

Surface Mount

Monolithic Amplifier

0.05-1 GHz

Product Features

- Similar to Agilent MSA-1105 and Mini-Circuits MAV-11SM+
- High IP3, 34 dBm typ.
- Excellent VSWR, 1.2:1 typ.
- Medium gain
- Output power, 18 dBm typ.
- Aqueous washable



Generic photo used for illustration purposes only

MAV-11BSM+

CASE STYLE: RRR137

Typical Applications

- Cellular
- UHF/VHF receivers/transmitters

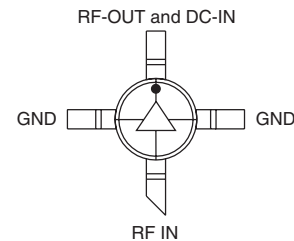
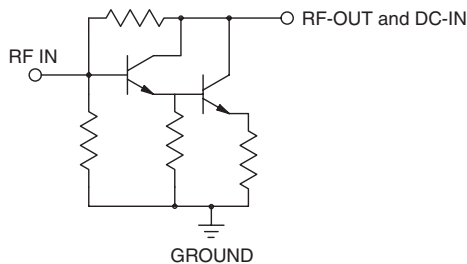
+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

General Description

MAV-11BSM+ (RoHS compliant) is a wideband amplifier offering high dynamic range. It has repeatable performance from lot to lot. It is enclosed in a plastic molded package. MAV-11BSM+ uses Darlington configuration and is fabricated using silicon technology. Expected MTBF is 270 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.

Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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/MCLStore/terms.jsp



Electrical Specifications at 25°C and 60mA, unless noted

Parameter	Min.	Typ.	Max.	Units
Frequency Range*	0.05		1	GHz
Gain	f=0.1 GHz	—	12.7	dB
	f=1 GHz	9.5 ²	11.3	
	f=2 GHz	—	9.5	
Input Return Loss		21		dB
Output Return Loss		21		dB
Output Power @ 1 dB compression		+18		dBm
Output IP3		+34		dBm
Noise Figure		4.4		dB
Recommended Device Operating Current		60		mA
Device Operating Voltage		5.5		V
Thermal Resistance, junction-to-case ¹		141		°C/W

*Guaranteed specification 0.05-1 GHz. Low frequency cut off determined by external coupling capacitors.

Absolute Maximum Ratings

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Operating Current	80mA
Power Dissipation	460mW
Input Power	13dBm

Note: Permanent damage may occur if any of these limits are exceeded.

These ratings are not intended for continuous normal operation.

¹Case is defined as ground leads.

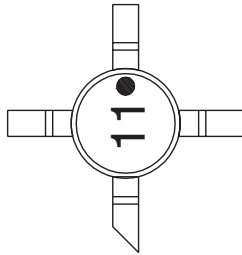
²Full temperature range.

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Product Marking



Marking may contain other features or characters for internal lot control

Additional Detailed Technical Information

Additional information is available on our web site. To access this information enter the model number on our web site home page.

Performance data, graphs, s-parameter data set (.zip file)

Case Style: RRR137

Plastic molded package, .145 body diameter, lead finish: matte-tin

Tape & Reel: F11

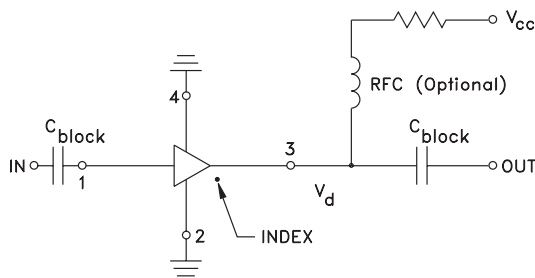
13" reels with 20, 50, 100, 200, 500 devices

Suggested Layout for PCB Design: PL-169

Evaluation Board: TB-412-11B+

Environmental Ratings: ENV08T3

Recommended Application Circuit



R BIAS	
Vcc	"1%" Res. Values (ohms) for Optimum Biasing
7	28.0
8	45.3
9	61.9
10	78.7
11	95.3
12	113
13	127
14	143
15	158

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ESD Rating

Human Body Model (HBM): Class 1B (500 v to < 1000 v) in accordance with ANSI/ESD STM 5.1 - 2001

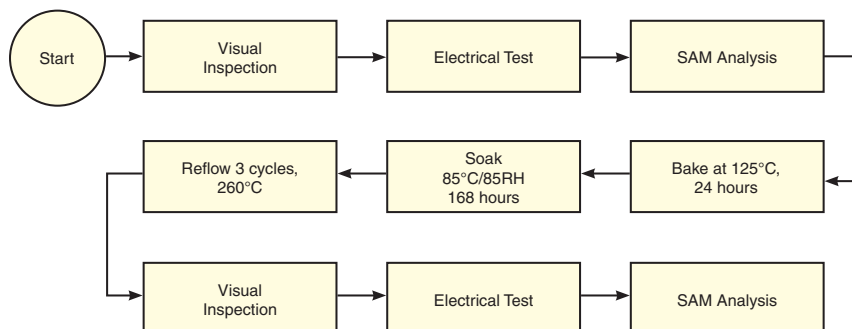
Machine Model (MM): Class M1 (< 100 v) in accordance with ANSI/ESD STM 5.2 - 1999

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

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MMIC Amplifier

MAV-11BSM+

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 = 60mA, Vd = 5.56V @Temperature = +25degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output	Noise Figure
					K	Delta			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)	(dB)
50	12.42	17.18	14.76	22.56	1.11	0.71	40.08	18.16	4.03
100	12.15	17.01	18.92	27.72	1.14	0.69	39.03	18.00	4.17
150	12.09	16.96	20.67	30.23	1.15	0.68	39.67	18.33	4.22
200	12.05	17.01	21.56	31.47	1.16	0.69	39.12	18.31	4.19
250	12.01	17.04	22.25	32.61	1.17	0.69	39.05	18.37	4.29
300	11.97	17.09	22.70	33.08	1.17	0.70	38.64	18.18	4.34
350	11.92	17.13	23.09	33.54	1.18	0.70	37.93	18.19	4.40
400	11.87	17.17	23.40	33.62	1.19	0.71	37.71	18.23	4.43
450	11.82	17.21	23.77	33.23	1.20	0.71	37.01	18.18	4.45
500	11.76	17.26	24.00	32.92	1.20	0.72	36.53	18.20	4.45
550	11.70	17.33	24.29	32.63	1.21	0.73	36.09	18.03	4.53
600	11.63	17.38	24.47	31.83	1.22	0.74	36.13	17.94	4.53
650	11.57	17.42	24.68	30.98	1.23	0.74	35.27	17.74	4.54
700	11.49	17.47	24.83	30.31	1.24	0.75	35.50	17.84	4.57
750	11.42	17.50	24.94	29.55	1.25	0.75	35.03	17.87	4.58
800	11.35	17.54	24.74	28.88	1.26	0.76	34.89	17.88	4.52
850	11.27	17.59	24.68	28.15	1.27	0.77	34.97	17.84	4.57
900	11.19	17.65	24.54	27.37	1.29	0.77	34.65	17.79	4.60
950	11.10	17.70	24.44	26.42	1.30	0.78	34.31	17.71	4.62
1000	11.01	17.74	24.15	25.83	1.31	0.79	34.18	17.58	4.64
1050	10.92	17.76	23.70	25.24	1.32	0.79	34.30	17.57	4.70
1100	10.83	17.82	23.36	24.56	1.34	0.80	33.99	17.74	4.72
1150	10.74	17.87	22.86	23.98	1.35	0.80	33.93	17.71	4.72
1200	10.65	17.92	22.51	23.35	1.36	0.81	33.95	17.77	4.71
1250	10.56	17.97	22.10	22.71	1.38	0.82	34.11	17.58	4.77
1300	10.46	18.01	21.70	22.17	1.39	0.82	33.86	17.67	4.78
1350	10.37	18.08	21.23	21.66	1.41	0.83	33.94	17.58	4.79
1400	10.26	18.12	20.89	21.13	1.42	0.83	33.99	17.42	4.81
1450	10.17	18.19	20.46	20.65	1.44	0.84	33.66	17.39	4.87
1500	10.08	18.24	19.98	20.23	1.45	0.85	33.66	17.47	4.89
1550	9.98	18.30	19.59	19.72	1.47	0.85	32.95	17.61	4.88
1600	9.88	18.36	19.17	19.25	1.49	0.86	33.28	17.40	5.05
1650	9.79	18.40	18.75	18.88	1.50	0.86	33.48	17.35	4.83
1700	9.69	18.45	18.30	18.54	1.52	0.86	33.60	17.57	4.92
1750	9.59	18.52	17.98	18.18	1.54	0.87	33.36	17.51	4.98
1800	9.49	18.57	17.62	17.80	1.55	0.87	33.33	17.32	5.04
1850	9.39	18.64	17.25	17.49	1.57	0.88	33.46	17.00	5.05
1900	9.30	18.69	16.89	17.16	1.59	0.88	33.15	17.07	5.09
1950	9.19	18.78	16.56	16.95	1.62	0.89	33.02	17.00	5.13
2000	9.09	18.83	16.19	16.64	1.63	0.89	32.56	16.99	4.89

