

Ingenic®

SPI NOR

ADD Parameter Description Document

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北京君正集成电路股份有限公司
Ingenic Semiconductor Co., Ltd.

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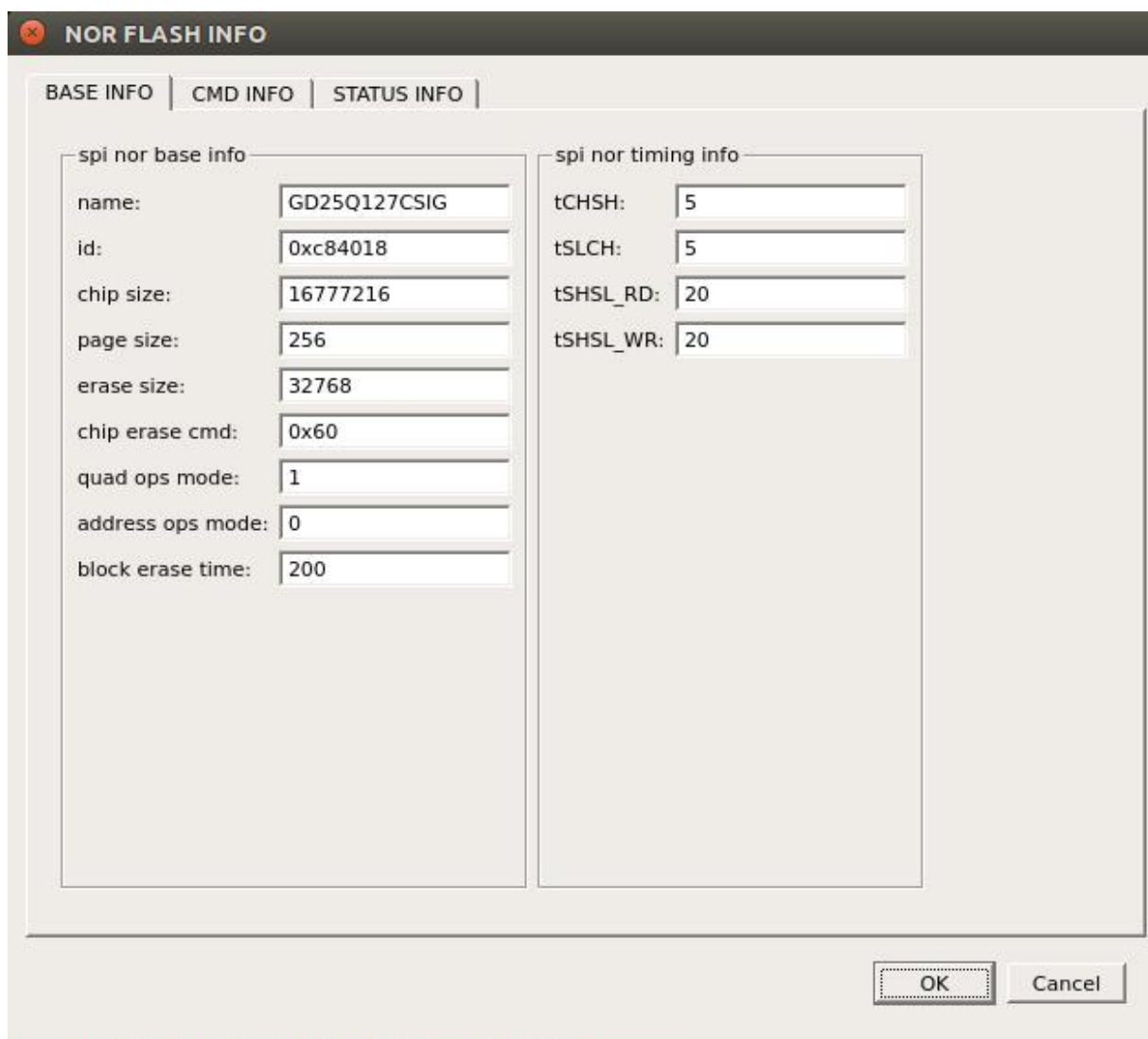
Overview

Add the SPI NOR parameter method to the USB Cloner.

