

2400–2500 MHz, 60 W CW RF Power Amplifier Module

Compact solid-state RF power amplifier module for 2.45 GHz ISM applications, based on a high-power LDMOS two-stage MMIC device and optimized for continuous-wave operation.

FREQUENCY

2.4–2.5 GHz

OUTPUT POWER

60 W CW

SUPPLY VOLTAGE

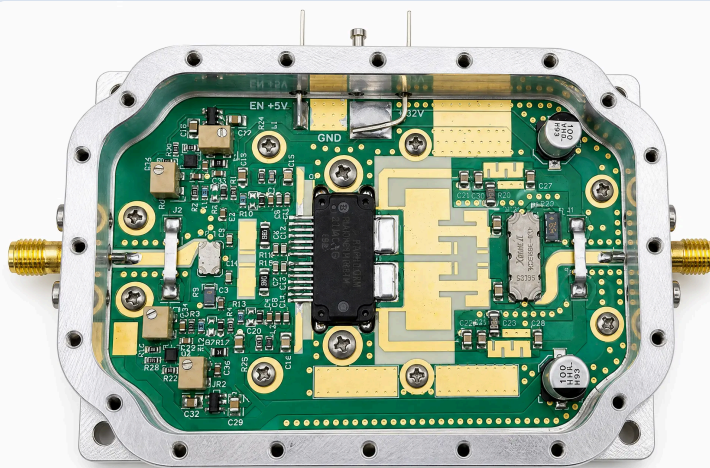
32 VDC

GAIN

27 dB typ.

HIGHLIGHTS

- 2400–2500 MHz ISM-band RF power amplifier module
- 60 W CW output power capability
- Typical gain: 27 dB
- High-efficiency LDMOS amplifier architecture
- Designed for 32 VDC main supply operation
- Enable input for RF output control
- Integrated aluminium housing for thermal and mechanical integration



2400–2500 MHz / 60 W ISM RF amplifier module in aluminium housing. Product image is for reference only.

APPLICATIONS

- 2.45 GHz ISM RF systems
- Industrial heating systems
- Plasma generation
- Laboratory RF sources
- RF driver and test systems

The module is intended for integration on a suitable heatsink or cold plate. Correct thermal management, 50 Ω RF loading, and proper supply sequencing are required for reliable operation.

Electrical Summary

Electrical values, $Z_S = Z_L = 50 \Omega$, $T_{case} = 25^\circ\text{C}$ unless otherwise noted

Parameter	Value	Unit	Notes
Frequency range	2400–2500	MHz	ISM-band operation
Nominal frequency	2450	MHz	Typical operating point
RF output power	60	W CW	Nominal output power capability
Small-signal gain	27	dB	Typical value
RF supply voltage	32	VDC	Main amplifier supply
Enable voltage	5	VDC	Enable / RF control input

Absolute Maximum Ratings

Not simultaneous, module-level limits

Parameter	Rating	Unit	Notes	Export Classification
RF Supply Voltage	+32	VDC	Nominal main supply voltage	EAR 99
Enable Voltage	+5	VDC	Enable / RF control input	
RF Input Power	+25	dBm	Maximum safe input level	
Output Load VSWR	2:1	—	Protection and derating depend on system integration	
Operating Temperature	+55	°C	Baseplate / housing temperature	
Storage Temperature	+60	°C	Non-operating	

Electrical Specifications

Electrical values, $Z_S = Z_L = 50 \Omega$, $T_{case} = 25^\circ\text{C}$ unless otherwise noted

Parameter	Min	Typ.	Max	Unit	Notes
Frequency Range	2400	2450	2500	MHz	ISM-band operation
RF Output Power	—	60	—	W CW	Nominal output power capability
RF Output Power	—	47.8	—	dBm	Equivalent to 60 W
Small-Signal Gain	—	27	—	dB	Typical value
Gain Flatness	—	± 1	—	dB	Across 2400–2500 MHz
Nominal Input Drive Level	—	+22	—	dBm	Input level required for rated output power
RF Supply Voltage	—	32	—	VDC	Main amplifier supply
Enable Voltage	—	5	—	VDC	Enable / RF control input
Drain Efficiency	—	45	—	%	Typical device-level value at 2450 MHz
Input Return Loss	—	18	—	dB	Typical device-level value, module measurement TBD
Harmonics	—	TBD	—	dBc	To be verified during module test
Spurious Suppression	—	TBD	—	dBc	To be verified during module test
RF Impedance	—	50	—	Ω	Input and output ports
Operating Mode	—	CW	—	—	Continuous-wave operation

The module is designed for continuous-wave RF power delivery in 2.45 GHz ISM applications. Electrical performance is specified for 50 Ω input and output operation under the stated operating conditions.

