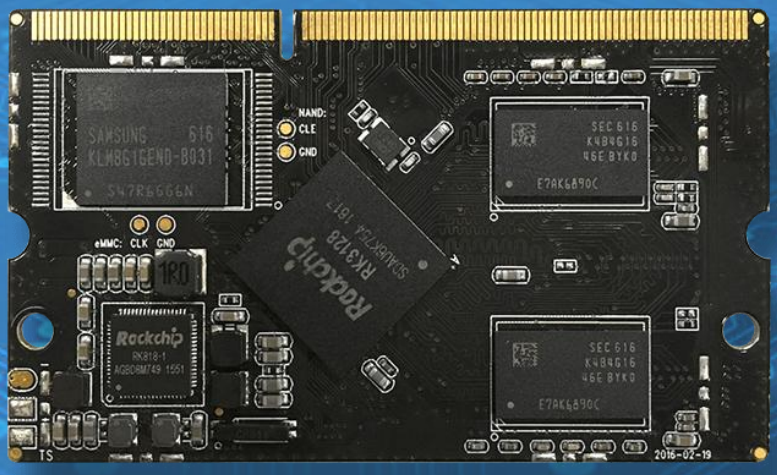
Core-3128J

四核高性能核心板

V1.1



天启智能科技有限公司

www.t-firefly.com

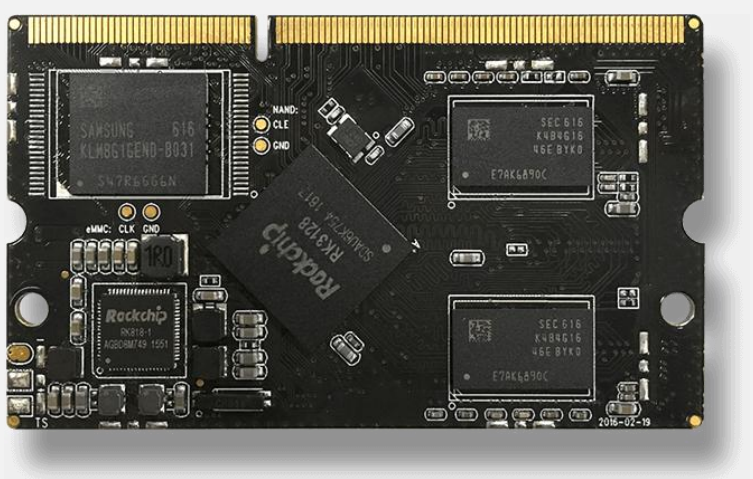
更 新 记 录

版 本	更 新 日 期	更 新 内 容
V1.0	2018-04-10	原始版本
V1.1	2020-11-04	更新接口定义和排版

目　录

一、产 品 简 介

Core-3128J 是一款基于四核 Cortex-A7 高性能核心板，采用 Rockchip RK3128 四核 Cortex-A7 1.3GHz 处理器，核心板沉金接口设计，其 DDR3-204P 接口，引出芯片的全部功能，数据传输和扩展性都得到最好的发挥，核心板布局紧凑美观，提供多种存储配置，用户仅需扩展功能底板即可快速实现项目研产。



超高性价比的处理核心

RK3128 四核 ARM Cortex-A7 处理器， 主频高达 1.3GHz，集成 Mali-400 MP2 图形处理器，支持 OpenGL ES1.1/2.0， 内嵌高性能 2D 硬件加速。

高性能图形与视像处理器

采用 ARM 的 Mail-400 MP2，内建 2D 加速器，支持 OpenGL ES1.1/2.0， 可以实现 1080P H.265 硬件解码和 1080P H.264 视频编

布局紧凑美观

设计尺寸仅有 67.6mm x 40mm，节约更多宝贵的空间。

沉金接口，稳固可靠

DDR3-204P 接口，引出了芯片的全部，数据传输和扩展性能得到最好发挥，沉金工艺引脚，耐腐蚀，4 螺柱固定，牢固可靠。

开放资料

配套的源代码、教程、技术资料和开发工具都可在官网下载，提供开发底板选购，开发和学习变得更简单方便

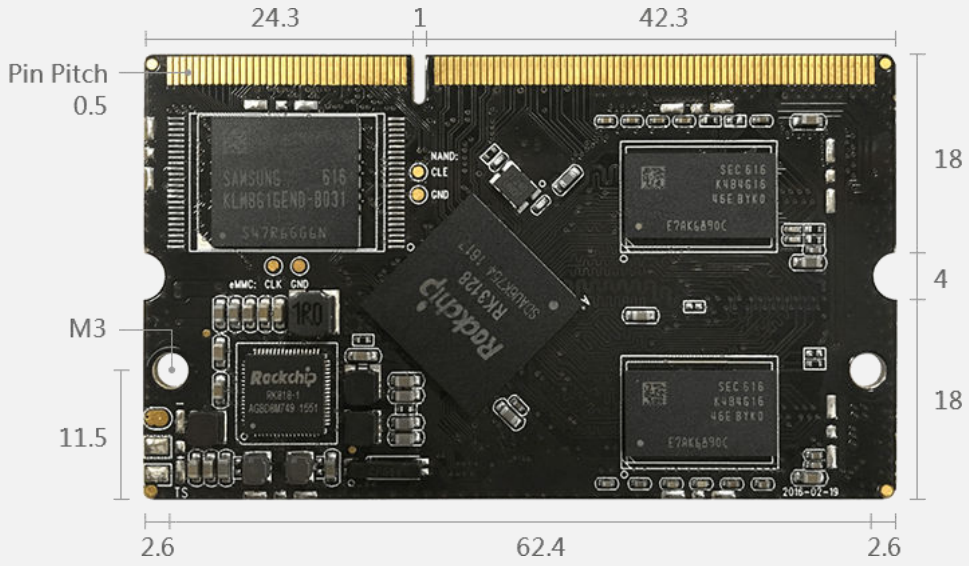
应用广泛

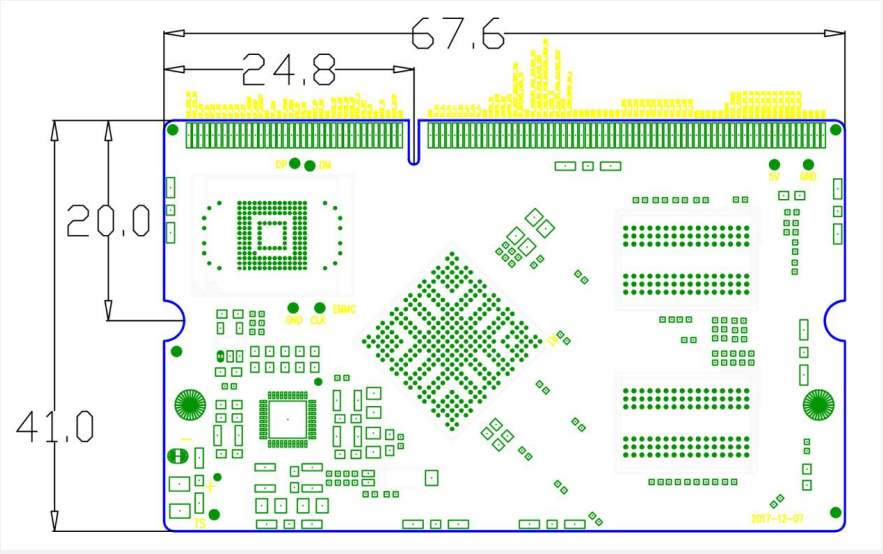
适用于高清商显广告机、自动售货机、医疗健康设备、游戏游艺机、智能 POS 机、智能机器人、工业电脑等

