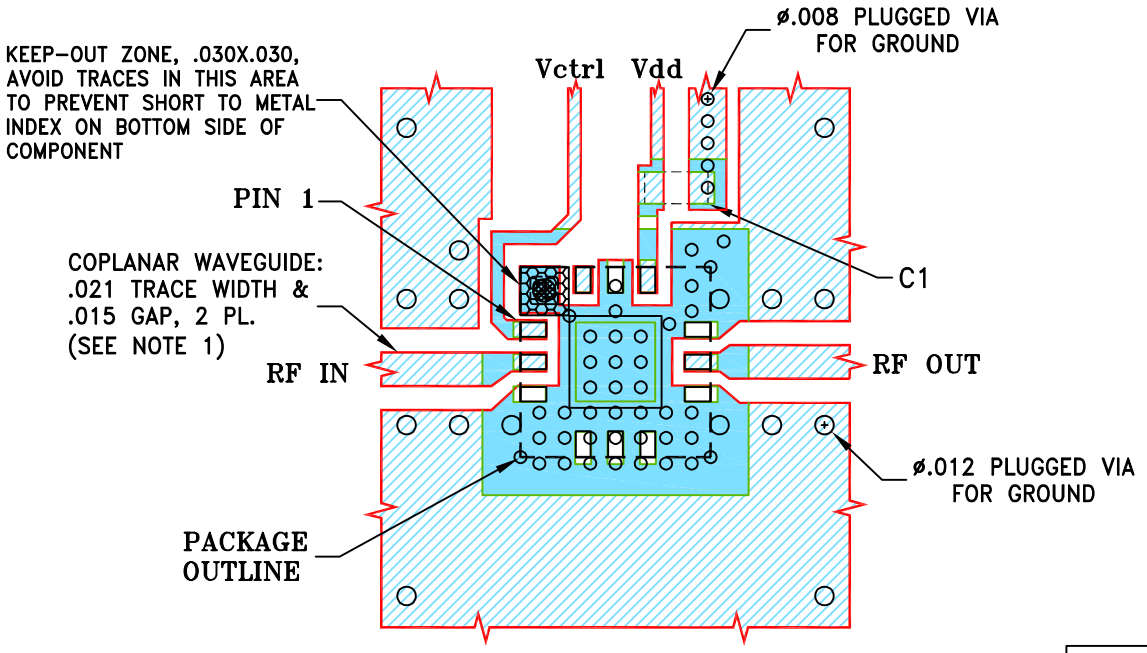
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-023731	NEW RELEASE	11/25/24	ITG	IL

SUGGESTED MOUNTING CONFIGURATION FOR DQ1225 CASE STYLE



COMPONENT	SIZE
C1	0402

NOTES:

1. TRACE WIDTH AND GAP ARE SHOWN FOR ROGERS RO4350B, DIELECTRIC THICKNESS: .010"; COPPER: 1 Oz EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
2. CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES REFER TO TB-TSS14252LNC+.
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	ITG	11/25/24
TOLERANCES ON:	CHECKED	GF	11/25/24
2 PL DECIMALS ±	APPROVED	IL	11/25/24
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

ASHEETA1.DWG REV:A DATE:01/12/95

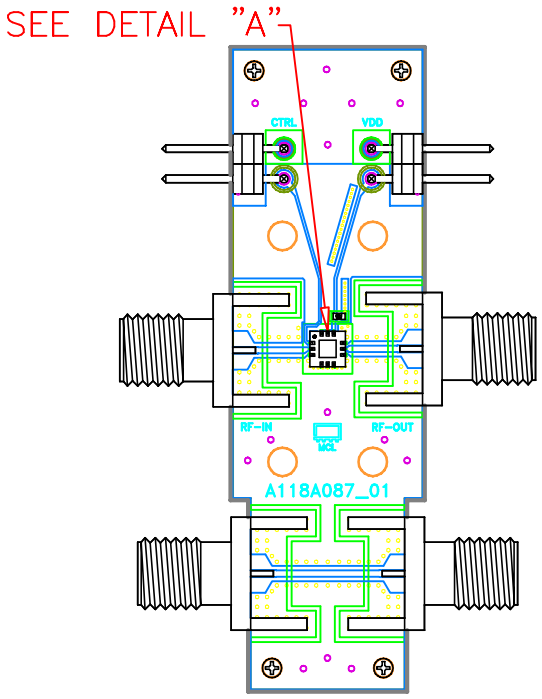
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

