MMIC SURFACE MOUNT

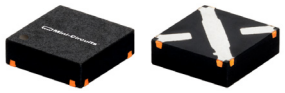
Monolithic Amplifier

LEE-39+

50Ω DC to 8 GHz

FEATURES

- Frequency Range, DC to 8 GHz
- Internally Matched to 50Ω
- Output Power, +10.4 dBm Typ.
- Excellent Package for Heat Dissipation, Exposed Metal Bottom
- Flat Output Power to 10 GHz
- Aqueous Washable
- Protected By US Patent 6,943,629
- Low Additive Phase Noise



Generic photo used for illustration purposes only

CASE STYLE: FG873

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

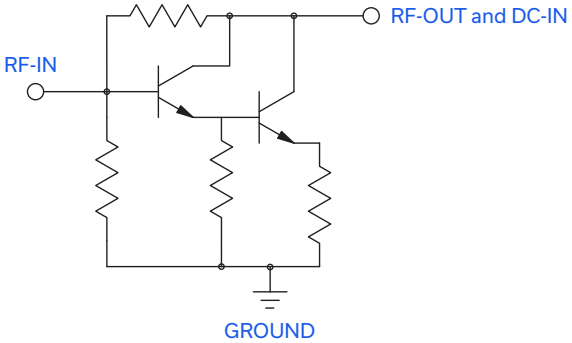
APPLICATIONS

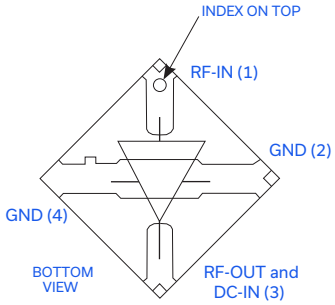
- Cellular
- PCS
- Communication Receivers & Transmitters
- Satellite Communication, Military

PRODUCT OVERVIEW

LEE-39+ (RoHS compliant) is a wideband amplifier offering high dynamic range. It has repeatable performance from lot to lot. It is enclosed in a 3 x 3 mm MCLP molded plastic package. Expected MTBF is 6,000 years at +85°C case temperature.

SIMPLIFIED SCHEMATIC AND PIN DESCRIPTION





Function	Pin Number	Description
RF-IN	1	RF input pin. This pin requires the use of an external DC blocking capacitor chosen for the frequency of operation.
RF-OUT and DC-IN	3	RF output and bias pin. DC voltage is present on this pin; therefore a DC blocking capacitor is necessary for proper operation. An RF choke is needed to feed DC bias without loss of RF signal due to the bias connection, as shown in "Recommended Application Circuit".
GND	2,4	Connections to ground. Use via holes as shown in "Suggested Layout for PCB Design" to reduce ground path inductance for best performance.

REV. N
ECO-024941
LEE-39+
MCL NY
250320

Monolithic Amplifier

LEE-39+

50Ω DC to 8 GHz

ELECTRICAL SPECIFICATIONS AT +25°C AND 35 mA UNLESS NOTED OTHERWISE

Parameter	Conditions (GHz)	Min.	Typ.	Max.	Units
Frequency Range[1]		DC		8	GHz
Gain	0.1	18.5	21.9		dB
	1		21.4		
	2		20.8		
	4		18.3		
	5		16.6		
	8		13.5		
	10		10.5		
Input Return Loss	DC - 3		17.5		dB
	3 - 8		15.5		
Output Return Loss	DC - 3		17.5		dB
	3 - 8		12.5		
Output Power @ 1 dB Compression	2	+10.4	+11.6		dBm
	8		+10.1		
Output IP3	2		+23.4		dBm
Noise Figure	2		2.4		dB
Recommended Device Operating Current			35		mA
Device Operating Voltage		+3.1	+3.5	+3.9	V
Device Voltage Variation vs. Temperature at 35 mA			-2.5		mV/°C
Device Voltage Variation vs. Current at +25°C			2.9		mV/mA
Thermal Resistance, Junction-to-Case[2]			127		°C/W

1. Guaranteed specification DC-8 GHz. Low frequency cut off determined by external coupling capacitors.
2. Case is defined as ground leads.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature[3]	-45°C to +85°C
Storage Temperature	-65°C to +150°C
Operating Current	55 mA
Input Power	+13 dBm

3. Based on typical case temperature rise +5°C above ambient.

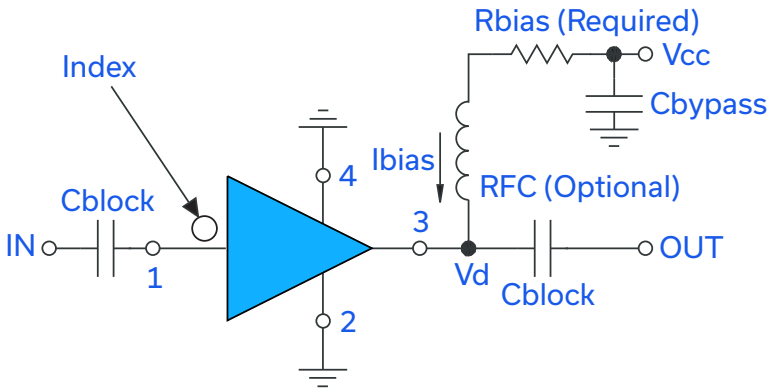
Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation.

Monolithic Amplifier

LEE-39+

50Ω DC to 8 GHz

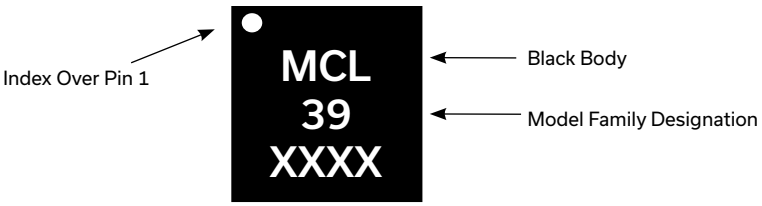
RECOMMENDED APPLICATION CIRCUIT



Test Board includes case, connectors, and components (in bold) soldered to PCB

R BIAS	
Vcc	"1%" Res. Values (Ohms) for Optimum Biasing
7	107
8	133
9	162
10	191
11	221
12	249
13	280
14	309
15	340
16	365
17	392
18	422
19	453
20	475

PRODUCT MARKING



Markings in addition to model number designation may appear for internal quality control purposes.

Monolithic Amplifier

LEE-39+

50Ω DC to 8 GHz

ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASHBOARD. CLICK HERE

Performance Data & Graphs	Data Table Swept Graphs S-Parameter Data Set (.zip file)
Case Style	FG873 Plastic package, exposed paddle, Lead finish: Tin-Silver over Nickel
Tape & Reel **Standard Quantities Available on Reel**	F68 7" Reels with 20, 50, 100, 200, 500 or 1K devices 13" Reels with 2K, 3K, 4K devices
Suggested Layout for PCB Design	PL-252
Evaluation Board	TB-413-39+
Environmental Ratings	ENV08T2

ESD RATING

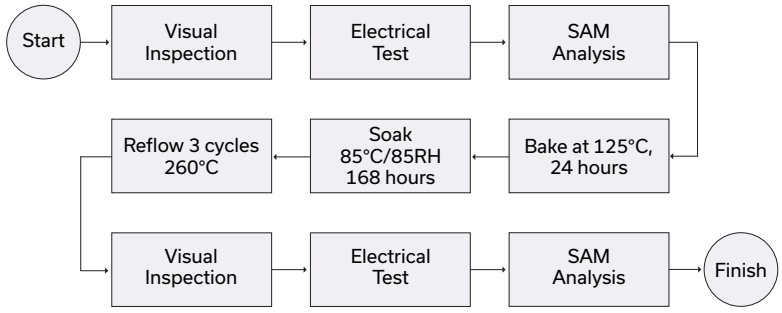
Human Body Model (HBM): Class 1A (250 V to < 500 V) in accordance with ANSI/ESD STM 5.1 - 2001
Machine Model (MM): Class M1 (< 100 V) in accordance with ESD STM 5.2 - 1999

MSL RATING

Moisture Sensitivity: MSL1 in accordance with IPC/JEDECJ-STD-020C

No.	Test Required	Condition	Standard	Quantity
1	Visual Inspection	Low Power Microscope Magnification 40x	MIP-IN-0003 (MCT spec)	45 units
2	Electrical Test	Room Temperature	SCD (MCL spec)	45 units
3	SAM Analysis	Less than 10% growth in term of delamination	J-Std-020C (Jedec Standard)	45 units
4	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-020C (Jedec Standard)	45 units

MSL TEST FLOW CHART



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

MMIC Amplifier LEE-39+

Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions or to view GRAPHS.

