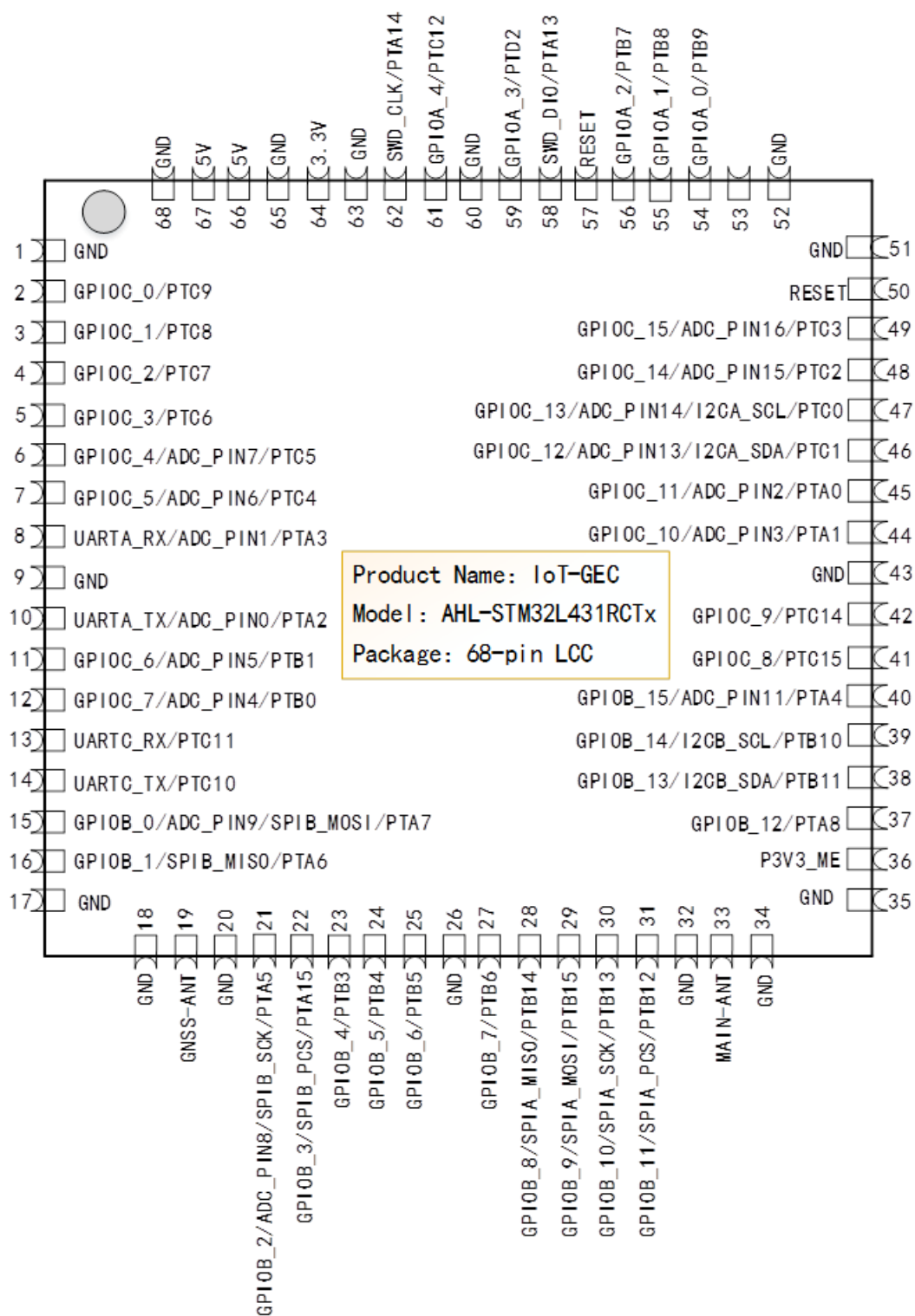


金葫芦AHL-STM32L431的引脚图



金葫芦AHL-STM32L431的引脚复用功能

功能 GEC 引脚号	不可编程 引脚	STM32	引脚复用功能
1	GND	GND	
2		PTC9	TSC_G4_IO4/SDMMC1_D1
3		PTC8	TSC_G4_IO3/SDMMC1_D0
4		PTC7	TSC_G4_IO2/SDMMC1_D7
5		PTC6	TSC_G4_IO1/SDMMC1_D6
6		PTC5	COMP1_INP/ADC1_IN14/WKUP5/USART3_RX
7		PTC4	COMP1_INM/ADC1_IN13/USART3_TX
8		PTA3	UART_2_RX (UART_User)
9	GND	GND	
10		PTA2	UART_2_TX
11		PTB1	COMP1_INM/ADC1_IN16/TIM1_CH3N/USART3_RTS_DE/ LPUART1_RTS_DE/QUADSPI_BK1_IO0/LPTIM2_IN1/
12		PTB0	ADC1_IN15/TIM1_CH2N/SPI1_NSS/USART3_CK/ QUADSPI_BK1_IO1/COMP1_OUT/SAI1_EXTCLK
13		PTC11	UART_3_RX (BIOS 保留串口更新使用)
14		PTC10	UART_3_TX
15		PTA7	ADC1_IN12/TIM1_CH1N/I2C3_SCL/SPI1_MOSI/ QUADSPI_BK1_IO2/COMP2_OUT
16		PTA6	ADC1_IN11/TIM1_BKIN/SPI1_MISO/COMP1_OUT/USART3_CTS/LP UART1_CTS/QUADSPI_BK1_IO3/TIM1_BKIN_COMP2/ TIM16_CH1
17	GND	GND	
18	GND	GND	
19	GNSS-ANT		GPS/北斗天线接入
20	GND	GND	
21		PTA5	COMP1_INM/COMP2_INM/ADC1_IN10/DAC1_OUT2/TIM2_CH1/ TIM2_ETR/SPI1_SCK/LPTIM2_ETR
22		PTA15	JTDI/TIM2_CH1/TIM2_ETR/USART2_RX/SPI1_NSS/ SPI3_NSS/USART3_RTS_DE/TSC_G3_IO1/SWPMI1_SUSPEND
23		PTB3	COMP2_INM/JTDO-TRACESWO/TIM2_CH2/ SPI1_SCK/SPI3_SCK/USART1_RTS_DE/SAI1_SCK_B
24		PTB4	COMP2_INP/NJTRST/I2C3_SDA/SPI1_MISO/ SPI3_MISO/USART1_CTS/TSC_G2_IO1/SAI1_MCLK_B
25		PTB5	LPTIM1_IN1/I2C1_SMBA/SPI1_MOSI/SPI3_MOSI/USART1_CK/ TSC_G2_IO2/COMP2_OUT/SAI1_SD_B/TIM16_BKIN
26	GND	GND	