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MMIC Amplifier

MAV-11BSM+

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 = 48mA, Vd = 5.35V @Temperature = +25degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output	Noise Figure
					K	Delta			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)	(dB)
50	12.38	17.14	14.58	22.38	1.11	0.71	42.52	16.13	3.90
100	12.11	16.99	18.52	28.79	1.14	0.69	41.17	15.92	4.02
150	12.04	16.95	20.07	32.74	1.15	0.69	42.02	16.21	4.08
200	12.00	16.96	20.83	35.41	1.16	0.69	41.26	16.23	4.02
250	11.96	17.01	21.46	37.56	1.17	0.70	41.56	16.28	4.19
300	11.92	17.03	21.84	37.80	1.17	0.70	40.63	16.11	4.25
350	11.87	17.10	22.20	37.40	1.18	0.71	40.14	16.10	4.24
400	11.82	17.15	22.51	36.57	1.19	0.71	39.32	16.15	4.32
450	11.77	17.20	22.85	35.26	1.20	0.72	38.88	16.09	4.28
500	11.71	17.24	23.09	33.96	1.21	0.72	38.16	16.13	4.34
550	11.64	17.29	23.37	33.19	1.22	0.73	37.71	15.96	4.44
600	11.58	17.34	23.57	31.97	1.23	0.74	37.48	15.85	4.38
650	11.51	17.41	23.82	30.87	1.24	0.74	36.56	15.71	4.39
700	11.44	17.43	23.98	29.93	1.24	0.75	36.53	15.78	4.38
750	11.37	17.47	24.14	29.10	1.25	0.76	36.13	15.83	4.38
800	11.29	17.52	24.09	28.44	1.26	0.76	35.92	15.84	4.41
850	11.21	17.57	24.08	27.73	1.28	0.77	36.00	15.79	4.47
900	11.13	17.62	24.10	26.97	1.29	0.77	35.72	15.78	4.47
950	11.04	17.67	24.05	26.08	1.30	0.78	35.26	15.70	4.48
1000	10.96	17.71	23.83	25.44	1.31	0.79	34.97	15.59	4.48
1050	10.87	17.76	23.49	24.89	1.33	0.79	35.31	15.56	4.53
1100	10.78	17.78	23.19	24.29	1.34	0.80	34.95	15.73	4.55
1150	10.69	17.85	22.79	23.72	1.35	0.81	34.82	15.75	4.58
1200	10.60	17.90	22.50	23.17	1.37	0.81	34.82	15.82	4.60
1250	10.51	17.97	22.11	22.54	1.38	0.82	35.06	15.65	4.58
1300	10.41	17.99	21.78	22.01	1.39	0.82	34.80	15.77	4.61
1350	10.32	18.04	21.31	21.56	1.41	0.83	34.83	15.70	4.65
1400	10.22	18.11	21.01	21.05	1.43	0.84	34.97	15.57	4.70
1450	10.12	18.16	20.57	20.59	1.44	0.84	34.55	15.57	4.66
1500	10.03	18.22	20.12	20.18	1.46	0.85	34.51	15.65	4.73
1550	9.93	18.27	19.75	19.70	1.47	0.85	33.71	15.80	4.72
1600	9.83	18.34	19.32	19.27	1.49	0.86	33.96	15.64	4.89
1650	9.74	18.39	18.90	18.90	1.51	0.86	34.20	15.63	4.69
1700	9.65	18.44	18.46	18.56	1.52	0.87	34.40	15.90	4.79
1750	9.55	18.51	18.13	18.25	1.54	0.87	34.01	15.86	4.86
1800	9.45	18.59	17.79	17.88	1.56	0.88	33.84	15.75	4.83
1850	9.35	18.62	17.40	17.57	1.58	0.88	34.02	15.47	4.97
1900	9.26	18.67	17.05	17.27	1.60	0.88	33.57	15.63	4.92
1950	9.15	18.73	16.72	17.06	1.62	0.89	33.38	15.63	4.92
2000	9.06	18.83	16.33	16.76	1.64	0.89	32.82	15.67	4.73

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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 = 72mA, Vd = 5.76V @Temperature = +25degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output	Noise Figure
					K	Delta			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)	(dB)
50	12.45	17.24	14.99	21.91	1.11	0.71	37.21	19.50	4.20
100	12.18	17.03	19.52	25.50	1.14	0.69	36.56	19.47	4.33
150	12.12	16.99	21.50	27.05	1.15	0.68	37.00	19.74	4.38
200	12.08	17.05	22.62	27.62	1.16	0.69	36.63	19.73	4.35
250	12.04	17.08	23.57	28.40	1.17	0.69	36.62	19.72	4.51
300	12.00	17.09	24.07	28.87	1.17	0.69	36.38	19.57	4.59
350	11.95	17.13	24.57	29.35	1.18	0.70	35.88	19.57	4.56
400	11.90	17.19	24.93	29.70	1.19	0.71	35.76	19.60	4.58
450	11.85	17.22	25.31	29.95	1.19	0.71	35.24	19.56	4.60
500	11.79	17.28	25.59	30.19	1.20	0.72	34.97	19.59	4.69
550	11.73	17.31	25.84	30.42	1.21	0.72	34.64	19.43	4.70
600	11.66	17.37	25.89	30.28	1.22	0.73	34.72	19.36	4.66
650	11.59	17.43	26.06	29.87	1.23	0.74	34.05	19.20	4.72
700	11.52	17.46	26.05	29.70	1.24	0.75	34.28	19.27	4.72
750	11.45	17.49	26.06	29.28	1.25	0.75	33.89	19.33	4.69
800	11.38	17.52	25.65	28.91	1.26	0.76	33.82	19.31	4.70
850	11.30	17.57	25.45	28.28	1.27	0.76	33.88	19.31	4.74
900	11.22	17.61	25.14	27.55	1.28	0.77	33.63	19.23	4.75
950	11.13	17.67	24.91	26.71	1.29	0.78	33.38	19.15	4.75
1000	11.04	17.70	24.46	26.09	1.31	0.78	33.32	19.00	4.75
1050	10.95	17.73	23.95	25.49	1.32	0.79	33.39	19.00	4.87
1100	10.87	17.79	23.49	24.82	1.33	0.80	33.15	19.14	4.84
1150	10.78	17.82	22.90	24.22	1.34	0.80	33.14	19.12	4.88
1200	10.68	17.88	22.53	23.51	1.35	0.81	33.18	19.15	4.87
1250	10.59	17.93	22.05	22.84	1.37	0.81	33.34	18.94	4.89
1300	10.50	17.98	21.63	22.28	1.38	0.82	33.11	18.98	4.93
1350	10.40	18.03	21.14	21.74	1.40	0.83	33.23	18.87	4.95
1400	10.30	18.09	20.77	21.19	1.41	0.83	33.28	18.70	5.02
1450	10.21	18.13	20.33	20.65	1.43	0.84	33.03	18.63	5.01
1500	10.11	18.18	19.88	20.19	1.44	0.84	33.05	18.63	5.02
1550	10.01	18.25	19.45	19.66	1.46	0.85	32.45	18.73	5.01
1600	9.92	18.30	19.04	19.20	1.48	0.85	32.78	18.48	5.21
1650	9.83	18.34	18.61	18.80	1.49	0.86	32.99	18.30	4.98
1700	9.73	18.41	18.17	18.41	1.51	0.86	33.14	18.45	5.11
1750	9.63	18.46	17.83	18.04	1.52	0.87	32.99	18.26	5.13
1800	9.53	18.54	17.50	17.64	1.54	0.87	32.97	17.97	5.13
1850	9.43	18.58	17.13	17.32	1.56	0.88	33.13	17.55	5.26
1900	9.34	18.63	16.79	16.99	1.57	0.88	32.88	17.55	5.23
1950	9.23	18.71	16.46	16.74	1.60	0.88	32.81	17.40	5.24
2000	9.13	18.76	16.08	16.42	1.62	0.89	32.42	17.30	5.08

