

DESCRIPTION

The TX6F-SH51-02M is an optical communication subsystem that transmits HDMI 2.0b over a single fiber optic cable and when paired with the RX6F-SH51-02M receiver module, provides a full system solution for long-distance HDMI 2.0. The module includes high-speed data channels supporting 18 Gbps data rates PLUS a bidirectional side-band channel (one each direction), all on a single multimode fiber. With integrated drivers and amplifiers, the TX Subsystem eliminates the need for in-house optoelectronic design expertise for your HDMI applications.



FEATURES

- Supports both HDMI 1.x and HDMI 2.0 signals
- Full UHD, 4K 4:4:4 60 frames per second video transmission
- Single fiber operation for all video, content protection and maintenance data including EDID and CEC
- Automatically adjusts to video data rate
- Supports both HDCP 2.2 and HDCP 1.4 content protection
- Integrated safety feature turns off lasers when an open fiber is detected
- Supports 50-micron OM3 or OM4 fiber with an SC Connector interface
- Allows FCC Class B compliance at customer end product level
- Fully interoperable with the Inneos RX6F-SH51-03A HDMI optical adapter module

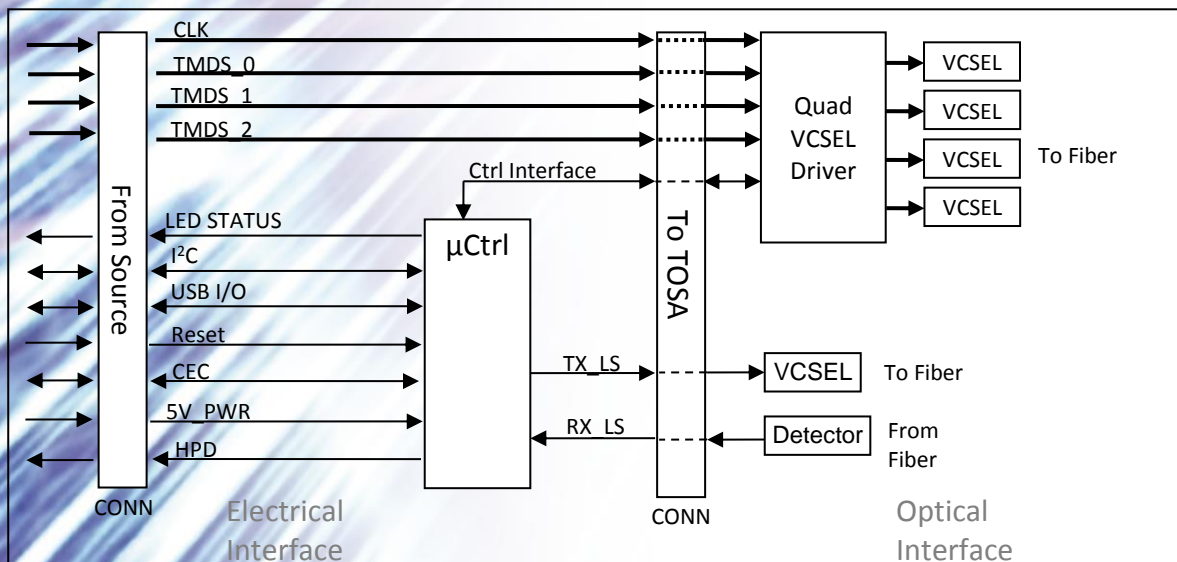
APPLICATIONS

- HDMI™ Matrix Switches
- HDMI™ Optical Extenders

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
TX6F-SH51-02M	Board-pluggable Transmitter Module
RX6F-SH51-02M	Board-pluggable Receiver Module (see corresponding data sheet)
EK1-SH51-02M	Evaluation Board for Transmitter or Receiver module

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

STORAGE TEMPERATURE RANGE	T _S	-40	85	°C
3.3 Volt Supply	V _{CC}	-0.3	3.6	V
5.0 Volt Supply	V _{DD} , V _{USB}	-0.3	5.3	V
Relative Humidity	RH		80	%
ESD Protection (HBM)			8	kV
Storage Temperature Range	T _C	-40	85	°C

MAXIMUM OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	MAX	UNITS
3.3 Volt Supply	V _{CC}	3.15	3.45	V
Operating Case Temperature Range	T _C	0	65	°C

ELECTRICAL SPECIFICATIONS

In addition to the tables below, the HDMI and USB signals conform to the specification requirements for the HDMI 2.0b specification respectively.

PARAMETER	SYMBOL	MIN	MAX	UNITS
HDMI Differential Input Voltage, Lanes 0 – 3	V _{pp}	300	1200	mV _{pp}
HDMI Differential Impedance	Z _{Diff}	85	115	Ω
LED Output Low Voltage	V _{LEDOL}	0	0.6	V
LED Output High Voltage	V _{LEDOH}	V _{CC} -0.7	V _{CC}	V
Supply Current – 3.3V rail	I _{CC}		250	mA

DESCRIPTION

The RX6F-SH51-02M is an optical communication subsystem that receives HDMI 2.0b over a single fiber optic cable and when paired with the TX6F-SH51-02M transmitter module, provides a full system solution for long-distance HDMI 2.0. The module includes high-speed data channels supporting 18 Gbps data rates PLUS a bidirectional side-band channel (one each direction), all on a single multimode fiber. With integrated receivers and amplifiers, the RX Subsystem eliminates the need for in-house optoelectronic design expertise for your HDMI applications.



