



ERZ-HPA-0850-1050-49

The ERZ-HPA-0850-1050-49 is a CW High Power Amplifier based on GaN technology focused for Radar applications in X band. It provides 80W in a compact size.

Main Features:

- Frequency Range: 8.5 to 10.5 GHz
- Typical values: Pout: 80 W, PAE 16%
- RF connectors (I/O): SMA (F) / WR-90
- DC & Control connectors: D-sub type
- Several mounting options
- Compact aluminum housing
- Hi-reliability and dedicated screening/
environmental tests available under request

Typical applications:

- Radar X-band

Electrical Specifications

Parameter		Value			Units
		Min	Typ	Max	
Frequency		8.5	-	10.5	GHz
Saturated Output Power (CW)		49	-	50	dBm
Power Consumption	@Psat	471	-	616	W
	@Pout=48dBm	354	-	475	
	@Pout=49dBm	386	-	551	
Small Signal Gain		57	-	48	dB
Large Signal Gain (Pout=49dBm)		36.5	-	54	dB
Input VSWR		-	1.5:1	2.0:1	-
Output VSWR			1.8:1	2.0:1	-
DC Voltage		24	28	32	V
Load VSWR Protection		-	-	∞:1	-
Harmonics level (Pout=49dBm)		-66	-	-47	dBc
PAE (@Psat)		-	16	-	%

Specifications at a case temperature of 25°C

Mechanical Specifications

Parameter	Value	Units
Dimensions (LxWxH)	With WG Transition: 262.15 x 170 x 50 Without WG Transition: 240 x 170 x 29.3	mm
Weight	2100	gr
Housing	Nickel	-
RF Connectors	IN: SMA (F) / OUT: WR-90 (flat flange)	-
DC Connector	D-sub 5W5 Male	-
Control Connector	D-sub9 Male	-

Output Power

Figure 2 shows measurements of output saturated power versus frequency at temperature -40°C, 25°C and 70°C (at case).

