COAXIAL

Power Amplifier

ZHL-0G82G0010+
ZHL-0G82G0010X+

50Ω 800 to 2000 MHz 10 W SMA Female

THE BIG DEAL

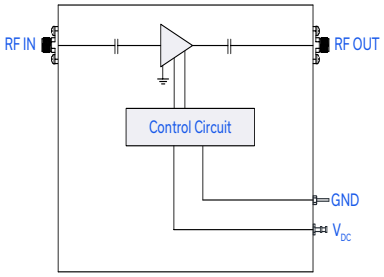
- Broadband Operation, 800 to 2000 MHz
- High Gain, 46 dB Typ.
- High P1dB, +40 dBm Typ.
- High OIP3, +49 dBm Typ.
- Thermally Self-Protected

Generic photo used for illustration purposes only

APPLICATIONS

- Communication Systems
- R&D, Production, and OTA Test Systems
- Test & Measurement Equipment
- General Laboratory Applications

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

The ZHL-0G82G0010(X)+ is a high-power broadband amplifier operating over the 800 to 2000 MHz frequency band providing more than 10 W of output power with a typical small signal gain of 46 dB.

The amplifier uses state-of-the-art semiconductor technology and can be used in a wide range of applications. A single supply voltage ensures ease of operation. The amplifier is made with a rugged aluminum housing, has a compact size (151.13 × 90.93 × 29.85 mm), and can be supplied with or without a heatsink.

KEY FEATURES

Features	Advantages
Broadband, Useable from 800 to 2000 MHz	Suitable for a broad range of high-power broadband applications, including test setups, communications and production applications.
High Gain, 46 dB Typ.	Enables signal amplification to 10 W (Typ) output without the need for multiple gain stages.
Thermally Self-Protected	A built-in sensing feature signals the unit to power off when the amplifier reaches its maximum rated operating temperature, preventing damage to the equipment and providing added reliability.
Small and Lightweight	With a small footprint (151.13 mm × 90.93 mm × 29.85 mm) and lightweight (580 grams) modular design.
Low Voltage	Powered by a low voltage of +24 V supply.

ELECTRICAL SPECIFICATIONS, +25°C, V_{DC}= +24 V

Parameter	Symbol	Condition (MHz)		Min.	Typ.	Max.	Units
Frequency Range	f	–		800	–	2000	MHz
Gain	G_{SS}	P_{IN}= -26 dBm	800 - 2000	40	46	49	dB
Gain Flatness	$G_{SS-FLAT}$	P_{IN}= -26 dBm	800 - 2000	–	±1.3	±2.0	dB
Output Power at 1 dB Compression	P_{1dB}	800 - 2000		+39	+40	–	dBm
Output Power at 3 dB Compression	P_{3dB}	800 - 2000		+40	+41	–	dBm
Output Power at Saturation	P_{SAT}	800 - 2000		+40	+41	–	dBm
Noise Figure	NF	P_{IN}= -26 dBm	800 - 2000	–	4	–	dB
Output 3rd Order Intercept Point	OIP3	P_{OUT}=+30 dBm/tone	800 - 2000	–	+49	–	dBm
Input Return Loss	I-RL	P_{IN}= -26 dBm	800 - 2000	9.5	17.5	–	dB
Output Return Loss	O-RL	P_{IN}= -26 dBm	800 - 2000	6	17.5	–	dB
DC Supply Voltage	V_{SUPPLY}	800 - 2000		+20	+24	+28	V
DC Supply Current	I_{SUPPLY}	P_{IN}= -26 dBm	Without Fan	–	3.9	5.0	A
			With Fan	–	4.3	5.4	

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings	
Operating Temperature	ZHL-0G82G0010+	$T_{AMBIENT}$: -20°C to +60°C
	ZHL-0G82G0010X+	$T_{MOUNTINGBASE}$: Max +80°C
Storage Temperature	-55°C to +100°C	
Max Power Dissipation	130 W (without fan)	140 W (with fan)
No damage with an open or short at P_{OUT} = +40 dBm CW for 2 minutes max		
RF Input Power (no damage)	+5 dBm	
DC Operating Voltage	±29 V	

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

PROTECTIONS

Parameter	Rating
Shut Down Temperature	90±5°C
Over Voltage (Shut Down)	29±1 V
Output Load Mismatch	No damage with an open or short at P_{OUT}=+40 dBm (10 W) for 2 minutes max

DETERMINING MAXIMUM THERMAL RESISTANCE OF USERS' EXTERNAL HEAT SINK

$$\textit{MAXIMUM THERMAL RESISTANCE} = \frac{\textit{MAXIMUM OPERATING CASE TEMP} - \textit{MAXIMUM USER AMBIENT TEMP}}{\textit{POWER DISSIPATION}}$$

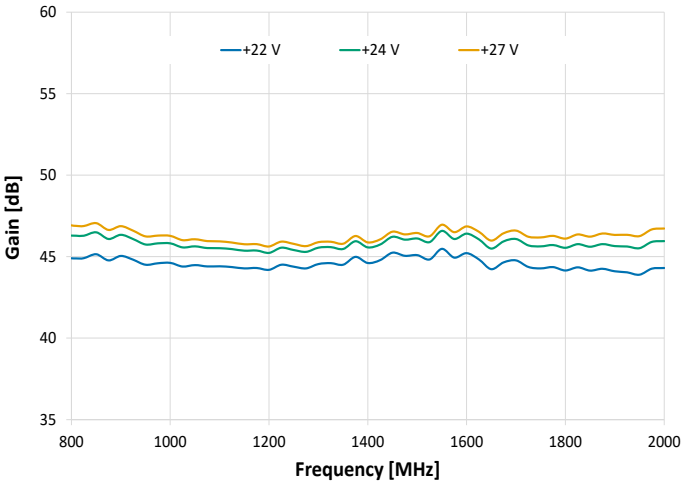
Example:	MAXIMUM MOUNTING BASE TEMP = +80 °C (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) MAXIMUM USER AMBIENT TEMP = +60 °C (USER DEFINED) POWER DISSIPATION = 140 WATTS (EXAMPLE) THEN MAXIMUM ALLOWABLE THERMAL RESISTANCE = 0.14 °C/W

COAXIAL CONNECTIONS

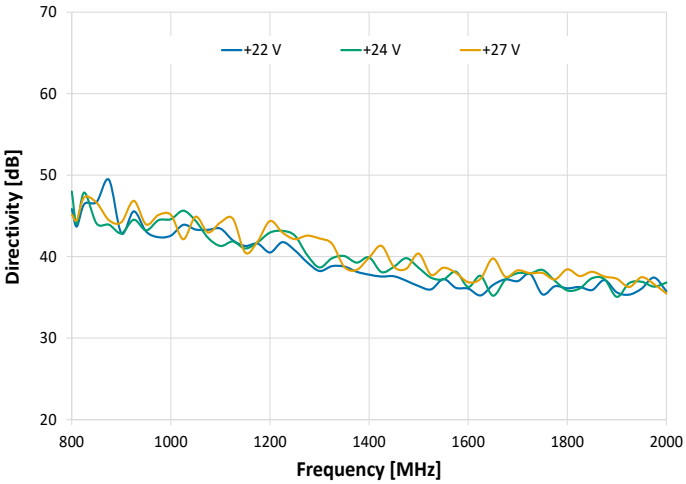
IN (RF IN)	SMA Female
OUT (RF OUT)	SMA Female