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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 = 60mA, Vd = 5.72V @Temperature = -45degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output	Noise Figure
					K	Delta			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)	(dB)
50	12.32	17.21	13.78	25.43	1.12	0.72	32.39	18.83	3.75
100	12.14	17.00	16.99	32.87	1.14	0.69	32.69	18.37	3.86
150	12.10	16.99	18.39	41.70	1.15	0.69	32.65	18.49	3.88
200	12.07	16.97	18.84	41.33	1.15	0.69	32.77	18.52	3.81
250	12.04	16.99	19.17	36.35	1.16	0.69	32.61	18.43	4.00
300	12.01	17.02	19.90	35.17	1.16	0.69	32.89	18.50	3.97
350	11.96	17.07	20.32	33.80	1.17	0.70	32.91	18.50	4.02
400	11.92	17.13	20.56	32.67	1.18	0.70	33.12	18.70	4.08
450	11.87	17.22	20.78	31.34	1.19	0.71	33.26	18.44	4.07
500	11.82	17.24	20.93	30.30	1.20	0.72	33.43	18.61	4.07
550	11.76	17.29	21.17	29.81	1.20	0.72	33.55	18.33	4.09
600	11.70	17.35	21.43	29.07	1.21	0.73	33.50	18.18	4.15
650	11.63	17.44	21.52	28.39	1.23	0.74	34.22	17.97	4.14
700	11.56	17.50	21.51	27.52	1.24	0.75	34.06	18.07	4.14
750	11.49	17.56	21.70	26.66	1.25	0.75	34.42	18.11	4.10
800	11.42	17.62	21.62	25.66	1.26	0.76	34.49	17.99	4.09
850	11.35	17.67	21.68	24.84	1.27	0.77	34.31	18.07	4.18
900	11.27	17.75	21.67	24.03	1.28	0.77	34.22	17.99	4.21
950	11.18	17.83	21.88	23.39	1.30	0.78	34.69	17.83	4.22
1000	11.10	17.87	21.65	22.88	1.31	0.79	35.20	17.74	4.23
1050	11.01	17.93	21.43	22.38	1.32	0.79	34.38	17.71	4.24
1100	10.92	18.00	21.35	21.96	1.34	0.80	34.55	17.98	4.30
1150	10.83	18.05	21.20	21.66	1.35	0.81	34.33	17.87	4.26
1200	10.74	18.12	20.96	21.45	1.37	0.81	34.56	17.91	4.34
1250	10.64	18.20	20.63	21.06	1.39	0.82	33.95	17.58	4.31
1300	10.55	18.26	20.25	20.80	1.40	0.83	33.88	17.74	4.37
1350	10.45	18.33	19.91	20.53	1.42	0.83	34.27	17.63	4.41
1400	10.34	18.40	19.60	20.11	1.44	0.84	33.76	17.40	4.43
1450	10.24	18.46	19.19	19.75	1.46	0.85	33.86	17.39	4.44
1500	10.14	18.53	18.87	19.42	1.48	0.85	33.36	17.41	4.47
1550	10.04	18.58	18.45	19.22	1.49	0.86	32.99	17.52	4.43
1600	9.94	18.64	18.12	18.89	1.51	0.86	33.51	17.36	4.54
1650	9.84	18.71	17.73	18.67	1.53	0.87	33.13	17.31	4.43
1700	9.75	18.76	17.34	18.47	1.55	0.87	32.66	17.45	4.52
1750	9.65	18.81	17.05	18.22	1.57	0.88	32.29	17.26	4.62
1800	9.53	18.90	16.85	17.90	1.59	0.88	32.83	17.09	4.64
1850	9.44	18.96	16.47	17.47	1.61	0.89	32.45	16.68	4.68
1900	9.35	18.97	16.08	17.33	1.62	0.89	32.11	16.75	4.65
1950	9.23	19.06	15.74	17.23	1.65	0.90	31.97	16.54	4.71
2000	9.14	19.14	15.41	16.99	1.67	0.90	31.62	16.34	4.52

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MMIC Amplifier

MAV-11BSM+

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 = 48mA, Vd = 5.55V @Temperature = -45degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output	Noise Figure
					K	Delta			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)	(dB)
50	12.31	17.22	13.47	24.85	1.12	0.73	32.19	16.69	3.59
100	12.13	17.02	16.41	31.18	1.14	0.70	32.23	16.24	3.70
150	12.09	16.94	17.70	34.82	1.15	0.69	32.24	16.35	3.70
200	12.06	16.97	18.06	34.54	1.15	0.69	32.35	16.42	3.67
250	12.03	17.00	18.35	32.52	1.16	0.69	32.26	16.34	3.82
300	12.00	17.04	18.98	32.46	1.16	0.70	32.44	16.38	3.79
350	11.96	17.11	19.40	31.73	1.17	0.70	32.49	16.38	3.87
400	11.91	17.13	19.61	30.73	1.18	0.71	32.69	16.59	3.86
450	11.86	17.18	19.80	29.71	1.19	0.71	32.76	16.35	3.93
500	11.81	17.23	19.96	28.81	1.19	0.72	32.91	16.51	3.90
550	11.76	17.30	20.21	28.33	1.20	0.73	32.98	16.24	3.98
600	11.69	17.36	20.43	27.75	1.21	0.73	33.14	16.12	3.96
650	11.63	17.43	20.50	27.07	1.23	0.74	33.50	15.91	3.97
700	11.55	17.52	20.52	26.09	1.24	0.75	33.61	16.01	4.01
750	11.49	17.57	20.69	25.30	1.25	0.75	33.75	16.07	3.95
800	11.42	17.64	20.66	24.39	1.26	0.76	33.97	15.96	3.99
850	11.34	17.70	20.69	23.71	1.27	0.77	33.92	16.05	4.02
900	11.26	17.77	20.77	23.04	1.29	0.77	33.88	15.98	4.03
950	11.18	17.86	21.00	22.48	1.30	0.78	34.22	15.84	4.75
1000	11.09	17.89	20.85	22.06	1.31	0.79	34.60	15.76	4.04
1050	11.01	17.95	20.70	21.60	1.33	0.79	34.07	15.75	4.09
1100	10.92	18.03	20.68	21.23	1.34	0.80	34.21	16.05	4.11
1150	10.83	18.10	20.61	21.01	1.36	0.81	34.11	15.96	4.10
1200	10.74	18.17	20.44	20.86	1.37	0.81	34.32	16.02	4.22
1250	10.64	18.24	20.22	20.54	1.39	0.82	33.91	15.73	4.15
1300	10.55	18.31	19.90	20.29	1.41	0.83	33.75	15.90	4.20
1350	10.44	18.39	19.62	20.08	1.43	0.84	34.07	15.83	4.21
1400	10.34	18.44	19.34	19.70	1.45	0.84	33.63	15.65	4.24
1450	10.24	18.52	18.96	19.37	1.46	0.85	33.69	15.67	4.22
1500	10.14	18.58	18.67	19.08	1.48	0.85	33.35	15.74	4.32
1550	10.04	18.65	18.28	18.93	1.50	0.86	32.92	15.89	4.32
1600	9.94	18.72	17.98	18.65	1.52	0.87	33.40	15.78	4.41
1650	9.84	18.77	17.64	18.46	1.54	0.87	33.03	15.77	4.29
1700	9.75	18.81	17.26	18.30	1.55	0.88	32.61	16.01	4.39
1750	9.65	18.88	16.99	18.05	1.58	0.88	32.26	15.89	4.39
1800	9.53	18.98	16.78	17.79	1.60	0.89	32.73	15.77	4.45
1850	9.44	19.03	16.41	17.38	1.62	0.89	32.39	15.54	4.51
1900	9.35	19.05	16.04	17.30	1.63	0.89	32.09	15.69	4.47
1950	9.23	19.11	15.71	17.20	1.66	0.90	31.92	15.67	4.54
2000	9.14	19.20	15.39	17.03	1.68	0.91	31.60	15.67	4.34

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MMIC Amplifier

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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 = 72mA, Vd = 5.91 @Temperature = -45degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output	Noise Figure
					K	Delta			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)	(dB)
50	12.33	17.20	14.04	25.78	1.12	0.72	33.32	20.18	3.93
100	12.15	17.01	17.53	33.21	1.14	0.69	33.92	19.83	4.04
150	12.11	16.97	19.15	42.32	1.15	0.69	33.82	19.86	4.05
200	12.08	16.93	19.55	42.56	1.15	0.68	33.97	19.87	3.99
250	12.05	17.00	19.99	37.56	1.16	0.69	33.76	19.72	4.14
300	12.02	17.04	20.75	34.96	1.16	0.69	34.09	19.82	4.25
350	11.97	17.08	21.25	34.04	1.17	0.70	34.06	19.81	4.18
400	11.93	17.13	21.49	32.80	1.18	0.70	34.38	20.00	4.22
450	11.88	17.16	21.71	31.90	1.19	0.71	34.46	19.76	4.24
500	11.83	17.23	21.92	30.85	1.19	0.71	34.76	19.95	4.21
550	11.78	17.30	22.17	30.32	1.20	0.72	34.94	19.68	4.34
600	11.71	17.37	22.43	29.67	1.22	0.73	34.62	19.58	4.27
650	11.64	17.42	22.47	28.97	1.23	0.74	35.80	19.39	4.33
700	11.57	17.48	22.46	28.29	1.24	0.74	35.30	19.45	4.33
750	11.51	17.54	22.67	27.62	1.25	0.75	35.85	19.50	4.27
800	11.44	17.58	22.56	26.55	1.26	0.76	35.81	19.38	4.26
850	11.36	17.65	22.53	25.64	1.27	0.76	35.51	19.46	4.39
900	11.28	17.71	22.52	24.69	1.28	0.77	35.11	19.37	4.34
950	11.20	17.80	22.69	23.96	1.30	0.78	35.61	19.19	4.40
1000	11.11	17.84	22.33	23.41	1.31	0.78	36.47	19.08	4.41
1050	11.03	17.90	22.05	22.89	1.32	0.79	35.11	19.06	4.43
1100	10.94	17.96	21.91	22.43	1.34	0.80	35.23	19.28	4.46
1150	10.85	18.02	21.67	22.10	1.35	0.80	34.87	19.14	4.44
1200	10.75	18.10	21.36	21.81	1.37	0.81	35.22	19.11	4.49
1250	10.65	18.17	20.94	21.33	1.39	0.82	34.48	18.67	4.51
1300	10.56	18.21	20.48	21.04	1.40	0.82	34.38	18.64	4.55
1350	10.46	18.28	20.09	20.75	1.42	0.83	34.89	18.09	4.54
1400	10.35	18.34	19.72	20.32	1.43	0.84	34.28	17.24	4.54
1450	10.25	18.41	19.30	19.95	1.45	0.84	34.36	17.03	4.59
1500	10.15	18.48	18.97	19.59	1.47	0.85	33.77	16.84	4.68
1550	10.05	18.54	18.53	19.31	1.49	0.86	33.28	16.86	4.66
1600	9.96	18.58	18.13	19.03	1.50	0.86	33.98	16.55	4.76
1650	9.85	18.66	17.78	18.71	1.52	0.87	33.59	16.45	4.58
1700	9.76	18.69	17.35	18.53	1.54	0.87	33.12	16.48	4.69
1750	9.66	18.77	17.06	18.22	1.56	0.88	32.72	16.30	4.74
1800	9.54	18.86	16.83	17.90	1.58	0.88	33.30	16.10	4.78
1850	9.46	18.91	16.46	17.46	1.60	0.89	32.91	15.77	4.85
1900	9.36	18.93	16.08	17.26	1.61	0.89	32.53	15.84	4.83
1950	9.24	19.00	15.72	17.13	1.64	0.90	32.38	15.77	4.86
2000	9.15	19.08	15.40	16.87	1.66	0.90	32.01	15.65	4.68

