

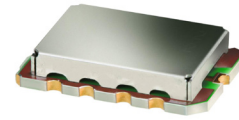
Low Noise Amplifier

TAMP-362LN+

50Ω 3300 to 3600 MHz

The Big Deal

- Ultra Low Noise Figure, 0.9 dB typ.
- Low Current, 20mA at +5V
- Good VSWR, 1.3:1 typ.
- Integrated Bias Matching and Stabilization Circuits



CASE STYLE: JQ1382

Product Overview

The TAMP-362LN+ (RoHS compliant) utilizes advanced HJ-FET technology in a single stage low noise amplifier design built into a shielded case (size: .591"x.394"x.118"). The drop-in module offers ultra low noise figure with good input and output return loss over the entire frequency range and without the need of external matching components.

Key Features

Feature	Advantages
Ultra Low NF	With typ. 0.9 dB NF, the TAMP-362LN+ enables greater sensitivity for receiver applications. It includes all matching and stability circuits making this Drop-in LNA module a turn-key solution for ensuring low system sensitivity in demanding applications.
Low Current, 20mA typ.	At only 20mA, the TAMP-362LN+ is ideal for applications with limited available power or densely packed applications where thermal and power management is critical.
Well Matched input/ output ports	With typical input & output VSWR of 1.3:1, the TAMP-362LN+ can be used in cascade with many 50 Ohm components and maintain minimal interaction or reflections.
Drop-in Module	Eliminates the need for designers to optimize low noise transistor bias and matching circuitry. The TAMP-362LN+ provides the outstanding combined performance and does not require any external elements. The case PCB area is smaller than most LNA transistor designs with external circuitry.
Metal Case	Provides a protective enclosure improving handling robustness in addition to shielding the sensitive high gain devices from close by circuitry.
Unconditionally stable	No adverse effects due to reactive loads at the input and output ports avoiding potential instability which can be a critical requirement when integrating high gain, high frequency devices on an open PCB assembly.

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-Circuit's 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/MCLStore/terms.jsp



Surface Mount

Low Noise Amplifier

TAMP-362LN+

50Ω

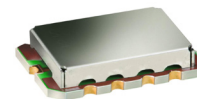
3300 to 3600 MHz

Features

- Ultra Low noise figure, 0.9 dB typ.
- Output power, up to +11 dBm typ.
- Good output IP3, 25 dBm typ.
- Low current consumption
- Good VSWR, 1.3:1 typ.
- Unconditionally stable

Applications

- WiMAX
- Defence system radar
- Base station transceiver, tower mounted amplifier, repeater
- General purpose low noise amplifier



CASE STYLE: JQ1382

+RoHS Compliant

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

Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		3300		3600	MHz
Noise Figure	3300 - 3600		0.9	1.2	dB
Gain	3300 - 3600	10	12		dB
Gain Flatness	3300 - 3600		± 0.4	± 0.8	dB
Output Power at 1dB compression	3300 - 3600	9	11		dBm
Output third order intercept point (OIP3)	3300 - 3600		25		dBm
Input VSWR	3300 - 3600		1.3		:1
Output VSWR	3300 - 3600		1.3		:1
DC Supply Voltage			5.0		V
DC Supply Current			20	30	mA

Pin Connections

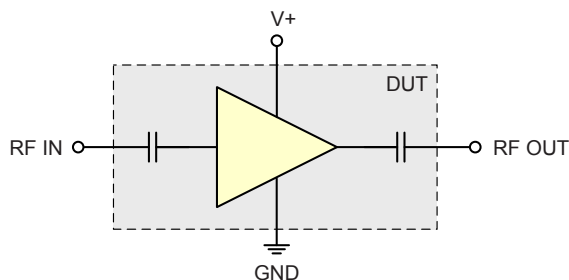
RF IN	10
RF OUT	5
V+	7
GROUND	1,2,3,4,6,8,9,11

Maximum Ratings

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Operating Voltage	5.5 V
Input RF Power (no damage)	0 dBm
Power Consumption	165 mW

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

Simplified Schematic



ESD Rating

Human Body Model (HBM): Class 0 (< 250 V) in accordance with EIAJ-ED-4701

Machine Model (MM): Class M1 (<100 V) in accordance with EIAJ-ED-4701

Notes

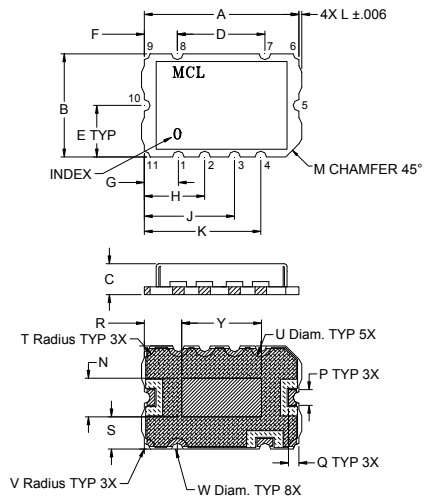
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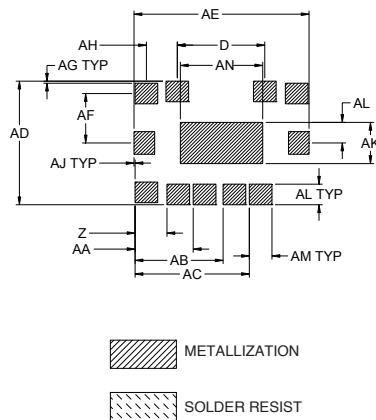
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REV. B
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TAMP-362LN+
EDR-9575/1
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Outline Drawing



