MMIC SURFACE MOUNT

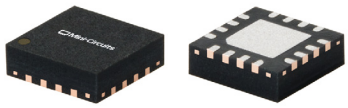
SPDT RF Switch

M3SWA2-34DR+

50 Ω DC to 30 GHz Absorptive RF Switch with Internal Driver

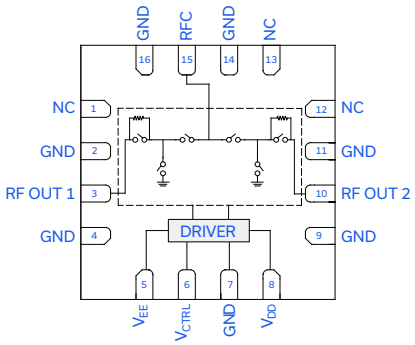
THE BIG DEAL

- Wideband, DC to 30 GHz
- Low Insertion Loss, Typ. 1.0 dB
- High Isolation, Typ. 65 dB
- High Input IP3, Typ. +48 dBm
- Fast Rise/Fall Time, Typ. 6.9 ns/7.1 ns
- 3x3 mm, 16-Lead QFN-Style Package



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



APPLICATIONS

- Radar, EW and ECM Defense Systems
- Communication Infrastructure
- Test and Measurement

PRODUCT OVERVIEW

Mini-Circuits' M3SWA2-34DR+ is a GaAs MMIC SPDT absorptive switch with an internal driver designed for wideband operation from DC to 30 GHz. This switch enables fast, nano-second switching across a wide frequency range with minimum gate lag effects. This model provides excellent isolation, high linearity and is capable of withstanding +27 dBm RF input power. It is packaged in a small 3x3 mm QFN-Style package for ease of integration in compact assemblies.

KEY FEATURES

Features	Advantages
Absorptive Design	Absorptive switch design enables excellent return loss on all ports, minimizing reflection at the unselected port.
High Isolation: • 61 dB Typ. RFC to RF1/RF2 • 65 dB Typ. RF1 to RF2	High isolation significantly reduces leakage of power into OFF ports.
High Linearity and Input Power: • Input Power at P1dB, +25.2 dBm Typ. • Input IP3, +48 dBm Typ. • Max RF Input Power, +27 dBm CW	High linearity minimizes unwanted intermodulation products which are difficult or impossible to filter in multi-carrier environments, or in the presence of strong interfering signal from adjacent circuitry. High RF input power tolerance protects the device from damage due to unexpected spikes in signal level.
Fast RF Switching Time: • Rise/Fall Time, Typ. 6.9 ns/7.1 ns • On/Off Time, Typ. 23.3 ns/16.5 ns • Settling to 0.05 dB, Typ. 29 ns	Fast switching makes this model suitable for applications where extremely fast transition between ports is required, such as automated switching networks.
Compact Size, 3x3 mm	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.

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ELECTRICAL SPECIFICATIONS[1,2,3] AT +25° C, V_{DD}= +3.3 V, V_{EE}= -3.3 V, UNLESS NOTED OTHERWISE

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range		DC		30	GHz
Insertion Loss	0.01		0.6		dB
	0.1		0.6		
	1.0		0.6		
	10		1.0		
	20		1.3		
	30		2.2		
Isolation Between Ports, RF1 & RF2	0.01	68	79		dB
	0.1	74	78		
	1.0	63	67		
	10	59	65		
	20	49	53		
	30	44	48		
Isolation Between RFC & RF1/RF2 Ports	0.01	71	83		dB
	0.1	73	77		
	1.0	61	65		
	10	46	50		
	20	41	48		
	30	41	45		
Return Loss - RFC	0.01	15	19		dB
	0.1	20	24		
	1.0	17	21		
	10	13	17		
	20	12	17		
	30	13	20		
Return Loss - RF1 & RF2 (On & Off State)	0.01	15	19		dB
	0.1	16	22		
	1.0	17	22		
	10	14	21		
	20	11	17		
	30	7	14		
Input IP3 (P_{IN} = +5 dBm/Tone)	0.01		+46		dBm
	0.1		+50		
	1.0		+52		
	10		+51		
	20		+46		
	30		+42		
Input Power at P1dB	0.01		+19.8		dBm
	0.1		+24.5		
	1.0		+26.1		
	10		+27.4		
	20		+27.8		
	30		+25.7		
Input Power at P0.1dB	0.01		+17.7		dBm
	0.1		+21.6		
	1.0		+23.4		
	10		+26.3		
	20		+26.9		
	30		+24.4		

1. Tested on Mini-Circuits Characterization Test Board TB-M3SWA234DRC+. See Figure 2.
2. Bi-directional, refer to S-Parameters for actual performance.
3. All RF-ports must be DC blocked or held at 0 V DC.

SPDT RF Switch

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DC ELECTRICAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Units
Positive Supply Voltage, V_{DD}	+3.3		+3.6	V
Negative Supply Voltage, V_{EE}	-3.6		-3.3	V
Positive Supply Current, I_{DD}		2.7	2.9	mA
Negative Supply Current, I_{EE}		1.6	1.8	mA
Control Voltage Low		0	+0.8	V
Control Voltage High	+1.8	+2	+3.6	V
Control Current Low		0.01	1	µA
Control Current High		5	9	µA

SWITCHING SPECIFICATIONS

Parameter	Condition	Min.	Typ.	Max.	Units
ON Time, 50% Control to 90% RF output	RF P_{IN} at RFC = 0 dBm RF Frequency = 150 MHz Control Frequency = 1 kHz Control High = +2 V Control Low = 0 V		23		ns
OFF Time, 50% Control to 10% RF output			16		ns
Video Leakage			+5.4		mV
Rise Time, 10% to 90% of RF output			6.9		ns
Fall Time, 90% to 10% of RF output			7.1		ns
Settling time (50% VCTRL to 0.05 dB of final RF output)			29		ns

TRUTH TABLE

State of Control Voltage	RFC to RF1	RFC to RF2
Low	ON	OFF
High	OFF	ON

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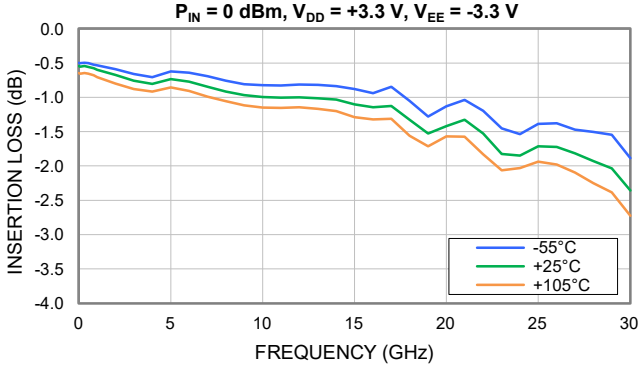
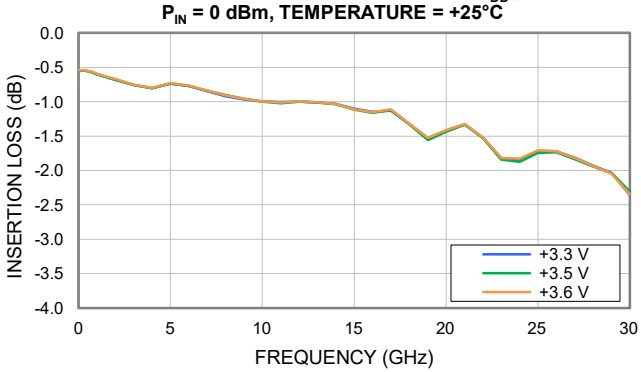
TYPICAL PERFORMANCE GRAPHS

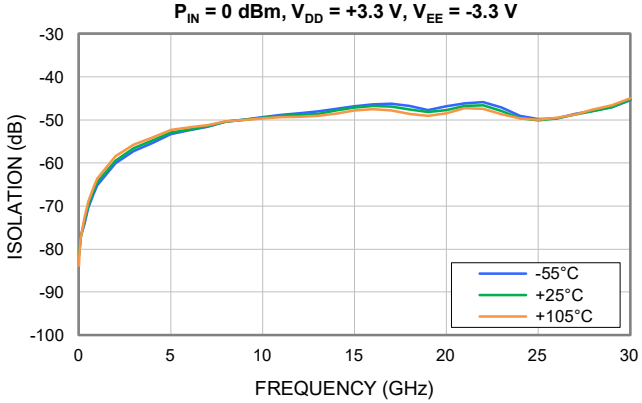
INSERTION LOSS RFC-RF OUT[4] vs. TEMPERATURE,
P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



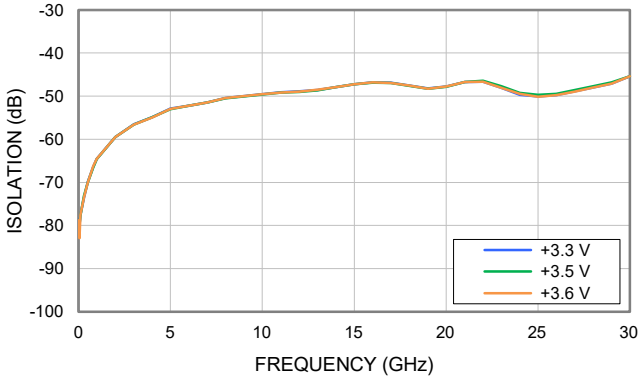
INSERTION LOSS RFC-RF OUT[4] vs. V_{DD}[6],
P_{IN} = 0 dBm, TEMPERATURE = +25°C



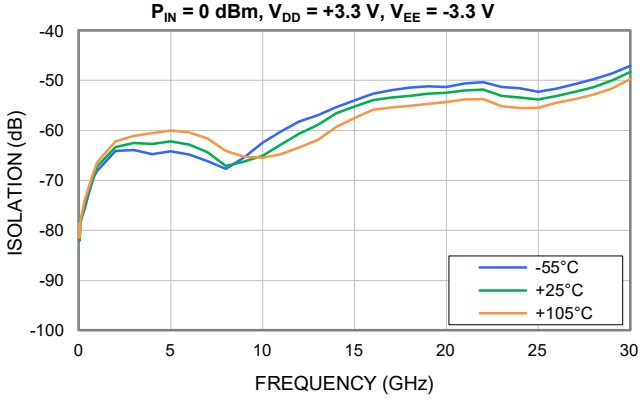
ISOLATION RFC-RF OUT[5] vs. TEMPERATURE,
P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



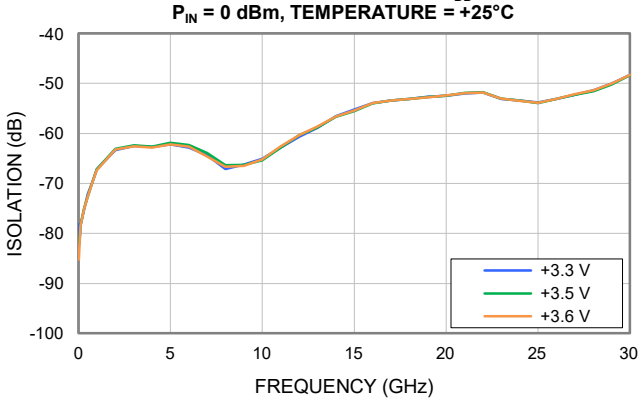
ISOLATION RFC-RF OUT[5] vs. V_{DD}[6],
P_{IN} = 0 dBm, TEMPERATURE = +25°C



ISOLATION RF1 - RF2 vs. TEMPERATURE,
P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



ISOLATION RF1 - RF2 vs. V_{DD}[6],
P_{IN} = 0 dBm, TEMPERATURE = +25°C



4. RF OUT is defined as either RF1 (ON) or RF2 (ON)
5. RF OUT is defined as either RF1 (OFF) or RF2 (OFF)
6. V_{EE} is the negative equivalent value to V_{DD}

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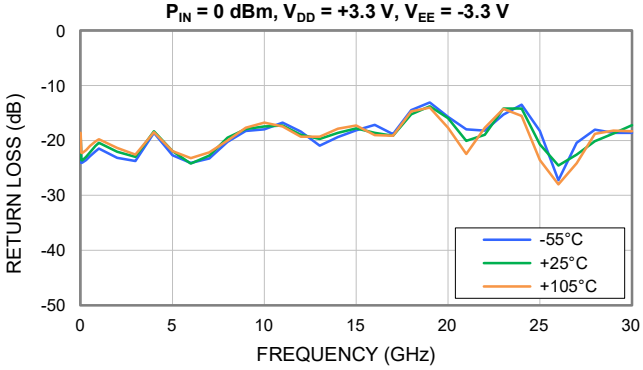
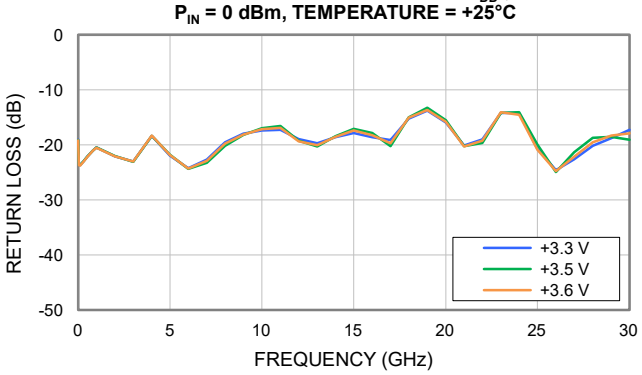
TYPICAL PERFORMANCE GRAPHS

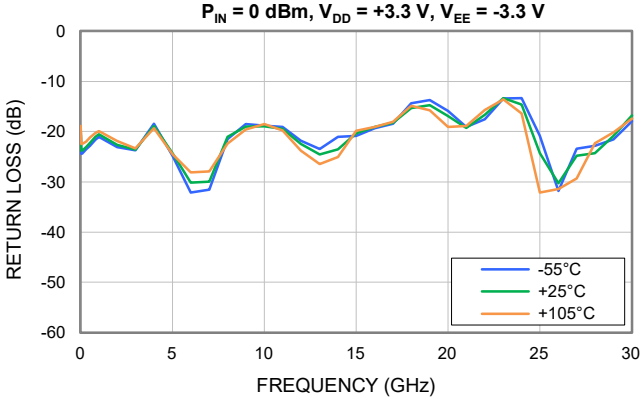
RFC INPUT RETURN LOSS vs. TEMPERATURE,
P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



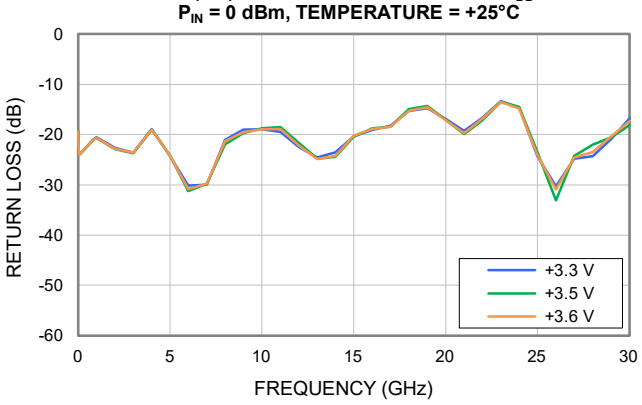
RFC INPUT RETURN LOSS vs. V_{DD}[6],
P_{IN} = 0 dBm, TEMPERATURE = +25°C



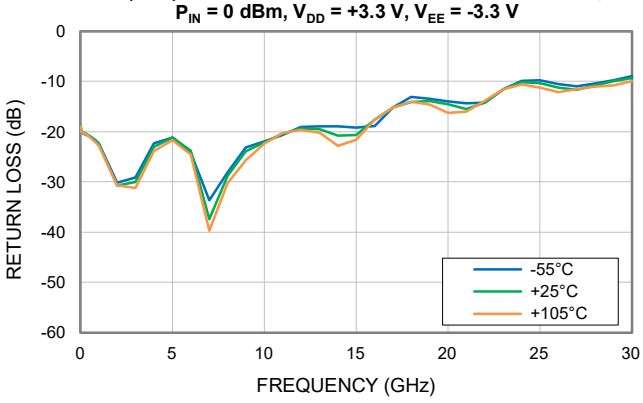
RF1 (ON) OUTPUT RETURN LOSS vs. TEMPERATURE,
P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



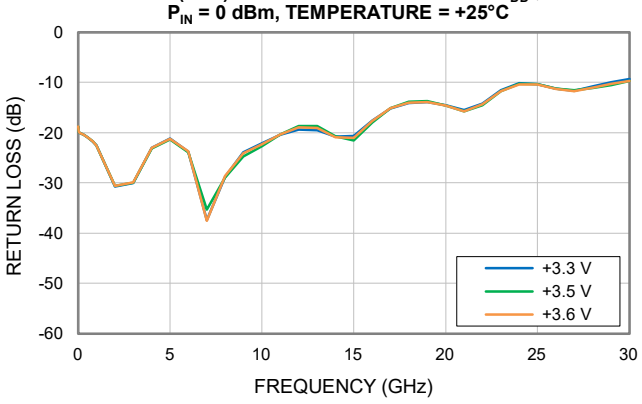
RF1 (ON) OUTPUT RETURN LOSS vs. V_{DD}[6],
P_{IN} = 0 dBm, TEMPERATURE = +25°C



RF1 (OFF) OUTPUT RETURN LOSS vs. TEMPERATURE,
P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



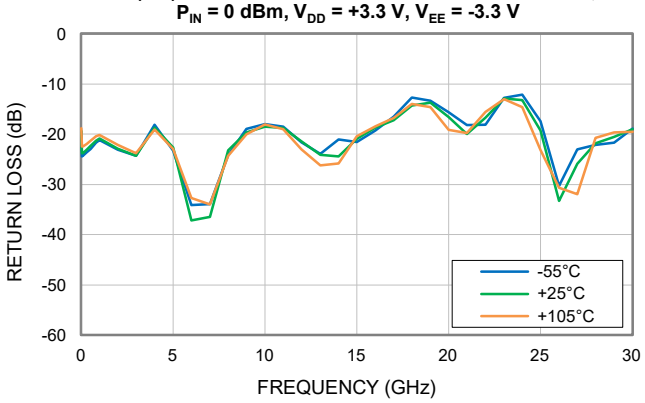
RF1 (OFF) OUTPUT RETURN LOSS vs. V_{DD}[6],
P_{IN} = 0 dBm, TEMPERATURE = +25°C