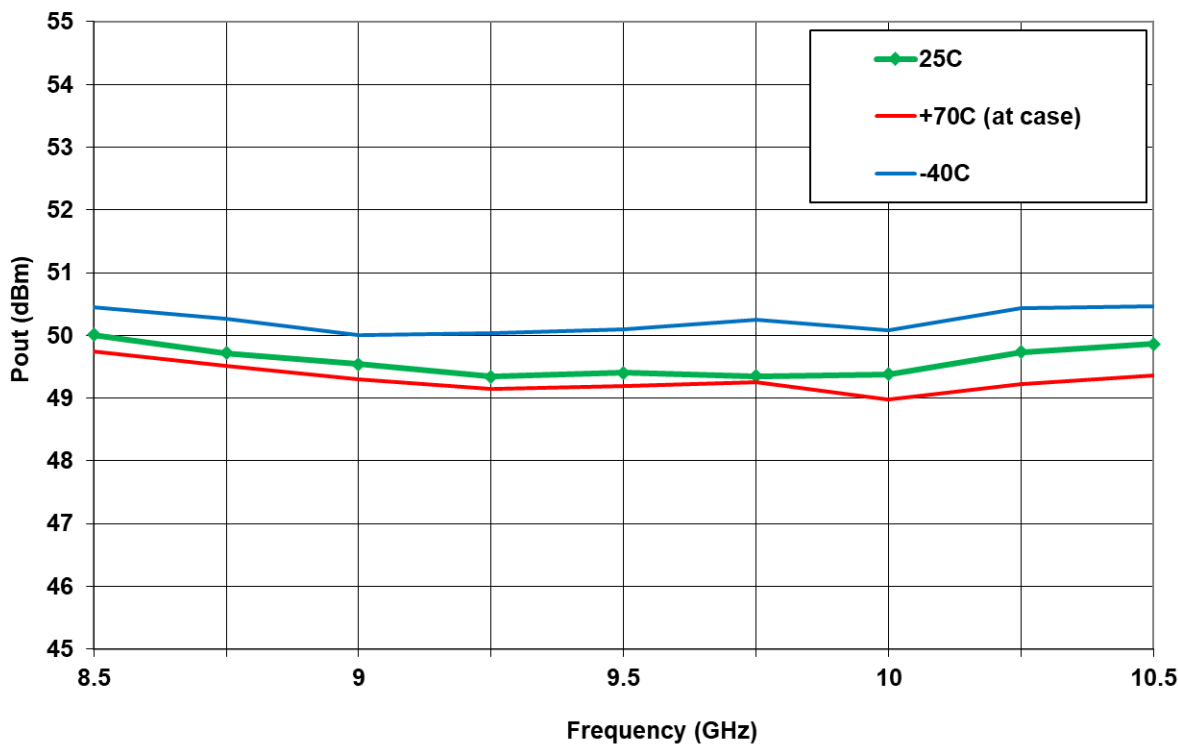


Figure 2: ERZ-HPA-0850-1050-49 Psat Vs Freq

Large Signal Gain

Figure 2 shows Large Signal Gain measurement as a function of frequency at $P_{out}=49\text{dBm}$ at temperature 25°C .

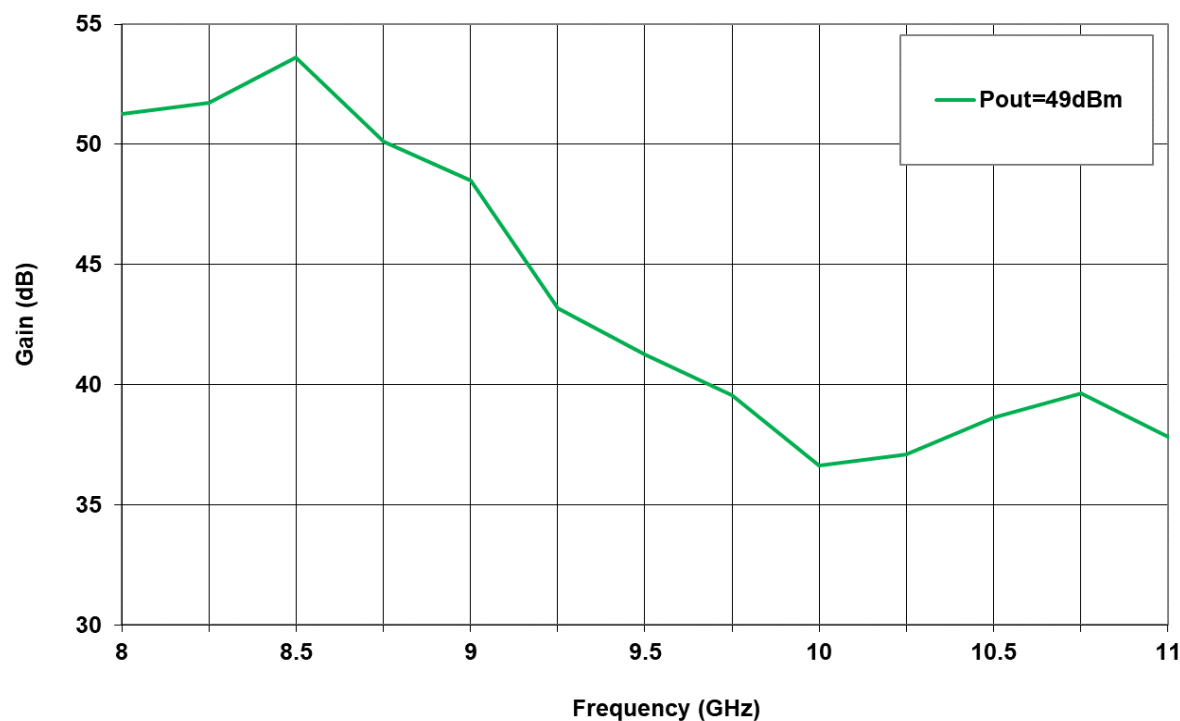


Figure 2: ERZ-HPA-0850-1050-49 Large Signal Gain at $P_{out}=49\text{dBm}$

Small Signal Gain

Figure 3 shows Small Signal Gain measurement as a function of frequency at temperature 25°C.)

