DATASHEET

BuiltSAFE™ MFCC-8556

Freescale® QorIQ® P2 Conduction-cooled Single Board Computer PMC/XMC Module

- **Designed for DAL-C (DO-178C/DO-254) certification**
- **Freescale® QorIQ® P2020 processor**
- **Xilinx Spartan®-6 LXT user-programmable FPGA (1)**
- **Mercury Advanced Board Management Controller**
- **1x PCIe x2 on XMC (1), 2x GbE on PMC/XMC (1)**
- **1x USB 2.0 on PMC/XMC (1), 3x UARTs on PMC/XMC (1)**

(1) Optional

Mercury's BuiltSAFE™ products bring the highest level of flight safety assurance to aerospace and defense applications. Our proven, reusable Design Assurance Level (DAL) certified artifacts for mission computing, avionics, networking and datalink comms processing save time and cost while decreasing risk.

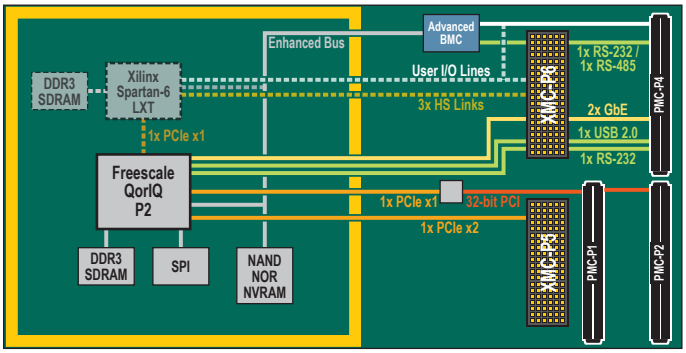
Mercury's BuiltSAFE MFCC-8556 is a powerful processing solution packaged in a PMC/XMC form-factor for airborne conduction-cooled applications. The MFCC-8556 is designed for the most demanding missions, combining high compute power and flight-worthiness capabilities in harsh environments.

The MFCC-8556 is Mercury's sixth generation PMC/XMC PowerPC multi-function processing solution, featuring a fast dual-core processor with high-speed links and bridges (PCIe, GbE) and an optional user-programmable FPGA for application development.

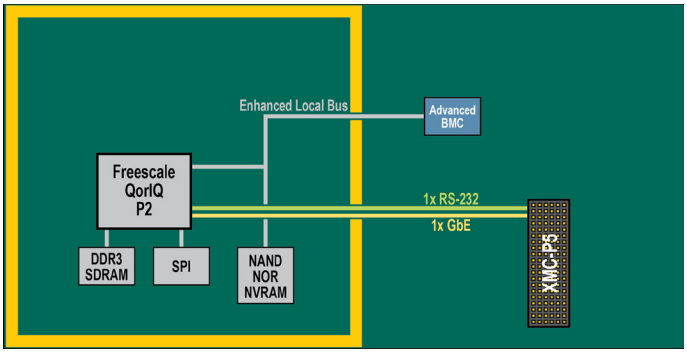
An Advanced Board Management Controller is implemented for configuration management, event logging and other supporting tasks. It monitors and controls the system continuously, ensuring reliability and safety even in the case of failure conditions.

BuiltSAFE for Avionics

Mercury's expertise and experience in safety certifiable solutions has been built on successful execution of dozens of programs over three decades. This domain knowledge is the foundation of our BuiltSAFE portfolio of open architecture modules, systems and software for avionics, communications, video servers, and mission computing.

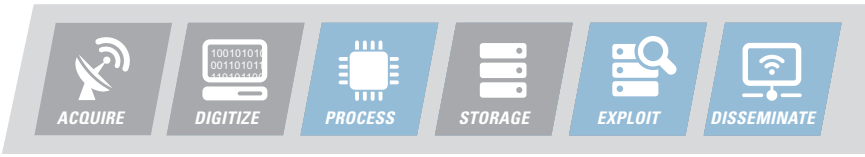


MFCC-8556GF



MFCC-8556PF

Mercury Systems is a leading commercial provider of secure sensor and mission processing subsystems. Optimized for customer and mission success, Mercury's solutions power a wide variety of critical defense and intelligence programs.