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

TEST CONDITIONS: Icc = 35mA, Vd = 3.61V @Temperature = +25degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability	
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta
50	23.52	25.53	27.58	25.99	1.03	0.80
100	23.46	25.90	30.96	24.44	1.04	0.76
200	23.42	25.71	29.78	24.12	1.03	0.77
400	23.21	25.59	29.41	22.98	1.04	0.76
600	22.88	25.37	29.77	21.35	1.04	0.75
800	22.55	25.23	28.96	20.32	1.04	0.74
1000	22.20	25.00	28.91	19.78	1.05	0.73
1200	21.88	24.79	28.95	19.48	1.05	0.72
1400	21.48	24.52	31.40	18.95	1.06	0.71
1600	21.11	24.29	33.95	18.73	1.06	0.70
1800	20.71	24.00	38.16	18.64	1.06	0.69
2000	20.34	23.71	41.70	18.98	1.07	0.68
2200	19.92	23.44	36.81	19.16	1.07	0.67
2400	19.56	23.15	33.74	19.95	1.08	0.66
2600	19.14	22.85	28.84	20.30	1.08	0.65
2800	18.75	22.59	27.06	21.24	1.09	0.64
3000	18.39	22.25	24.26	21.82	1.09	0.64
3200	18.01	22.01	23.05	22.62	1.09	0.63
3500	17.52	21.62	21.43	24.43	1.10	0.62
4000	16.61	20.89	21.29	26.58	1.11	0.61
4500	15.81	20.30	21.56	25.48	1.13	0.59
5000	15.06	19.74	23.58	22.76	1.14	0.58
5500	14.35	19.24	24.22	19.27	1.15	0.57
6000	13.71	18.78	21.61	17.06	1.16	0.57
6500	13.17	18.38	18.15	15.37	1.17	0.57
7000	12.66	17.97	15.29	14.06	1.16	0.58
7500	12.16	17.66	13.29	13.15	1.17	0.58
8000	11.53	17.26	11.16	11.66	1.16	0.59
9000	9.96	16.85	7.83	9.25	1.18	0.59
10000	7.84	16.59	5.99	7.53	1.23	0.57
11000	5.87	16.11	5.12	6.70	1.27	0.55
12000	4.09	15.73	4.59	6.37	1.32	0.52
13000	2.46	15.85	3.73	5.37	1.29	0.51
14000	0.85	16.87	3.09	4.62	1.32	0.50
15000	0.08	16.99	3.09	4.56	1.30	0.46
16000	0.44	16.06	4.17	5.99	1.42	0.32
17000	1.41	14.05	6.60	8.80	1.45	0.17
18000	2.17	12.38	8.81	12.89	1.43	0.25
19000	1.83	12.96	5.58	11.99	1.41	0.35
20000	-0.65	20.01	3.66	7.37	2.76	0.35

FREQ	IP3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dBm)	(dBm)	(dB)
50	25.58	12.32	2.26
100	25.47	11.61	2.12
200	25.49	11.61	2.38
400	25.38	11.60	2.42
600	25.08	11.51	2.38
800	25.27	11.13	2.27
1000	25.03	10.95	2.28
1200	25.10	10.89	2.36
1400	25.06	11.10	2.32
1600	25.54	10.95	2.25
1800	26.03	11.39	2.36
2000	25.86	11.10	2.28
2200	25.80	10.60	2.39
2400	25.78	10.75	2.41
2600	25.89	11.40	2.43
2800	26.12	11.62	2.37
3000	26.34	11.41	2.43
3200	26.27	11.62	2.48
3400	26.29	11.69	2.46
3600	26.06	11.80	2.43
3800	25.94	11.98	2.54
4000	26.00	12.19	2.60
4200	25.75	12.19	2.61
4400	25.89	12.10	2.73
4800	25.31	11.97	2.78
5000	25.26	11.57	2.69
5200	25.14	11.27	2.70
5600	25.09	11.20	2.77
5800	24.62	11.13	2.99
6000	24.48	10.87	3.00
6200	24.21	11.45	2.90
6600	23.55	10.93	3.09
6800	23.32	10.83	3.01
7000	23.44	10.73	3.07
7200	22.95	10.59	3.05
8000	22.02	9.31	3.36

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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: Icc = 28mA, Vd = 3.58V @Temperature = +25degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability	
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta
50	22.81	25.01	29.29	35.32	1.03	0.78
100	22.85	24.99	28.47	40.29	1.03	0.78
200	22.76	25.09	28.96	36.14	1.04	0.76
400	22.53	24.95	29.94	31.18	1.04	0.76
600	22.31	24.80	32.49	28.18	1.04	0.75
800	21.96	24.61	33.07	26.44	1.04	0.74
1000	21.71	24.51	32.04	24.36	1.05	0.72
1200	21.34	24.26	30.78	23.63	1.05	0.71
1400	21.04	24.05	31.70	22.95	1.05	0.71
1600	20.62	23.75	30.21	22.18	1.06	0.70
1800	20.32	23.57	28.84	21.48	1.06	0.68
2000	19.93	23.31	26.46	21.33	1.07	0.67
2200	19.58	23.07	25.21	21.57	1.07	0.67
2400	19.18	22.77	23.05	22.01	1.07	0.66
2600	18.82	22.52	22.67	22.40	1.08	0.65
2800	18.44	22.24	20.76	23.09	1.08	0.64
3000	18.12	22.02	20.39	23.60	1.09	0.63
3200	17.76	21.77	19.46	24.45	1.09	0.62
3500	17.24	21.34	18.46	26.12	1.09	0.62
4000	16.41	20.77	18.31	29.03	1.11	0.60
4500	15.60	20.11	18.67	28.58	1.12	0.59
5000	14.89	19.66	19.95	25.00	1.14	0.58
5500	14.17	19.14	20.85	20.52	1.16	0.57
6000	13.53	18.73	19.69	18.06	1.17	0.56
6500	13.00	18.34	16.89	16.14	1.17	0.56
7000	12.47	17.98	14.55	14.75	1.18	0.56
7500	11.99	17.69	12.73	13.79	1.18	0.56
8000	11.32	17.35	10.68	12.15	1.18	0.57
9000	9.77	16.92	7.60	9.71	1.19	0.57
10000	7.66	16.76	5.88	8.01	1.26	0.55
11000	5.69	16.27	5.05	7.16	1.31	0.53
12000	3.95	15.87	4.52	6.77	1.35	0.50
13000	2.28	15.98	3.71	5.75	1.32	0.49
14000	0.71	16.90	3.09	4.92	1.35	0.48
15000	-0.16	17.07	3.10	4.86	1.34	0.43
16000	0.10	16.20	4.08	6.14	1.45	0.30
17000	0.99	14.33	6.35	8.62	1.51	0.13
18000	1.85	12.59	8.49	12.38	1.46	0.22
19000	1.51	13.12	5.40	12.41	1.44	0.32
20000	-0.93	19.95	3.65	7.76	2.84	0.34

FREQ	IP3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dBm)	(dBm)	(dB)
50	22.27	8.95	2.24
100	22.16	8.23	2.11
200	22.15	8.87	2.41
400	22.03	8.82	2.41
600	21.80	8.45	2.38
800	21.95	8.25	2.28
1000	21.69	8.28	2.30
1200	21.76	8.17	2.33
1400	21.79	7.99	2.30
1600	22.22	8.24	2.26
1800	22.78	8.63	2.31
2000	22.54	8.35	2.29
2200	22.54	7.40	2.37
2400	22.74	7.59	2.35
2600	23.14	8.62	2.39
2800	23.62	9.01	2.33
3000	23.94	8.81	2.43
3200	23.85	8.86	2.47
3400	24.16	9.02	2.44
3600	24.20	9.18	2.40
3800	24.37	9.32	2.47
4000	24.60	9.83	2.57
4200	24.32	9.94	2.52
4400	24.46	10.05	2.69
4800	24.29	10.26	2.74
5000	24.44	9.83	2.63
5200	24.40	9.45	2.66
5600	24.28	10.08	2.67
5800	23.92	10.28	2.90
6000	23.99	9.88	2.90
6200	23.65	10.37	2.83
6600	23.04	10.11	2.96
6800	23.15	10.07	2.93
7000	23.39	10.07	2.96
7200	22.79	9.94	2.96
8000	21.89	8.74	3.17

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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: Icc = 42mA, Vd = 3.62V @Temperature = +25degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability	
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta
50	23.90	26.00	22.28	20.23	1.03	0.79
100	23.91	26.12	22.92	20.05	1.03	0.78
200	23.81	26.17	22.79	19.63	1.03	0.77
400	23.56	26.03	23.10	18.85	1.04	0.76
600	23.26	25.83	22.86	18.18	1.04	0.75
800	22.89	25.58	22.77	17.77	1.04	0.74
1000	22.55	25.38	22.83	17.49	1.05	0.73
1200	22.15	25.10	23.58	17.20	1.05	0.72
1400	21.78	24.86	24.68	16.94	1.05	0.71
1600	21.35	24.58	25.73	17.02	1.06	0.70
1800	20.96	24.30	27.20	17.11	1.06	0.69
2000	20.57	23.99	29.40	17.40	1.07	0.68
2200	20.15	23.71	33.67	17.82	1.07	0.67
2400	19.75	23.30	47.29	18.31	1.07	0.67
2600	19.34	23.06	44.21	18.97	1.08	0.65
2800	18.93	22.75	33.45	19.72	1.09	0.64
3000	18.58	22.45	29.64	20.49	1.09	0.64
3200	18.20	22.16	26.58	21.09	1.09	0.63
3500	17.67	21.76	23.99	22.73	1.10	0.62
4000	16.77	21.03	23.53	24.64	1.11	0.61
4500	15.94	20.42	24.02	23.75	1.13	0.59
5000	15.19	19.83	26.64	21.51	1.14	0.59
5500	14.46	19.29	27.34	18.54	1.15	0.58
6000	13.82	18.79	22.86	16.51	1.15	0.57
6500	13.28	18.38	18.78	14.89	1.16	0.58
7000	12.79	17.96	15.85	13.68	1.15	0.58
7500	12.31	17.63	13.76	12.75	1.15	0.59
8000	11.66	17.20	11.48	11.32	1.15	0.60
9000	10.10	16.70	8.05	8.92	1.16	0.61
10000	8.00	16.50	6.09	7.18	1.21	0.59
11000	6.01	16.01	5.20	6.38	1.25	0.57
12000	4.21	15.62	4.62	6.04	1.29	0.54
13000	2.52	15.78	3.76	5.05	1.26	0.53
14000	0.98	16.83	3.10	4.38	1.30	0.52
15000	0.22	16.95	3.10	4.32	1.27	0.48
16000	0.69	15.94	4.19	5.76	1.37	0.35
17000	1.68	13.88	6.78	8.88	1.42	0.19
18000	2.45	12.18	9.08	13.15	1.39	0.28
19000	2.04	12.88	5.71	11.51	1.39	0.37
20000	-0.42	20.08	3.69	6.97	2.69	0.37