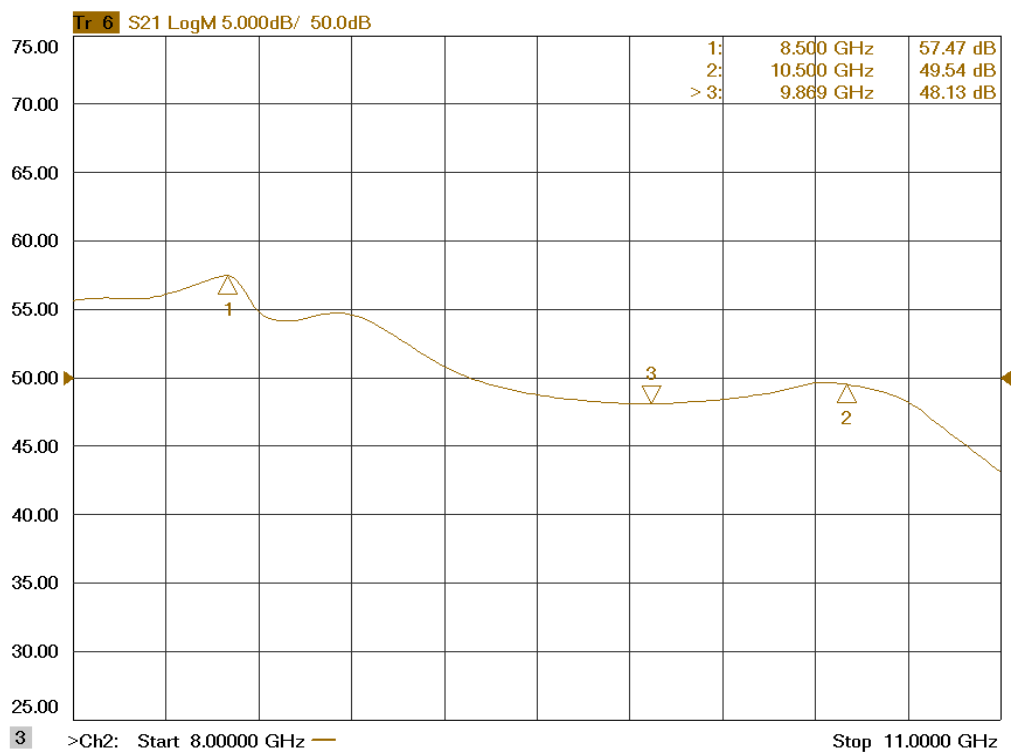


Figure 3: ERZ-HPA-0850-1050-49 Small signal gain Vs Frequency

Power Consumption

Figure 4 shows power consumption measurements versus frequency at Pout 48dBm, 49dBm at 25°C. Figure 5 shows power consumption measurements versus frequency at Psat at temperature -40°C, 25°C and 70°C (at case).

