Drop-In

Medium Power Amplifier

TAMP-112-2W+

50Ω 650 to 1200 MHz

CASE STYLE: NP1933

The Big Deal

- Miniature Shielded Rugged Case
- Wide frequency range
- Excellent Gain Flatness
- Power ON/OFF feature

Product Overview

Mini-Circuits' TAMP-112-2W+ can be used as a driver amplifier with P1dB of 1W (typ.) and P3dB of up to 2W (typ.). The gain of this amplifier has an excellent flatness over a wide frequency range. This amplifier has a dynamic range and therefore can be used as RF front end or a driver amplifier.

Key Features

Feature	Advantages
Frequency Range: 650 to 1200 MHz	Covers fixed, mobile, land mobile, aeronautical radio navigation frequency bands.
Excellent Gain flatness: ±1.0 dB typ.	Excellent gain flatness minimizes distortion of amplified signals, including multi-tone, complex modulation, wide frequency range and noise-like signals.
Output Power 1W (+30dBm, typ)	High output power in a small package
Noise Figure	Low noise figure, 2.8 dB typ. and high OIP3, +41dBm typ. defines the high dynamic range of the amplifier.

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Features

- Power ON/OFF
- Single +5V operation
- Wide bandwidth, 650 to 1200 MHz
- Excellent gain flatness: ±1.0 dB, typ.
- Low noise figure, 2.8 dB typ.
- Output power, up to +30 dBm typ.
- Unconditionally stable
- Small size

CASE STYLE: NP1933

+RoHS Compliant

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

Applications

- Buffer amplifier
- Driver amplifier
- UHF communication
- Instrumentation
- Test equipment

Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		650	—	1200	MHz
Gain	650 - 1200	28	31	—	dB
Gain Flatness	650 - 1200	—	±1.0	—	dB
Output Power at 1dB compression	650 - 1200	—	+30	—	dBm
Output third order intercept point	650 - 1200	—	+41	—	dBm
Noise Figure	650 - 1200	—	2.8	—	dB
Input VSWR	650 - 1200	—	1.9	—	:1
Output VSWR	650 - 1200	—	2.1	—	:1
Active Directivity *(Isolation-Gain)*	650 - 1200	—	20	—	dB
DC Supply Voltage		—	+5.0	—	V
Supply Current[1]		—	750	850	mA

Note 1. Supply current is 170 mA typ., in power OFF mode, when Vcntl=0V, or Vcntl port is open.

Maximum Ratings

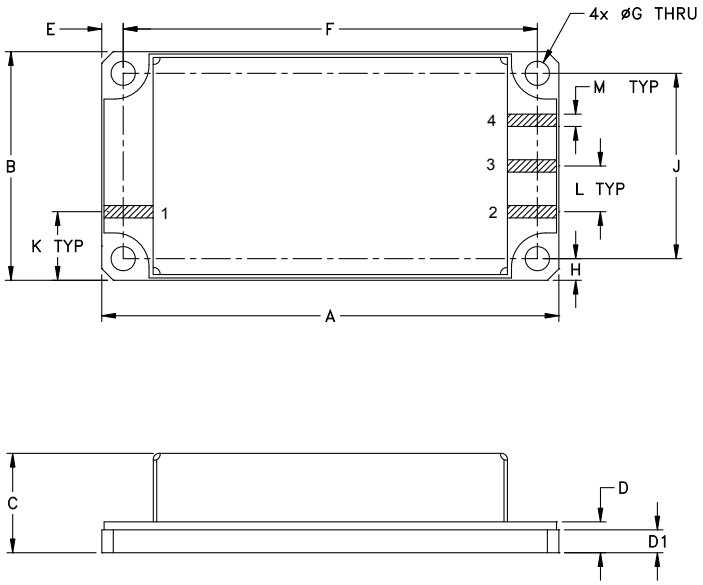
Parameter	Ratings
Operating Temperature (base plate)	-40°C to 85°C
Storage Temperature	-55°C to 100°C
DC Voltage	+5.5 V
Input RF Power (no damage)	+15 dBm
Power Dissipation	4.4W