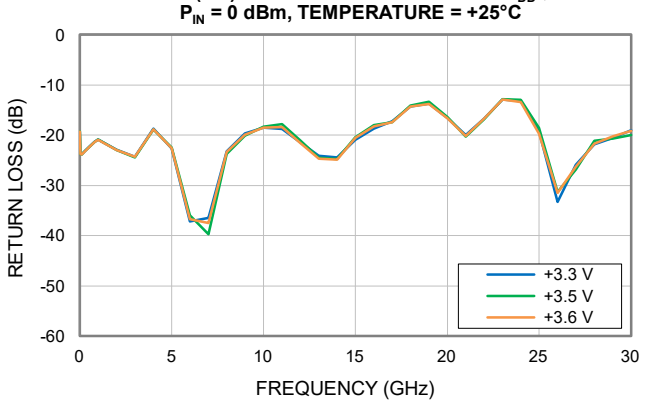
4. RF OUT is defined as either RF1 (ON) or RF2 (ON)
5. RF OUT is defined as either RF1 (OFF) or RF2 (OFF)
6. V_{EE} is the negative equivalent value to V_{DD}

TYPICAL PERFORMANCE GRAPHS

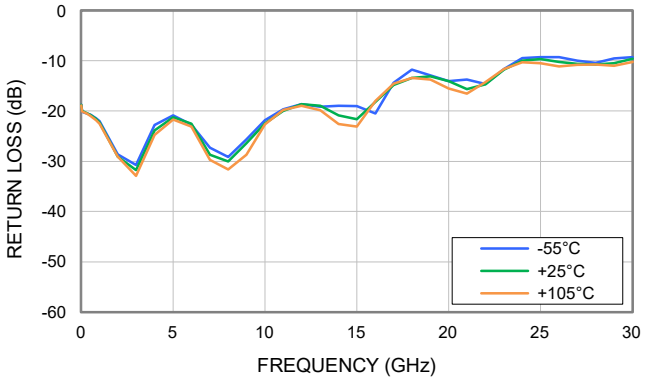
RF2 (ON) OUTPUT RETURN LOSS vs. TEMPERATURE, P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



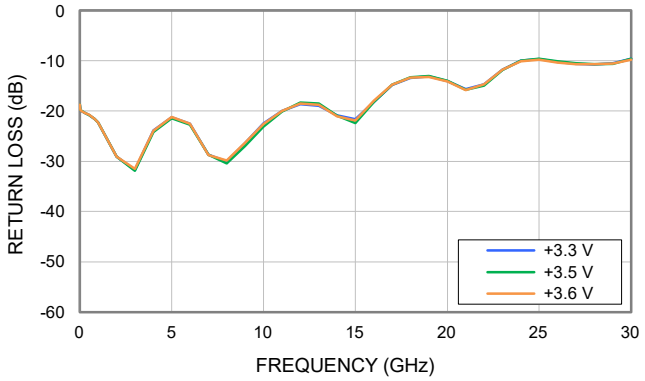
RF2 (ON) OUTPUT RETURN LOSS vs. V_{DD} [6], P_{IN} = 0 dBm, TEMPERATURE = +25°C



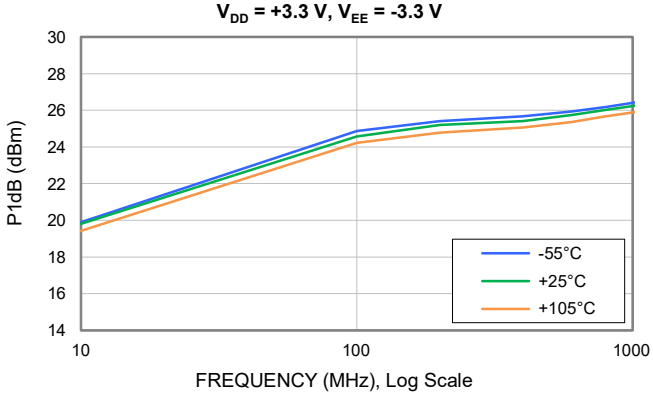
RF2 (OFF) OUTPUT RETURN LOSS vs. TEMPERATURE, P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



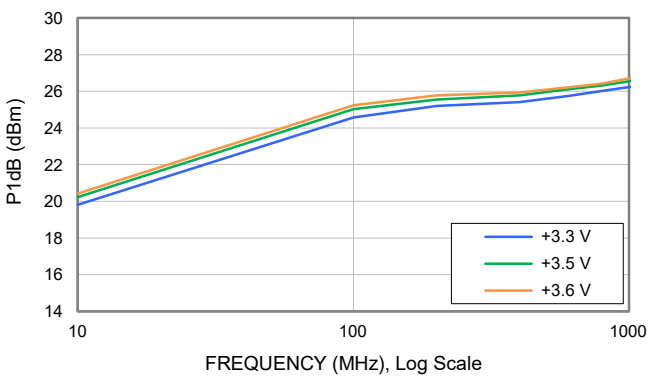
RF2 (OFF) OUTPUT RETURN LOSS vs. V_{DD} [6], P_{IN} = 0 dBm, TEMPERATURE = +25°C



INPUT P1dB vs. TEMPERATURE, V_{DD} = +3.3 V, V_{EE} = -3.3 V



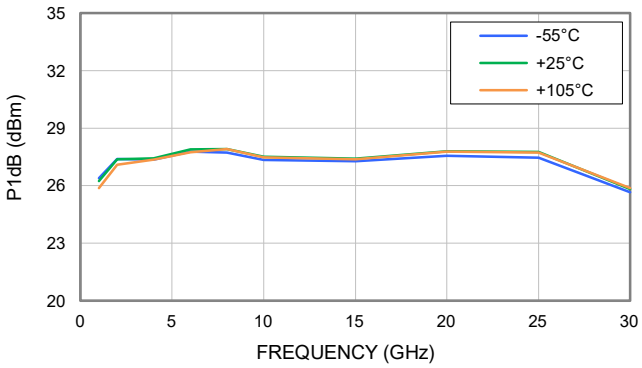
INPUT P1dB vs. V_{DD} [6], TEMPERATURE = +25°C



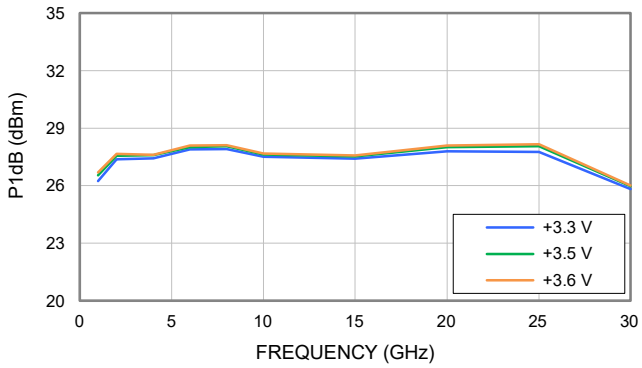
4. RF OUT is defined as either RF1 (ON) or RF2 (ON)
5. RF OUT is defined as either RF1 (OFF) or RF2 (OFF)
6. V_{EE} is the negative equivalent value to V_{DD}

TYPICAL PERFORMANCE GRAPHS

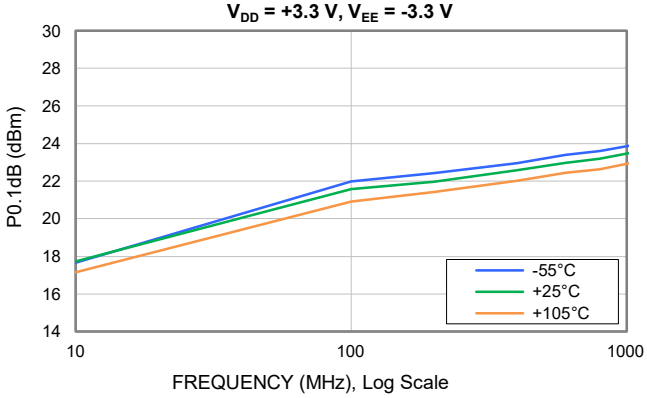
INPUT P1dB vs. TEMPERATURE, V_{DD} = +3.3 V, V_{EE} = -3.3 V



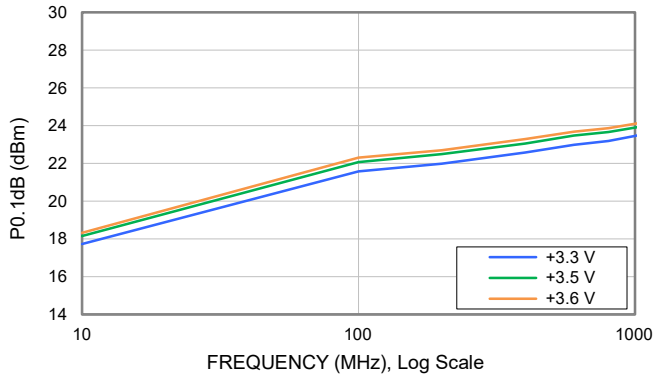
INPUT P1dB vs. V_{DD}[6], TEMPERATURE = +25°C



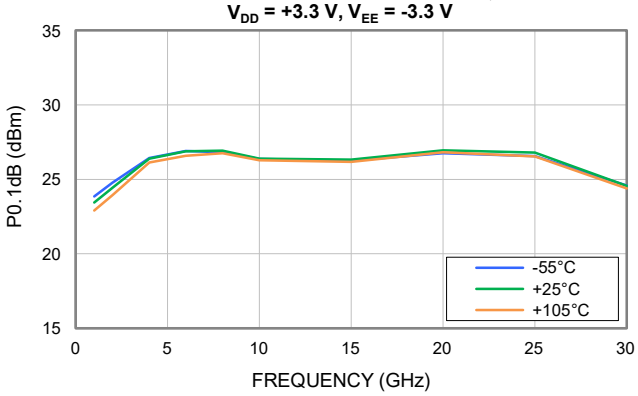
INPUT P0.1dB vs. TEMPERATURE, V_{DD} = +3.3 V, V_{EE} = -3.3 V



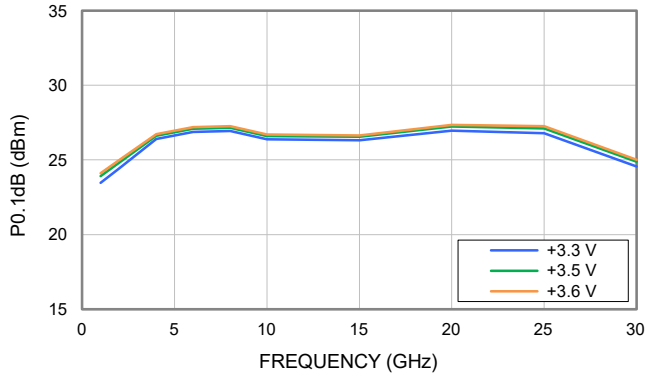
INPUT P0.1dB vs. V_{DD}[6], TEMPERATURE = +25°C



INPUT P0.1dB vs. TEMPERATURE, V_{DD} = +3.3 V, V_{EE} = -3.3 V



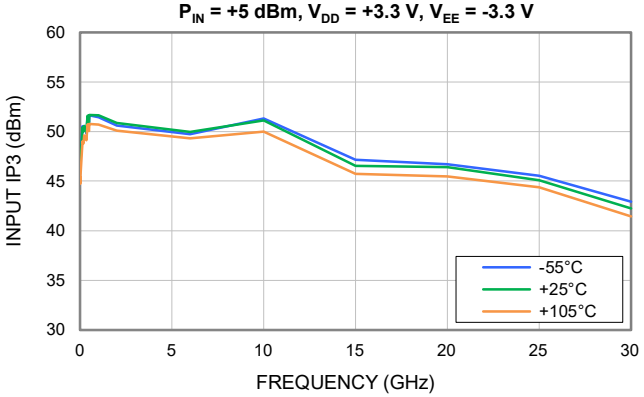
INPUT P0.1dB vs. V_{DD}[6], TEMPERATURE = +25°C



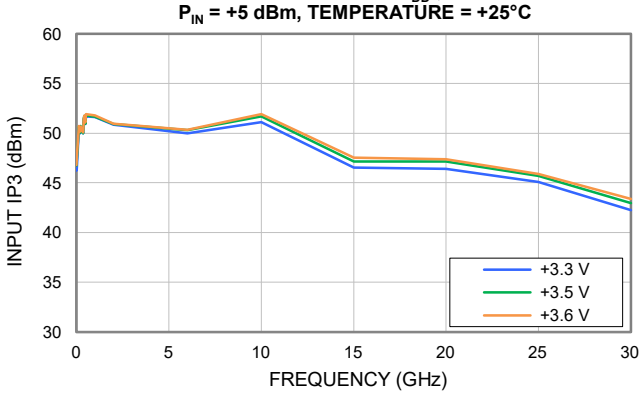
4. RF OUT is defined as either RF1 (ON) or RF2 (ON)
5. RF OUT is defined as either RF1 (OFF) or RF2 (OFF)
6. V_{EE} is the negative equivalent value to V_{DD}

TYPICAL PERFORMANCE GRAPHS

INPUT IP3 vs. TEMPERATURE,
P_{IN} = +5 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



INPUT IP3 vs. V_{DD}[6],
P_{IN} = +5 dBm, TEMPERATURE = +25°C



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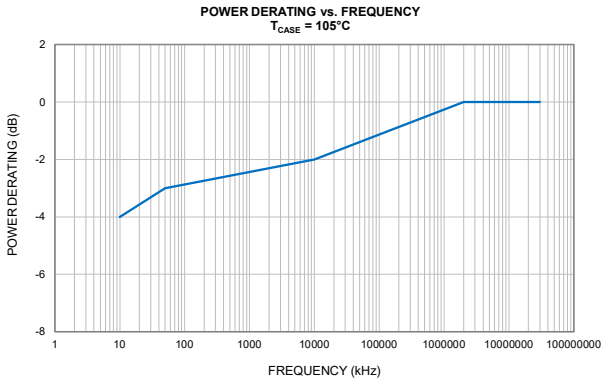
5. RF OUT is defined as either RF1 (OFF) or RF2 (OFF)
6. V_{EE} is the negative equivalent value to V_{DD}

ABSOLUTE MAXIMUM RATINGS[7]

Parameter	Ratings
Operating Temperature (ground lead)	-55°C to +105°C
Storage Temperature	-65°C to +150°C
Junction Temperature[8]	+150°C
Total Power Dissipation	0.43 W
Through Path @ +105°C[9,10] Input Power at RFC (CW), (V_{DD} = +3.5 V, V_{EE} = -3.5 V)	+29 dBm
Input Power at RF1/RF2 (CW), RF Applied to Selected Power (V_{DD} = +3.5 V, V_{EE} = -3.5 V)	+29 dBm
Input Power at RF1/RF2 (CW), RF Applied to Unselected Power (V_{DD} = +3.5 V, V_{EE} = -3.5 V)	+29 dBm
Hot Switching @ +105°C[9] Input Power at RFC (CW), (V_{DD} = +3.5 V, V_{EE} = -3.5 V)	+24 dBm @ < 2 GHz +27 dBm @ 2-30 GHz
DC Voltage (V_{DD})	0 V to +5 V
DC Voltage (V_{EE})	-5 V to 0 V

7. Permanent damage may occur if any of these limits are exceeded. Maximum ratings are not intended for continuous normal operation.
8. Peak temperature on top of Die.
9. Validated at +105°C.
10. See derating curve at right for power derating over frequency.



THERMAL RESISTANCE

Parameter	Ratings	Ratings
Thermal Resistance (Θ_{jc})[11]	Through Path RFC to RF-OUT 1	184°C/W
	Through Path RF-OUT 1 to RFC	217°C/W
	Termination Path	363°C/W

11. 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-001-2017
CDM	C3	≥ 1000 V	JESD22-C101F

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

SPDT RF Switch

M3SWA2-34DR+

50 Ω DC to 30 GHz Absorptive RF Switch with Internal Driver

FUNCTIONAL DIAGRAM

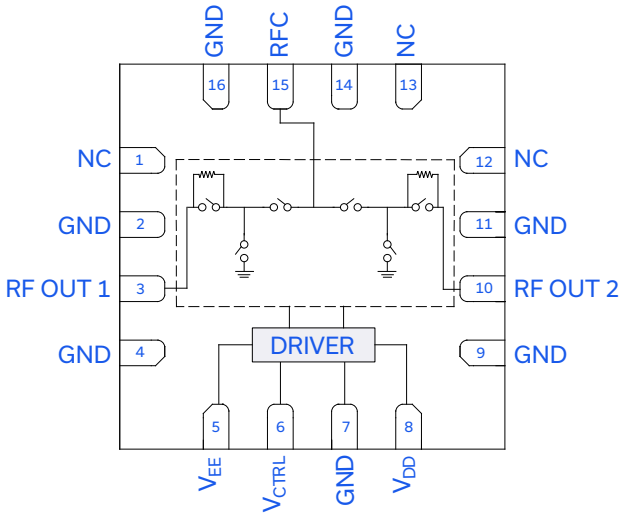


Figure 1. M3SWA2-34DR+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Application Description (Refer to Fig 2)
RFC	15	RFC Pad connects to RF Input port.
RF OUT 1	3	RF OUT 1 Pad connects to RF Output port 1.
RF OUT 2	10	RF OUT 2 Pad connects to RF Output port 2.
V_{DD}	8	V_{DD} Pad connects to positive DC Input.
V_{EE}	5	V_{EE} Pad connects to negative DC Input.
V_{CTRL}	6	V_{CTRL} Pad connects to switch control voltage input.
GND	2, 4, 7, 9, 11, 14, 16 & Paddle	Connects to ground.
NC	1, 12, 13	Not used internally. Connected to ground on test board.

CHARACTERIZATION TEST BOARD

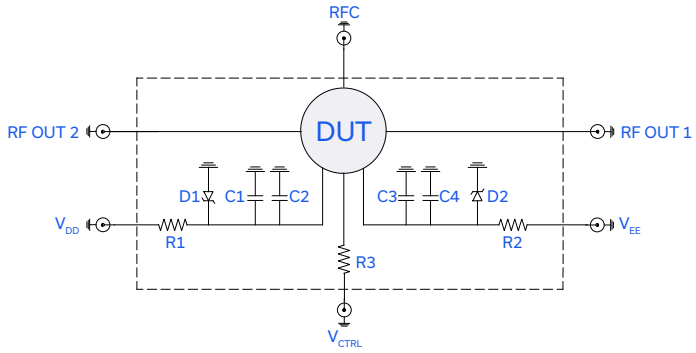


Figure 2. M3SWA2-34DR+ Characterization and Application Circuit

Electrical Parameters and Conditions
Insertion Loss, Isolation, Return Loss, Input Power at 1dB Compression (P1dB), and Input IP3 tested using PNA-X N5247B microwave network analyzer and P5022A vector network analyzer.