FREQ	IP3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dBm)	(dBm)	(dB)
50	28.29	14.18	2.30
100	28.19	13.72	2.15
200	28.20	13.68	2.40
400	27.94	13.67	2.45
600	27.52	13.70	2.42
800	27.60	13.32	2.33
1000	27.32	13.06	2.30
1200	27.29	12.95	2.38
1400	27.13	13.16	2.34
1600	27.56	13.03	2.28
1800	27.67	13.40	2.37
2000	27.58	13.32	2.32
2200	27.40	12.88	2.42
2400	27.12	12.84	2.43
2600	26.85	13.18	2.44
2800	26.73	13.17	2.41
3000	26.80	13.22	2.48
3200	26.65	13.35	2.52
3400	26.61	13.33	2.49
3600	26.23	13.19	2.48
3800	25.98	13.26	2.59
4000	25.89	13.39	2.66
4200	25.72	13.19	2.64
4400	25.85	13.12	2.74
4800	25.17	12.65	2.82
5000	24.96	12.30	2.77
5200	24.87	12.23	2.80
5600	24.87	11.68	2.83
5800	24.35	11.49	3.06
6000	24.11	11.37	3.05
6200	23.84	11.93	3.05
6600	23.48	11.35	3.15
6800	23.16	11.21	3.10
7000	23.32	11.11	3.17
7200	22.81	10.91	3.14
8000	22.04	9.68	3.43

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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: Icc = 35mA, Vd = 3.78V @Temperature = -45degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability	
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta
50	23.82	26.38	24.06	22.34	1.04	0.75
100	23.81	25.97	27.03	21.87	1.03	0.78
200	23.71	26.02	28.19	22.78	1.03	0.77
400	23.53	25.80	24.23	20.18	1.03	0.78
600	23.23	25.65	24.32	19.21	1.04	0.76
800	22.91	25.38	23.88	18.42	1.04	0.76
1000	22.56	25.25	24.82	18.10	1.04	0.74
1200	22.21	24.97	24.21	17.80	1.04	0.74
1400	21.86	24.74	25.01	17.60	1.05	0.72
1600	21.46	24.41	26.55	17.64	1.05	0.72
1800	21.08	24.16	29.07	17.74	1.06	0.71
2000	20.69	23.88	31.68	18.11	1.06	0.70
2200	20.28	23.58	34.98	18.19	1.06	0.69
2400	19.97	23.24	43.90	18.91	1.06	0.69
2600	19.48	23.02	44.61	19.60	1.08	0.66
2800	19.18	22.65	35.06	20.46	1.07	0.67
3000	18.80	22.34	29.19	21.21	1.08	0.66
3200	18.46	22.07	26.24	22.45	1.08	0.66
3500	17.92	21.63	24.56	23.47	1.08	0.65
4000	17.00	21.00	24.26	24.10	1.10	0.63
4500	16.21	20.29	23.72	24.32	1.10	0.62
5000	15.57	19.72	25.42	23.24	1.11	0.62
5500	14.82	19.14	29.26	20.26	1.12	0.61
6000	14.18	18.75	24.87	17.56	1.13	0.60
6500	13.72	18.28	18.71	15.55	1.13	0.61
7000	13.18	17.89	14.72	13.28	1.12	0.62
7500	12.71	17.58	12.92	12.33	1.12	0.62
8000	12.18	17.09	11.29	11.09	1.11	0.64
9000	10.80	16.48	8.67	9.68	1.12	0.64
10000	8.66	16.40	5.89	7.19	1.16	0.63
11000	6.48	16.15	4.71	5.89	1.19	0.61
12000	4.99	15.29	4.46	6.08	1.19	0.58
13000	3.53	15.27	4.01	5.43	1.17	0.54
14000	1.53	17.02	2.70	3.95	1.17	0.58
15000	0.42	17.21	2.68	3.72	1.11	0.54
16000	1.20	16.21	3.74	5.60	1.23	0.37
17000	2.58	13.70	6.33	9.76	1.26	0.20
18000	3.36	11.99	9.00	13.05	1.25	0.32
19000	3.07	12.25	5.79	11.26	1.20	0.42
20000	0.68	19.11	2.74	6.96	1.86	0.42

FREQ	IP3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dBm)	(dBm)	(dB)
50	25.84	12.27	1.83
100	25.70	11.80	1.71
200	25.72	11.67	1.95
400	25.69	11.77	1.97
600	25.53	11.58	1.94
800	25.77	11.40	1.84
1000	25.54	11.25	1.81
1200	25.62	11.13	1.86
1400	25.66	11.24	1.80
1600	26.18	11.10	1.75
1800	26.69	11.59	1.85
2000	26.54	11.33	1.79
2200	26.50	10.94	1.88
2400	26.51	10.85	1.86
2600	26.72	11.53	1.88
2800	26.97	11.80	1.85
3000	27.35	11.52	1.92
3200	27.24	11.83	1.95
3400	27.36	11.84	1.91
3600	27.23	11.97	1.88
3800	27.13	11.99	1.96
4000	27.23	12.39	1.99
4200	27.04	12.44	2.01
4400	27.19	12.41	2.09
4800	26.63	12.54	2.16
5000	26.50	12.25	2.04
5200	26.56	12.05	2.12
5600	26.57	12.06	2.18
5800	25.94	12.07	2.44
6000	25.75	11.99	2.44
6200	25.48	12.32	2.39
6600	24.91	11.85	2.51
6800	24.64	11.74	2.45
7000	24.63	11.68	2.49
7200	24.04	11.45	2.43
8000	23.13	10.29	2.72

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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: Icc = 28mA, Vd = 3.76V @Temperature = -45degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability	
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta
50	23.25	25.30	39.58	33.00	1.03	0.79
100	23.19	25.46	36.32	33.49	1.03	0.77
200	23.11	25.38	33.73	33.26	1.03	0.77
400	22.98	25.19	42.15	26.66	1.03	0.78
600	22.68	25.13	40.23	25.25	1.04	0.75
800	22.42	24.96	35.77	23.36	1.04	0.75
1000	22.08	24.71	39.64	22.09	1.04	0.74
1200	21.80	24.45	36.95	20.93	1.04	0.74
1400	21.46	24.26	38.93	20.96	1.05	0.73
1600	21.08	24.06	36.33	20.70	1.05	0.71
1800	20.70	23.79	35.10	20.68	1.06	0.70
2000	20.33	23.53	34.18	20.45	1.06	0.69
2200	19.98	23.27	30.96	20.63	1.06	0.68
2400	19.65	22.88	28.75	20.92	1.06	0.69
2600	19.20	22.77	27.23	22.05	1.08	0.66
2800	18.92	22.38	25.03	22.37	1.07	0.67
3000	18.55	22.14	23.04	23.42	1.08	0.66
3200	18.21	21.83	21.35	25.09	1.08	0.65
3500	17.70	21.48	20.85	26.04	1.08	0.64
4000	16.80	20.85	20.66	26.94	1.10	0.62
4500	16.04	20.16	20.79	26.89	1.10	0.62
5000	15.40	19.59	21.53	25.33	1.11	0.62
5500	14.66	19.04	24.75	21.42	1.12	0.61
6000	14.06	18.68	23.48	18.46	1.14	0.59
6500	13.59	18.29	17.74	16.16	1.13	0.60
7000	13.03	17.91	14.03	13.83	1.13	0.61
7500	12.54	17.63	12.36	12.87	1.13	0.61
8000	12.02	17.16	10.87	11.51	1.12	0.63
9000	10.64	16.58	8.43	10.11	1.14	0.62
10000	8.46	16.56	5.73	7.57	1.18	0.61
11000	6.28	16.29	4.64	6.28	1.22	0.59
12000	4.84	15.45	4.40	6.43	1.22	0.56
13000	3.41	15.34	3.95	5.79	1.19	0.52
14000	1.40	17.06	2.64	4.25	1.18	0.56
15000	0.24	17.25	2.68	3.99	1.14	0.51
16000	0.89	16.37	3.71	5.76	1.26	0.34
17000	2.20	13.94	6.13	9.55	1.30	0.17
18000	3.04	12.18	8.60	12.62	1.27	0.28
19000	2.81	12.39	5.65	11.64	1.22	0.39
20000	0.40	19.13	2.71	7.48	1.92	0.40

FREQ	IP3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dBm)	(dBm)	(dB)
50	22.18	9.16	1.80
100	22.04	8.74	1.70
200	22.03	8.73	1.94
400	22.01	9.01	1.98
600	21.86	8.57	1.92
800	22.07	8.19	1.80
1000	21.79	8.15	1.81
1200	21.88	8.48	1.84
1400	21.98	8.13	1.80
1600	22.45	8.49	1.76
1800	22.99	8.56	1.84
2000	22.76	8.21	1.77
2200	22.77	7.65	1.87
2400	22.99	7.59	1.86
2600	23.45	8.60	1.85
2800	23.87	8.86	1.84
3000	24.33	8.66	1.91
3200	24.22	9.05	1.94
3400	24.53	9.00	1.88
3600	24.65	9.37	1.82
3800	24.92	9.42	1.94
4000	25.21	9.77	1.98
4200	25.03	9.96	1.95
4400	25.23	10.00	2.07
4800	25.18	10.53	2.12
5000	25.38	10.34	2.01
5200	25.47	9.86	2.08
5600	25.28	10.55	2.12
5800	24.90	10.89	2.36
6000	24.85	10.78	2.36
6200	24.95	10.98	2.27
6600	24.35	10.86	2.43
6800	24.20	10.87	2.38
7000	24.16	10.89	2.46
7200	23.88	10.77	2.39
8000	22.87	9.74	2.59