TYPICAL PERFORMANCE GRAPHS

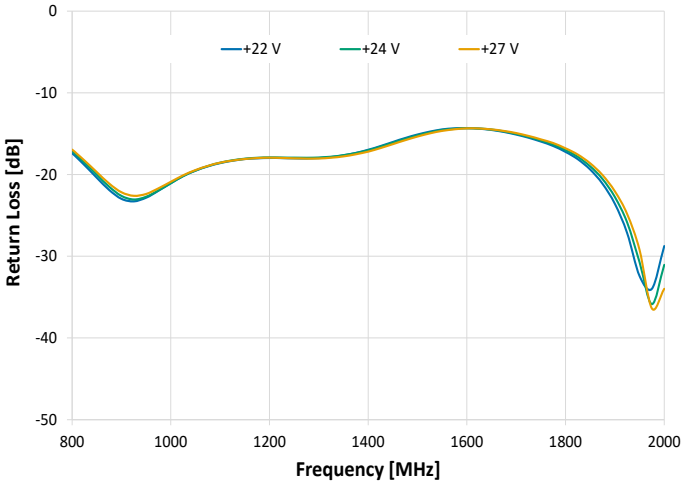
Small Signal Gain vs. Output Frequency



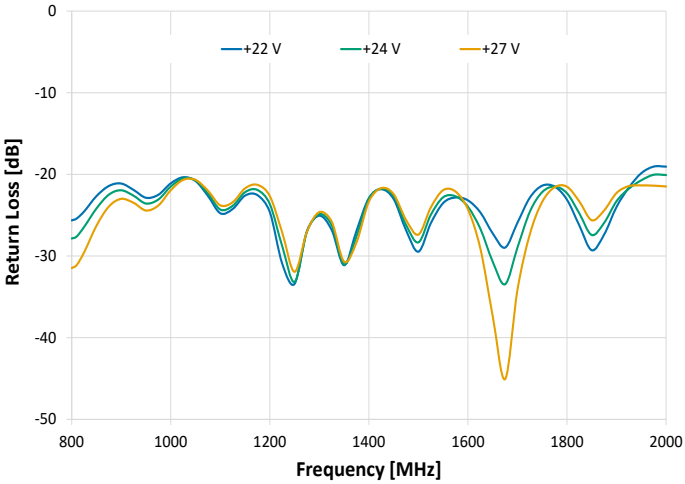
Directivity vs. Output Frequency



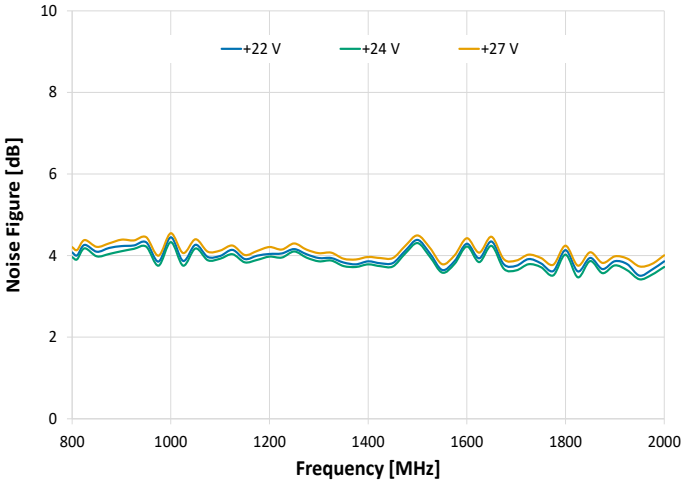
Return Loss In vs. Output Frequency



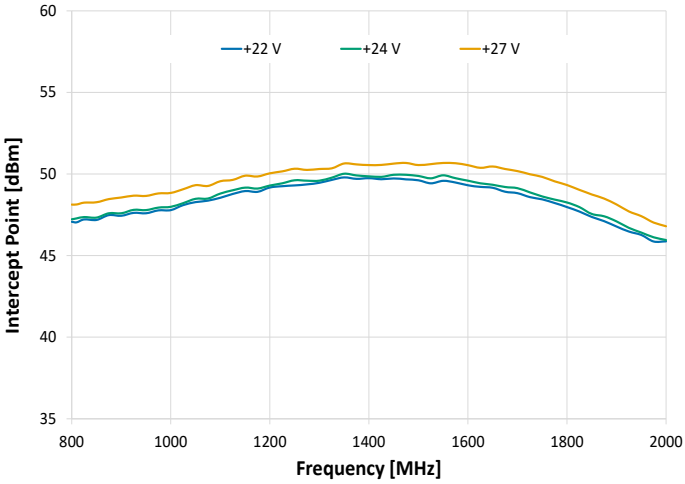
Return Loss Out vs. Output Frequency



Noise Figure vs. Output Frequency

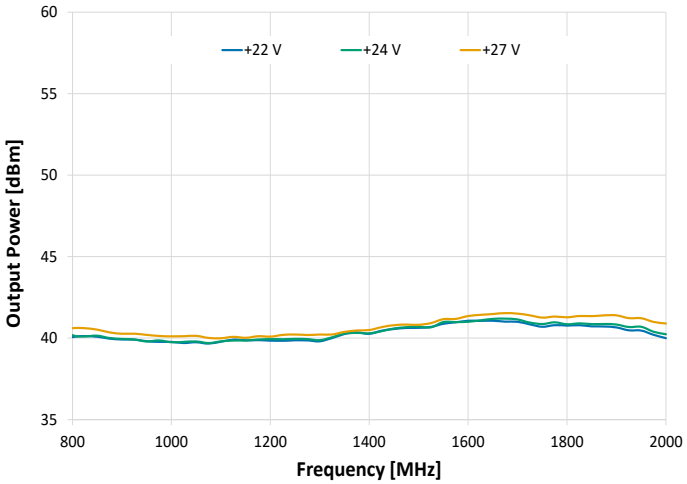


3rd Order Intercept Point vs. Output Frequency

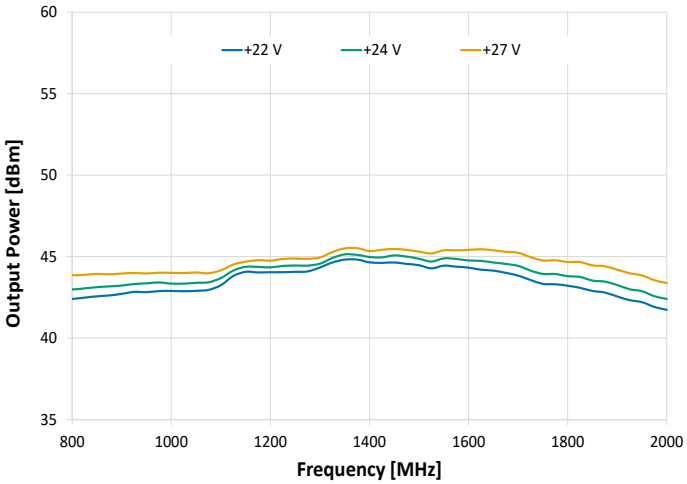


TYPICAL PERFORMANCE GRAPHS (CONTINUED)

