

Application Note

COMP

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1. Preface

This application note describes sample software COMP by comparator (COMP).

This document helps the user check operation of a product under development and develop its program.

2. Technical Term

Term/Abbreviation	Definition
BSP	Board Support Package
CG	Clock Control and Operation Mode
COMP	Comparator
DAC	Digital to Analog Converter
ADC	Analog to Digital Converter
Timer	T32A:32-bit Timer Event Counter

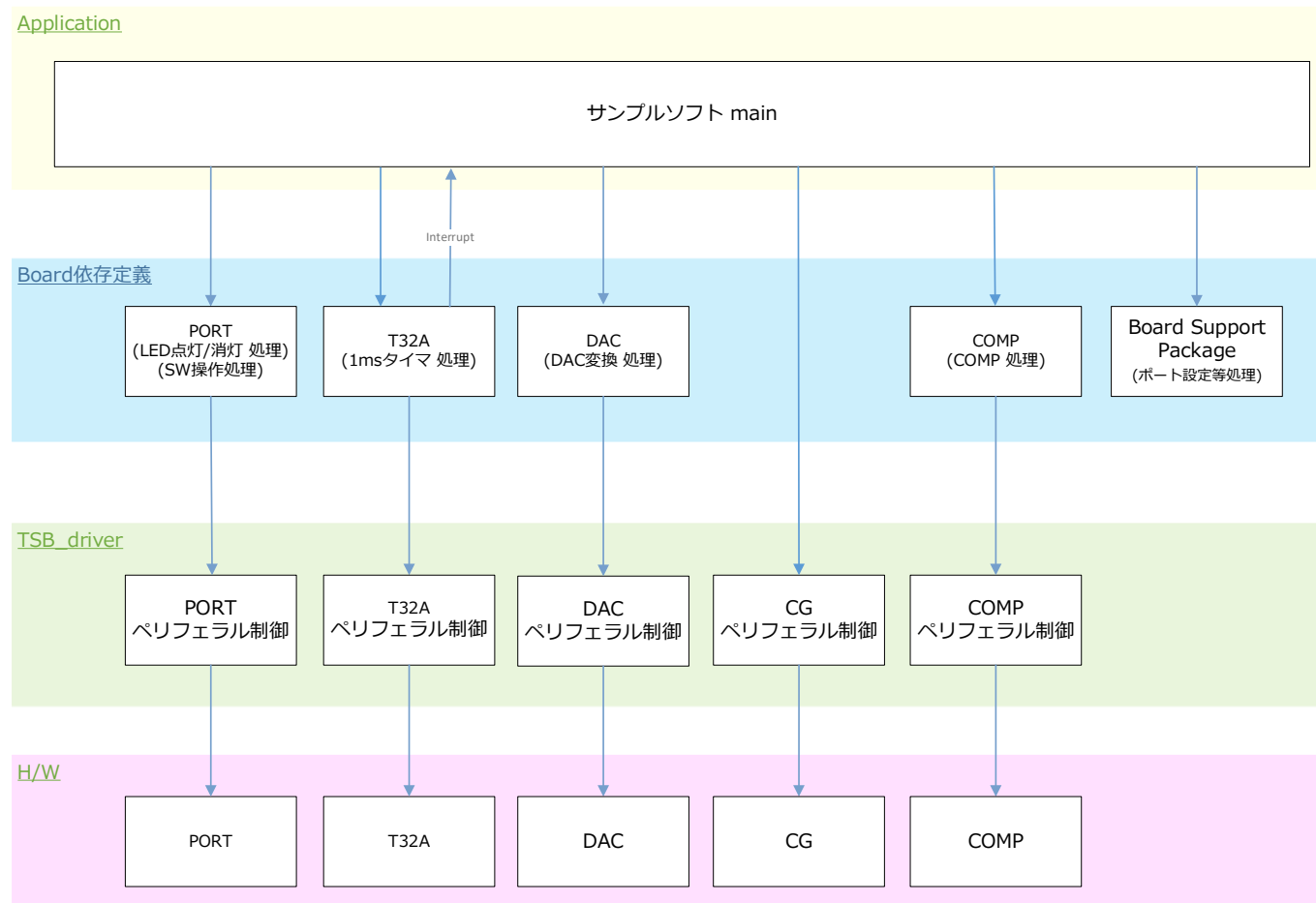
3. Reference Document

Document	Notes
Data sheet	Refer to the data sheet of MCU to be used.
Reference manual	Refer to the reference manual of each IP to be used.
Application Note MCU User Guide	Refer to the MCU user guide to be used.
Driver API List	Refer to the Doc folder.

4. Target Sample Program

Sample Program	Outline
COMP	Sample program of DNF function

5. Configuration Diagram



6. Sample Program: COMP

This sample software compares the analog input voltage with the reference voltage (DAC output) using the comparator (COMP) function.

Each LED is turned on or off based on the comparison result..

6.1. Outlines of Operation

When BSP_PSW_x is pressed, the analog input voltage corresponding to the selected switch input is compared with the reference voltages.

When BSP_PSW_1 is pressed, the analog input voltage BSP_COMP_1 is compared with the lower reference voltage BSP_DAC_1 and the upper reference voltage BSP_DAC_2.

When BSP_PSW_2 is pressed, the analog input voltage BSP_COMP_2 is compared with the lower reference voltage BSP_DAC_1 and the upper reference voltage BSP_DAC_2.

