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MFCC-8581 SBC

INTEL Core-i7 11th Gen Safety Critical Module, BuiltSAFE™

ITAR FREE

A rugged, safety critical SBC for high-performance embedded computing applications

- Intel Core-I7 1186GRE 4-Cores @1.8GHz
- Intel Iris Xe GPU @1.35GHz
- 2x DDR4 x16 channels (16GB each) up to 3200MT/s supporting In Band ECC
- 64GB SSD (SLC technology)
- INTEL Functional Safety (FuSa)
- Safety certifiable with DO-254 and DO-178C artifacts up to DAL-B
- Evidence to cover:
  - AC/AMC 20-152A
  - AC/AMC 20-193

For mission critical flight computing, this rugged Single Board Computer combines the Intel 11th Gen Core i7 UP3-class processor, Intel FuSa, and exclusive AEP access to unlock higher performance, accelerate integration, and long-term lifecycle support. Scalable, RTOS agnostic, and designed for DAL B certifiable aerospace applications - with no export restrictions.

Highlights

- Compact Single Board Computer for modular and scalable system integration.
- Safety critical SKU (1186GRE) version of the embedded mobile processor version (UP3-class) of INTEL core i7 CPU from 11th generation.
- High-Performance Embedded Computing; Optimized for real-time safety critical application, in a competitive power budget.
- Exclusive partnership with INTEL providing access and advanced support to the Airworthiness Evidence Package (AEP) necessary for AEH Complex certification requirements (AC/AMC 20-152A.)
- INTEL Functional Safety (FuSa) implementation
- Ruggedized Design: Built to withstand extreme temperatures, shock, vibration, and other harsh environmental conditions.
- Real Time Operating System-agnostic, supports any safety critical RTOS and allows monocore or multicore operations (as per AC/AMC20-193).
- Safety-Certifiable: Suitable for use in applications up to Design Assurance Level B (DAL-B) per DO-178C/DO-254 standards.
- Available in 2x variants:
  - XMC variant: compliant to XMC 2.0 VITA 42 / VITA 61 standards
  - SFF variant: optimized for Small Form Factor Integration
- Compatible Mercury product line:
  - XMC variant: ROCK-2 / ROCK-3
  - SFF variant: ROCK-4
- ITAR-Free: Fully exportable, enabling use in international programs without export restrictions.

DESIGNED WITH BUILTSAFE™ TECHNOLOGIES—TESTED, CERTIFIED AND FIELDED OVER THREE DECADES

The MFCC-8581 board is architected using Mercury's proven BuiltSAFE Commercial-Off-The-Shelf (COTS) elements and artifacts to deliver flawless performance and ease of systems integration. Modular and reusable, BuiltSAFE technologies maximize interoperability and speed technology refresh by minimizing the need for recertification. Mercury's BuiltSAFE solutions have been designed, tested, certified and fielded over three decades on multiple safety-critical platforms.

TECHNICAL SPECIFICATIONS

Processing and Video

- Intel Core-I7 1186GRE 4-Cores @1.8GHz base freq. (UP3-class)
- Intel Iris Xe GPU @1.35GHz

Functional Safety

- TDP disabled
- Funtional Safety Island (INTEL FuSa)
- Board Management Controller (BMC)
- Configurable Hardware Watchdog
- Thermal management

Memory

- 2x DDR4 x16 channels (16GB each) up to 3200MT/s supporting In Band ECC
- 256GB SSD TLC technology

XMC interfaces

- 1x PCIe gen4 x4 (CPU)
- 1x PCIe gen3 x4 (PCH)
- 2x PCIe gen3 x1 OR 2x SATA 3.0 (PCH) – a combination 1x PCIe/ 1x SATA may be supported
- 1x USB 2.0 (CPU)
- 1x USB 3.0 (CPU)
- 1x Display Port MST out (CPU) up to HBR3.
- 2x 1000BASE-KX (Ethernet controller I350)
- 2x 10GBASE-KR (Ethernet controller E810)
- 2x SPI with 2 CS / 1x SMBUS / 1x I2C / 2x UART (PCH)
- Optional 2nd DisplayPort (replaces 2x 10GBASE-KR)