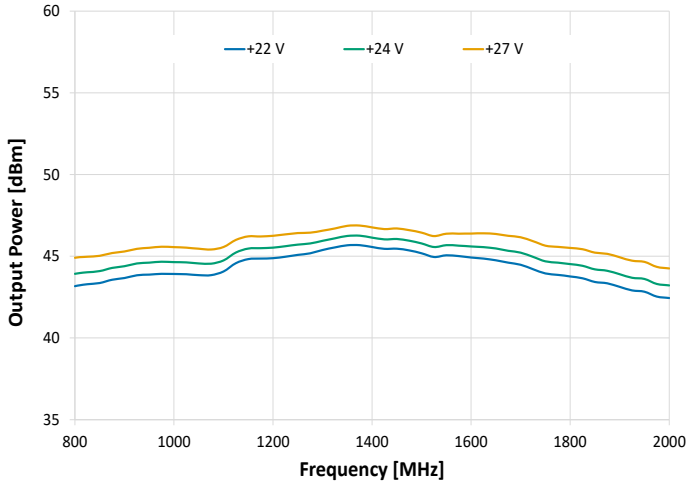
Output Power at 1dB Compression vs. Output Frequency



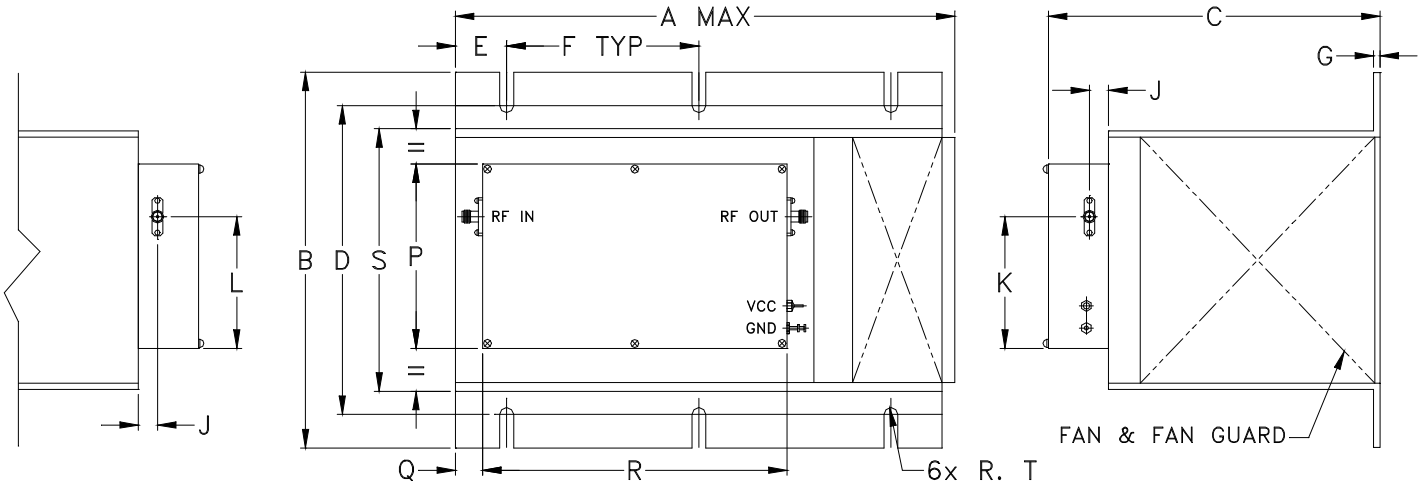
Output Power at 3dB Compression vs. Output Frequency



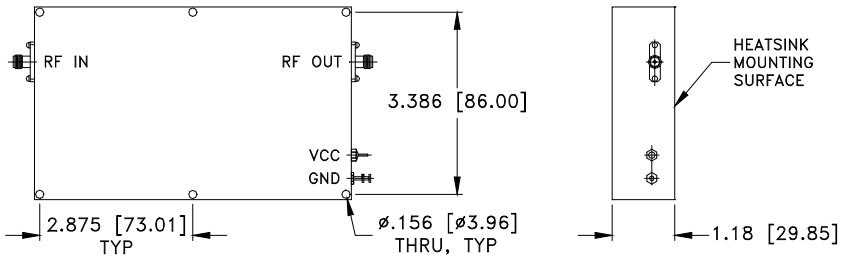
Output Power Saturation vs. Output Frequency



CASE STYLE DRAWING (WITH HEATSINK / WITHOUT HEATSINK)



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK.



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
Inch	9.85	7.3	6.5	6.00	1.00	3.75	.13	-	.37	2.56	2.56	-	-	3.58	.5	5.95	5.1	.135
mm	250.19	185.42	165.10	152.40	25.40	95.25	3.30	-	9.40	65.02	65.02	-	-	90.93	12.70	151.13	129.54	3.43

Notes:

1. Case material: Aluminum alloy.
2. Case finish: Clear chemical conversion coating, non-chrome or trivalent chrome based.
   Heatsink finish: Black anodize.
3. Weight: 580 grams / 4265 grams with heatsink.
4. Dimensions: Inches [mm].
   Tolerances: 1 PI. ±.1 inch; 2 PI. ±.03 inch; 3 PI. ±.015 inch.
5. Recommended screw for mounting model without heatsink on 3/32" thick sheet: #6-32, 1.50" Length.

DETAILED MODEL INFORMATION IS AVAILABLE ON OUR WEBSITE CLICK HERE

Performance Data	Table Graphs S-Parameter (S2P Files) Data Set (.zip file)
RoHS Status	Compliant
Environmental Ratings	ENV23T19

ORDERING INFORMATION

Model No. Links	ZHL-0G82G0010+	ZHL-0G82G0010X+
Option	With heatsink	Without heatsink
Case Style	BT1204	
Connector	IN (SMA Female) / OUT (SMA Female)	

Coaxial

Amplifier

ZHL-0G82G0010(X)+

Typical Performance Data

Test Conditions: Temperature = +25°C.

