
CH7111A HDMI 2.1 12Gbps Re-Timer

FEATURES

- Compliant with HDMI specification version 2.1
- Supports up to HDMI 12Gbps FRL data rate
- Supports up to HDMI 6Gbps TMDS data rate or 600 MHz TMDS clock for video transport
- Dedicated PLL for removing the jitter of TMDS clock and data, integrated CDR for removing the jitter of FRL signal
- DP++ support in AC coupling input mode for HDMI level shifter
- DC coupling input mode support for HDMI signal retiming
- Automatic link training for FRL mode
- SCDC (Status and Control Data Channel) interception supported
- Adaptive equalizer to compensate for HDMI cables, PCB layout and/or connector losses, and supports up to 34 dB boost at 600MHz
- Configurable Pre-Emphasis on output driver
- 3.3 and 1.2V Power supply
- Crystal-free
- IIC-over-AUX transaction supported
- Active DDC buffer and related control register integrated
- HDMI Identifier supported
- IIC serial port for configuration and chip debugging
- Low power architecture
- RoHS compliant and Halogen free package
- HBM 4KV ESD performance
- Offered in 48-Pin QFN package (6 x 6 mm)

GENERAL DESCRIPTION

Chrontel's CH7111A is an innovative, low-power, high performance HDMI re-timing semiconductor device for improving the input TMDS/FRL signal to meet the HDMI 2.1 signal integrity requirement. This device integrates adaptive equalizer, receiver CDR, internal oscillator, high performance PLL and configurable Pre-Emphasis module, and is specially designed targeting for the HDMI 2.1 repeater and the DP++ adaptor market segments.

A sophisticated active DDC buffer is also employed by CH7111A to improve the stability and increase robustness of the HDMI DDC communication