www.mrcy.com

Technical Specifications

Compliance

PMC: VITA 20, VITA 32

XMC: VITA 42

Power Consumption

minimum	typical	maximum	units
-	8	12 (1)	Watts

Processor

Freescale QorIQ P2020 (2 cores) @ 1.0 GHz

Memory

512 MB/2 GB DDR3 SDRAM @ 6.4 GB/s peak with ECC protection

2 GB Flash (NAND)

128 MB Flash (NOR)

256 KB NVRAM

User Programmable FPGA I/O

Xilinx Spartan-6 LXT FPGA with 128 MB DDR3 SDRAM (B) (D) (G)

User-specific I/O lines on PMC-P4/XMC-P6 (B) (D) (G) (L)

Buses

1x 32-bit PCI 3.0 bus at 33/66 MHz on PMC-P1/P2 (B) (G) (L)

Links / Connections

1x PCIe x2 on XMC-P5 (VITA 42.3) (D) (G)

3x high-speed links on user-programmable FPGA to XMC-P6 (D) (G)

2x 1000Base-T on PMC-P4/XMC-P6 (B) (D) (G)

1x 10/100Base-T on PMC-P4 (L)

1x 10/100/1000Base-T on XMC-P5 (P)

1x USB 2.0 host / device on PMC-P4/XMC-P6 (B) (D) (G)

2x RS-232 on PMC-P4/XMC-P6 (B) (D) (G)

1x RS-232 on PMC-P4 (L)

1x RS-232 on XMC-P5 (P)

1x selectable RS-422/485 on PMC-P4/XMC-P6 (B) (D) (G) (L)

(1) Without FPGA user functionality

(B), (C), (D), (G), (L) and (P) applies to B, C, D, G, L and P model options

Advanced Board Management Controller

CPU speed control logic

Advanced power management

Voltage and current monitoring

Temperature monitoring (thermal sensors on critical positions)

Advanced error reporting and logging

Development / Debug

Onboard JTAG test port

Ruggedization Levels

Level	Description	Cooling Type	Operating Temperature	Vibration (1 hour per axis)	Operating Shocks
C4	Extended range CC	Conduction	-40°C to 85°C [CC4]	5-100 Hz: increase at 3 dB/octave, 100-1000 Hz: 0.1 g^2/Hz, 1000-2000Hz: decrease at 6 dB/octave	40g, 11ms saw-tooth, three axes

Environmental Specifications

Condition	Limits, standards	Comments
Non-operating temperature	-55°C to 105°C [C4]	
Humidity	95%	
Altitude	-1,500 to 60,000 feet	May require conformal coating
Fungus resistance	No nutrient materials	
Workmanship	IPC-A-160 class 3	
Soldering	IPC J-STD-001 class 3	
PCB Manufacturing	IPC-A-600 class 3	
Conformal coating	IPC-CC-830	Optional
Materials	REACH compliant	ROHS variants as an option
Flammability	UL 94 Class V-0	
Quality	EN 9100:2008	

Product Ordering

MFCC-556BF	Conduction-cooled PMC with QorIQ P2020 @ 1.0 GHz, 512 MB DDR3, 2 GB NAND, 128 MB NOR, 256 KB NVRAM, Spartan-6 LXT 128 MB DDR3
MFCC-8556DF	Conduction-Cooled XMC with QorIQ P2020 @ 1.0 GHz, 512 MB DDR3, 2 GB NAND, 128 MB NOR, 256 KB NVRAM Spartan-6 LXT with 128 MB DDR3
MFCC-8556LF	Conduction-cooled PMC with QorIQ P2020 @ 1.0 GHz, 512 MB DDR3, 2 GB NAND, 128 MB NOR, 256 KB NVRAM (pin-out: MFCC-8448 compatible)
MFCC-8556PF	Conduction-cooled XMC with QorIQ P2020 @ 1.0 GHz, 512 MB DDR3, 2 GB NAND, 128 MB NOR, 256 KB NVRAM (no XMC-P6)
MFCC-8556DH	Conduction-cooled XMC with QorIQ P2020@1.0GHz 2GB DDR3, 2GB NAND, 128MB NOR, 256KB NVRAM, Spartan-6 LXT with 128MB DDR3

Conformal coating versions of these boards are also available.

OWW-36410A	VxWorks® BSP for MFCC-8550/56
OWW-36410E	VxWorks 653 BSP for MFCC-8550/56
OWX-36410L	Linux® Toolbox for MFCC-8550/56

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mercury systems™

INNOVATION THAT MATTERS™

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