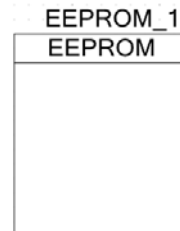


EEPROM

0.0

Features

- 512B to 2 KB
- 1,000,000 cycles, 20 year retention
- Read byte at a time
- Program 16 bytes at a time



General Description

The EEPROM component provides an API to write a row (16 bytes) of data to the EEPROM. The term write implies Erase and then program in one operation.

When to use an EEPROM

You can use an EEPROM component:

- For off-chip storage of data (freeing up on-chip RAM)
- For read-only (or rarely-changing) program data
- For data that must survive power cycles (e.g., calibration tables or device configuration)

Input/Output Connections

There are no IO connections for the EEPROM component. It is an API only.

Parameters and Setup

The EEPROM has no configurable parameters other than standard Instance Name and Built-in parameters.

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Application Programming Interface

Application Programming Interface (API) routines allow you to configure the component using software. The following table lists and describes the interface to each function. The subsequent sections cover each function in more detail.

By default, PSoC Creator assigns the instance name "EEPROM_1" to the first instance of a component in a given design. You can rename it to any unique value that follows the syntactic rules for identifiers. The instance name becomes the prefix of every global function name, variable, and constant symbol. For readability, the instance name used in the following table is "EEPROM".

Function	Description
EEPROM_EraseSector	Erases an EEPROM sector.
EEPROM_Write	Blocks while writing a row to EEPROM
EEPROM_StartWrite	Starts writing a row of data to EEPROM
EEPROM_QueryWrite	Checks the state of a write to EEPROM

cystatus EEPROM_EraseSector(uint8 sectorNumber)

Description:	Erases a sector (64 rows) of memory. This function blocks until the operation is complete.
Parameters:	Uint8 sector. Sector number to erase.
Return Value:	CYRET_SUCCESS if the operation was successful. CYRET_BAD_PARAM if the parameters were invalid. CYRET_LOCKED if the SPC is busy. CYRET_TIMEOUT if the operation timed out. CYRET_UNKNOWN if there was an SPC error.
Side Effects:	None

cystatus EEPROM_Write(uint8 * rowData, uint8 rowNumber)

Description:	Writes a row (16 bytes) of data to the EEPROM. This is a blocking call. It will not return until the function succeeds or fails.
Parameters:	uint8 * rowData. Address of the data to write to the EEPROM. uint8 rowNumber. EEPROM row number to program.
Return Value:	CYRET_SUCCESS if the operation was successful. CYRET_BAD_PARAM if the parameters were invalid. CYRET_LOCKED if the SPC is busy. CYRET_TIMEOUT if the operation timed out. CYRET_UNKNOWN if there was an SPC error.
Side Effects:	None

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cystatus EEPROM_StartWrite(uint8 * rowData, uint8 rowNumber)

Description:	Starts the SPC write function. This function does not block, it returns once the command has begun the SPC write function. Once this function has been called the SPC will be locked until EEPROM_QueryWrite() returns CYRET_SUCCESS. To abandon the write, call CySpcUnlock() to unlock the SPC.
Parameters:	uint8 * rowData. Address of the data to write to the EEPROM. uint8 rowNumber. EEPROM row number to program.
Return Value:	CYRET_SUCCESS if the data was read. CYRET_BAD_PARAM if the parameters were invalid. CYRET_LOCKED if the SPC is busy. CYRET_TIMEOUT if the operation timed out. CYRET_UNKNOWN if there was an SPC error.
Side Effects:	None

cystatus EEPROM_QueryWrite(void)

Description:	Checks the state of a write to EEPROM. This function must be called until the return value is not CYRET_STARTED.
Parameters:	void
Return Value:	CYRET_SUCCESS if the data was read. CYRET_BAD_PARAM if the parameters were invalid. CYRET_LOCKED if the SPC is busy. CYRET_TIMEOUT if the operation timed out. CYRET_UNKNOWN if there was an SPC error.
Side Effects:	None

Sample Firmware Source Code

The following is a C language example demonstrating the basic functionality of the EEPROM component. This example assumes the component has been placed in the design and is named "EEPROM_1."

```
#include <DEVICE.H>
#include <EEPROM_1.H>

void main(void)
{
    cystatus status;

    /* Erase all 2k. */
    EEPROM_1_EraseSector(0);
    EEPROM_1_EraseSector(1);
```



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```
/* Acquire die temperature before using the write functions. */
CySetTemp();

/* Blocking method to write "0123456789ABCDEF" to EEPROM row 0 */
EEPROM_1_Write("0123456789ABCDEF", 0);

/* Polling method to write "0123456789ABCDEF" to EEPROM row 0 */
EEPROM_1_StartWrite("0123456789ABCDEF", 0);

do
{
    status = EEPROM_1_QueryWrite();

    /* Do something else. */

} while(status == CYRET_STARTED);

if(status == CYRET_SUCCESS)
{
    /* Data was written. */
}
else
{
    /* Error condition. */
}
}
```

Functional Description

To write to the EEPROM, you must first acquire the die temperature. You only need to acquire the temperature once to use the write functions. If the application will be used in an environment where the die temperature changes 20°C or more, the temperature should be refreshed to allow the Smart Write Algorithm to work correctly.

References

NA

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