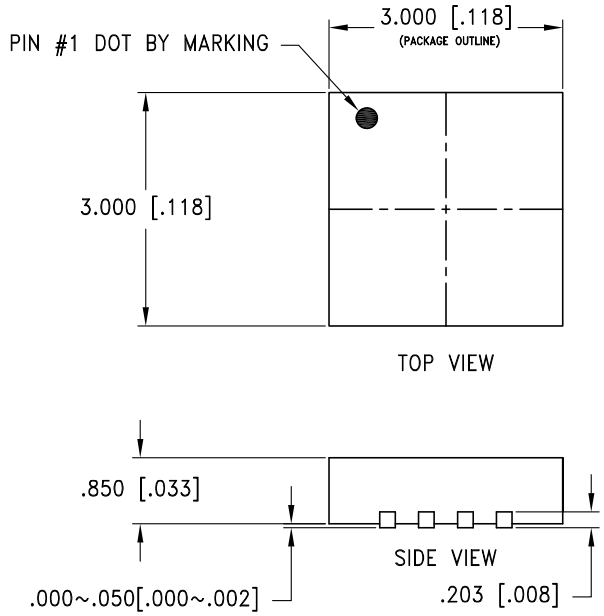
Conditions:
1. Insertion Loss, Isolation, and Return Loss: P_{IN} = 0 dBm
2. Input IP3 (IIP3): Two tones, spaced 1 MHz apart, +5 dBm/Tone at input.

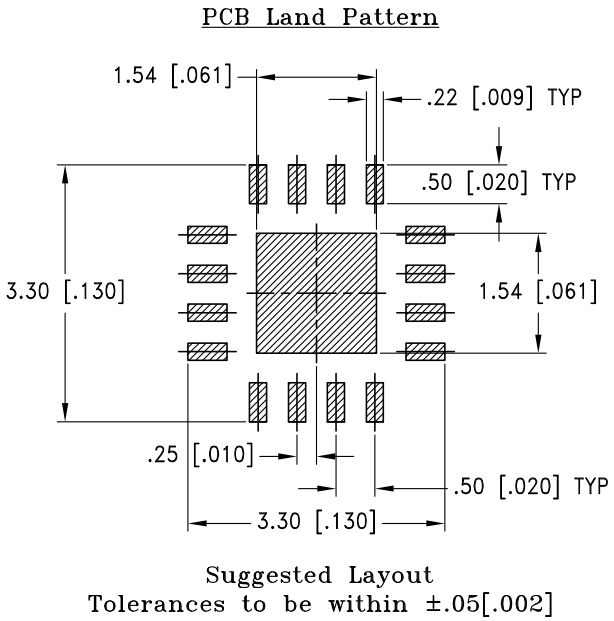
Component	Value	Size	Part Number	Manufacturer
C2, C3	100 pF	0402	GRM1555C1H101JA01D	Murata
C1, C4	0.1 uF	0402	GRM155R71C104KA88D	Murata
R1, R2	11.5 Ω	0402	RP73PF1E11R5BTDF	TE Connectivity
R3	100 Ω	0402	RK73H1ETTP1000F	KOA
D1, D2	V_Z = +5.6 V	SOD-123	SZMMSZ5232BT1G	ON Semiconductor

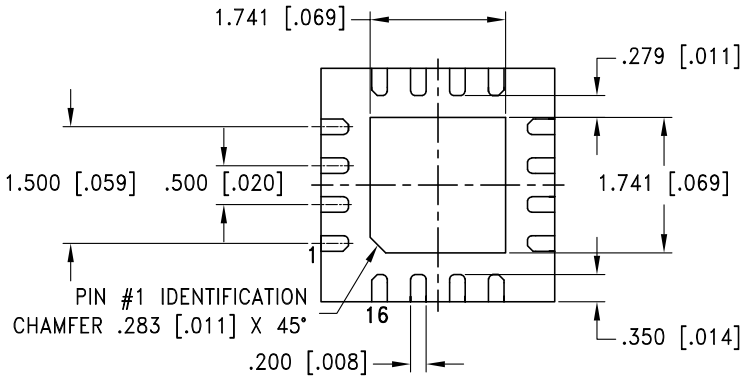
SPDT RF Switch M3SWA2-34DR+

50 Ω DC to 30 GHz Absorptive RF Switch with Internal Driver

CASE STYLE DRAWING

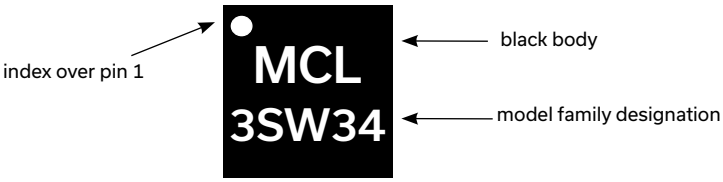






Weight: .02 grams
Dimensions are in mm [Inches]. Tolerances: 3 Pl. ±.05 [.002]

PRODUCT MARKING



Marking may contain other features or characters for internal lot control

SPDT RF Switch

M3SWA2-34DR+

50 Ω DC to 30 GHz Absorptive RF Switch with Internal Driver

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S3P Files) Data Set (.zip file)
Case Style	DQ3005. Plastic package, exposed paddle, Lead Finish: Matte-Tin
RoHS Status	Compliant
Tape & Reel **Standard quantities available on reel**	F104 7" reels with 20, 50, 100, 200, 500, 1000, or 2000 devices
Suggested Layout for PCB Design	PL-768
Evaluation Board	TB-M3SWA234DRC+ 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:

STATE	CONTROL INPUT	RFC TO RF1	RFC TO RF2
1	HIGH	OFF	ON
2	LOW	ON	OFF

TEST CONDITIONS: V_{DD}= +3.3V, V_{EE} = -3.3V @ Temperature = +25°C

FREQ	Insertion Loss		Isolation				Return Loss					
	RFC-RF1 State 2	RFC-RF2 State 1	RFC-RF1 State 1	RFC-RF2 State 2	RF1-RF2 State 2	RF1-RF2 State 1	RFC State 2	RFC State 1	RF1 State 2	RF1 State 1	RF2 State 2	RF2 State 1
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
0.01	0.5	0.5	81.5	84.6	78.2	81.9	19.3	19.1	19.3	18.8	18.8	19.3
0.05	0.6	0.6	80.0	80.0	83.5	82.0	23.6	23.6	23.8	19.9	19.9	23.8
0.1	0.5	0.6	77.5	77.7	79.1	78.5	23.6	23.7	23.8	20.1	20.0	23.8
0.3	0.5	0.5	73.6	73.9	75.3	75.6	23.0	23.0	23.1	20.4	20.4	23.1
0.5	0.6	0.6	69.9	71.6	72.1	73.2	22.1	22.2	22.2	20.9	20.8	22.4
0.8	0.6	0.6	66.4	67.7	69.3	70.0	21.0	21.0	21.1	21.8	21.6	21.3
1.0	0.6	0.6	64.5	65.9	67.2	68.4	20.6	20.5	20.6	22.5	22.3	20.9
2.0	0.7	0.7	59.5	60.8	63.3	64.7	22.5	22.0	22.7	30.7	29.1	22.9
3.0	0.8	0.7	56.6	58.0	62.5	64.2	23.0	23.5	23.6	30.0	31.8	24.3
4.0	0.8	0.8	54.8	55.8	62.7	65.1	18.3	18.7	18.9	23.0	23.9	18.7
5.0	0.7	0.7	52.9	54.4	62.2	65.1	22.2	22.0	24.3	21.2	21.2	22.7
6.0	0.8	0.8	52.2	53.9	62.8	65.9	25.3	24.2	30.2	23.8	22.5	37.2
7.0	0.8	0.8	51.5	53.1	64.4	68.7	23.7	22.7	29.9	37.4	28.7	36.4
8.0	0.9	0.9	50.4	51.7	67.1	71.9	19.5	20.2	21.1	28.8	30.0	23.2
9.0	1.0	0.9	50.0	51.1	66.2	68.6	17.9	18.7	19.0	23.9	26.5	19.7
10.0	1.0	1.0	49.5	50.5	65.1	65.2	17.4	17.4	18.9	22.1	22.5	18.5
11.0	1.0	1.0	49.1	50.2	63.2	62.8	17.6	17.2	19.4	20.4	20.0	18.8
12.0	1.0	1.0	48.9	50.0	61.5	60.6	19.3	18.9	22.5	19.4	18.7	21.4
13.0	1.0	1.0	48.6	49.8	60.8	58.8	19.8	19.7	24.6	19.5	18.9	24.1
14.0	1.0	1.0	47.9	50.4	59.7	56.6	18.6	18.8	23.5	20.8	20.9	24.5
15.0	1.1	1.1	47.2	50.1	56.8	55.2	17.8	17.9	20.4	20.7	21.6	20.9
16.0	1.1	1.1	46.8	48.9	54.9	53.9	19.0	18.6	19.1	17.6	18.2	18.7
17.0	1.1	1.1	46.9	48.7	54.4	53.4	19.8	19.1	18.3	15.2	14.8	17.2
18.0	1.3	1.3	47.6	48.8	54.2	53.1	15.9	15.2	15.4	14.1	13.4	14.3
19.0	1.5	1.5	48.2	48.8	53.7	52.7	14.4	13.8	14.8	13.9	13.1	13.7
20.0	1.4	1.4	47.7	48.0	53.7	52.5	16.2	15.9	16.9	14.6	14.0	16.6
21.0	1.3	1.3	46.9	46.8	53.1	52.0	20.2	20.1	19.3	15.5	15.6	20.0
22.0	1.5	1.5	47.1	46.6	52.6	51.8	19.3	19.0	16.7	14.2	14.7	16.7
23.0	1.8	1.8	49.2	48.0	53.5	53.1	14.7	14.2	13.4	11.5	11.8	12.9
24.0	1.7	1.8	52.5	49.6	54.0	53.4	15.3	14.2	14.7	10.2	10.0	13.2
25.0	1.7	1.7	53.1	50.1	54.0	53.8	22.3	20.7	24.3	10.3	9.7	19.3
26.0	1.7	1.7	53.3	49.7	53.3	53.1	24.6	28.7	30.3	11.3	10.2	33.3
27.0	1.8	1.8	53.0	48.8	52.4	52.3	22.6	23.9	24.8	11.7	10.6	25.9
28.0	1.9	1.9	52.1	48.0	51.5	51.4	20.3	20.1	24.3	10.8	10.7	21.8
29.0	2.0	2.0	51.4	47.1	50.8	50.1	18.8	19.0	20.9	10.0	10.5	20.6
30.0	2.3	2.4	49.1	45.3	49.8	48.3	17.2	18.0	16.8	9.3	9.6	19.0

FREQ	Input Power at 1dB Comp.		Input Power at 0.1dB Comp.	
	RF1 State 2	RF2 State 1	RF1 State 2	RF2 State 1
(GHz)	(dBm)	(dBm)	(dBm)	(dBm)
0.01	19.9	19.8	17.8	17.7
0.1	24.6	24.6	21.6	21.6
0.2	25.2	25.2	22.0	22.0
0.4	25.4	25.5	22.6	22.6
0.6	25.7	25.8	23.0	23.0
0.8	26.0	26.1	23.2	23.2
1.0	26.2	26.3	23.5	23.5
2.0	27.4	27.4	24.5	24.4
4.0	27.4	27.5	26.4	26.4
6.0	28.0	27.9	27.0	26.9
8.0	27.9	28.0	26.9	26.9
10.0	27.5	27.5	26.4	26.4
15.0	27.5	27.4	26.4	26.3
20.0	27.8	27.8	27.0	27.0
25.0	27.8	27.8	26.8	26.8
30.0	26.0	25.8	24.7	24.6

FREQ	Input IP3	
	RF1 State 2	RF2 State 1
(MHz)	(dBm)	(dBm)
0.25	46.3	46.3
0.50	46.8	46.8
0.75	47.0	46.9
1	47.0	47.1
10	46.3	46.3
100	49.5	49.4
125	50.5	50.4
150	50.3	50.3
175	50.0	50.0
200	50.1	50.0
225	50.6	50.6
250	50.4	50.3
275	50.4	50.2
300	50.4	50.3
325	50.2	50.1
350	50.1	50.0
375	50.7	50.5
400	51.4	51.4
425	51.7	51.6
450	51.3	51.2
475	51.0	50.9
500	51.7	51.7
1000	51.6	51.7
2000	50.9	50.9
6000	50.0	50.0
10000	51.3	51.1
15000	46.8	46.6
20000	46.7	46.4
25000	45.1	45.2
30000	42.7	42.3

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

Definitions:

STATE	CONTROL INPUT	RFC TO RF1	RFC TO RF2
1	HIGH	OFF	ON
2	LOW	ON	OFF

TEST CONDITIONS: V_{DD}= +3.5V, V_{EE} = -3.5V @ Temperature = +25°C

FREQ	Insertion Loss		Isolation				Return Loss					
	RFC-RF1 State 2	RFC-RF2 State 1	RFC-RF1 State 1	RFC-RF2 State 2	RF1-RF2 State 2	RF1-RF2 State 1	RFC State 2	RFC State 1	RF1 State 2	RF1 State 1	RF2 State 2	RF2 State 1
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
0.01	0.5	0.5	81.5	86.0	81.7	83.4	19.1	19.1	19.2	18.8	18.7	19.2
0.05	0.5	0.5	81.0	79.8	81.3	82.5	23.6	23.6	23.8	19.9	19.9	23.8
0.1	0.5	0.5	77.7	77.8	78.5	78.7	23.7	23.7	23.9	20.1	20.0	23.9
0.3	0.5	0.5	73.2	74.7	75.1	76.2	23.0	23.1	23.1	20.4	20.4	23.2
0.5	0.6	0.6	70.1	71.0	72.7	73.6	22.1	22.1	22.3	20.9	20.8	22.4
0.8	0.6	0.6	66.5	67.5	69.2	70.0	21.0	21.0	21.2	21.8	21.6	21.4
1.0	0.6	0.6	64.5	65.8	67.2	68.4	20.5	20.5	20.7	22.5	22.3	20.9
2.0	0.7	0.7	59.4	60.8	63.1	64.9	22.4	22.0	22.9	30.6	29.1	23.0
3.0	0.8	0.7	56.6	58.1	62.4	64.3	23.0	23.6	23.8	30.0	31.9	24.5
4.0	0.8	0.8	54.9	55.9	62.6	65.1	18.4	18.8	19.1	23.1	24.2	18.9
5.0	0.7	0.7	53.0	54.6	61.9	65.3	22.0	21.8	24.2	21.3	21.4	22.5
6.0	0.8	0.8	52.2	54.0	62.3	65.8	25.1	24.3	31.2	23.9	22.7	36.0
7.0	0.8	0.8	51.5	53.3	63.9	69.2	23.8	23.2	29.7	35.3	28.7	39.7
8.0	0.9	0.9	50.5	51.9	66.3	72.0	20.1	20.9	22.0	28.9	30.4	23.8
9.0	1.0	0.9	50.0	51.2	66.3	68.9	18.2	18.8	19.8	24.7	27.0	20.1
10.0	1.0	1.0	49.6	50.7	65.4	65.7	17.0	17.0	18.8	22.7	23.0	18.3
11.0	1.0	1.0	49.2	50.3	63.3	62.9	16.9	16.6	18.5	20.4	20.1	17.8
12.0	1.0	1.0	48.9	50.1	61.4	60.4	19.5	19.2	21.6	18.7	18.3	21.0
13.0	1.0	1.0	48.6	50.0	61.0	58.8	20.4	20.3	24.8	18.7	18.5	24.5
14.0	1.0	1.0	47.9	50.6	60.2	56.7	18.4	18.5	24.5	20.7	20.9	24.7
15.0	1.1	1.1	47.2	50.4	57.3	55.5	17.2	17.1	20.4	21.6	22.4	20.5
16.0	1.2	1.2	46.9	49.0	55.2	54.0	18.4	17.8	18.8	18.0	18.2	18.0
17.0	1.1	1.1	46.9	48.8	54.6	53.4	21.1	20.2	18.4	15.1	14.8	17.4
18.0	1.3	1.3	47.6	49.0	54.3	53.2	15.6	15.0	14.9	13.8	13.3	14.2
19.0	1.5	1.6	48.3	48.9	54.1	52.7	13.9	13.3	14.3	13.7	13.0	13.4
20.0	1.4	1.4	47.8	48.0	54.0	52.5	16.0	15.5	17.1	14.6	14.0	16.4
21.0	1.3	1.3	46.9	46.7	53.2	51.9	20.6	20.2	19.9	15.7	15.8	20.3
22.0	1.5	1.5	47.1	46.4	52.5	51.8	20.2	19.6	17.2	14.6	14.9	16.9
23.0	1.8	1.8	49.2	47.7	53.4	53.0	14.7	14.2	13.5	11.8	11.8	12.8
24.0	1.8	1.9	52.2	49.2	53.9	53.4	15.3	14.1	14.5	10.3	10.0	13.0
25.0	1.7	1.7	52.9	49.6	54.1	54.0	21.9	19.9	23.4	10.3	9.6	18.6
26.0	1.7	1.7	53.5	49.4	53.4	53.1	24.9	28.8	33.1	11.2	10.1	31.3
27.0	1.8	1.8	53.0	48.6	52.6	52.3	21.3	22.9	24.2	11.5	10.5	26.8
28.0	1.9	1.9	52.2	47.7	51.6	51.5	18.7	19.1	22.0	11.1	10.7	21.2
29.0	2.0	2.0	51.8	46.8	50.6	50.2	18.5	19.0	20.5	10.5	10.6	20.7
30.0	2.3	2.3	49.7	45.4	50.0	48.4	19.1	20.0	18.1	9.7	9.6	20.0

