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AG6200-MCQ

HDMI 转 VGA 转换器

中文数据表 V1.3

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| Version | Date | Notes |
|---------|-----------|--|
| 1.0 | 2016.3 | First Released |
| 1.1 | 2017.4 | Update package size |
| 1.2 | 2018.1 | Revise ASIC P/N from AG6200B to AG6200-MCQ |
| 1.3 | 2019/1/11 | Modify Table 2 Normal Operating Conditions |

PS:本中文规格书由第三方翻译软件自动翻译，权威信息请以原厂英文版规格书为准。

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AG6200-MCQ 特征

将 HDMI 1.4b 转换为 VGA

AG6200 支持高达 1920x1200@60Hz 的视频分辨率:

AG6200 支持热插拔检测

内置晶体, 无需外挂晶体。

内置 5V 至 1.2V 稳压器

核心电压 1.2V

符合 HDCP 1.4 规范的片上 HDCP 引擎

集成片上 HDCP 密钥

AG6200 支持 2 通道 IIS 音频接口

AG6200 支持 1080i 分辨率

AG6200-MCQ 封装

AG6200-MCQ 封装尺寸: 48-pin QFN, 6 mm x 6 mm

AG6200-MCQ 温度范围 (0°C ~ +85°C)

AG6200-MCQ 应用

电缆适配器

扩展底座、扩展坞

AG6200-MCQ 概述

Algotek AG6200-MCQ 芯片是一个 HDMI (高清多媒体接口) 到 VGA 桥接芯片。它将 HDMI 信号转换为标准 VGA 信号它可以在适配器、智能电缆等设备中设计