27		PTB6	COMP2_INP/LPTIM1_ETR/I2C1_SCL/USART1_TX/ TSC_G2_IO3/SAI1_FS_B/TIM16_CH1N
28		PTB14	TIM1_CH2N/I2C2_SDA/SPI2_MISO/USART3_RTS_DE/ TSC_G1_IO3/SWPMI1_RX/SAI1_MCLK_A/TIM15_CH1
29		PTB15	RTC_REFIN/TIM1_CH3N/SPI2_MOSI/TSC_G1_IO4/ SWPMI1_SUSPEND/SAI1_SD_A/TIM15_CH2
30		PTB13	TIM1_CH1N/I2C2_SCL/SPI2_SCK/USART3_CTS/LPUART1_CTS/TSC G1_IO2/SWPMI1_TX/SAI1_SCK_A/TIM15_CH1N
31		PTB12	TIM1_BKIN/TIM1_BKIN_COMP2/I2C2_SMBA/SPI2_NSS/ USART3_CK/LPUART1_RTS_DE/TSC_G1_IO1/SWPMI1_IO/

			SAI1_FS_A/TIM15_BKIN
32	GND	GND	
33	MAIN_ ANT		天线接入
34	GND	GND	
35	GND	GND	
36	3.3V		3.3V 输出（监测用）
37		PTA8	MCO/TIM1_CH1/USART1_CK/SWPMI1_IO/SAI1_SCK_A/LPTIM2_OUT/
38		PTB11	TIM2_CH4/I2C2_SDA/USART3_RX/LPUART1_TX/QUADSPI_BK1_NCS/COMP2_OUT
39		PTB10	TIM2_CH3/I2C2_SCL/SPI2_SCK/USART3_TX/LPUART1_RX/TSC_SYNC/QUADSPI_CLK/COMP1_OUT/SAI1_SCK_A
40		PTA4	COMP1_INM/COMP2_INM/ADC1_IN9/DAC1_OUT1/SPI1_NSS/SPI3_NSS/USART2_CK/SAI1_FS_B/LPTIM2_OUT
41		PTH1	OSC_OUT
42		PTH0	OSC_IN
43	GND	GND	
44		PTA1	OPAMP1_VINM/COMP1_INP/ADC1_IN6/TIM2_CH2/I2C1_SMBA/SPI1_SCK/USART2_RTS_DE/TIM15_CH1N
45		PTA0	OPAMP1_VINP/COMP1_INM/ADC1_IN5/RTC_TAMP2/WKUP1/TIM2_CH1/USART2_CTS/COMP1_OUT/SAI1_EXTCLK/TIM2_ETR
46		PTC1	ADC1_IN2/LPTIM1_OUT/I2C3_SDA/LPUART1_TX
47		PTC0	ADC1_IN1/LPTIM1_IN1/I2C3_SCL/LPUART1_RX/LPTIM2_IN1
48		PTC2	ADC1_IN3/LPTIM1_IN2/SPI2_MISO
49		PTC3	ADC1_IN4/LPTIM1_ETR/SPI2_MOSI, SAI1_SD_A/LPTIM2_ETR
50	RESET	NRST	
51	GND	GND	
52	GND	GND	
53			