Freq. (MHz)	Small Signal Gain (dB)			Return Loss In (dB)			Return Loss Out (dB)		
	+22 V	+24 V	+27 V	+22 V	+24 V	+27 V	+22 V	+24 V	+27 V
800	44.90	46.30	46.92	-17.39	-17.13	-16.94	-25.62	-27.85	-31.47
810	44.89	46.29	46.89	-17.95	-17.67	-17.46	-25.40	-27.60	-31.10
825	44.91	46.29	46.88	-18.85	-18.54	-18.29	-24.53	-26.42	-29.51
850	45.15	46.50	47.06	-20.39	-20.02	-19.70	-22.65	-24.16	-26.27
875	44.77	46.09	46.64	-21.88	-21.50	-21.11	-21.40	-22.46	-23.92
900	45.05	46.34	46.87	-22.97	-22.62	-22.17	-21.11	-21.94	-22.99
925	44.81	46.08	46.59	-23.27	-23.05	-22.60	-21.90	-22.61	-23.48
950	44.50	45.75	46.24	-22.82	-22.72	-22.37	-22.85	-23.56	-24.41
975	44.60	45.82	46.30	-21.98	-21.94	-21.68	-22.48	-23.06	-23.80
1000	44.62	45.82	46.28	-21.05	-21.05	-20.88	-21.09	-21.48	-21.92
1025	44.40	45.57	46.02	-20.18	-20.18	-20.09	-20.35	-20.51	-20.66
1050	44.49	45.64	46.07	-19.51	-19.50	-19.44	-20.81	-20.73	-20.67
1075	44.40	45.53	45.96	-18.98	-18.96	-18.94	-22.64	-22.32	-21.99
1100	44.41	45.52	45.94	-18.58	-18.54	-18.53	-24.76	-24.30	-23.79
1125	44.36	45.46	45.87	-18.30	-18.26	-18.28	-24.23	-23.84	-23.40
1150	44.28	45.37	45.76	-18.10	-18.06	-18.09	-22.59	-22.16	-21.69
1175	44.31	45.38	45.77	-18.01	-17.94	-17.98	-22.54	-21.90	-21.28
1200	44.19	45.24	45.63	-17.96	-17.90	-17.93	-24.61	-23.63	-22.65
1225	44.50	45.55	45.92	-17.98	-17.92	-17.97	-30.93	-28.79	-27.13
1250	44.38	45.41	45.78	-18.02	-17.93	-18.00	-33.40	-33.15	-31.92
1275	44.28	45.30	45.65	-18.02	-17.95	-18.03	-26.91	-27.00	-27.00
1300	44.55	45.55	45.89	-17.97	-17.91	-18.02	-25.05	-24.85	-24.60
1325	44.60	45.59	45.92	-17.85	-17.81	-17.94	-26.83	-26.26	-25.79
1350	44.51	45.47	45.80	-17.65	-17.63	-17.77	-31.11	-31.01	-30.69
1375	44.99	45.95	46.27	-17.34	-17.36	-17.51	-26.87	-27.56	-28.32
1400	44.61	45.57	45.88	-16.97	-17.02	-17.18	-22.89	-23.02	-23.33
1425	44.79	45.75	46.06	-16.51	-16.58	-16.75	-21.80	-21.75	-21.68
1450	45.25	46.22	46.54	-16.01	-16.10	-16.26	-23.01	-22.68	-22.42
1475	45.05	46.05	46.37	-15.52	-15.63	-15.78	-26.81	-26.17	-25.55
1500	45.10	46.12	46.45	-15.09	-15.19	-15.34	-29.46	-28.32	-27.36
1525	44.83	45.89	46.25	-14.74	-14.83	-14.96	-25.98	-24.95	-24.04
1550	45.48	46.59	46.96	-14.48	-14.55	-14.65	-23.50	-22.80	-21.93
1575	44.94	46.09	46.50	-14.35	-14.40	-14.46	-22.82	-22.68	-22.10
1600	45.22	46.41	46.85	-14.30	-14.33	-14.35	-23.17	-23.96	-24.29
1625	44.83	46.06	46.53	-14.37	-14.37	-14.36	-24.64	-26.65	-29.05
1650	44.23	45.50	45.99	-14.53	-14.49	-14.46	-27.20	-30.66	-37.31
1675	44.65	45.94	46.44	-14.78	-14.72	-14.66	-28.95	-33.45	-45.07
1700	44.77	46.09	46.60	-15.10	-15.01	-14.93	-25.92	-28.96	-34.14
1725	44.37	45.69	46.23	-15.49	-15.39	-15.27	-22.84	-24.57	-27.31
1750	44.28	45.63	46.18	-15.95	-15.83	-15.68	-21.37	-22.16	-23.35
1775	44.36	45.72	46.27	-16.50	-16.34	-16.15	-21.50	-21.49	-21.57
1800	44.15	45.54	46.11	-17.21	-17.00	-16.78	-23.10	-22.31	-21.50
1825	44.35	45.77	46.36	-18.13	-17.84	-17.56	-26.28	-24.78	-23.32
1850	44.15	45.61	46.23	-19.38	-18.99	-18.62	-29.29	-27.41	-25.60
1875	44.26	45.77	46.42	-21.12	-20.54	-20.06	-27.37	-25.93	-24.41
1900	44.10	45.65	46.34	-23.58	-22.75	-22.04	-23.98	-23.28	-22.28
1925	44.04	45.62	46.35	-27.16	-25.87	-24.84	-21.60	-21.74	-21.43
1950	43.89	45.52	46.26	-32.42	-30.73	-29.22	-19.85	-20.71	-21.34
1975	44.26	45.91	46.67	-33.97	-35.85	-36.38	-19.03	-20.04	-21.38
2000	44.30	45.95	46.73	-28.75	-31.04	-33.98	-19.04	-20.07	-21.46

Typical Performance Data

Test Conditions: Temperature = +25°C.

Freq. (MHz)	Directivity (dB)			Noise Figure (dB)			3rd Order Intercept Point (dBm)		
	+22 V	+24 V	+27 V	+22 V	+24 V	+27 V	+22 V	+24 V	+27 V
800	45.84	47.99	45.18	4.08	3.96	4.21	47.07	47.22	48.13
810	43.71	44.02	44.47	4.01	3.91	4.14	47.05	47.29	48.14
825	46.45	47.87	47.28	4.26	4.18	4.38	47.22	47.36	48.25
850	46.71	44.07	46.62	4.10	3.98	4.21	47.19	47.33	48.27
875	49.42	43.93	44.47	4.19	4.04	4.30	47.48	47.60	48.47
900	42.87	42.87	44.23	4.24	4.11	4.39	47.44	47.60	48.56
925	45.56	44.53	46.86	4.25	4.17	4.37	47.62	47.81	48.68
950	43.09	43.23	43.96	4.33	4.22	4.45	47.60	47.79	48.66
975	42.40	44.48	45.12	3.85	3.75	4.00	47.77	47.95	48.81
1000	42.59	44.60	45.13	4.45	4.33	4.55	47.79	47.99	48.84
1025	43.91	45.64	42.14	3.87	3.76	4.06	48.10	48.22	49.07
1050	43.33	44.40	44.91	4.27	4.18	4.40	48.28	48.48	49.32
1075	43.30	42.31	42.97	3.97	3.89	4.10	48.37	48.50	49.27
1100	43.45	41.32	44.21	3.99	3.93	4.13	48.55	48.81	49.56
1125	42.01	41.86	44.67	4.14	4.03	4.25	48.78	49.00	49.65
1150	41.31	41.00	40.50	3.92	3.83	4.01	48.96	49.17	49.90
1175	41.61	41.77	41.86	4.00	3.90	4.12	48.91	49.11	49.85
1200	40.52	42.96	44.38	4.04	3.98	4.21	49.18	49.29	50.05
1225	41.79	43.16	42.97	4.05	3.95	4.15	49.26	49.44	50.16
1250	40.79	42.60	42.15	4.16	4.10	4.30	49.30	49.62	50.33
1275	39.31	40.20	42.58	4.03	3.95	4.15	49.37	49.59	50.25
1300	38.24	38.68	42.23	3.94	3.86	4.06	49.47	49.60	50.31
1325	38.84	39.81	41.60	3.94	3.88	4.07	49.64	49.78	50.35
1350	38.79	40.08	38.73	3.83	3.74	3.92	49.80	50.02	50.65
1375	38.15	39.27	38.38	3.79	3.72	3.91	49.71	49.92	50.59
1400	37.79	39.91	39.89	3.86	3.79	3.97	49.75	49.86	50.55
1425	37.57	38.11	41.33	3.81	3.74	3.94	49.68	49.83	50.56
1450	37.60	38.76	38.75	3.82	3.73	3.94	49.73	49.95	50.64
1475	37.05	39.82	38.51	4.12	4.05	4.24	49.68	49.96	50.68
1500	36.39	38.63	40.38	4.39	4.31	4.50	49.62	49.88	50.55
1525	35.99	37.43	37.78	4.06	3.98	4.19	49.43	49.74	50.61
1550	37.25	37.21	38.64	3.65	3.58	3.79	49.58	49.92	50.68
1575	36.19	38.15	38.02	3.87	3.80	4.01	49.48	49.74	50.66
1600	36.09	36.28	36.87	4.29	4.22	4.43	49.31	49.59	50.55
1625	35.25	37.64	37.29	3.94	3.84	4.07	49.22	49.43	50.38
1650	36.52	35.22	39.78	4.35	4.24	4.46	49.16	49.34	50.47
1675	37.21	37.18	37.54	3.79	3.68	3.91	48.92	49.20	50.31
1700	37.00	37.98	38.33	3.75	3.64	3.88	48.83	49.14	50.19
1725	37.89	37.94	37.97	3.92	3.79	4.02	48.59	48.88	49.99
1750	35.38	38.37	38.00	3.81	3.72	3.94	48.45	48.63	49.83
1775	36.38	37.03	37.21	3.62	3.51	3.78	48.23	48.43	49.55
1800	36.11	35.86	38.45	4.13	4.03	4.25	47.98	48.26	49.33
1825	36.28	36.10	37.62	3.61	3.47	3.76	47.71	47.97	49.03
1850	35.91	37.36	38.14	3.94	3.87	4.08	47.37	47.56	48.75
1875	37.13	37.25	37.57	3.67	3.57	3.82	47.12	47.41	48.50
1900	35.62	35.07	37.29	3.86	3.76	3.98	46.78	47.10	48.14
1925	35.35	36.76	36.27	3.79	3.64	3.93	46.48	46.71	47.71
1950	36.08	36.92	37.48	3.51	3.42	3.74	46.27	46.42	47.42
1975	37.44	36.33	36.63	3.66	3.53	3.80	45.87	46.13	47.03
2000	35.76	36.82	35.47	3.86	3.72	4.01	45.87	45.96	46.80

