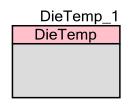


# Die Temperature (DieTemp)

1.10

#### **Features**

- Accuracy of +/-5 °C
- Range -40°C to +140°C (0xffd8 to 0x008c)
- Blocking and non blocking API



# **General Description**

The Die Temperature (DieTemp) component provides an API to acquire the temperature of the die. The System Performance Controller (SPC) is used to acquire the die temperature. The API includes blocking and non blocking calls.

#### When to use a DieTemp

Use a DieTemp component when you want to measure the die temperature of the device.

## Input/Output Connections

There are no Input/Output Connections on the DieTemp component. It is a software component only.

### **Parameters and Setup**

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

## **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 "DieTemp\_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 "DieTemp".

Function	Description
DieTemp_Start	Starts the SPC command to get the die temperature
DieTemp_Query	Queries the SPC to see if the temperature command is finished
DieTemp_GetTemp	Sets up the command to get the temperature and blocks until finished

#### cystatus DieTemp\_Start (void)

**Description:** Sends the command and parameters to the SPC to start a Die Temperature reading. This

function returns before the SPC finishes. If this function is called successfully, the SPC will be locked and DieTemp\_Query will have to be successfully called to unlock it. CySpcUnlock() can also be called if the caller decides not to finish the temperature

reading.

Parameters: void

**Return Value:** CYRET STARTED if the SPC command was started successfully.

CYRET UNKNOWN if the SPC command failed.

CYRET\_LOCKED if the SPC was busy.

Side Effects: None

#### cystatus DieTemp\_Query (int16 \* temperature)

**Description:** Checks to see if the SPC command started by DieTemp\_Start has finished. If the

command has not finished, the temperature value is not written. The caller would poll this

function until completion of the command.

**Parameters:** int16 \* temperature. Address to store the temperature in degree of Celsius.

**Return Value:** CYRET\_SUCCESS if the temperature command completed successfully.

CYRET UNKNOWN if the there was an SPC failure.

CYRET STARTED if the temperature command has not completed.

Side Effects: None



#### cystatus DieTemp\_GetTemp(int16 \* temperature)

**Description:** Sends the command and parameters to the SPC to start a Die Temperature reading and

waits until it fails or completes. After DieTemp MAX WAIT ticks, the function will return

even if the SPC has not finished.

Parameters: int16 \* temperature. Address to store the temperature in degree of Celsius.

**Return Value:** CYRET\_SUCCESS if the command was completed successfully.

CYRET\_TIMEOUT if the command times out.

Status codes from DieTemp\_Start or DieTemp\_Query.

Side Effects: None

## Sample Firmware Source Code

The following is a C language example demonstrating the basic functionality of the DieTemp component. This example assumes the component has been placed in a design with the default name "DieTemp\_1."

**Note** If you rename your component you must also edit the example code as appropriate to match the component name you specify.

```
#include <device.h>
void main()
    cystatus status;
    int16 temperature;
    /* Blocking call. */
    DieTemp_1_GetTemp(&temperature);
    /* Non blocking method. */
    /* Start the command to get the temperature. */
    status = DieTemp_1_Start();
    if(status != CYRET_STARTED)
        /* Handle error! */
    while(status == CYRET_STARTED)
        /* Do something useful. */
        /* Check to see if the command was completed. */
        status = DieTemp_1_Query (&temperature);
    }
}
```



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