Chrontel

CH7102A HDMI to BT656 Converter

FEATURES

- HDMI Receiver compliant with HDMI 1.4 specification
- Support ITU-R 601 or ITU-R 656 compatible YCbCr 4:2:2 output format with embedded syncs or discrete syncs. Support resolution up to 1280 x 720@60Hz or 1920x1080@30Hz for YCbCr 4:2:2 output
- On-chip Audio encoder which support 2 channel IIS/ S/PDIF audio output
- Optional HDCP 1.4 specification supported
- MCU embedded to handle the control logic
- Support device boot up by automatically loading firmware from on-chip flash
- Integrated EDID Buffer
- Crystal Free architecture
- HDMI input detection supported
- Support Auto Power Saving mode and low stand-by current
- Support RGB to YCC conversion in ITU-R BT.601 and 709 color space
- IIC slave interface and HDMI DDC interface are available for configuration and firmware update.
- Low power architecture
- RoHS compliant and Halogen free package
- Offered in 40-Pin QFN package (5 x 5 mm)

APPLICATION

- Car Infotainment Device
- Notbook/Ultrabook
- Tablet Device
- Handheld/Portable Device
- Digital Video Systems

GENERAL DESCRIPTION

Chrontel's CH7102A is a low-cost, low-power semiconductor device that consists of HDMI receiver, YCbCr 4:2:2 encoder and audio encoder, which can convert HDMI signals into 8 bit YCbCr 4:2:2 outputs with IIS or SPDIF audio output.