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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: Icc = 42mA, Vd = 3.80V @Temperature = -45degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability	
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta
50	24.16	26.28	20.20	18.55	1.03	0.79
100	24.18	26.24	21.71	18.87	1.02	0.80
200	24.09	26.25	22.10	19.14	1.03	0.79
400	23.84	26.21	20.33	17.21	1.03	0.77
600	23.54	25.95	20.64	16.98	1.03	0.77
800	23.19	25.77	20.44	16.36	1.04	0.76
1000	22.85	25.52	20.79	16.36	1.04	0.75
1200	22.46	25.31	20.67	15.96	1.04	0.73
1400	22.10	25.01	21.70	16.01	1.05	0.73
1600	21.67	24.70	22.67	16.09	1.05	0.72
1800	21.31	24.39	24.12	16.43	1.05	0.71
2000	20.90	24.11	25.27	16.71	1.06	0.70
2200	20.49	23.76	27.34	17.00	1.06	0.69
2400	20.12	23.43	30.58	17.52	1.06	0.69
2600	19.67	23.19	34.32	18.37	1.07	0.67
2800	19.34	22.80	44.03	19.05	1.07	0.67
3000	18.98	22.47	38.16	20.00	1.07	0.67
3200	18.61	22.16	30.70	21.07	1.08	0.66
3500	18.07	21.80	27.88	21.79	1.08	0.65
4000	17.14	21.10	27.28	22.64	1.10	0.63
4500	16.34	20.39	26.68	22.82	1.10	0.62
5000	15.68	19.76	29.06	22.08	1.11	0.62
5500	14.91	19.18	35.97	19.48	1.11	0.61
6000	14.28	18.76	25.15	17.01	1.12	0.60
6500	13.82	18.30	19.28	15.11	1.12	0.62
7000	13.30	17.86	15.13	12.98	1.11	0.63
7500	12.83	17.55	13.34	12.06	1.11	0.63
8000	12.32	17.01	11.62	10.77	1.10	0.66
9000	10.98	16.38	8.90	9.35	1.11	0.66
10000	8.81	16.30	6.01	6.89	1.14	0.65
11000	6.58	16.05	4.78	5.60	1.17	0.63
12000	5.14	15.17	4.52	5.77	1.17	0.60
13000	3.65	15.19	4.03	5.13	1.15	0.56
14000	1.61	16.95	2.71	3.70	1.15	0.60
15000	0.54	17.17	2.68	3.48	1.10	0.56
16000	1.42	16.14	3.79	5.34	1.21	0.39
17000	2.91	13.49	6.56	9.81	1.24	0.24
18000	3.61	11.83	9.31	13.20	1.23	0.34
19000	3.29	12.14	5.99	10.76	1.19	0.44
20000	0.90	19.17	2.80	6.51	1.83	0.44

FREQ	IP3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dBm)	(dBm)	(dB)
50	28.72	14.47	1.88
100	28.59	14.07	1.73
200	28.61	14.02	1.97
400	28.51	14.09	1.95
600	28.22	14.04	1.94
800	28.41	13.65	1.86
1000	28.17	13.36	1.82
1200	28.19	13.32	1.87
1400	28.11	13.32	1.83
1600	28.59	13.22	1.80
1800	28.81	13.66	1.89
2000	28.75	13.53	1.83
2200	28.65	13.21	1.90
2400	28.38	13.01	1.89
2600	28.18	13.49	1.92
2800	28.12	13.62	1.89
3000	28.26	13.58	2.02
3200	28.16	13.75	2.00
3400	28.12	13.79	1.95
3600	27.82	13.80	1.91
3800	27.56	13.87	2.02
4000	27.47	13.95	2.03
4200	27.34	13.93	2.02
4400	27.55	13.90	2.14
4800	26.76	13.62	2.19
5000	26.53	13.28	2.09
5200	26.52	13.19	2.15
5600	26.60	12.80	2.24
5800	26.02	12.63	2.48
6000	25.69	12.52	2.48
6200	25.31	13.00	2.43
6600	24.95	12.39	2.56
6800	24.67	12.24	2.55
7000	24.57	12.11	2.54
7200	24.01	11.86	2.56
8000	23.16	10.71	2.80

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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: Icc = 35mA, Vd = 3.45V @Temperature = +85degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability	
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta
50	23.17	25.41	37.24	30.94	1.03	0.77
100	23.11	25.48	41.69	28.72	1.04	0.76
200	23.06	25.37	34.21	26.01	1.03	0.77
400	22.84	25.20	39.95	25.26	1.04	0.76
600	22.51	25.11	41.39	24.24	1.04	0.74
800	22.20	24.91	41.63	23.01	1.05	0.73
1000	21.82	24.70	61.76	22.48	1.05	0.72
1200	21.50	24.46	54.08	21.34	1.05	0.71
1400	21.10	24.28	56.66	20.43	1.06	0.69
1600	20.72	24.02	41.91	20.04	1.07	0.68
1800	20.32	23.77	35.81	19.69	1.07	0.67
2000	19.93	23.49	32.16	19.66	1.07	0.66
2200	19.49	23.24	29.07	19.97	1.08	0.65
2400	19.13	22.85	26.51	20.15	1.08	0.65
2600	18.66	22.68	24.40	21.20	1.10	0.62
2800	18.32	22.34	22.58	21.71	1.09	0.62
3000	17.93	22.09	20.98	22.63	1.10	0.61
3200	17.55	21.80	20.23	23.54	1.10	0.61
3500	17.03	21.47	19.34	24.92	1.11	0.59
4000	16.10	20.80	19.61	27.25	1.13	0.58
4500	15.29	20.14	19.94	26.21	1.15	0.57
5000	14.55	19.61	20.88	22.86	1.16	0.56
5500	13.74	19.10	20.93	18.61	1.18	0.55
6000	13.09	18.74	19.22	16.61	1.20	0.54
6500	12.52	18.30	16.25	15.48	1.20	0.54
7000	11.98	17.93	14.77	14.56	1.21	0.53
7500	11.51	17.63	13.24	13.83	1.21	0.54
8000	10.81	17.27	11.01	12.21	1.22	0.54
9000	9.02	16.98	7.34	9.17	1.24	0.55
10000	6.87	16.98	5.85	7.65	1.34	0.52
11000	5.12	16.23	5.41	7.34	1.39	0.49
12000	3.29	15.62	4.74	6.68	1.41	0.48
13000	1.36	16.15	3.63	5.46	1.41	0.48
14000	-0.12	17.14	3.29	4.91	1.50	0.45
15000	-0.53	16.71	3.60	5.32	1.51	0.38
16000	-0.46	16.32	4.53	6.55	1.74	0.28
17000	0.12	14.57	6.74	8.39	1.76	0.15
18000	1.04	12.87	9.00	11.74	1.65	0.19
19000	0.64	13.32	5.62	12.69	1.64	0.30
20000	-2.13	21.47	4.14	7.88	4.08	0.30

FREQ	IP3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dBm)	(dBm)	(dB)
50	25.47	12.30	2.63
100	25.39	11.61	2.49
200	25.42	11.82	2.73
400	25.21	11.61	2.77
600	24.86	11.63	2.78
800	25.00	10.88	2.65
1000	24.74	10.91	2.69
1200	24.78	10.91	2.76
1400	24.71	10.92	2.76
1600	25.18	11.01	2.69
1800	25.62	11.37	2.77
2000	25.44	11.06	2.74
2200	25.37	10.49	2.83
2400	25.29	10.57	2.86
2600	25.27	11.25	2.88
2800	25.41	11.44	2.88
3000	25.57	11.44	2.94
3200	25.39	11.59	2.99
3400	25.43	11.55	2.97
3600	25.13	11.41	2.95
3800	25.04	11.48	3.10
4000	24.93	11.76	3.16
4200	24.71	11.58	3.18
4400	24.83	11.59	3.30
4800	24.22	11.03	3.42
5000	24.17	10.65	3.31
5200	23.98	10.46	3.35
5600	23.99	10.17	3.37
5800	23.44	10.07	3.61
6000	23.29	9.84	3.59
6200	22.92	10.50	3.51
6600	22.33	9.91	3.68
6800	22.35	9.84	3.64
7000	22.42	9.81	3.72
7200	21.97	9.64	3.71
8000	21.34	8.35	4.01