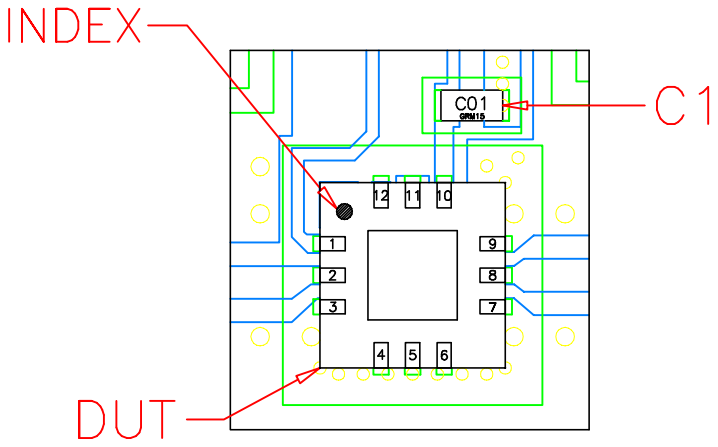
PL, DQ1225, TB-TSS14252LNC+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-806	OR

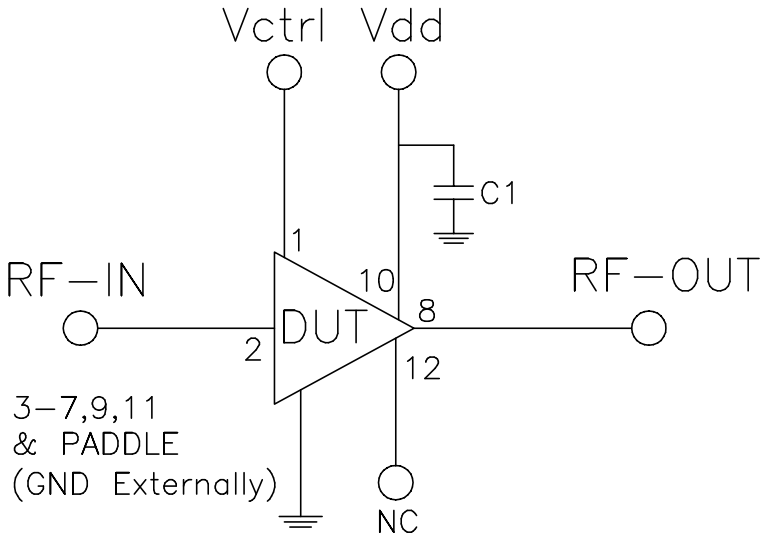
FILE:	SCALE:	SHEET:
98PL806	8:1	1 OF 1

Evaluation Board and Circuit





DETAIL "A"
LOCATION OF
UNITS COMPONENTS
(SCALE 5:1)



SCHEMATIC DIAGRAM

Component	Size	Value	Part Number	Manufacturer
C1	0402	1uF	GRM155C81E105KE11D	Murata

Notes:

1. 50 Ohm SMA Female Connectors.
2. PCB Material: Roger RO4350B or equivalent, Dielectric constant=3.5, Thickness=0.010 inch

Mini-Circuits®

Mini-Circuits

Environmental Specifications ENV08T1

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-40° to 85° C or -45° to 85° C or -55° to 105° C or -40° to 105° C or -40° to 95° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C or -65° to 150° Ambient Environment	Individual Model Data Sheet
HTOL	1000 hours at 125°C	MIL-STD-883, Method 1005, Condition B
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Mechanical Shock	1.5Kg, 0.5 ms, 5 shock pulses, Y1 direction only	MIL-STD-883, Method 2002, Condition B, except Y1 direction only
Vibration (Variable Frequency)	50g peak	MIL-STD-883, Method 2007, Condition B
Autoclave	15 psig, 100% RH, 121°C, 96 hours	JESD22-A102, Condition C
HAST	130°C, 85% RH, 96 hours	JESD22-A110
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Solder Reflow Heat	Sn-Pb Eutetic Process: 240°C peak Pb-Free Process: 260°C peak	J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1
Moisture Sensitivity: Level 1	Bake at 125°C for 24 hours Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 260°C peak	J-STD-020

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215