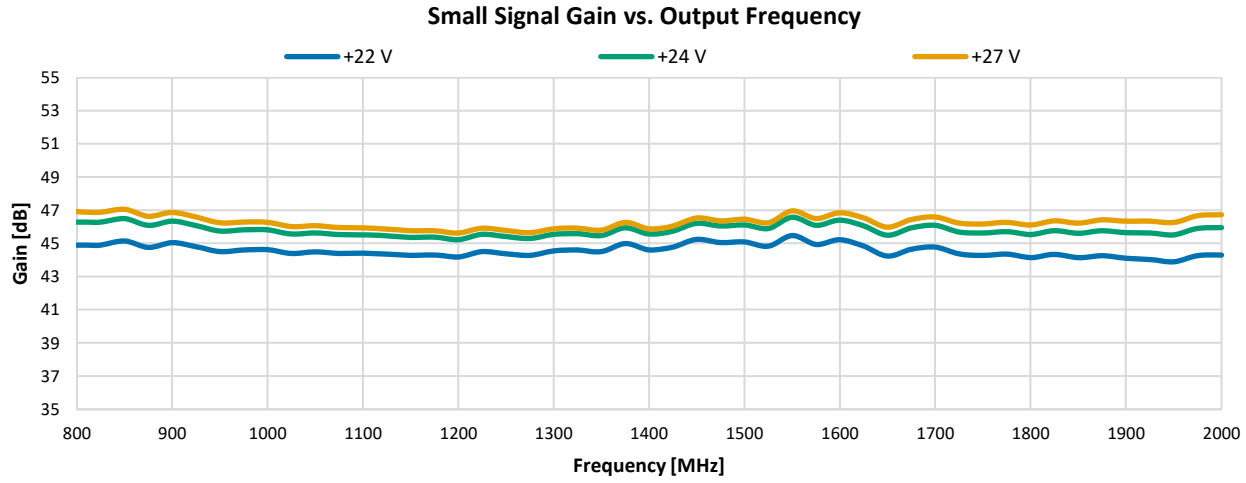
Typical Performance Data

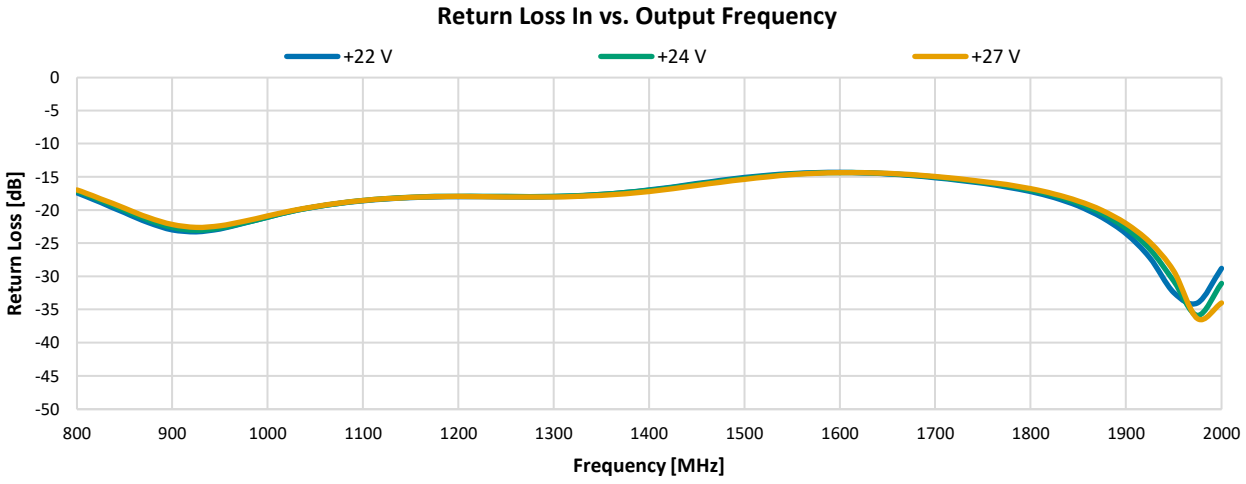
Test Conditions: Temperature = +25°C.