FREQ	Input Power at 1dB Comp.		Input Power at 0.1dB Comp.	
	RF1 State 2	RF2 State 1	RF1 State 2	RF2 State 1
(GHz)	(dBm)	(dBm)	(dBm)	(dBm)
0.01	20.2	20.2	18.2	18.1
0.1	25.0	25.1	22.1	22.1
0.2	25.6	25.6	22.5	22.5
0.4	25.8	25.8	23.1	23.1
0.6	26.1	26.1	23.5	23.5
0.8	26.3	26.4	23.7	23.7
1.0	26.5	26.5	23.9	23.9
2.0	27.6	27.6	24.9	24.8
4.0	27.6	27.6	26.6	26.7
6.0	28.1	28.0	27.2	27.1
8.0	28.1	28.1	27.1	27.2
10.0	27.6	27.6	26.6	26.6
15.0	27.6	27.5	26.6	26.5
20.0	28.0	28.0	27.2	27.2
25.0	28.1	28.1	27.1	27.1
30.0	26.1	26.0	25.0	24.9

FREQ	Input IP3	
	RF1 State 2	RF2 State 1
(MHz)	(dBm)	(dBm)
0.25	46.7	46.8
0.50	47.2	47.2
0.75	47.3	47.3
1	47.3	47.4
10	47.2	47.2
100	49.7	49.7
125	50.7	50.7
150	50.6	50.5
175	50.1	50.0
200	50.3	50.2
225	50.7	50.7
250	50.6	50.5
275	50.5	50.4
300	50.6	50.4
325	50.2	50.2
350	50.2	50.0
375	50.8	50.6
400	51.6	51.5
425	51.8	51.7
450	51.4	51.3
475	51.1	51.0
500	51.9	51.8
1000	51.7	51.9
2000	51.0	50.9
6000	50.3	50.3
10000	51.7	51.7
15000	47.4	47.2
20000	47.2	47.2
25000	45.7	45.8
30000	43.2	43.0

Typical Performance Data

Definitions:

STATE	CONTROL INPUT	RFC TO RF1	RFC TO RF2
1	HIGH	OFF	ON
2	LOW	ON	OFF

TEST CONDITIONS: V_{DD}= +3.6V, V_{EE} = -3.6V @ Temperature = +25°C

FREQ	Insertion Loss		Isolation				Return Loss					
	RFC-RF1 State 2	RFC-RF2 State 1	RFC-RF1 State 1	RFC-RF2 State 2	RF1-RF2 State 2	RF1-RF2 State 1	RFC State 2	RFC State 1	RF1 State 2	RF1 State 1	RF2 State 2	RF2 State 1
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
0.01	0.5	0.53	78.7	81.2	86.4	85.2	19.2	19.2	19.3	18.8	18.7	19.3
0.05	0.5	0.54	83.0	82.9	83.9	82.6	23.6	23.6	23.9	19.9	19.9	23.8
0.1	0.5	0.54	77.5	78.1	79.2	78.6	23.7	23.8	23.9	20.1	20.0	23.9
0.3	0.5	0.54	73.5	74.1	75.3	76.3	23.0	23.1	23.2	20.4	20.4	23.2
0.5	0.6	0.55	70.0	71.4	72.7	74.1	22.2	22.1	22.3	20.9	20.8	22.5
0.8	0.6	0.57	66.2	67.3	69.3	70.2	21.1	21.1	21.2	21.8	21.6	21.4
1.0	0.6	0.59	64.5	65.8	67.4	68.2	20.6	20.5	20.7	22.5	22.3	21.0
2.0	0.7	0.66	59.4	60.8	63.2	64.6	22.5	22.1	22.8	30.6	29.1	23.0
3.0	0.8	0.74	56.6	58.0	62.6	64.4	23.0	23.5	23.6	29.9	31.5	24.3
4.0	0.8	0.79	54.9	55.8	62.8	65.2	18.3	18.7	19.0	23.0	23.9	18.8
5.0	0.7	0.72	53.0	54.5	62.2	65.3	22.1	21.9	24.2	21.2	21.2	22.6
6.0	0.8	0.75	52.2	53.8	62.6	65.7	25.1	24.3	30.9	23.8	22.5	36.7
7.0	0.8	0.82	51.4	53.0	64.6	68.8	23.8	22.9	29.8	37.5	28.8	37.5
8.0	0.9	0.88	50.4	51.7	66.6	71.6	19.8	20.5	21.3	28.6	29.8	23.4
9.0	1.0	0.94	50.0	51.0	66.5	68.6	18.1	18.8	19.5	24.1	26.4	19.9
10.0	1.0	0.99	49.5	50.5	65.2	65.6	17.2	17.1	18.9	22.3	22.6	18.5
11.0	1.0	1.01	49.1	50.2	63.3	62.6	17.2	16.9	18.9	20.3	20.0	18.4
12.0	1.0	0.98	48.9	49.9	61.3	60.4	19.6	19.3	22.1	18.9	18.5	21.6
13.0	1.0	1.00	48.5	49.8	60.7	58.6	20.1	20.1	24.9	19.1	18.8	24.7
14.0	1.0	1.01	47.9	50.4	59.7	56.6	18.6	18.7	24.3	20.9	21.1	24.9
15.0	1.1	1.09	47.2	50.1	56.9	55.4	17.4	17.4	20.2	21.1	21.9	20.5
16.0	1.2	1.15	46.8	48.9	54.9	53.9	18.7	18.2	18.9	17.7	17.9	18.3
17.0	1.1	1.11	46.9	48.7	54.4	53.4	20.4	19.7	18.4	15.2	14.8	17.4
18.0	1.3	1.32	47.6	48.8	54.2	53.0	15.7	15.1	15.3	14.1	13.4	14.3
19.0	1.5	1.53	48.3	48.8	53.9	52.8	14.2	13.6	14.6	13.9	13.2	13.8
20.0	1.4	1.41	47.7	48.1	53.6	52.4	16.2	15.8	17.1	14.7	14.2	16.7
21.0	1.3	1.32	46.8	46.8	53.0	51.9	20.5	20.3	19.7	15.8	15.8	20.2
22.0	1.5	1.52	47.1	46.6	52.6	51.8	19.6	19.3	16.9	14.3	14.7	16.7
23.0	1.8	1.82	49.2	48.0	53.3	53.0	14.6	14.1	13.5	11.7	11.8	12.9
24.0	1.7	1.83	52.5	49.4	54.1	53.5	15.6	14.6	14.9	10.4	10.1	13.5
25.0	1.7	1.71	53.3	50.1	54.1	53.9	22.7	20.9	24.0	10.4	9.8	19.7
26.0	1.7	1.72	53.5	49.7	53.3	53.1	24.8	28.5	30.9	11.3	10.4	31.5
27.0	1.8	1.82	53.0	48.9	52.4	52.1	22.1	23.6	24.5	11.7	10.7	26.3
28.0	1.9	1.93	52.3	48.0	51.7	51.4	19.5	19.6	23.5	11.0	10.7	21.7
29.0	2.0	2.05	52.0	47.1	50.6	50.0	18.3	18.7	20.4	10.3	10.5	20.2
30.0	2.3	2.35	49.2	45.3	49.7	48.3	17.9	18.5	17.4	9.7	9.8	19.1

FREQ	Input Power at 1dB Comp.		Input Power at 0.1dB Comp.	
	RF1 State 2	RF2 State 1	RF1 State 2	RF2 State 1
(GHz)	(dBm)	(dBm)	(dBm)	(dBm)
0.01	20.5	20.4	18.3	18.3
0.1	25.2	25.2	22.4	22.3
0.2	25.8	25.8	22.7	22.7
0.4	25.9	26.0	23.3	23.3
0.6	26.2	26.3	23.7	23.7
0.8	26.4	26.5	23.9	23.9
1.0	26.7	26.7	24.2	24.1
2.0	27.7	27.7	25.0	25.0
4.0	27.6	27.7	26.7	26.8
6.0	28.2	28.1	27.3	27.2
8.0	28.1	28.2	27.2	27.3
10.0	27.7	27.7	26.7	26.7
15.0	27.6	27.6	26.7	26.6
20.0	28.1	28.1	27.4	27.4
25.0	28.2	28.2	27.3	27.3
30.0	26.1	26.0	25.1	25.0

FREQ	Input IP3	
	RF1 State 2	RF2 State 1
(MHz)	(dBm)	(dBm)
0.25	46.8	46.9
0.50	47.2	47.3
0.75	47.3	47.4
1	47.4	47.4
10	47.5	47.5
100	49.8	49.8
125	50.7	50.7
150	50.6	50.5
175	50.2	50.1
200	50.4	50.3
225	50.7	50.7
250	50.6	50.5
275	50.6	50.4
300	50.6	50.5
325	50.3	50.2
350	50.2	50.1
375	50.8	50.6
400	51.6	51.5
425	51.8	51.7
450	51.4	51.3
475	51.1	51.1
500	51.9	51.9
1000	51.8	51.9
2000	51.0	51.0
6000	50.3	50.6
10000	52.1	51.9
15000	47.8	47.5
20000	47.4	47.4
25000	45.9	46.0
30000	43.5	43.4

Typical Performance Data

Definitions:

STATE	CONTROL INPUT	RFC TO RF1	RFC TO RF2
1	HIGH	OFF	ON
2	LOW	ON	OFF

TEST CONDITIONS: V_{DD}= +3.3V, V_{EE} = -3.3V @ Temperature = -55°C

FREQ	Insertion Loss		Isolation				Return Loss					
	RFC-RF1 State 2	RFC-RF2 State 1	RFC-RF1 State 1	RFC-RF2 State 2	RF1-RF2 State 2	RF1-RF2 State 1	RFC State 2	RFC State 1	RF1 State 2	RF1 State 1	RF2 State 2	RF2 State 1
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
0.01	0.5	0.5	80.3	84.8	78.9	84.5	19.5	19.3	19.5	18.9	18.8	19.6
0.05	0.5	0.5	81.0	80.4	80.8	81.4	24.1	24.2	24.5	20.0	19.9	24.5
0.1	0.5	0.5	77.2	78.4	77.8	78.7	24.1	24.2	24.4	20.3	20.2	24.3
0.3	0.5	0.5	74.2	74.8	75.9	76.6	23.6	23.7	23.5	20.6	20.4	23.6
0.5	0.5	0.5	70.5	71.7	72.9	74.0	22.9	22.9	22.8	20.9	20.7	23.0
0.8	0.5	0.5	67.1	68.3	69.3	70.8	22.0	22.0	21.6	21.7	21.5	21.8
1.0	0.5	0.5	65.2	66.5	68.1	69.2	21.5	21.5	21.1	22.4	22.0	21.2
2.0	0.6	0.6	60.1	61.7	64.1	65.8	23.6	23.2	23.1	30.1	28.6	23.1
3.0	0.7	0.6	57.3	58.6	63.9	66.3	23.7	24.2	23.7	29.1	30.7	24.4
4.0	0.7	0.7	55.4	56.5	64.8	67.6	18.6	18.9	18.5	22.3	22.8	18.1
5.0	0.6	0.6	53.3	54.9	64.2	67.8	22.8	22.7	24.8	21.2	20.9	23.3
6.0	0.6	0.6	52.4	54.1	64.8	68.5	24.9	24.1	32.2	24.2	22.7	34.1
7.0	0.7	0.7	51.6	53.2	66.2	71.0	24.3	23.3	31.5	33.7	27.3	33.9
8.0	0.8	0.7	50.4	51.7	67.7	69.7	20.2	21.2	21.5	28.1	29.2	24.2
9.0	0.8	0.8	49.9	51.0	65.7	65.4	18.3	19.1	18.5	23.2	25.6	18.9
10.0	0.8	0.8	49.3	50.4	63.5	62.5	18.0	18.0	18.8	21.9	21.8	18.0
11.0	0.8	0.8	48.8	50.0	61.3	60.2	17.1	16.7	19.1	20.7	19.6	18.5
12.0	0.8	0.8	48.4	49.6	59.5	58.2	18.4	18.4	21.8	19.1	18.6	21.6
13.0	0.8	0.8	48.1	49.4	58.7	56.9	21.0	21.2	23.5	18.9	19.1	23.9
14.0	0.8	0.8	47.5	49.8	57.7	55.3	19.7	19.4	21.1	19.0	18.9	21.1
15.0	0.9	0.8	46.8	49.5	55.5	54.0	18.2	18.2	20.8	19.2	19.0	21.6
16.0	0.9	0.9	46.4	48.3	53.7	52.7	17.2	17.4	19.4	18.9	20.5	19.3
17.0	0.8	0.8	46.2	47.9	52.9	52.0	20.1	18.8	18.4	15.2	14.4	16.5
18.0	1.0	1.1	46.8	48.2	52.5	51.4	15.5	14.5	14.3	13.1	11.8	12.8
19.0	1.3	1.3	47.7	48.4	52.2	51.2	13.4	13.1	13.7	13.4	12.9	13.4
20.0	1.1	1.1	46.8	47.3	52.5	51.3	16.2	15.8	15.9	14.0	14.1	15.7
21.0	1.0	1.0	46.2	46.2	51.8	50.6	18.7	18.0	19.1	14.3	13.7	18.2
22.0	1.2	1.2	46.2	45.9	51.3	50.3	18.3	18.2	17.6	14.2	14.6	18.1
23.0	1.5	1.4	48.0	47.2	51.9	51.3	15.7	15.3	13.4	11.5	11.7	12.8
24.0	1.5	1.5	51.6	49.1	52.4	51.6	14.4	13.5	13.4	9.9	9.4	12.1
25.0	1.4	1.4	52.2	49.8	52.7	52.3	20.4	18.3	20.8	9.8	9.3	17.4
26.0	1.4	1.3	53.0	49.7	52.1	51.6	27.3	34.5	31.8	10.5	9.3	30.3
27.0	1.5	1.4	52.4	48.7	51.2	50.8	20.4	21.5	23.4	11.0	10.0	23.0
28.0	1.5	1.5	52.0	47.9	50.3	49.8	18.1	18.2	22.8	10.4	10.4	22.1
29.0	1.5	1.5	52.1	47.1	49.3	48.6	18.7	19.1	21.6	9.8	9.6	21.7
30.0	1.8	1.9	49.2	45.4	48.6	47.1	18.7	18.9	18.0	9.0	9.3	18.9

FREQ	Input Power at 1dB Comp.		Input Power at 0.1dB Comp.	
	RF1 State 2	RF2 State 1	RF1 State 2	RF2 State 1
(GHz)	(dBm)	(dBm)	(dBm)	(dBm)
0.01	20.0	19.9	17.7	17.7
0.1	24.9	24.9	22.1	22.0
0.2	25.5	25.4	22.5	22.4
0.4	25.7	25.7	23.0	22.9
0.6	25.9	26.0	23.4	23.4
0.8	26.2	26.2	23.6	23.6
1.0	26.4	26.4	23.9	23.9
2.0	27.4	27.4	24.8	24.8
4.0	27.4	27.4	26.4	26.5
6.0	27.9	27.8	26.9	26.9
8.0	27.7	27.7	26.8	26.8
10.0	27.4	27.3	26.4	26.4
15.0	27.4	27.3	26.4	26.3
20.0	27.5	27.6	26.8	26.8
25.0	27.5	27.5	26.6	26.6
30.0	25.8	25.7	24.8	24.6

FREQ	Input IP3	
	RF1 State 2	RF2 State 1
(MHz)	(dBm)	(dBm)
0.25	46.7	46.6
0.50	47.2	47.1
0.75	47.3	47.3
1	47.4	47.4
10	47.3	47.4
100	49.6	49.7
125	50.5	50.5
150	50.4	50.5
175	50.1	50.2
200	50.1	50.1
225	50.5	50.4
250	50.2	50.2
275	50.2	50.2
300	50.2	50.2
325	49.9	49.9
350	49.9	49.8
375	50.4	50.4
400	51.1	51.2
425	51.3	51.3
450	51.0	51.0
475	50.7	50.8
500	51.6	51.8
1000	51.4	51.6
2000	50.7	50.6
6000	49.9	49.8
10000	51.4	51.3
15000	47.2	47.2
20000	46.8	46.7
25000	45.6	45.6
30000	43.3	42.9

Typical Performance Data

Definitions:

STATE	CONTROL INPUT	RFC TO RF1	RFC TO RF2
1	HIGH	OFF	ON
2	LOW	ON	OFF

TEST CONDITIONS: V_{DD}= +3.5V, V_{EE} = -3.5V @ Temperature = -55°C

FREQ	Insertion Loss		Isolation				Return Loss					
	RFC-RF1 State 2	RFC-RF2 State 1	RFC-RF1 State 1	RFC-RF2 State 2	RF1-RF2 State 2	RF1-RF2 State 1	RFC State 2	RFC State 1	RF1 State 2	RF1 State 1	RF2 State 2	RF2 State 1
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
0.01	0.5	0.5	87.7	78.7	78.4	84.6	19.3	19.4	19.4	19.2	18.8	19.6
0.05	0.5	0.5	80.0	81.2	82.5	81.6	24.3	24.7	24.6	20.5	20.0	25.0
0.1	0.5	0.5	77.7	77.7	78.7	78.0	24.3	24.7	24.5	20.8	20.2	24.9
0.3	0.5	0.5	74.1	75.1	75.9	76.1	23.6	24.0	23.8	21.1	20.5	24.1
0.5	0.5	0.5	70.8	72.4	73.2	74.1	22.8	23.0	23.2	21.4	20.9	23.4
0.8	0.5	0.5	67.0	68.5	69.7	71.0	21.6	21.9	22.2	22.2	21.6	22.3
1.0	0.5	0.5	65.2	66.8	67.8	69.5	21.0	21.2	21.7	22.8	22.1	21.7
2.0	0.6	0.5	60.1	61.7	64.1	65.8	22.8	22.4	24.1	29.6	28.5	23.5
3.0	0.6	0.6	57.3	58.7	63.8	66.1	23.4	23.7	24.3	29.1	30.8	24.6
4.0	0.7	0.6	55.4	56.5	64.5	67.6	18.1	18.5	19.3	22.7	23.2	18.6
5.0	0.6	0.6	53.2	55.0	64.1	68.1	22.5	22.5	25.6	21.8	21.3	23.5
6.0	0.6	0.6	52.4	54.2	64.4	68.5	25.0	24.5	33.9	25.4	22.9	33.0
7.0	0.7	0.6	51.6	53.3	66.1	71.5	25.0	23.8	30.7	30.1	27.1	32.0
8.0	0.7	0.7	50.4	51.9	67.4	70.0	20.8	21.4	22.1	27.4	29.1	24.2
9.0	0.8	0.7	49.9	51.0	65.6	65.4	18.2	18.9	19.8	23.8	26.2	19.8
10.0	0.8	0.7	49.4	50.5	63.9	63.0	17.2	17.2	19.4	22.9	22.7	18.3
11.0	0.8	0.8	48.9	50.1	61.9	60.5	16.6	16.2	18.4	21.3	19.9	17.4
12.0	0.8	0.7	48.6	49.7	59.7	58.4	18.8	18.7	20.4	18.6	18.2	20.5
13.0	0.8	0.7	48.2	49.5	58.9	56.8	21.5	21.5	23.7	18.3	18.5	24.5
14.0	0.8	0.7	47.4	50.0	58.2	55.0	19.2	18.8	21.6	18.7	19.0	21.9
15.0	0.9	0.8	46.7	49.8	55.7	54.0	17.3	17.2	21.2	19.4	19.7	21.4
16.0	0.9	0.9	46.3	48.3	53.9	52.7	17.0	16.8	19.5	19.9	20.6	18.5
17.0	0.8	0.8	46.1	48.0	53.1	52.0	21.2	19.9	18.3	15.4	14.4	16.5
18.0	1.0	1.0	46.8	48.3	52.7	51.6	14.5	14.0	14.1	12.8	11.8	12.8
19.0	1.3	1.2	47.7	48.4	52.5	51.3	12.7	12.4	13.6	13.3	12.8	13.1
20.0	1.1	1.1	47.0	47.3	52.8	51.3	15.8	15.1	15.9	14.1	13.9	15.4
21.0	1.0	1.0	46.2	46.1	51.9	50.6	19.3	18.5	19.1	14.3	13.9	18.4
22.0	1.2	1.1	46.1	45.6	51.3	50.4	19.4	19.2	18.3	14.5	14.9	18.1
23.0	1.4	1.4	48.0	46.8	52.0	51.3	15.2	14.7	13.8	11.9	11.8	12.8
24.0	1.5	1.5	51.4	48.8	52.4	51.6	13.9	13.0	13.6	10.1	9.5	12.1
25.0	1.3	1.4	52.1	49.4	52.9	52.4	19.6	17.4	20.4	9.9	9.3	17.0
26.0	1.4	1.3	53.2	49.3	52.2	51.7	26.1	30.6	32.5	10.4	9.3	26.7
27.0	1.5	1.4	52.5	48.3	51.4	50.8	19.6	21.2	23.7	10.7	9.9	24.1
28.0	1.5	1.5	52.1	47.6	50.3	50.0	17.2	17.7	20.6	10.6	10.3	21.4
29.0	1.5	1.5	52.4	46.8	49.4	48.7	18.4	18.6	20.5	10.3	9.7	20.8
30.0	1.8	1.8	49.9	45.2	48.7	47.1	20.0	20.5	19.1	9.4	9.4	19.8