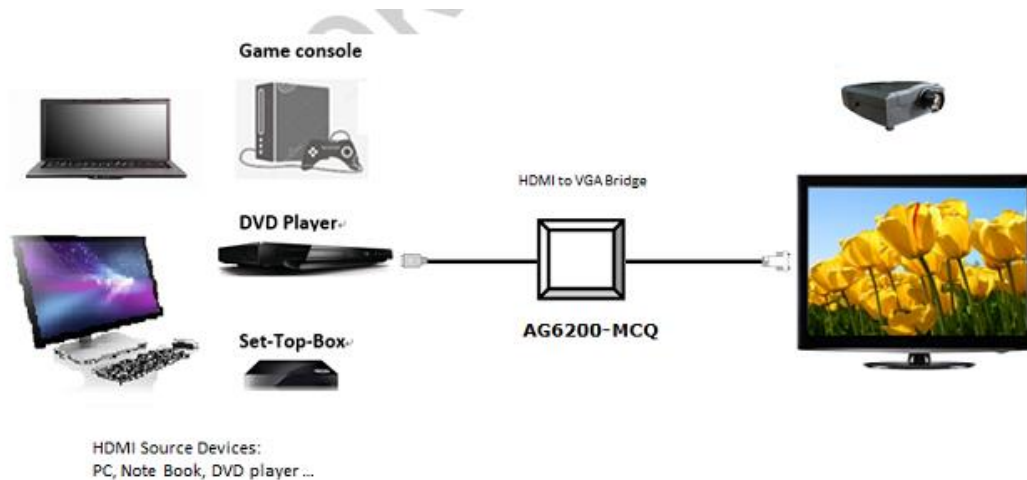


图 1 HDMI 到 VGA 网桥的应用

1、AG6200-MCQ 系统框图和功能描述

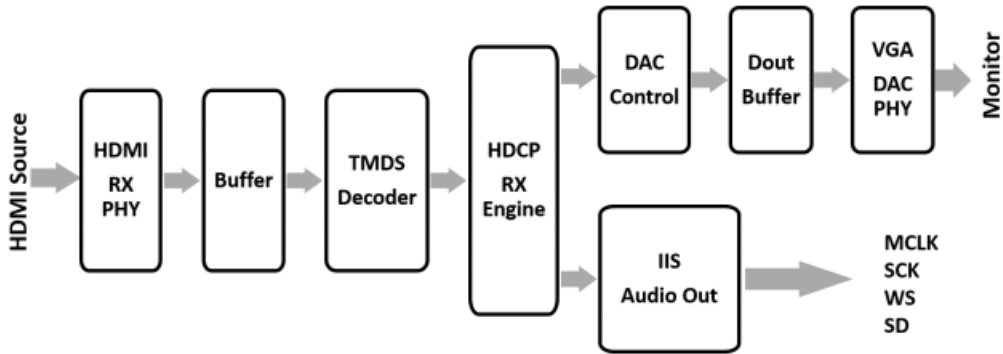


图 2 系统框图

AG6200-MCQ 引脚映射

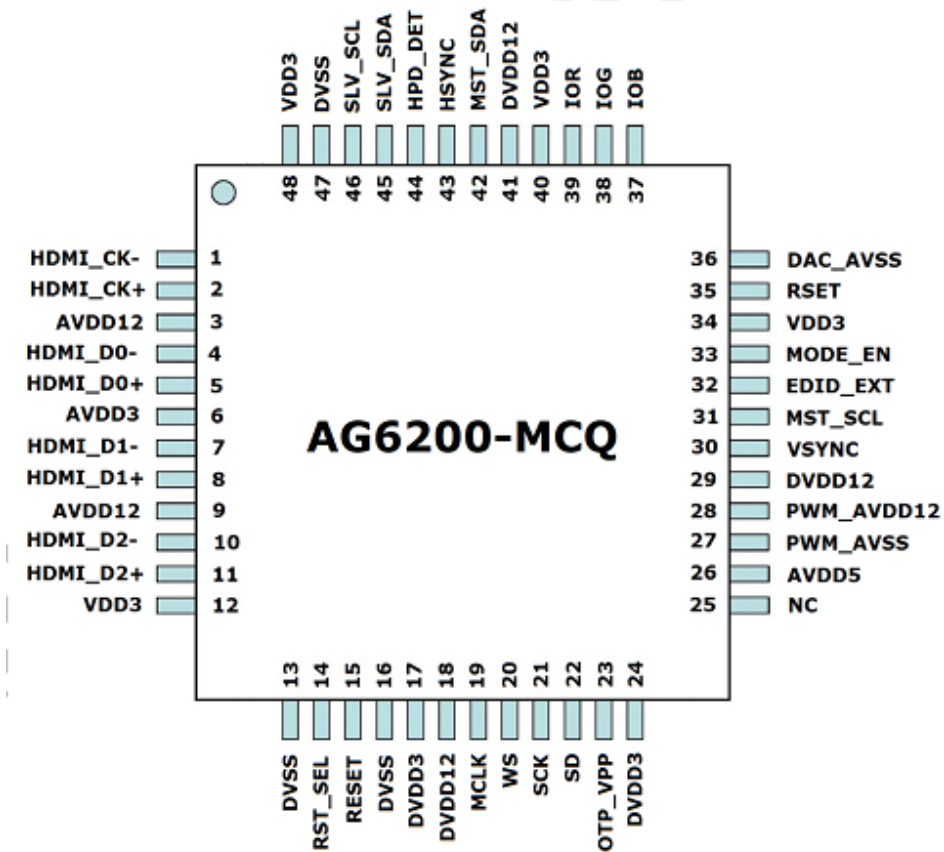


图 3 48 引脚映射

AG6200-MCQ 管脚说明

| PIN NO. | Package Pin Name | Type | Description |
|---------|------------------|---------------|--|
| 1 | HDMI_CK- | Input | HDMI Receiver clock negative input |
| 2 | HDMI_CK+ | Input | HDMI Receiver clock positive input |
| 3 | AVDD12 | Power | HDMI 1.2V power |
| 4 | HDMI_D0- | Input | HDMI Receiver channel-0 negative input |
| 5 | HDMI_D0+ | Input | HDMI Receiver channel-0 positive input |
| 6 | AVDD3 | Power | HDMI 3.3V power |
| 7 | HDMI_D1- | Input | HDMI Receiver channel-1 negative input |
| 8 | HDMI_D1+ | Input | HDMI Receiver channel-1 positive input |
| 9 | AVDD12 | Power | HDMI 1.2V power |
| 10 | HDMI_D2- | Input | HDMI Receiver channel-2 negative input |
| 11 | HDMI_D2+ | Input | HDMI Receiver channel-2 positive input |
| 12 | VDD3 | Power | HDMI 3.3V power |
| 13 | DVSS | Power | Ground |
| 14 | RST_SEL | Input | POR or input reset select |
| 15 | RESET | Input | Reset Input |
| 16 | DVSS | Power | Ground |
| 17 | DVDD3 | Power | Digital 3.3V power |
| 18 | DVDD12 | Power | Digital 1.2V power |
| 19 | MCLK | Output | I2S System Clock |
| 20 | WS | Output | I2S Word Select |
| 21 | SCK | Output | I2S Continuous Serial Clock |
| 22 | SD | Output | I2S Serial Data Output |
| 23 | OTP_VPP | Power | OTP 3.3V/6.5V power |
| 24 | DVDD3 | Power | Digital 3.3V power |
| 25 | N.C | N.C | N.C |
| 26 | AVDD5 | Power | PWM & LDO 5V input |
| 27 | PWM_AVSS | Power | Ground |
| 28 | PWM_AVDD12 | Power | PWM 1.2V output |
| 29 | DVDD12 | Power | Digital 1.2V power |
| 30 | VSYNC | Output | V_SYNC |
| 31 | MST_SCL | Bidirectional | VGA I2C SCL |
| 32 | EDID_EXT | Input | EDID Extension bit |

| PIN NO. | Package Pin Name | Type | Description |
|---------|------------------|---------------|-------------------------------------|