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

Pad Connections

RF Input	1
RF Output	2
+Vcc	3
Vcntl	4

Outline Drawing

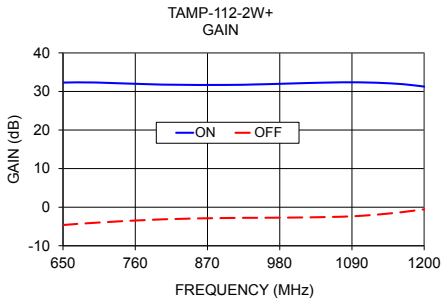


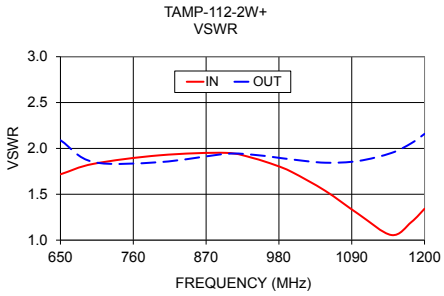
Outline Dimensions (inch / mm)

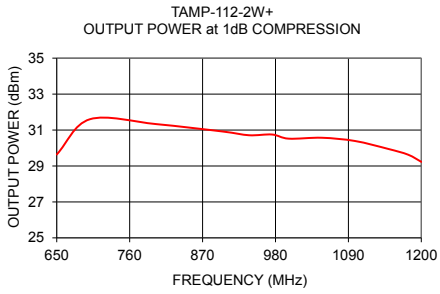
A	B	C	D	D1	E	F	G
2.00	1.00	0.44	0.14	.110	.094	1.812	.106
50.80	25.40	11.18	3.56	2.79	2.39	46.02	2.69

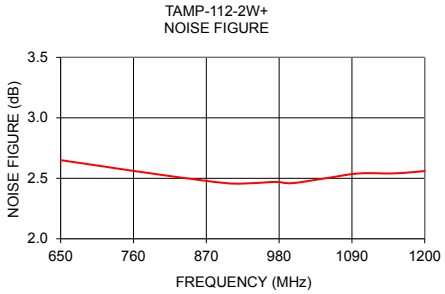
H	J	K	L	M			wt
.095	.810	.30	.20	.050			grams
2.41	20.57	7.62	5.08	1.27			35

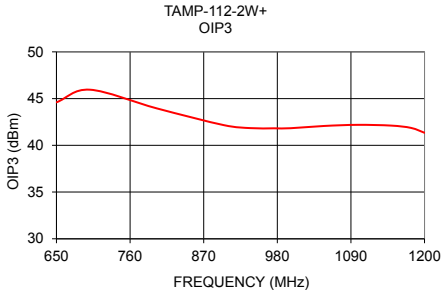
FREQUENCY (MHz)	GAIN (dB)		VSWR (:1)		NOISE FIGURE (dB)	POUT at 1 dB COMPR. (dBm)	OIP3 (dBm)
	Vcntl=+5V ON	Vcntl=0V or open OFF	IN	OUT			
650	32.30	-4.63	1.7	2.1	2.65	29.64	44.60
700	32.32	-4.03	1.8	1.9	2.61	31.60	45.95
800	31.78	-3.16	1.9	1.9	2.53	31.33	43.95
900	31.69	-2.81	2.0	1.9	2.46	30.92	42.16
940	31.81	-2.76	1.9	1.9	2.46	30.71	41.84
975	31.95	-2.72	1.8	1.9	2.47	30.75	41.82
1000	32.08	-2.69	1.7	1.9	2.46	30.52	41.83
1050	32.29	-2.57	1.5	1.8	2.50	30.57	42.07
1100	32.37	-2.29	1.3	1.9	2.54	30.39	42.19
1150	32.09	-1.59	1.1	2.0	2.54	29.95	42.11
1180	31.67	-1.00	1.2	2.1	2.55	29.63	41.86
1200	31.25	-0.56	1.3	2.2	2.56	29.23	41.34











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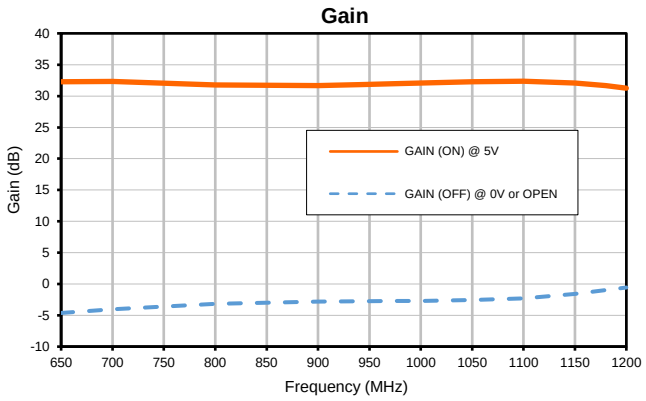
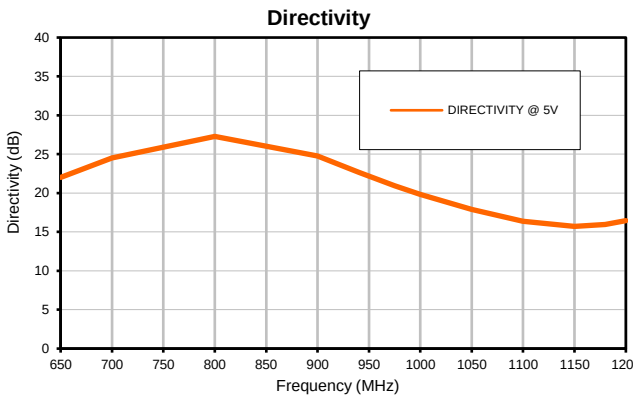
Medium Power Amplifier TAMP-112-2W+