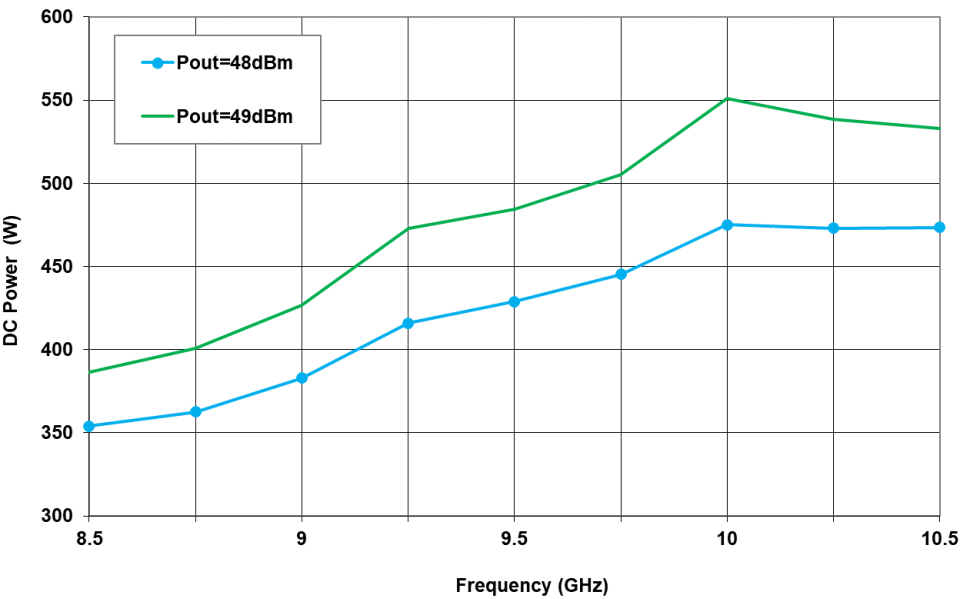


Figure 4: ERZ-HPA-0850-1050-49 Power Consumption at Pout=48dBm and Pout=49dBm.

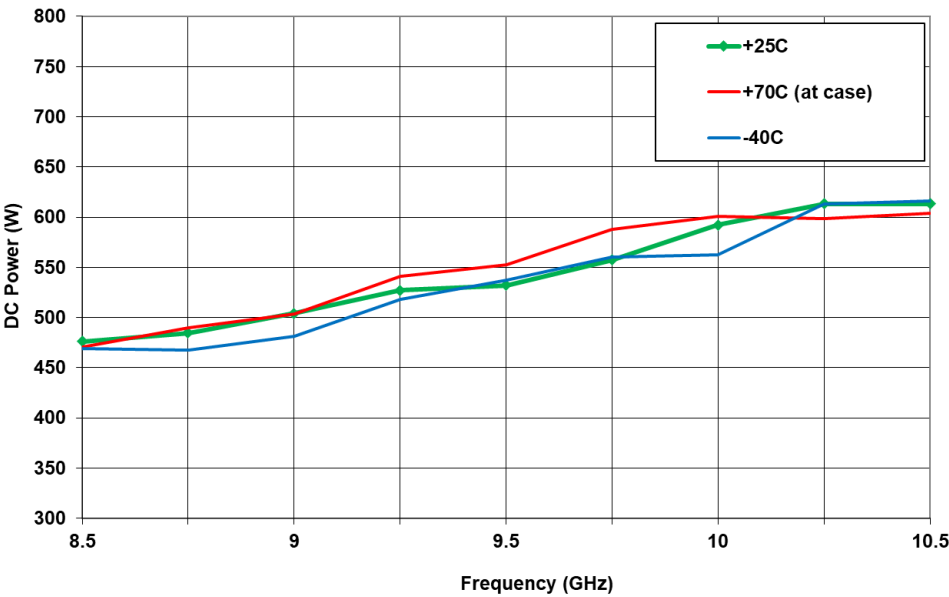


Figure 5: ERZ-HPA-0850-1050-49 Power Consumption at Psat

Output Power Detected Vs Input Power

Figure 6 shows output power detector voltage versus output power versus frequency.