PCB Land Pattern

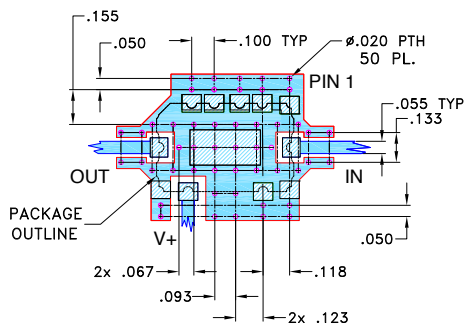


Outline Dimensions (inch mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U
.591	.394	.118	.335	.197	.126	.130	.230	.344	.445	.011	.050	.148	.060	.040	.143	.123	.042	.084
15.0	10.0	3.0	8.5	5.0	3.2	3.3	5.85	8.75	11.3	.28	1.27	3.75	1.52	1.02	3.63	3.13	1.07	2.13

V	W	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	AN	wt.
.022	.044	.305	.122	.222	.337	.437	.472	.669	.189	.008	.118	.004	.158	.079	.087	.315	grams
.56	1.12	7.75	3.1	5.65	8.55	11.1	12.0	17.0	4.8	.20	3.0	.10	4.0	2.0	2.2	8.0	0.8

Demo Board MCL P/N: TB-468+ Suggested PCB Layout (PL-293)



NOTES:

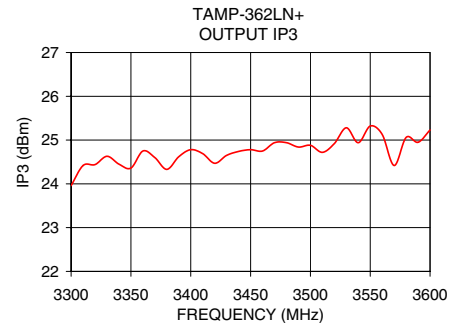
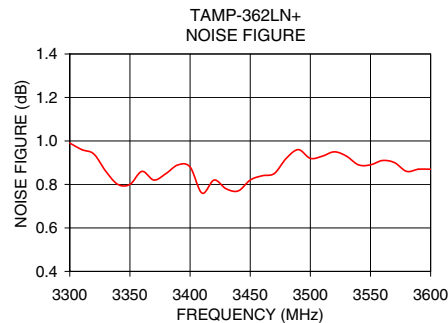
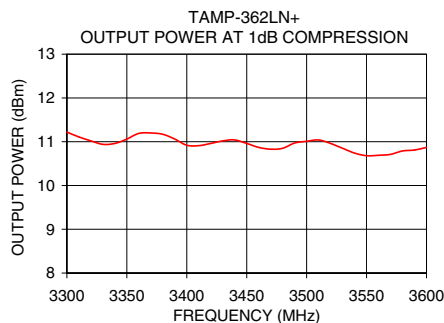
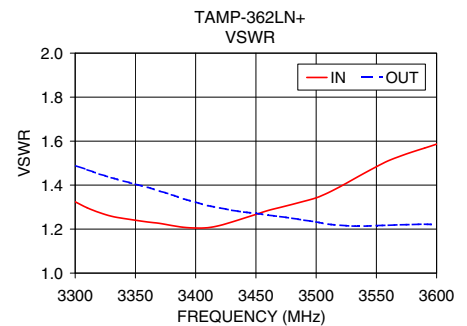
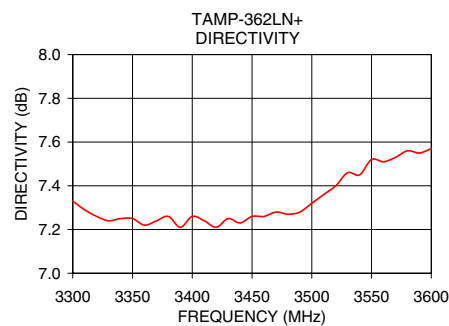
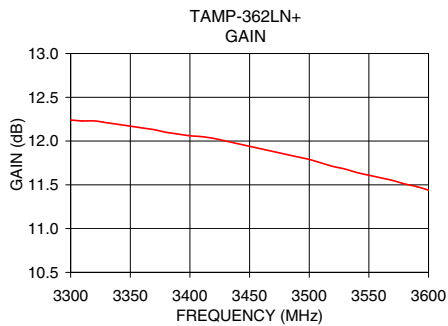
- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002; COPPER 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
 - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
-  DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR IN (:1)	VSWR OUT (:1)	NOISE FIGURE (dB)	P. OUT @ 1dB COMPR. (dBm)	OUTPUT IP3 (dBm)
3300.00	12.24	7.33	1.32	1.49	0.99	11.22	23.96
3320.00	12.23	7.26	1.28	1.45	0.94	11.02	24.44
3340.00	12.19	7.25	1.25	1.42	0.80	10.96	24.45
3360.00	12.15	7.22	1.23	1.39	0.86	11.19	24.75
3380.00	12.10	7.26	1.22	1.36	0.85	11.17	24.33
3400.00	12.06	7.26	1.21	1.32	0.88	10.92	24.78
3420.00	12.03	7.21	1.22	1.30	0.82	10.96	24.47
3440.00	11.97	7.23	1.25	1.28	0.77	11.04	24.74
3460.00	11.91	7.26	1.28	1.26	0.84	10.87	24.75
3480.00	11.85	7.27	1.31	1.25	0.92	10.85	24.94
3470.00	11.88	7.28	1.30	1.26	0.85	10.83	24.94
3480.00	11.85	7.27	1.31	1.25	0.92	10.85	24.94
3490.00	11.82	7.28	1.33	1.24	0.96	10.97	24.84
3500.00	11.79	7.32	1.34	1.23	0.92	11.01	24.88
3510.00	11.75	7.36	1.37	1.22	0.93	11.04	24.72
3520.00	11.71	7.40	1.39	1.22	0.95	10.96	24.92
3540.00	11.64	7.45	1.45	1.21	0.89	10.74	24.94
3560.00	11.58	7.51	1.51	1.22	0.91	10.69	25.13
3580.00	11.51	7.56	1.55	1.22	0.86	10.79	25.06
3600.00	11.44	7.57	1.59	1.22	0.87	10.87	25.23



