

G3399 System on Module Introduction



Shenzhen Grape, Co., Ltd.

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Release notes

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Chapter 1. G3399 System on Module Introduction

1.1 G3399 System on Module Introduction

G3399 system on module bases on Rockchip RK3399 (64bit) chip platform, which is designed by Shenzhen Graperain Technology Co., Ltd..

G3399 SOM is based on Rockchip RK3399, 64 bit 6-core, work-station-level processor. It's Dual-core Cortex-A72 + Quad-core Cortex-A53. The frequency is up to 2.0GHz. The new kernel is almost 100% performance up than A15/A17/A57

Integrated with ARM Mali-T860 MP4 graphics processor, supports OpenGL ES1.1/2.0/3.0/3.1, OpenVG1.1, OpenCL, Directx11, AFBC (ARM Frame Buffer Compression). Such powerful GPU supports H.265HEVC and VP9, H.265 encode and 4K HDR. And it can be applied to computer vision, learning machine, 4K 3D etc..

Interfaces: Dual MIPI-CSI, dual ISP, PCIe, USB3.0, USB2.0, TypeC etc.

Besides powerful performance RK3399, G3399 SOM equips 2GB/4GB DDR3, 8GB/16GB/32GB eMMC high-speed storage, and standalone power management system, and powerful network scalability, and abundant display interfaces, and Android 7.1, Linux, Debian OS

G3399 development board takes SOM+carrier board design. SOM has rich expansion, up to 200 PIN, speed up to 2.0Hz. The PCB is designed in an 8-layer process with optimum electrical characteristics and anti-interference characteristics for stable and reliable operation.

Characteristics of G3399 system on module

- Best size: Only 55mm x 55mm
- Take RK808 PMU to insure it works stability.
- Support many brands eMMC, default 8GB eMMC.
- Take single channel DDR3, default 2GB, and 4GB optional
- Support power sleep awake
- Support Android 7.1, Linux, ubuntu, Debian OS
- Support gigabit Ethernet
- Abundant display interfaces

1.2 Specifications

Parameters	
Appearance	Stamp hole
SOM size	55mm*55mm*1.0mm
Pin patch	1.1mm
Pin numbers	200PIN
Layer	8 layer

System Configuration	
CPU	RK3399
Frequency	Cortex A53 quad core 1.4GHz + dual core A72 (2GHz)
RAM	default 2GB, 4GB optional
eMMC	4GB/8GB/16GB/32GB eMMC optional,
Power IC	RK808, support dynamic frequency
Graph and Video Processor	Mali-T860 MP4, quad core GPU OpenGL ES 1.1/2.0/3.0/3.1 Openg1.1,OpenCL, Directx11 4K VP9 and 4K 10bits H265/H.264 video decoding, up to 60 fps 1080P multi-format video decoding 1080P video decoding, such as H.264, VP8

Interfaces Parameter	
Display	MIPI, eDP output
Interfaces	RTL8211E gigabit Ethernet PHY
Touch	Capacitive touch,supports USB serial ports
Audio	AC97/IIS/PCM, supports record and play
SD	Dual channels SDIO output
eMMC	Onboard eMMC interface, no pin output any more
Ethernet	The gigabit Ethernet
USB HOST	Two channels HOST 2.0, one channel HOST 3.0
USB TYPEC	1 channel
UART	Five channels serials, and supports flow control serial port
PWM	Two channels PWM output
IIC	Six channels IIC output
SPI	One channel SPI output
ADC	Five channels ADC

Camera	two channels MIPI output
HDMI	HDMI output, and audio output synchronization
MIPI	One channel MIPI RX, One channel MIPI TX, One channel MIPI RX/TX
eDP	Support
PCIE	Support

Electrical Features	
Input Voltage	4.2V--5V
Output Voltage	1.8V/3.3V
Storage Temp.	-30~80 °C
Working Temp.	-20~70 °C

