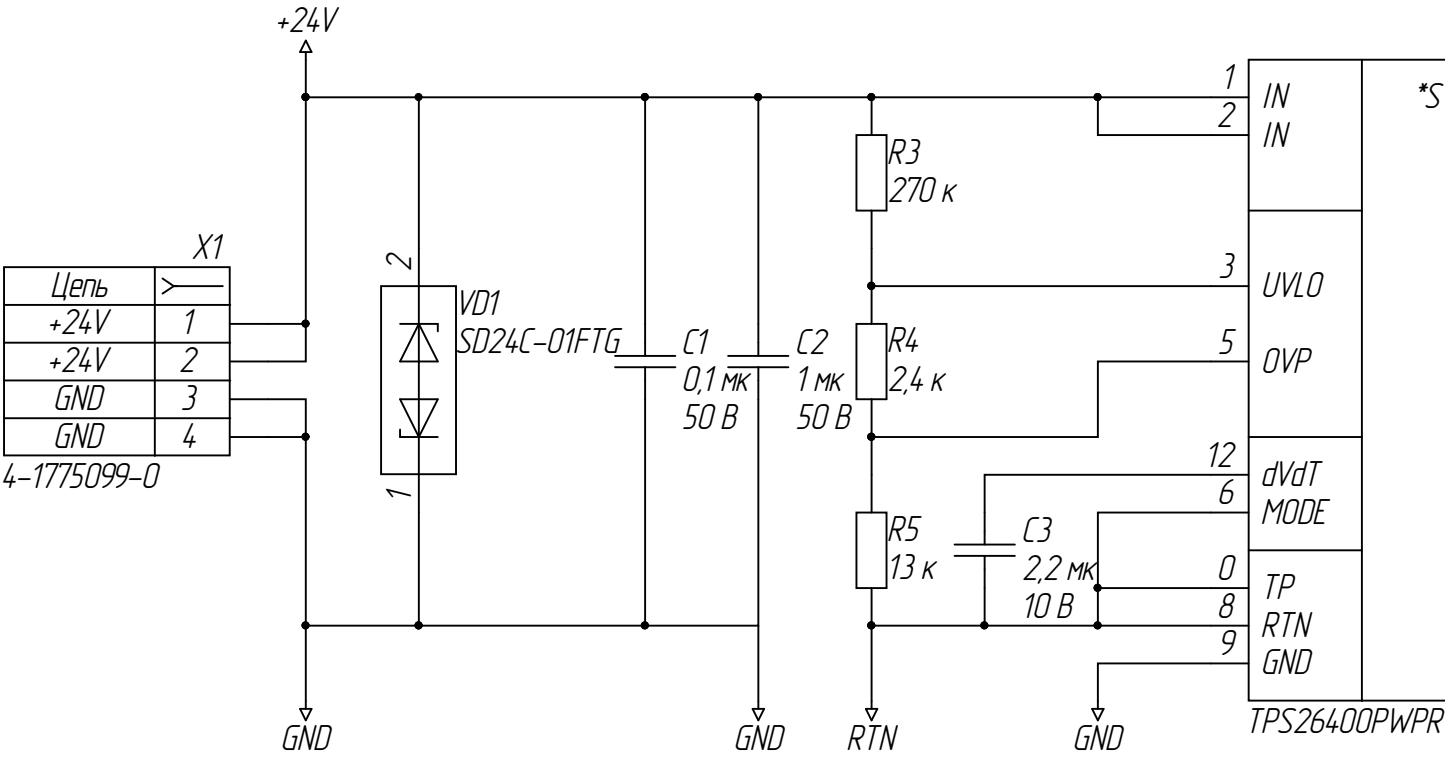
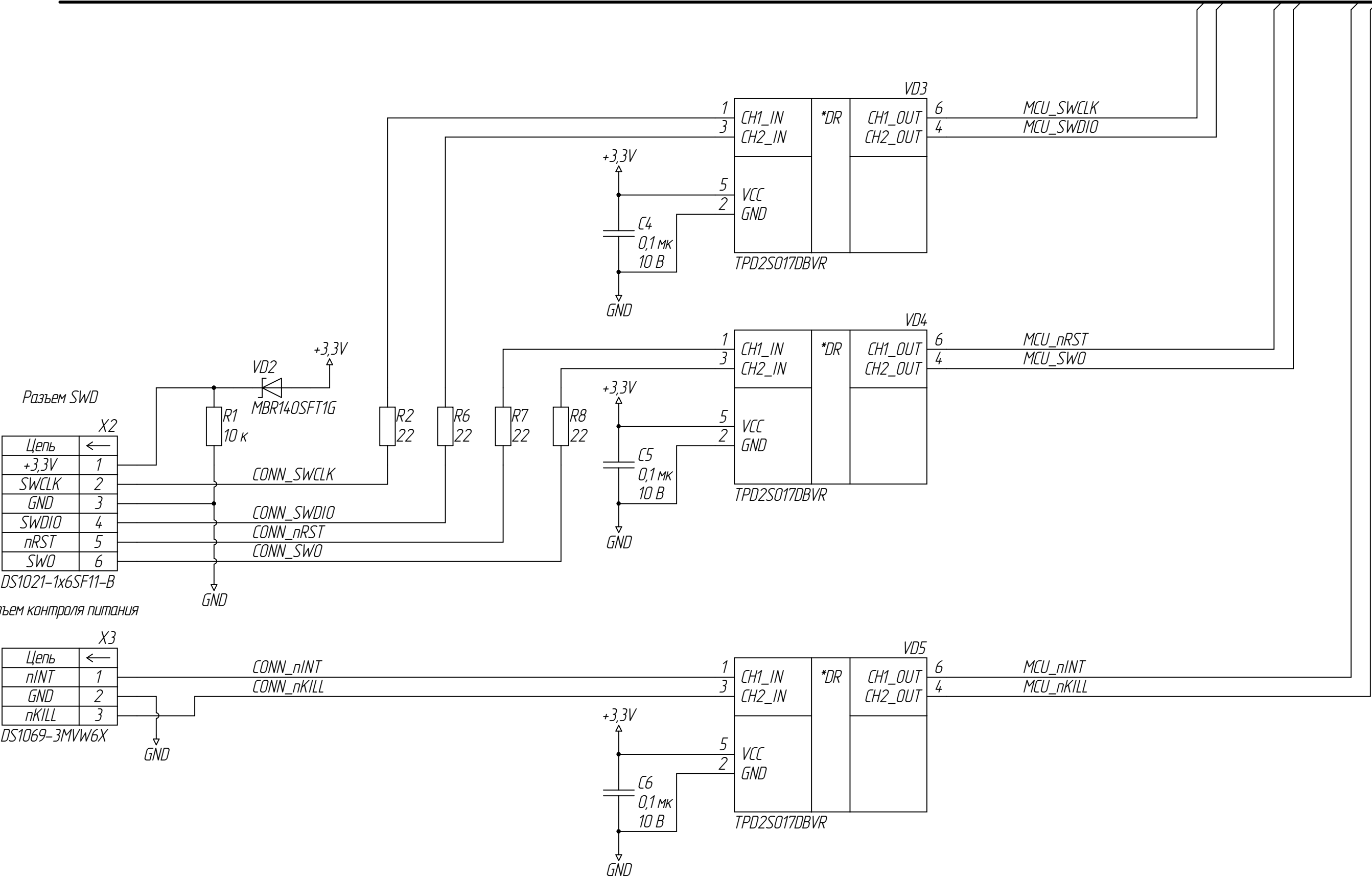