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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: Icc = 28mA, Vd = 3.43V @Temperature = +85degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability	
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta
50	22.41	24.68	25.14	27.91	1.03	0.77
100	22.37	24.81	24.45	28.79	1.04	0.76
200	22.31	24.71	25.80	31.29	1.04	0.76
400	22.16	24.59	25.00	28.15	1.04	0.76
600	21.92	24.48	24.47	27.58	1.04	0.74
800	21.60	24.35	25.43	26.87	1.05	0.73
1000	21.23	24.20	24.55	25.88	1.05	0.71
1200	20.92	23.89	25.33	25.08	1.05	0.71
1400	20.64	23.77	25.14	23.72	1.06	0.69
1600	20.25	23.52	24.60	22.95	1.06	0.68
1800	19.88	23.30	23.44	22.04	1.07	0.67
2000	19.48	23.00	22.45	21.62	1.07	0.66
2200	19.10	22.82	21.63	21.79	1.08	0.64
2400	18.75	22.46	20.63	21.70	1.07	0.64
2600	18.32	22.38	19.59	22.74	1.09	0.62
2800	17.98	22.00	18.70	22.97	1.09	0.62
3000	17.63	21.79	17.68	23.47	1.09	0.61
3200	17.29	21.52	17.17	24.44	1.09	0.61
3500	16.75	21.15	16.76	25.44	1.10	0.60
4000	15.85	20.62	17.17	28.50	1.13	0.57
4500	15.05	19.92	17.53	29.73	1.14	0.57
5000	14.35	19.43	18.25	25.45	1.16	0.56
5500	13.55	18.97	18.66	20.08	1.18	0.54
6000	12.92	18.63	17.65	17.58	1.20	0.53
6500	12.35	18.25	15.25	16.28	1.21	0.53
7000	11.82	17.94	14.02	15.32	1.22	0.52
7500	11.31	17.67	12.62	14.52	1.23	0.52
8000	10.61	17.31	10.61	12.85	1.23	0.53
9000	8.81	17.11	7.17	9.66	1.27	0.53
10000	6.70	17.11	5.75	8.13	1.38	0.50
11000	4.95	16.38	5.35	7.81	1.43	0.47
12000	3.16	15.75	4.70	7.12	1.45	0.46
13000	1.23	16.26	3.62	5.78	1.45	0.46
14000	-0.29	17.22	3.25	5.21	1.53	0.43
15000	-0.76	16.81	3.58	5.57	1.56	0.36
16000	-0.82	16.52	4.47	6.66	1.82	0.26
17000	-0.29	14.80	6.56	8.16	1.82	0.13
18000	0.75	13.11	8.69	11.28	1.70	0.17
19000	0.31	13.44	5.51	13.03	1.69	0.27
20000	-2.40	21.33	4.13	8.23	4.17	0.28

FREQ	IP3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dBm)	(dBm)	(dB)
50	22.32	9.26	2.62
100	22.24	8.88	2.49
200	22.26	9.03	2.67
400	22.05	9.16	2.75
600	21.77	8.49	2.76
800	21.89	8.23	2.67
1000	21.59	8.61	2.67
1200	21.65	8.15	2.76
1400	21.65	8.24	2.72
1600	22.08	8.26	2.66
1800	22.65	8.74	2.75
2000	22.39	8.30	2.71
2200	22.41	7.58	2.81
2400	22.62	7.39	2.81
2600	22.97	8.65	2.85
2800	23.37	9.08	2.81
3000	23.68	8.95	2.89
3200	23.53	9.09	2.97
3400	23.81	9.09	2.95
3600	23.77	9.32	2.92
3800	23.92	9.45	3.05
4000	24.07	9.88	3.09
4200	23.77	9.75	3.13
4400	23.91	10.00	3.27
4800	23.61	9.76	3.34
5000	23.66	9.39	3.27
5200	23.60	9.34	3.29
5600	23.49	9.43	3.30
5800	23.09	9.46	3.52
6000	23.15	9.11	3.47
6200	22.75	9.73	3.45
6600	22.10	9.38	3.58
6800	22.25	9.30	3.51
7000	22.40	9.31	3.56
7200	22.02	9.22	3.59
8000	21.36	7.91	3.89

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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: Icc = 42mA, Vd = 3.46V @Temperature = +85degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability	
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta
50	23.61	25.57	25.25	23.22	1.02	0.80
100	23.58	25.80	24.95	21.34	1.03	0.78
200	23.45	25.82	24.13	20.49	1.03	0.77
400	23.24	25.63	26.35	20.92	1.04	0.76
600	22.91	25.49	26.44	20.19	1.04	0.75
800	22.59	25.31	26.88	19.58	1.05	0.74
1000	22.20	25.13	27.54	19.13	1.05	0.72
1200	21.83	24.87	28.85	18.88	1.06	0.71
1400	21.41	24.58	29.58	18.28	1.06	0.70
1600	21.00	24.30	31.68	18.10	1.06	0.69
1800	20.57	24.08	33.70	17.80	1.07	0.67
2000	20.15	23.75	40.34	18.04	1.08	0.66
2200	19.73	23.45	45.72	18.36	1.08	0.65
2400	19.35	23.15	33.47	18.93	1.09	0.64
2600	18.87	22.92	30.37	19.66	1.10	0.62
2800	18.51	22.58	25.95	20.51	1.10	0.62
3000	18.13	22.27	24.19	21.23	1.10	0.62
3200	17.72	21.99	22.66	22.22	1.11	0.61
3500	17.18	21.56	21.19	23.79	1.12	0.60
4000	16.24	20.94	21.60	25.41	1.14	0.58
4500	15.41	20.26	21.93	24.39	1.15	0.57
5000	14.67	19.70	23.16	21.59	1.16	0.56
5500	13.85	19.19	22.71	17.92	1.18	0.55
6000	13.19	18.78	20.11	16.12	1.20	0.54
6500	12.63	18.32	16.83	15.06	1.20	0.54
7000	12.11	17.92	15.24	14.19	1.20	0.54
7500	11.61	17.61	13.64	13.44	1.20	0.54
8000	10.94	17.21	11.23	11.94	1.20	0.55
9000	9.13	16.88	7.48	8.89	1.23	0.56
10000	7.00	16.88	5.90	7.39	1.32	0.53
11000	5.23	16.15	5.45	7.07	1.36	0.51
12000	3.37	15.43	4.76	6.47	1.38	0.50
13000	1.44	16.14	3.66	5.23	1.40	0.50
14000	-0.04	17.08	3.26	4.70	1.46	0.47
15000	-0.42	16.70	3.59	5.15	1.48	0.40
16000	-0.28	16.24	4.56	6.44	1.70	0.29
17000	0.34	14.36	6.88	8.44	1.71	0.17
18000	1.23	12.69	9.20	11.99	1.61	0.21
19000	0.83	13.22	5.75	12.33	1.61	0.31
20000	-2.01	21.39	4.15	7.58	3.96	0.31

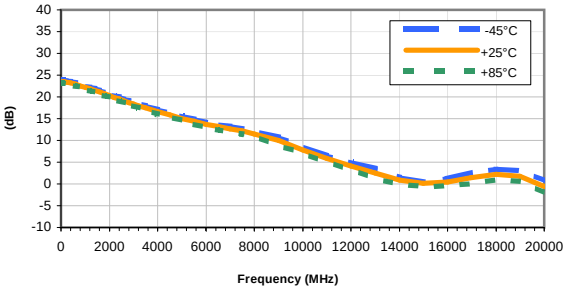
FREQ	IP3 Output	1dB Comp. Output	Noise Figure
(MHz)	(dBm)	(dBm)	(dB)
50	28.15	13.85	2.67
100	28.11	13.46	2.50
200	28.10	13.34	2.73
400	27.74	13.24	2.81
600	27.12	13.30	2.79
800	27.09	12.91	2.69
1000	26.75	12.81	2.73
1200	26.68	12.73	2.81
1400	26.49	12.85	2.78
1600	26.84	12.60	2.74
1800	26.82	12.98	2.83
2000	26.65	12.84	2.78
2200	26.45	12.58	2.89
2400	26.12	12.33	2.90
2600	25.81	12.61	2.92
2800	25.63	12.62	2.93
3000	25.63	12.67	2.98
3200	25.36	12.75	3.07
3400	25.29	12.48	3.06
3600	24.95	12.27	3.00
3800	24.70	12.43	3.10
4000	24.62	12.55	3.22
4200	24.35	12.32	3.22
4400	24.49	12.16	3.41
4800	23.88	11.52	3.45
5000	23.73	11.10	3.38
5200	23.52	11.01	3.43
5600	23.48	10.51	3.43
5800	22.96	10.35	3.70
6000	22.92	10.16	3.70
6200	22.41	10.82	3.64
6600	22.04	10.23	3.80
6800	21.92	10.11	3.78
7000	21.98	10.09	3.80
7200	21.65	9.89	3.82
8000	21.03	8.58	4.14

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Typical Performance Curves

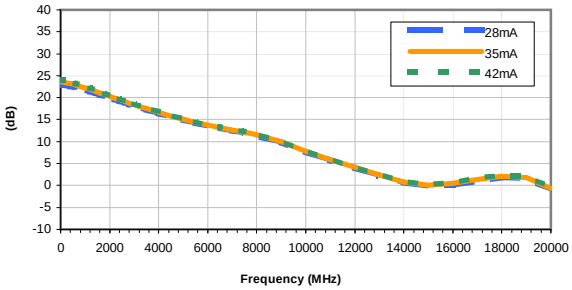
GAIN vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 35mA



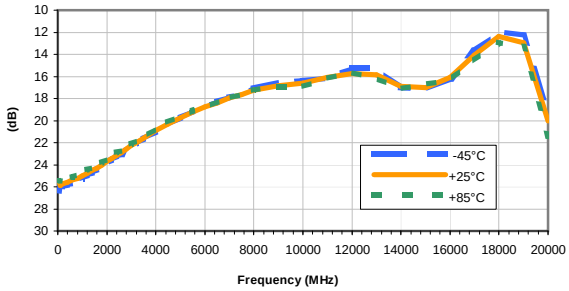
GAIN vs. CURRENT

INPUT POWER = -25dBm, Temperature = +25°C



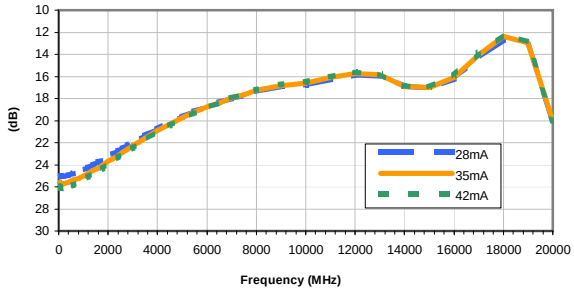
ISOLATION vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 35mA