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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: I = 101mA, Vd = 5V @Temperature = +25degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output	Noise* Figure
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)	(dB)
2600	8.60	26.91	2.75	4.70	1.75	0.54	20.32	9.33	2.46
2700	9.36	25.52	3.30	5.13	1.63	0.53	20.78	9.75	2.19
2800	10.06	24.25	4.06	5.73	1.55	0.52	21.03	10.38	1.75
2900	10.68	23.06	5.04	6.54	1.49	0.50	21.47	10.56	1.48
3000	11.19	22.01	6.37	7.63	1.45	0.49	21.90	11.06	1.37
3100	11.57	21.12	8.15	9.08	1.42	0.47	22.24	11.51	1.03
3200	11.81	20.38	10.55	10.97	1.39	0.46	22.78	11.67	0.87
3300	11.90	19.82	13.84	13.44	1.38	0.44	23.32	11.69	1.03
3350	11.89	19.60	15.80	14.95	1.38	0.44	23.43	11.45	0.89
3380	11.87	19.49	17.07	15.98	1.38	0.44	23.59	11.72	0.98
3400	11.86	19.42	17.96	16.72	1.38	0.43	23.62	11.53	1.00
3410	11.85	19.38	18.40	17.11	1.37	0.43	23.67	11.57	0.93
3420	11.84	19.35	18.82	17.52	1.37	0.43	23.59	11.61	0.88
3430	11.81	19.32	19.11	17.93	1.37	0.43	23.71	11.55	0.87
3440	11.80	19.30	19.48	18.37	1.38	0.43	23.75	11.48	0.82
3450	11.79	19.27	19.77	18.81	1.38	0.43	23.78	11.42	0.81
3460	11.77	19.24	20.01	19.27	1.37	0.43	23.72	11.49	0.89
3470	11.75	19.22	20.19	19.76	1.38	0.43	23.81	11.41	0.99
3480	11.73	19.19	20.29	20.23	1.37	0.43	23.86	11.34	0.86
3490	11.72	19.17	20.38	20.76	1.37	0.43	23.85	11.42	0.97
3500	11.69	19.14	20.31	21.31	1.38	0.43	23.91	11.55	0.88
3510	11.66	19.13	20.12	21.91	1.38	0.43	23.99	11.61	0.78
3520	11.64	19.11	20.04	22.49	1.38	0.43	24.03	11.56	0.83
3530	11.61	19.09	19.75	23.08	1.38	0.43	23.85	11.46	0.85
3540	11.59	19.07	19.52	23.74	1.38	0.42	23.92	11.33	0.87
3550	11.57	19.05	19.18	24.37	1.38	0.42	23.84	11.31	0.95
3560	11.54	19.03	18.88	25.03	1.38	0.42	24.00	11.23	0.97
3570	11.51	19.02	18.57	25.74	1.38	0.42	24.10	11.21	1.00
3580	11.48	19.00	18.24	26.45	1.38	0.42	23.89	11.26	0.90
3590	11.44	18.99	17.83	27.12	1.38	0.42	23.90	11.41	0.91
3600	11.41	18.98	17.53	27.81	1.38	0.42	23.80	11.47	0.92
3700	11.06	18.89	14.42	28.37	1.40	0.41	23.92	11.02	0.93
3800	10.67	18.88	12.24	23.52	1.41	0.40	23.91	10.66	1.00
3900	10.26	18.92	10.61	20.43	1.44	0.40	23.28	10.48	0.92
4000	9.84	18.99	9.45	18.61	1.46	0.39	22.94	10.19	0.96
4100	9.43	19.08	8.54	17.44	1.49	0.38	22.84	9.74	1.12
4200	9.01	19.16	7.83	16.80	1.53	0.37	22.66	9.45	1.12
4300	8.58	19.26	7.27	16.39	1.56	0.35	22.63	9.22	1.14
4400	8.16	19.33	6.83	16.24	1.60	0.34	22.71	9.07	1.43

*The Noise Figure measurement preformed in shielded box.

