CML Micro

PRODUCT BRIEF

CML Distributor Confidential

CMX90A002

1W - 2W 860 - 960 MHz Power Amplifier

Next-Generation ISM-band Power Amplifier

www.cmlmicro.com

About CMX90A002

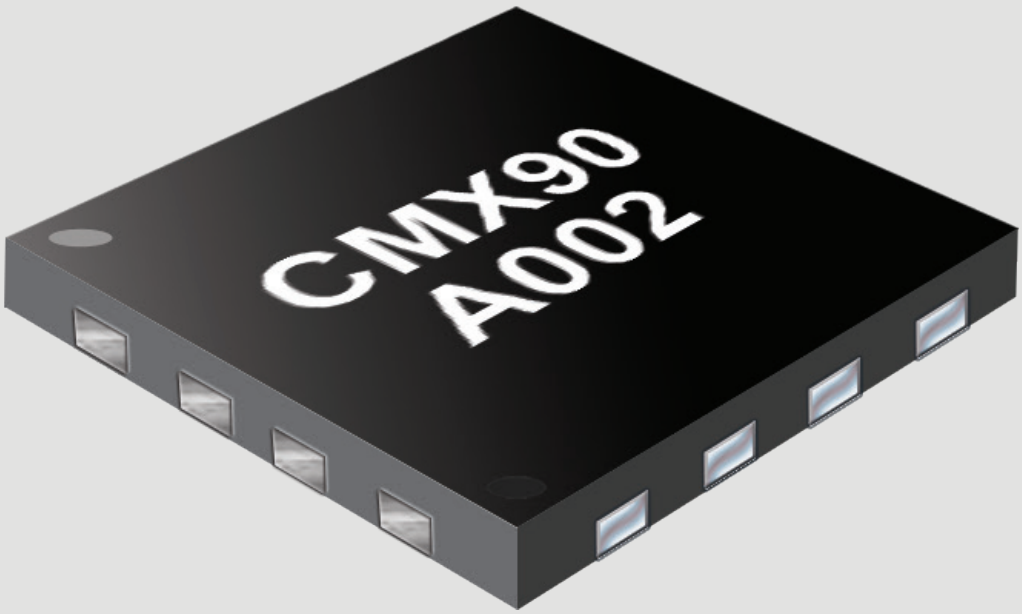
WHAT IS IT

The CMX90A002 is a two-stage, fully matched MMIC power amplifier for 860–960 MHz applications. It delivers up to 32.5 dBm saturated output power from a compact 3 × 3 mm VQFN-16 package.

The device is a new evolution of the existing CMX90A003 & CMX90A004 ISM-band amplifier family. It combines the wider voltage capability previously addressed across those devices into a single PA operating from 1.9 - 4.5 V, into a smaller 3 x 3 mm package.

The CMX90A002 is optimised for maximum efficiency across a wide collector-voltage range and is suitable for systems powered directly from a super-capacitor backup store or from a single-cell Li-ion battery.

External component count is reduced through integrated input and output matching and on-chip bias circuitry, including an input DC-blocking capacitor.

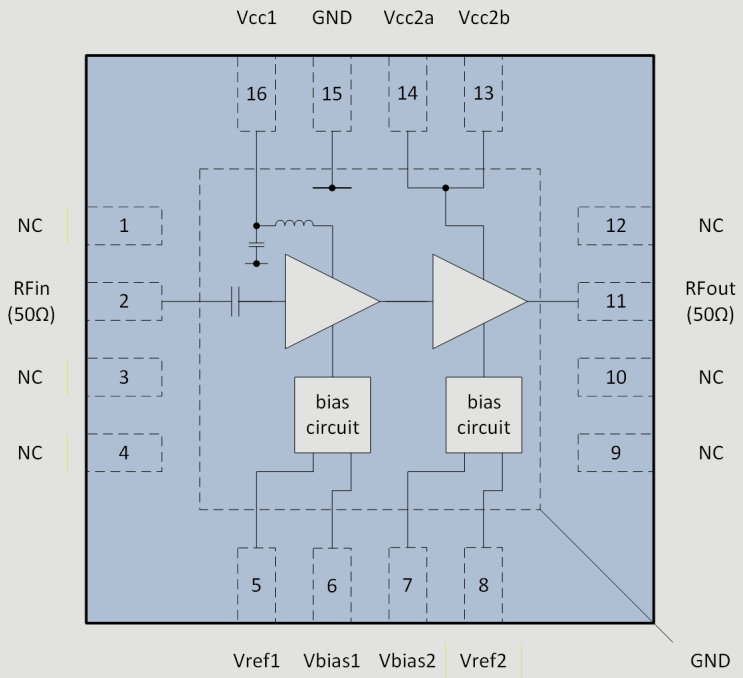


CORE VALUE PROPOSITION (Why It Matters)

- **Smaller Package:** the CMX90A002 uses a 9mm² (3 x 3 mm) package, rather than 16 mm² (4 x 4 mm), as used by the CMX90A003 and CMX90A004; ~44% smaller. This allows high-efficiency ISM-band Power-Amplification in a smaller PCB area; great where the customer's PCB-space is limited.
- **Wider voltage operation:** One PA covers the full 1.9 – 4.5 V supply range for new 860–960 MHz designs. This compares to the smaller voltage ranges that the other family components can operate over: (CMX90A003: 1.9 – 2.5 V; CMX90A004: 2.7 –4.5 V).
- **Up to +32.5 dBm** saturated output power and 49 % PAE provide a strong combination of RF output and efficiency.
- **Integrated matching** and bias circuitry reduce external RF components and simplify implementation.
- **The broader voltage range** gives designers greater freedom to use the same PA across different power-source and supply-rail architectures.