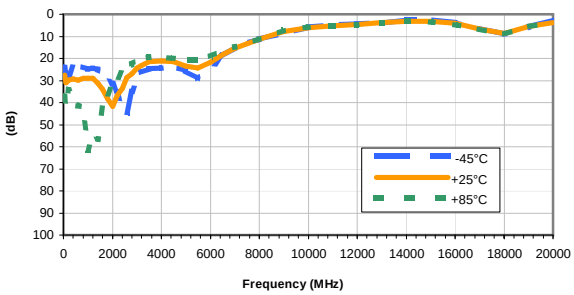
ISOLATION vs. CURRENT

INPUT POWER = -25dBm, Temperature = +25°C



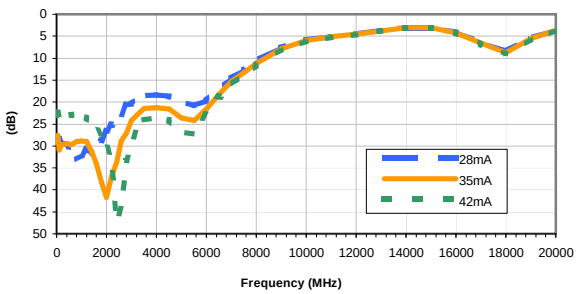
INPUT RETURN LOSS vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 35mA



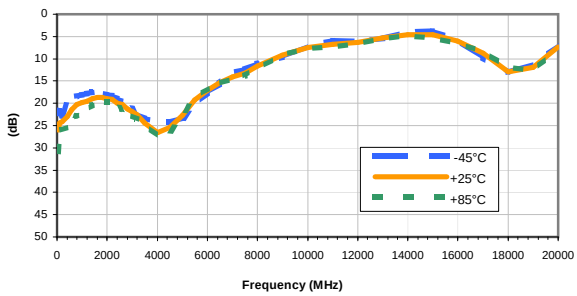
INPUT RETURN LOSS vs. CURRENT

INPUT POWER = -25dBm, Temperature = +25°C



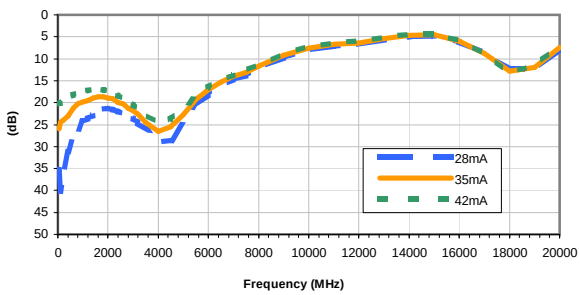
OUTPUT RETURN LOSS vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 35mA



OUTPUT RETURN LOSS vs. CURRENT

INPUT POWER = -25dBm, Temperature = +25°C

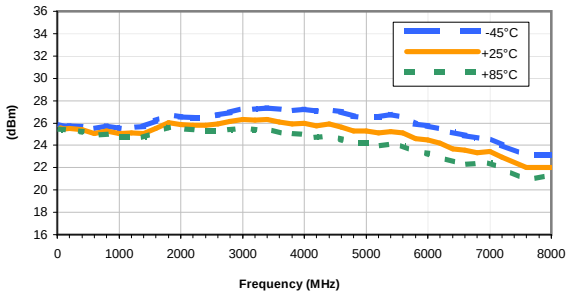


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Typical Performance Curves

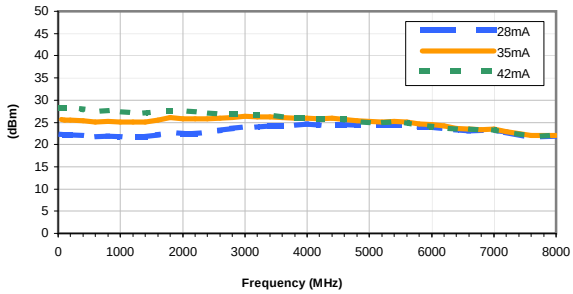
OUTPUT IP3 vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 35mA



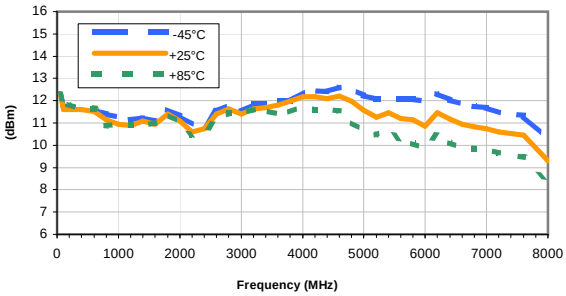
OUTPUT IP-3 vs. CURRENT

INPUT POWER = -25dBm, Temperature = +25°C



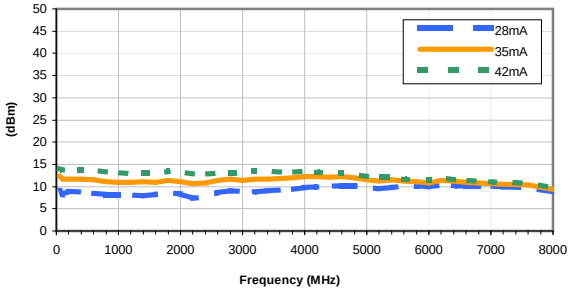
OUTPUT POWER at 1dB Compression vs. TEMPERATURE

CURRENT = 35mA



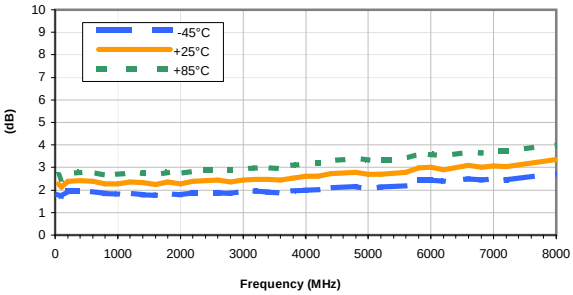
OUTPUT POWER at 1dB Compression vs. CURRENT

Temperature = +25°C



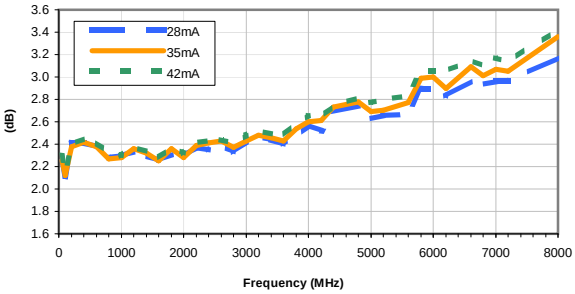
Noise Figure vs. TEMPERATURE

CURRENT = 35mA



Noise Figure vs. CURRENT

Temperature = +25°C



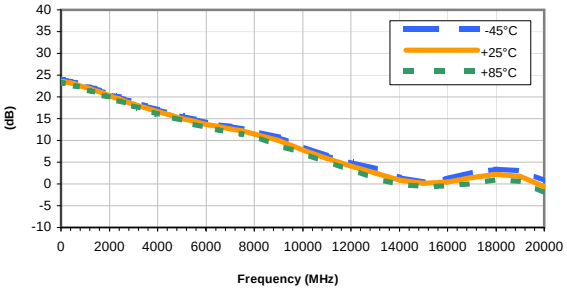
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Typical Performance Curves

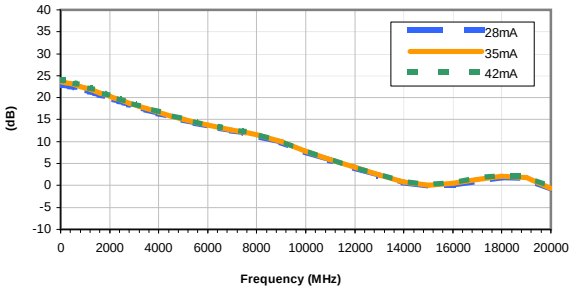
GAIN vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 35mA



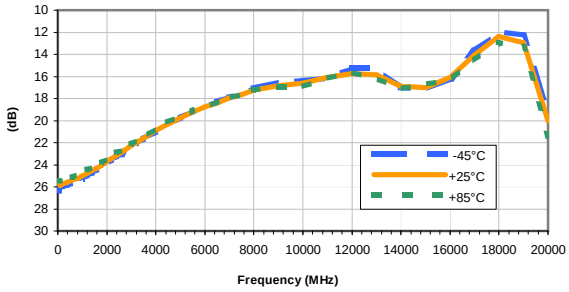
GAIN vs. CURRENT

INPUT POWER = -25dBm, Temperature = +25°C



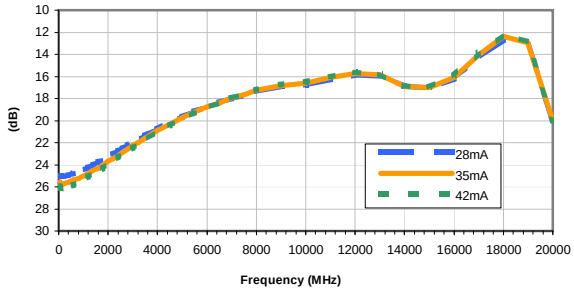
ISOLATION vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 35mA



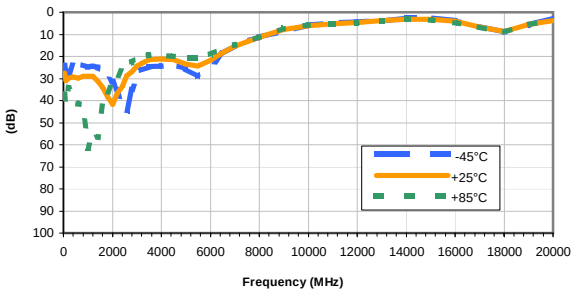
ISOLATION vs. CURRENT

INPUT POWER = -25dBm, Temperature = +25°C



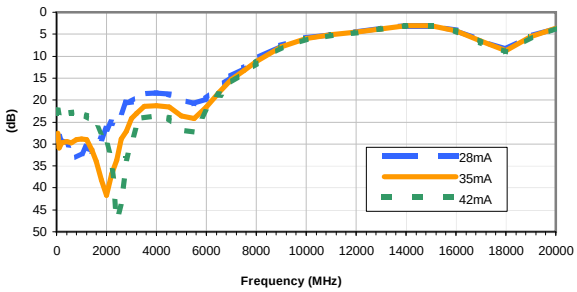
INPUT RETURN LOSS vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 35mA



