RT PolarFire Military Temperature Engineering Silicon (MS) FPGAs
December 21, 2020

To facilitate design evaluation activities of the new RT PolarFire FPGA family, Microchip offers RT PolarFire MS devices. These devices use the first RT PolarFire silicon. Note that some flight-model tests are not performed on the RT PolarFire MS devices:

1. RT PolarFire MS devices are intended for hardware functional 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 PolarFire MS devices are tested at full military temperature from –55°C to 125°C (see note 3 below for exceptions), while RT PolarFire Engineering Sample (ES) devices are only tested at room temperature.
3. The following features on RT PolarFire MS devices have received testing at full military temperature and at both core voltages (1.0V and 1.05V):
   - FPGA Fabric
   - GPIO, HSIO and DDR interfaces
   - CCC/PLL, uSRAM and DSP Mathblocks
   - SERDES for native SERDES (ePCS) and PCIe interfaces
   - Program/Erase through JTAG interface

   The following features are tested to a limited temperature and voltage range:
   - LSRAM – tested from -55°C to 100°C at 1.0V ±3%. Do not operate LSRAM at junction temperature greater than 100°C, or at 1.05V. While MS supports operation of LSRAM to a maximum of 100°C and at 1.0V only, the final qualified flight silicon will support operation to a maximum of 125°C and will support operation at 1.0V and 1.05V core supply voltage.

   No other features have been tested on RT PolarFire MS devices.
4. No MIL-STD-883 Class B testing is performed. RT PolarFire MS devices are not subjected to temperature cycling, fine and gross leak testing, X-ray inspection, PIND testing, assembly lot Group B testing, or burn-in.
5. Customers are recommended to operate RT PolarFire MS devices within the datasheet recommended operating conditions.
6. Microchip does not guarantee life time or reliability of RT PolarFire MS devices.
7. RT PolarFire MS devices are offered in Ceramic Column Grid Array (CCGA, CG1509), Ceramic Ball Grid Array (CBGA, CB1509) or Ceramic Land Grid Array (CLGA, LG1509) 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 PolarFire MS 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.

8. The lids of RT PolarFire MS devices 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.

9. RT PolarFire MS units may be assembled using an assembly process that is not qualified for space flight.

10. RT PolarFire MS units will be marked as "MS".

11. RT PolarFire MS units may have cosmetic visual imperfections.

12. RT PolarFire MS units are not DLA or QML certified.

13. RT PolarFire MS units are not tested for radiation performance.

14. A system-generated Certificate of Conformance will be shipped with the RT PolarFire MS units. No other data will be shipped or available to ship with the RT PolarFire MS units.

15. Microchip provides general technical support for RT PolarFire MS through the local Field Application Engineers and through the general Technical Support channels, but will not provide failure analysis support for RT PolarFire MS devices.
Technical Support Contact Info:
Web: soc.microsemi.com/mycases
Phone (NA): 800.262.1060
Phone (Int'l): +1 650.318.4460
Email: soc_tech@microsemi.com

16. 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.

17. No special or customer specific testing will be available for RT PolarFire MS units. Requests for Single Lot Date Code, specific date codes, Single Wafer Lot, date code restrictions, or specific wafer lots will not be accepted.

18. Microchip cannot guarantee availability of flight units from the same wafer lot or date code as the RT PolarFire MS units.

19. No customer QA and/or P.O. clauses will be reviewed or accepted on RT PolarFire MS orders. There will be no review of customer Terms and Conditions on RT PolarFire MS orders. Orders will be accepted to Microchip standard Terms and Conditions only, http://www.microsemi.com/terms-a-conditions

20. RT PolarFire MS units are subject to the same export controls as standard RT FPGA units.