二、规 格 参 数

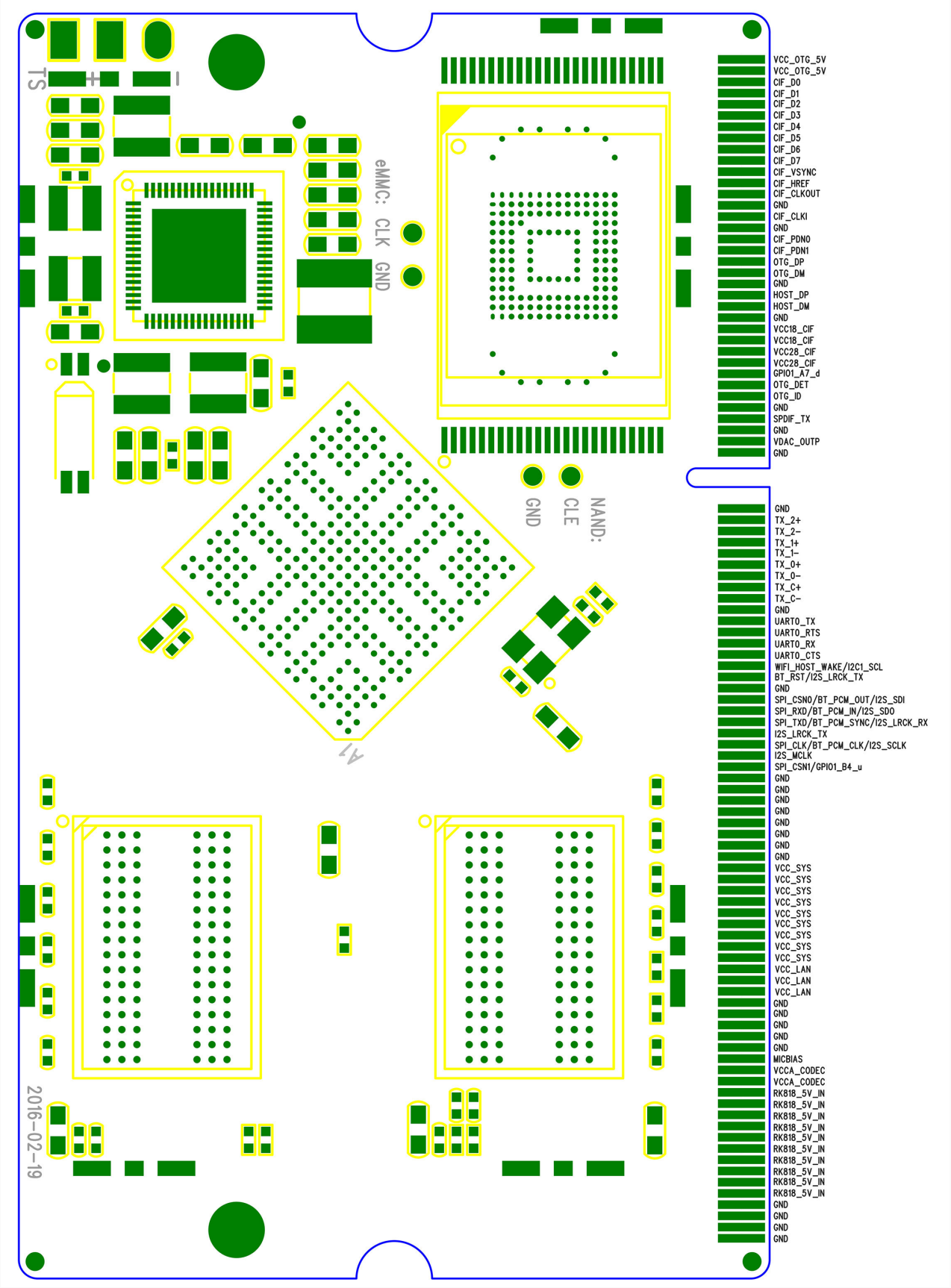
基 本 参 数	
主控芯片	Rockchip RK3128
处理器	ARM®四核 Cortex-A7 处理器，主频高达 1.3GHz
图形处理器	ARM® Mali-400 MP2 双核 GPU，支持 OpenGL ES1.1/2.0 内嵌高性能 2D 加速硬件
视频处理器	1080P 多格式视频解码，包含 1080P H.265 硬件解码 1080P 视频编码，支持 H.264
内存	双通道 DDR3（512MB/1GB/2GB 可选配）
存储器	高速 eMMC（4GB/8GB/16GB/32GB 可选配）
硬 件 特 性	
以太网	集成 GMAC 以太网控制器，扩展 Realtek RTL8211E 实现 10/100/1000Mbps 以太网
无线网络	带 SDIO 接口，用于扩展 WiFi&蓝牙二合一模块
显示	视频输出接口： - 1 x HDMI，支持高清视频输出 - 1 x CVBS，模拟视频输出 显示屏接口 - 1 x MIPI，单通道 or 1 x LVDS 单通道 or 1 x RGB 的显示屏接口
音频	1 x HDMI，音频输出 1 x SPDIF 数字音频接口，用于音频输出 2 x I2S 用于音频输入输出
摄像头	1 x DVP 摄像头接口（最高支持 5Mpixel）
USB	1 x USB2.0 Host，1 x USB2.0 OTG
红外	1 x 红外接收接口（占用 PWM3 引脚）
其他接口	3 x UART （UART2 默认用作 Debug Serial） 2 x SDIO/SDMMC （SDIO1 用于扩展 WiFi 模块，SDMMC0 用于扩展 TF 卡） 4 x PWM（PWM3 用于红外接收） 4 x I2C、3 x ADC、2 x SPI、而 GPIO 高达 73 个
系 统 软 件	
系统支持	Android 5.1 / Ubuntu 15.04 / Linux
外 观 规 格	
主板尺寸	67.6mm x 40mm
接口类型	DDR3 内存接口（204P，0.5mm 间距）
主板参数	板厚 1.0mm，6 层板设计，沉金工艺