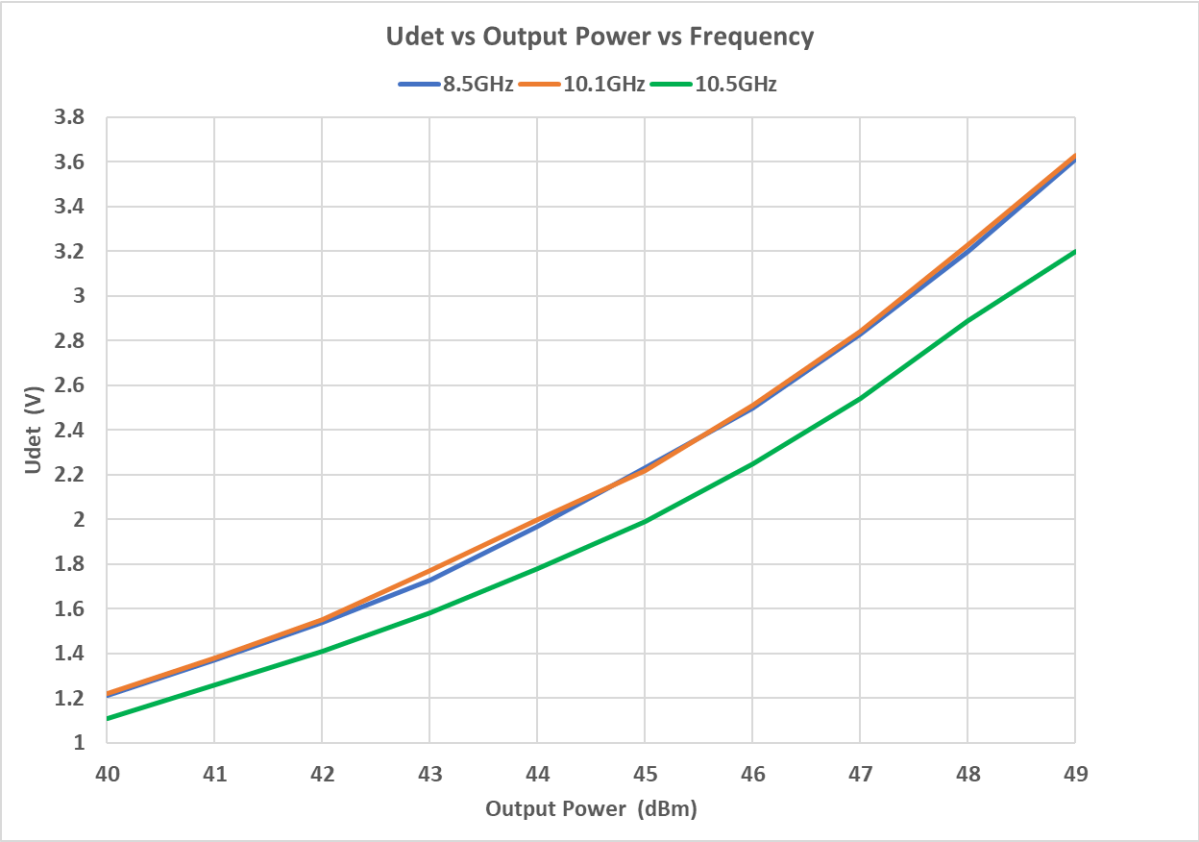


Figure 6: ERZ-HPA-0850-1050-49 Output Power Detector Voltage

Input and Output Matching

Figure 7 and 8 show input (S11) and output (S22) VSWR as a function of frequency at room temperature (25°C).