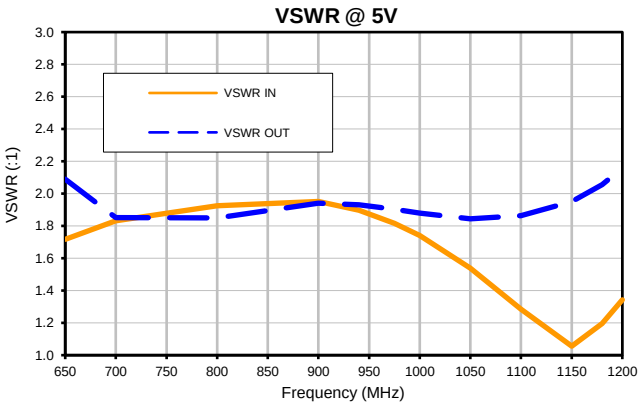
Typical Performance Data

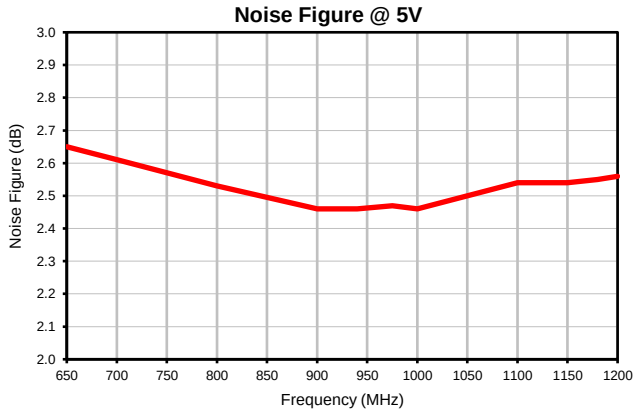
FREQUENCY (MHz)	GAIN (dB)		DIRECTIVITY	VSWR (:1)		NOISE FIGURE	POUT @ 1 dB COMPRESSION	OUTPUT IP3
	Vctrl=5V ON	Vctrl=0V or OPEN OFF	(dB) 5V	IN 5V	OUT 5V	(dB) 5V	(dBm) 5V	(dBm) 5V
650	32.30	-4.63	22.01	1.72	2.09	2.65	29.64	44.60
700	32.32	-4.03	24.53	1.83	1.85	2.61	31.60	45.95
800	31.78	-3.16	27.29	1.93	1.85	2.53	31.33	43.95
900	31.69	-2.81	24.75	1.95	1.94	2.46	30.92	42.16
940	31.81	-2.76	22.68	1.90	1.93	2.46	30.71	41.84
975	31.95	-2.72	20.94	1.82	1.90	2.47	30.75	41.82
1000	32.08	-2.69	19.84	1.74	1.88	2.46	30.52	41.83
1050	32.29	-2.57	17.89	1.54	1.84	2.50	30.57	42.07
1100	32.37	-2.29	16.35	1.29	1.86	2.54	30.39	42.19
1150	32.09	-1.59	15.72	1.06	1.95	2.54	29.95	42.11
1180	31.67	-1.00	15.98	1.20	2.06	2.55	29.63	41.86
1200	31.25	-0.56	16.47	1.34	2.16	2.56	29.23	41.34