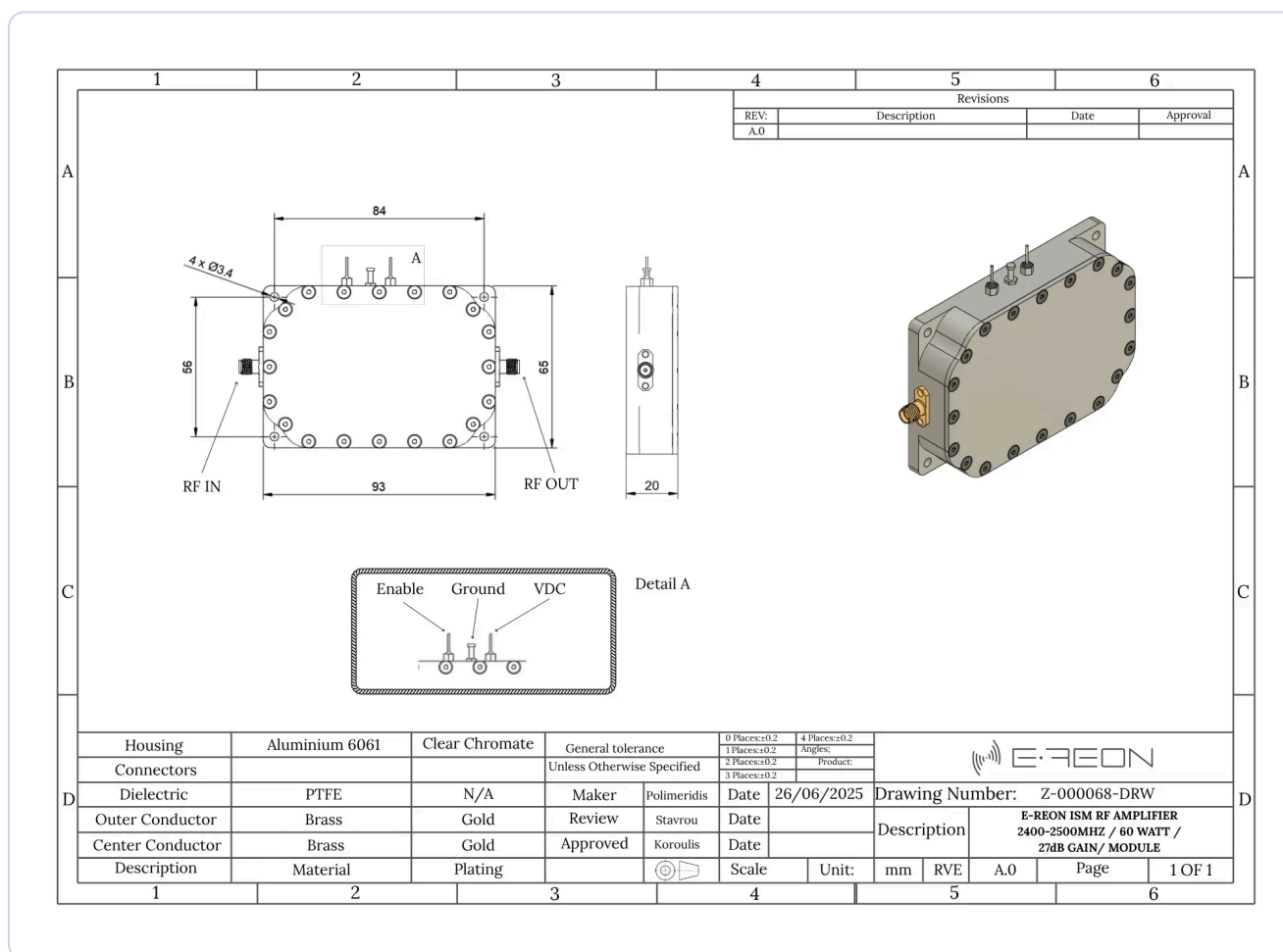
Mechanical Specifications

Module outline, interfaces, and mounting information

Parameter	Value	Unit	Notes
Module Dimensions	93 × 65 × 20	mm	Overall outline, excluding connector protrusion
Mounting Hole Spacing	84 × 56	mm	4 mounting holes
Mounting Holes	4 × Ø3.4	mm	For module mounting to heatsink or cold plate
Housing Material	Aluminium 6061	—	Clear chromate finish
RF Input Connector	SMA Female	—	50 Ω RF input
RF Output Connector	SMA Female	—	50 Ω RF output
DC / Control Interface	Pin terminals	—	Enable, ground, and VDC connections
Cooling Method	External heatsink / cold plate	—	Mounting surface must provide adequate thermal dissipation

Mechanical Drawing

Reference outline drawing, dimensions in millimeters



Dimensions are provided for mechanical integration. The module must be mounted to a suitable thermal interface using proper fastening torque and thermal interface material.

RF, DC & Control Interfaces

Module connector functions and integration interfaces

RF INTERFACES

Interface	Connector	Description
RF IN	SMA Female	50 Ω RF input port
RF OUT	SMA Female	50 Ω RF output port

RF input and output ports are located on opposite sides of the module housing. Use suitable 50 Ω coaxial cables and connectors rated for the required RF power level.