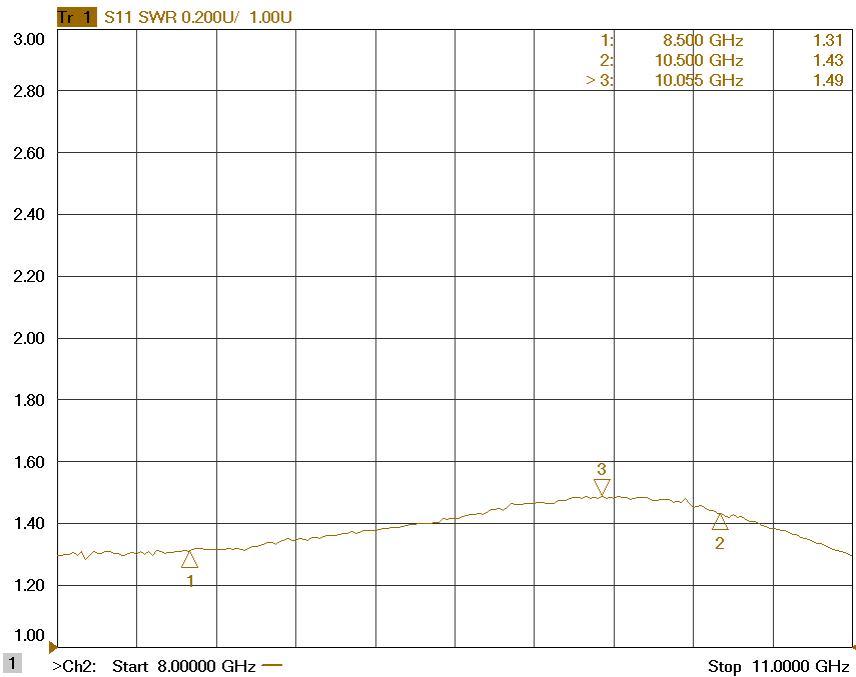


Figure 7: ERZ-HPA-0850-1050-49 Input Matching Vs Frequency

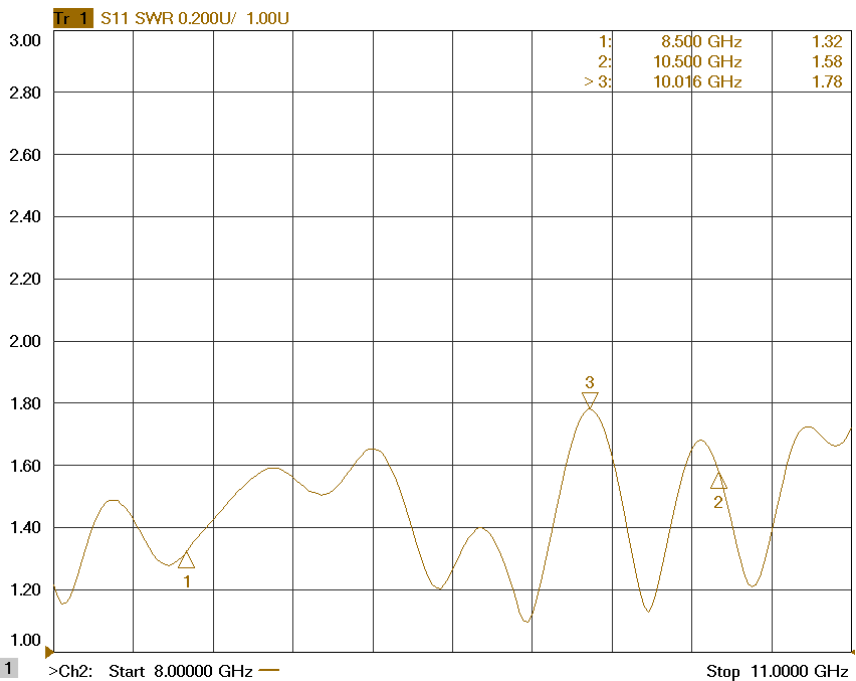


Figure 8: ERZ-HPA-0850-1050-49 Output Matching Vs Frequency

Outline Drawing

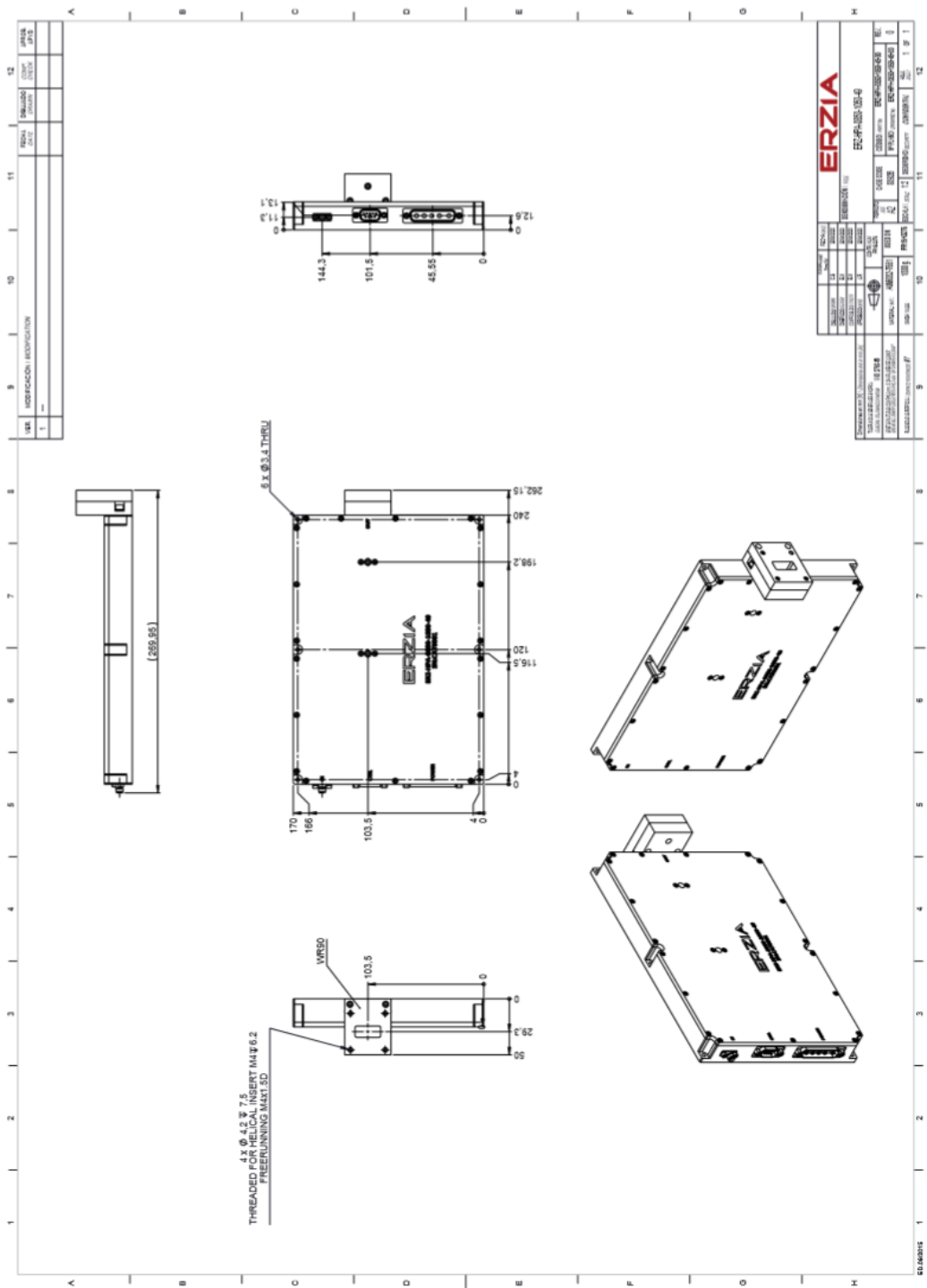


Figure 9: ERZ-HPA-0850-1050-49 Outline Drawing

Power Supply & Control Interfaces

Table below shows D-Sub 5W5 connector pinout configuration

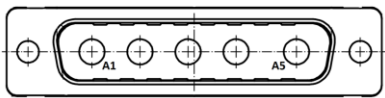


Figure 10: Power Connector. DSUB 5W5 Male Front View

PIN	LABEL	FUNCTION	DESCRIPTION
A1	VDD	VDD	+28V Power Source
A2	VDD	VDD	+28V Power Source
A3	PGND	Power Ground	Power Ground
A4	PGND	Power Ground	Power Ground
A5	PGND	Power Ground	Ground to Chasis