The HDMI Receiver integrated is compliant with HDMI 1.4b. With sophisticated MCU and the On-chip Flash, CH7102A supports auto-boot and programmable EDID ROM. Leveraging the firmware auto loaded from the embedded Flash, CH7102A can support HDMI input detection enter into Power saving mode automatically.
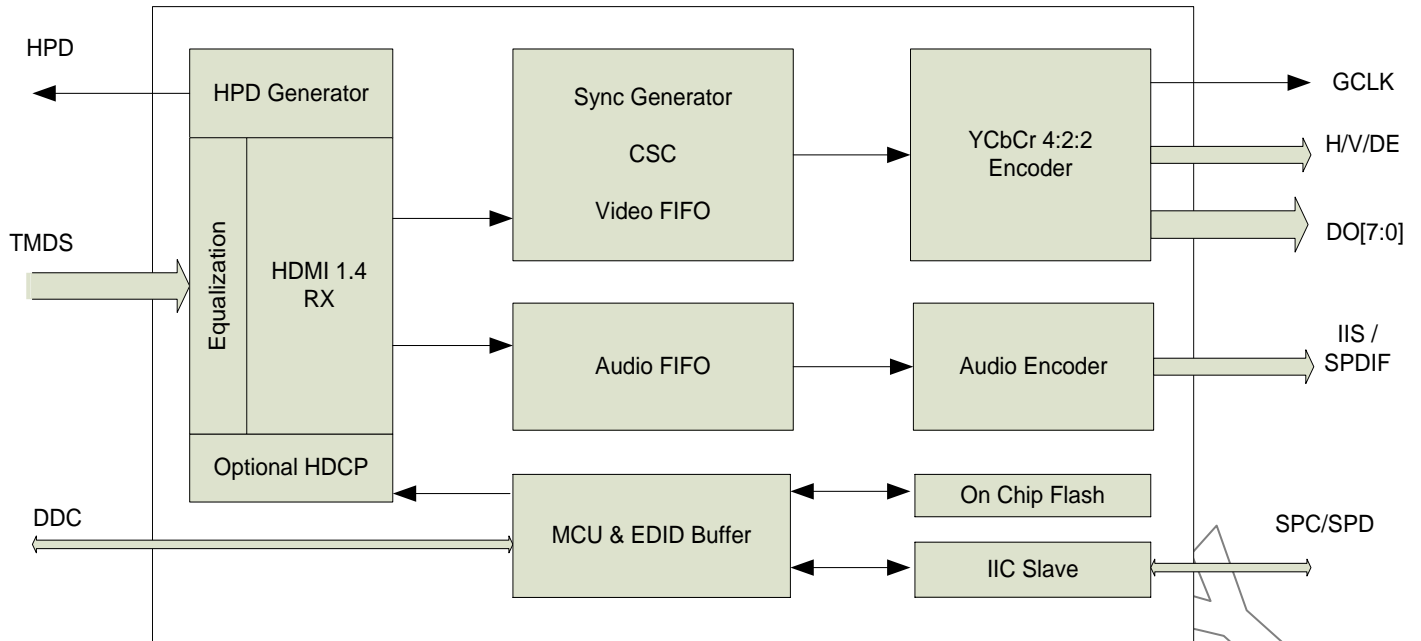
Figure 1: CH7102A Functional Block Diagram
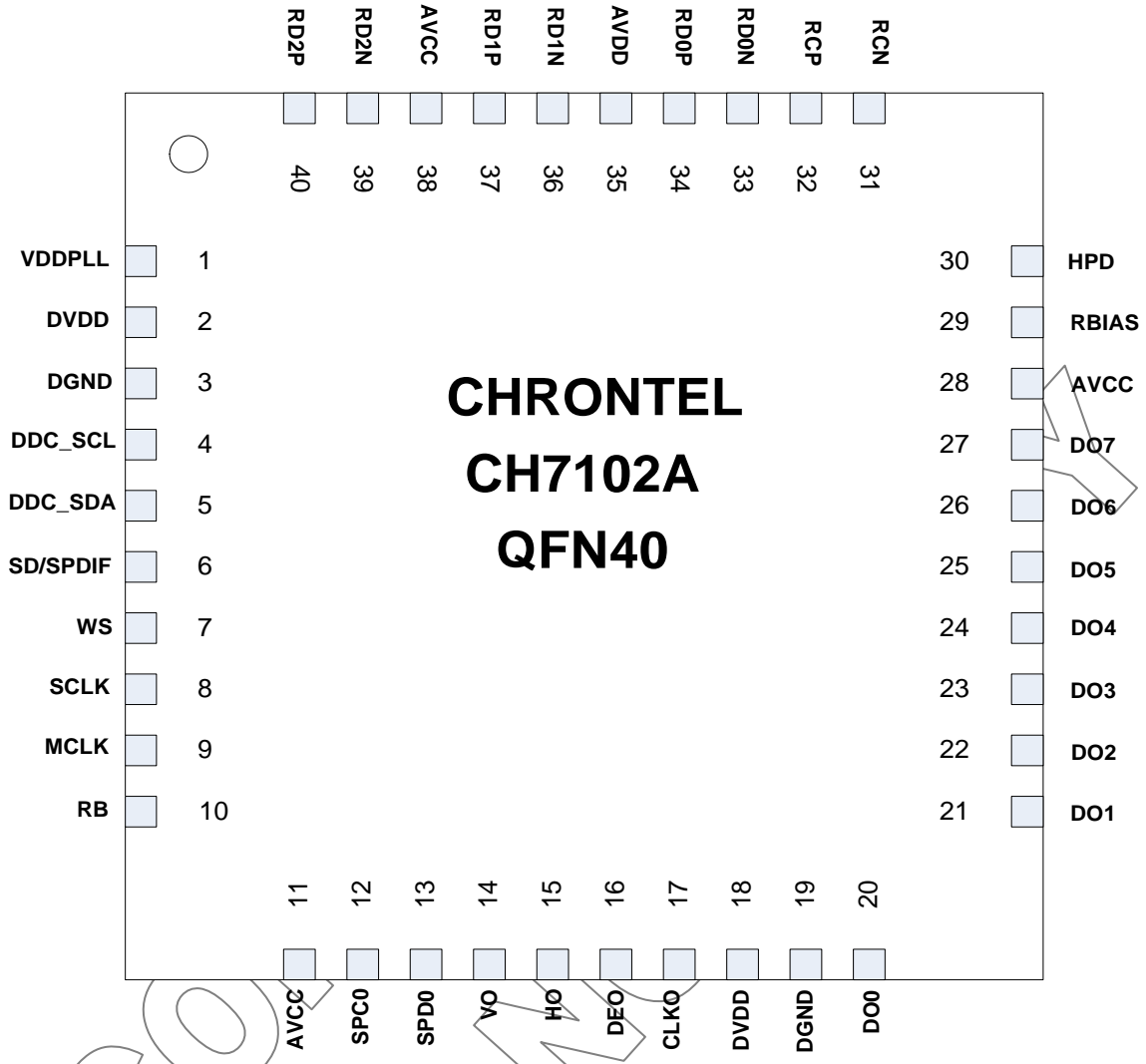
1.0 PIN-OUT