54		PTB9	IR_OUT/I2C1_SDA/SPI2_NSS/CAN1_TX/SDMMC1_D5/SAI1_FS_A
55	BIOS 指示	PTB8	I2C1_SCL/CAN1_RX/SDMMC1_D4/SAI1_MCLK_A/TIM16_CH1
56		PTB7	COMP2_INM/PVD_IN/LPTIM1_IN2/I2C1_SDA/USART1_RX/TSC_G2_IO4
57	RST	NRST	
58	SWD_DIO	PTA13	JTMS-SWDIO/IR_OUT/SWPMI1_TX/SAI1_SD_B
59		PTD2	USART3_RTS_DE/TSC_SYNC/SDMMC1_CMD
60	GND	GND	
61		PTC12	SPI3_MOSI/USART3_CK/TSC_G3_IO4/SDMMC1_CK
62	SWD_CLK	PTA14	JTCK-SWDCLK/LPTIM1_OUT/I2C1_SMBA/SWPMI1_RX/SAI1_FS_B
63	GND	GND	
64	3.3V		3.3V 输出（150mA）
65	GND	GND	
66	5V 输入		
67	5V 输入		
68	GND	GND	

附录：内嵌MCU芯片（STM32L431-LQFP64封装）引脚梳理表

引脚号	引脚名	复用功能	备注
1	VBAT		
2	PTC13	RTC_TAMP1/RTC_TS/RTC_OUT/WKUP2	
3	PTC14	OSC32_IN	外接晶振引脚，最好不 复用为 GPIO
4	PTC15	OSC32_OUT	
5	PTH0	OSC_IN	
6	PTH1	OSC_OUT	
7	NRST		复位引脚， 上拉
8	PTC0	ADC1_IN1/LPTIM1_IN1/I2C3_SCL/LPUART1_RX/LPTIM2_IN1	
9	PTC1	ADC1_IN2/LPTIM1_OUT/I2C3_SDA/LPUART1_TX	
10	PTC2	ADC1_IN3/LPTIM1_IN2/SPI2_MISO	
11	PTC3	ADC1_IN4/LPTIM1_ETR/SPI2_MOSI, SAI1_SD_A/LPTIM2_ETR	
12	VSSA	VREF-	A/D 电源
13	VDDA	VREF+	
14	PTA0	OPAMP1_VINP/COMP1_INM/ADC1_IN5/RTC_TAMP2/WKUP1/TIM2_CH1/USART2_CTS/COMP1_OUT/SAI1_EXTCLK/TIM2_ETR	
15	PTA1	OPAMP1_VINM/COMP1_INP/ADC1_IN6/TIM2_CH2/I2C1_SMBA/SPI1_SCK/USART2_RTS_DE/TIM15_CH1N	
16	PTA2	COMP2_INM/ADC1_IN7/WKUP4/LSCO/TIM2_CH3/USART2_TX/LPUART1_TX/QUADSPI_BK1_NCS/COMP2_OUT/TIM15_CH1	
17	PTA3	OPAMP1_VOUT/COMP2_INP/ADC1_IN8/TIM2_CH4/USART2_RX/LPUART1_RX/QUADSPI_CLK/SAI1_MCLK_A/TIM15_CH2	
18	VSS		电源