| 33 | MODE_EN | Input | Reserve |
| 34 | VDD3 | Power | DAC analog & Digital 3.3V power |
| 35 | RSET | Input | output 4.7k Ω to GND |
| 36 | DAC_AVSS | Power | DAC Ground |
| 37 | IOB | Output | Blue output 75 Ω to GND |
| 38 | IOG | Output | Green output 75 Ω to GND |
| 39 | IOR | Output | Red output 75 Ω to GND |
| 40 | VDD3 | Power | DAC analog & Digital 3.3V power |
| 41 | DVDD12 | Power | Digital 1.2V power |
| 42 | MST_SDA | Bidirectional | VGA I2C SDA |
| 43 | HSYNC | Output | H_SYNC |
| 44 | HPD_DET | Bidirectional | HDMI Hot Plug |
| 45 | SLV_SDA | Bidirectional | HDMI Display Data Channel (DDC) SDA |
| 46 | SLV_SCL | Bidirectional | HDMI Display Data Channel (DDC) SCL |
| 47 | DVSS | Power | Ground |
| 48 | VDD3 | Power | Digital & HDMI 3.3V power |

Tabl

表 1 引脚说明

2、AG6200-MCQ 电气特性

正常工作条件

| Symbol | Parameter | Min | Typ. | Max | Unit |
|-------------------------------|--|------|------|------|-----------------------------|
| AVDD12, DVDD12, PWM_AVDD12 | 1.2V Power | 1.08 | 1.2 | 1.32 | V |
| AVDD3, VDD3, DVDD3 | 3.3V Power | 3.0 | 3.3 | 3.6 | V |
| AVDD5 | 5V Power Input for LDO 5V-to-3.3V | 4.5 | 5 | 5.5 | V |
| OTP_VPP | 3.3V Power for read | 3.0 | 3.3 | 3.6 | V |
| | 6.5V Power for write | 6.3 | 6.5 | 6.7 | V |
| θ_{JC} | Thermal Resistance (Junction to Case) | | 2 | | $^{\circ}\text{C}/\text{W}$ |
| θ_{JA} | Thermal Resistance (Junction to Ambient) | | 33 | | $^{\circ}\text{C}/\text{W}$ |
| TJ | Junction Temperature | 0 | 25 | 125 | $^{\circ}\text{C}$ |
| Ta | Ambient Temperature | 0 | 25 | 85 | $^{\circ}\text{C}$ |

表 2 正常运行条件

直流规范

| Symbol | Parameter | Frequency | VDD | AVDD PLL ² | AVDD | VDDH | VDD5V_IN | VDDIO | XTALV CC33 | Units |
|-------------------|------------------|-----------|------|-----------------------|-------|-------|----------|-------|------------|-------|
| | | | 1.2V | 1.2V | 1.2V | 3.3 V | 5.0 V | 3.3 V | 3.3 V | |
| I _{DDSB} | No input current | — | 7.20 | — | 18.35 | — | 5.90 | <1 | — | mA |