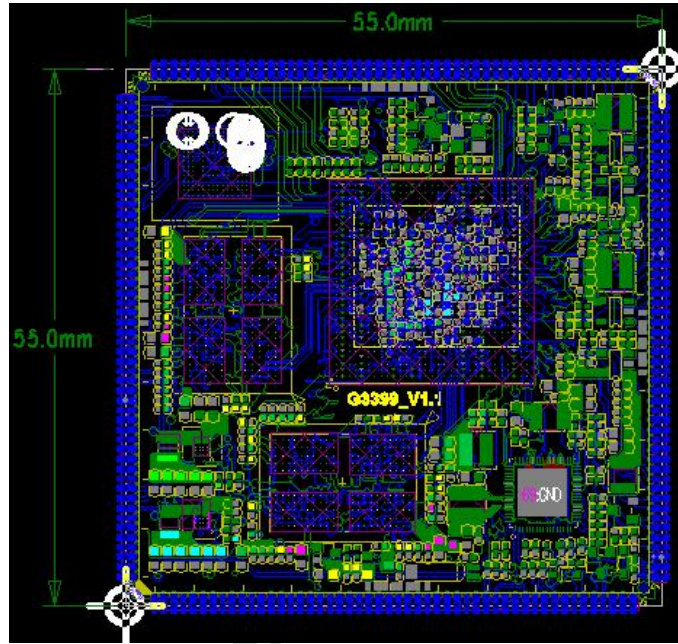
1.3 G3399 System on Module Appearance



Front of G3399 system on module

1.4 G3399 System on Module Structure

Structure and Dimension



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1.5 G3399 Development Board Appearance

More information, please reference G3399 development board introduction in pdf.



Front side of G3399 development board

Chapter 2 Pin Definition

2.1 G3399 System on Module Pin Definition 1

Pin Definition			
Pin No.	Signal	Pin No.	Signal
1	I2C1 SDA	26	UART0 RXD
2	I2C1 SCL	27	GPIO D4
3	I2S1 SCLK	28	PMU RESET
4	I2S1 SDO0	29	GPIO4 D6
5	I2S1 SDIO	30	GPIO4 D1
6	I2S1 LRCK TX	31	GPIO4 D3
7	I2S1 LRCK RX	32	PMIC EXT EN
8	I2S CLK	33	RTC CLKO WIFI
9	I2S0 SCLK	34	VCC RTC
10	I2S0 LRCK RX	35	PWM1
11	I2S0 LRCK TX	36	PWM0
12	I2S0 SDIO	37	POWER KEY
13	I2S0 SDI1	38	GPIO2 D3
14	I2S0 SDO0	39	GPIO2 D4
15	I2S0 SDO1	40	GPIO4 D2
16	I2S0 SDO2	41	GPIO4 D5
17	SDIO0 D0	42	VCC3V3 S5
18	SDIO0 D1	43	SPDIF TX
19	SDIO0 D2	44	UART2DBG RX
20	SDIO0 D3	45	UART2DBG TX
21	SDIO0 CMD	46	I2C SDA HDMI
22	SDIO0 CLK	47	I2C SCL HDMI
23	UART0 RTS	48	HDMI CEC
24	UART0 TXD	49	PORT PHD
25	UART0 CTS	50	VCC CHAREG EN

2.2 G3399 System on Module Pin Definition 2

Pin Definition			
Pin No.	Signal	Pin No.	Signal
51	VCC3V3 SYS	76	MIPI TX0 D2N
52	VCC3V3 SYS	77	MIPI TX0 D2P
53	GND	78	MIPI TX0 CLKN

54	MIPI TX1/RX1 D0N	79	MIPI TX0 CLKP
55	MIPI TX1/RX1 D0P	80	MIPI TX0 D1N
56	MIPI TX1/RX1 D1N	81	MIPI TX0 D1P
57	MIPI TX1/RX1 D1P	82	MIPI TX0 D0N
58	MIPI TX1/RX1 CLKN	83	MIPI TX0 D0P
59	MIPI TX1/RX1 CLKP	84	GND
60	MIPI TX1/RX1 D2N	85	HDMI TXCN
61	MIPI TX1/RX1 D2P	86	HDMI TXCP
62	MIPI TX1/RX1 D3N	87	HDMI TX0N
63	MIPI TX1/RX1 D3P	88	HDMI TX0P
64	MIPI RX0 D3N	89	HDMI TX1N
65	MIPI RX0 D3P	90	HDMI TX1P
66	MIPI RX0 D2N	91	HDMI TX2N
67	MIPI RX0 D2P	92	HDMI TX2P
68	MIPI RX0 CLKN	93	TYPECO SBU1 DC
69	MIPI RX0 CLKP	94	TYPECO SBU2 DC
70	MIPI RX0 D1N	95	TYPECO SBU2
71	MIPI RX0 D1P	96	TYPECO SBU1
72	MIPI RX0 D0N	97	TYPECO RX1N
73	MIPI RX0 D0P	98	TYPECO RX1P
74	MIPI TX0 D3N	99	TYPECO TX1P
75	MIPI TX0 D3P	100	TYPECO TX1N