REV. X2
TAMP-362LN+
110313
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IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED RoHS compliant

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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: I = 102mA, Vd = 5V @Temperature = -40degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)
2600	9.11	26.90	2.14	4.41	1.49	0.60	21.90	9.77
2700	9.87	25.44	2.67	4.86	1.43	0.59	21.95	10.11
2800	10.57	24.10	3.45	5.54	1.40	0.56	22.18	10.59
2900	11.19	22.96	4.45	6.47	1.37	0.54	22.57	10.79
3000	11.72	21.94	5.79	7.56	1.35	0.52	23.15	11.29
3100	12.09	21.00	7.60	9.11	1.34	0.50	23.71	11.70
3200	12.30	20.29	9.99	11.08	1.33	0.49	24.46	11.84
3300	12.37	19.73	13.32	13.77	1.32	0.47	25.00	11.76
3350	12.35	19.54	15.21	15.17	1.32	0.47	25.09	11.61
3360	12.33	19.54	15.68	15.63	1.33	0.46	25.33	11.70
3370	12.34	19.49	16.19	16.10	1.33	0.46	25.16	11.82
3380	12.32	19.43	16.63	16.40	1.33	0.46	25.10	11.81
3400	12.30	19.37	17.62	17.36	1.33	0.46	25.22	11.59
3410	12.31	19.29	18.15	17.49	1.32	0.46	25.24	11.67
3420	12.23	19.37	18.24	18.27	1.34	0.45	25.19	11.73
3430	12.24	19.33	18.87	18.97	1.33	0.45	25.23	11.67
3440	12.26	19.24	19.51	19.12	1.32	0.46	25.41	11.64
3450	12.26	19.20	19.91	19.50	1.32	0.46	25.83	11.64
3460	12.27	19.10	20.43	19.39	1.31	0.46	25.58	11.68
3470	12.19	19.15	20.32	20.09	1.33	0.46	25.53	11.59
3480	12.15	19.19	20.18	20.99	1.33	0.45	25.74	11.56
3490	12.15	19.20	20.34	21.78	1.34	0.45	25.85	11.59
3500	12.14	19.12	20.51	22.09	1.33	0.45	25.91	11.64
3510	12.10	19.12	20.21	22.87	1.33	0.45	25.67	11.65
3520	12.11	19.09	20.26	23.34	1.33	0.45	25.95	11.58
3530	12.07	19.07	20.07	24.15	1.33	0.45	26.23	11.57
3540	12.06	19.06	19.85	24.73	1.33	0.45	25.95	11.50
3550	12.01	19.07	19.40	25.69	1.34	0.45	25.86	11.50
3560	12.03	19.02	19.07	25.60	1.33	0.45	25.84	11.44
3570	12.03	18.96	18.86	25.58	1.32	0.45	25.93	11.46
3580	11.97	18.86	18.91	25.85	1.32	0.46	25.56	11.46
3590	11.91	18.91	18.29	27.01	1.33	0.45	25.79	11.60
3600	11.88	18.97	17.72	28.24	1.33	0.45	25.67	11.59
3700	11.49	18.80	14.77	28.74	1.34	0.44	25.75	11.27
3800	11.28	18.93	11.89	22.21	1.35	0.43	25.18	11.07
3900	10.82	18.78	10.66	20.49	1.36	0.43	25.38	11.00
4000	10.36	18.51	9.74	20.19	1.36	0.42	24.60	10.77
4100	10.03	18.70	8.75	18.73	1.38	0.41	24.66	10.41
4200	9.65	18.61	7.91	18.21	1.37	0.40	23.75	9.93
4300	9.33	18.96	7.17	17.66	1.42	0.38	24.04	9.76
4400	8.89	18.85	6.89	17.65	1.44	0.37	24.49	9.56

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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: I = 99mA, Vd = 5V @Temperature = +85degC