19	VDD		
20	PTA4	COMP1_INM/COMP2_INM/ADC1_IN9/DAC1_OUT1/SPI1_NSS/SPI3_NSS/USART2_CK/SAI1_FS_B/LPTIM2_OUT	
21	PTA5	COMP1_INM/COMP2_INM/ADC1_IN10/DAC1_OUT2/TIM2_CH1/TIM2_ETR/SPI1_SCK/LPTIM2_ETR	
22	PTA6	ADC1_IN11/TIM1_BKIN/SPI1_MISO/COMP1_OUT/USART3_CTS/LPUART1_CTS/QUADSPI_BK1_IO3/TIM1_BKIN_COMP2/TIM16_CH1	
23	PTA7	ADC1_IN12/TIM1_CH1N/I2C3_SCL/SPI1_MOSI/QUADSPI_BK1_IO2/COMP2_OUT	
24	PTC4	COMP1_INM/ADC1_IN13/USART3_TX	
25	PTC5	COMP1_INP/ADC1_IN14/WKUP5/USART3_RX	
26	PTB0	ADC1_IN15/TIM1_CH2N/SPI1_NSS/USART3_CK/QUADSPI_BK1_IO1/COMP1_OUT/SAI1_EXTCLK	
27	PTB1	COMP1_INM/ADC1_IN16/TIM1_CH3N/USART3_RTS_DE/LPUART1_RTS_DE/QUADSPI_BK1_IO0/LPTIM2_IN1/	
28	PTB2	COMP1_INP/RTC_OUT/LPTIM1_OUT/I2C3_SMBA/	
29	PTB10	TIM2_CH3/I2C2_SCL/SPI2_SCK/USART3_TX/LPUART1_RX/TSC_SYNC/QUADSPI_CLK/COMP1_OUT/SAI1_SCK_A	

30	PTB11	TIM2_CH4/I2C2_SDA/USART3_RX/LPUART1_TX/ QUADSPI_BK1_NCS/COMP2_OUT	
31	VSS		电源
32	VDD		
33	PTB12	TIM1_BKIN/TIM1_BKIN_COMP2/I2C2_SMBA/SPI2_NSS/ USART3_CK/LPUART1_RTS_DE/TSC_G1_IO1/SWPMI1_IO/ SAI1_FS_A/TIM15_BKIN	
34	PTB13	TIM1_CH1N/I2C2_SCL/SPI2_SCK/USART3_CTS/LPUART1_CTS/TSC _G1_IO2/SWPMI1_TX/SAI1_SCK_A/TIM15_CH1N	
35	PTB14	TIM1_CH2N/I2C2_SDA/SPI2_MISO/USART3_RTS_DE/ TSC_G1_IO3/SWPMI1_RX/SAI1_MCLK_A/TIM15_CH1	
36	PTB15	RTC_REFIN/TIM1_CH3N/SPI2_MOSI/TSC_G1_IO4/ SWPMI1_SUSPEND/SAI1_SD_A/TIM15_CH2	
37	PTC6	TSC_G4_IO1/SDMMC1_D6	
38	PTC7	TSC_G4_IO2/SDMMC1_D7	
39	PTC8	TSC_G4_IO3/SDMMC1_D0/	