表 3 直流电源典型电源规格

| Symbol | Parameter | Frequency | VDD | AVDD PLL ² | AVDD | VDDH | VDD5V_IN | VDDIO | XTALV CC33 | Units |
|-------------------|------------------|-----------|------|-----------------------|------|-------|----------|-------|------------|-------|
| | | | 1.2V | 1.2V | 1.2V | 3.3 V | 5.0 V | 3.3 V | 3.3 V | |
| I _{DDSB} | No input current | — | 80 | — | 40 | — | 6 | <1 | — | mA |

表 4 直流电源最大供电规范

| Symbol | Parameter | Pin Type | Conditions | Min | Typ. | Max | Units |
|-----------------------|---|---------------|--------------------------|-----|------|-----|-------|
| V _{TH+DDC} | LOW to HIGH threshold, DDC interface | Schmitt | — | 2.0 | — | — | V |
| V _{TH-DDC} | HIGH to LOW threshold DDC interface | Schmitt | — | — | — | 0.8 | V |
| V _{TH+CEC_A} | LOW to HIGH threshold, CEC_A pin | Schmitt | — | 2.0 | — | — | V |
| V _{TH-CEC_A} | HIGH to LOW threshold, CEC_A pin | Schmitt | — | — | — | 0.8 | V |
| V _{TH+I2C} | LOW-to-HIGH Threshold, I ² C Bus | Schmitt | — | 2.0 | — | — | V |
| V _{TH-I2C} | HIGH-to-LOW Threshold, I ² C Bus | Schmitt | — | — | — | 0.8 | V |
| V _{TH+} | LOW to HIGH threshold | LVTTL Schmitt | — | 2.0 | — | — | V |
| V _{TH-} | HIGH to LOW threshold | LVTTL Schmitt | — | — | — | 0.8 | V |
| V _{OL-DDC} | LOW-level Output Voltage, DDC interface | Open Drain | I _{OL} ■ = 3 mA | — | — | 0.4 | V |
| V _{OL-I2C} | LOW-level Output Voltage I ² C Bus | Open Drain | I _{OL} ■ = 3 mA | — | — | 0.4 | V |
| I _{Oz} | Output leakage current | — | High impedance | — | — | ±1 | μA |
| I _{IL} | Input leakage current | — | — | — | — | ±1 | μA |
| I _{OD} | General digital output drive | LVTTL/Output | V _{OH} ■ 2.4 V | 7.5 | — | — | mA |
| | | | V _{OL} ■ 0.4 V | | — | — | mA |
| I _{ODCEC_A} | CEC_A digital output drive | Schmitt | V _{OH} ■ 2.4 V | 4.0 | — | — | mA |
| | | | V _{OL} ■ 0.4 V | | — | — | mA |