FREQ	Gain	Isolation	Input Return Loss	Output Return Loss	Stability		IP3 Output	1dB Comp. Output
(MHz)	(dB)	(dB)	(dB)	(dB)	K	Delta	(dBm)	(dBm)
2600	8.75	26.44	1.98	5.08	1.46	0.57	19.91	9.40
2700	9.49	25.18	2.53	5.49	1.43	0.56	20.33	9.83
2800	10.16	23.86	3.31	6.09	1.41	0.54	20.47	10.33
2900	10.74	22.75	4.31	6.88	1.40	0.52	20.82	10.66
3000	11.21	21.69	5.73	7.93	1.38	0.51	21.17	11.14
3100	11.52	20.80	7.68	9.41	1.38	0.48	21.45	11.41
3200	11.70	20.20	10.17	11.17	1.38	0.46	21.99	11.73
3300	11.81	19.60	14.02	13.32	1.37	0.45	22.47	11.65
3350	11.79	19.44	16.44	14.49	1.37	0.44	22.57	11.39
3360	11.77	19.39	17.03	14.76	1.37	0.44	22.67	11.46
3370	11.75	19.36	17.57	15.06	1.37	0.44	22.59	11.60
3380	11.73	19.37	18.14	15.45	1.38	0.43	22.73	11.66
3400	11.72	19.29	19.70	16.15	1.38	0.43	22.82	11.42
3410	11.72	19.23	20.49	16.38	1.37	0.43	22.76	11.43
3420	11.71	19.19	21.27	16.68	1.37	0.43	22.75	11.52
3430	11.67	19.19	21.72	17.07	1.38	0.43	22.90	11.50
3440	11.68	19.14	22.70	17.43	1.37	0.43	22.85	11.47
3450	11.67	19.06	23.44	17.60	1.37	0.43	22.99	11.42
3460	11.62	19.07	23.65	17.87	1.37	0.43	22.90	11.47
3470	11.62	19.04	24.15	18.39	1.37	0.43	22.91	11.42
3480	11.59	18.96	24.40	18.52	1.37	0.43	23.04	11.34
3490	11.54	18.97	24.15	18.93	1.37	0.43	23.06	11.31
3500	11.49	18.99	23.76	19.48	1.38	0.42	23.03	11.38
3510	11.46	19.02	22.99	20.20	1.39	0.42	23.09	11.47
3520	11.44	19.05	22.37	20.75	1.39	0.42	23.18	11.47
3530	11.41	19.05	21.63	21.39	1.39	0.41	23.13	11.44
3540	11.39	19.02	21.02	21.81	1.39	0.41	22.99	11.36
3550	11.38	19.03	20.23	22.44	1.39	0.41	23.08	11.31
3560	11.38	18.95	19.85	22.56	1.38	0.42	23.15	11.24
3570	11.33	18.92	19.42	22.99	1.39	0.42	23.21	11.18
3580	11.31	18.91	18.91	23.51	1.39	0.42	22.88	11.16
3590	11.26	18.88	18.50	23.88	1.39	0.41	23.07	11.30
3600	11.19	18.90	17.89	24.75	1.39	0.41	23.11	11.29
3700	10.90	18.82	13.76	28.27	1.39	0.41	22.77	10.99
3800	10.45	18.72	11.46	26.78	1.41	0.40	22.81	10.64
3900	10.11	18.76	9.57	22.37	1.41	0.39	22.77	10.44
4000	9.70	18.98	8.31	19.86	1.44	0.38	22.49	10.17
4100	9.27	18.87	7.35	18.90	1.43	0.38	22.36	9.84
4200	8.83	19.03	6.65	17.98	1.46	0.37	22.24	9.34
4300	8.45	19.25	5.98	17.13	1.48	0.36	22.19	9.10
4400	8.05	19.12	5.59	16.77	1.48	0.35	22.20	8.90

REV. X2

TAMP-362LN+

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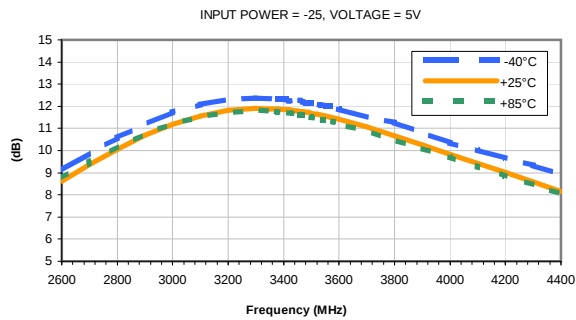


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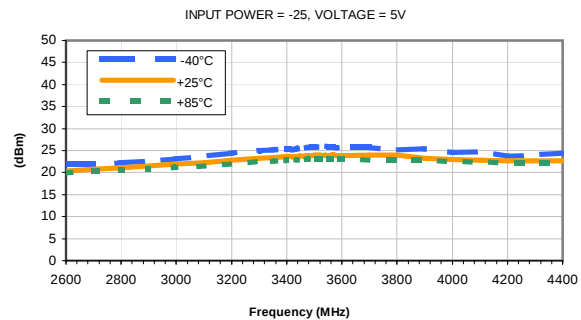