Release history

Date	Revision	Revision History
Feb.01, 2023	1.0	First released

1 BASE INFO



NOR FLASH INFO

BASE INFO | CMD INFO | STATUS INFO

spi nor base info

name: GD25Q127CSIG

id: 0xc84018

chip size: 16777216

page size: 256

erase size: 32768

chip erase cmd: 0x60

quad ops mode: 1

address ops mode: 0

block erase time: 200

spi nor timing info

tCHSH: 5

tSLCH: 5

tSHSL_RD: 20

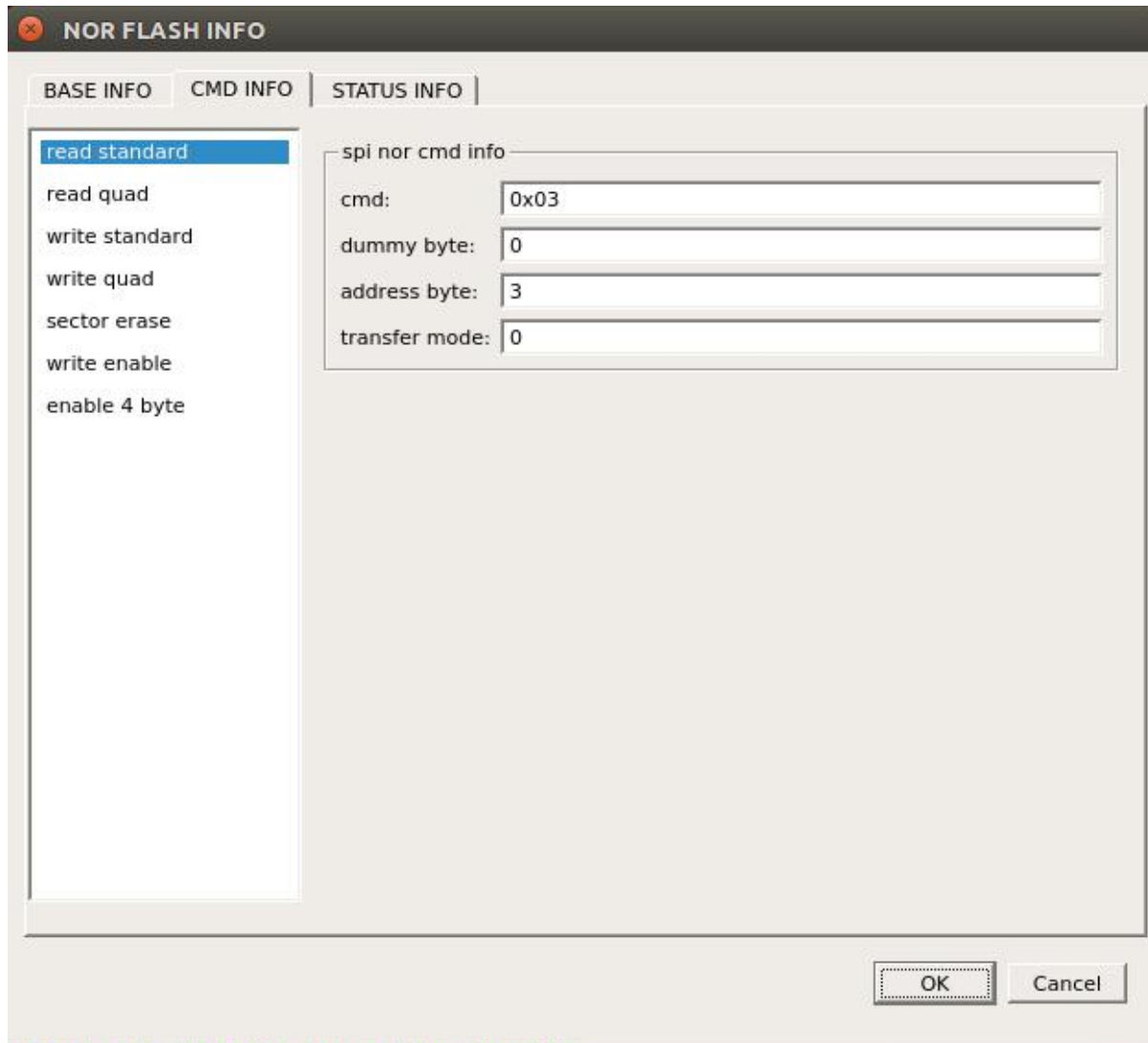
tSHSL_WR: 20

OK Cancel

Name	Description
name	The name of spi flash
id	Flash ID, Manufacturer id + Device id
chip size	Flash size
page size	Page size of spi flash write operation
chip erase cmd	Erase command
erase size	The size of the erase block corresponding to the erase command
quad ops mode	The operation of setting four-wire mode 0: Directly send the four-wire command to enter the four-wire mode 1: Enter the four-wire mode by setting the register of spi flash
address ops mode	The operation of setting the 4bytes address mode(Use of spi nor flash larger than 16MB) 0: Enter the 4byte address mode by directly sending the command to enter the 4byte address mode 1: First issue the write enable command, then issue the command to enter the 4byte address mode, and enter the 4byte address mode