Rugged and Low Power

- Operating Temp: 0°C to 55°C or -40°C to 85°C options. Customizable.
- DO-160G, MIL-STD-810G, MIL-STD-1686C, MIL-STD-202H option

Power Consumption

- Minimum: 23W
- Typical: 26W
- Maximum: 42.4W

SW support

- Optimized BIOS/UEFI
- Real Time operating System agnostic
  - PikesOS (SYSGO)
  - LynxOS-178 (LYNX)
  - Integrity (GHS)
- Allows monocore or controlled multicore operations
- Certifiable bootloader

Variant

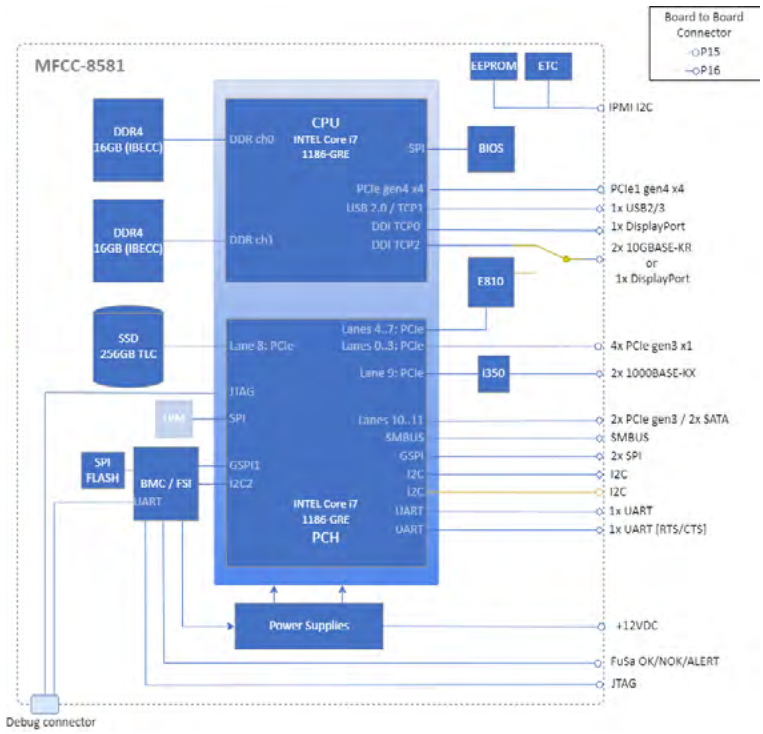
- XMC variant: compliant to XMC 2.0 VITA 42 / VITA 61 standards
- SFF variant: optimized for Small Form Factor Integration

BuiltSAFE™ Proven Elements

- DO-254 hardware up to DAL-B
- DO-178C Bootloader up to DAL-B
- Design and quality assurance
- Full Configuration control
- Pro-active Obsolescence Management
- All necessary evidences to cover requirement from:
  - AC/AMC 20-152A
  - AC/AMC 20-193

Export Control Classification (ECN)

- CH ECN: N/A
- Tariff Nr: 8471.5000
- LIC: No License Required (NLR)
- Origin: Switzerland



PRODUCT FAMILY INFORMATION

This product is part of the Mercury INTEL Core-i7 11th Gen comprehensive product family, leveraging design building blocks, knowhow and knowledge.

MFCC-8580	General Purposes, High processing XMC Single Board Computer (SBC) Module
MFCC-8581	Safety Critical, (DAL-B/A), XMC Single Board Computer ▪ XMC variant compliant to XMC 2.0 VITA 42 / VITA 61 standards ▪ SFF variant optimized for Small Form Factor Equipment Integration
CIOB-2580	Safety Critical, (DAL-B/A), 3U-VPX Single Board Computer (SBC module)

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