



Prototyping for Space-Flight Designs with Microchip RT-PROTO FPGAs

Introduction

To facilitate lower-cost prototyping and design validation activities, Microchip offers RTSX-SU, RTAX-S, RTAX-DSP, RT ProASIC3, RTG4™ and RT PolarFire® FPGAs in “RT-PROTO” form. RT-PROTO devices use the same silicon and the same packages as the flight-model FPGAs, however in order to reduce costs, some flight-model tests are not performed on the RT-PROTO devices.

Please note the following in regard to RT-PROTO units:

1. RT-PROTO FPGAs are intended for hardware timing verification only. They should not be used for space flight applications. They should also not be used for applications or activities which require the quality of space flight parts, such as qualification of space flight hardware.
2. RT-PROTO parts are tested across the full military temperature range (–55 °C, room temperature, and 125 °C). No Mil-Std-883 Class B testing is performed. RT-PROTO parts are not subjected to temperature cycling, fine and gross leak testing, X-ray inspection, PIND testing, assembly-lot Group B testing, or burn-in.
3. Microchip does not guarantee life time or reliability of RT-PROTO.
4. RT-PROTO FPGAs are offered in ceramic and plastic packages. The hermeticity of the lid seal is not tested and is not guaranteed. The seal integrity should be sufficient to protect the FPGA during normal PCB manufacturing and cleaning processes. However, since hermeticity is not guaranteed, the RT-PROTO devices should not be subjected to thermal vacuum tests. System level flight-model qualification should be performed with flight-qualified FPGAs, meaning FPGAs screened to at least Mil-Std-883 Class B.
5. The lids of RT-PROTOS have a shallow dimple drilled through the top plating layers but not penetrating the thickness of the lid. The purpose of this dimple is to deter counterfeiting. The drilling operation does not cause operating characteristics of the device to deteriorate. RTG4 PROTOS in the plastic FC1657 and FCG1657 packages do not have such dimple to reduce the risk of damaging the device during the process of applying dimple.
6. RT-PROTO units may be assembled using an assembly process that is not qualified for space flight.
7. RT-PROTO units will be marked as “PROTO”.
8. RT-PROTO units may have cosmetic visual imperfections.
9. RT-PROTO units are not DLA or QML certified.
10. RT-PROTO units are not tested for radiation performance.
11. A system generated Certificate of Conformance will ship with the units, note this is not hand-signed by Quality Assurance. No other data will be shipped, or is available for shipment, with RT-PROTO units.
12. Microchip provides general technical support for RT-PROTO through the local Field Application Engineers and through the general Technical Support channels, but will not provide failure analysis support for RT-PROTO devices.
13. If programming at the Microchip factory is required, the programming files must be supplied at the time of order placement; Microchip cannot reserve inventory or units from lots in process pending receipt of customer programming files.
14. No special or customer specific testing will be available for RT-PROTO units. Requests for Single Lot Date Code, specific date codes, Single Wafer Lot, date code restrictions, or specific wafer lots will not be accepted.
15. Microchip cannot guarantee availability of flight units from the same wafer lot or date code as the RT-PROTO units.

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16. No customer QA or Purchase Order clauses will be reviewed/accepted on RT-PROTO orders. There will be no review of customer Terms and Conditions on RT-PROTO orders. Orders will be accepted to Microchip standard Terms and Conditions only.
 17. RT-PROTO FPGA units are under the same export controls as standard RT FPGA units.

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1. Revision History

Revision	Date	Description
B	03/2022	<ul style="list-style-type: none">• Added RT PolarFire[®].• Updated item #2: Fine and Gross Leak testing was added to the list of tests RT-PROTO should not be subjected to.• Added item #3 and #12.
N/A	09/2017	This was the initial release of the document.

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- Distributor or Representative
- Local Sales Office
- Embedded Solutions Engineer (ESE)
- Technical Support

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