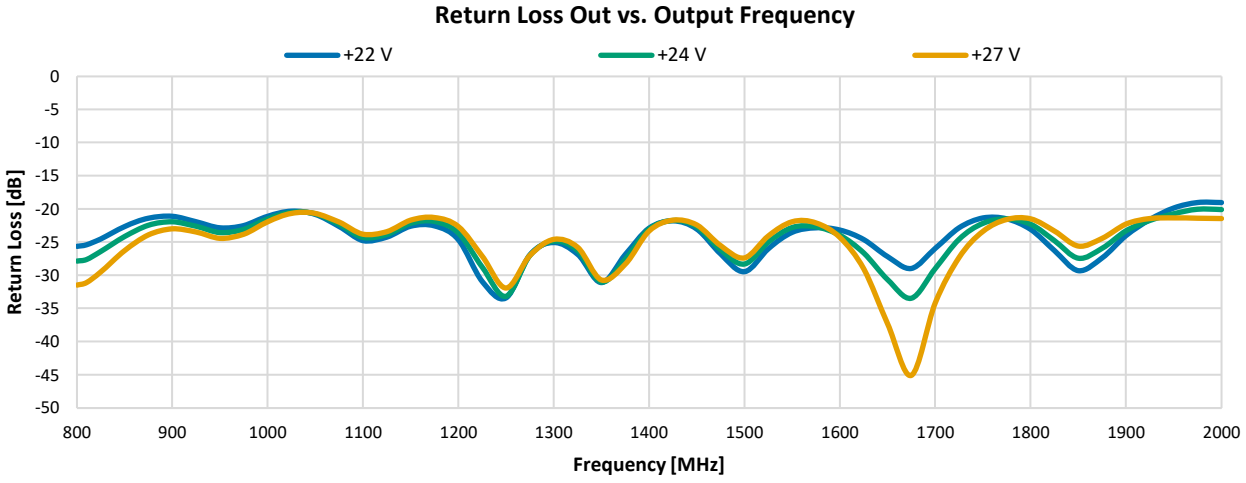
Freq. (MHz)	Power 1 dB Compression (dBm)			Power 3 dB Compression (dBm)			Output Power Saturation (dBm)		
	+22 V	+24 V	+27 V	+22 V	+24 V	+27 V	+22 V	+24 V	+27 V
800	40.07	40.18	40.61	42.40	42.99	43.86	43.17	43.93	44.91
810	40.11	40.11	40.62	42.44	43.01	43.87	43.23	43.98	44.95
825	40.13	40.11	40.61	42.49	43.06	43.89	43.29	44.02	44.97
850	40.09	40.15	40.53	42.57	43.13	43.95	43.37	44.10	45.03
875	39.97	40.01	40.35	42.62	43.18	43.92	43.57	44.29	45.20
900	39.92	39.95	40.27	42.72	43.23	43.96	43.67	44.39	45.29
925	39.91	39.92	40.28	42.84	43.33	44.00	43.84	44.56	45.46
950	39.81	39.80	40.20	42.83	43.36	43.97	43.88	44.61	45.52
975	39.77	39.86	40.13	42.89	43.42	44.02	43.93	44.66	45.58
1000	39.77	39.75	40.11	42.90	43.35	44.01	43.92	44.65	45.56
1025	39.70	39.77	40.12	42.88	43.35	44.00	43.90	44.63	45.53
1050	39.75	39.80	40.14	42.91	43.40	44.03	43.85	44.57	45.46
1075	39.67	39.70	40.02	42.96	43.43	43.99	43.85	44.55	45.42
1100	39.78	39.80	39.99	43.25	43.69	44.16	44.07	44.75	45.57
1125	39.91	39.86	40.08	43.82	44.15	44.52	44.58	45.23	46.00
1150	39.87	39.86	40.02	44.07	44.38	44.69	44.83	45.48	46.22
1175	39.88	39.92	40.12	44.03	44.38	44.78	44.86	45.50	46.21
1200	39.85	39.94	40.09	44.05	44.34	44.75	44.88	45.53	46.26
1225	39.84	39.93	40.20	44.05	44.43	44.86	44.98	45.62	46.34
1250	39.87	39.96	40.23	44.07	44.45	44.89	45.09	45.71	46.42
1275	39.86	39.94	40.20	44.09	44.45	44.87	45.19	45.79	46.45
1300	39.81	39.88	40.22	44.33	44.57	44.95	45.39	45.95	46.56
1325	40.01	40.06	40.23	44.64	44.92	45.28	45.55	46.10	46.70
1350	40.25	40.28	40.38	44.82	45.14	45.51	45.68	46.25	46.87
1375	40.35	40.32	40.47	44.82	45.11	45.52	45.68	46.26	46.89
1400	40.27	40.30	40.50	44.65	44.98	45.34	45.57	46.14	46.77
1425	40.46	40.43	40.68	44.62	44.96	45.42	45.45	46.04	46.67
1450	40.57	40.60	40.80	44.65	45.08	45.47	45.47	46.06	46.70
1475	40.63	40.67	40.83	44.56	45.01	45.42	45.36	45.95	46.60
1500	40.64	40.70	40.82	44.47	44.87	45.31	45.19	45.79	46.45
1525	40.69	40.67	40.93	44.28	44.70	45.20	44.96	45.57	46.24
1550	40.88	40.99	41.17	44.45	44.90	45.39	45.06	45.68	46.39
1575	40.97	40.99	41.19	44.39	44.86	45.39	45.01	45.65	46.39
1600	41.07	41.01	41.36	44.33	44.77	45.41	44.93	45.60	46.39
1625	41.06	41.09	41.43	44.20	44.74	45.45	44.86	45.56	46.41
1650	41.07	41.18	41.48	44.15	44.65	45.39	44.76	45.48	46.36
1675	41.02	41.20	41.54	44.01	44.56	45.30	44.61	45.34	46.25
1700	41.00	41.15	41.51	43.84	44.44	45.24	44.48	45.22	46.16
1725	40.85	40.95	41.40	43.57	44.15	44.98	44.21	44.96	45.93
1750	40.70	40.87	41.26	43.33	43.94	44.77	43.95	44.69	45.65
1775	40.80	40.97	41.33	43.31	43.93	44.78	43.87	44.61	45.57
1800	40.78	40.86	41.28	43.22	43.80	44.67	43.77	44.52	45.51
1825	40.80	40.91	41.36	43.09	43.76	44.67	43.65	44.42	45.43
1850	40.73	40.86	41.35	42.90	43.53	44.47	43.43	44.20	45.23
1875	40.72	40.87	41.40	42.80	43.47	44.41	43.34	44.12	45.15
1900	40.66	40.84	41.40	42.56	43.26	44.20	43.13	43.90	44.94
1925	40.48	40.68	41.23	42.33	43.00	43.99	42.91	43.69	44.73
1950	40.47	40.70	41.23	42.21	42.88	43.85	42.83	43.61	44.66
1975	40.20	40.39	41.00	41.92	42.58	43.56	42.53	43.31	44.35
2000	40.00	40.24	40.90	41.74	42.41	43.38	42.45	43.22	44.26

Typical Performance Graphs

Test Conditions: Temperature = +25°C.