表 5 数字 I/O 规

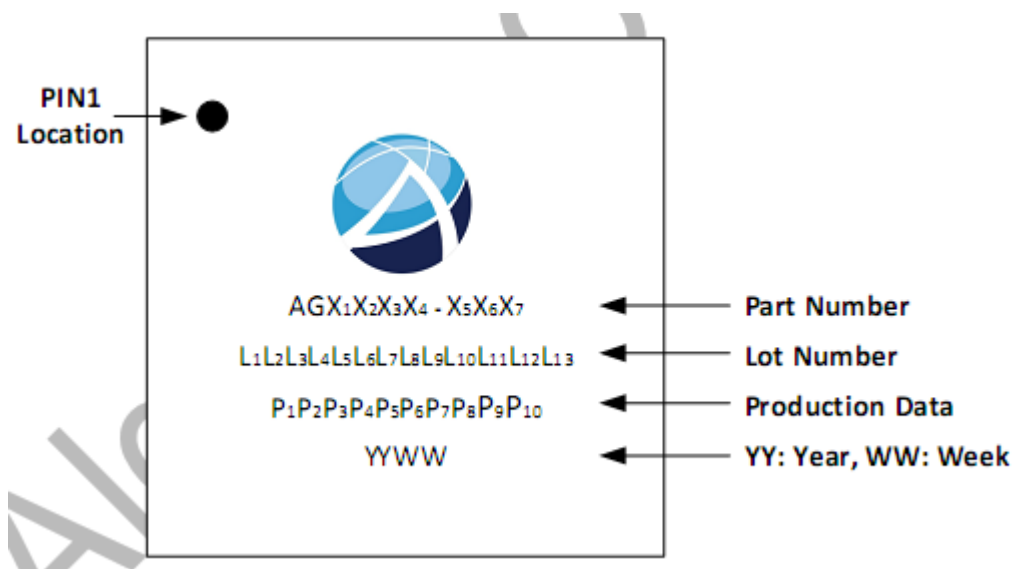
交流规格

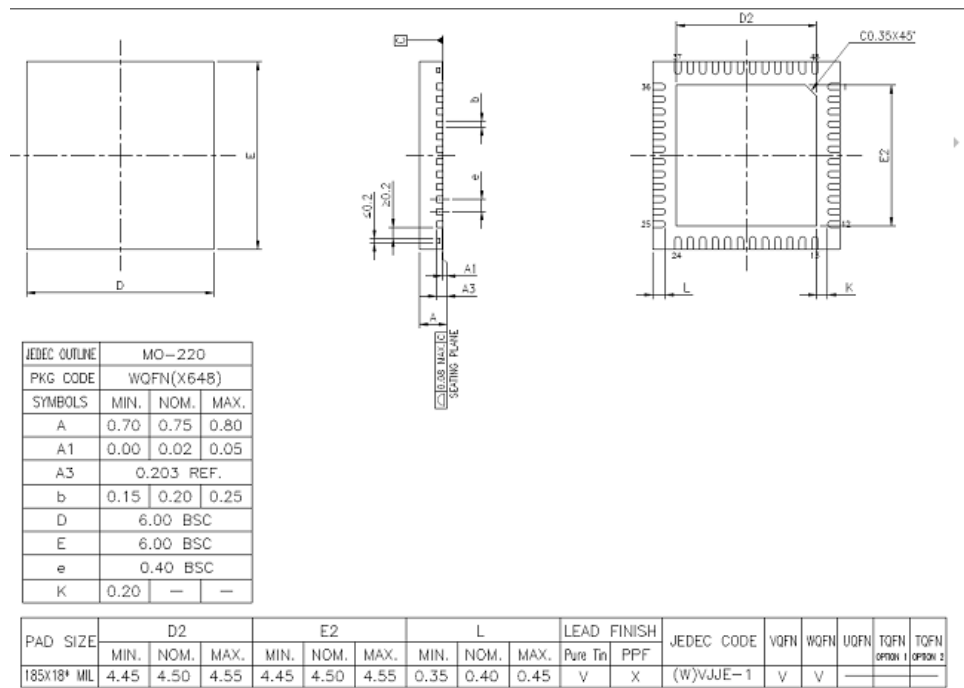
| Symbol | Parameter | Conditions | Min | Typ. | Max | Units |
|------------|------------------------------------|------------|-------|------|-----------------|-------|
| TSKEW_DF | Input Differential Intra-Pair Skew | — | — | — | 110 | ps |
| TSKEW_CM | Input Common-mode Intra-Pair Skew | — | — | — | 110 | ps |
| FRXC | Common mode Input Clock | — | 25 | — | 75 | MHz |
| TRXC | Common mode Input Clock Period | — | 13.33 | — | 40 | ns |
| TCLOCK_JIT | Common-mode Clock Jitter | — | — | — | 0.3TBIT + 200 | ps |
| TDATA_JIT | Differential Data Jitter Tolerance | — | — | — | 0.4TBIT + 88.88 | ps |

表 6 TMDS 输入时间

3、AG6200-MCQ 包装和标记规范

AG6200-MCQ 标记



AG6200-MCQ 包装尺寸
QFN48 QFN48


注 1。所有尺寸均以毫米为单位。2 尺寸 **b** 从苹果到金属化终端的距离在 0.15 毫米到 0 之间测量。距离终端 TP 30mm，终端另一端具有可选半径。不应在该半径区域 3 内测量尺寸 **b**。双边共面区适用于膨胀热沉段塞和终端

4.参考文献

HDMI 1.4b Specification HDMI 1.4b 规格

HDCP 1.4 Specification HDCP 1.4 规范