FEATURES

- Supports both HDMI 1.x and HDMI 2.0 signals
- Full UHD, 4K 4:4:4 60 frames per second video transmission
- Single fiber operation for all video, content protection and maintenance data including EDID and CEC
- Automatically adjusts to video data rate
- Supports both HDCP 2.2 and HDCP 1.4 content protection
- Supports 50-micron OM3 or OM4 fiber with an SC Connector interface
- Allows FCC Class B compliance at customer end product level
- Fully interoperable with the Inneos TX6F-SH51-03A HDMI optical adapter module

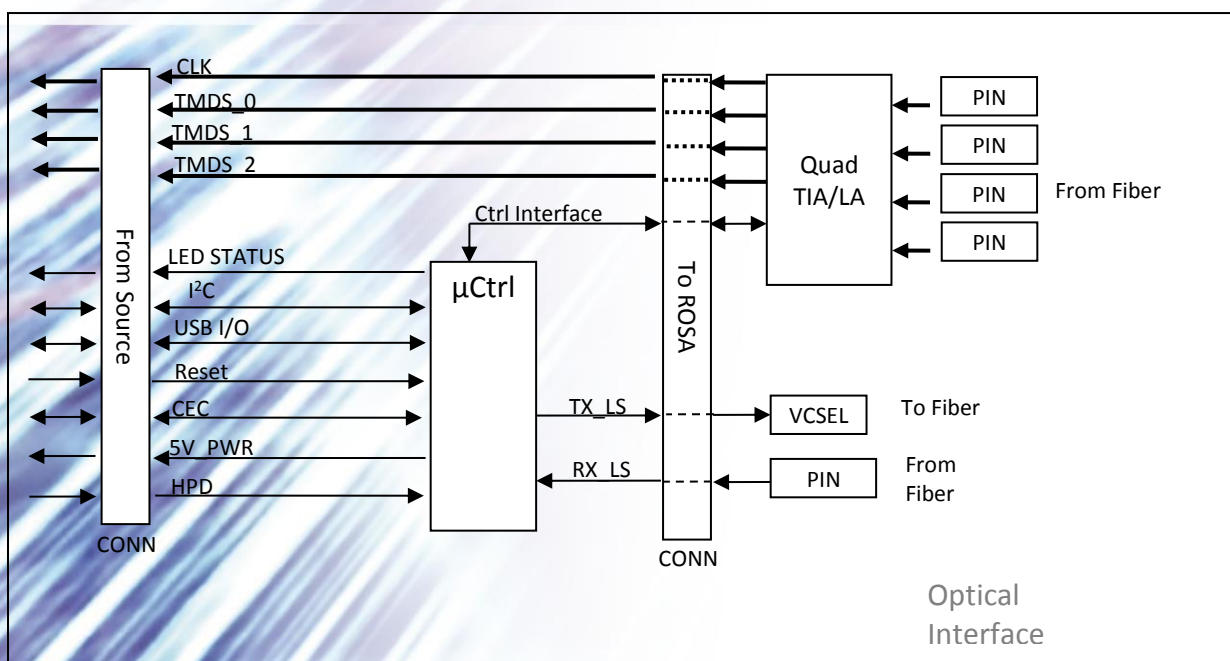
APPLICATIONS

- HDMI™ Matrix Switches
- HDMI™ Optical Extenders

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
RX6F-SH51-02M	Board-pluggable Receiver Module
TX6F-SH51-02M	Board-pluggable Transmitter Module (see corresponding data sheet)
EK1-SH51-02M	Evaluation Board for Transmitter or Receiver module

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNITS
Storage Temperature Range	T _c	-40	85	°C
3.3 Volt Supply	V _{cc}	-0.3	3.6	V
5.0 Volt Supply	V _{dd}	-0.3	5.3	V
Relative Humidity	RH		80	%
ESD Protection (HBM)			8	kV

MAXIMUM OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	MAX	UNITS
3.3 Volt Supply	V _{cc}	3.135	3.465	V
5.0 Volt Supply	V _{dd}	4.7	5.3	V
Operating Case Temperature Range	T _c	0	65	°C

ELECTRICAL SPECIFICATIONS

In addition to the tables below, the HDMI and USB signals conform to the specification requirements for the HDMI 2.0b Specification and USB 2.0 Specification respectively.

PARAMETER	SYMBOL	MIN	MAX	UNITS
TMDS Differential Output Voltage, Lanes 0 – 3	V _{pp}	300	1200	mVpp
TMDS Output Jitter	J _{pp}	-	60	ps
Single-ended Termination Resistance, Lanes 0 – 3	R _{SE}	45	55	Ω
LED Output Low Voltage	V _{LEDOL}	0	0.6	V
LED Output High Voltage	V _{LEDOH}	V _{cc} -0.7	V _{cc}	V
Reset Input High Voltage	V _{IH}	0.8*V _{cc}	-	V
Reset Input Low Voltage	V _{IL}	-	0.2*V _{cc}	V
Supply Current – 3.3V Rail	I _{cc}	400	-	mA
Supply Current – 5.0V Rail	I _{dd}	100	-	mA