When BSP_PSW_3 is pressed, the analog input voltage BSP_COMP_3 is compared with the lower reference voltage BSP_DAC_1 and the upper reference voltage BSP_DAC_2.

The comparison result for each switch input is indicated by the LEDs as shown below.

- BSP_COMP_1

Conversion Range	BSP_LED_1	BSP_LED_2
Analog Voltage < Lower Reference Voltage	OFF	ON
Lower Reference Voltage <= Analog Voltage <= Upper Reference Voltage	ON	ON
Analog Voltage > Upper Reference Voltage	ON	OFF

- BSP_COMP_2

Conversion Range	BSP_LED_3	BSP_LED_4
Analog Voltage < Lower Reference Voltage	OFF	ON
Lower Reference Voltage <= Analog Voltage <= Upper Reference Voltage	ON	ON
Analog Voltage > Upper Reference Voltage	ON	OFF

- BSP_COMP_3

Conversion Range	BSP_LED_5	BSP_LED_6
Analog Voltage < Lower Reference Voltage	OFF	ON
Lower Reference Voltage <= Analog Voltage <= Upper Reference Voltage	ON	ON
Analog Voltage > Upper Reference Voltage	ON	OFF

6.2. Function to Use

The functions to use are as follows:

For the Port assignment of each BSP channel, refer to the MCU user guide.

IP	Channel	Objective
COMP	BSP_COMP_1	Analog Input Channel CH0 / CH1
	BSP_COMP_2	Analog Input Channel CH2 / CH3
	BSP_COMP_3	Analog Input Channel CH4 / CH5
DAC	BSP_DAC_1	Reference Voltage (Lower)
	BSP_DAC_2	Reference Voltage (Upper)
PORT (Push Switch)	BSP_PSW_1	For Event Trigger
	BSP_PSW_2	For Event Trigger
	BSP_PSW_3	For Event Trigger
PORT (LED)	BSP_LED_1	For operation check
	BSP_LED_2	For operation check
	BSP_LED_3	For operation check
	BSP_LED_4	For operation check
	BSP_LED_5	For operation check
	BSP_LED_6	For operation check

6.3. Interrupt to Use

For details, please refer to the “Interrupt List by Sample” in the MCU User’s Manual.

6.4. Configuration

Configuration setting.