APPLICATION

- HDMI 2.1 Source device
- HDMI 2.1 Sink Device
- HDMI 2.1 Cable

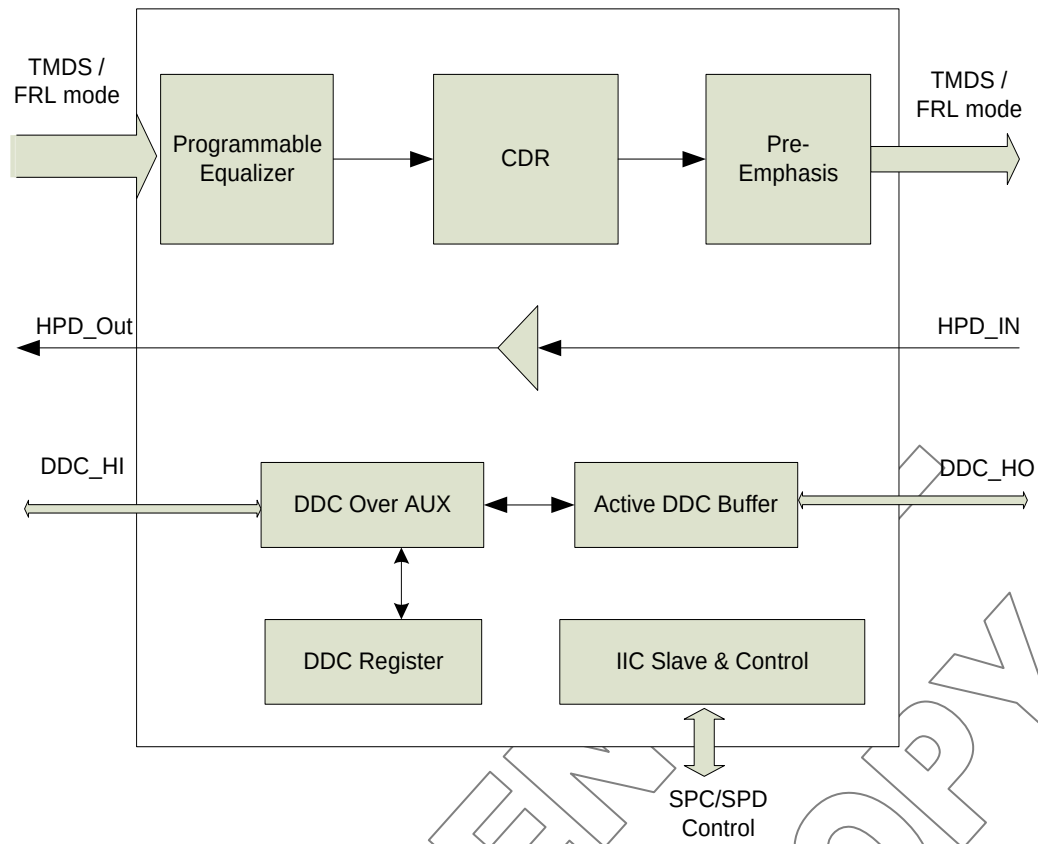


Figure 1: CH7111A Functional Block Diagram

1.0 PIN-OUT

1.1 Package Diagram

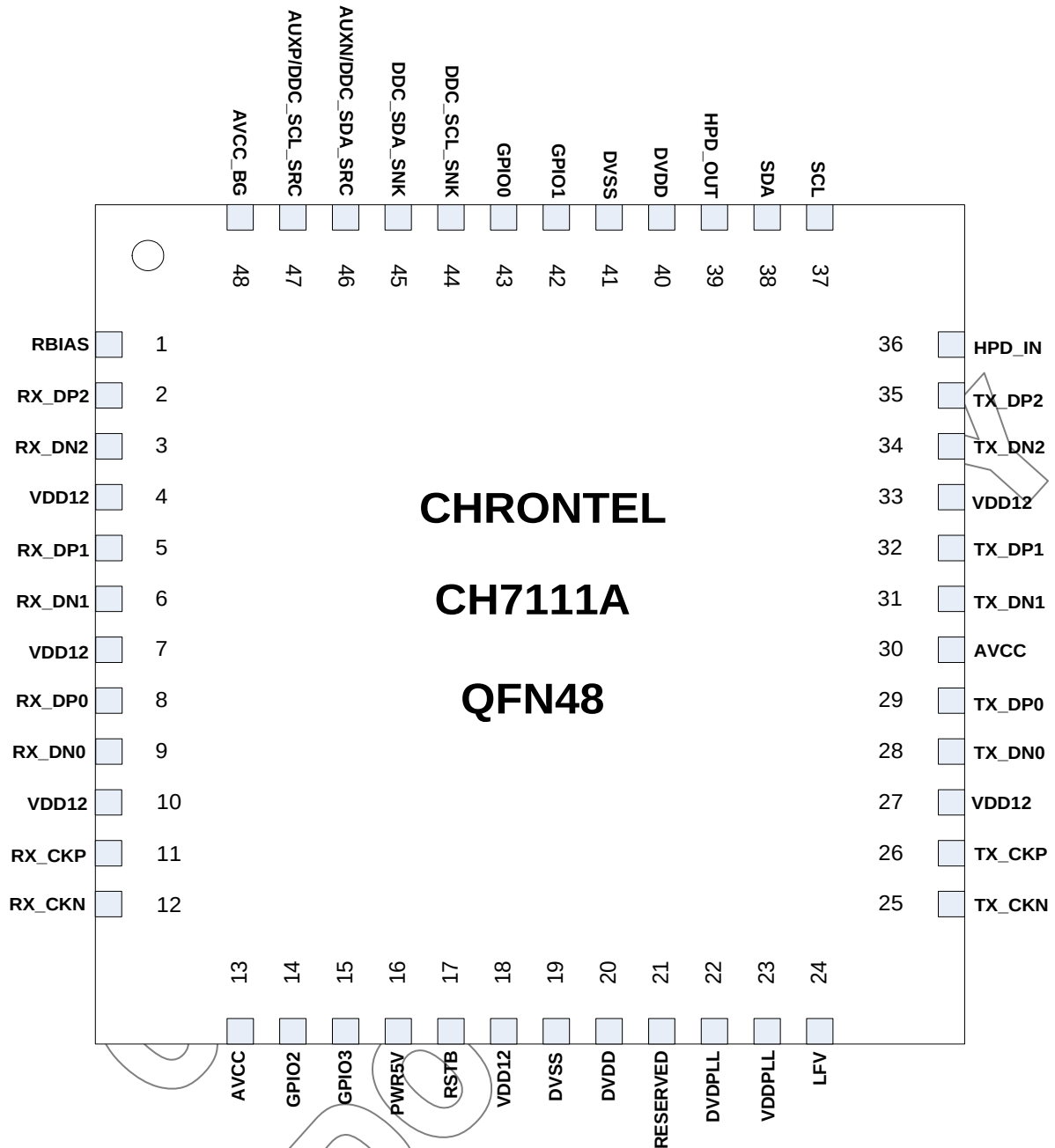


Figure 2: CH7111A 48-Pin QFN Pin Out

1.2 Pin Description

Table 1: Pin Name Descriptions

Pin #	Type	Symbol	Description
1	Input	RBIAS	External Reference Current Set This pin sets the external reference current. A 1 k Ω with 1% tolerance resistor should be connected between this pin and ground using short and wide traces
2,3,5,6,8, 9,11,12	In	RX_CKN/P, RX_DN/P[2:0]	HDMI Input / DP Dual Mode Main Link Inputs These pins accept differential pairs signals from the HDMI / DisplayPort Dual Mode transmitter.
14,15,42, 43	In/Out	GPIO[3:0]	General Purpose Input and Output Pins
16	In	PWR5V	HDMI 5V Input Detection
17	In	RSTB	Chip Reset Input
21		RESERVED	Reserved Pin
24	In	LFV	External Capacitor One 1uF capacitor should be connected between this pin and the ground
25,26,28, 29,31,32, 34,35	Out	TX_CKP/N, TX_DP/N[2:0]	TMDS/FRL Outputs
36	In	HPD_IN	HDMI Transmitter Hot Plug Input
37	In	SCL	Serial Port Clock Input This pin functions as the clock pin of the serial port. External pull-up 6.8 k Ω resistor is required
38	In/out	SDA	Serial Port Data Input / Output This pin functions as the bi-directional data pin of the serial port. External pull-up 6.8 k Ω resistor is required
