

HARSH ENVIRONMENT MONITORING & CONTROL BOARD

HEMC-PCBA-01-A

APPLICATIONS

- Actuator Control and Monitoring
- Vehicle subject to Harsh and constraint environment



FEATURES

- NXP®/Freescale QorIQ embedded processor
- Microsemi® IGLOO2 FPGA low density device
- Real Time OS VxWORKS®
- µAFDX® / AFDX® interfaces
- Operating junction temperature range -55°C to 125°C
- Heat spreader thermal connection for ease integration

SPECIFICATIONS

CPU

UNIT

| | P1013 | P1022 | |
|--|-------|-------|-------|
| NXP SoC | P1013 | P1022 | |
| CPU Cores | 1 | 2 | |
| L1 Instruction Cache (each core) | 32 | 32 | Kbyte |
| L1 Data Cache (each core) | 32 | 32 | Kbyte |
| L2 Data Cache with ECC (shared by cores) | 256 | 256 | Kbyte |
| Double precision floating-point support | ✓ | ✓ | |
| Maximum CPU frequency | 1067 | 1067 | MHz |
| Integrated security engine (SEC) | ✓ | ✓ | |
| 64-bit DDR2/DDR3 SDRAM controller with ECC | ✓ | ✓ | |
| JTAG controller | ✓ | ✓ | |

MEMORY

UNIT

| DDR2 RAM Size | 256 | MByte |
|-----------------------|-----|-------|
| DDR2 RAM Speed | 333 | MHz |
| DDR2 RAM Memory Width | 32 | bit |
| NOR | 32 | MByte |
| EEPROM | 128 | KByte |

INTERFACES OVERVIEW

| LVDS (dual channel 620Mbps) | 2 |
|---|----|
| I2C | 2 |
| SPI | 1 |
| UART RS485 FULL DUPLEX | 2 |
| UART RS485 HALF DUPLEX | 1 |
| SD/MMC | 1* |
| Digital Serial Input | 7 |
| Digital Serial Output | 1 |
| PCIe Gen 2.0 (lane count) | 4 |
| 10/100 MBits/s Ethernet for Avionic Full Duplex | 4 |
| Power supply monitoring, airplane bus supply monitoring | 1 |
| Temperature sensors (PT100 type) | 3 |
| Environnemental sensors (4-20mA type) | 3 |

| | |
|---|--------------------------|
| Linear/Rotary Variable Differential Transformer (supply - acquisition, 1500/3500Hz) | 2 |
| Display Interface Unit | TFT LCD up to 1280x1024* |
| USB 2.0 (host/device) | 2* |
| GPIO | 87* |
| Serial ATA II (3Gbits/s) | 2* |

*These interfaces are available on pins that are not defined as standard interfaces in the Flight Management Unit. The pins are either located in the specific area or are alternate functions of other pins. There are restrictions on using different interfaces simultaneously. For more information feel free to contact us.

SUPPORTED OPERATING SYSTEM

| | |
|-------------------|---|
| VXWORKS ARINC 653 | ✓ |
|-------------------|---|

ELECTRICAL CHARACTERISTICS

| | MIN | TYP. | MAX | UNITS |
|-------------------|-------|------|-------|-------|
| Main power supply | 14.25 | 15 | 15.75 | V |
| POWER | | 8 | 12 | W |

MECHANICAL DATA

| | L | W | H | UNITS |
|----------------------|------------------------------|------|-------|-------|
| Dimensions | 136 | 112 | 13 | mm |
| | 5.35 | 4.41 | 0.512 | inch |
| Weight | | | 150 | g |
| | | | 0.33 | lb |
| Mechanical interface | 1 single connector 96 points | | | |

ENVIRONMENT DATA

| | MIN | TYP. | MAX | UNITS |
|--|-----|------|-------|-------|
| Galvanic insulation between signals / mechanical holes (1min test) | | | 500 | Vdc |
| Operating junction temperature range | -55 | | +125 | °C |
| Operating moisture | | | 80 | % |
| MTBF (MIL-HDBK_217F AUC @ 40°C) | | | 84700 | Hours |

STANDARDS

| | |
|------------------|--|
| Other | Pb-free reflow compatible and ROHS compliant |
| Design guidances | RTCA/DO-254 and RTCA/DO-178b compatible |

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