Защитная микросхема



Понижающий преобразователь  
напряжения 12 В/3,3 В



1 (Листы 2, 3)

Изм.	Лист	№ докум.	Подп.	Дата
Разраб.	Панькоб И.С.			
Проб.	Капустин Д.А.			
Т.контр.				
И.контр.				
Утв.	Капустин Д.А.			

СПБПУ.3331506.01933

Плата управления  
станка с ЧПУ

Схема электрическая принципиальная

Лит. 1

Масса 3

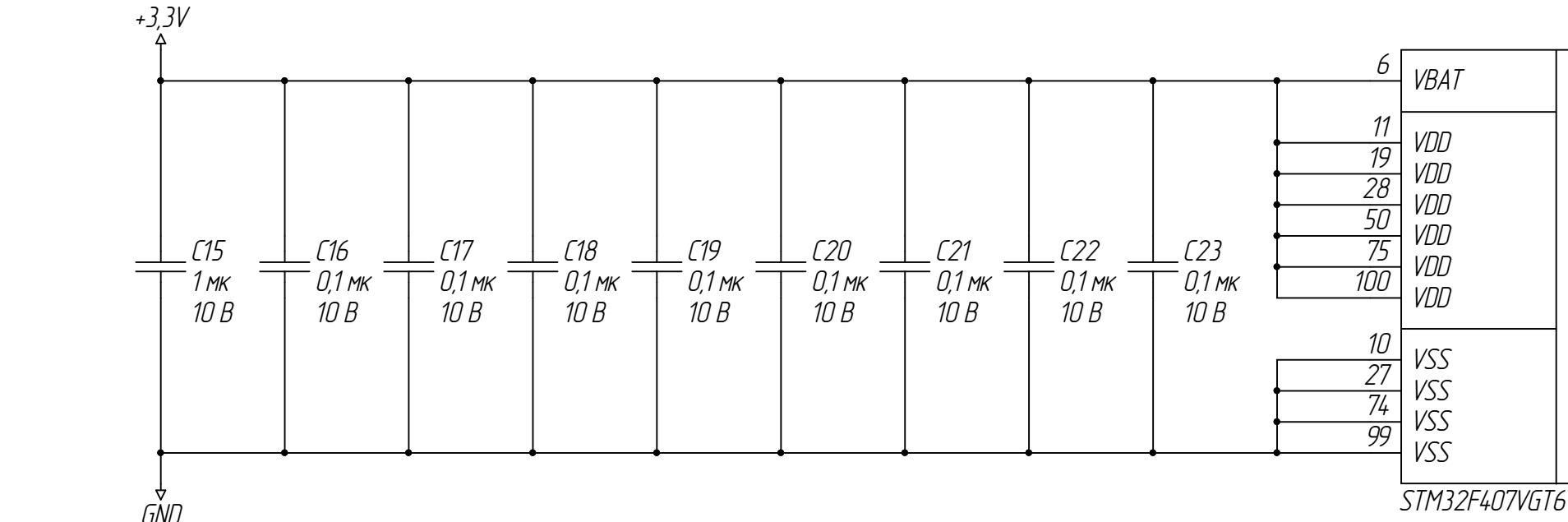
Масштаб

Копировал

Формат А2

Микроконтроллер

MCU_DEV1_STEP/AIN1	23	PA0/ADC123_IN0/WKUP/USART2_CTS/UART4_TX/TIM2_CH1_ETR/TIM5_CH1/TIM8_ETR/ETH_MII_CRD/EVENTOUT
MCU_DEV1_DIR/AIN2	24	PA1/ADC123_IN1/USART2_RTS/UART4_RX/TIM2_CH2/TIM5_CH2/ETH_RMII_REF_CLK/ETH_MII_RX_CLK/EVENTOUT
MCU_DEV1_BIN1	25	PA2/ADC123_IN2/USART2_TX/TIM2_CH3/TIM5_CH3/TIM9_CH1/ETH_MDIO/EVENTOUT
MCU_DEV1_BIN2	26	PA3/ADC123_IN3/USART2_RX/TIM2_CH4/TIM5_CH4/TIM9_CH2/OTG_HS_ULPI_D0/ETH_MII_COL/EVENTOUT
MCU_SPI1_NSS	29	PA4/ADC12_IN4/DAC_OUT1/USART2_CK/SPI1_NSS/SPI3_NSS/I2S3_WS/DCMI_HSYNC/OTG_HS_SOF/EVENTOUT
MCU_SPI1_SCK	30	PA5/ADC12_IN5/DAC_OUT2/SPI1_SCK/TIM2_CH1_ETR/TIM8_CH1N/OTG_HS_ULPI_CK/EVENTOUT
MCU_SPI1_MISO	31	PA6/ADC12_IN6/SPI1_MISO/TIM1_BKIN/TIM3_CH1/TIM8_BKIN/TIM13_CH1/DCMI_PIXCLK/EVENTOUT
MCU_SPI1_MOSI	32	PA7/ADC12_IN7/SPI1_MOSI/TIM1_CH1N/TIM3_CH2/TIM8_CH1N/TIM14_CH1/ETH_MII_RX_DV/ETH_RMII_CRD_DV/EVENTOUT
MCU_USART1_TX	67	PA8/USART1_CK/I2C3_SCL/TIM1_CH1/MCO1/OTG_FS_SOF/EVENTOUT
MCU_USART1_RX	68	PA9/USART1_TX/I2C3_SMB/12C3_SCL/TIM1_CH1/MCO1/OTG_FS_SOF/EVENTOUT