FREQ	Input Power at 1dB Comp.		Input Power at 0.1dB Comp.	
	RF1 State 2	RF2 State 1	RF1 State 2	RF2 State 1
(GHz)	(dBm)	(dBm)	(dBm)	(dBm)
0.01	20.4	20.3	18.1	18.0
0.1	25.4	25.3	22.6	22.5
0.2	25.8	25.8	23.0	22.9
0.4	26.0	26.0	23.5	23.5
0.6	26.2	26.2	23.9	23.9
0.8	26.4	26.5	24.1	24.1
1.0	26.7	26.7	24.4	24.3
2.0	27.6	27.6	25.2	25.1
4.0	27.5	27.5	26.6	26.7
6.0	28.0	27.9	27.1	27.1
8.0	27.9	27.9	27.0	27.0
10.0	27.5	27.5	26.6	26.6
15.0	27.5	27.4	26.6	26.5
20.0	27.7	27.8	27.0	27.0
25.0	27.7	27.8	26.9	26.9
30.0	26.0	25.9	25.1	24.9

FREQ	Input IP3	
	RF1 State 2	RF2 State 1
(MHz)	(dBm)	(dBm)
0.25	46.9	46.8
0.50	47.3	47.2
0.75	47.4	47.3
1	47.4	47.3
10	48.1	48.1
100	50.0	49.9
125	50.9	50.8
150	50.7	50.6
175	50.3	50.2
200	50.2	50.2
225	50.6	50.6
250	50.4	50.3
275	50.3	50.3
300	50.3	50.2
325	49.9	50.0
350	49.9	49.9
375	50.5	50.5
400	51.2	51.3
425	51.5	51.4
450	51.1	51.1
475	50.8	50.8
500	51.8	51.8
1000	51.5	51.7
2000	50.7	50.7
6000	49.9	50.0
10000	51.6	51.5
15000	47.6	47.6
20000	47.1	47.0
25000	46.0	46.1
30000	43.7	43.4

Typical Performance Data

Definitions:

STATE	CONTROL INPUT	RFC TO RF1	RFC TO RF2
1	HIGH	OFF	ON
2	LOW	ON	OFF

TEST CONDITIONS: V_{DD}= +3.6V, V_{EE} = -3.6V @ Temperature = -55°C

FREQ	Insertion Loss		Isolation				Return Loss					
	RFC-RF1 State 2	RFC-RF2 State 1	RFC-RF1 State 1	RFC-RF2 State 2	RF1-RF2 State 2	RF1-RF2 State 1	RFC State 2	RFC State 1	RF1 State 2	RF1 State 1	RF2 State 2	RF2 State 1
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
0.01	0.5	0.5	93.3	78.6	80.9	82.2	19.5	19.5	19.6	18.8	18.7	19.7
0.05	0.5	0.5	80.4	82.5	80.6	82.5	24.7	24.8	25.0	20.0	19.9	25.0
0.1	0.5	0.5	78.4	78.9	78.4	78.6	24.6	24.8	25.0	20.3	20.2	24.9
0.3	0.5	0.4	74.0	75.4	76.6	76.7	24.0	24.2	24.1	20.6	20.5	24.0
0.5	0.5	0.5	70.4	71.9	73.1	74.1	23.1	23.1	23.2	21.0	20.7	23.4
0.8	0.5	0.5	67.2	68.7	69.8	70.7	22.0	22.0	22.0	21.8	21.5	22.2
1.0	0.5	0.5	65.3	66.5	68.1	69.4	21.3	21.3	21.5	22.4	22.0	21.7
2.0	0.5	0.5	60.1	61.7	64.3	65.6	23.1	22.6	23.5	30.0	28.6	23.4
3.0	0.6	0.6	57.3	58.7	63.9	66.2	23.1	23.6	23.6	29.0	30.7	24.2
4.0	0.6	0.6	55.3	56.4	65.1	67.7	18.2	18.5	18.7	22.3	22.8	18.4
5.0	0.6	0.5	53.2	54.8	64.1	67.7	22.9	22.8	25.4	21.2	20.9	23.7
6.0	0.6	0.6	52.4	54.1	64.8	68.8	25.2	24.5	34.4	24.1	22.7	34.8
7.0	0.6	0.6	51.5	53.1	66.6	71.1	24.3	23.3	30.8	32.5	27.1	32.0
8.0	0.7	0.6	50.4	51.7	67.6	69.3	20.1	20.9	21.3	27.9	29.1	23.8
9.0	0.7	0.7	49.8	50.9	65.5	65.2	18.0	18.7	19.0	23.3	25.7	19.3
10.0	0.8	0.7	49.3	50.3	63.4	62.7	17.6	17.5	19.1	22.0	22.0	18.2
11.0	0.8	0.7	48.8	49.9	61.3	60.3	17.0	16.7	18.6	20.5	19.5	18.1
12.0	0.8	0.7	48.5	49.5	59.5	58.3	18.8	18.9	21.1	18.6	18.4	21.4
13.0	0.7	0.7	48.1	49.3	58.8	56.9	20.7	21.0	23.9	18.7	19.0	24.6
14.0	0.8	0.7	47.3	49.7	57.8	54.9	19.2	18.9	22.0	19.2	19.1	21.9
15.0	0.8	0.8	46.6	49.5	55.3	53.7	17.7	17.7	21.0	19.4	19.3	21.8
16.0	0.9	0.8	46.2	48.2	53.5	52.6	17.3	17.4	19.2	19.1	20.4	18.9
17.0	0.8	0.8	46.1	47.8	52.9	51.9	20.8	19.5	18.1	15.1	14.2	16.3
18.0	1.0	1.0	46.7	48.2	52.6	51.6	14.7	13.8	14.1	12.9	11.6	12.6
19.0	1.2	1.2	47.7	48.3	52.3	51.3	13.0	12.7	13.8	13.4	13.0	13.7
20.0	1.0	1.0	46.8	47.3	52.3	51.2	16.2	15.6	16.4	14.3	14.2	15.9
21.0	1.0	0.9	46.1	46.1	51.7	50.5	19.7	18.9	19.2	14.6	13.9	18.3
22.0	1.1	1.1	46.2	45.8	51.2	50.4	18.6	18.4	17.4	14.3	14.6	17.7
23.0	1.4	1.4	47.9	47.1	52.0	51.3	15.1	14.6	13.5	11.7	11.6	12.7
24.0	1.4	1.4	51.6	49.0	52.6	51.7	14.2	13.4	13.6	9.9	9.5	12.5
25.0	1.3	1.3	52.4	49.7	52.8	52.2	20.3	18.2	21.1	9.8	9.4	18.0
26.0	1.3	1.3	53.2	49.6	52.0	51.6	26.1	33.9	34.0	10.6	9.4	28.3
27.0	1.4	1.3	52.4	48.5	51.2	50.6	20.9	22.1	23.4	11.1	10.1	23.9
28.0	1.4	1.4	51.9	47.8	50.4	49.9	18.4	18.7	22.2	10.6	10.4	22.3
29.0	1.5	1.5	52.5	47.1	49.5	48.5	18.4	18.8	20.6	10.0	9.6	20.3
30.0	1.7	1.8	49.3	45.4	48.5	47.1	18.4	18.4	18.3	9.2	9.6	18.5

FREQ	Input Power at 1dB Comp.		Input Power at 0.1dB Comp.	
	RF1 State 2	RF2 State 1	RF1 State 2	RF2 State 1
(GHz)	(dBm)	(dBm)	(dBm)	(dBm)
0.01	20.6	20.5	18.3	18.2
0.1	25.6	25.5	22.8	22.8
0.2	26.0	26.0	23.2	23.2
0.4	26.2	26.2	23.7	23.7
0.6	26.3	26.4	24.1	24.1
0.8	26.5	26.6	24.3	24.3
1.0	26.8	26.8	24.6	24.5
2.0	27.6	27.6	25.3	25.3
4.0	27.5	27.6	26.7	26.8
6.0	28.0	27.9	27.2	27.2
8.0	27.9	27.9	27.1	27.1
10.0	27.6	27.5	26.7	26.7
15.0	27.5	27.4	26.7	26.6
20.0	27.8	27.9	27.1	27.2
25.0	27.8	27.9	27.0	27.1
30.0	26.1	26.0	25.2	25.0

FREQ	Input IP3	
	RF1 State 2	RF2 State 1
(MHz)	(dBm)	(dBm)
0.25	46.9	46.8
0.50	47.3	47.1
0.75	47.3	47.1
1	47.4	47.2
10	48.2	48.4
100	50.0	50.1
125	51.0	51.0
150	50.7	50.8
175	50.3	50.4
200	50.3	50.3
225	50.7	50.6
250	50.5	50.4
275	50.3	50.4
300	50.3	50.3
325	50.1	50.0
350	50.0	49.9
375	50.5	50.5
400	51.3	51.3
425	51.4	51.5
450	51.0	51.1
475	50.8	50.9
500	51.8	51.9
1000	51.5	51.8
2000	50.7	50.7
6000	50.1	50.3
10000	52.0	51.6
15000	47.8	47.8
20000	47.4	47.4
25000	46.2	46.2
30000	44.0	43.8

Typical Performance Data

Definitions:

STATE	CONTROL INPUT	RFC TO RF1	RFC TO RF2
1	HIGH	OFF	ON
2	LOW	ON	OFF

TEST CONDITIONS: V_{DD}= +3.3V, V_{EE} = -3.3V @ Temperature = +105°C

FREQ	Insertion Loss		Isolation				Return Loss					
	RFC-RF1 State 2	RFC-RF2 State 1	RFC-RF1 State 1	RFC-RF2 State 2	RF1-RF2 State 2	RF1-RF2 State 1	RFC State 2	RFC State 1	RF1 State 2	RF1 State 1	RF2 State 2	RF2 State 1
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
0.01	0.6	0.6	84.5	83.8	81.1	78.6	18.8	18.6	18.9	19.0	18.9	18.8
0.05	0.7	0.7	80.1	81.6	82.1	81.4	22.3	22.3	22.5	20.1	20.0	22.5
0.1	0.7	0.7	77.8	77.6	77.9	78.9	22.3	22.4	22.5	20.2	20.2	22.5
0.3	0.6	0.6	72.8	73.7	74.2	74.8	21.8	21.9	22.0	20.6	20.5	22.0
0.5	0.7	0.7	69.0	70.1	71.6	72.8	21.1	21.1	21.2	21.1	21.0	21.3
0.8	0.7	0.7	65.6	66.6	68.3	68.9	20.2	20.2	20.3	22.0	21.8	20.5
1.0	0.7	0.7	63.6	64.8	66.4	67.3	19.8	19.8	19.9	22.8	22.5	20.2
2.0	0.8	0.8	58.5	59.8	62.1	63.3	21.7	21.4	21.9	30.7	29.1	22.1
3.0	0.9	0.9	55.7	57.0	61.1	62.4	22.6	22.9	23.3	31.2	32.9	23.8
4.0	0.9	0.9	54.1	54.9	60.5	62.6	18.5	18.9	19.3	23.8	24.7	19.1
5.0	0.9	0.9	52.4	53.8	60.0	62.2	22.0	21.9	24.5	21.7	21.7	23.0
6.0	0.9	0.9	51.8	53.3	60.4	62.8	24.1	23.2	28.1	24.5	23.2	32.7
7.0	1.0	1.0	51.2	52.7	61.6	64.8	23.0	22.2	27.9	39.7	29.7	34.0
8.0	1.1	1.0	50.3	51.6	64.2	68.9	20.0	20.6	22.4	30.3	31.6	24.4
9.0	1.1	1.1	50.0	51.0	65.3	72.0	17.7	18.4	19.6	25.7	28.7	20.1
10.0	1.2	1.1	49.6	50.5	65.5	70.1	16.7	16.8	18.6	22.4	22.7	18.1
11.0	1.2	1.2	49.4	50.4	64.7	66.7	17.7	17.4	19.8	20.3	19.8	19.0
12.0	1.1	1.1	49.3	50.2	63.4	64.3	19.6	19.4	23.8	19.6	18.9	23.0
13.0	1.2	1.2	49.1	50.3	63.6	61.8	19.4	19.3	26.4	20.2	19.8	26.3
14.0	1.2	1.2	48.5	51.0	63.0	59.3	17.9	17.9	25.1	22.8	22.6	25.9
15.0	1.3	1.3	47.9	50.7	59.5	57.5	17.3	17.5	19.9	21.6	23.1	20.5
16.0	1.3	1.3	47.5	49.5	57.1	55.8	19.6	19.0	19.1	17.6	18.0	18.4
17.0	1.3	1.3	47.8	49.5	56.6	55.4	19.9	19.2	18.1	15.2	14.6	16.8
18.0	1.5	1.6	48.6	49.6	56.4	55.1	15.3	14.7	14.9	14.1	13.4	14.0
19.0	1.7	1.7	49.1	49.5	55.9	54.7	14.6	14.0	15.8	14.6	13.7	14.7
20.0	1.6	1.6	48.4	48.6	55.6	54.3	17.8	17.7	19.1	16.3	15.6	19.2
21.0	1.6	1.6	47.6	47.3	54.7	53.8	22.5	22.5	18.9	16.0	16.5	19.8
22.0	1.8	1.8	48.3	47.4	54.2	53.8	17.9	17.7	15.7	13.8	14.2	15.6
23.0	2.0	2.1	50.3	48.7	55.2	55.4	14.8	14.2	13.6	11.6	11.7	13.0
24.0	1.9	2.0	53.4	49.7	55.7	55.5	16.7	15.5	16.4	10.6	10.3	14.7
25.0	1.9	1.9	53.4	49.9	55.4	55.7	23.7	23.6	32.1	11.2	10.5	23.2
26.0	2.0	2.0	53.4	49.5	54.5	54.9	28.0	31.3	31.4	12.1	11.1	30.6
27.0	2.1	2.1	52.5	48.8	53.7	54.1	24.2	25.6	29.3	11.6	10.8	31.9
28.0	2.2	2.3	51.0	47.6	52.8	53.6	18.8	18.9	22.3	11.0	10.7	20.7
29.0	2.3	2.4	50.2	46.7	52.1	51.6	18.2	18.4	20.2	10.8	11.0	19.7
30.0	2.7	2.7	48.1	45.0	51.1	49.7	18.3	19.1	17.5	10.0	10.3	19.5

FREQ	Input Power at 1dB Comp.		Input Power at 0.1dB Comp.	
	RF1 State 2	RF2 State 1	RF1 State 2	RF2 State 1
(GHz)	(dBm)	(dBm)	(dBm)	(dBm)
0.01	19.5	19.4	17.3	17.2
0.1	24.3	24.2	21.0	20.9
0.2	24.9	24.8	21.5	21.4
0.4	25.1	25.1	22.1	22.0
0.6	25.4	25.4	22.5	22.4
0.8	25.7	25.7	22.7	22.6
1.0	25.9	25.9	23.0	22.9
2.0	27.1	27.1	24.0	23.9
4.0	27.4	27.4	26.1	26.1
6.0	27.8	27.7	26.7	26.6
8.0	27.9	27.9	26.7	26.8
10.0	27.5	27.5	26.3	26.3
15.0	27.5	27.4	26.3	26.2
20.0	27.8	27.8	26.9	26.8
25.0	27.8	27.7	26.5	26.5
30.0	26.0	25.9	24.6	24.4

FREQ	Input IP3	
	RF1 State 2	RF2 State 1
(MHz)	(dBm)	(dBm)
0.25	44.7	44.7
0.50	45.3	45.3
0.75	45.4	45.4
1	45.5	45.5
10	44.8	44.7
100	48.2	48.1
125	49.2	49.0
150	49.0	48.9
175	48.9	48.8
200	49.1	48.9
225	49.7	49.6
250	49.5	49.4
275	49.6	49.4
300	49.6	49.5
325	49.4	49.2
350	49.3	49.1
375	49.9	49.6
400	50.5	50.4
425	50.9	50.7
450	50.5	50.3
475	50.2	50.1
500	50.9	50.8
1000	50.7	50.8
2000	50.2	50.1
6000	49.4	49.3
10000	50.1	50.0
15000	46.0	45.7
20000	45.7	45.5
25000	44.4	44.4
30000	41.7	41.5