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MMIC Amplifier

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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 = 60mA, Vd = 5.35V @Temperature = +85degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output	Noise Figure
					K	Delta			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)	(dB)
50	12.36	17.23	15.25	19.36	1.11	0.71	33.61	17.30	4.33
100	12.03	17.07	19.61	21.35	1.15	0.70	33.41	17.58	4.45
150	11.96	17.09	21.58	22.17	1.16	0.70	33.66	18.04	4.56
200	11.93	17.09	23.67	22.52	1.17	0.70	33.54	18.10	4.45
250	11.90	17.12	24.55	23.14	1.18	0.70	33.50	18.34	4.66
300	11.86	17.14	24.58	24.28	1.18	0.70	33.44	17.82	4.72
350	11.81	17.16	25.05	25.45	1.19	0.71	33.20	17.88	4.73
400	11.76	17.19	25.44	25.96	1.20	0.71	33.13	17.81	4.80
450	11.71	17.24	25.33	26.54	1.21	0.72	32.88	17.86	4.79
500	11.65	17.28	25.54	27.13	1.21	0.73	32.71	17.87	4.87
550	11.59	17.30	25.69	27.68	1.22	0.73	32.50	17.77	4.89
600	11.52	17.34	25.78	28.04	1.23	0.74	32.54	17.62	4.87
650	11.45	17.35	25.67	28.16	1.24	0.74	32.15	17.53	4.92
700	11.38	17.39	25.72	28.48	1.25	0.75	32.25	17.67	4.91
750	11.31	17.42	25.83	28.24	1.25	0.75	32.05	17.70	4.91
800	11.24	17.43	25.48	28.01	1.26	0.76	32.00	17.64	4.84
850	11.17	17.47	25.29	27.55	1.27	0.76	32.04	17.64	4.96
900	11.09	17.52	24.96	26.94	1.28	0.77	31.88	17.58	4.99
950	11.00	17.55	24.93	26.29	1.29	0.78	31.75	17.53	4.98
1000	10.92	17.57	24.57	25.89	1.30	0.78	31.67	17.46	4.98
1050	10.84	17.61	24.15	25.37	1.31	0.79	31.75	17.39	5.02
1100	10.76	17.65	23.60	24.71	1.33	0.79	31.63	17.59	5.06
1150	10.67	17.68	23.14	24.15	1.34	0.80	31.61	17.64	5.02
1200	10.59	17.74	22.72	23.50	1.35	0.81	31.63	17.72	5.11
1250	10.50	17.79	22.24	22.81	1.36	0.81	31.74	17.47	5.08
1300	10.41	17.81	21.76	22.24	1.37	0.82	31.64	17.55	5.12
1350	10.32	17.89	21.24	21.76	1.39	0.82	31.68	17.53	5.16
1400	10.23	17.93	20.80	21.29	1.40	0.83	31.72	17.34	5.16
1450	10.13	17.98	20.39	20.78	1.42	0.83	31.55	17.28	5.15
1500	10.04	18.05	20.01	20.29	1.43	0.84	31.56	17.34	5.21
1550	9.94	18.10	19.48	19.81	1.45	0.84	31.20	17.54	5.21
1600	9.85	18.18	19.10	19.31	1.47	0.85	31.41	17.32	5.39
1650	9.77	18.21	18.66	18.97	1.48	0.85	31.61	17.28	5.14
1700	9.68	18.25	18.22	18.62	1.49	0.86	31.68	17.55	5.28
1750	9.58	18.31	17.84	18.24	1.51	0.86	31.58	17.42	5.32
1800	9.48	18.40	17.50	17.85	1.53	0.87	31.54	17.20	5.35
1850	9.39	18.45	17.14	17.45	1.55	0.87	31.66	16.95	5.03
1900	9.30	18.48	16.71	17.21	1.56	0.88	31.45	17.01	5.41
1950	9.19	18.57	16.32	16.99	1.58	0.88	31.45	16.96	5.40
2000	9.08	18.66	16.03	16.59	1.61	0.89	31.15	16.90	5.28

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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 = 48mA, Vd = 5.14V @Temperature = +85degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output	Noise Figure
					K	Delta			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)	(dB)
50	12.32	17.17	15.16	19.89	1.11	0.71	33.16	15.06	4.17
100	11.99	17.03	19.34	22.83	1.15	0.70	32.95	15.27	4.29
150	11.91	17.01	21.09	24.01	1.16	0.70	33.11	15.70	4.39
200	11.87	17.02	22.97	24.45	1.17	0.70	33.05	15.83	4.33
250	11.84	17.04	23.84	25.26	1.18	0.70	33.08	15.66	4.46
300	11.80	17.06	23.74	26.71	1.18	0.71	32.93	15.67	4.51
350	11.75	17.09	24.11	28.21	1.19	0.71	32.91	15.72	4.59
400	11.70	17.13	24.48	28.98	1.20	0.72	32.71	15.79	4.62
450	11.64	17.19	24.43	29.68	1.21	0.72	32.61	15.64	4.63
500	11.58	17.22	24.68	30.37	1.21	0.73	32.43	15.94	4.67
550	11.52	17.24	24.92	30.97	1.22	0.73	32.32	15.72	4.74
600	11.46	17.27	25.10	31.18	1.23	0.74	32.23	15.64	4.73
650	11.39	17.33	25.08	30.91	1.24	0.75	31.93	15.50	4.76
700	11.32	17.36	25.22	30.81	1.25	0.75	31.93	15.65	4.77
750	11.25	17.38	25.41	30.17	1.26	0.76	31.76	15.60	4.72
800	11.18	17.43	25.19	29.49	1.27	0.76	31.78	15.72	4.69
850	11.10	17.44	25.16	28.79	1.28	0.77	31.82	15.66	4.79
900	11.02	17.49	24.99	27.98	1.29	0.77	31.68	15.56	4.84
950	10.94	17.52	25.01	27.00	1.30	0.78	31.49	15.54	4.85
1000	10.85	17.55	24.74	26.46	1.31	0.78	31.36	15.36	4.85
1050	10.77	17.58	24.46	25.87	1.32	0.79	31.57	15.29	4.89
1100	10.69	17.62	24.00	25.16	1.33	0.80	31.43	15.50	4.87
1150	10.61	17.66	23.53	24.48	1.34	0.80	31.36	15.65	4.94
1200	10.52	17.72	23.15	23.86	1.36	0.81	31.42	15.63	4.95
1250	10.43	17.78	22.72	23.11	1.37	0.81	31.54	15.55	4.94
1300	10.34	17.80	22.22	22.55	1.38	0.82	31.48	15.46	4.98
1350	10.25	17.87	21.71	22.02	1.40	0.83	31.50	15.51	4.98
1400	10.16	17.92	21.27	21.56	1.41	0.83	31.60	15.54	5.01
1450	10.07	17.95	20.87	21.02	1.42	0.84	31.45	15.58	5.01
1500	9.97	18.04	20.45	20.53	1.44	0.84	31.47	15.41	5.10
1550	9.88	18.10	19.91	20.07	1.46	0.85	31.12	15.69	5.05
1600	9.78	18.14	19.51	19.58	1.47	0.85	31.28	15.64	5.24
1650	9.70	18.18	19.05	19.21	1.49	0.86	31.50	15.58	5.01
1700	9.61	18.24	18.57	18.85	1.50	0.86	31.63	15.76	5.13
1750	9.51	18.30	18.16	18.49	1.52	0.87	31.48	15.75	5.16
1800	9.41	18.40	17.84	18.09	1.54	0.87	31.37	15.60	5.20
1850	9.32	18.46	17.45	17.71	1.56	0.88	31.54	15.43	5.30
1900	9.24	18.47	17.01	17.47	1.57	0.88	31.34	15.55	5.24
1950	9.13	18.56	16.61	17.29	1.60	0.89	31.29	15.47	5.29
2000	9.02	18.66	16.30	16.88	1.62	0.89	30.97	15.56	5.06

