C SK9822 Module Documentation

SK9822 module transmits a single frame or a sequence of frames with respect to the settings. The module instantiates bytes transmitter, start bytes transmitter, end bytes transmitter, binary colors transmitter and full colors transmitter. The internal state machine iterates over them to share the SPI output. While no transmission goes on, the internal state machine is in idle mode and it is the right moment to change settings of the module. The transmission state can be recognized by the high value of the transmission indication flag. Only when the state machine switches back to idle mode, the transmission indication flag becomes zero again.

Parameters

Parameter	Default value	Type	Description
LED_number	8	Integer	Defines the number of LEDs in the chain
max_brightness	8	Integer	Default value and the maximum value of the global brightness
const_brightness	0	bool	If true, overrides any user global brightness value with the constant one
CLK_divider	50	Integer	Specifies the source CLK frequency division factor for SCLK signal. Can be in range of 1…65535

Signals

Signal	Direction	Width (bits)	Description
CLK	IN	1	Clock signal
NRST	IN	1	Synchronous reset. Active low
SCLK	OUT	1	SPI clock output
MOSI	OUT	1	SPI data output
CSR_TI	OUT	1	Transmission indication
CSR_INSEL	IN	1	Color source selection
CSR_LOOP	IN	1	Continuous transmission option
TSR_ST	IN	1	Start transmission command
GBCR_INSEL	IN	1	Global brightness input selection
GBCR_GB	IN	5	Global brightness value, cannot exceed max_brightness
ICSR_TIEN	IN	1	Transmission interrupt enable
ICSR_TI	IN	1	Transmission interrupt status
ICSR_CTI	IN	1	Clear transmission interrupt
ICSR_STI	IN	1	Set transmission interrupt

R	IN	(LED_number-1) / 8) + 1) * 8	Each i-th bit corresponds to the i-th LED's red channel on/off state
G	IN	(LED_number-1) / 8) + 1) * 8	Each i-th bit corresponds to the i-th LED's green channel on/off state
B	IN	(LED_number-1) / 8) + 1) * 8	Each i-th bit corresponds to the i-th LED's blue channel on/off state
LEDs	IN	32 * LED_number	The least significant byte is individual brightness. The most significant byte is the red channel value.