block erase time	The size of the erasing block corresponding to the erasing command, and the erasing time(Use for burning tool)
tCHSH	Chip select activate Hold Time (ns)
tSLCH	Chip select activate Setup Time (ns)
tSHSL_RD	Read operation, Chip selection signal from low to high, Time required from high to low(ns)
tSHSL_WR	Write and erase operations, Chip selection signal from low to high, Time required from high to low(ns)

2 CMD INFO

Command parameters are divided into:read standard command,read quad command, write standard command, write quad command, erase command, write enable command, Enter the 4byte address mode command. A command contains cmd, dummy byte, address byte and transfer_mode.



Name	Description
cmd	Command code for read/write quad operation
dummy byte	Number of dummy clocks in the figure(Unit: bit)
address byte	Address length,If it is a 24bit address, The address length is 3 bytes. If it is a 32bit address,The address length is 4 bytes.(Unit: bit)
transfer mode	Transmission mode of corresponding controller,If the command and address are single line,The data is four-wire,The transmission mode is 5, see SOC PM document SFC transfer format and SFC Transfer Configure Register sections.

2.1 SFC transfer format:

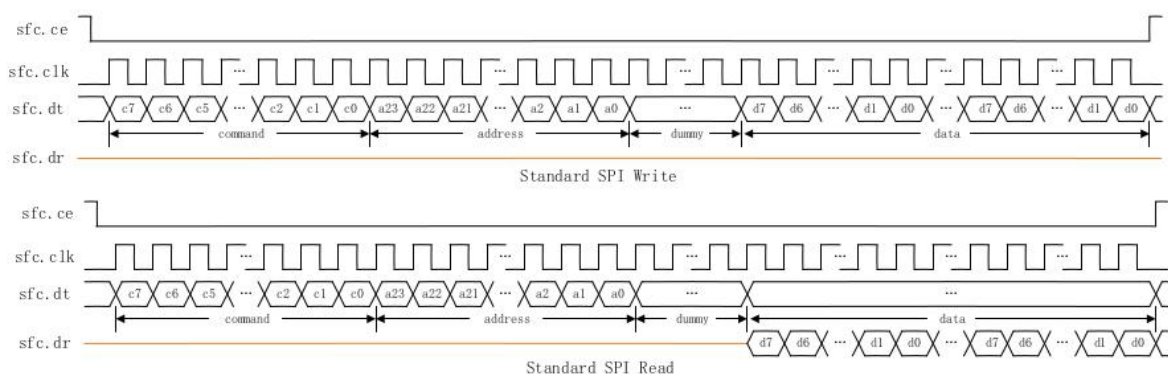


Figure 11-5 Data Format(Standard SPI)