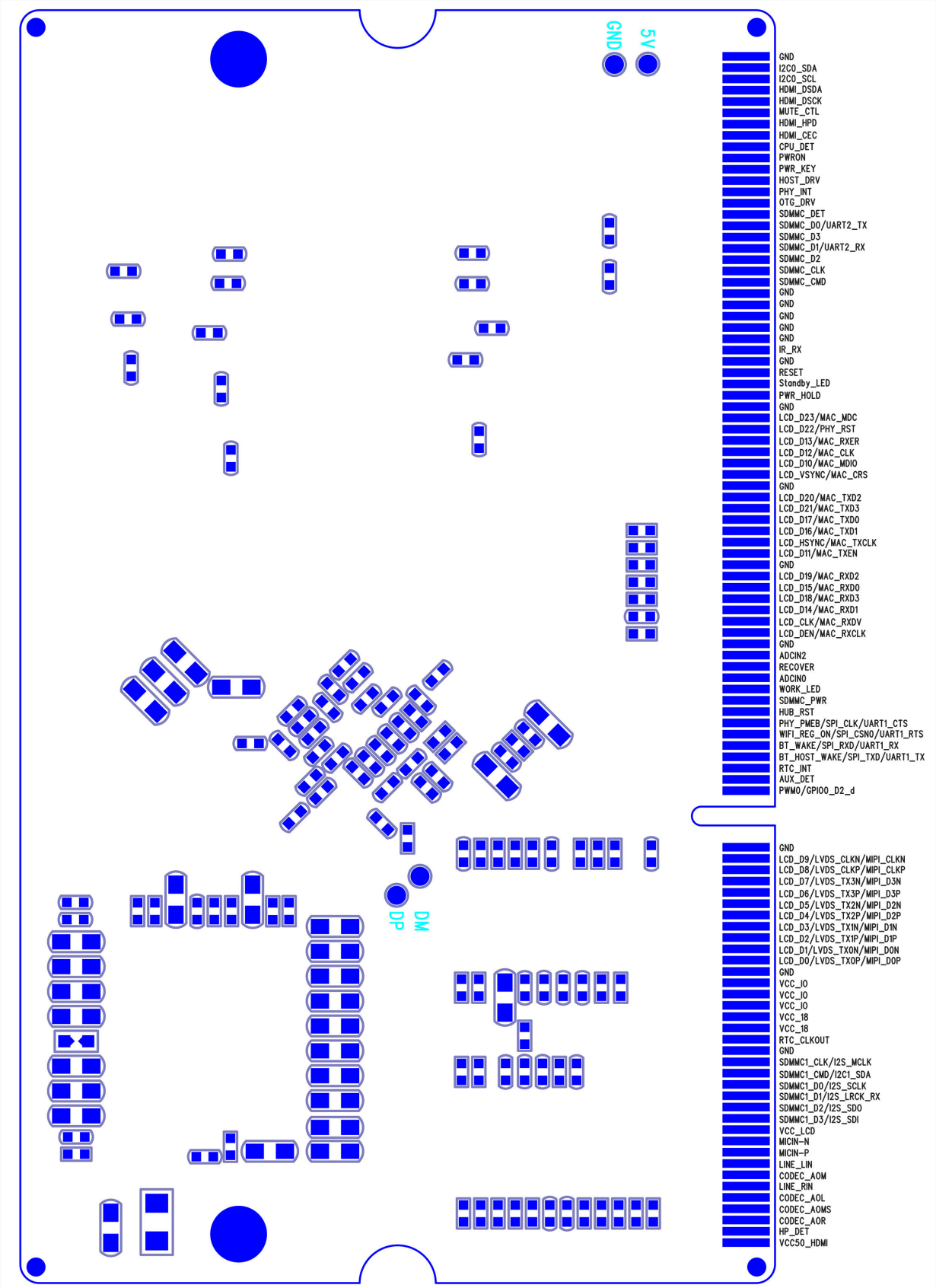
三、核心板尺寸



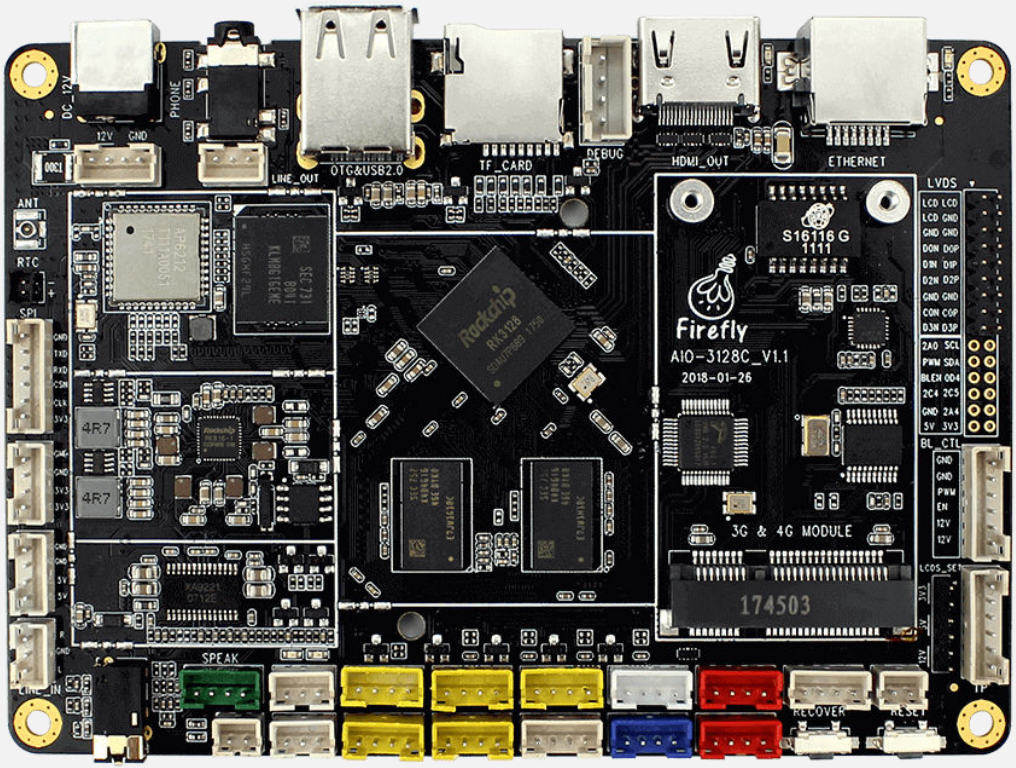


四、核心板接口描述

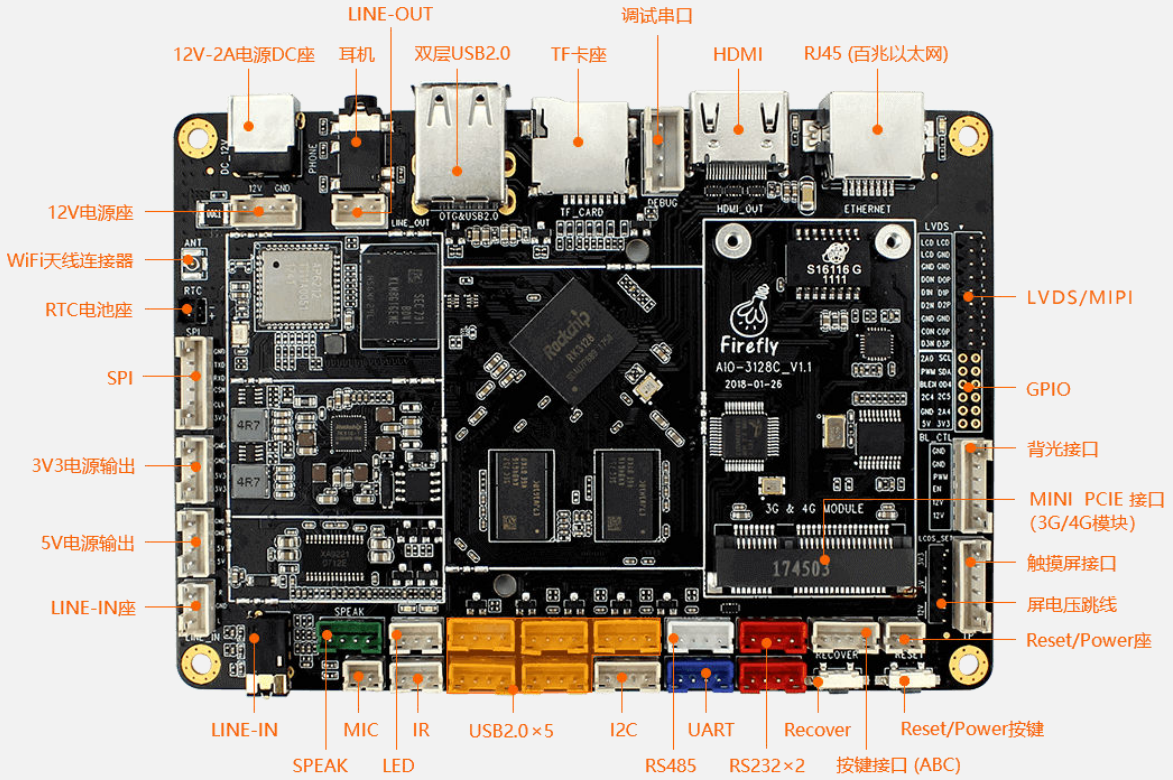

TS
eMMC: CLK GND
NAND: CLE GND
2016-02-19
VCC_OTG_5V
VCC_OTG_5V
CIF_D0
CIF_D1
CIF_D2
CIF_D3
CIF_D4
CIF_D5
CIF_D6
CIF_D7
CIF_VSYNC
CIF_HREF
CIF_CLKOUT
GND
CIF_CLKI
GND
CIF_PDN0
CIF_PDN1
OTG_DP
OTG_DM
GND
HOST_DP
HOST_DM
GND
VCC18_CIF
VCC18_CIF
VCC28_CIF
VCC28_CIF
GPIO1_A7_d
OTG_DET
OTG_ID
GND
SPDIF_TX
GND
VDAC_OUTP
GND
GND
TX_2+
TX_2-
TX_1+
TX_1-
TX_0+
TX_0-
TX_C+
TX_C-
GND
UART0_TX
UART0_RTS
UART0_RX
UART0_CTS
WIFI_HOST_WAKE/I2C1_SCL
BT_RST/I2S_LRCK_TX
GND
SPI_CSN0/BT_PCM_OUT/I2S_SDI
SPI_RXD/BT_PCM_IN/I2S_SDO
SPI_TXD/BT_PCM_SYNC/I2S_LRCK_RX
I2S_LRCK_TX
SPI_CLK/BT_PCM_CLK/I2S_SCLK
I2S_MCLK
SPI_CSN1/GPIO1_B4_u
GND
GND
GND
GND
GND
GND
GND
GND
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_SYS
VCC_LAN
VCC_LAN
VCC_LAN
GND
GND
GND
GND
GND
MICBIAS
VCCA_CODEC
VCCA_CODEC
RK818_5V_IN
RK818_5V_IN
RK818_5V_IN
RK818_5V_IN
RK818_5V_IN
RK818_5V_IN
RK818_5V_IN
RK818_5V_IN
RK818_5V_IN
RK818_5V_IN
GND
GND
GND
GND