1.1 Package Diagram

Figure 2: CH7102A 40-Pin QFN Pin Out

1.2 Pin Description

Table 1: Pin Name Descriptions

Pin #	Type	Symbol	Description
4	In	DDC_SCL	**Serial Port Clock to HDMI/DVI Transmitter** This pin functions as the clock bus of the serial port to HDMI or DVI DDC transmitter. This pin requires a pull-up 47 kΩ resistor to the desired voltage level.
5	In/out	DDC_SDA	**Serial Port Data to HDMI/DVI Transmitter** This pin functions as the data bus of the serial port to HDMI or DVI DDC transmitter. This pin requires a pull-up 47 kΩ resistor to the desired voltage level.
6	Out	SD/SPDIF	**I2S Serial Data or SPDIF Output**
7	Out	WS	**I2S Word Select**
8	Out	SCLK	**I2S Continuous Serial Clock**
9	Out	MCLK	**I2S System Clock**
10	In	RB	**Chip Reset** Low to 0V for reset. Typical High level is 3.3V
12	In	SPC0	**Serial Port Clock Input** This pin functions as the clock pin of the serial port. External pull-up 6.8 KΩ resister is required
13	In/out	SPD0	**Serial Port 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
14	Out	VO	**VSYNC Output of BT656**
15	Out	HO	**HSYNC Output of BT656**
16	Out	DEO	**Data Enable Output of BT656**
17	Out	CLKO	**Clock Output of BT656**
20~27	Out	DO0~DO7	**BT656 Data Output**
29	In	RBIAS	**Current Set Resistor Input** This pin sets the DAC current. A 10 KΩ, 1% tolerance resistor should be connected between this pin and AVSS using short and wide traces
30	Out	HPD	**HDMI Receiver Hot Plug output**
31,32,33, 34,36,37, 39,40	In	RD [2:0] P/N RCP/N	**HDMI TMDS Input** HDMI differential clock and data input pairs
1	Power	VDDPLL	**PLL Power Supply (1.2V)**
2,18	Power	DVDD	**Digital IO Power Supply (1.2V)**
3,19	Power	DGND	**Digital Ground**
11,28,38	Power	AVCC	**Analog Power Supply (3.3V)**
35	Power	AVDD	**HDMI Receiver Analog Power Supply (1.2V)**
Pad	Power	GND	**Power Supply Ground**