Typical Performance Curves

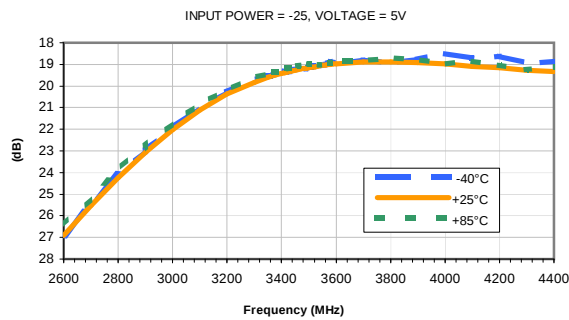
GAIN vs. FREQUENCY & TEMPERATURE



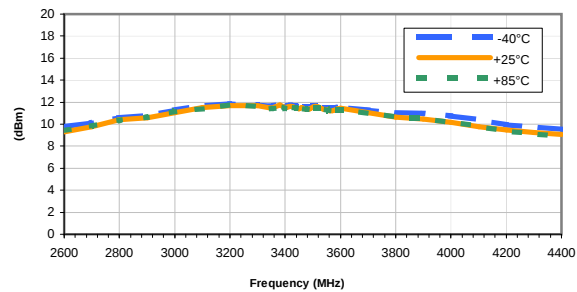
OUTPUT IP3 vs. FREQUENCY & TEMPERATURE



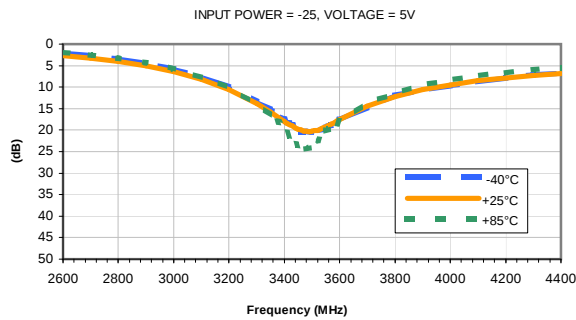
ISOLATION vs. FREQUENCY & TEMPERATURE



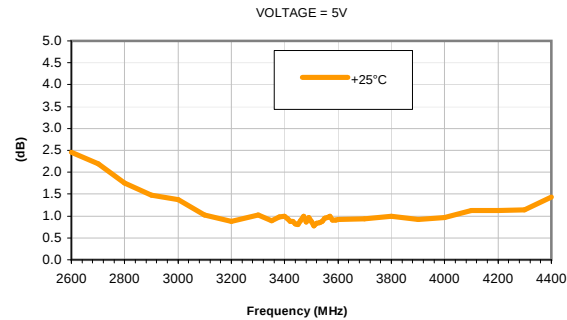
OUTPUT POWER at 1dB COMPRESSION vs. FREQUENCY & TEMPERATURE



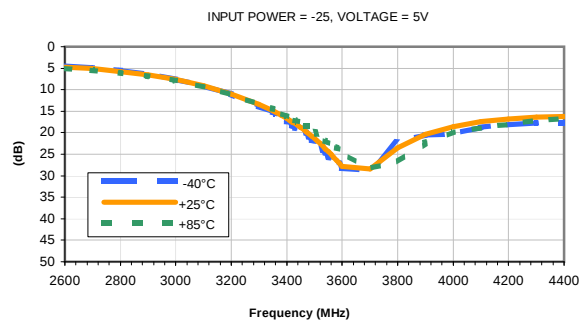
INPUT RETURN LOSS vs. FREQUENCY & TEMPERATURE



NOISE FIGURE vs. FREQUENCY



OUTPUT RETURN LOSS vs. FREQUENCY & TEMPERATURE



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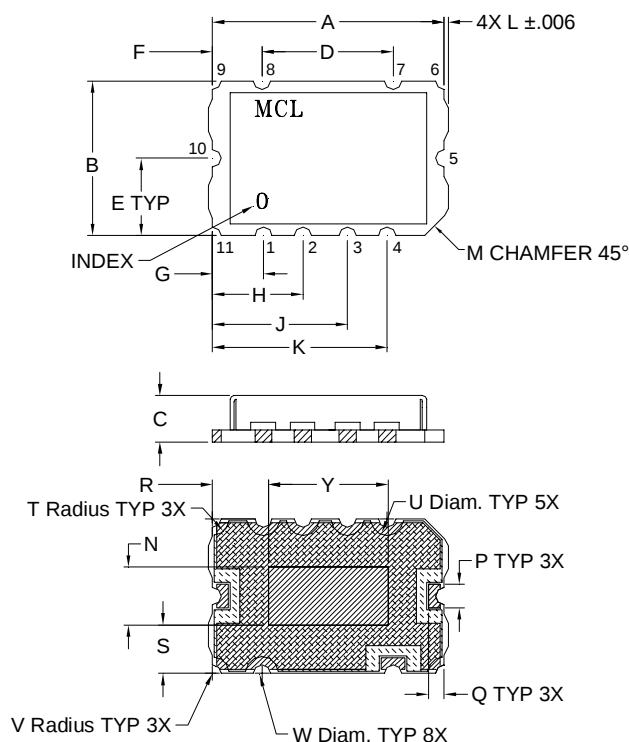


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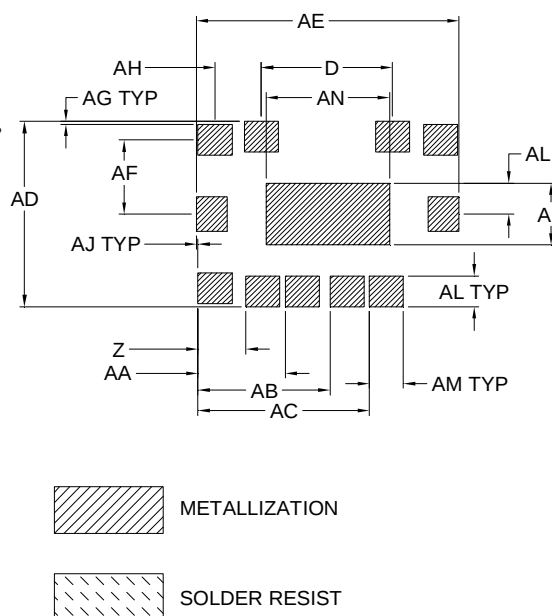
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Outline Dimensions