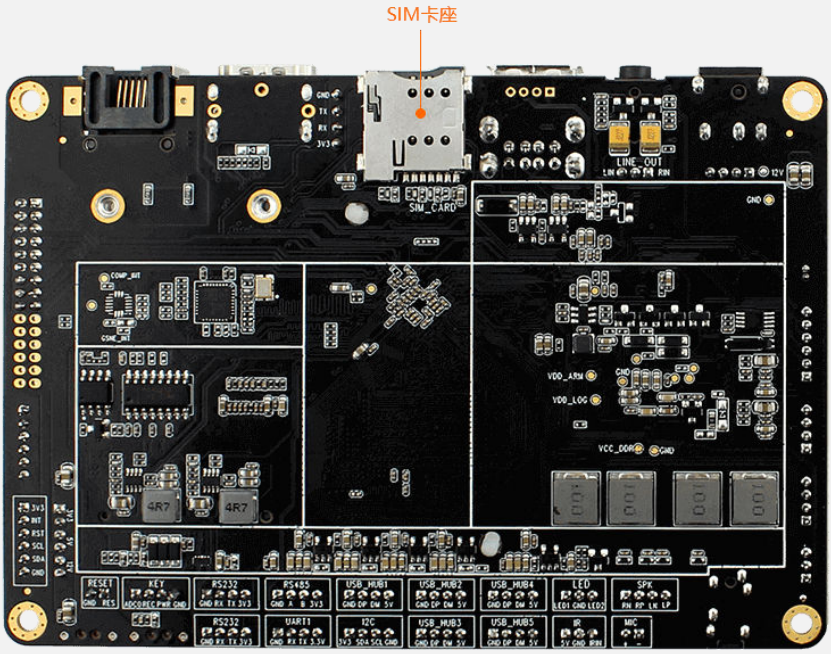

GND
5V
DP
DM
GND
I2C0_SDA
I2C0_SCL
HDMI_DSDA
HDMI_DSCK
MUTE_CTL
HDMI_HPD
HDMI_CEC
CPU_DET
PWRON
PWR_KEY
HOST_DRV
PHY_INT
OTG_DRV
SDMMC_DET
SDMMC_D0/UART2_TX
SDMMC_D3
SDMMC_D1/UART2_RX
SDMMC_D2
SDMMC_CLK
SDMMC_CMD
GND
GND
GND
GND
GND
IR_RX
GND
RESET
Standby_LED
PWR_HOLD
GND
LCD_D23/MAC_MDC
LCD_D22/PHY_RST
LCD_D13/MAC_RXER
LCD_D12/MAC_CLK
LCD_D10/MAC_MDIO
LCD_VSYNC/MAC_CRS
GND
LCD_D20/MAC_TXD2
LCD_D21/MAC_TXD3
LCD_D17/MAC_TXD0
LCD_D16/MAC_TXD1
LCD_HSYNC/MAC_TXCLK
LCD_D11/MAC_TXEN
GND
LCD_D19/MAC_RXD2
LCD_D15/MAC_RXD0
LCD_D18/MAC_RXD3
LCD_D14/MAC_RXD1
LCD_CLK/MAC_RXDV
LCD_DEN/MAC_RXCLK
GND
ADCIN2
RECOVER
ADCIN0
WORK_LED
SDMMC_PWR
HUB_RST
PHY_PMEB/SPI_CLK/UART1_CTS
WIFI_REG_ON/SPI_CSN0/UART1_RTS
BT_WAKE/SPI_RXD/UART1_RX
BT_HOST_WAKE/SPI_TXD/UART1_TX
RTC_INT
AUX_DET
PWM0/GPIO0_D2_d
GND
LCD_D9/LVDS_CLKN/MIPI_CLKN
LCD_D8/LVDS_CLKP/MIPI_CLKP
LCD_D7/LVDS_TX3N/MIPI_D3N
LCD_D6/LVDS_TX3P/MIPI_D3P
LCD_D5/LVDS_TX2N/MIPI_D2N
LCD_D4/LVDS_TX2P/MIPI_D2P
LCD_D3/LVDS_TX1N/MIPI_D1N
LCD_D2/LVDS_TX1P/MIPI_D1P
LCD_D1/LVDS_TX0N/MIPI_D0N
LCD_D0/LVDS_TX0P/MIPI_D0P
GND
VCC_IO
VCC_IO
VCC_IO
VCC_18
VCC_18
RTC_CLKOUT
GND
SDMMC1_CLK/I2S_MCLK
SDMMC1_CMD/I2C1_SDA
SDMMC1_D0/I2S_SCLK
SDMMC1_D1/I2S_LRCK_RX
SDMMC1_D2/I2S_SDO
SDMMC1_D3/I2S_SDI
VCC_LCD
MICIN-N
MICIN-P
LINE_LIN
CODEC_AOM
LINE_RIN
CODEC_AOL
CODEC_AOMS
CODEC_AOR
HP_DET
VCC50_HDMI

五、主板尺寸


89.0mm
127.0mm
DC_12V
PHONE
OTG&USB2.0
TF_CARD
DEBUG
HDMI_OUT
ETHERNET
LVDS
LINE_OUT
ANT
RTC
SPI
SPEAK
LINE_IN
RECOVER
RESET
3G & 4G MODULE
Firefly
AIO-3128C_V1.1
2018-01-26
S16116 G
1111
174503

六、主板接口描述


LINE-OUT
调试串口
12V-2A电源DC座
耳机
双层USB2.0
TF卡座
HDMI
RJ45 (百兆以太网)
12V电源座
WiFi天线连接器
RTC电池座
SPI
3V3电源输出
5V电源输出
LINE-IN座
LVDS/MIPI
GPIO
背光接口
MINI PCIE 接口
(3G/4G模块)
触摸屏接口
屏电压跳线
Reset/Power座
LINE-IN
MIC
IR
USB2.0×5
I2C
UART
Recover
Reset/Power按键
SPEAK
LED
RS485
RS232×2
按键接口 (ABC)


SIM卡座

Notes1:
Pin type: I = input, O = output, I/O = input/output (bidirectional) ,G= Ground , P = power supply ,
DOWN = Internal pull down , UP = Internal pull UP, 0 = Lowe Level 1 = High level