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091206
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MMIC Amplifier

MAV-11BSM+

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 = 72mA, Vd = 5.56V @Temperature = +85degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output	Noise Figure
					K	Delta			
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)	(dB)
50	12.37	17.33	15.32	18.78	1.11	0.72	33.32	18.66	4.48
100	12.05	17.14	19.66	20.08	1.15	0.70	33.18	19.01	4.59
150	11.98	17.12	21.78	20.76	1.16	0.69	33.43	19.49	4.69
200	11.95	17.13	24.01	21.04	1.17	0.69	33.29	19.50	4.61
250	11.93	17.16	24.93	21.62	1.18	0.70	33.23	19.73	4.75
300	11.89	17.16	24.89	22.55	1.18	0.70	33.20	19.23	4.91
350	11.84	17.19	25.54	23.56	1.19	0.71	32.92	19.28	4.89
400	11.80	17.22	25.81	23.93	1.20	0.71	32.91	19.17	4.92
450	11.74	17.26	25.68	24.47	1.20	0.72	32.66	19.25	4.95
500	11.68	17.30	25.85	24.97	1.21	0.72	32.48	19.29	4.99
550	11.62	17.32	25.98	25.52	1.22	0.73	32.28	19.17	5.03
600	11.56	17.36	25.93	25.75	1.23	0.73	32.34	19.05	5.06
650	11.49	17.39	25.75	26.05	1.24	0.74	31.97	18.99	5.05
700	11.42	17.40	25.71	26.35	1.24	0.75	32.11	19.09	5.05
750	11.35	17.43	25.71	26.31	1.25	0.75	31.91	19.14	5.04
800	11.28	17.47	25.25	26.24	1.26	0.76	31.86	19.07	5.01
850	11.21	17.48	24.98	26.05	1.27	0.76	31.89	19.08	5.08
900	11.13	17.54	24.61	25.71	1.28	0.77	31.74	19.04	5.11
950	11.04	17.57	24.50	25.25	1.29	0.77	31.65	18.99	5.12
1000	10.96	17.58	24.05	24.94	1.30	0.78	31.60	18.89	5.13
1050	10.89	17.61	23.64	24.57	1.31	0.79	31.64	18.83	5.19
1100	10.80	17.66	23.13	24.03	1.32	0.79	31.53	19.04	5.19
1150	10.72	17.70	22.67	23.54	1.33	0.80	31.55	19.08	5.21
1200	10.63	17.75	22.17	22.93	1.35	0.80	31.57	19.14	5.24
1250	10.54	17.79	21.73	22.34	1.36	0.81	31.65	18.88	5.20
1300	10.46	17.84	21.28	21.82	1.37	0.82	31.55	18.93	5.24
1350	10.36	17.89	20.75	21.35	1.38	0.82	31.60	18.89	5.29
1400	10.27	17.94	20.33	20.92	1.40	0.83	31.64	18.66	5.33
1450	10.18	17.98	19.97	20.41	1.41	0.83	31.49	18.54	5.30
1500	10.08	18.05	19.59	19.96	1.43	0.84	31.51	18.57	5.36
1550	9.99	18.10	19.11	19.48	1.44	0.84	31.19	18.66	5.32
1600	9.89	18.15	18.76	18.99	1.46	0.85	31.39	18.37	5.49
1650	9.81	18.18	18.35	18.68	1.47	0.85	31.60	18.25	5.28
1700	9.72	18.24	17.89	18.31	1.48	0.86	31.65	18.46	5.43
1750	9.63	18.31	17.54	17.94	1.50	0.86	31.58	18.22	5.48
1800	9.52	18.37	17.20	17.55	1.52	0.87	31.56	17.92	5.48
1850	9.43	18.44	16.87	17.15	1.54	0.87	31.65	17.56	5.57
1900	9.35	18.47	16.49	16.93	1.55	0.88	31.53	17.57	5.53
1950	9.24	18.53	16.09	16.70	1.57	0.88	31.51	17.45	5.55
2000	9.13	18.65	15.81	16.28	1.60	0.89	31.24	17.36	5.43

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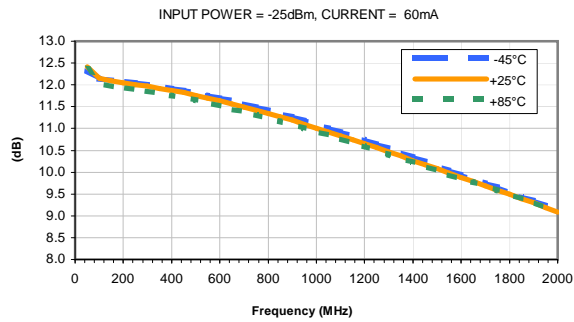


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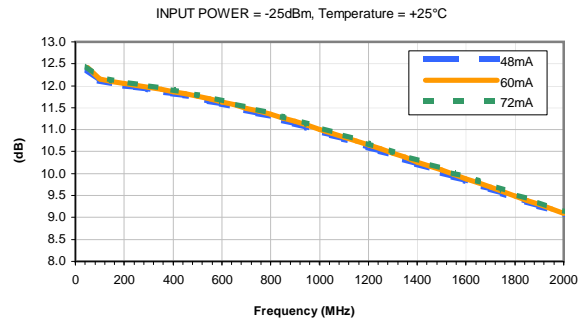