Typical Performance Data

Definitions:

STATE	CONTROL INPUT	RFC TO RF1	RFC TO RF2
1	HIGH	OFF	ON
2	LOW	ON	OFF

TEST CONDITIONS: V_{DD}= +3.5V, V_{EE} = -3.5V @ Temperature = +105°C

FREQ	Insertion Loss		Isolation				Return Loss					
	RFC-RF1 State 2	RFC-RF2 State 1	RFC-RF1 State 1	RFC-RF2 State 2	RF1-RF2 State 2	RF1-RF2 State 1	RFC State 2	RFC State 1	RF1 State 2	RF1 State 1	RF2 State 2	RF2 State 1
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
0.01	0.6	0.6	81.6	85.4	80.3	79.0	18.6	18.6	18.7	18.9	18.9	18.8
0.05	0.7	0.7	81.0	82.2	82.7	81.6	22.3	22.2	22.5	20.1	20.0	22.4
0.1	0.7	0.7	77.5	77.5	78.6	78.8	22.3	22.3	22.5	20.2	20.1	22.5
0.3	0.6	0.6	72.5	73.8	75.1	75.5	21.7	21.8	22.0	20.6	20.5	21.9
0.5	0.7	0.7	69.2	70.4	71.2	71.8	21.1	21.0	21.2	21.1	21.0	21.3
0.8	0.7	0.7	65.6	66.5	68.2	69.2	20.2	20.2	20.3	22.0	21.8	20.5
1.0	0.7	0.7	63.6	65.0	66.2	67.5	19.9	19.8	19.9	22.8	22.5	20.2
2.0	0.8	0.8	58.5	59.8	61.9	63.4	21.7	21.3	22.1	30.6	29.0	22.2
3.0	0.9	0.9	55.8	57.1	60.8	62.4	22.5	22.9	23.5	31.0	33.1	24.0
4.0	0.9	0.9	54.2	55.0	60.4	62.6	18.4	19.0	19.3	23.7	25.0	19.1
5.0	0.9	0.9	52.4	53.9	59.8	62.6	21.8	21.8	24.3	21.6	21.8	22.6
6.0	0.9	0.9	51.8	53.4	60.0	62.6	24.0	23.3	28.6	24.4	23.2	32.4
7.0	1.0	1.0	51.3	52.9	61.4	64.8	23.2	22.5	28.1	37.7	29.5	33.2
8.0	1.0	1.0	50.4	51.7	63.5	68.7	20.3	20.9	23.1	30.3	31.8	24.9
9.0	1.1	1.1	50.0	51.1	64.8	72.0	17.8	18.4	20.0	26.3	29.2	20.3
10.0	1.1	1.1	49.7	50.8	65.2	70.3	16.6	16.6	18.5	22.6	23.1	18.0
11.0	1.2	1.2	49.4	50.4	64.8	67.1	17.4	17.0	19.3	20.3	19.9	18.3
12.0	1.1	1.1	49.3	50.3	63.3	64.0	19.8	19.4	23.1	19.1	18.7	22.3
13.0	1.2	1.1	49.1	50.4	63.5	61.8	19.7	19.6	26.1	19.5	19.3	25.7
14.0	1.2	1.2	48.5	51.1	63.6	59.5	18.0	17.9	26.4	22.6	22.4	26.4
15.0	1.3	1.3	48.0	51.0	60.0	57.9	17.0	17.0	20.1	22.4	23.8	20.4
16.0	1.3	1.3	47.6	49.6	57.5	56.0	19.2	18.4	19.0	17.9	18.1	18.0
17.0	1.3	1.3	47.8	49.5	56.8	55.4	20.8	19.8	18.2	15.2	14.6	17.0
18.0	1.5	1.5	48.6	49.7	56.6	55.1	15.3	14.8	14.7	13.9	13.4	14.0
19.0	1.7	1.7	49.2	49.4	56.1	54.7	14.4	13.7	15.5	14.4	13.6	14.2
20.0	1.5	1.6	48.6	48.6	56.0	54.3	17.4	17.0	19.4	16.3	15.3	18.6
21.0	1.6	1.6	47.6	47.2	54.8	53.7	22.5	22.3	19.3	16.3	16.7	20.3
22.0	1.8	1.8	48.2	47.2	54.0	53.6	18.8	18.4	16.2	14.1	14.6	15.9
23.0	2.0	2.0	50.3	48.3	54.9	55.2	15.0	14.3	13.8	11.8	11.8	13.1
24.0	1.9	2.0	52.9	49.4	55.4	55.4	16.6	15.2	16.2	10.6	10.3	14.2
25.0	1.9	1.9	53.2	49.5	55.5	56.0	23.2	22.3	30.6	11.2	10.4	21.5
26.0	2.0	2.0	53.3	49.3	54.5	55.1	26.7	30.6	31.4	12.2	10.9	31.3
27.0	2.1	2.1	52.7	48.5	53.8	54.4	22.7	24.2	28.1	11.5	10.7	33.3
28.0	2.2	2.2	51.4	47.6	52.9	53.4	18.3	18.6	21.1	11.2	10.8	20.3
29.0	2.3	2.3	50.4	46.4	51.8	51.7	18.7	19.1	20.2	11.2	11.3	20.1
30.0	2.6	2.6	48.5	45.0	51.1	49.9	19.9	21.0	18.5	10.3	10.3	20.8

FREQ	Input Power at 1dB Comp.		Input Power at 0.1dB Comp.	
	RF1 State 2	RF2 State 1	RF1 State 2	RF2 State 1
(GHz)	(dBm)	(dBm)	(dBm)	(dBm)
0.01	19.9	19.8	17.7	17.6
0.1	24.7	24.6	21.5	21.4
0.2	25.3	25.2	22.0	21.9
0.4	25.5	25.4	22.6	22.5
0.6	25.7	25.8	23.0	22.9
0.8	26.0	26.0	23.2	23.1
1.0	26.3	26.3	23.5	23.4
2.0	27.3	27.3	24.3	24.3
4.0	27.5	27.5	26.4	26.4
6.0	27.9	27.9	26.9	26.9
8.0	28.0	28.1	27.0	27.0
10.0	27.7	27.6	26.6	26.5
15.0	27.6	27.6	26.6	26.4
20.0	28.0	28.0	27.2	27.1
25.0	28.0	28.0	26.9	26.9
30.0	26.2	26.0	24.9	24.7

FREQ	Input IP3	
	RF1 State 2	RF2 State 1
(MHz)	(dBm)	(dBm)
0.25	45.5	45.6
0.50	46.0	46.1
0.75	46.2	46.2
1	46.2	46.3
10	45.7	45.4
100	48.5	48.3
125	49.5	49.2
150	49.2	49.0
175	49.1	48.8
200	49.2	49.0
225	49.9	49.7
250	49.7	49.5
275	49.7	49.4
300	49.8	49.5
325	49.5	49.3
350	49.4	49.1
375	50.0	49.6
400	50.7	50.5
425	51.0	50.8
450	50.5	50.4
475	50.3	50.1
500	51.1	50.9
1000	50.9	50.9
2000	50.3	50.2
6000	49.6	49.5
10000	50.5	50.4
15000	46.6	46.4
20000	46.2	46.0
25000	44.9	45.0
30000	42.3	42.2

Typical Performance Data

Definitions:

STATE	CONTROL INPUT	RFC TO RF1	RFC TO RF2
1	HIGH	OFF	ON
2	LOW	ON	OFF

TEST CONDITIONS: V_{DD}= +3.6V, V_{EE} = -3.6V @ Temperature = +105°C

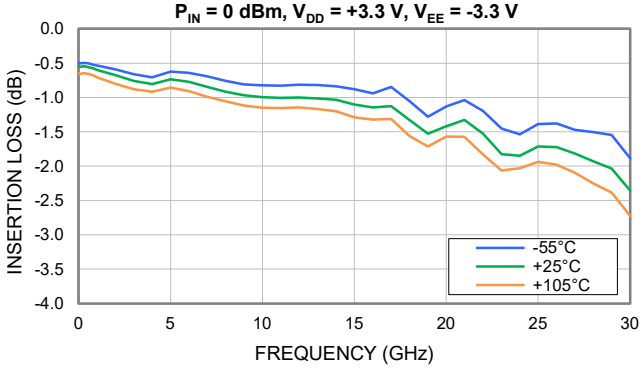
FREQ	Insertion Loss		Isolation				Return Loss					
	RFC-RF1 State 2	RFC-RF2 State 1	RFC-RF1 State 1	RFC-RF2 State 2	RF1-RF2 State 2	RF1-RF2 State 1	RFC State 2	RFC State 1	RF1 State 2	RF1 State 1	RF2 State 2	RF2 State 1
(GHz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)
0.01	0.6	0.6	84.8	83.1	88.3	83.3	18.7	18.7	18.8	18.9	18.9	18.8
0.05	0.6	0.6	81.5	81.2	79.9	81.5	22.3	22.3	22.5	20.1	20.1	22.5
0.1	0.6	0.6	77.5	77.8	79.0	79.6	22.4	22.4	22.5	20.2	20.2	22.5
0.3	0.6	0.6	73.0	73.4	74.5	74.8	21.8	21.9	22.0	20.5	20.5	22.0
0.5	0.7	0.6	69.3	70.2	71.4	73.0	21.1	21.0	21.2	21.1	21.0	21.4
0.8	0.7	0.7	65.6	66.6	68.0	69.3	20.2	20.2	20.3	22.0	21.8	20.6
1.0	0.7	0.7	63.6	64.8	66.4	67.1	19.9	19.8	20.0	22.8	22.5	20.2
2.0	0.8	0.8	58.5	59.7	62.2	63.5	21.8	21.3	22.0	30.6	29.0	22.2
3.0	0.9	0.9	55.9	57.0	60.9	62.7	22.6	22.9	23.4	30.9	32.7	23.9
4.0	0.9	0.9	54.1	54.9	60.7	62.6	18.4	18.9	19.3	23.7	24.8	19.1
5.0	0.8	0.8	52.4	53.8	60.1	62.3	21.9	21.9	24.5	21.6	21.6	22.8
6.0	0.9	0.9	51.8	53.3	60.3	62.7	24.0	23.2	28.4	24.4	23.1	32.9
7.0	1.0	1.0	51.2	52.7	61.7	64.9	23.2	22.3	27.8	42.6	29.8	33.8
8.0	1.0	1.0	50.3	51.5	64.0	68.9	20.1	20.7	22.5	29.9	31.2	24.4
9.0	1.1	1.1	50.0	51.0	65.3	72.4	17.7	18.3	19.8	25.7	28.4	20.2
10.0	1.1	1.1	49.7	50.6	65.6	70.0	16.6	16.6	18.6	22.4	22.8	18.2
11.0	1.1	1.1	49.4	50.4	65.0	66.4	17.6	17.3	19.5	20.3	19.9	18.9
12.0	1.1	1.1	49.3	50.3	63.3	63.7	19.7	19.6	23.4	19.2	18.9	22.9
13.0	1.2	1.1	49.0	50.2	63.3	61.7	19.5	19.4	26.3	19.8	19.6	26.1
14.0	1.2	1.2	48.5	51.0	62.8	59.3	17.9	17.9	25.9	22.9	22.5	26.1
15.0	1.3	1.3	48.0	50.7	59.5	57.7	17.1	17.2	19.8	21.8	23.3	20.4
16.0	1.3	1.3	47.6	49.6	57.1	55.8	19.2	18.6	19.1	17.6	17.9	18.2
17.0	1.3	1.3	47.8	49.5	56.5	55.4	20.5	19.7	18.3	15.3	14.7	17.2
18.0	1.5	1.5	48.6	49.6	56.2	55.1	15.3	14.8	15.0	14.1	13.5	14.2
19.0	1.7	1.7	49.1	49.5	56.0	54.7	14.4	13.8	15.5	14.5	13.8	14.5
20.0	1.5	1.6	48.4	48.7	55.5	54.2	17.6	17.3	19.4	16.3	15.3	18.9
21.0	1.6	1.5	47.6	47.4	54.6	53.7	22.6	22.6	19.2	16.3	16.7	20.3
22.0	1.8	1.8	48.3	47.4	54.1	53.7	18.4	18.2	16.0	13.9	14.5	15.9
23.0	2.0	2.0	50.3	48.7	55.0	55.2	14.9	14.3	13.8	11.8	11.8	13.1
24.0	1.9	2.0	53.2	49.7	55.6	55.5	16.8	15.6	16.4	10.7	10.4	14.6
25.0	1.9	1.9	53.5	49.9	55.6	55.8	23.5	23.2	32.0	11.3	10.5	22.7
26.0	1.9	2.0	53.5	49.6	54.5	54.9	26.9	30.8	31.3	12.2	11.1	32.0
27.0	2.1	2.1	52.7	48.8	53.9	54.2	23.4	24.8	28.4	11.7	10.9	30.2
28.0	2.2	2.2	51.2	47.8	52.9	53.2	18.6	18.7	22.2	11.2	10.8	20.7
29.0	2.3	2.4	50.5	46.8	51.9	51.6	18.5	18.8	20.1	10.9	11.2	19.9
30.0	2.6	2.7	48.1	45.0	51.0	49.6	19.2	19.9	17.9	10.3	10.4	20.1

FREQ	Input Power at 1dB Comp.		Input Power at 0.1dB Comp.	
	RF1 State 2	RF2 State 1	RF1 State 2	RF2 State 1
(GHz)	(dBm)	(dBm)	(dBm)	(dBm)
0.01	20.1	20.0	17.9	17.8
0.1	24.9	24.8	21.8	21.7
0.2	25.4	25.4	22.2	22.1
0.4	25.7	25.6	22.8	22.7
0.6	25.9	25.9	23.2	23.1
0.8	26.2	26.2	23.4	23.3
1.0	26.4	26.4	23.7	23.6
2.0	27.3	27.4	24.5	24.5
4.0	27.6	27.6	26.5	26.5
6.0	28.0	27.9	27.0	27.0
8.0	28.1	28.1	27.1	27.1
10.0	27.7	27.7	26.7	26.6
15.0	27.7	27.6	26.7	26.5
20.0	28.1	28.1	27.3	27.3
25.0	28.1	28.1	27.1	27.1
30.0	26.3	26.1	25.0	24.9

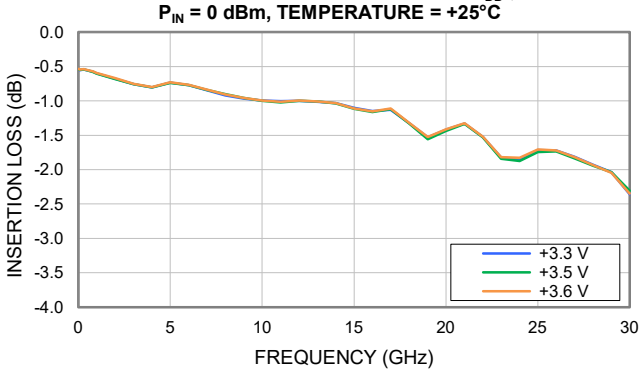
FREQ	Input IP3	
	RF1 State 2	RF2 State 1
(MHz)	(dBm)	(dBm)
0.25	45.7	45.6
0.50	46.2	46.2
0.75	46.4	46.3
1	46.4	46.4
10	45.8	45.7
100	48.5	48.4
125	49.4	49.3
150	49.3	49.1
175	49.1	48.9
200	49.2	49.1
225	49.9	49.7
250	49.7	49.5
275	49.7	49.5
300	49.8	49.6
325	49.5	49.3
350	49.4	49.2
375	49.9	49.7
400	50.7	50.5
425	50.9	50.8
450	50.5	50.5
475	50.3	50.2
500	51.1	50.9
1000	50.8	50.9
2000	50.3	50.2
6000	49.9	49.8
10000	50.9	50.9
15000	47.0	46.7
20000	46.6	46.6
25000	45.1	45.2
30000	42.7	42.6

Typical Performance Curves

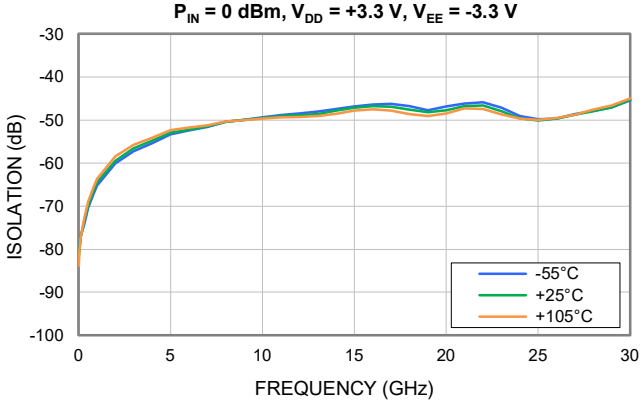
INSERTION LOSS RFC-RF OUT[1] vs. TEMPERATURE, P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



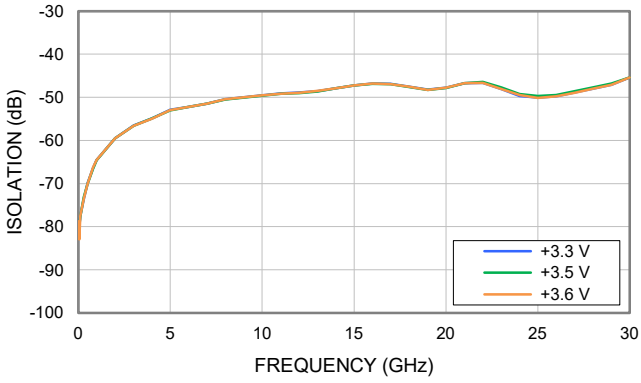
INSERTION LOSS RFC-RF OUT[1]vs. V_{DD}[3], P_{IN} = 0 dBm, TEMPERATURE = +25°C



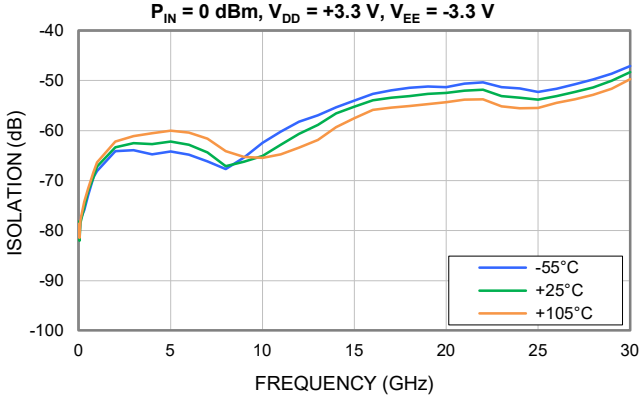
ISOLATION RFC-RF OUT[2] vs. TEMPERATURE, P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