	69	PA10/USART1_RX/TIM1_CH3/DCMI_D1/OTG_FS_ID/EVENTOUT
	70	PA11/USART1_CTS/CAN1_RX/TIM1_CH4/OTG_FS_DM/EVENTOUT
MCU_SWDIO	71	PA12/USART1_RTS/CAN1_TX/TIM1_ETR/OTG_FS_DP/EVENTOUT
MCU_SWCLK	72	PA13/JTMS/SWDIO/EVENTOUT
MCU_SPI3_NSS	76	PA14/JTCK/SWCLK/EVENTOUT
	77	PA15/JTDI/SPI1_NSS/SPI3_NSS/I2S3_WS/TIM2_CH1_ETR/EVENTOUT
MCU_nINT	35	PB0/ADC12_IN8/TIM1_CH2N/TIM3_CH3/TIM8_CH2N/OTG_HS_ULPI_D1/ETH_MII_RXD2/EVENTOUT
MCU_nKILL	36	PB1/ADC12_IN9/TIM1_CH3N/TIM3_CH4/TIM8_CH3N/OTG_HS_ULPI_D2/ETH_MII_RXD3/EVENTOUT
MCU_SWO	37	PB2/BOOT1/EVENTOUT
	89	PB3/JTDO/TRACESWO/SPI1_SCK/SPI3_SCK/I2S3_CK/TIM2_CH2/EVENTOUT
	90	PB4/JTST/SPI1_MISO/SPI3_MISO/I2S3EXT_SD/TIM3_CH1/EVENTOUT
	91	PB5/I2C1_SMB/12C1_SCL/SPI1_MOSI/SPI3_MOSI/I2S3_SD/CAN2_RX/TIM3_CH2/DCMI_D10/OTG_HS_ULPI_D7/ETH_PPS_OUT/EVENTOUT
	92	PB6/USART1_TX/I2C1_SCL/CAN2_TX/TIM4_CH1/DCMI_D5/EVENTOUT
	93	PB7/USART1_RX/I2C1_SDA/TIM4_CH2/DCMI_VSYNC/FSMC_NL/EVENTOUT
	95	PB8/I2C1_SCL/CAN1_RX/SDIO_D4/TIM4_CH3/TIM10_CH1/DCMI_D6/ETH_MII_TXD3/EVENTOUT
	96	PB9/I2C1_SDA/SPI2_NSS/I2S2_WS/CAN1_TX/SDIO_D5/TIM4_CH4/TIM11_CH1/DCMI_D7/EVENTOUT
	47	PB10/USART3_TX/I2C2_SCL/SPI2_SCK/I2S2_CK/TIM2_CH3/OTG_HS_ULPI_D3/ETH_MII_RX_ER/EVENTOUT
MCU_SPI2_NSS	48	PB11/USART3_RX/I2C2_SDA/TIM2_CH4/OTG_HS_ULPI_D4/ETH_RMII_TX_EN/ETH_MII_TX_EN/EVENTOUT
MCU_SPI2_SCK	51	PB12/USART3_CK/I2C2_SMB/12C2_SCL/SPI2_NSS/I2S2_WS/CAN2_RX/TIM1_BKIN/OTG_HS_ULPI_D5/ETH_RMII_TXD0/ETH_MII_TXD0/OTG_HS_ID/EVENTOUT