Typical Performance Curves

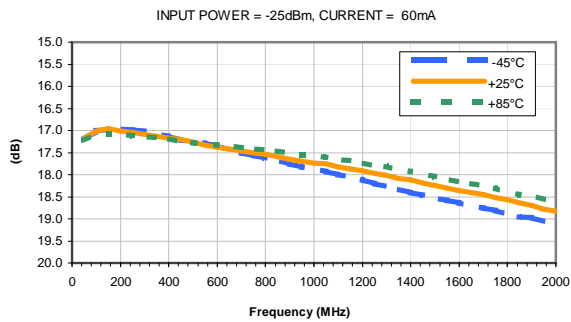
GAIN vs. TEMPERATURE



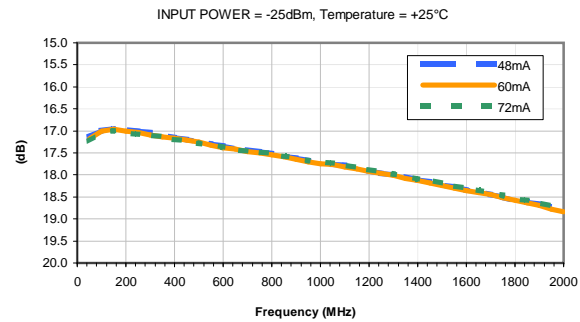
GAIN vs. CURRENT



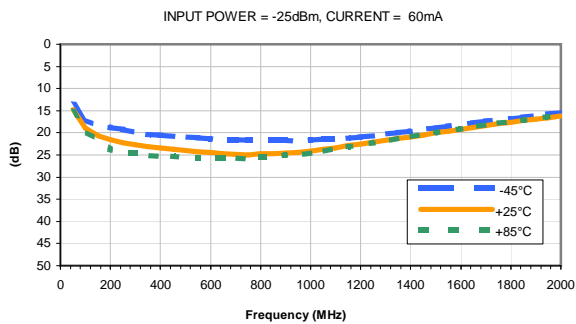
ISOLATION vs. TEMPERATURE



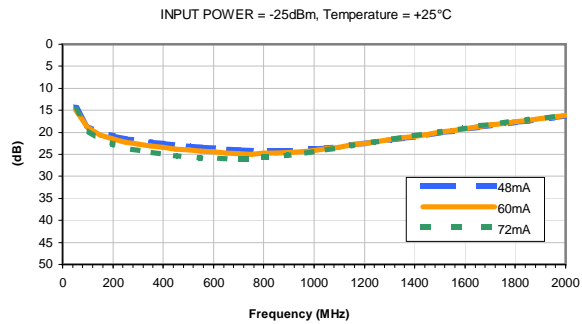
ISOLATION vs. CURRENT



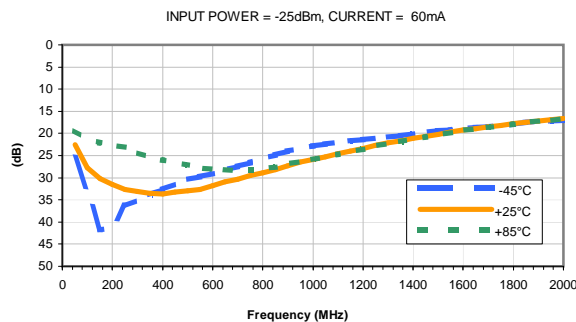
INPUT RETURN LOSS vs. TEMPERATURE



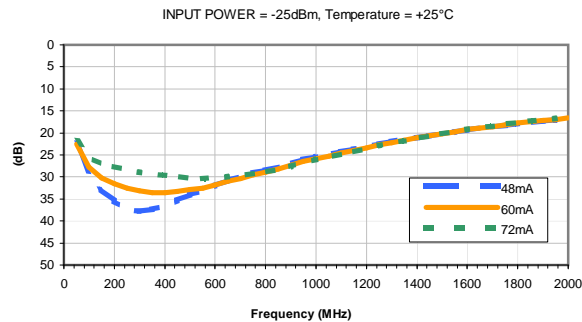
INPUT RETURN LOSS vs. CURRENT



OUTPUT RETURN LOSS vs. TEMPERATURE



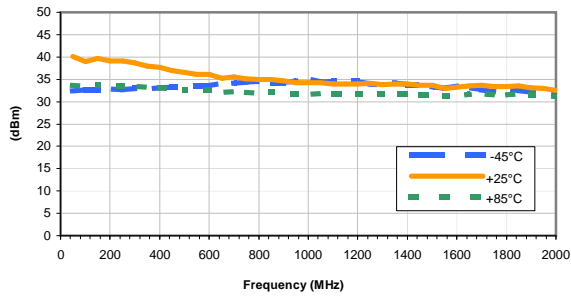
OUTPUT RETURN LOSS vs. CURRENT



Typical Performance Curves

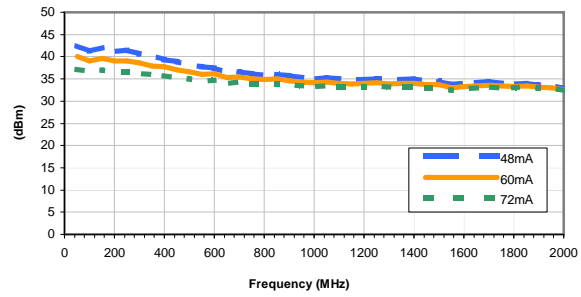
OUTPUT IP3 vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 60mA



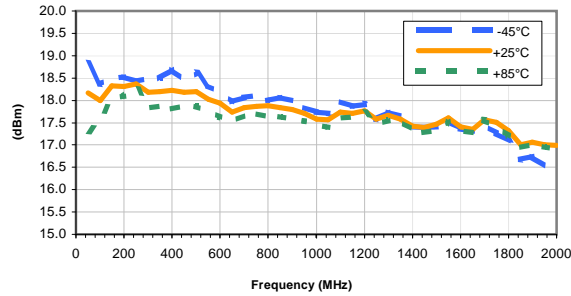
OUTPUT IP-3 vs. CURRENT

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



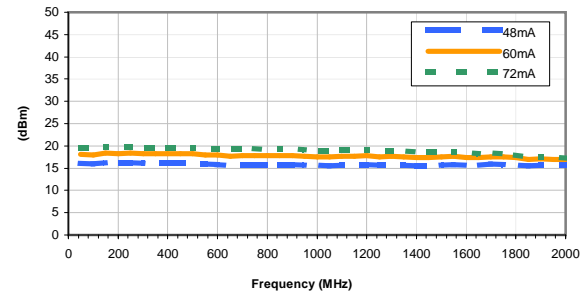
OUTPUT POWER at 1dB Compression vs. TEMPERATURE

CURRENT = 60mA



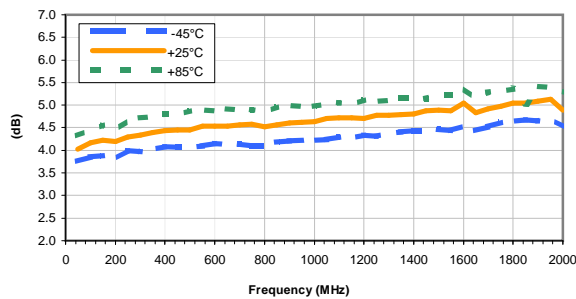
OUTPUT POWER at 1dB Compression vs. CURRENT