PCB Land Pattern

Suggested Layout



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N	P
JQ1382	.591 (15.0)	.394 (10.0)	.118 (3.0)	.335 (8.5)	.197 (5.0)	.126 (3.2)	.130 (3.3)	.230 (5.85)	.344 (8.75)	.445 (11.3)	.011 (.28)	.050 (1.27)	.148 (3.75)	.060 (1.52)

CASE#	Q	R	S	T	U	V	W	Y	Z	AA	AB	AC	AD	AE
JQ1382	.040 (1.02)	.143 (3.63)	.123 (3.13)	.042 (1.07)	.084 (2.13)	.022 (.56)	.044 (1.12)	.305 (7.75)	.122 (3.1)	.222 (5.65)	.337 (8.55)	.437 (11.1)	.472 (12.0)	.669 (17.0)

CASE#	AF	AG	AH	AJ	AK	AL	AM	AN	WT. GRAMS
JQ1382	.189 (4.8)	.008 (.20)	.118 (3.0)	.004 (.10)	.158 (4.0)	.079 (2.0)	.087 (2.2)	.315 (8.0)	.8

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .03$; 3 Pl. $\pm .015$

Notes:

1. Case material: Nickel-Silver alloy.
2. Base: Printed wiring laminate.
3. Termination finish:

For RoHS Case Styles: 3-5 μ inch (.08-.13 microns) Gold over 120-240 μ inch (3.05-6.10 microns) Nickel plate

For RoHS-5 Case Styles: Tin-Lead plate.



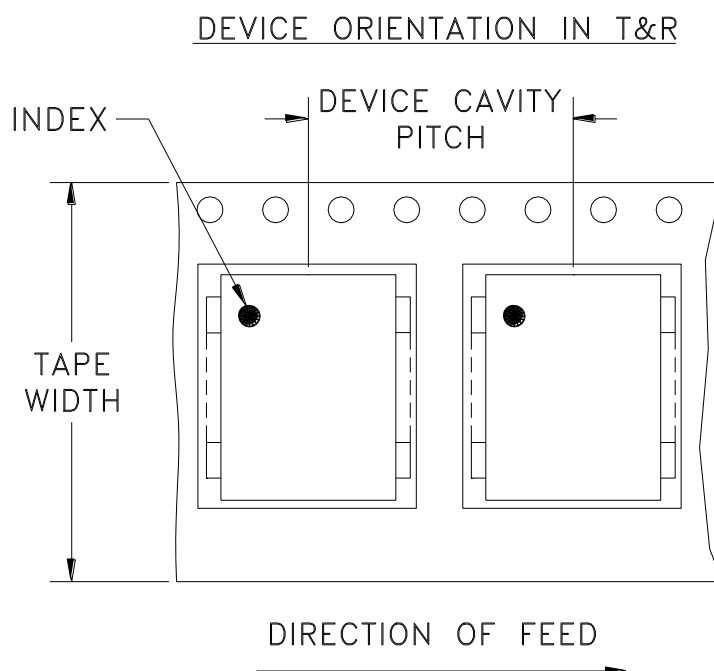
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Tape & Reel Packaging TR-F10



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel
24	16	7	10,20,50,100,200
		13	500

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

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

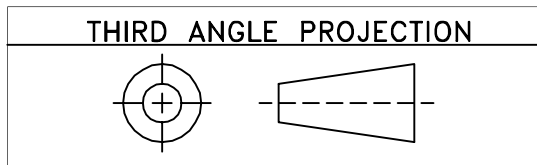


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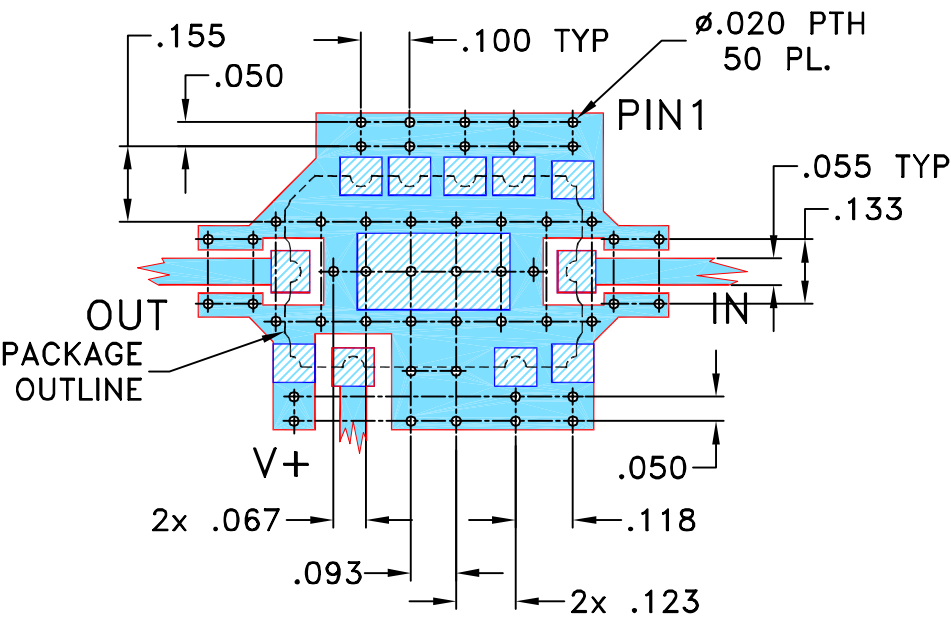
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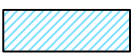
REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M119697	NEW RELEASE	10/08	HB	HH
A	M120556	UPDATE GROUND PLANE DIM.	12/08	HB	HH
A	R75063	UPDATE GROUND PLANE DIM.	12/08	HB	HH

