
Functional Safety Ready PIC16 and PIC18 Microcontrollers

When implementing the safety features of safety-critical equipment using electronics, hereunder microcontrollers, it is required to comply with the applicable functional safety standards, whether it is automotive, industrial or medical applications. Necessary information about a microcontroller's failure rate and failure modes are rarely covered in the data sheet, and it is therefore imperative that the vendor of the microcontroller provides this information separately. The two most important documents are the Failure Mode Effect and Diagnostics Analysis (FMEDA) report and the Safety Manual. With these documents, the embedded designer can meet the requirements of a safety-critical design and document the use of recommended mechanisms to detect failures in the system.

All PIC16 and PIC18 Microcontrollers are Suitable for Safety-Critical Designs



FMEDA reports and Safety Manuals are available for all PIC16 and PIC18 microcontrollers marked as "Functional Safety Ready". The documents can be provided on request to your local [Microchip Sales Office](#). If the product you want to use is not yet marked "Functional Safety Ready" – contact Microchip anyway: FMEDAs can be created on request for most products. For more information about Functional Safety Ready PIC16 and PIC18 products, visit the [Functional Safety Design center](#).



A large number of the PIC16 and PIC18 microcontrollers have been tested and qualified in accordance to the AEC-Q100 requirements, meaning they are [qualified for automotive](#) use. These products are typically Grade 1 (125°C), but can in some cases, also be provided as Grade 0 (150°C). Further, some products are available in QFN packages with wettable flanks for better soldering characteristics and lower production test cost.



Microchip has experts on functional safety in all geographies who are ready to advise and assist you in achieving safety compliance for safety-critical automotive, industrial and medical applications. Microchip can also help you find [expert consultants](#) if advanced design services are required.

Safety Certified Development Tools

To ease the certification of safety-critical applications, Microchip offers a range of development tools targeting safety applications: The [MPLAB® X](#) and [MPLAB XC Compiler](#) Licenses for functional safety include all the documentation and reports needed to have a fully qualified ISO 26262, IEC 61508, IEC 62304 and IEC 60730 development environment, including certification by TÜV SÜD. This can be combined with the diagnostic power of the [MPLAB Code Coverage](#) tool to further simplify your functional safety certification process.



The Microchip Website

Microchip provides online support via our website at <http://www.microchip.com/>. This website is used to make files and information easily available to customers. Some of the content available includes:

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

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- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.
- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as "unbreakable."

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