Part A	pin	Core board pin definition	Pin type	I/O Pull	Default function	Defualt function description	IO Power domain	Pin Number	RK3128 Pin Name
	2	VBOOST_1	P		VBOOST	Output Voltage 5V, Rated input current 800mA	5.0V		
	4	VBOOST_2	P		VBOOST		5.0V		
	6	CIF_D0/TS_D0_D	I	DOWN	CIF_D0	Camera interface 8-bit input pixel data		U17	CIF_D0/TS_D0
	8	CIF_D1/TS_D1_D	I	DOWN	CIF_D1	Camera interface 8-bit input pixel data		V17	CIF_D1/TS_D1
	10	CIF_D2/TS_D2_D	I	DOWN	CIF_D2	Camera interface 8-bit input pixel data		W17	CIF_D2/TS_D2
	12	CIF_D3/TS_D3_D	I	DOWN	CIF_D3	Camera interface 8-bit input pixel data		V16	CIF_D3/TS_D3
	14	CIF_D4/TS_D4_D	I	DOWN	CIF_D4	Camera interface 8-bit input pixel data		T13	CIF_D4/TS_D4
	16	CIF_D5/TS_D5_D	I	DOWN	CIF_D5	Camera interface 8-bit input pixel data		R13	CIF_D5/TS_D5
	18	CIF_D6/TS_D6_D	I	DOWN	CIF_D6	Camera interface 8-bit input pixel data		R14	CIF_D6/TS_D6
	20	CIF_D7/TS_D7_D	I	DOWN	CIF_D7	Camera interface 8-bit input pixel data		T16	CIF_D7/TS_D7
	22	CIF_VSYNC/TS_SYNC_D	I	DOWN	CIF_VSYNC	Camera interface vertical sync signal		U13	CIF_VSYNC/TS_SYNC
	24	CIF_HREF/TS_FAIL_D	I	DOWN	CIF_HREF	Camera interface horizontial sync signal		V18	CIF_HREF/TS_FAIL
	26	CIF_CLKO/TS_CLKO_D	O	DOWN	CIF_CLKOUT	Camera interface output work clock , Core board internal series resistance 22R		V13	CIF_CLKO/TS_CLKO
	28	GND_1	G		GND	GND			
	30	CIF_CLKI/TS_VALID_D	I	DOWN	CIF_CLKI	Camera interface input pixel clock		U16	CIF_CLKI/TS_VALID
	32	GND_2	G		GND	GND			
	34	GPIO3_D7/CIF_PDN0/TEST_CLKO_D	I/O	DOWN	CIF_PDN0	Camera interface 8-bit input pixel data		K18	GPIO3_D7/CIF_PDN0/TEST_CLKO
	36	CIF_PDN1/GPIO3_B3_D	I/O	UP	CIF_PDN1	Camera interface 8-bit input pixel data		Y20	CIF_PDN1/GPIO3_B3
	38	USB0_DP	A		OTG_DP	USB Data signal DP USB OTG Data Plus port		W16	USB0_DP
	40	USB0_DM	A		OTG_DM	USB Data signal DM		Y16	USB0_DM
	42	GND_3	G		GND	GND			
	44	USB1_DP	A		HOST_DP	USB HOST Data Plus port	3.3V	W14	USB1_DP
	46	USB1_DM	A		HOST_DM	USB HOST Data Minus port	3.3V	Y14	USB1_DM
	48	GND_4	G		GND	GND			
	50	VCC18_CIF_1	P		VCC18_CIF	Output Voltage 1.8V, Rated input current 400mA(LDO)	1.8V		
	52	VCC18_CIF_2	P		VCC18_CIF		1.8V		
	54	VCC28_CIF_1	P		VCC28_CIF	Output Voltage 2.8V, Rated input current 100mA(LDO)	2.8V		
	56	VCC28_CIF_2	P		VCC28_CIF		2.8V		
	58	GPIO1_A7/SDMMC0_WP_D	I/O	DOWN	GPIO1_A7_d	GPIO		L19	GPIO1_A7/SDMMC0_WP
	60	USB0_VBUS_3.3V	A		OTG_DET	Vbus power detect for USB2.0	3.3V	U11	USB0_VBUS
	62	USB0_ID_3.3V	A		OTG_ID	USB HOST 2.0 ID indicator	3.3V	R11	USB0_ID
	64	GND_5	G		GND	GND			
	66	GPIO3_D3/SPDIF_U	I/O	UP	SPDIF_TX	SPDIF searial data input		Y19	GPIO3_D3/SPDIF
	68	GND_6	G		GND	GND			
	70	TV ENCODER_IOUTP	A		VDAC_OUTP	Video output		V7	TV ENCODER_IOUTP
	72	GND_7	G		GND	GND			
	74	GND_8	G		GND	GND			
	76	HDMI_TX2P	A		TX_2+_A	HDMI channel 2 differential serial data positive		Y5	HDMI_TX2P
	78	HDMI_TX2N	A		TX_2-_A	HDMI channel 2 differential serial data negative		W5	HDMI_TX2N
	80	HDMI_TX1P	A		TX_1+_A	HDMI channel 1 differential serial data positive		Y4	HDMI_TX1P
	82	HDMI_TX1N	A		TX_1-_A	HDMI channel 1 differential serial data negative		W4	HDMI_TX1N
	84	HDMI_TX0P	A		TX_0+_A	HDMI channel 0 differential serial data positive		Y2	HDMI_TX0P
	86	HDMI_TX0N	A		TX_0-_A	HDMI channel 0 differential serial data negative		W2	HDMI_TX0N
	88	HDMI_TX3P	A		TX_C+_A	HDMI differential pixel clock positive		Y1	HDMI_TX3P
	90	HDMI_TX3N	A		TX_C-_A	HDMI differential pixel clock negative		W1	HDMI_TX3N
	92	GND_9	G		GND	GND			
	94	GPIO2_D2/CARD_RST/UART0_TX_D_3.0V	I/O	DOWN	UART0_TX	UART0 serial port , for BT module	3.0V	T18	GPIO2_D2/CARD_RST/UART0_TX
	96	GPIO0_C1/CARD_IO/UART0_RTSN_U_3.0V	I/O	UP	UART0_RTS	UART0 serial port , for BT module	3.0V	P15	GPIO0_C1/CARD_IO/UART0_RTSN
	98	GPIO2_D3/CARD_CLK/UART0_RX_D_3.0V	I/O	DOWN	UART0_RX	UART0 serial port , for BT module	3.0V	Y17	GPIO2_D3/CARD_CLK/UART0_RX
	100	GPIO2_D5/CARD_DET/UART0_CTSN_D_3.0V	I/O	DOWN	UART0_CTS	UART0 serial port , for BT module	3.0V	W20	GPIO2_D5/CARD_DET/UART0_CTSN
	102	GPIO0_A2/I2C1_SCL_U_3.0V	I/O	UP	WIFI_HOST_WAKE/I2C1_SCL	WIFI module wake up AP	3.0V	F19	GPIO0_A2/I2C1_SCL
	104	GPIO1_A3/I2S_LRCK_TX_D_3.0V	I/O	DOWN	BT_RST/I2S_LRCK_TX	BT Reset	3.0V	G15	GPIO1_A3/I2S_LRCK_TX

