CH7110A HDMI 2.0 Re-Timer

FEATURES

- Compliant with HDMI specification version 2.0 and version 1.4
- Support up to 600 MHz TMDS pixel frequency for video transport with resolution up to 4Kx2K@60Hz
- Dedicated 6Gbps clock and data recovery module (CDR) integrated
- Adaptive equalizer to compensate for Cable, PCB and/or connector losses
- Configurable Pre-Emphasis on output driver support
- AC-coupled and DC-coupled input support
- Input TMDS/HPD signal detection support and automatic power down management
- Built-in power regulator converting 3.6V~1.3V input to 1.2V output
- Active DDC buffer
- MCU embedded to handle the control logic
- Support device boot up by automatically loading firmware from embedded ROM
- IIC slave interface and HDMI DDC interface are available for debug and firmware update
- Low power architecture
- RoHS compliant and Halogen free package
- HBM 6KV ESD performance
- Offered in 40-Pin QFN package (5 x 5mm)

APPLICATION

- HDMI 2.0 Source Devices
- HDMI 2.0 Sink Devices
- HDMI 2.0 Repeater

GENERAL DESCRIPTION

Chrontel's CH7110A is an innovative, low-power, high performance semiconductor devices that re-timing and improve the input TMDS signal to match the HDMI 2.0 specification. These devices integrate programmable equalizer, 6Gbps TMDS Clock and Data Recovery (CDR), accurate internal oscillator, high performance PLL and configurable Pre-Emphasis module, are specially designed to target the HDMI 2.0 retime/repeater market segments.

A sophisticated active DDC buffer is also employed by CH7110A, to achieve the losses compensation of HDMI DDC channel and improve the stability and robust of the DDC communication