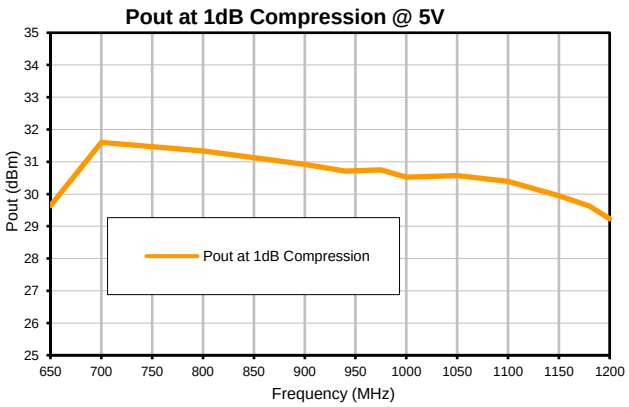
Typical Performance Curves

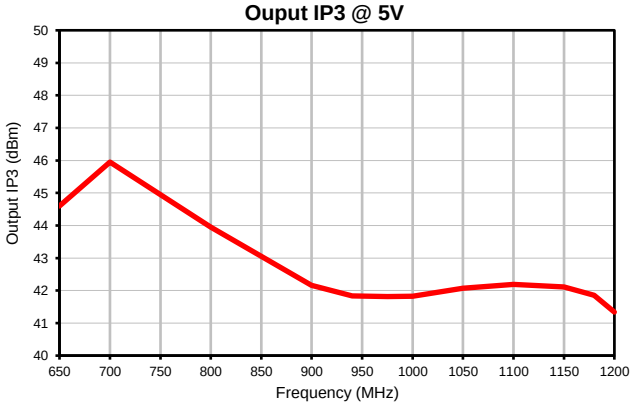








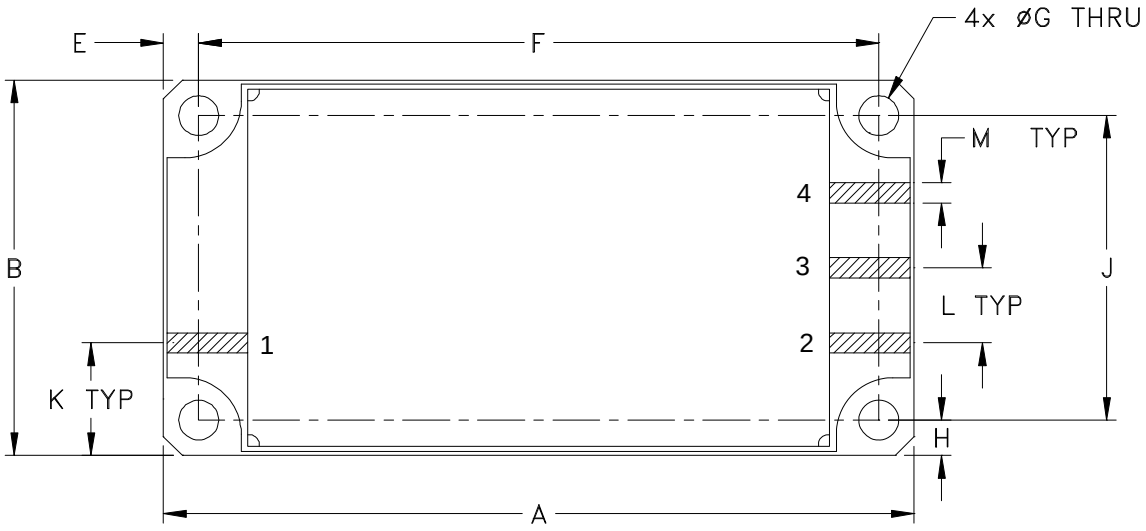


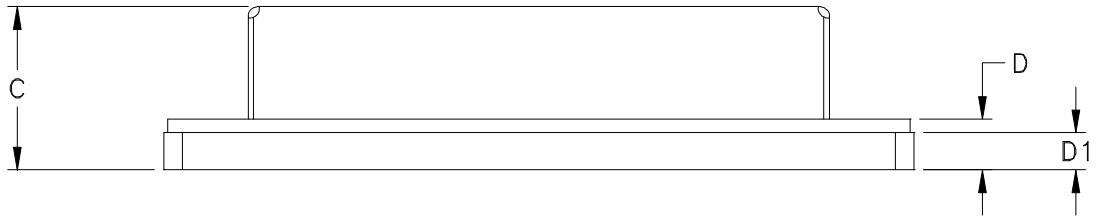


Case Style NP

NP1933

Outline Dimensions





CASE#	A	B	C	D	D1	E	F	G	H	J	K	L	M	WT GRAMS
NP1933	2.00 (50.80)	1.00 (25.4)	.44 (11.18)	.14 (3.56)	.110 (2.79)	.094 (2.39)	1.812 (46.02)	.106 (2.69)	.095 (2.41)	.810 (20.57)	.30 (7.62)	.20 (5.08)	.050 (1.27)	35

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

Notes:

1. Can material: Nickel Silver
2. Base plate material: brass Alloy
3. Base plate Finish:
   For RoHS Case Styles: Tri-Metal Plating

Mini-Circuits®
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Mini-Circuits

Environmental Specifications ENV44

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