2.3 G3399 System on Module Pin Definition 3

Pin Definition			
Pin No.	Signal	Pin No.	Signal
101	TYPECO_RX2N	126	ADC_IN0
102	TYPECO_RX2P	127	VCC1V8 S3
103	TYPECO_TX2P	128	GPIO2 D2
104	TYPECO_TX2N	129	GPIO0 A4
105	TYPECO_DM	130	GPIO0 B2
106	TYPECO_DP	131	GPIO0 B1
107	USB3_SSTXP	132	GPIO0 A3
108	USB3_SSTXN	133	EDP_TX3P
109	USB3_SSRXP	134	EDP_TX3N
110	USB3_SSRXN	135	EDP_TX2P
111	USB3_DM	136	EDP_TX2N
112	USB3_DP	137	EDP_TX1P
113	HOST0_DM	138	EDP_TX1N
114	HOST0_DP	139	EDP_TX0P

115	HOST1 DM	140	EDP TXON
116	HOST1 DP	141	EDPAUXP
117	PCIE RX0 P	142	EDPAUXN
118	PCIE RX0 N	143	SDMMC0 CLK
119	PCIE TX0P	144	SDMMC0 D3
120	PCIE TX0N	145	SDMMC0 D2
121	PCIE REF CLKN	146	SDMMC0 D1
122	PCIE REF CLKP	147	SDMMC0 D0
123	TYPECO U2VBUSD	148	SDMMC0 CMD
124	ADKEY IN	149	SDMMC0 DET L
125	ADC2	150	SDMMC0 PWR H

2.4 G3399 System on Module Pin Definition 4

Pin Definition			
Pin No.	Signal	Pin No.	Signal
151	GPIO0 B3	176	GPIO2 A7
152	GPIO0 B0	177	GPIO2 A1
153	GPIO1 A1	178	GPIO2 A0
154	GPIO1 A0	179	GPIO2 B1
155	I2C4 SCL	180	GPIO2 B2
156	I2C4 SDA	181	GIO4 D0
157	IR RX	182	GND
158	GPIO0 A2	183	MAC RXCLK
159	GPIO0 B4	184	MAC MCLK
160	GPIO0 B5	185	MAC MDC
161	GPIO1 A4	186	MAC RXD3
162	GPIO1 A3	187	MAC RXD2
163	GPIO1 A2	188	MAC RXD1
164	GPIO1 A7	189	MAC RXD0
165	GPIO1 B0	190	MAC COL
166	GPIO1 B2	191	MAC TXCLK
167	GPIO1 B1	192	MAC REX/INT
168	GPIO1 D0	193	MAC CRS
169	GPIO1 C2	194	MAC TXD0
170	GPIO1 C4	195	MAC TXD1
171	GPIO1 C6	196	MAC TXD2
172	GPIO1 C7	197	MAC TXD3
173	GPIO1 B5	198	MAC TXEN

174	GPIO2 B3	199	MAC MDIO
175	GPIO2 B0	200	MAC RXDV

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Chapter 3 Hardware Design

3.1 Hardware Design Reference

If use G3399 platform for product design and development, related to power supply, USB3.0, HDMI, eDP, MIPI, TypeC, audio, network (Ethernet, WIFI, Bluetooth), camera etc., can refer to our carrier board design. the circuit and layout of those parts are open to customers.

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Chapter 4 Product Portfolio

4.1 System on Module (SOM) Series

G4418 System on module (Samsung S5P4418)

G6818 System on module (Samsung S5P6818)

G3128 System on module (Rockchip RK3128)

G3288 System on module (Rockchip RK3288, stamp hole)

GR3288 System on module (Rockchip RK3288, gold finger)

G3399 System on module (Rockchip RK3399, stamp hole)

GR3399 System on module (Rockchip RK3399, gold finger)

4.2 Development Board (Dev. Board)Series

G4418 development board (Samsung S5P4418)

G6818 development board (Samsung S5P 6818)

G3288 development board (Rockchip RK3288)

GR3288 development board (Rockchip RK3288)

G3399 development board (Rockchip RK3288)

GR3399 development board (Rockchip RK3288)

4.3 Single Board Computer (SBC) Series

G4418 single board computer (Samsung S5P4418)

G6818 single board computer (Samsung S5P 6818)

G3128 single board computer(Rockchip RK3128)

Instructions: More information of specifications and other products, please pay attention to website and contact us directly.

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