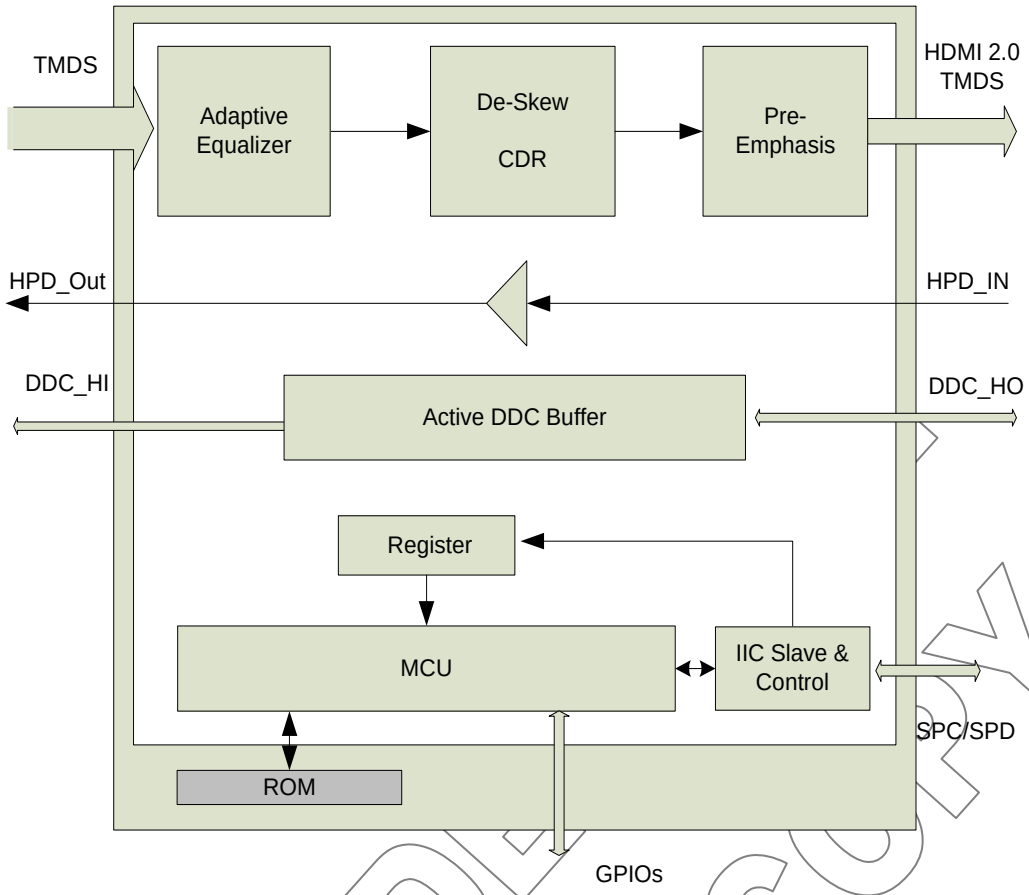

Figure 1: CH7110A Functional Block Diagram

1.0 PIN-OUT

1.1 Package Diagram

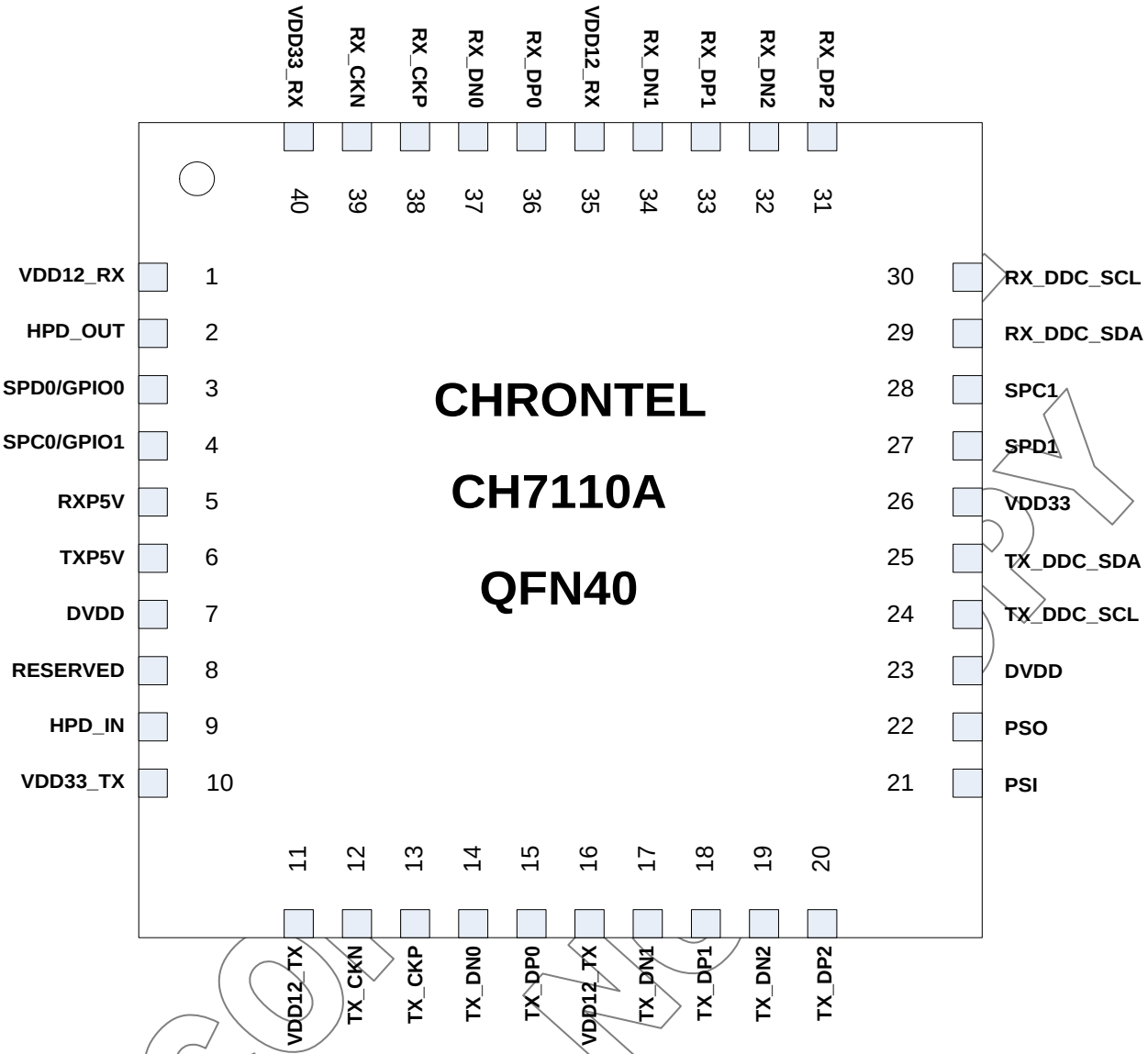

Figure 2: 40-Pin QFN Pin Out

1.2 Pin Description

Table 1: 40 Pin Name Descriptions

Pin #	Type	Symbol	Description
2	Out	HPD_OUT	**HDMI Hot Plug Output**
3	In/out	SPD0	**IIC Slave Port 0 Data Input / Output** This pin functions as the bi-directional data pin of the serial port. External pull-up 6.8 KΩ resister is required
	In/out	GPIO0	**General Purpose In and Out Pin**
4	In	SPC0	**IIC Slave Port 0 Clock Input** This pin functions as the clock pin of the serial port. External pull-up 6.8 KΩ resister is required
	In/out	GPIO1	**General Purpose In and Out Pin**
5	In	RXP5V	**Power 5V Input from HDMI Source**
6	Out	TXP5V	**Power 5V Out to HDMI Sink**
7	In	HPD_IN	**HDMI Hot Plug Input**
8	In	RESERVED	**Reserved Pins**
12~15, 17~20	Out	TXCKN/P TX_DN/P[2:0]	**HDMI Output Port** These pins provide the differential signal output for the HDMI/DVI .
24,25	In/Out	TX_DDC_SCL TX_DDC_SDA	**Serial Port Output to HDMI/DVI Sink** The pin should be connected to HDMI DDC from Sink. This pin requires a pull-up 1.8 kΩ resistor to the desired voltage level
27,28	In/Out	SPC1, SPD1	**IIC Slave Port 1** These pins function as the IIC Slave port.