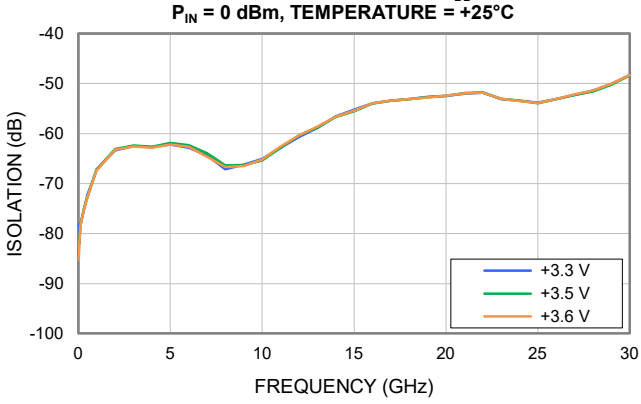
ISOLATION RFC-RF OUT[2] vs. V_{DD}[3], P_{IN} = 0 dBm, TEMPERATURE = +25°C



ISOLATION RF1 - RF2 vs. TEMPERATURE, P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



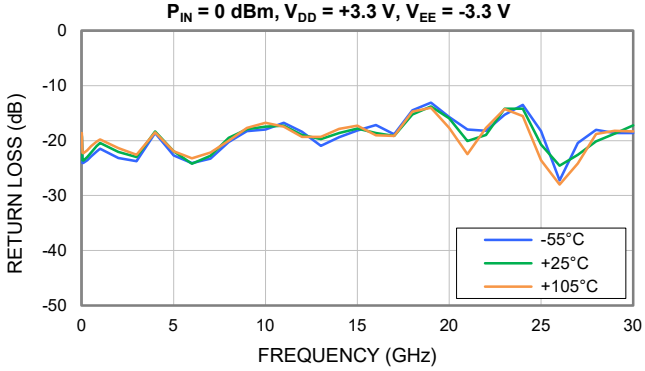
ISOLATION RF1 - RF2 vs. V_{DD}[3], P_{IN} = 0 dBm, TEMPERATURE = +25°C



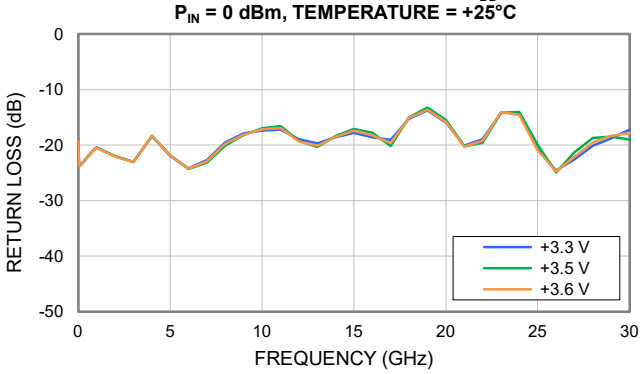
1. RF OUT is defined as either RF1 (ON) or RF2 (ON)
2. RF OUT is defined as either RF1 (OFF) or RF2 (OFF)
3. V_{EE} is the negative equivalent value to V_{DD}

Typical Performance Curves

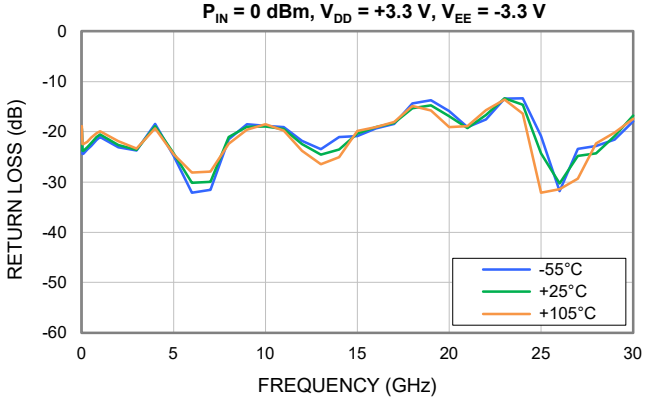
RFC INPUT RETURN LOSS vs. TEMPERATURE, P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



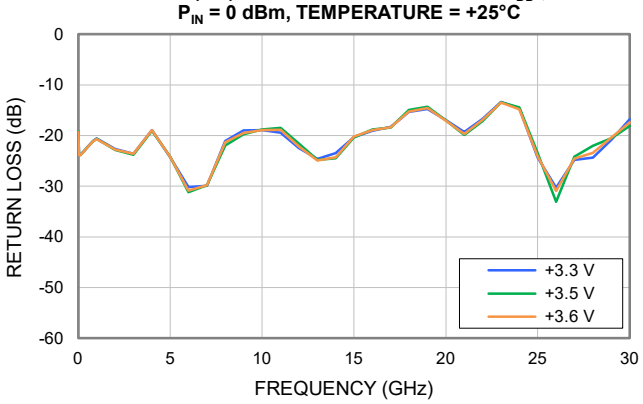
RFC INPUT RETURN LOSS vs. V_{DD}[3], P_{IN} = 0 dBm, TEMPERATURE = +25°C



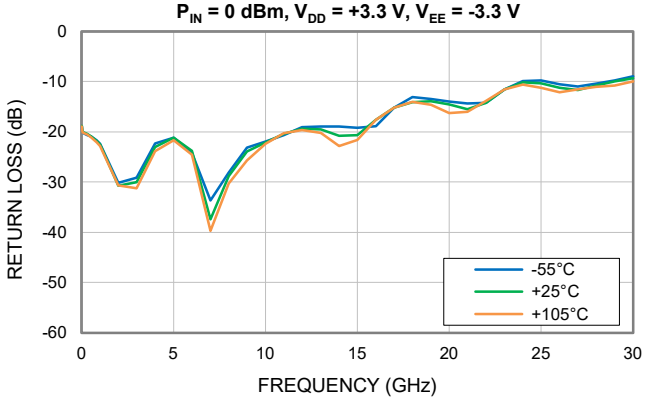
RF1 (ON) OUTPUT RETURN LOSS vs. TEMPERATURE, P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



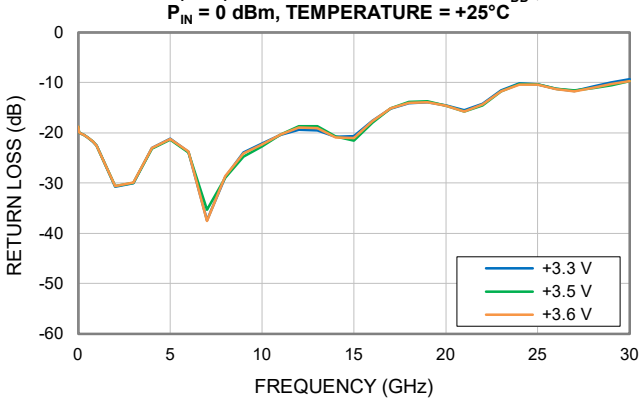
RF1 (ON) OUTPUT RETURN LOSS vs. V_{DD}[3], P_{IN} = 0 dBm, TEMPERATURE = +25°C



RF1 (OFF) OUTPUT RETURN LOSS vs. TEMPERATURE, P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



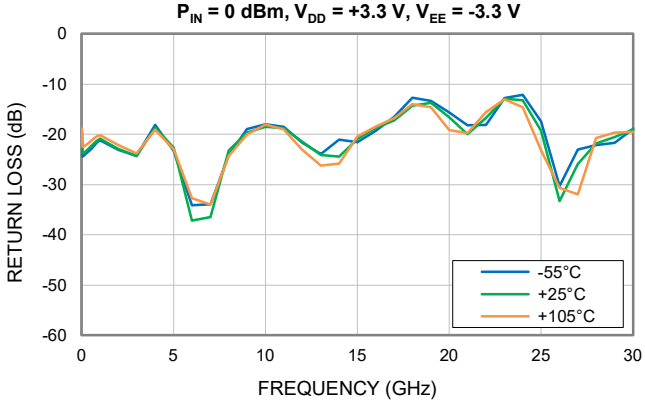
RF1 (OFF) OUTPUT RETURN LOSS vs. V_{DD}[3], P_{IN} = 0 dBm, TEMPERATURE = +25°C



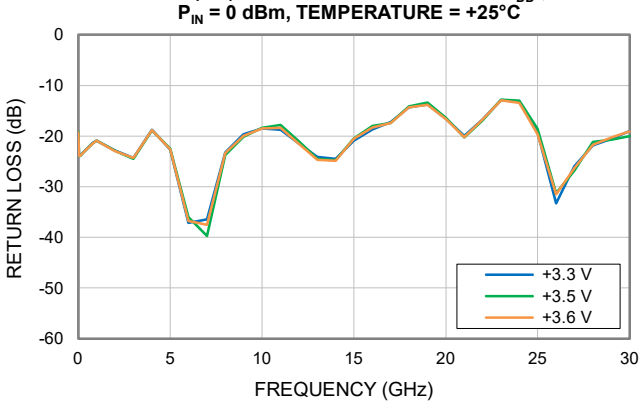
1. RF OUT is defined as either RF1 (ON) or RF2 (ON)
2. RF OUT is defined as either RF1 (OFF) or RF2 (OFF)
3. V_{EE} is the negative equivalent value to V_{DD}

Typical Performance Curves

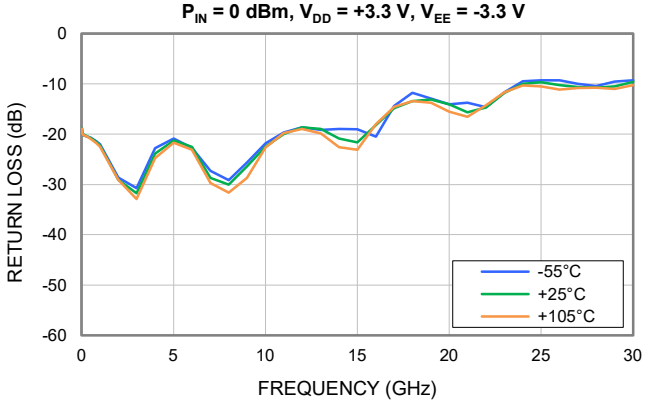
RF2 (ON) OUTPUT RETURN LOSS vs. TEMPERATURE, P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



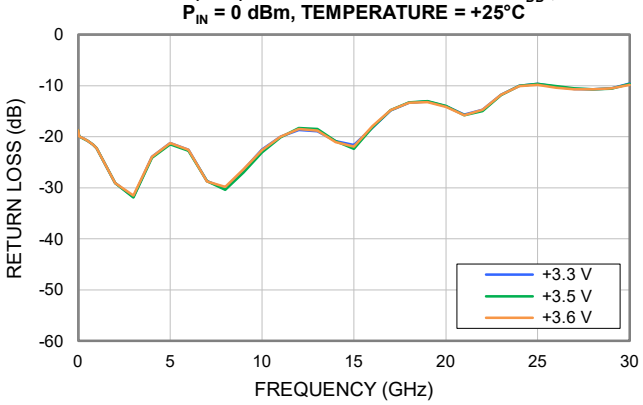
RF2 (ON) OUTPUT RETURN LOSS vs. V_{DD}[3], P_{IN} = 0 dBm, TEMPERATURE = +25°C



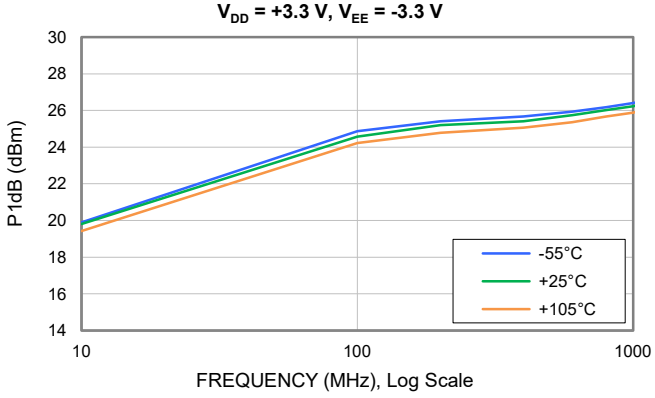
RF2 (OFF) OUTPUT RETURN LOSS vs. TEMPERATURE, P_{IN} = 0 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



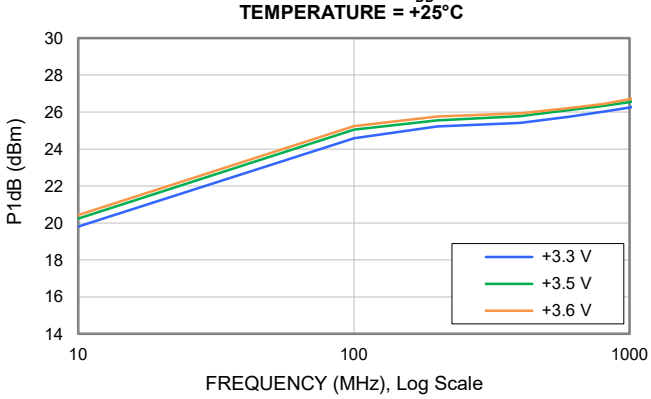
RF2 (OFF) OUTPUT RETURN LOSS vs. V_{DD}[3], P_{IN} = 0 dBm, TEMPERATURE = +25°C



INPUT P1dB vs. TEMPERATURE, V_{DD} = +3.3 V, V_{EE} = -3.3 V



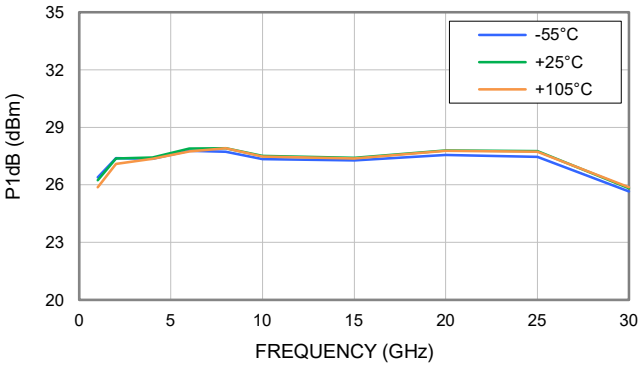
INPUT P1dB vs. V_{DD}[3], TEMPERATURE = +25°C



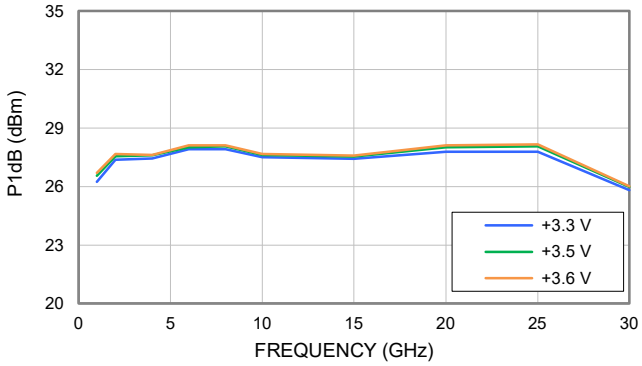
1. RF OUT is defined as either RF1 (ON) or RF2 (ON)
2. RF OUT is defined as either RF1 (OFF) or RF2 (OFF)
3. V_{EE} is the negative equivalent value to V_{DD}

Typical Performance Curves

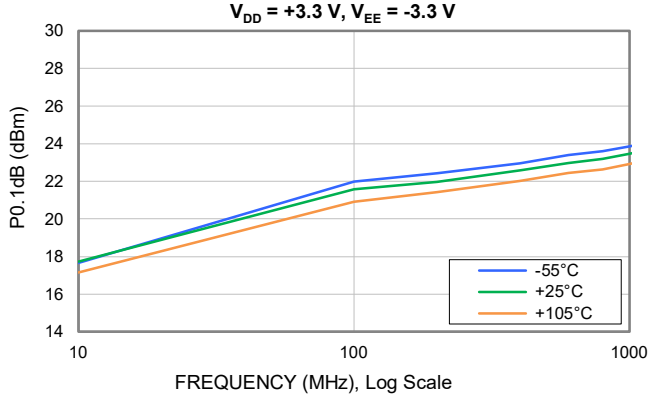
INPUT P1dB vs. TEMPERATURE, V_{DD} = +3.3 V, V_{EE} = -3.3 V



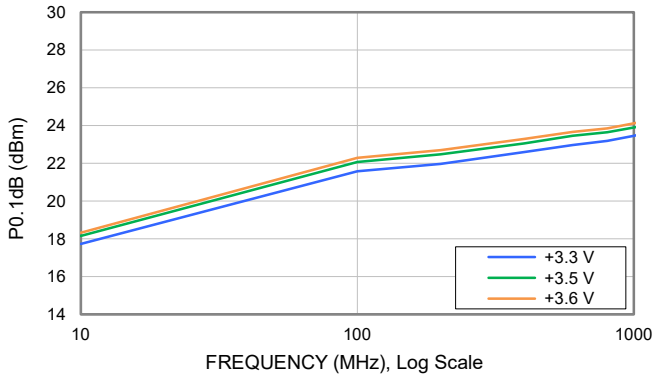
INPUT P1dB vs. V_{DD}[3], TEMPERATURE = +25°C



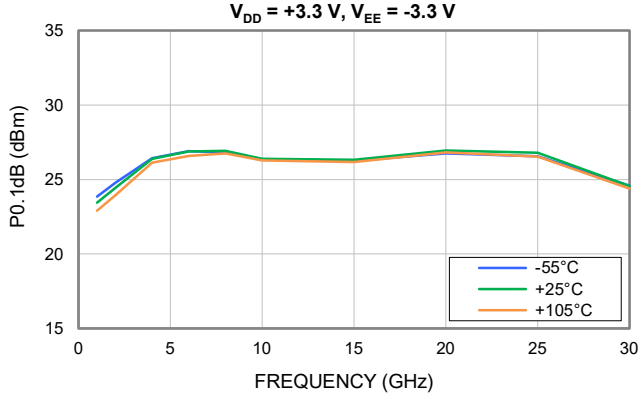
INPUT P0.1dB vs. TEMPERATURE, V_{DD} = +3.3 V, V_{EE} = -3.3 V