	106	GND_10	G		GND	GND			
	108	GPIO0_B6/I2S_SDI/SPI_CSN0_U_3.0V	I/O	UP	SPI_CSN0/BT_PCM_OUT/I2S_SDI	SPI chip select signal,low active	3.0V	K19	GPIO0_B6/I2S_SDI/SPI_CSN0
	110	GPIO0_B5/I2S_SDO/SPI_RXD_U_3.0V	I/O	UP	SPI_RXD/BT_PCM_IN/I2S_SDO	SPI serial data input	3.0V	L20	GPIO0_B5/I2S_SDO/SPI_RXD
	112	GPIO0_B3/I2S_LRCK_RX/SPI_TXD_U_3.0V	I/O	UP	SPI_TXD/BT_PCM_SYNC/I2S_LRCK_RX	SPI serial data output	3.0V	J19	GPIO0_B3/I2S_LRCK_RX/SPI_TXD
	114	GPIO0_B4/I2S_LRCK_TX_U_3.0V	I/O	UP	I2S_LRCK_TX	I2S serial clock	3.0V	H16	GPIO0_B4/I2S_LRCK_TX
	116	GPIO0_B1/I2S_SCLK/SPI_CLK_U_3.0V	I/O	UP	SPI_CLK/BT_PCM_CLK/I2S_SCLK	SPI serial clock	3.0V	K20	GPIO0_B1/I2S_SCLK/SPI_CLK
	118	GPIO0_B0/I2S_MCLK_U_3.0V	I/O	UP	I2S_MCLK	I2S clock source	3.0V	H17	GPIO0_B0/I2S_MCLK
	120	GPIO1_B4/SPI_CSN1_U_3.0V	I/O	UP	SPI_CSN1/GPIO1_B4_u	GPIO , SPI chip select signal,low active	3.0V	B19	GPIO1_B4/SPI_CSN1
	122	GND_11	G		GND	Power ground			
	124	GND_12	G		GND				
	126	GND_13	G		GND				
	128	GND_14	G		GND				
	130	GND_15	G		GND				
	132	GND_16	G		GND				
	134	GND_17	G		GND				
	136	GND_18	G		GND				
	138	VCC_SYS_1	P		VCC_SYS	System Power supply Input Voltag : Min 4.8V,Typ 5V, Max 5.2V Input current: Typ 345mA ;Max 660mA	5.0V		
	140	VCC_SYS_2	P		VCC_SYS		5.0V		
	142	VCC_SYS_3	P		VCC_SYS		5.0V		
	144	VCC_SYS_4	P		VCC_SYS		5.0V		
	146	VCC_SYS_5	P		VCC_SYS		5.0V		
	148	VCC_SYS_6	P		VCC_SYS		5.0V		
	150	VCC_SYS_7	P		VCC_SYS		5.0V		
	152	VCC_SYS_8	P		VCC_SYS		5.0V		
	154	VCC_SYS_9	P		VCC_SYS		5.0V		
	156	VCC_LAN_1	P		VCC_LAN	Output Voltage 3.0V, Rated input current 150mA(LDO)	3.0V		
	158	VCC_LAN_2	P		VCC_LAN		3.0V		
	160	VCC_LAN_3	P		VCC_LAN		3.0V		
	162	GND_19	G		GND	Power ground			
	164	GND_20	G		GND				
	166	GND_21	G		GND				
	168	GND_22	G		GND				
	170	GND_23	G		GND				
	172	CODEC_MICBIAS			MICBIAS	MICBIAS			
	174	VCCA_CODEC_1	P		VCCA_CODEC	Output Voltage 3.0V, Rated input current 150mA(LDO)	3.0V		
	176	VCCA_CODEC_2	P		VCCA_CODEC		3.0V		
	178	RK818_5V_IN_1	P		RK818_5V_IN	USB 5V power input	5.0V		
	180	RK818_5V_IN_2	P		RK818_5V_IN	USB 5V power input	5.0V		
	182	RK818_5V_IN_3	P		RK818_5V_IN	USB 5V power input	5.0V		
	184	RK818_5V_IN_4	P		RK818_5V_IN	USB 5V power input	5.0V		
	186	RK818_5V_IN_5	P		RK818_5V_IN	USB 5V power input	5.0V		
	188	RK818_5V_IN_6	P		RK818_5V_IN	USB 5V power input	5.0V		
	190	RK818_5V_IN_7	P		RK818_5V_IN	USB 5V power input	5.0V		
	192	RK818_5V_IN_8	P		RK818_5V_IN	USB 5V power input	5.0V		
	194	RK818_5V_IN_9	P		RK818_5V_IN	USB 5V power input	5.0V		
	196	RK818_5V_IN_10	P		RK818_5V_IN	USB 5V power input	5.0V		
	198	GND_24	G		GND	Power ground			
	200	GND_25	G		GND				
	202	GND_26	G		GND				
	204	GND_27	G		GND				
Part B	**pin**	**Core board pin definition**	**Pin type**	**I/O Pull**	**Default function**	**Defualt function description**	**IO Power domain**	**Pin Number**	**RK3128 Pin Name**
	1	VCC50_HDMI			NC (no used)	NC (no used)			
	3	CODEC_HPDET	A		HP_DET	Headphone detection		C14	CODEC_HPDET
	5	CODEC_AOR	A		CODEC_AOR	Right channel output of the headphone		B15	CODEC_AOR
	7	CODEC_AOMS	A		CODEC_AOMS	Headphone virtual ground feedback		A16	CODEC_AOMS