MCU_SPI2_MISO	52	PB13/USART3_CTS/SPI2_SCK/I2S2_CK/CAN2_TX/TIM1_CH1N/OTG_HS_ULPI_D6/ETH_RMII_TXD1/ETH_MII_TXD1/OTG_HS_VBUS/EVENTOUT
MCU_SPI2_MOSI	53	PB14/USART3_RTS/SPI2_MISO/I2S2EXT_SD/TIM1_CH2N/TIM8_CH2N/TIM12_CH1/OTG_HS_DM/EVENTOUT
	54	PB15/SPI2_MOSI/I2S2_SD/TIM1_CH3N/TIM8_CH3N/TIM12_CH2/OTG_HS_DP/RTC_REFIN/EVENTOUT
MCU_DEV1_nSLEEP	15	PC0/ADC123_IN10/OTG_HS_ULPI_STP/EVENTOUT
MCU_DEV1_RESET	16	PC1/ADC123_IN11/ETH_MDIO/EVENTOUT
MCU_DEV1_nFAULT	17	PC2/ADC123_IN12/SPI2_MISO/I2S2EXT_SD/OTG_HS_ULPI_DIR/ETH_MII_TXD2/EVENTOUT
MCU_DEV1_nSTALL	18	PC3/ADC123_IN13/SPI2_MOSI/I2S2_SD/OTG_HS_ULPI_NXT/ETH_MII_TX_CLK/EVENTOUT
	33	PC4/ADC12_IN14/ETH_RMII_RXD0/ETH_MII_RXD0/EVENTOUT
	34	PC5/ADC12_IN15/ETH_RMII_RXD1/ETH_MII_RXD1/EVENTOUT
	63	PC6/USART6_TX/I2S2_MCK/SDIO_D6/TIM3_CH1/TIM8_CH1/DCMI_D0/EVENTOUT
	64	PC7/USART6_RX/I2S3_MCK/SDIO_D7/TIM3_CH2/TIM8_CH2/DCMI_D1/EVENTOUT
	65	PC8/USART6_CK/SDIO_D0/TIM3_CH3/TIM8_CH3/DCMI_D2/EVENTOUT
MCU_SPI3_SCK	66	PC9/I2S3_CKIN/I2C3_SDA/SDIO_D1/TIM3_CH4/TIM8_CH4/MCO2/DCMI_D3/EVENTOUT
MCU_SPI3_MISO	78	PC10/SPI3_SCK/I2S3_CK/UART4_TX/SDIO_D2/DCMI_D8/USART3_TX/EVENTOUT
MCU_SPI3_MOSI	79	PC11/USART3_RX/UART4_RX/SPI3_MISO/I2S3EXT_SD/SDIO_D3/DCMI_D4/EVENTOUT
	80	PC12/USART3_CK/UART5_TX/SPI3_MOSI/I2S3_SD/SDIO_CK/DCMI_D9/EVENTOUT
	7	PC13/RTC_OUT/RTC_TAMP1/RTC_TS/EVENTOUT
	8	PC14/OSC32_IN/EVENTOUT
	9	PC15/OSC32_OUT/EVENTOUT



