**IP_SMPTE2059_SLV**

The IP_SMPTE2059_SLV of our Video-over-IP core family is a slave IP core conforming to SMPTE ST 2059-1 and -2.

The IP_SMPTE2059 series are composed of 2 types of cores, a master functionality of vPTPM (Master-Core) and a slave functionality of vPTPS (Slave-Core), it can be used with a single, multiple, or combination of cores.

In addition, control packets via bi-directional ports on MPU bus has a capability to implement AMWA-NMOS functionality.

<table>
<thead>
<tr>
<th>Features</th>
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<tbody>
<tr>
<td>1. Compliant to SMPTE 2059-1 and -2</td>
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<tr>
<td>2. A video clock (148.5 MHz / 148.35 MHz) and video frame timing generation</td>
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<tr>
<td>3. An audio clock (24.576 MHz) and an audio sample clock (48 MHz) generation</td>
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<td>4. Counter output for PTS</td>
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<td>5. 1 PPS output</td>
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<td>6. Serial output for time data</td>
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<td>7. MPU accessibility by sending and receiving control packets</td>
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<td>8. Ethernet port compatible with GbE, 10 GbE, and 25 GbE</td>
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<tr>
<td>9. Extensibility for time synchronization with hitless with duplicate redundant lines</td>
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<tr>
<td>10. 125 MHz clock recovery with an PLL inside an FPGA or an external VCXO</td>
</tr>
</tbody>
</table>

**Features Diagram**

- **vPTPS**
  - Tx Buffer
  - Rx Buffer
  - Protocol Filter
  - EtherType Filter
  - DMAC Filter

- **MPU I/F**
  - Video Frame Pulse 148.5/148.35MHz
  - Audio 48KHz 24.576MHz
  - PTS Counter 27MHz
  - 1PPS Serial RTC 125MHz

- **UDP/IP/MAC**
  - UDP/IP/MAC Packetize

- **125MHz XO**
  - 125MHz

- **Phy**
  - GbE

- **Ethernet Port**
  - GbE, 10 GbE, 25 GbE

- **Protocol**
  - PTP
  - Sequencer

- **UDP/IP/MAC**
  - UDP/IP/MAC Packetize

- **Filter**
  - Protocol
  - EtherType
  - DMAC

- **Analysis**
  - PTP
  - Analyze

- **Control**
  - RTS CNTL
  - AUD CNTL
  - VID CNTL
  - PTP CNTL
  - RTS CNTL

- **125MHz XO**
  - 125MHz

- **124MHz XO**
  - 124MHz

**Diagram Note:**

- **XO**
  - 125MHz

**Diagram Elements:**

- **MUX**
  - Multiplexer

**Diagram Details:**

- **Video Frame Pulse 148.5/148.35MHz**
  - Input to vPTPS

- **Audio 48KHz 24.576MHz**
  - Input to vPTPS

- **PTS Counter 27MHz**
  - Input to vPTPS

- **1PPS Serial RTC 125MHz**
  - Input to vPTPS

- **125MHz XO**
  - 125MHz Output

- **GbE Phy**
  - GbE Output

- **UDP/IP/MAC Phy**
  - GbE Output

- **Protocol Filter**
  - Filters Protocol

- **EtherType Filter**
  - Filters EtherType

- **DMAC Filter**
  - Filters DMAC

- **PTP Sequencer**
  - Sequences PTP

- **PTP Analyze**
  - Analyzes PTP

- **UDP/IP/MAC Packetize**
  - Packetizes UDP/IP/MAC

- **MUX**
  - Muxes Signals