9	CODEC_AOL	A		CODEC_AOL	Left channel output of the headphone		B17	CODEC_AOL
11	CODEC_AIR	A		LINE_RIN	Right channel line-in input		D16	CODEC_AIR
13	CODEC_AOM	A		CODEC_AOM	Headphone virtual ground output		B16	CODEC_AOM
15	CODEC_AIL	A		LINE_LIN	Left channel line-in input		C16	CODEC_AIL
17	CODEC_MICR	A		MICIN-P	Right channel microphone PGA positive input		E16	CODEC_MICR
19	CODEC_MICL	A		MICIN-N	Right channel microphone PGA negative input		E14	CODEC_MICL
21	VCC_LCD	P		VCC_LCD	Output Voltage 3.0V, Rated input current 300mA	3.0V		
23	GPIO1_A5/I2S_SDI/SDMMC1_D3_D_3.0V	I/O	DOWN	SDMMC1_D3/I2S_SDI	I2S serial data input	3.0V	G17	GPIO1_A5/I2S_SDI/SDMMC1_D3
25	GPIO1_A4/I2S_SDO/SDMMC1_D2_D_3.0V	I/O	DOWN	SDMMC1_D2/I2S_SDO	I2S serial data ouput	3.0V	G16	GPIO1_A4/I2S_SDO/SDMMC1_D2
27	GPIO1_A2/I2S_LRCK_RX/SDMMC1_D1_U_3.0V	I/O	UP	SDMMC1_D1/I2S_LRCK_RX	I2S serial data output	3.0V	E19	GPIO1_A2/I2S_LRCK_RX/SDMMC1_D1
29	GPIO1_A1/I2S_SCLK/SDMMC1_D0/PMIC_SLEEP_D_3.0V	I/O	DOWN	SDMMC1_D0/I2S_SCLK	I2S serial clock	3.0V	E18	GPIO1_A1/I2S_SCLK/SDMMC1_D0/PMIC_SLEEP
31	GPIO0_A3/I2C1_SDA/SDMMC1_CMD_U_3.0V	I/O	UP	SDMMC1_CMD/I2C1_SDA	I2C1 data	3.0V	D17	GPIO0_A3/I2C1_SDA/SDMMC1_CMD
33	GPIO1_A0/I2S_MCLK/SDMMC1_CLKO/XIN_32K_D_3.0V	I/O	DOWN	SDMMC1_CLK/I2S_MCLK	I2S clock source	3.0V	E20	GPIO1_A0/I2S_MCLK/SDMMC1_CLKO/XIN_32K
35	GND_28	G		GND	GND			
37	RTC_CLKOUT			RTC_CLKOUT	RCT card clock.			
39	VCC_18_1	P		VCC_18	Output Voltage 1.8V, Rated input current 150mA(LDO)	1.8V		
41	VCC_18_2	P		VCC_18		1.8V		
43	VCC_IO_1	P		VCC_IO	Output Voltage 3.0V, Rated input current 230mA(LDO)	3.0V		
45	VCC_IO_2	P		VCC_IO		3.0V		
47	VCC_IO_3	P		VCC_IO		3.0V		
49	GND_29	G		GND	GND			
51	LCDC_D0/LVDS_TX0P/EBC_SDDO0/MIPI_D0P	A		LCD_D0/LVDS_TX0P/MIPI_D0P	LCDC data output		Y13	LCDC_D0/LVDS_TX0P/EBC_SDDO0/MIPI_D0P
53	LCDC_D1/LVDS_TX0N/EBC_SDDO1/MIPI_D0N	A		LCD_D1/LVDS_TX0N/MIPI_D0N	LCDC data output		W13	LCDC_D1/LVDS_TX0N/EBC_SDDO1/MIPI_D0N
55	LCDC_D2/LVDS_TX1P/EBC_SDDO2/MIPI_D1P	A		LCD_D2/LVDS_TX1P/MIPI_D1P	LCDC data output		Y11	LCDC_D2/LVDS_TX1P/EBC_SDDO2/MIPI_D1P
57	LCDC_D3/LVDS_TX1N/EBC_SDDO3/MIPI_D1N	A		LCD_D3/LVDS_TX1N/MIPI_D1N	LCDC data output		W11	LCDC_D3/LVDS_TX1N/EBC_SDDO3/MIPI_D1N
59	LCDC_D4/LVDS_TX2P/EBC_SDDO4/MIPI_D2P	A		LCD_D4/LVDS_TX2P/MIPI_D2P	LCDC data output		Y10	LCDC_D4/LVDS_TX2P/EBC_SDDO4/MIPI_D2P
61	LCDC_D5/LVDS_TX2N/EBC_SDDO5/MIPI_D2N	A		LCD_D5/LVDS_TX2N/MIPI_D2N	LCDC data output		W10	LCDC_D5/LVDS_TX2N/EBC_SDDO5/MIPI_D2N
63	LCDC_D6/LVDS_TX3P/EBC_SDDO6/MIPI_D3P	A		LCD_D6/LVDS_TX3P/MIPI_D3P	LCDC data output		W8	LCDC_D6/LVDS_TX3P/EBC_SDDO6/MIPI_D3P
65	LCDC_D7/LVDS_TX3N/EBC_SDDO7/MIPI_D3N	A		LCD_D7/LVDS_TX3N/MIPI_D3N	LCDC data output		Y8	LCDC_D7/LVDS_TX3N/EBC_SDDO7/MIPI_D3N
67	LCDC_D8/LVDS_CLKP/EBC_SDCE0/MIPI_CLKP	A		LCD_D8/LVDS_CLKP/MIPI_CLKP	LCDC data output		Y7	LCDC_D8/LVDS_CLKP/EBC_SDCE0/MIPI_CLKP
69	LCDC_D9/LVDS_CLKN/EBC_SDCE1/MIPI_CLKN	A		LCD_D9/LVDS_CLKN/MIPI_CLKN	LCDC data output		W7	LCDC_D9/LVDS_CLKN/EBC_SDCE1/MIPI_CLKN
71	GND_30	G		GND	GND			
73	GPIO0_D2/PWM0_D_3.0V	I/O	DOWN	PWM0/GPIO0_D2_d	PWM output	3.0V	U18	GPIO0_D2/PWM0
75	GPIO0_D3/PWM1_D_3.0V	I/O	DOWN	AUX_DET	AUX detect input	3.0V	T17	GPIO0_D3/PWM1
77	GPIO0_D4/PWM2_U_3.0V	I/O	UP	RTC_INT_	RTC power enable 1:Enable 0:Disable	3.0V	V14	GPIO0_D4/PWM2
79	GPIO1_B1/UART1_TX/SPI_TXD_U_3.0V	I/O	UP	BT_HOST_WAKE/SPI_TXD/UART1_TX	BT module wake up AP	3.0V	H18	GPIO1_B1/UART1_TX/SPI_TXD
81	GPIO1_B2/UART1_RX/SPI_RXD_U_3.0V	I/O	UP	BT_WAKE/SPI_RXD/UART1_RX	AP wake up BT module	3.0V	H19	GPIO1_B2/UART1_RX/SPI_RXD
83	GPIO1_B3/UART1_RTSN/SPI_CSN0_U_3.0V	I/O	UP	WIFI_REG_ON/SPI_CSN0/UART1_RTS	WIFI module power enable 1:Enable 0:Disable	3.0V	G18	GPIO1_B3/UART1_RTSN/SPI_CSN0
85	GPIO1_B0/UART1_CTSN/SPI_CLK_U_3.0V	I/O	UP	PHY_PMEB/SPI_CLK/UART1_CTS	SPI serial clock	3.0V	G19	GPIO1_B0/UART1_CTSN/SPI_CLK
87	GPIO2_A7/FLASH_DQS/EMMC_CLKO_U_3.0V	I/O	UP	HUB_RST	USB reset	3.0V	N19	GPIO2_A7/FLASH_DQS/EMMC_CLKO
89	GPIO1_B6/SDMMC0_PWR_D	I/O	DOWN	SDMMC_PWR	SDMMC card power-enable control signal		N18	GPIO1_B6/SDMMC0_PWR
91	GPIO1_C7/FLASH_CS3/EMMC_RST_U	I/O	UP	WORK_LED	System working state refers to LED		P19	GPIO1_C7/FLASH_CS3/EMMC_RST
93	ADCIN0	A		ADCIN0	ADC input signal for 0 channel	3.0V	P11	ADCIN0
95	ADCIN1	A		RECOVER	RECOVER , Core board interiorl pull up Resistor 10K	3.3V	U10	ADCIN1
97	ADCIN2	A		ADCIN2	ADC input signal for 2 channel	3.0V	V10	ADCIN2
99	GND_31	G		GND	GND			
101	GPIO2_B3/LCDC_DEN/EBC_GDCLK/GMAC_RXCLK_D_3.0V	I/O	DOWN	LCD_DEN/MAC_RXCLK	LCDC RGB interface data enable	3.0V	U1	GPIO2_B3/LCDC_DEN/EBC_GDCLK/GMAC_RXCLK
103	GPIO2_B0/LCDC_CLK/EBC_SDCLK/GMAC_RXDV_D_3.0V	I/O	DOWN	LCD_CLK/MAC_RXDV	LCDC RGB interface display clock out	3.0V	U5	GPIO2_B0/LCDC_CLK/EBC_SDCLK/GMAC_RXDV
105	GPIO2_C0/LCDC_D14/EBC_VCOM/GMAC_RXD1_D_3.0V	I/O	DOWN	LCD_D14/MAC_RXD1	LCDC data output	3.0V	T3	GPIO2_C0/LCDC_D14/EBC_VCOM/GMAC_RXD1
107	GPIO2_C4/LCDC_D18/EBC_GDRL/I2C2_SDA/GMAC_RXD3_D_3.0V	I/O	DOWN	LCD_D18/MAC_RXD3	LCDC data output	3.0V	T4	GPIO2_C4/LCDC_D18/EBC_GDRL/I2C2_SDA/GMAC_RXD3
109	GPIO2_C1/LCDC_D15/EBC_GDOE/GMAC_RXD0_D_3.0V	I/O	DOWN	LCD_D15/MAC_RXD0	LCDC data output	3.0V	R2	GPIO2_C1/LCDC_D15/EBC_GDOE/GMAC_RXD0
111	GPIO2_C5/LCDC_D19/EBC_SDSHR/I2C2_SCL/GMAC_RXD2_D_3.0V	I/O	DOWN	LCD_D19/MAC_RXD2	LCDC data output	3.0V	P3	GPIO2_C5/LCDC_D19/EBC_SDSHR/I2C2_SCL/GMAC_RXD2
113	GND_32	G		GND	GND			
115	GPIO2_B5/LCDC_D11/EBC_SDCE3/GMAC_TXEN_D_3.0V	I/O	DOWN	LCD_D11/MAC_TXEN	LCDC data output , Core board internal series resistance 22R	3.0V	U2	GPIO2_B5/LCDC_D11/EBC_SDCE3/GMAC_TXEN