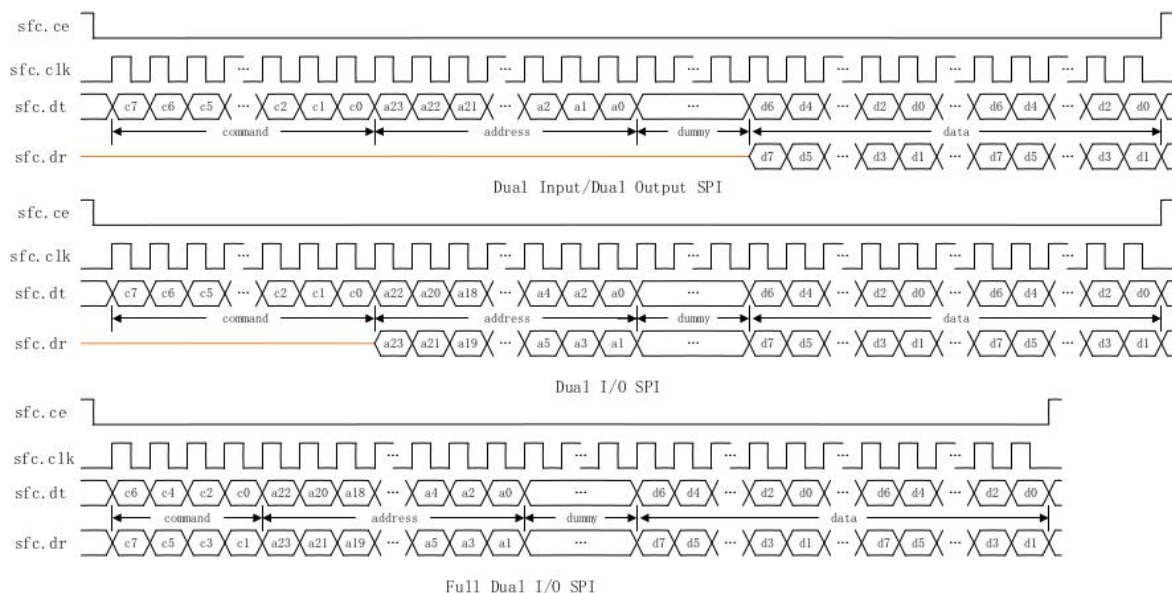


Figure 11-6 Data Format(Dual SPI)

