Introduction

The DSP-8682 integrates eight Texas Instruments TMS320C6678 multi-core digital signal processors (DSPs) each with 2GB of DDR3 1333/1600MHz 64-bit DDR3 memory, the PLX® ExpressLane™ PEX8748 PCIe Gen 3 switch, a Xilinx XC3S200AN Spartan-3 FPGA, and an IDT CPS1616 Serial RapidIO Gen 2 switch to achieve the highest possible performance levels in a full-length PCIe form factor. The PEX8748 and the IDT CPS1616 interconnect x2 lanes between each DSP device. A high speed connection to the host is assured through the PEX8748 switch’s PCIe x8 Gen 3 interface for the fastest possible data transfers. A HyperLink chip-to-chip interconnect interface has been implemented enabling the on-chip navigator to transparently dispatch tasks for execution between DSP pairs.

In addition, an SGMII daisy chain between all devices is connected to a Broadcom BCM5482S providing two RJ-45 Gigabit Ethernet connections the I/O panel.

The DSPs provide fixed- and floating-point capabilities enabling the board to perform 2,048 GMACs (Giga Multiply-Accumulation operations per second) using the embedded C66x DSP cores inside the TMS320C6678 devices.

The 64 DSP cores on the DSP-8682 make it ideal for power efficient solutions based on commercial and industrial servers needing the highest performing video processing technology on fast-to-deploy PCIe add-in cards. This raw computing power makes the DSP-8682 a perfect fit for advanced and complex video processing such as JPEG2000 for 2K/4K processing, AVC-Intra 50/100 and AVC-Ultra, deep-color pixel manipulation, HEVC/H.265 and motion-compensated temporal filtering. It is also suited for applications in many industries such as media gateways and high performance computing.

Specifications

| Media Processing Elements | Eight TI TMS320C6678  
Eight TMS320C66x cores (1/1.25GHz) per DSP  
2048 MB DDR3-1333 on board memory  
One Serial RapidIO 2.1 x2 interface up to 10Gbps plus two x1 interfaces up to 5Gbps bandwidth  
One PCI Express Gen-2 x2 interface  
Dual 10/100/1000Mbps Ethernet w/ SGMII |
| Host Interface | PCI Express Gen-3 x8 with PCI Express x8 edge connector |
| Ethernet | 2 x10/100/1000 Mbps Ethernet ports |
| Software Support | Host PC Linux DSP program loader  
MCSDK for TMS320C6678  
PDK for TMS320C6678 |
| Power | Max. 106W |
| Cooling | Aluminum cooler with fan (4800 RPM, 19.41 CFM) |
| Physical Dimensions | 111.15 x 312 mm (4.38” x 12.28”)  
0.8 kg |
| Environment | Operating temperature: 0 to 50° C  
Humidity: 20% to 90 % RH  
Storage temperature: -20 to 70° C  
Humidity: 5% to 95 % RH |
**Block Diagram**

**Dimensions**

Unit: mm

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>DSPC-8682G2-00A2E</td>
<td>Full-length PCI Express Card with 8 TMS320C6678 &amp; 2GB DDR3 on board memory per DSP</td>
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