



MATERION

CuPack™ Power RF Packages

Cutting edge, high power Silicon (Si), Gallium arsenide (GaAs), and Gallium nitride (GaN) transistors and MMICs demand very low thermal resistance and very low RF loss. CuPack™ power RF packages deliver outstanding performance for both requirements.

Our leading power RF packages feature 0.20 mm thick copper leads and base, and an alumina ceramic ringframe. They are electrolytically plated with nickel and gold and compatible with a wide range of die attach materials. They are available as surface mount packages with lead configuration options of straight, gull wing, or J-shaped forms.

Advantages of CuPack Packages

- Very low thermal resistance: die attach onto a 0.20 mm thick copper base
- Very low RF loss: air cavity with alumina ceramic ringframe
- Industry standard footprints, interchangeable with many plastic packages
- Direct bond copper construction; narrow lead pitch is possible
- Cavity area up to 3.8mm x 3.8mm for 420°C rating
- Cavity up to 5.0mm x 5.0mm for 320°C rating
- Wide variety of standard designs, plus rapid fabrication of new designs based on customers drawings
- Over 15 years of proven performance and reliability

We offer high-performance RF and microwave packages optimized for power devices. Ceramic insulated or ceramic air cavity packages are available in a variety designs for GaN MMICs and FETs, Si LDMOS FETs, and GaAs FETs. In addition to CuPacks RF packages, we manufacture BeO packaged as well as ceramic air cavity packages with bolt-down flanges.

Materion offers a wide range of ceramic packages to meet the demands of low thermal resistance. Our products provide very low RF loss for RF and microwave microelectronic packaging. In addition to our packages, we can incorporate flanges made from advanced materials to achieve the high-power density requirements of RF power transistors.

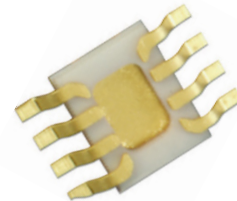
Accountability and Environmental Review

Customers are invited to review or audit Materion's manufacturing, environmental or financial policies and practices with respect to their refines.

Compliance and Environmental Leadership

All disposal procedures comply with state and federal regulations. Accreditations and certifications include:

- ISO 9001:2008 Quality System
- ISO 14001:2004 Environmental and Safety Management System
- Lean Sigma



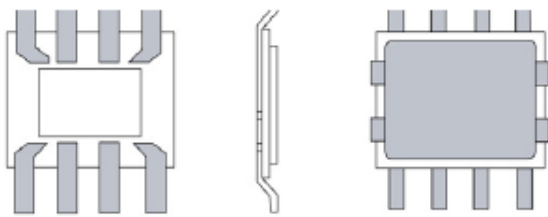
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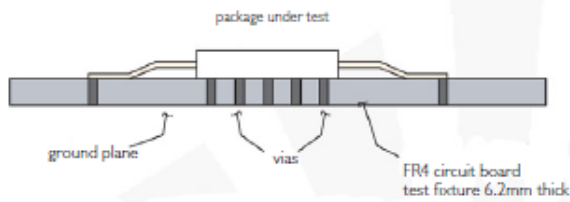
RF024 Electrical Characterization

Electrical Test Setup:

The RF024 CuPack™ packages utilize a copper base which is also the die pad. Below is a side view of how the package was fixtured for measurement. The vias directly under the package connect the package to the circuit board ground plane. In this case, 12 vias were used in a 6.2 mm thick FR4 circuit board, resulting in an equivalent ground inductance of 0.18 nH.



CuPack™ Package RF024



Side view of fixture used to measure packages

EQUIVALENT CIRCUIT VALUES:

L1	Lm1	L2	Lm2	Lgnd	R1	Rgnd
1.55nH	0.54nH	1.4nH	0.42nH	0.18nH	5K Ohms	1 Ohm

C1a	C1b	Cm1a	Cm1b	C2a	C2b	Cm2a	Cm2b	Cgnd
0.03pF	0.25pF	.003pF	.034pF	0.01pF	0.18pF	.001pF	.034pF	0.7pF

Insertion Loss:

Measured thru response of RF024 package with 60 mm long 50 Ohm transmission line inside package. Response includes fixture parasitics. Lid not installed.