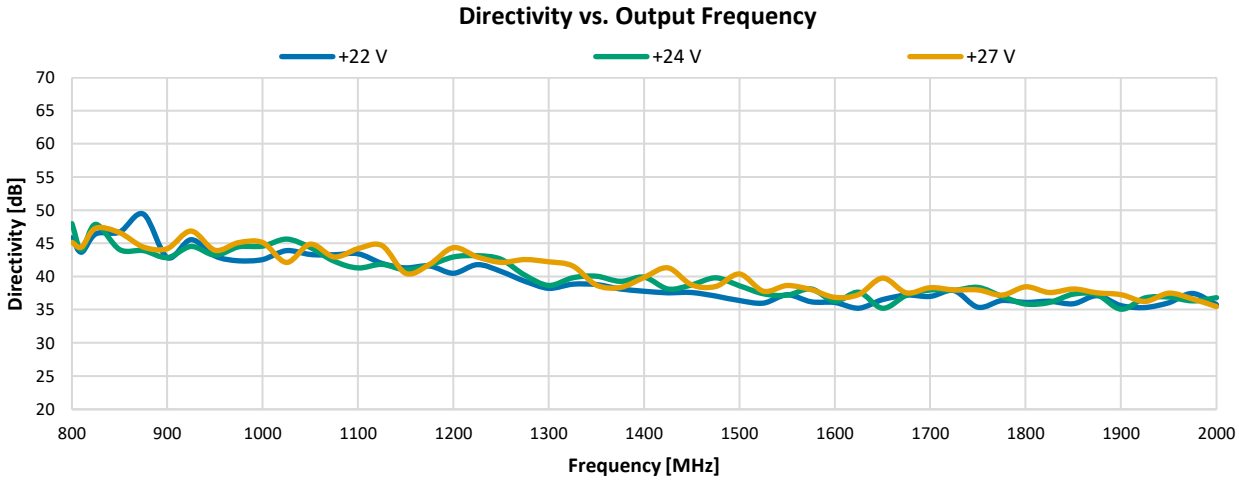


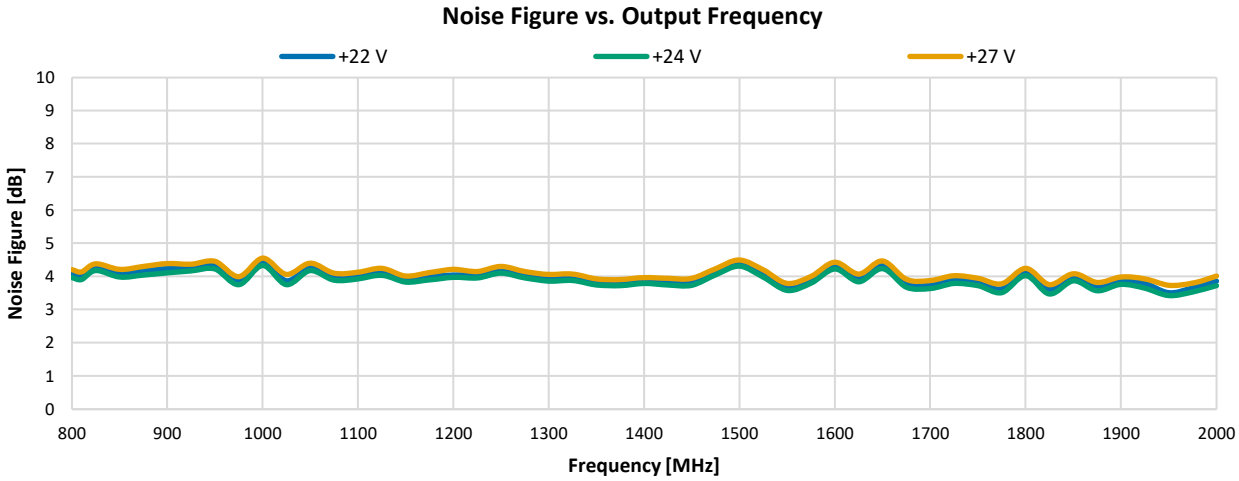


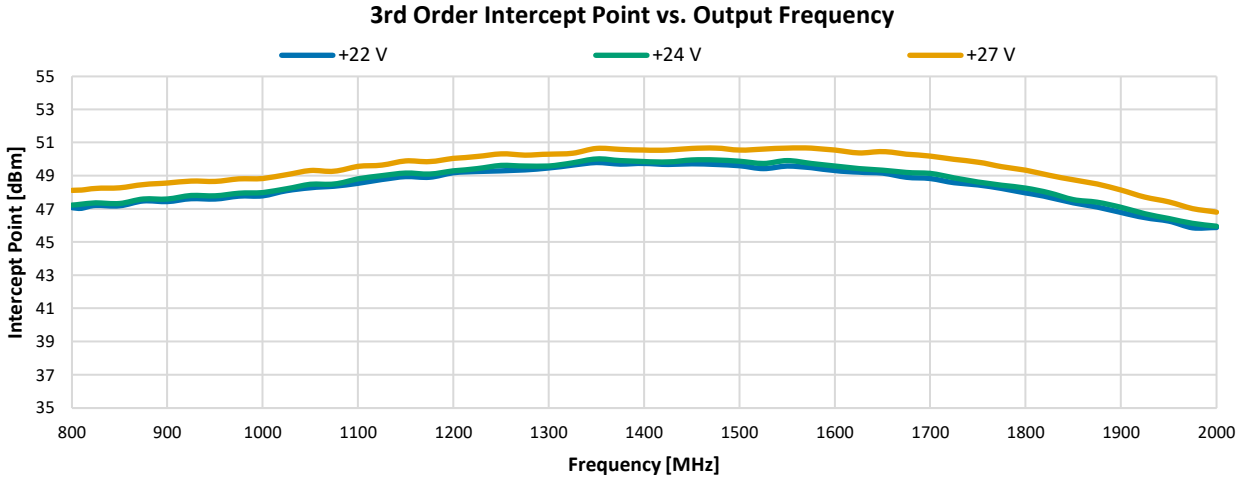


Typical Performance Graphs

Test Conditions: Temperature = +25°C.

