



Ceramic QFN Frequently Asked Questions

What are the advantages of Barry ceramic QFN packages compared with plastic QFNs?

Our ceramic QFNs are fully hermetically sealable as per MIL-STD -883 Test Method 1014 (universally accepted test designed to determine the effectiveness or hermeticity of the seal). Plastic packages are sometimes offered as 'Near Hermetic'. A 'Near Hermetic' configuration provides enhanced resistance to moisture entry into a package, but they are not hermetic as defined by the military specs. In addition, ceramic packages can withstand much higher temperatures. Where these characteristics are required or are highly desirable, our offerings provide greater value. The latest copy of MIL-STD-883 can be obtained at www.dsc.dla.mil/.

How do you leak test Barry C-QFN Packages?

Our ceramic QFNs are tested using method 1014 of MIL-STD-883 test condition A4 (unlidded package). The acceptance leak rate for this test is 1×10^{-8} atm-cc/sec. This test is performed using vacuum and helium leaking through the package is measured using a mass spectrometer.

What are the standard sizes and configurations of Barry ceramic QFN packages?

Our available in 6 sizes: 3mm to 8mm. Each size is available with either:

- 1: Bare Seal Ring
- 2: Grounded Seal Ring
- 3: Grounded Seal Ring with Castellations

What are the differences between the three forms of Barry ceramic QFN packages?

- 1: Bare Seal Ring - Epoxy lid attach - Not completely hermetic - lower cost
- 2: Grounded Seal Ring – Typically solder lid attach (AuSn eutectic) - Is Hermetic - Slightly lower cost than Castellated
- 3: Grounded Seal Ring with Castellations – Typically solder lid attach (AuSn eutectic) – Is Hermetic - Castellations allow solder fillets to form and therefore make inspection of pin solder joints possible by visual inspection rather than x-ray.

If I need a hermetic seal – which Barry ceramic QFN package type and lid type should I use?

Use either grounded seal ring or grounded seal ring with castellations version of QFN in conjunction with LID-XX-010, LID-XX-020 or LID-XX-030.

How do I attach a lid to the ceramic QFN package in order to create a hermetic seal?

Lids are typically attached using gold tin solder. We can provide lids with gold tin preforms attached as an option.

What custom options are available for ceramic QFN packages?

We can custom design a QFN to meet your requirements. Examples of custom changes to our standard ceramic QFN line include – custom pin counts, custom lead pitches, custom lead lengths, custom paddle sizes, alternate via placements and custom cavity depths.

What are the advantages of an AIN ceramic QFN packages compared with an Alumina ceramic QFN?

The net effect in the package is that the thermal resistance of an AIN package is about 1/3 that of the equivalent alumina package. Due to the relatively small difference in permittivity, the RF performance is essentially the same for both materials.

Are CAD - STEP files available of ceramic QFN packages?

Yes. We have 2-D QFN drawings on our website. 3-D QFN drawings are available by contacting our engineering department at engineering@barryind.com

What is the MOQ for ceramic QFN packages?

The MOQ for ceramic QFN packages is 25 pieces. However we are happy to provide free of charge samples.



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Can you support high volume production of ceramic QFN packages?

Yes.

What is the maximum operating temperature of ceramic QFN packages?

150°C

How much power can I dissipate with ceramic QFN packages?

Power dissipation of devices mounted in packages is generally limited by the maximum temperature that the active area of the device can tolerate. Since this is device and application specific, we are unable to directly rate the power dissipation capabilities of each package. We have, however, provided thermal resistance for each package configuration. With this information and the details of the application, the power dissipation can be readily determined.

What product life cycle stage are Barry ceramic QFN packages?

Released to Manufacturing

Do you offer a package assembly service for the ceramic QFN packages?

Yes. We have relationships with contract manufacturers that can assemble your die in our ceramic packages to your specifications.

Do you offer test services and high reliability screening for the ceramic QFN packages? (i.e. MIL 38535)

We offer a range of test services and high reliability screening. We can perform a number of the tests (e.g. thermal cycling, thermal shock, leak rate, solderability, DC and RF electrical test, etc.). For some testing such as salt atmosphere, we employ local qualified labs to augment our capability.

Do the ceramic QFN packages require degolding/pre-tinning to avoid gold embrittlement issues?

Our ceramic QFN packages are plated with Electroless Nickel, Electroless Palladium Immersion Gold (ENEPIG) which minimizes the risk of gold embrittlement as the gold layer is much thinner than that of standard gold plating schemes (typically less than 10 micro-inches) and is usually exempt from gold removal requirements (e.g. J-STD-001 – 3.9.3).