STM32F407VGT6

MCU

DD3A	81	MCU_DEV3_nFAULT
	82	MCU_DEV3_nSTALL
	83	MCU_LIMSW_XMIN
	84	MCU_LIMSW_XMAX
	85	MCU_LIMSW_YMIN
	86	MCU_LIMSW_YMAX
	87	MCU_LIMSW_ZMIN
	88	MCU_LIMSW_ZMAX
	55	MCU_DEV2_nFAULT
	56	MCU_DEV2_nSTALL
	57	MCU_DEV3_nSLEEP
	58	MCU_DEV3_RESET
	59	MCU_DEV3_STEP/AIN1
	60	MCU_DEV3_DIR/AIN2
	61	MCU_DEV3_BIN1
	62	MCU_DEV3_BIN2
	97	MCU_DEV2_nSLEEP
	98	MCU_DEV2_RESET
	1	MCU_DEV2_STEP/AIN1
	2	MCU_DEV2_DIR/AIN2
	3	MCU_DEV2_BIN1
	4	MCU_DEV2_BIN2
	5	MCU_DEV2_BIN3
	38	MCU_DEV2_nSLEEP
	39	MCU_DEV2_RESET
	40	MCU_DEV2_STEP/AIN1
	41	MCU_DEV2_DIR/AIN2
	42	MCU_DEV2_BIN1
	43	MCU_DEV2_BIN2
	44	MCU_DEV2_BIN3
	45	MCU_DEV2_BIN4
	46	MCU_DEV2_BIN5
	12	MCU_DEV2_nSLEEP
	13	MCU_DEV2_RESET
	14	MCU_DEV2_STEP/AIN1
	15	MCU_DEV2_DIR/AIN2
	16	MCU_DEV2_BIN1
	17	MCU_DEV2_BIN2
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