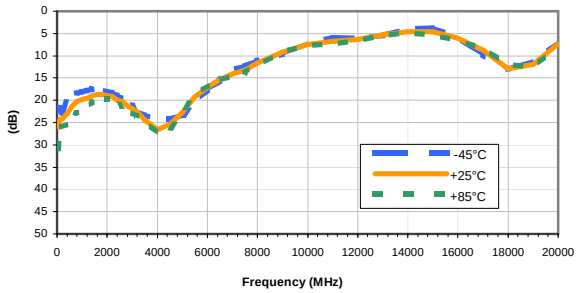
INPUT RETURN LOSS vs. CURRENT

INPUT POWER = -25dBm, Temperature = +25°C



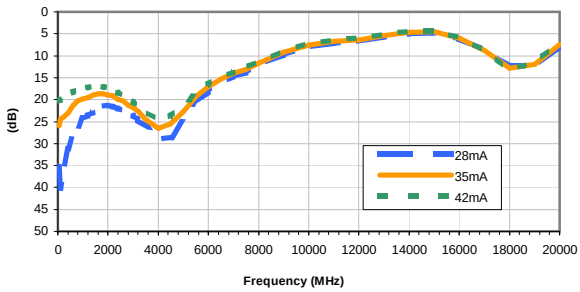
OUTPUT RETURN LOSS vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 35mA



OUTPUT RETURN LOSS vs. CURRENT

INPUT POWER = -25dBm, Temperature = +25°C

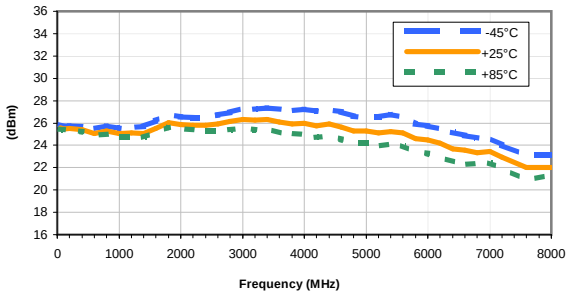


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Typical Performance Curves

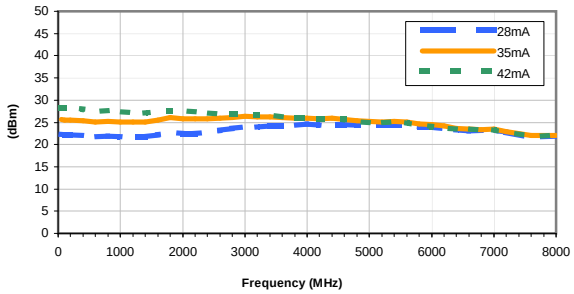
OUTPUT IP3 vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 35mA



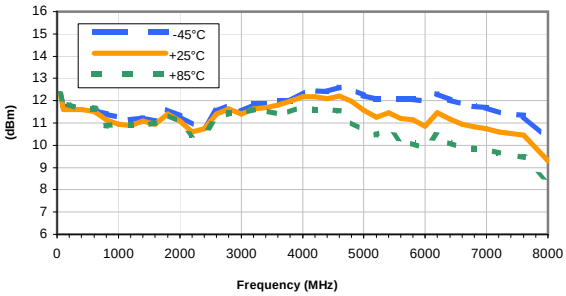
OUTPUT IP-3 vs. CURRENT

INPUT POWER = -25dBm, Temperature = +25°C



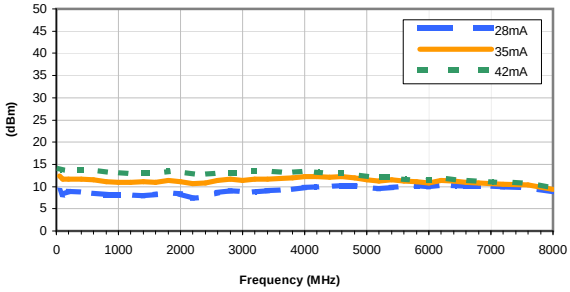
OUTPUT POWER at 1dB Compression vs. TEMPERATURE

CURRENT = 35mA



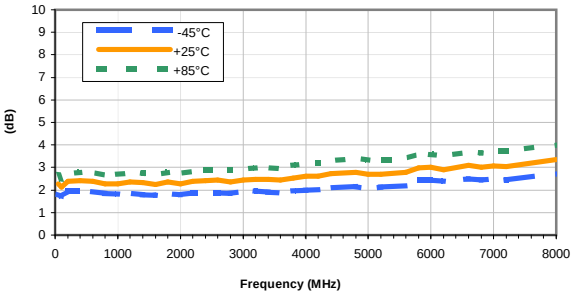
OUTPUT POWER at 1dB Compression vs. CURRENT

Temperature = +25°C



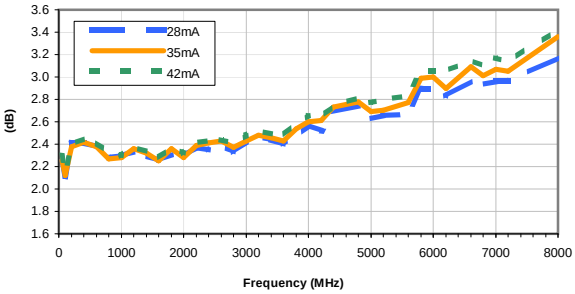
Noise Figure vs. TEMPERATURE

CURRENT = 35mA



Noise Figure vs. CURRENT

Temperature = +25°C

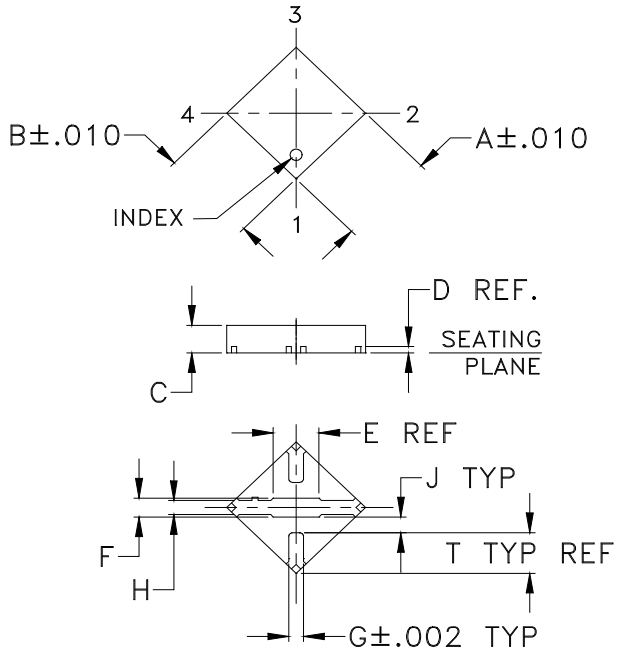


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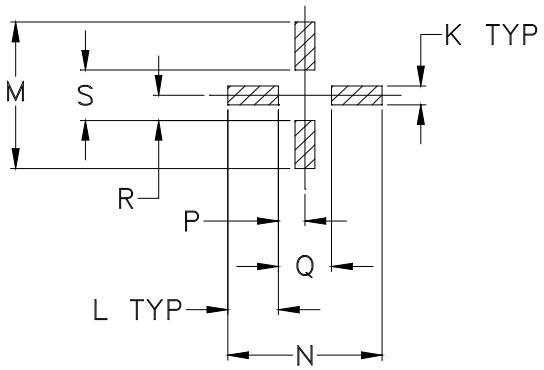
Case Style FG

FG873

Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L	M	N	P
FG873	.118 (3.00)	.118 (3.00)	.035 (0.89)	.008 (0.20)	.07 (1.78)	.024 (0.60)	.017 (0.43)	.018 (0.46)	.021 (0.52)	.024 (0.61)	.061 (1.55)	.186 (4.72)	.186 (4.72)	.032 (0.81)

CASE #	Q	R	S	T	WT. GRAM
FG873	.064 (1.63)	.032 (0.81)	.064 (1.63)	.050 (1.27)	.02

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

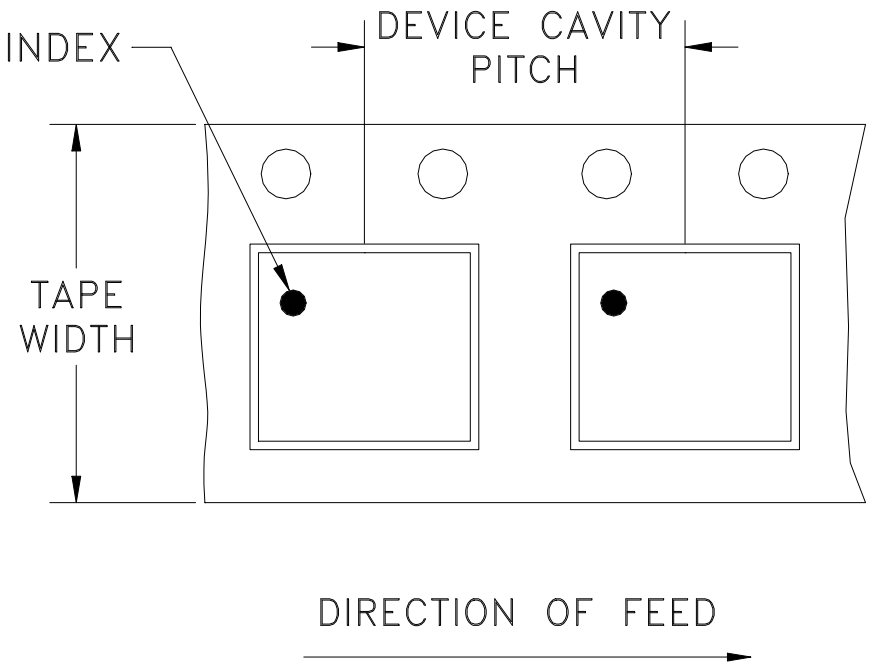
Notes:

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

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Tape & Reel Packaging TR-F68

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note	
12	8	7	Small quantity standard	20
				50
				100
				200
				500
		7	Standard	1000
		13	Standard	2000
				3000
				4000

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

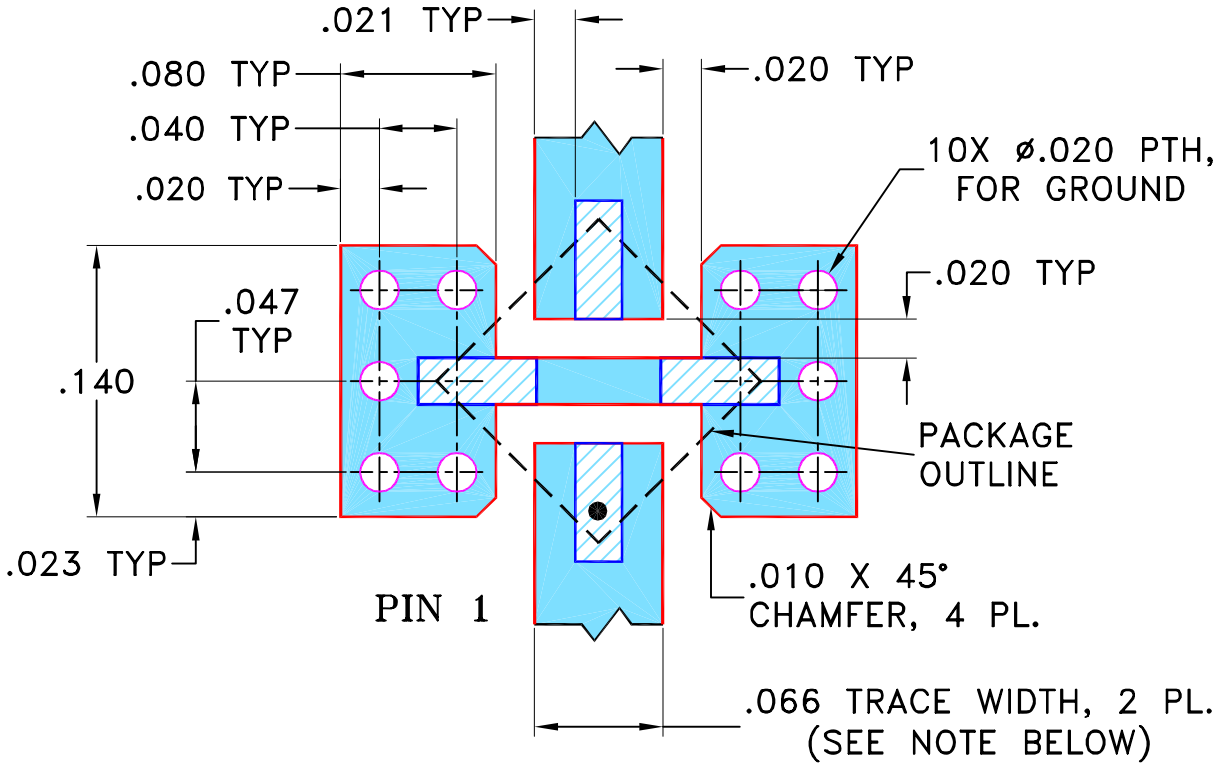
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THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M108436	NEW RELEASE	11/14/06	PW	IG

SUGGESTED MOUNTING CONFIGURATION FOR FG873 CASE STYLE, "cb" PIN CONNECTION



NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. 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	PW	11/11/06
TOLERANCES ON:	CHECKED	IL	11/14/06
2 PL DECIMALS ±	APPROVED	IG	11/14/06
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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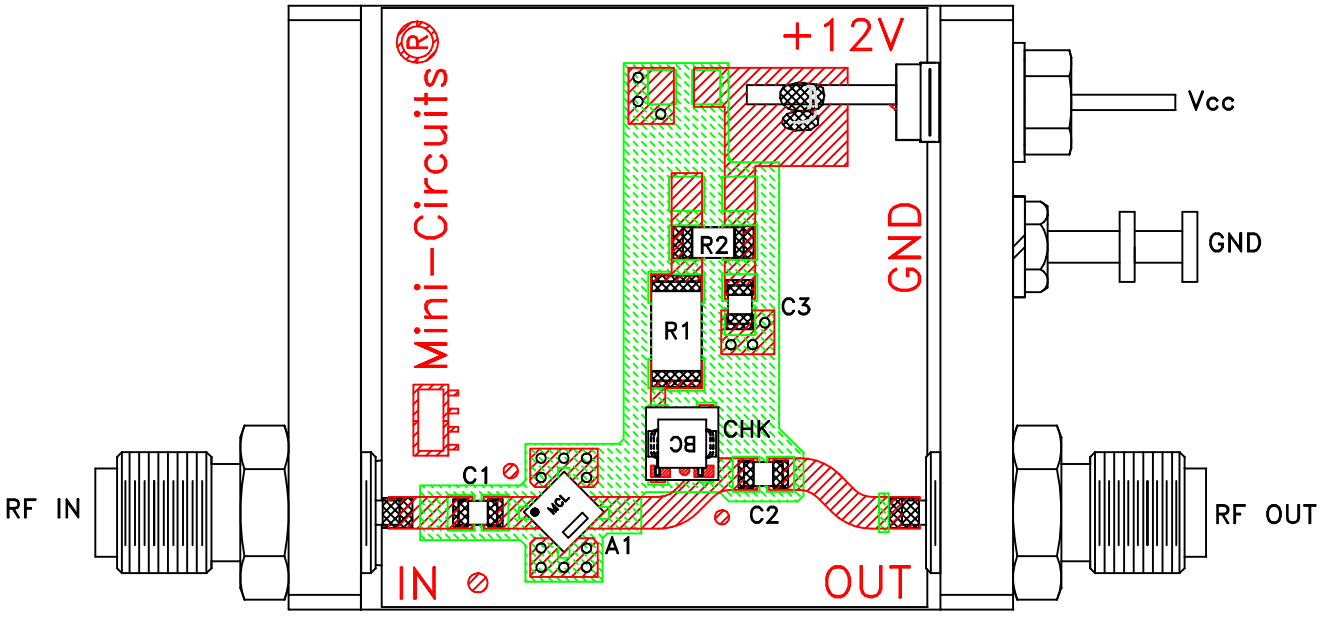
ASHEETA1.DWG REV:A DATE:01/12/95

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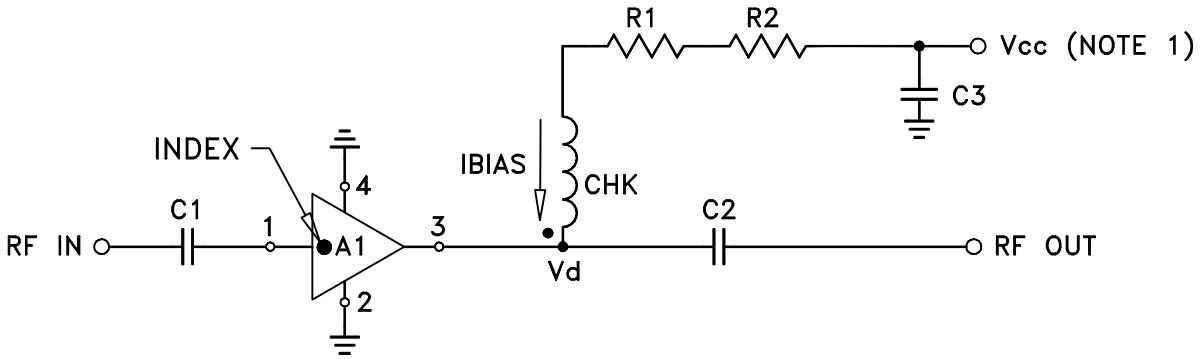
PL, cb, FG873, LEE, TB-413-XX+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-252	OR
FILE: 98PL252	SCALE: 10:1	SHEET: 1 OF 1	

Evaluation Board and Circuit



TB-LEE-39+



COMPONENT	VALUE
A1	LEE-39(+)
C1 (NOTE 4)	2400 pF
C2 (NOTE 4)	2400 pF
C3 (bypass)	0.1 uF
R1	243 Ohms, 0.75W
R2	0 Ohm, 0.25W
CHK	Mini-Circuits TCCH-80+

Schematic Diagram

NOTES:

1. Vcc voltage: +12±0.2V.
2. SMA Female connectors.
3. PCB material: Rogers RO4350 or equivalent, dielectric constant=3.5, dielectric thickness=.030 inch.
4. Capacitors, C1 & C2 should be free of resonance up to the highest frequency specified.

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Environmental Specifications **ENV08T2**

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	-45° to 85°C or -40° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-65° to 150° C Ambient Environment	Individual Model Data Sheet
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
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether +	MIL-STD-202, Method 215

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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
	monoethanolamine at 63°C to 70°C	

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