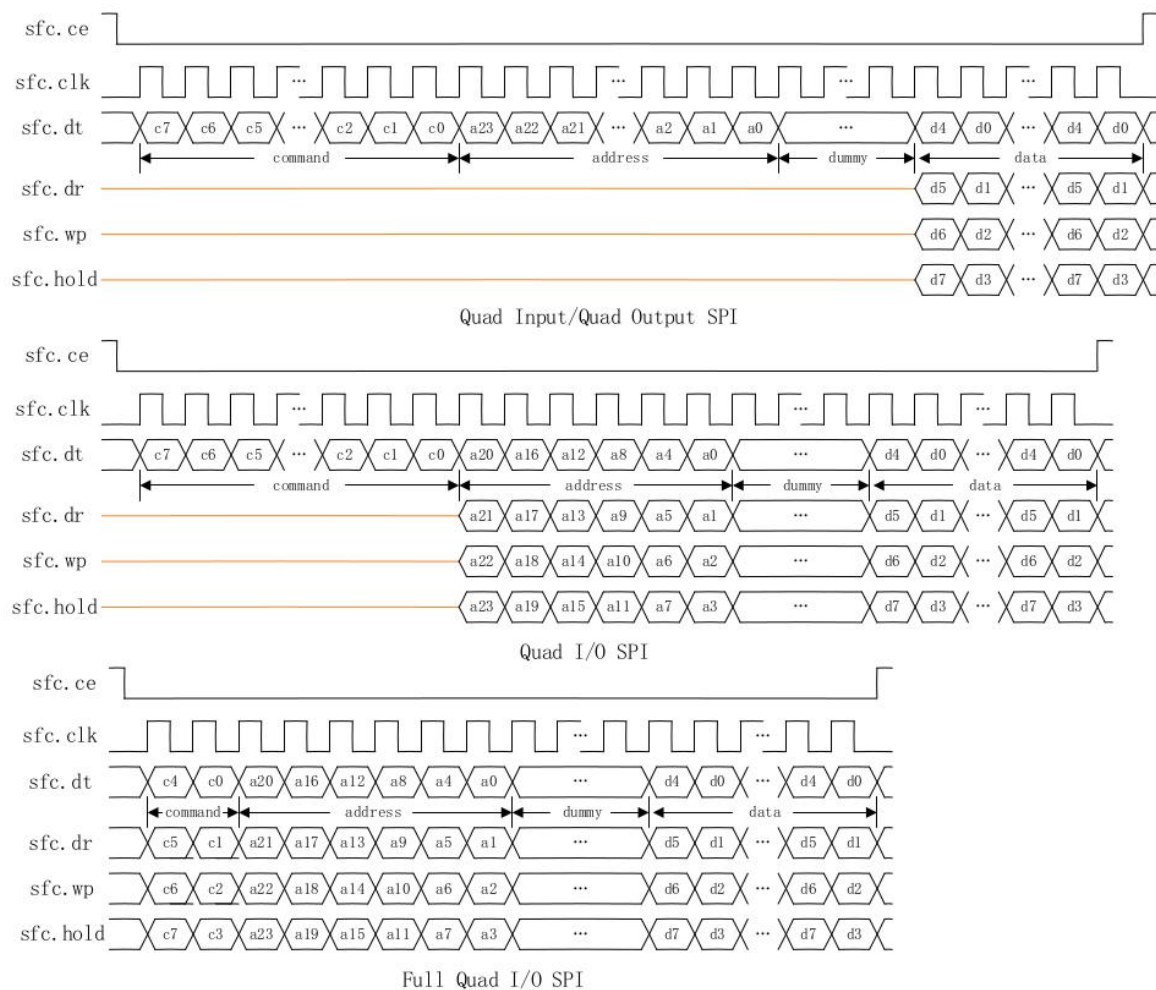


Figure 11-7 Data Format(Quad SPI)