117	GPIO2_B1/LCDC_HSYNC/EBC_SDLE/GMAC_TXCLK_D_3.0V	I/O	DOWN	LCD_HSYNC/MAC_TXCLK	LCDC RGB interface horizontial sync pulse, MCU i80 interface WEN signal , Core board internal series resistance 22R	3.0V	T5	GPIO2_B1/LCDC_HSYNC/EBC_SDLE/GMAC_TXCLK
119	GPIO2_C2/LCDC_D16/EBC_GDSP/GMAC_TXD1_D_3.0V	I/O	DOWN	LCD_D16/MAC_TXD1	LCDC data output , Core board internal series resistance 22R	3.0V	P1	GPIO2_C2/LCDC_D16/EBC_GDSP/GMAC_TXD1
121	GPIO2_C3/LCDC_D17/EBC_GDPWR0/GMAC_TXD0_D_3.0V	I/O	DOWN	LCD_D17/MAC_TXD0	LCDC data output , Core board internal series resistance 22R	3.0V	P2	GPIO2_C3/LCDC_D17/EBC_GDPWR0/GMAC_TXD0
123	GPIO2_C7/LCDC_D21/EBC_BORDER1/GPS_MAG/GMAC_TXD3_D_3.0V	I/O	DOWN	LCD_D21/MAC_TXD3	LCDC data output , Core board internal series resistance 22R	3.0V	P4	GPIO2_C7/LCDC_D21/EBC_BORDER1/GPS_MAG/GMAC_TXD3
125	GPIO2_C6/LCDC_D20/EBC_BORDER0/GPS_SIGN/GMAC_TXD2_D_3.0V	I/O	DOWN	LCD_D20/MAC_TXD2	LCDC data output , Core board internal series resistance 22R	3.0V	P5	GPIO2_C6/LCDC_D20/EBC_BORDER0/GPS_SIGN/GMAC_TXD2
127	GND_33	G		GND	GND			
129	GPIO2_B2/LCDC_VSYNC/EBC_SDOE/GMAC_CRS_D_3.0V	I/O	DOWN	LCD_VSYNC/MAC_CRS	LCDC RGB interface vertival sync pulse, MCU i80 interface CSN signal	3.0V	V5	GPIO2_B2/LCDC_VSYNC/EBC_SDOE/GMAC_CRS
131	GPIO2_B4/LCDC_D10/EBC_SDCE2/GMAC_MDIO_D_3.0V	I/O	DOWN	LCD_D10/MAC_MDIO	LCDC data output	3.0V	U3	GPIO2_B4/LCDC_D10/EBC_SDCE2/GMAC_MDIO
133	GPIO2_B6/LCDC_D12/EBC_SDCE4/GMAC_CLK_D_3.0V	I/O	DOWN	LCD_D12/MAC_CLK	LCDC data output	3.0V	U4	GPIO2_B6/LCDC_D12/EBC_SDCE4/GMAC_CLK
135	GPIO2_B7/LCDC_D13/EBC_SDCE5/GMAC_RXER_D_3.0V	I/O	DOWN	LCD_D13/MAC_RXER	LCDC data output	3.0V	T1	GPIO2_B7/LCDC_D13/EBC_SDCE5/GMAC_RXER
137	GPIO2_D0/LCDC_D22/EBC_GD_D_3.0V	I/O	DOWN	LCD_D22/PHY_RST	LCDC data output	3.0V	P6	GPIO2_D0/LCDC_D22/EBC_GDPWR1/GPS_CLK/GMAC_COL
139	GPIO2_D1/LCDC_D23/EBC_GDPWR2/GMAC_MDC_D_3.0V	I/O	DOWN	LCD_D23/MAC_MDC	LCDC data output	3.0V	T2	GPIO2_D1/LCDC_D23/EBC_GDPWR2/GMAC_MDC
141	GND_34	G		GND	GND			
143	GPIO2_A5/FLASH_WP/EMMC_PWR_D	I/O	DOWN	PWR_HOLD	Hold power enable 1:Enable 0:Disable		V19	GPIO2_A5/FLASH_WP/EMMC_PWR
145	GPIO1_C6/FLASH_CS2/EMMC_CMD_U	I/O	UP	Standby_LED	Stand by LED		U19	GPIO1_C6/FLASH_CS2/EMMC_CMD
147	NPOR	I	DOWN	RESET	RESET , Core board interiorl pull up Resistor 10K		N20	NPOR
149	GND_35	G		GND	GND			
151	GPIO3_D2/IR_u_3.0V	I/O	UP	IR_RX	IR receive data		W18	GPIO3_D2/IR
153	GND_36	G		GND	Power ground			
155	GND_37	G		GND				
157	GND_38	G		GND				
159	GND_39	G		GND				
161	GND_40	G		GND				
163	GPIO1_B7/SDMMC0_CMD_U	I/O	UP	SDMMC_CMD	SDMMC0 command output, JTAG TMS for MCU	Note 2	D18	GPIO1_B7/SDMMC0_CMD
165	GPIO1_C0/SDMMC0_CLKO_D	I/O	DOWN	SDMMC_CLK	SDMMC0 clock output, JTAG TCK for MCU		H20	GPIO1_C0/SDMMC0_CLKO
167	GPIO1_C4/SDMMC0_D2/JTAG_TCK_U	I/O	UP	SDMMC_D2	SDMMC0 data port , JTAG TCK for AP		K16	GPIO1_C4/SDMMC0_D2/JTAG_TCK
169	GPIO1_C3/SDMMC0_D1/UART2_RX_U	I/O	UP	SDMMC_D1/UART2_RX	SDMMC0 data port		K15	GPIO1_C3/SDMMC0_D1/UART2_RX
171	GPIO1_C5/SDMMC0_D3/JTAG_TMS_U	I/O	UP	SDMMC_D3	SDMMC0 data port , JTAG TMS for AP		M19	GPIO1_C5/SDMMC0_D3/JTAG_TMS
173	GPIO1_C2/SDMMC0_D0/UART2_TX_U	I/O	UP	SDMMC_D0/UART2_TX	SDMMC0 data port		L18	GPIO1_C2/SDMMC0_D0/UART2_TX
Note 2:Default is 3.3V; VCCIO5 Domain 1.8V or 3.3V Power supply, Voltage configure by GPIO0_A7; H = 3.3V, L = 1.8V.								
175	GPIO1_C1/SDMMC0_DET_U	I/O	UP	SDMMC_DET	SDMMC card detect signal, 0: TF card insert 1: TF card no insert		W19	GPIO1_C1/SDMMC0_DET
177	GPIO0_D6/SDMMC1_PWR_D	I/O	DOWN	OTG_DRV	USB OTG 5.0V Output EN		A20	GPIO0_D6/SDMMC1_PWR
179	GPIO0_D0/UART2_RTSN/PMIC_SLEEP_U	I/O	UP	PHY_INT	PHY interrupt input		C17	GPIO0_D0/UART2_RTSN/PMIC_SLEEP
181	GPIO3_C4_D	I/O	DOWN	HOST_DRV	USB HOST 5.0V Output EN		D19	GPIO3_C4
183	GPIO3_C7_U	I/O	UP	PWR_KEY	Power button press down signal In		G20	GPIO3_C7
185	PWRON			PWRON	Power on Signal Input, External connection Power key			
187	GPIO0_D1/UART2_CTSN_U	I/O	UP	CPU_DET	Thermal design power consumption		A19	GPIO0_D1/UART2_CTSN
189	GPIO0_C4/HDMI_CEC_U	I/O	UP	HDMI_CEC	HDMI CEC communication		C19	GPIO0_C4/HDMI_CEC
191	GPIO0_B7/HDMI_HPD_D	I/O	DOWN	HDMI_HPD	HDMI Hot Plug Detection interrupt with 5V tolerance		E13	GPIO0_B7/HDMI_HPD
193	GPIO3_C5_D	I/O	DOWN	MUTE_CTL	Headphone control		F13	GPIO3_C5
195	GPIO0_A6/HDMI_SCL/I2C3_SCL_U_3.3V	I/O	UP	HDMI_DSCK	I2C serial port ,for HDMI	3.3V	B20	GPIO0_A6/HDMI_SCL/I2C3_SCL
197	GPIO0_A7/HDMI_SDA/I2C3_SDA_U_3.3V	I/O	UP	HDMI_DSDA	I2C serial port ,for HDMI	3.3V	F14	GPIO0_A7/HDMI_SDA/I2C3_SDA
199	GPIO0_A0/I2C0_SCL_U	I/O	UP	I2C0_SCL	I2C0 clock		D20	GPIO0_A0/I2C0_SCL
201	GPIO0_A1/I2C0_SDA_U	I/O	UP	I2C0_SDA	I2C0 data		E17	GPIO0_A1/I2C0_SDA
203	GND_41	G		GND	Power ground			
207	GND_42	G		GND				
208	GND_43	G		GND				
209	GND_44	G		GND				
210	GND_45	G		GND				
211	GND_46	G		GND				
212	GND_47	G		GND				

公司简介

天启科技成立于 2009 年，国家高新技术企业，专注于开源智能硬件，人工智能，物联网，数字音频产品的研发设计、生产和销售，同时提供了智能软硬件产品的整体解决方案。开源品牌“Firefly”在互联网上拥有开源社区与网上商城，目前已超过 20 万用 户与 10000 多家的企业用户，为众多科技创业者与初创企业加速研发进程，并提供专业的技术服务。

天启智能科技有限公司

官网：www.t-firefly.com
电话：4001-511-533
邮编：528400
地址：广东省中山市东区中山四路 57 号宏宇大厦 1 座 2101 室

业务沟通

邮箱：sales@t-firefly.com

商城

自营商城：store.t-firefly.com
淘宝店：t-firefly.taobao.com

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