Temperature = +25°C



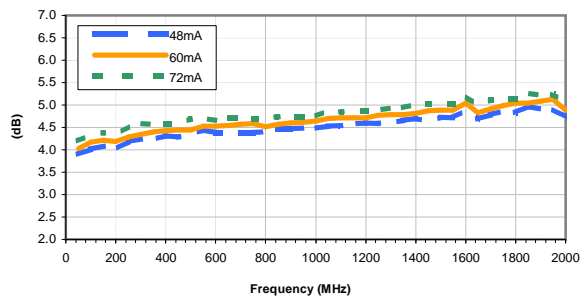
Noise Figure vs. TEMPERATURE

CURRENT = 60mA



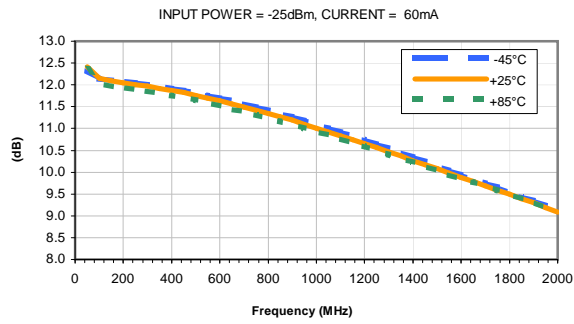
Noise Figure vs. CURRENT

Temperature = +25°C

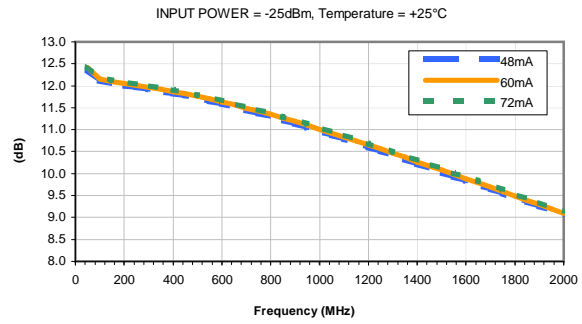


Typical Performance Curves

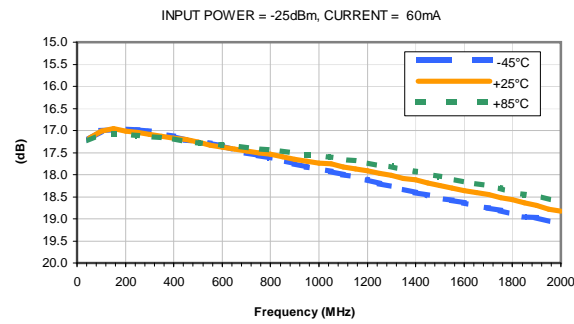
GAIN vs. TEMPERATURE



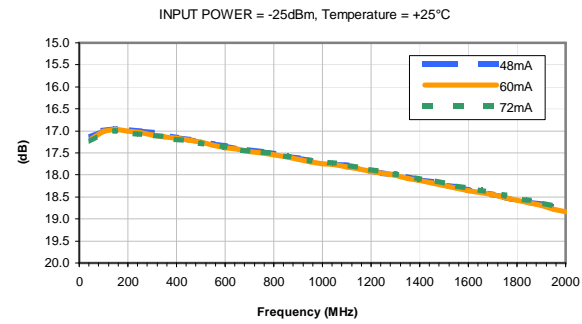
GAIN vs. CURRENT



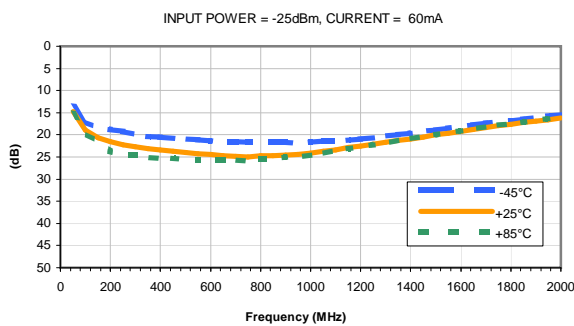
ISOLATION vs. TEMPERATURE



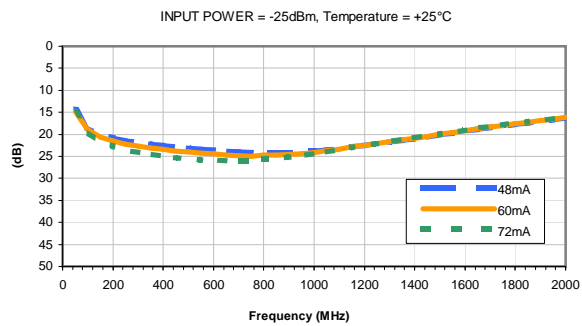
ISOLATION vs. CURRENT



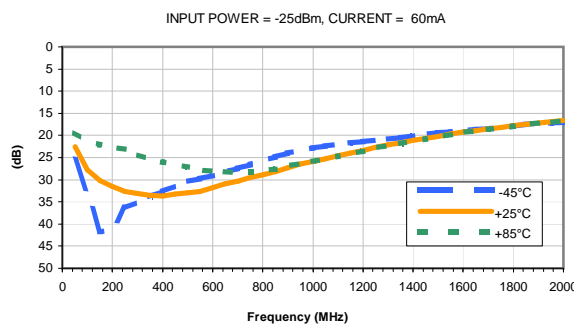
INPUT RETURN LOSS vs. TEMPERATURE



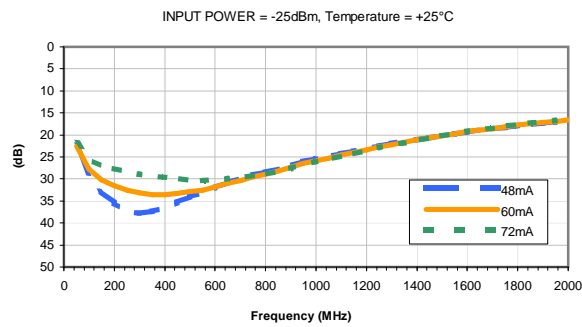
INPUT RETURN LOSS vs. CURRENT



OUTPUT RETURN LOSS vs. TEMPERATURE



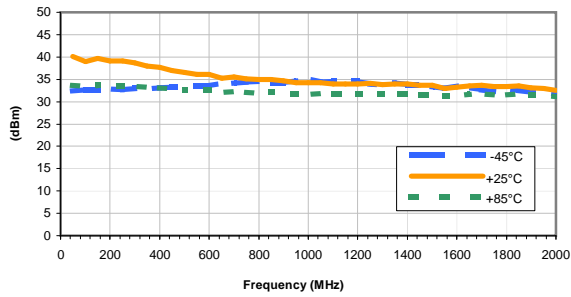
OUTPUT RETURN LOSS vs. CURRENT



Typical Performance Curves

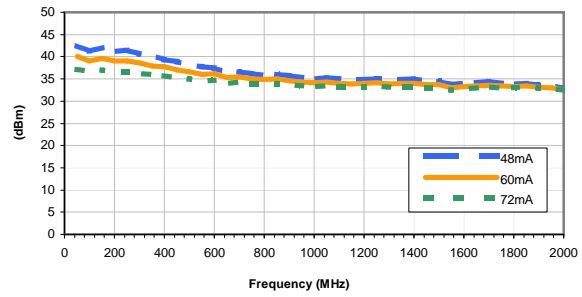
OUTPUT IP3 vs. TEMPERATURE

INPUT POWER = -25dBm, CURRENT = 60mA



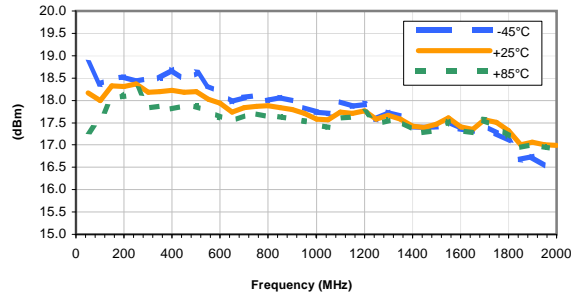
OUTPUT IP-3 vs. CURRENT

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



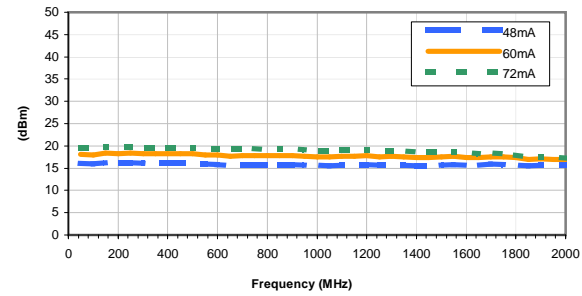
OUTPUT POWER at 1dB Compression vs. TEMPERATURE

CURRENT = 60mA



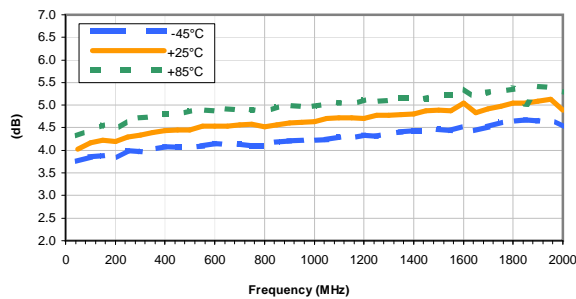
OUTPUT POWER at 1dB Compression vs. CURRENT

Temperature = +25°C



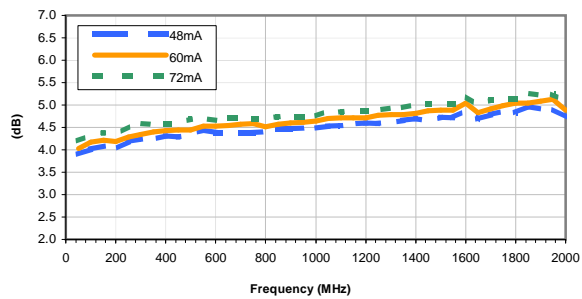
Noise Figure vs. TEMPERATURE

CURRENT = 60mA

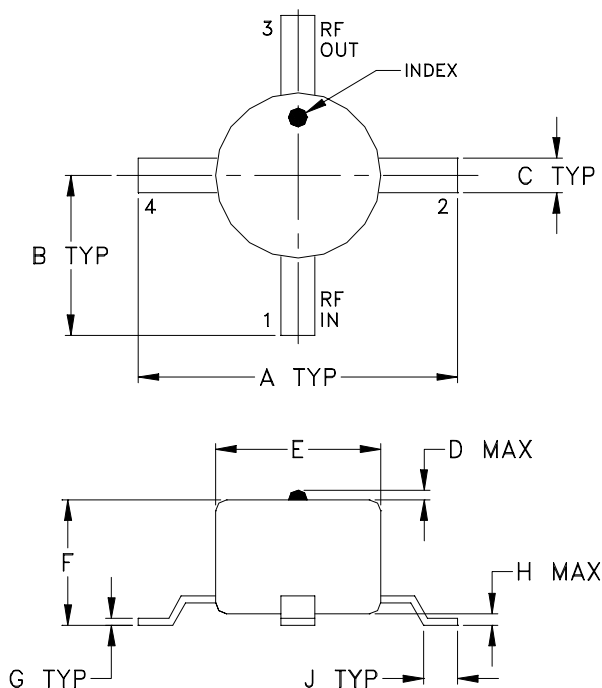


Noise Figure vs. CURRENT

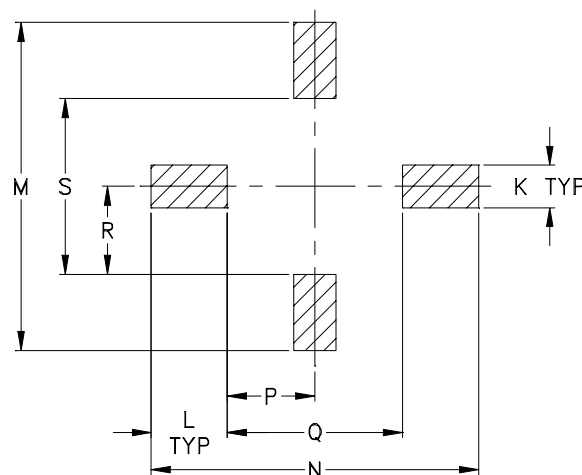
Temperature = +25°C



Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm .002$

CASE #	A	B	C	D	E	F	G	H	J	K	L	M	N
RRR137	.28 (7.11)	.14 (3.56)	.030 (.76)	.020 (0.51)	.145 (3.68)	.110 (2.79)	.007 (0.18)	.020 (0.51)	.03 (0.76)	.040 (1.02)	.072 (1.83)	.310 (7.87)	.310 (7.87)

CASE #	P	Q	R	S	WT. GRAM
RRR137	.084 (2.13)	.167 (4.24)	.084 (2.13)	.167 (4.24)	.015

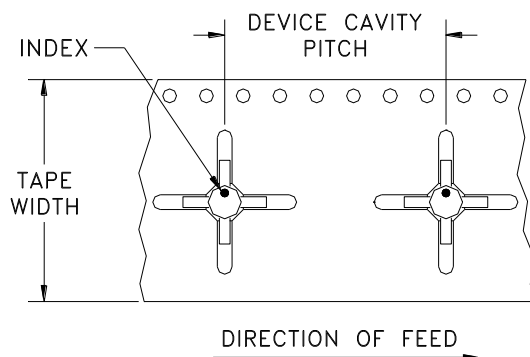
Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .02$; 3 Pl. $\pm .015$

Notes:

- Case material: Plastic.
- Termination finish:
For RoHS Case Styles: Tin-Silver-Nickel plate. All models, (+) suffix.
For RoHS-5 Case Styles: Tin-Lead plate. All models, No (+) suffix.
- RF output is identified by index mark, model dash number by alphanumeric code.
- Special Tolerances: Termination width $\pm .005$ inch, termination thickness $\pm .003$ inch.

