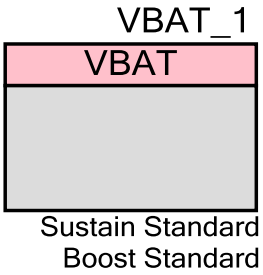
VBAT Domain (PDL_VBAT) 1.0



Features

- Three power supply domains:
  - CPU Domain
  - Always-ON Domain
  - VBAT Domain
- On-Chip Power Gating
- Off-Chip Power Gating

General Description

The Peripheral Driver Library (PDL) VBAT domain (PDL_VBAT) component can reduce consumption power during the RTC operation by supplying the power supply independent VBAT pin. The following circuit can also be used: RTC, 32 kHz oscillation circuit, power-on circuit, backup register (32 bytes), port circuit. It's applied to TYPE2-M0+ products.

This component uses firmware drivers from the PDL_VBAT module, which is automatically added to your project after a successful build.

When to Use a PDL_VBAT Component

Use the PDL_VBAT component to reduce the power consumption during the RTC operation.

Quick Start

1. Drag a PDL_VBAT component from the Component Catalog FMx/System/VBAT Domain folder onto your schematic. The placed instance takes the name VBAT_1.
2. Double-click to open the component's Configure dialog.
3. On the **Basic** tab, set the following parameters:
   - set the clock divider value
   - set sustain current
   - set boost current
   - set the boost time

4. Assign the pin in your device using the Pin Editor. If you are using a pin to read a SW button state on a development kit, refer the kit User Guide for suitable pin assignments.
5. Build the project to verify the correctness of your design. This will add the required PDL modules to the Workspace Explorer and generate configuration data for the VBAT_1 instance.
6. In the *main.c* file, initialize the peripheral and start the application.

```
Vbat_SetPinFunc_X0A_X1A();
(void) Vbat_Init((stc_vbat_config_t*) &VBAT_1_Config);
```

7. Build and program the device.

Component Parameters

The PDL_VBAT component Configure dialog allows you to edit the configuration parameters for the component instance.

Basic Tab

This tab contains the component parameters used in the basic peripheral initialization settings.

Parameter Name	Description
bLinkSubClk	Link Vbat control circuit to 32 kHz clock
bVbatClkEn	Start oscilation of Vbat domain
enBoostCurrent	Sub-clock boost current
enClkBoostTime	Sub-clock boost time
enSustainCurrent	Sub-clock sustain current
u8ClkDiv	Clock divider for PREAD, PWRITE, BREAD and BWRITE

Component Usage

After a successful build, firmware drivers from the PDL_VBAT module are added to your project in the pdl/drivers/vbat folder. Pass the generated data structures to the associated PDL functions in your application initialization code to configure the peripheral.

Generated Data

The PDL_VBAT component populates the following peripheral initialization data structure(s). The generated code is placed in C source and header files that are named after the instance of the component (e.g. *VBAT_config.c*). Each variable is also prefixed with the instance name of the component.

Data Structure Type	Name	Description
stc_vbat_config_t	VBAT_1_Config	Configuration structure

Once the component is initialized, the application code should use the peripheral functions provided in the referenced PDL files. Refer to the PDL documentation for the list of provided API functions. To access this document, right-click on the component symbol on the schematic and choose "**Open API Documentation…**" option in the drop-down menu.

Data in RAM

The generated data may be placed in flash memory (const) or RAM. The former is the more memory-efficient choice if you do not wish to modify the configuration data at run-time. Under the **Built-In** tab of the Configure dialog set the parameter CONST_CONFIG to make your selection. The default option is to place the data in flash.

Code Examples and Application Notes

There are numerous code examples that include schematics and example code available online at the Cypress Code Examples web page.

Cypress also provides a number of application notes describing how FMx devices can be integrated into your design. You can access the Cypress Application Notes search web page at www.cypress.com/appnotes.

Resources

The PDL_VBAT component uses the Vbat Domain (VBAT) peripheral block.

References

- FM0+ Family of 32-bit ARM® Cortex®-M0+ Microcontrollers Peripheral Manuals
- Cypress FM0+ Family of 32-bit ARM® Cortex®-M0+ Microcontrollers

Component Changes

This section lists the major changes in the component from the previous version.

Version	Description of Changes	Reason for Changes / Impact
1.0	Initial Version	

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