29,30	In/Out	RX_DDC_SCL RX_DDC_SDA	**Serial Port input from HDMI Source** The pin should be connected to HDMI DDC from HDMI source
31~34, 36~39	In	RX_CKN/P RX_DN/P[2:0]	**HDMI Input Port** These pins accept differential pairs signals from the HDMI / DisplayPort Dual Mode transmitter.
1,11,16,35	Power	VDD12_RX VDD12_TX	**1.2V Power Supply**
7	Power	DVDD	**Power Supply (1.2V)**
10,26,40	Power	VDD33 VDD33_RX VDD33_TX	**3.3V Power Supply**
21	Power	PSI	**Power Supply In (1.3~3.6V)**
22	Power	PSO	**Power Supply Out (1.2V)**
Thermal Pad	Power	GND	**Analog Ground**

2.0 PACKAGE DIMENSION

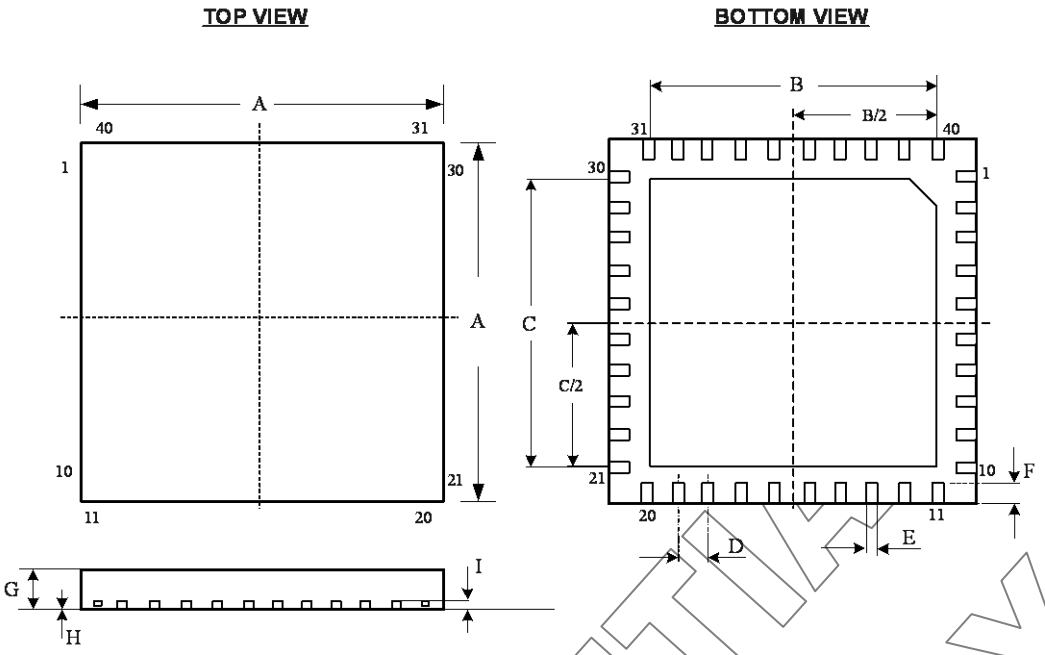

Figure 3: 40 Pin QFN Package

Table of Dimensions

No. of Leads		SYMBOL								
40 (5 X 5 mm)		A	B	C	D	E	F	G	H	I
Milli-meters	MIN	5BSC	3.50	3.50	0.4BSC	0.15	0.30	0.85	0	0.203REF
	NOM		3.60	3.60		0.20	0.40	0.90	0.02	
	MAX		3.70	3.70		0.25	0.50	0.95	0.05	

Notes:

1. Conforms to JEDEC standard MO-220.

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ORDERING INFORMATION

Part Number	Package Type	Operating Temperature Range	Minimum Order Quantity
CH7110A-BF-Y	40 QFN, Lead-free, w/ LDO	Commercial : 0 to 70°C	490/Tray
CH7110A-BFI-Y	40 QFN, Lead-free, w/ LDO	Industrial : -40 to 85°C	490/Tray
CH7110A-BF-N	40 QFN, Lead-free, w/o LDO	Commercial : 0 to 70°C	490/Tray
CH7110A-BFI-N	40 QFN, Lead-free, w/o LDO	Industrial : -40 to 85°C	490/Tray

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