Tape & Reel Packaging TR-F11

DEVICE ORIENTATION IN T&R EXCEPT MAV-11SM

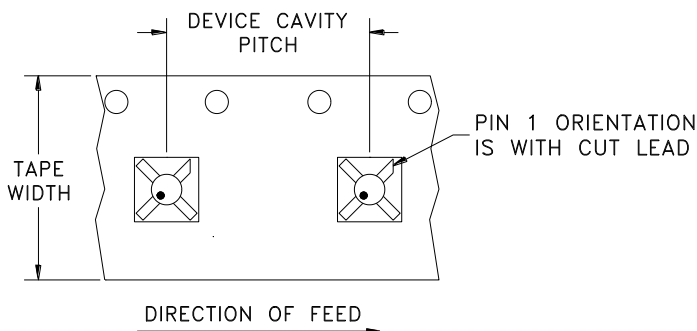


Applicable Case Styles
BBB123

Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
24	24	13	Small quantity standards (see note)	20
				50
				100
				200
			Standard	500

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

DEVICE ORIENTATION IN T&R FOR MAV-11SM ONLY



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
12	8	7	Small quantity standards (see note)	20
				50
				100
				200
			Standard	500

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



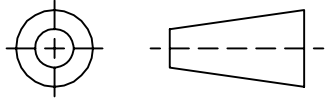
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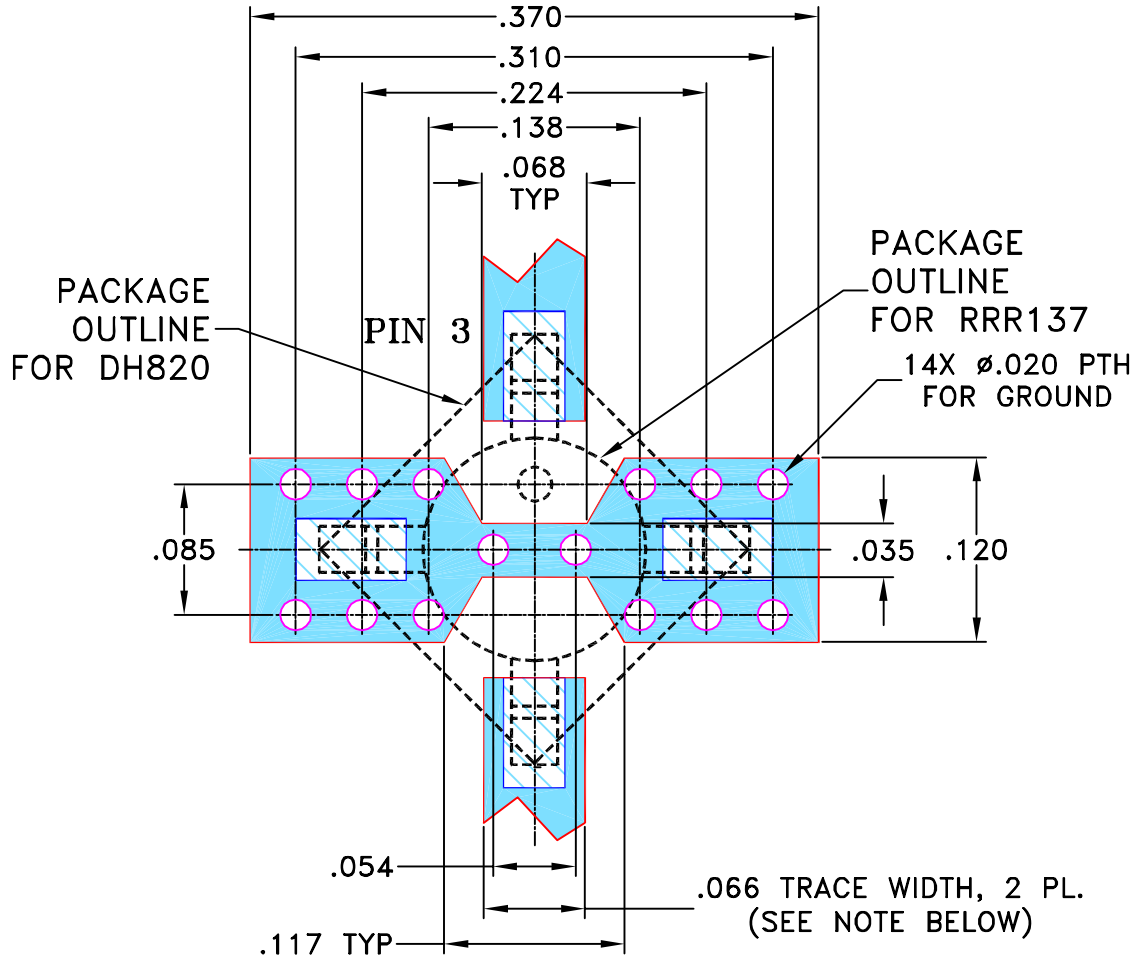
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M94379	NEW RELEASE	09/22/05	AV	MM
A	M102713	ADDED "...WITH SMOBC"	01/12/06	GF	IL
B	M108434	UPDATED DRAWING PER TB-412+	11/14/06	PW	IG

SUGGESTED MOUNTING CONFIGURATION FOR
DH820/RRR137 CASE STYLES, "cb" PIN CONNECTION



- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS $.030'' \pm .002''$; 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

AV

09/16/04

TOLERANCES ON:

CHECKED

IL

09/22/05

2 PL DECIMALS \pm

APPROVED

MM

09/22/05

3 PL DECIMALS \pm .005

ANGLES \pm

FRACTIONS \pm



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PL, cb, DH820/RRR137, MAV, TB-412-XXX+

SIZE

CODE IDENT

DRAWING NO:

REV:

A

15542

98-PL-169

B

FILE:

98PL169

SCALE:

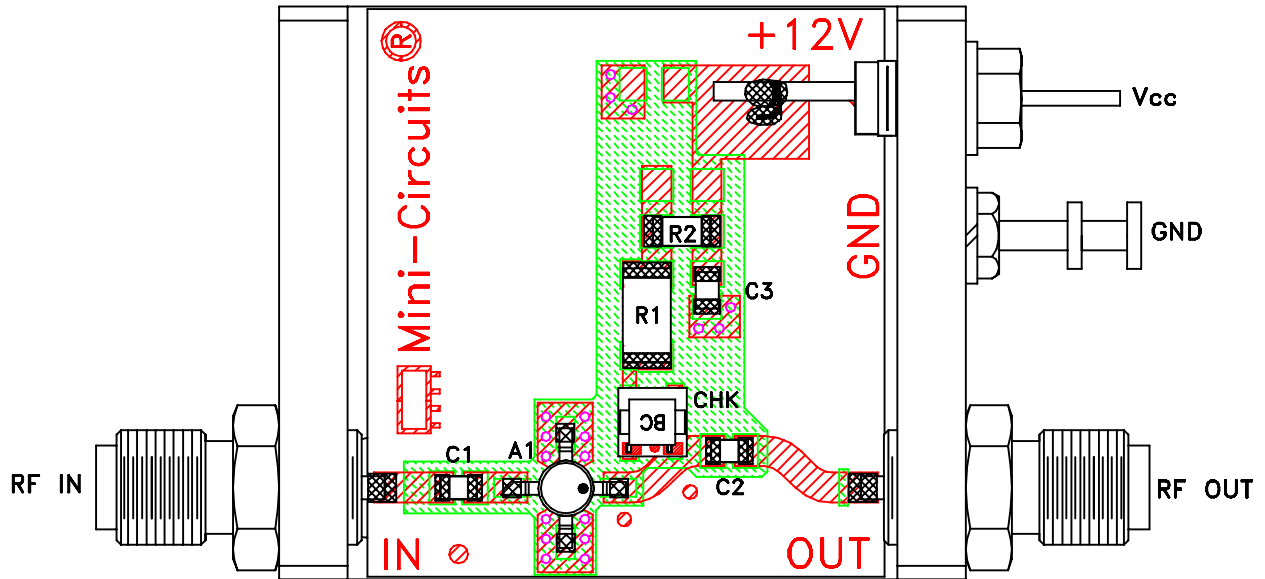
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SHEET:

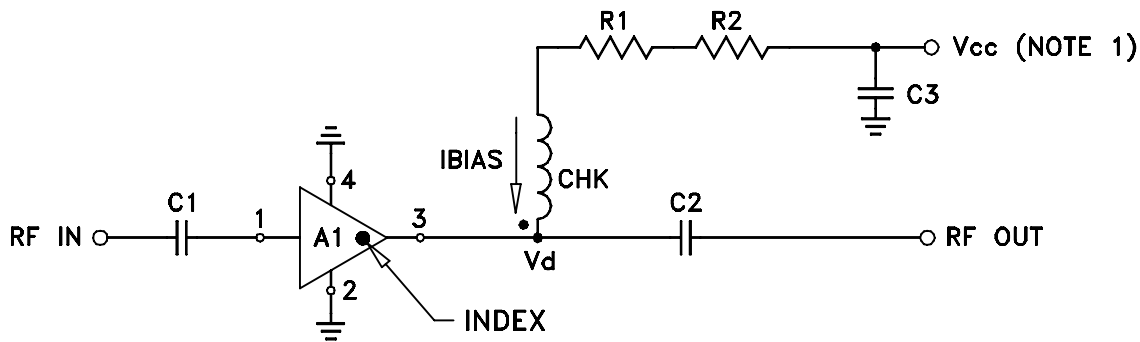
1 OF 1

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

Evaluation Board and Circuit



TB-412-11B+




COMPONENT	VALUE
A1	MAV-11BSM(+)
C1 (NOTE 4)	2400 pF
C2 (NOTE 4)	2400 pF
C3 (bypass)	0.1 uF
R1	100 Ohms, 0.75W
R2	8.25 Ohms, 0.25W
CHK	Mini-Circuits TCCH-80+

Schematic Diagram

NOTE:

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.

 **Mini-Circuits®**

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	-20° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° 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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Specification	Test/Inspection Condition	Reference/Spec
	monoethanolamine at 63°C to 70°C	