DC / CONTROL INTERFACE

Pin	Function	Description
Enable	EN	RF enable input, nominal +5 V logic
Ground	GND	DC and control reference ground
VDC	+32 V	Main RF amplifier supply input

The DC/control pins are located on the top side of the module. Observe correct polarity before applying supply voltage.

Connection Overview

Functional connection summary for system integration

Connection	Type	Direction	Integration Notes
RF Input	SMA Female	Input	Connect to 2.4–2.5 GHz RF drive source through a 50 Ω path
RF Output	SMA Female	Output	Connect to a suitable 50 Ω load, coupler, antenna, or RF system
Main Supply	Pin terminal	Input	Nominal +32 VDC supply for RF power operation
Ground	Pin terminal / housing	Reference	Use low-impedance grounding and proper mechanical bonding to the host system
Enable	Pin terminal	Input	Enable control input for RF output activation
Thermal Interface	Baseplate	Mechanical	Mount to heatsink or cold plate using appropriate thermal interface material

Recommended Operating Practice

BEFORE RF OPERATION

- Mount the module to a suitable heatsink or cold plate.
- Verify correct +32 VDC and ground connections.
- Connect the RF output to a rated 50 Ω load or system path.
- Confirm that the RF input level is within the specified operating range.

DURING OPERATION

- Apply RF drive only when the output path is properly terminated.
- Maintain adequate cooling during continuous-wave operation.
- Use the enable input to control RF output state.
- Do not operate into an open or unknown load condition.

Operating Guidance

Recommended practices for reliable module integration

POWER-UP SEQUENCE

1. Mount the module to the thermal interface before operation.
2. Connect the RF output to a suitable 50 Ω load or system path.
3. Apply the main +32 VDC supply.
4. Apply the enable signal only after supply and RF connections are verified.
5. Apply RF input drive within the specified operating range.

POWER-DOWN SEQUENCE

1. Remove or disable the RF input drive.
2. Disable the amplifier using the enable input.
3. Remove the main +32 VDC supply.
4. Allow the module and heatsink to cool before handling.

Thermal Integration

External heatsink or cold-plate cooling is required

Item	Recommendation	Notes
Cooling Method	Heatsink / cold plate	The module must be mounted to a suitable thermal mass before RF operation.
Thermal Interface	TIM required	Use thermal pad, thermal grease, or approved interface material between module and heatsink.
Mounting Surface	Flat, clean surface	The mating surface should provide good mechanical contact and low thermal resistance.
Airflow	Application dependent	Forced airflow may be required depending on duty cycle, ambient temperature, and heatsink size.
Temperature Monitoring	Recommended	System-level temperature monitoring is recommended for continuous operation.

RF LOAD REQUIREMENTS

- Operate only with a suitable 50 Ω RF load or matched RF system.
- Ensure the RF output path is connected before enabling RF output.
- Use cables, adapters, couplers, and loads rated for the required RF power.
- Avoid operation into open, shorted, or unknown load conditions.

HANDLING & INTEGRATION

- Handle the module using standard ESD precautions.
- Do not exceed the specified supply voltage or RF input level.
- Use low-impedance grounding between the module, heatsink, and host system.
- Verify all electrical and mechanical connections before applying RF power.

Continuous-Wave Operation

The amplifier module is intended for continuous-wave operation when integrated with adequate thermal management and a properly matched RF output path. System designers should verify heatsink temperature, airflow, RF loading, and supply stability under the intended operating conditions.

Reliable operation depends on correct thermal design, proper 50 Ω RF termination, stable DC supply, and operation within the specified electrical limits.

Ordering Information

Product ordering code and configuration summary

Ordering Code	Description	Status
ERA-2400-2500-60W-32P-MOD-A	2400–2500 MHz, 60 W CW RF power amplifier module, +32 VDC supply, SMA RF input/output, enable control input.	Released

Configuration Summary

Standard module configuration

STANDARD FEATURES

- 2400–2500 MHz ISM-band operation
- 60 W CW nominal RF output power
- +32 VDC main supply input
- Enable input for RF output control
- SMA Female RF input and output connectors
- Aluminium module housing for system integration

INTEGRATION REQUIREMENTS

- External heatsink or cold-plate cooling
- Suitable 50 Ω RF load or matched RF system
- Stable DC power supply with adequate current capability
- Low-impedance grounding to host system
- System-level verification under final operating conditions

Document Information

Revision and publication status

Item	Value	Notes
Product	ERA-2400-2500-60W-32P-MOD-A	ISM-band RF power amplifier module
Document Type	Datasheet	Customer-facing product information
Revision	Rev A	Initial release
Classification	Public	May be shared with customers and integration partners
Product Status	In Production	Specifications may be updated as part of product improvement

Revision History

Revision	Date	Description
Rev A	05.2025	Initial datasheet release.

Information in this document is provided to support customer evaluation and system integration. E-REON may update product specifications, configuration options, and documentation as part of continuous product development.

CONTACT

For product information, configuration options, and application support, please contact E-REON B.V. or visit the official E-REON product channels.