39	Out	HPD_OUT	HDMI / DP Dual Mode Receiver Hot Plug Output
44,45	In/Out	DDC_SCL_SNK DDC_SDA_SNK	Serial Port Data to HDMI Receiver The pin should be connected to data signal of HDMI DDC. This pin requires a pull-up 1.8 k Ω resistor to the desired voltage level
46,47	In/Out	AUXP/DDC_SCL_SRC AUXN/DDC_SDA_SRC	AUX Channel / Serial Port Input The pin should be connected to HDMI DDC or DisplayPort AUX Channel control
4,7,10,15, 18,20,22, 23,27,33, 40	Power	VDD12, DVDD, VDDPLL, DVDDL	1.2V Power Supply
13,30,48	Power	AVCC, AVCC_B G	Analog Power Supply (3.3V)
19,41, Thermal Pad	Power	DVSS	Ground

2.0 PACKAGE DIMENSION

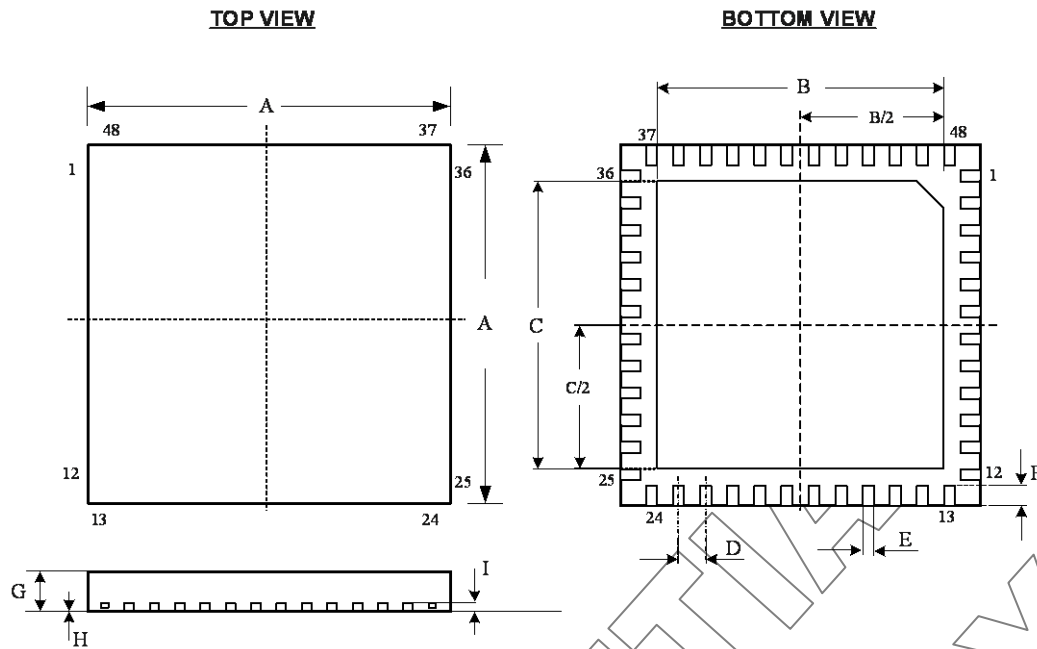


Table of Dimensions

No. of Leads		SYMBOL								
48 (6 X 6 mm)		A	B	C	D	E	F	G	H	I
Milli-meters	MIN	5.90	4.35	4.35	0.4	0.13	0.30	0.70	0	0.20
	NOM	6.00	4.50	4.50		0.19	0.40	0.75	-	-
	MAX	6.10	4.65	4.65		0.25	0.50	0.80	0.05	0.203

Notes:

Conforms to JEDEC standard JESD-30 MO-220.

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ORDERING INFORMATION			
Part Number	Package Type	Operating Temperature Range	Minimum Order Quantity
CH7111A-BF	48 QFN, Lead-free	Commercial: 0 to 70 °C	490/Tray
CH7111A-BFI	48 QFN, Lead-free	Industrial: -40 to 85 °C	490/Tray

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