2.0 PACKAGE DIMENSION
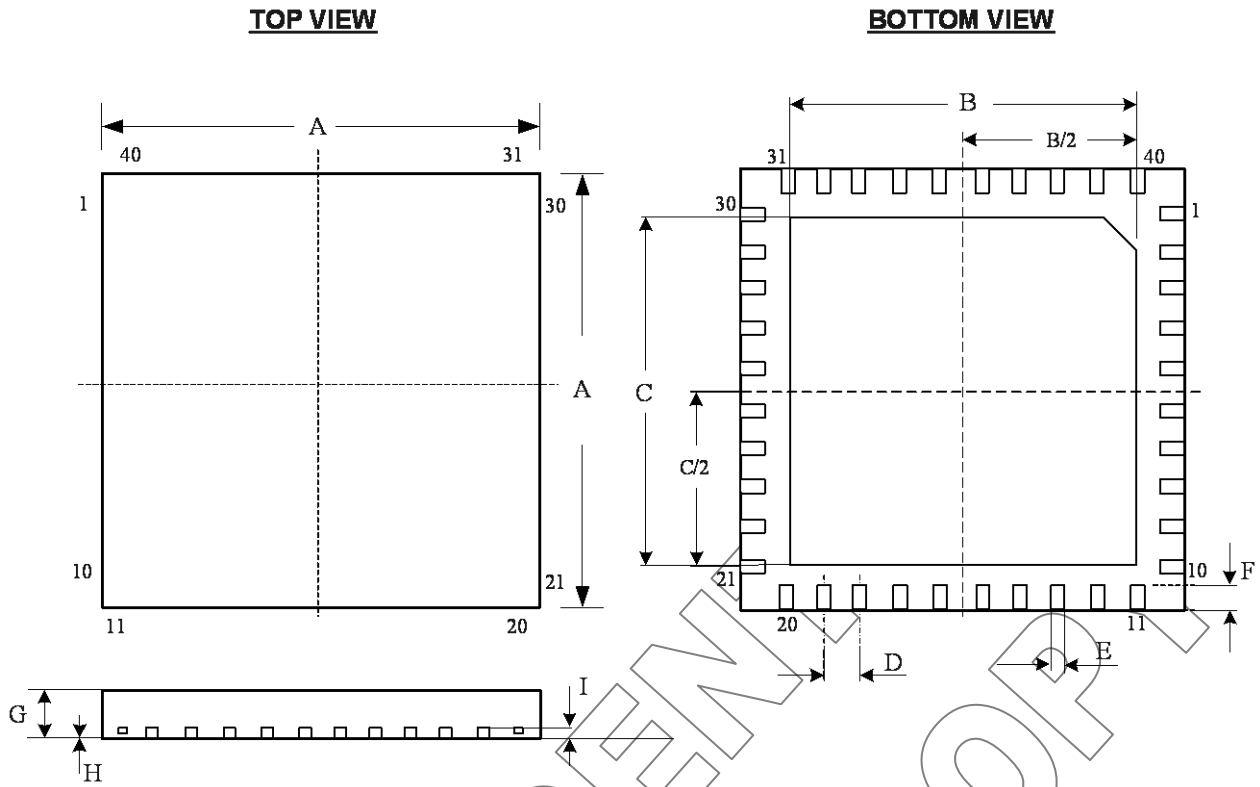
Figure 3: 40 Pin QFN Package

Table 2: Table of Dimensions

No. of Leads		SYMBOL								
40 (5 X 5 mm)		**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Milli-	**MIN**	4.90	3.20	3.20	0.4	0.15	0.35	0.80	0	0.203
meters	**MAX**	5.10	3.40	3.40		0.25	0.45	0.90	0.05	REF

Notes:
1. Conforms to JEDEC standard JESD-30 MO-220.

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ORDERING INFORMATION				
Part Number	**Package Type**	**Content Protection**	**Operating　　　　Temperature Range**	**Minimum Order Quantity**
CH7102A-BF	40 QFN, Lead-free	None	Commercial : 0 to 70℃	**490/Tray**
CH7102A -BFK	40 QFN, Lead-free	HDCP 1.4	Commercial : 0 to 70℃	**490/Tray**
CH7102A -BFI	40 QFN, Lead-free	None	Industrial : -40 to 85℃	**490/Tray**
CH7102A -BFIK	40 QFN, Lead-free	HDCP 1.4	Industrial : -40 to 85℃	**490/Tray**

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