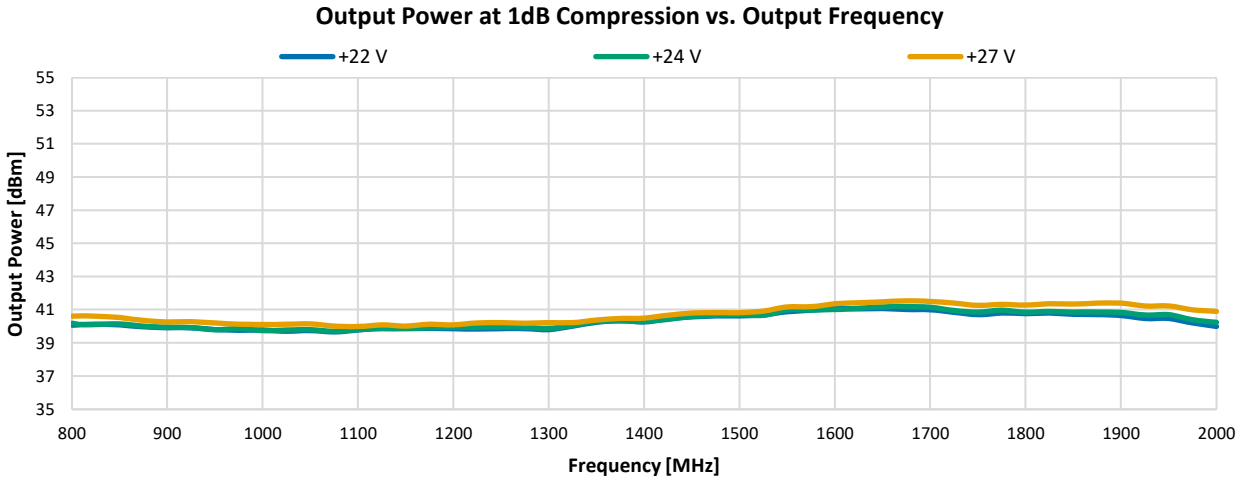


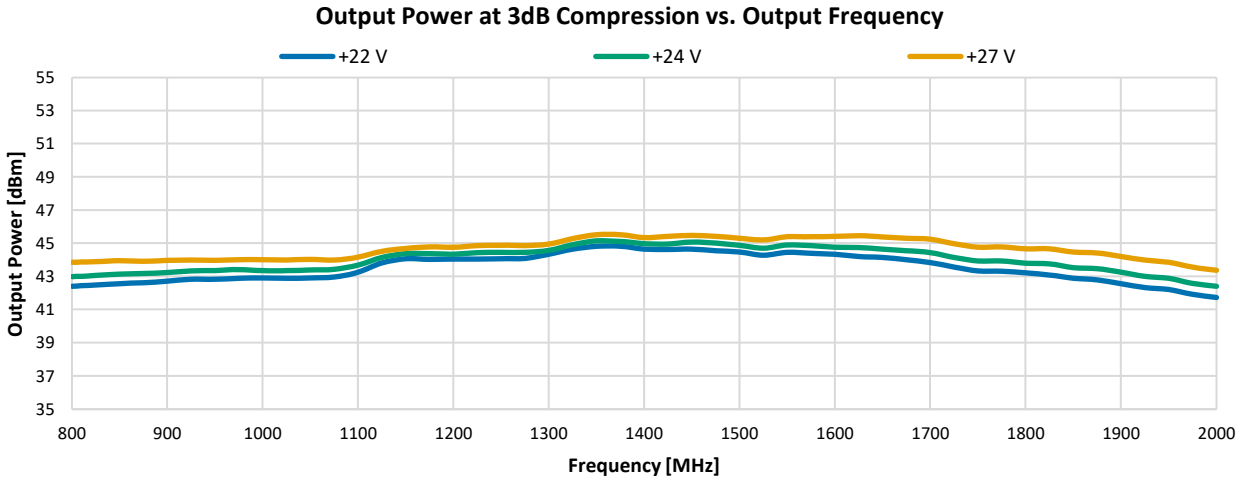


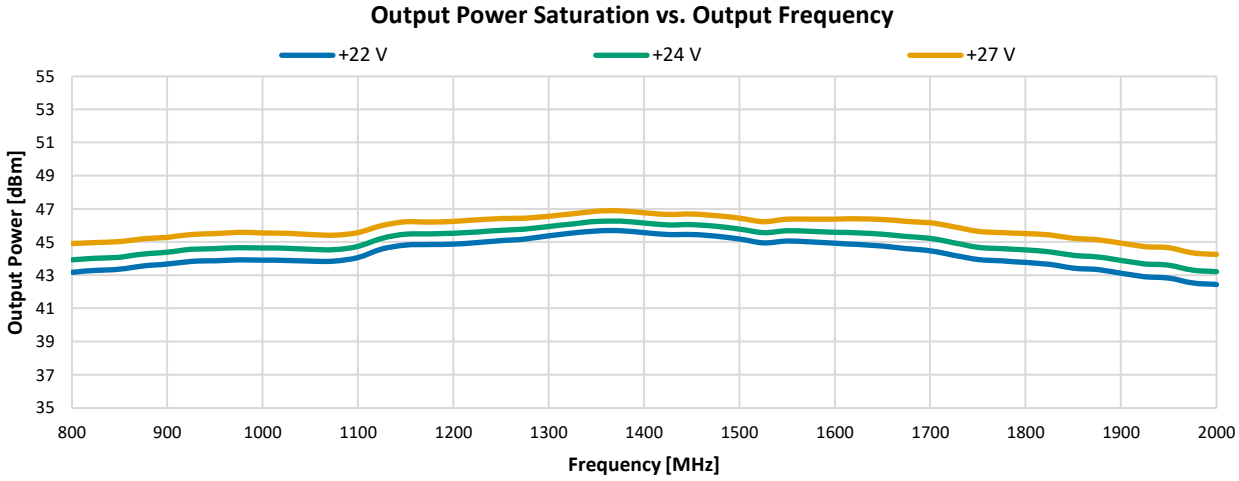


Typical Performance Graphs

Test Conditions: Temperature = +25°C.



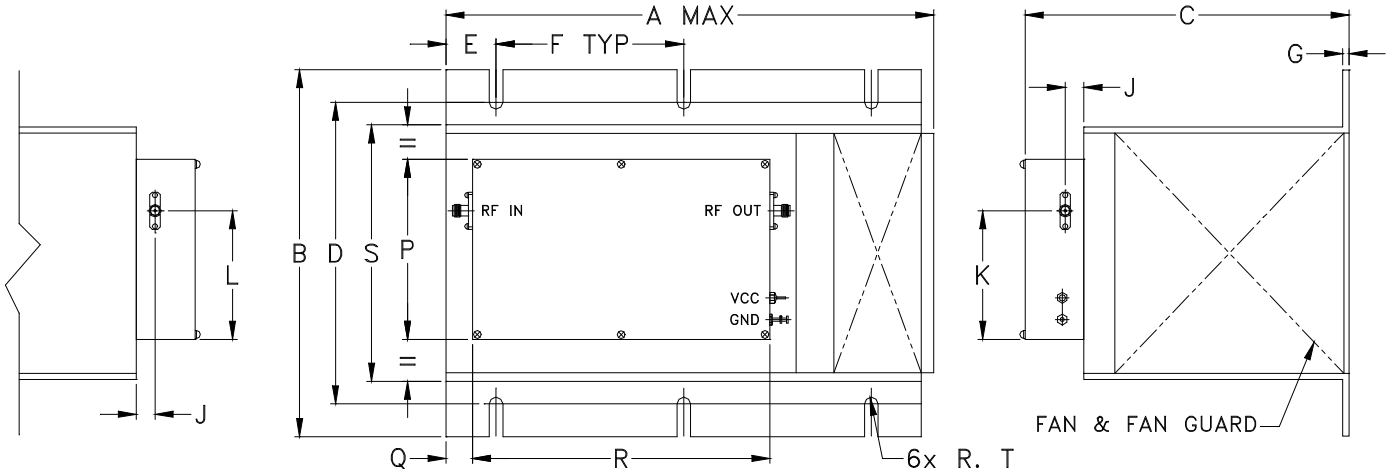




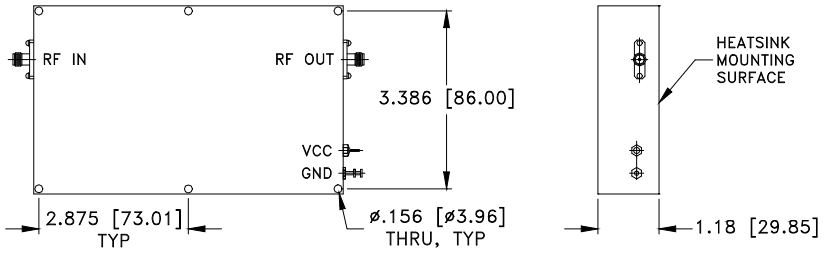
Case Style BT

BT1204

Outline Dimensions



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK.



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
BT1204	9.85 (250.19)	7.3 (185.42)	6.5 (165.10)	6.00 (152.40)	1.00 (25.40)	3.75 (95.25)	.13 (3.30)	- -	.37 (9.40)	2.56 (65.02)	2.56 (65.02)	- -	- -

CASE#	P	Q	R	S		T	WT, GRAM	WT WITHOUT HEATSINK, GRAM
BT1204	3.58 (90.93)	.5 (12.70)	5.95 (151.13)	5.1 (129.54)		.135 (3.43)	4265	580

Dimensions are in inches (mm). Tolerances: 1 Pl. ± .1; 2 Pl. ± .03; 3 Pl. ± .015

Notes:

1. Case material: Aluminum alloy.
2. Finish:
   For RoHS Case Styles: Clear Chemical conversion coating, non-chrome or trivalent chrome based.
3. Heatsink finish: Black anodize.
4. Refer to the individual model data sheet for the type of connectors available.
5. Recommended screws for mounting model without heat sink on 3/32" thick sheet: #6-32, 1.50" Length.

Mini-Circuits

Environmental Specifications **ENV23T19**

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 45°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Stabilization Bake	(non-operating) 125°C, 24 hours	- - -
Burn-in at Elevated Temp.	(DC on) 160 hours at 60° C base plate Temperature	MIL-STD-202, Method 108
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, except 100°C