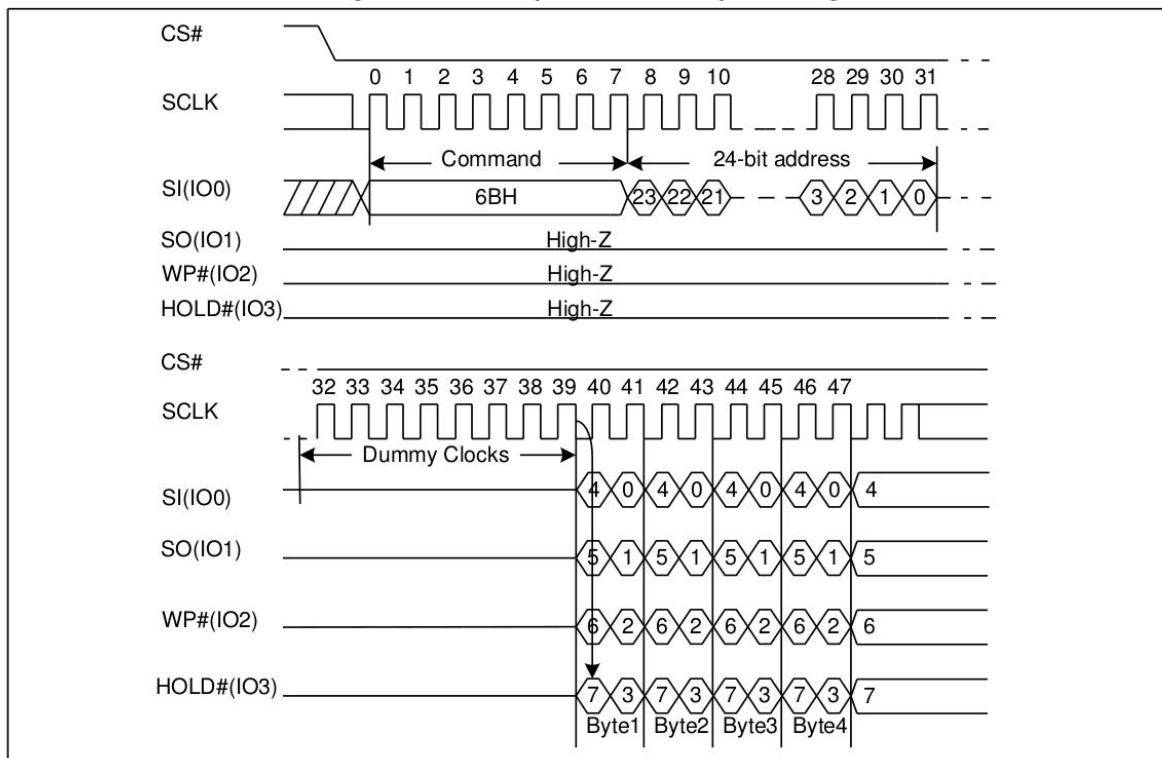
11.7.3.6 SFC Transfer Configure Register (phase0-phase5)

SFC_TRAN_CONF0-5																Base + 0x0014 - Base + 0x0028																					
Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0					
	TRAN_MODE				ADDR_WIDTH				POLL_EN	CMD_EN	PHASE_FORMAT				DMY_BITS				DATA_EN	TRAN_CMD																	
RST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					

Bits	Name	Description	RW
31:29	TRAN_MODE	Transfer mode: 000: Standard SPI (default) 001: Dual Input/Dual Output SPI 010: Dual I/O SPI 011: Full Dual I/O SPI 100: reserved 101: Quad Input/Quad Output SPI 110: Quad I/O SPI 111: Full Quad I/O SPI	RW

The command class parameter configuration is described in the following figure , Take flash GD25Q127CSIG quad read operation command as an example:

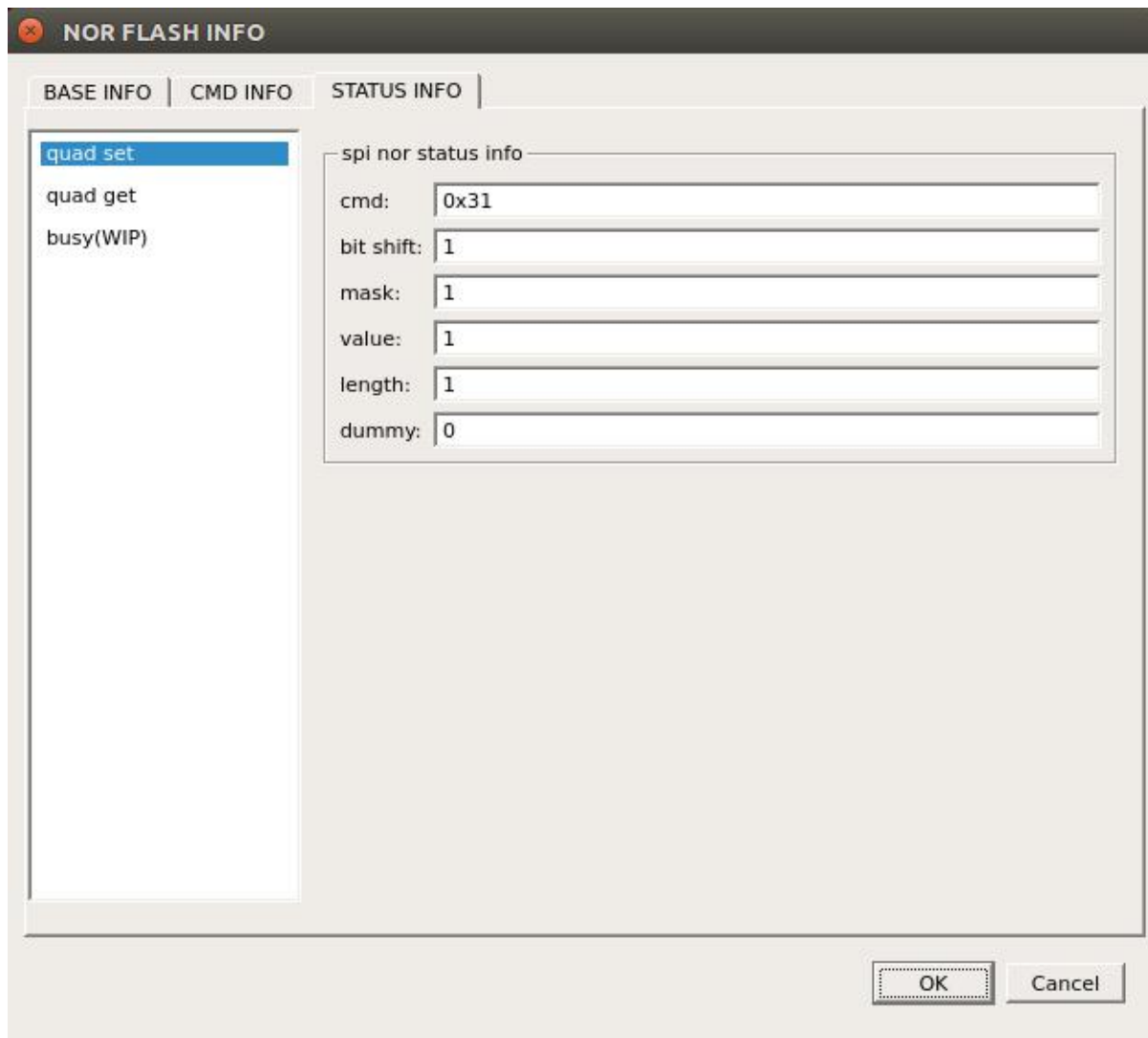
Figure11. Quad Output Fast Read Sequence Diagram



3 STATUS INFO

Register parameters are divided into:Set four-wire mode,Read four-wire mode,Get WIP status mode.

Each type of register operation is divided into: cmd, bit shift, mask, value, length, dummy.



Name	Description
cmd	Command to write register
bit shift	The position of the function to be operated in the register. Example:QE bit is in the 1st bit of the second register, bit shift is 1.
mask	The function to be operated occupies several consecutive bits in the register. Example: QE only accounts for 1 bit, so mask=1 If it accounts for 2 consecutive bits, so mask=3 If it accounts for 3 consecutive bits , so mask=7
value	The value to set the register.If the four-wire function is set,Need to write QE bit as 1,Value is 1.
length	This cmd command can operate on several bytes in the register (Unit:

	byte)
dummy	The number of dummies required for this cmd command

For example, GD25Q127CSIG set four-wire registers, the QE bit of the second status register needs to be written as 1, the command to write the second register operation is 0x31, all the above parameters can be found in the flash spec.

6. STATUS REGISTER

S23	S22	S21	S20	S19	S18	S17	S16
HOLD/RST	DRV1	DRV0	Reserved	Reserved	LPE	Reserved	Reserved

S15	S14	S13	S12	S11	S10	S9	S8
SUS1	CMP	LB3	LB2	LB1	SUS2	QE	SRP1

S7	S6	S5	S4	S3	S2	S1	S0
SRP0	BP4	BP3	BP2	BP1	BP0	WEL	WIP

Figure7. Write Status Register Sequence Diagram