Table below shows D-Sub 9 connector pinout

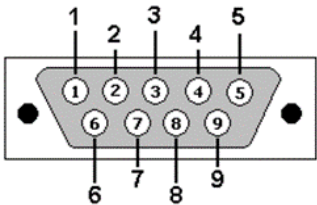


Figure 11: Control Connector. DSUB 9 Male Front View

PIN	LABEL	FUNCTION	DESCRIPTION
1	EN	Enable	TTL Signal OFF (0V to 0.8V); ON (2V to 5.5V)
2	Temp	Temperature Monitor	$V_o = -11.69 \text{ mV } C \times T + 1.8663V$
3	I_SEN	Current Sensor	$V_o = 0.1V/A$
4	DET	Output Power Detector	
5	-	-	Not Connected
6, 7, 8, 9	GND	Ground	Ground

Absolute Maximum Ratings

Condition	Value
DC Voltage	+32 VDC
Enable Control Voltage	+5.5 VDC
Maximum Input Power (CW)	+15 dBm under CW conditions
Operation temperature (at case)	-40 to 70 °C
Storage temperature	-55 to 125 °C

- Stress above these ratings may cause permanent damage to the device.
- It is final user responsibility to maintain the amplifier within the specified ranges.

Environmental Specifications (By Design)

Operating Temperature:	-40 to +70 °C	(MIL-STD-810F, method 520.2)
Storage Temperature:	-55 to 125 °C	(MIL-STD-810F, method 520.2)
Vibration:	8g rms	(MIL-STD-810F, method 514.5)
Shock:	20g,11ms,saw-tooth	(MIL-STD-810F, method 516.5)
Acceleration:	15g	(MIL-STD-810F, method 513.5)

RoHS & REACH Compliance

This part is compliant with EU 2011/65/UE RoHS (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) and REACH (Registration, Evaluation, Authorization and restriction of Chemical substances) directives.



Documentation and Test Reports

All modules are at least delivered with: Electrical Test Report, Certificate of Conformance, Certificate of Acceptance and Origin. Optionally, units can be environmentally tested (temperature, vibration...).

Option (HS): Heat Sink

A heat sink (HS) can be provided to allow the operation of Power Amplifiers. Please note that most power amplifiers need heat sink or appropriate heat dissipation strategy.

Space / Hi-Rel Usage

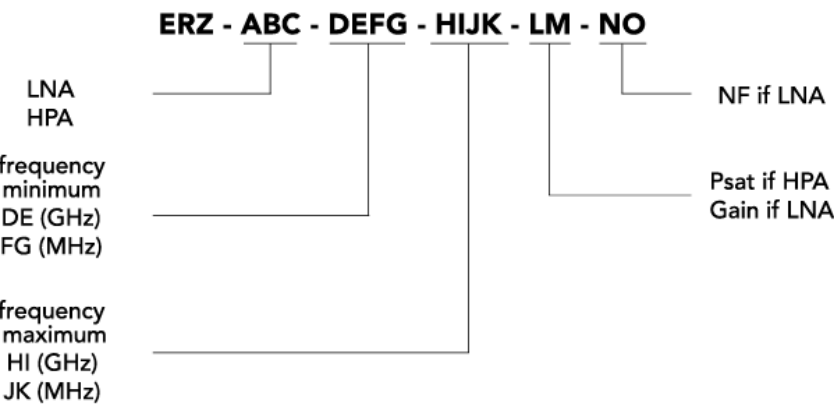
Most of ERZIA’s products are based on rad-hard technologies and can be manufactured and integrated according to MIL / ECSS or specific hi-rel standard-screening for space, aeronautics, or specific hi-reliability usage.

Customization and Extended Performances

ERZIA can fully design or adapt one of the existing RF amplifiers designs according to your specifications. Please contact us for additional information.

Model Number Codification

MODEL NUMBER



ERZIA

20260818_rev1.1

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