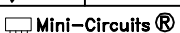
SUGGESTED MOUNTING CONFIGURATION FOR
JQ1382 CASE STYLE, "11AM01" PIN CODE



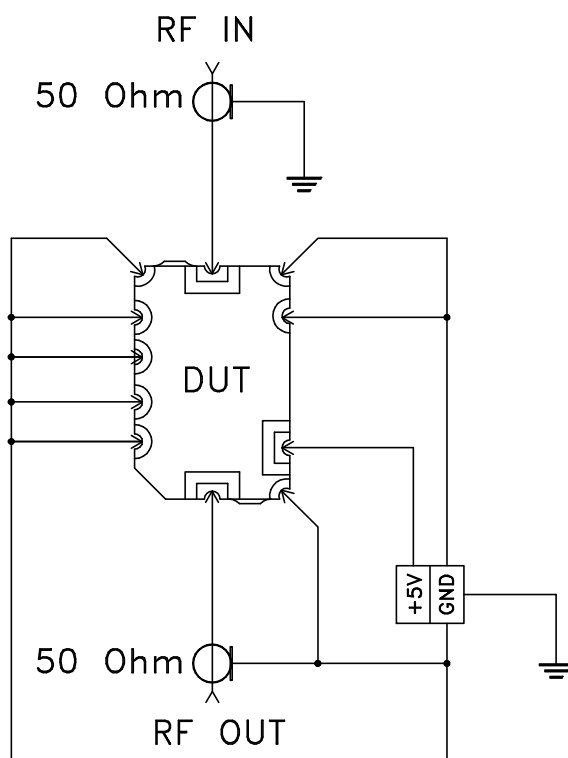
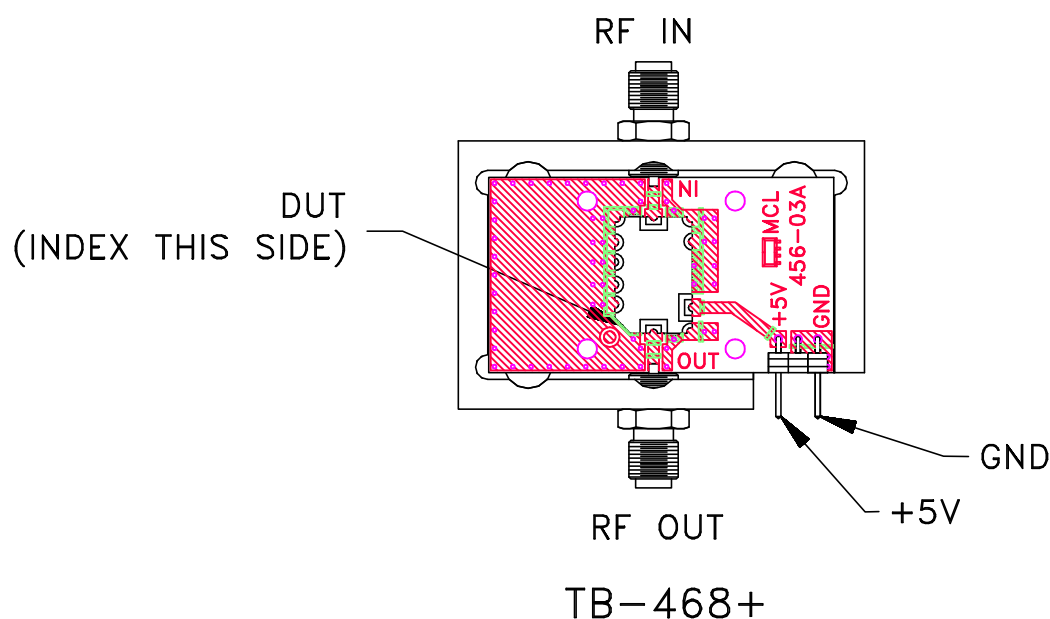
NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B 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	 Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235	
DIMENSIONS ARE IN INCHES		DRAWN	HB		
TOLERANCES ON:		CHECKED	DH		
2 PL DECIMALS ±		APPROVED	HH		
3 PL DECIMALS ± .005				PL, 11AM01, JQ1382, TAMP, TB-468	
ANGLES ±					
FRACTIONS ±					
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				DRAWING NO: 98-PL-293	REV: A
				FILE: 98PL293	SCALE: 2.5:1
				SHEET: 1 OF 1	

Evaluation Board and Circuit



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

 **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	-40° to 85° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
HAST	130°C, 85% RH, 96 hours	JESD22-A110
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process, 245°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (High Frequency)	20g peak, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215