WHAT IS DIFFERENT (Key Upgrades)

- **Moves from a 4 × 4 mm** footprint to 3 × 3 mm, reducing package area by ~44 %.
- **Combines** the CMX90A003 1.9 – 2.5 V use case and the CMX90A004 2.7 – 4.5 V use case into one device covering 1.9 – 4.5 V.
- **Designed** to provide comparable performance with reduced physical size.
- **Automatic shut-down** and output-power control are integrated.
- **The smaller, wider-voltage device** is intended to make CMX90A002 the easier choice for new designs.



How to Sell

WHY CONSIDER CMX90A002?

CMX90A002 is a Next-Generation ISM-Band Power Amplifier, combining competitive small-package with unique on-chip RF-matching to reduce total board-space and BoM, with a world-beating ultra-wide voltage supply-range.

PORTFOLIO / MIGRATION POSITIONING

CMX90A002 should be positioned as a new option for new designs and redesign activity, not as a forced replacement for CMX90A003 or CMX90A004.

- The principal migration argument come down to:
  - Need to condense physical area taken up by existing CMX90A003 or CMX90A004 solutions.
  - Need to operate the device over a wider voltage range: 1.9 – 4.5 V, rather than 1.9 - 2.5 V, or 2.7 - 4.5 V.
- There are no significant RF performance differences between CMX90A002 or the existing CMX90A003 or CMX90A004 devices.
- CMX90A002 has the same pin-order as CMX90A003 and CMX90A004, BUT the device is NOT pin-compatible, due to the smaller package-size. Anyone thinking of using CMX90A002 in preference to the CMX90A003 or CMX90A004 will have to re-design the system PCB to take account of the smaller package, and consequently the smaller package pad-ring.
- There is no cost-advantage of using CMX90A002 in place of CMX90A003 or CMX90A004.

IMPORTANT CAVEAT

The existing CMX90A003 and CMX90A004 are remaining as full-production products, and there should be no hints given that these parts are being discontinued and being replaced by CMX90A002. Existing customers should continue using CMX90A003 and CMX90A004. If however they are re-designing a solution, then CMX90A002 can be considered IF space-saving or a more flexible voltage-supply range are the key requirements.

TARGET APPLICATIONS

- Automatic Meter Readers (AMR)
- Smart meters
- Wireless modules
- Asset-tracking
- Final-stage power amplifiers
- Internet of Things (IoT)
- 868 / 915 MHz ISM applications
- Li-ion battery-powered systems

The strongest application story is compact smart-meter and industrial-IoT radio designs operating around 900 MHz, particularly where supply voltage varies significantly or PCB area is constrained.

TARGET CUSTOMERS

Smart-meter and IoT manufacturers, including:

- Landis+Gyr
- Badger Meter
- Vision Metering
- Xylem
- Inovonics
- Johnson Controls
- Aclara
- GE Lighting
- Tantalus
- Mueller
- Mesh-Net
- Subeca
- Trilliant
- IUSA
- Kamstrup

KEY FEATURES

- 3 × 3 mm VQFN-16 package
- 860 – 960 MHz frequency range
- 1.9 – 4.5 V supply voltage
- 32.5 dBm saturated output power at 3.6 V
- 29.5 dBm saturated output power at 2.5 V
- 30 dB small-signal gain
- 49 % PAE
- 50 Ω matched input and output
- Automatic shut-down and output-power control
- Two-stage, fully matched MMIC PA architecture

COMPETITIVE POSITIONING

- **Wide Power-Supply Range:** 1.9 - 4.5 V
- **Small package:** 3 × 3 mm VQFN-16
- **Upto 32.5 dBm** Psat (at 4.5 V)
- **High PAE:** 49 %
- **High Gain:** 31 dB
- **Integrated 50 ohm matching**
- **Integrated Power-Control functions**

Actions Required

Contact all potential customers

- Lead with the smaller 3 × 3 mm footprint.
- Then mention the wider Supply Voltage Range: 1.9 – 4.5 V.
- Prioritise new smart-meter, industrial-IoT, wireless-module and compact 900 MHz designs.
- Look for redesigns where customers are changing PCB size, battery architecture or PA supply rails.
- Use the ~44 % package-area reduction as a concrete design benefit.
- For existing CMX90A003 / A004 customers, position CMX90A002 as an option at the next redesign rather than creating an unnecessary migration event.
- Evaluation Board (EV90A002) will be available from DigiKey, Mouser and RFMW.

FREQUENTLY ASKED QUESTIONS

Q. Does the CMX90A002 need off-chip RF matching to 50 Ω?

A. No. Both the RF Input and RF Output pins on CMX90A002 are matched internally to 50 Ω .

Q. Why should I change from CMX90A003 or CMX90A004 if my existing design already works?

A. There is no requirement to change an established design. CMX90A002 is primarily intended to simplify new designs or redesigns through its smaller footprint and wider supply range.

Q. What is the main benefit beyond package size?

A. The device combines 1.9 – 4.5 V operation with the smaller package, allowing one PA choice across a broader range of system power architectures.

Q. Is there a thermal penalty from moving to 3 × 3 mm?

A. The supplied product positioning states that comparable performance is achieved with no expected thermal penalty.

Q. Can the CMX90A002 be controlled using Digital Control?

A. No, but there are features which can be adjusted, such as bias-current. Psat Output level is variable depending on the supply voltage. ....

Q. Does CMX90A002 replace CMX90A003 and CMX90A004?

A. No. The CMX90A002 compliments the existing CMX90A003 and CMX90A004. CMX90A003 and CMX90A004 will not be withdrawn.

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
CMX90A002QF-R710	7" Reel with 1,000 pieces
CMX90A002QF-R350	13" Reel with 5,000 pieces
EV90A002	Evaluation board

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