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.

The BuiltSAFE CB3P-6231 is a 3U OpenVPX™ PCIe switch PMC/XMC carrier board (VITA 46.9) for use with Mercury’s ROCK-2 chassis and backplanes. The carrier offers PCIe Gen1/Gen2/Gen3 lane switching capability, between PMC or XMC connectors and the backplane. The BuiltSAFE CB3P-6231 is packaged for commercial air-cooled and rugged conduction-cooled applications.

The carrier supports PMC (in monarch and non-monarch modes) or XMC mezzanines. PMC-J4 and XMC-J6 signal mapping to the OpenVPX-P2 connectors complies with VITA 46.9 P2w1 profiles: P2w1-P64s and P2w1-X24s+X8d+X12d respectively. PMC-J1/J2/J3 are connected to the PCIe switch through a PCIe to PCI/PCI-X bridge.

Additionally, the BuiltSAFE CB3P-6231 is available in air-cooled format for laboratory development purpose.

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.
Technical Specifications

Compliance
3U OpenVPX VITA 65
   Backplane switch profile SLT3-SWH-4F-14.4.4 (B2)
VPX-REDI VITA 48
XMC VITA 42 (XMC VITA 61 on request)
XMC PCIe VITA 42.3
PM C IEEE.1386
PrPMC VITA 32
PCI-X for PMCs and PrPMCs VITA 39
PMC/XMC Signal Mapping to OpenVPX to VITA 46.9
   P2w1-Ps on PMC-J4
   P2w1-X24s+X8d+X12d on XMC-J6

Power Consumption
Minimum  typical  maximum  units
-        7        12  Watts

Input/Output
Access to XMC-J6 I/O to VPX-P2 complaint with 46.9 P2w1-X24s+X8d+X12d
Access to all I PMC-J4 I/O to VPX-P2 compliant with VITA 46.9 P2w1-P64s

Switch/Bridges
1x PCIe Gen1/Gen2/Gen3 switch, 32-lanes
1x PCIe x4 to PCI/PCI-X bridge

High-Speed Links/Connections
4x PCIe x4 on OpenVPX connector (B2)
1x PCIx4 on XMC-J5
1x PCIe x4 on PCIe to PCI bridge (for PMC)

Sites (1)
1x XMC site
1x PMC site

Ruggedization Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Cooling Type</th>
<th>Operating Temperature</th>
<th>Vibration (1 hour per axis)</th>
<th>Operating Shocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Commercial AC</td>
<td>Forced Air*</td>
<td>0°C to 55°C [AC1]</td>
<td>5-100 Hz: increase at 3 dB/octave, 100-1000 Hz: 0.04 g^2/Hz, 1000-2000Hz: decrease at 6 dB/octave</td>
<td>20g, 11ms saw-tooth, three axes</td>
</tr>
<tr>
<td>C4</td>
<td>Extended range CC</td>
<td>Conduction</td>
<td>-40°C to 85°C [CC4]</td>
<td>5-100 Hz: increase at 3 dB/octave, 100-1000 Hz: 0.1 g^2/Hz, 1000-2000Hz: decrease at 6 dB/octave</td>
<td>40g, 11ms saw-tooth, three axes</td>
</tr>
</tbody>
</table>

* The required air-flow is defined separately for each product

Environmental Specifications

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

Product Ordering
CB3P-6231A244LN 3U OpenVPX PMC/XMC carrier board, ROCK-2 compatible, extended range conduction-cooled packaging, 0.8” pitch, XMC site VITA 42 (10mm stacking)
CB3P-6231B214LN 3U OpenVPX PMC/XMC carrier board, switch profile SLT3-SWH-4F-14.4.4, commercial air-cooled packaging, 0.8” pitch, XMC site VITA 42 (10mm stacking)
CB3P-6231B244LN 3U OpenVPX PMC/XMC carrier board, switch profile SLT3-SWH-4F-14.4.4, extended range conduction-cooled packaging, 0.8” pitch, XMC site VITA 42 (10mm stacking)

Related BuiltSAFE Hardware Products
FDISK-8432  Flash disk storage XMC
RSL-5222  Serial I/O PMC
VCP-8162  Dual channel XMC frame grabber (2)
VCP-8166  H.264/AVC Codec PMC/XMC (2)
VCP-8166MA  MPEG-2 Codec PMC/XMC with optional H.264/AVC support (2)
ROCK-2 3U OpenVPX, SWaP-optimized, rugged, modular, pre-qualified, COTS chassis

(B2) Applies to “B2” model
(1) User I/O connector of XMC and PMC sites are mutually exclusive
(2) Contact Mercury for more information

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