40	PTC9	TSC_G4_IO4/SDMMC1_D1	
41	PTA8	MCO/TIM1_CH1/USART1_CK/SWPMI1_IO/SAI1_SCK_A/ LPTIM2_OUT/	
42	PTA9	TIM1_CH2/I2C1_SCL/USART1_TX/SAI1_FS_A/TIM15_BKIN	
43	PTA10	TIM1_CH3/I2C1_SDA/USART1_RX/SAI1_SD_A	
44	PTA11	TIM1_CH4/TIM1_BKIN2/SPI1_MISO/COMP1_OUT/USART1_CTS/CA N1_RX/TIM1_BKIN2_COMP1	
45	PTA12	TIM1_ETR/SPI1_MOSI/USART1_RTS_DE/CAN1_TX	
46	PTA13	JTMS-SWDIO/IR_OUT/SWPMI1_TX/SAI1_SD_B	SWDIO
47	VSS		电源
48	VDD		
49	PTA14	JTCK-SWDCLK/LPTIM1_OUT/I2C1_SMBA/SWPMI1_RX/ SAI1_FS_B	SWDCLK
50	PTA15	JTDI/TIM2_CH1/TIM2_ETR/USART2_RX/SPI1_NSS/ SPI3_NSS/USART3_RTS_DE/TSC_G3_IO1/SWPMI1_SUSPEND	
51	PTC10	SPI3_SCK/USART3_TX/TSC_G3_IO2/SDMMC1_D2	
52	PTC11	SPI3_MISO/USART3_RX/TSC_G3_IO3/SDMMC1_D3	
53	PTC12	SPI3_MOSI/USART3_CK/TSC_G3_IO4/SDMMC1_CK	
54	PTD2	USART3_RTS_DE/TSC_SYNC/SDMMC1_CMD	
55	PTB3	COMP2_INM/JTDO-TRACESWO/TIM2_CH2/ SPI1_SCK/SPI3_SCK/USART1_RTS_DE/SAI1_SCK_B	
56	PTB4	COMP2_INP/NJTRST/I2C3_SDA/SPI1_MISO/ SPI3_MISO/USART1_CTS/TSC_G2_IO1/SAI1_MCLK_B	
57	PTB5	LPTIM1_IN1/I2C1_SMBA/SPI1_MOSI/SPI3_MOSI/USART1_CK/ TSC_G2_IO2/COMP2_OUT/SAI1_SD_B/TIM16_BKIN	
58	PTB6	COMP2_INP/LPTIM1_ETR/I2C1_SCL/USART1_TX/ TSC_G2_IO3/SAI1_FS_B/TIM16_CH1N	
59	PTB7	COMP2_INM/PVD_IN/LPTIM1_IN2/I2C1_SDA/ USART1_RX/TSC_G2_IO4	

60	PTH3	BOOT0	启动设置， 接地
61	PTB8	I2C1_SCL/ CAN1_RX/SDMMC1_D4/SAI1_MCLK_A/TIM16_CH1	
62	PTB9	IR_OUT/ I2C1_SDA/SPI2_NSS/ CAN1_TX/SDMMC1_D5/SAI1_FS_A	
63	VSS		电源
64	VDD		