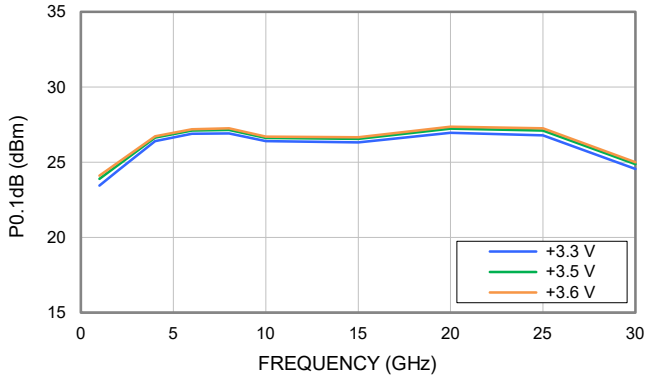
INPUT P0.1dB vs. V_{DD}[3], TEMPERATURE = +25°C



INPUT P0.1dB vs. TEMPERATURE, V_{DD} = +3.3 V, V_{EE} = -3.3 V



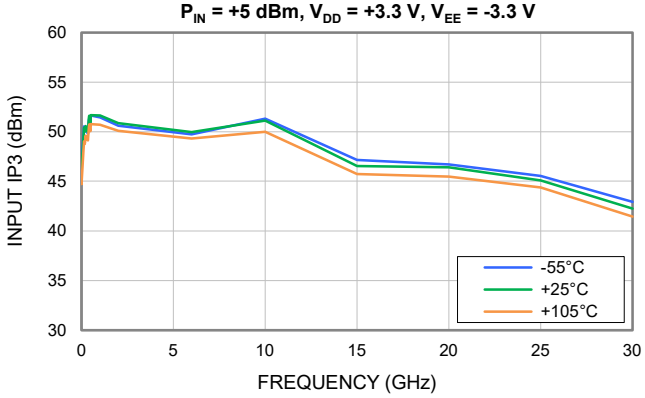
INPUT P0.1dB vs. V_{DD}[3], TEMPERATURE = +25°C



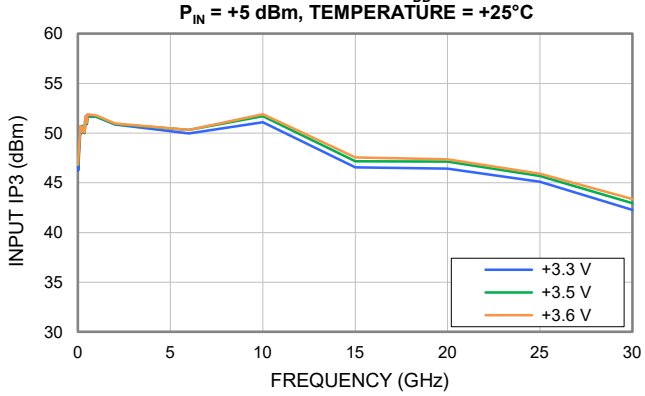
1. RF OUT is defined as either RF1 (ON) or RF2 (ON)
2. RF OUT is defined as either RF1 (OFF) or RF2 (OFF)
3. V_{EE} is the negative equivalent value to V_{DD}

Typical Performance Curves

INPUT IP3 vs. TEMPERATURE,
P_{IN} = +5 dBm, V_{DD} = +3.3 V, V_{EE} = -3.3 V



INPUT IP3 vs. V_{DD}[3],
P_{IN} = +5 dBm, TEMPERATURE = +25°C

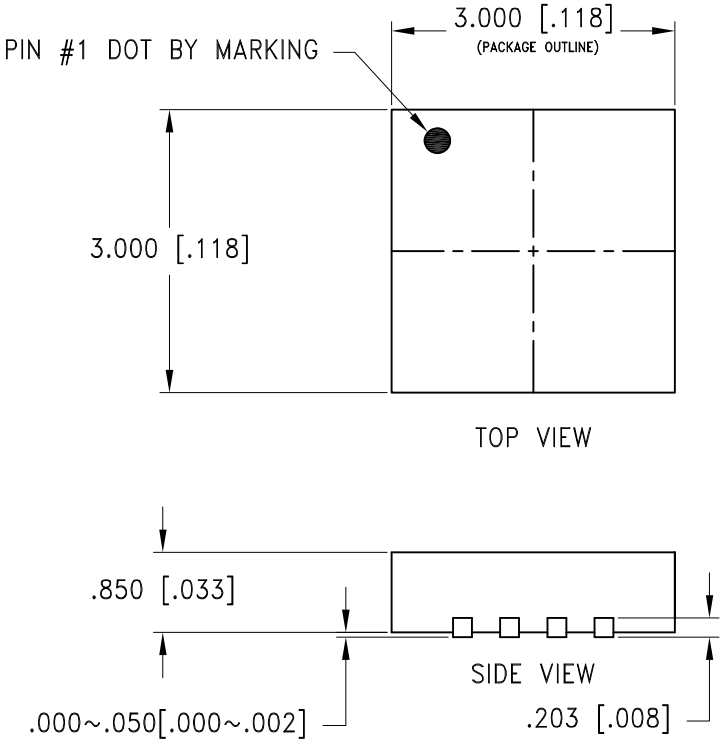


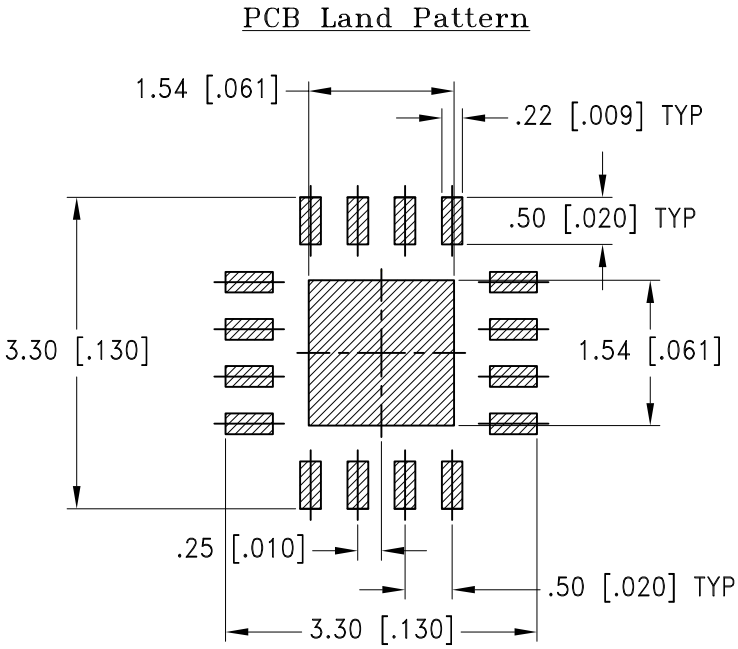
1. RF OUT is defined as either RF1 (ON) or RF2 (ON)
2. RF OUT is defined as either RF1 (OFF) or RF2 (OFF)
3. V_{EE} is the negative equivalent value to V_{DD}

Case Style DQ

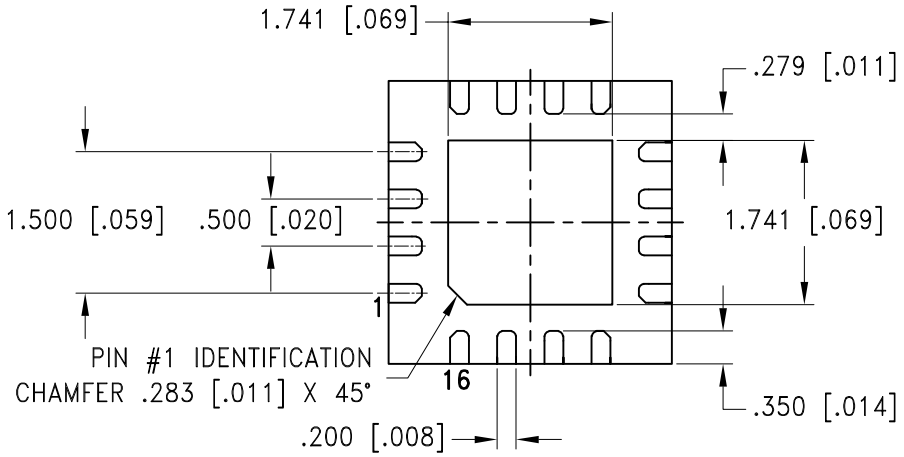
Outline Dimensions

DQ3005





Suggested Layout
Tolerances to be within ±.05[.002]



Weight= .02 Grams

Dimensions are in mm[inches]. Tolerances: 3 Pl. ±.05[.002]

Notes:
1. Case material: Plastic.
2. Termination finish:
   ForRoHS Case Styles: Matte-Tin. All models, (+) suffix.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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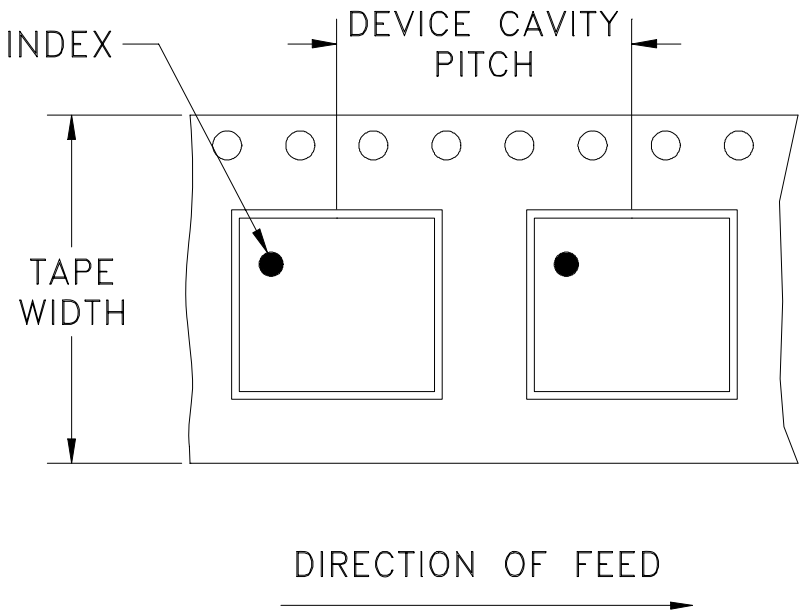
Tape & Reel Packaging TR-F104

DEVICE ORIENTATION IN T&R



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

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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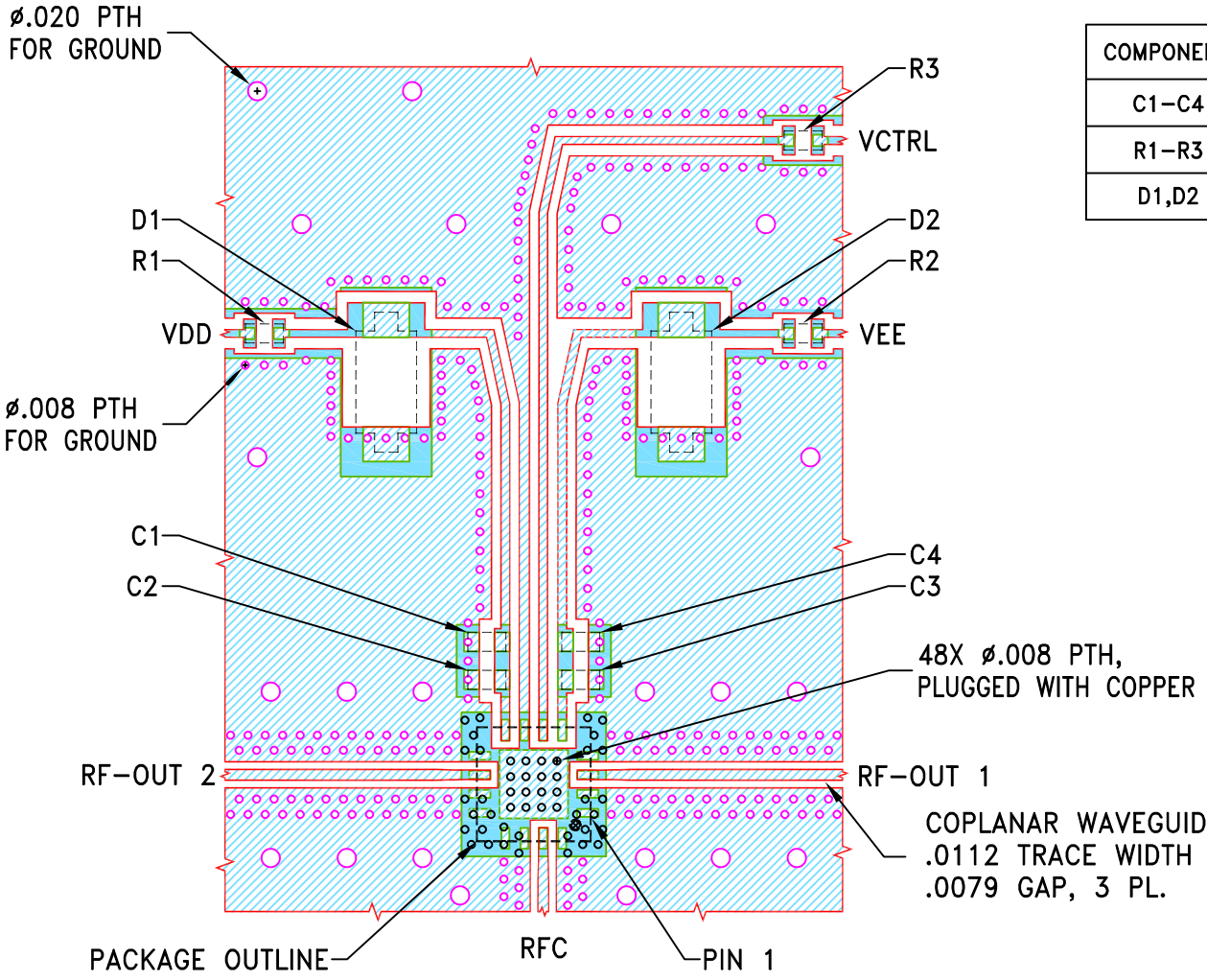
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	ECO-020351	NEW RELEASE	12/21/23	ITG	IL

SUGGESTED MOUNTING CONFIGURATION FOR DQ3005 CASE STYLE



COMPONENT	SIZE
C1-C4	0402
R1-R3	0402
D1,D2	SOD-123

NOTES:

1. TRACE WIDTH AND GAP ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .0066". 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-M3SWA234DRC+.
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	12/21/23
TOLERANCES ON:	CHECKED	GF	12/21/23
2 PL DECIMALS ±	APPROVED	IL	12/21/23
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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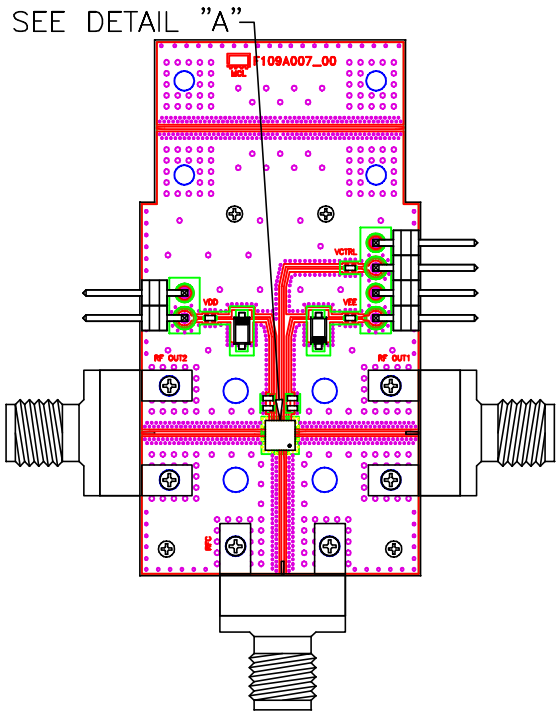
ASHEETA1.DWG REV:A DATE:01/12/95

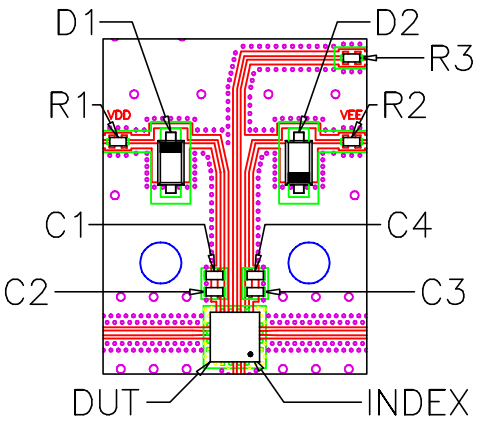
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, DQ3005, TB-M3SWA234DRC+

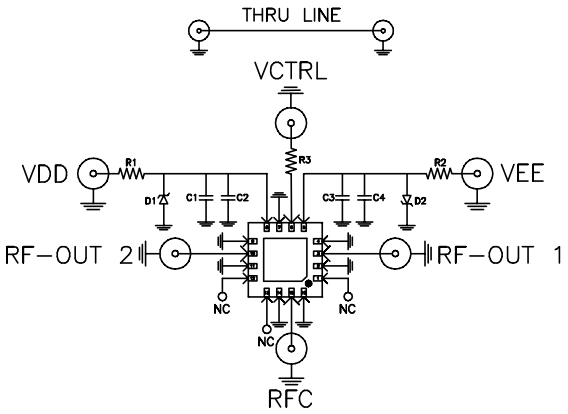
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-768	OR
FILE: 98PL768	SCALE: 5:1	SHEET: 1 OF 1	

Evaluation Board and Circuit





DETAIL "A"
Location of Units Components
(SCALE 2:1)



SCHEMATIC DIAGRAM
(SCALE 3:1)

Component	Size	Value	Part Number	Manufacturer
C2,C3	0402	100pF	GRM1555C1H101JA01D	Murata
C1,C4	0402	0.1uF	GRM155R71C104KA88D	Murata
R1,R2	0402	11.5Ohm	RP73PF1E11R5BTDF	TE Connectivity
R3	0402	100Ohm	RK73H1ETTP1000F	Koa
D1,D2	SOD-123	Vz=5.6V	SZMMSZ5232BT1G	ON Semiconductor

Notes:

1. 2.4mm Female Connectors.
2. PCB Material: Roger RO4350B or equivalent, Dielectric constant=3.5, Thickness=0.0066 inch

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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

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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

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