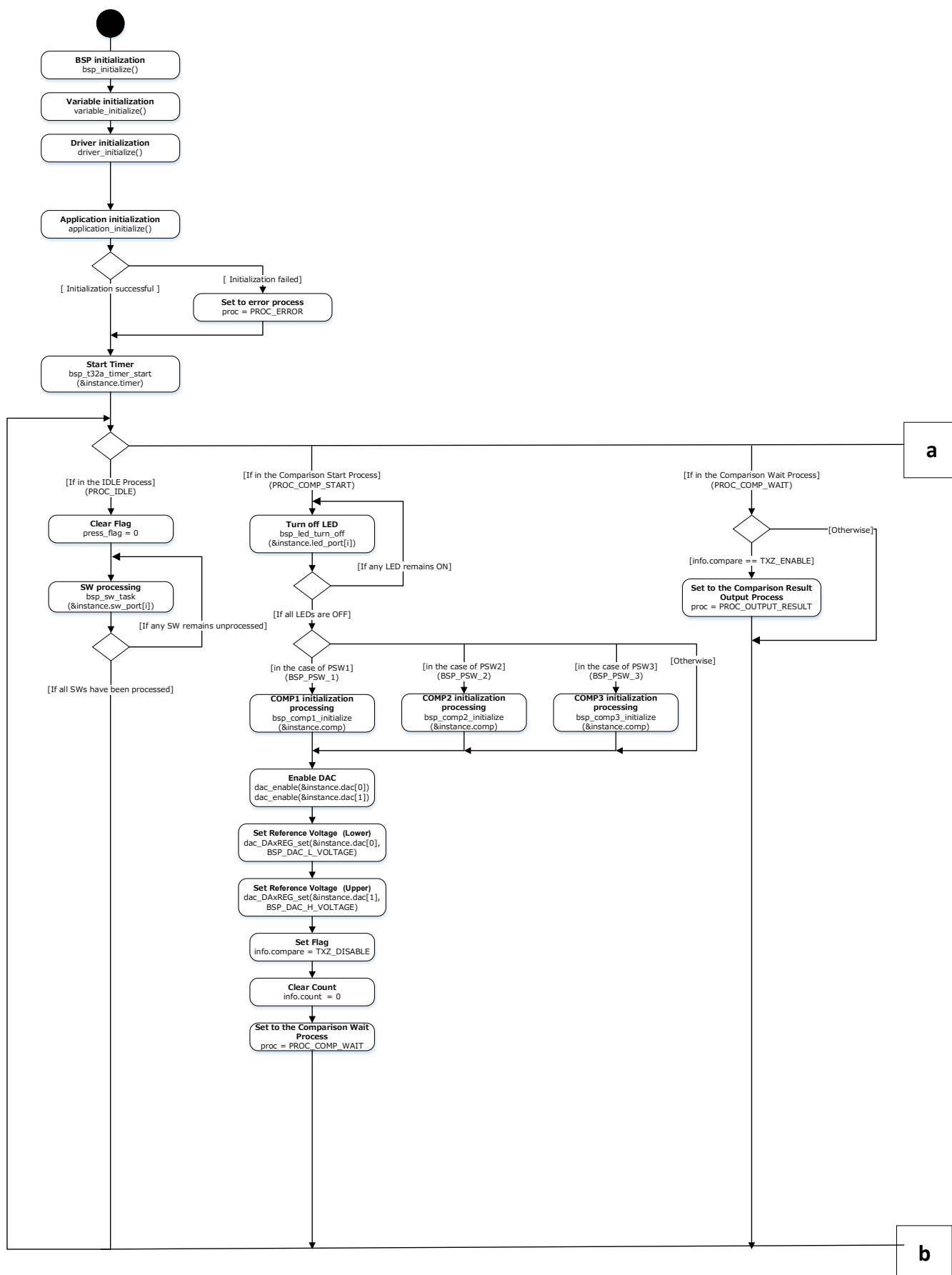
Configuration	Soft Definition	Current Value (Defaults)	Description
Reference Voltage	BSP_DAC_L_VOLTAGE	78	Reference Voltage (Lower)
	BSP_DAC_H_VOLTAGE	180	Reference Voltage (Upper)

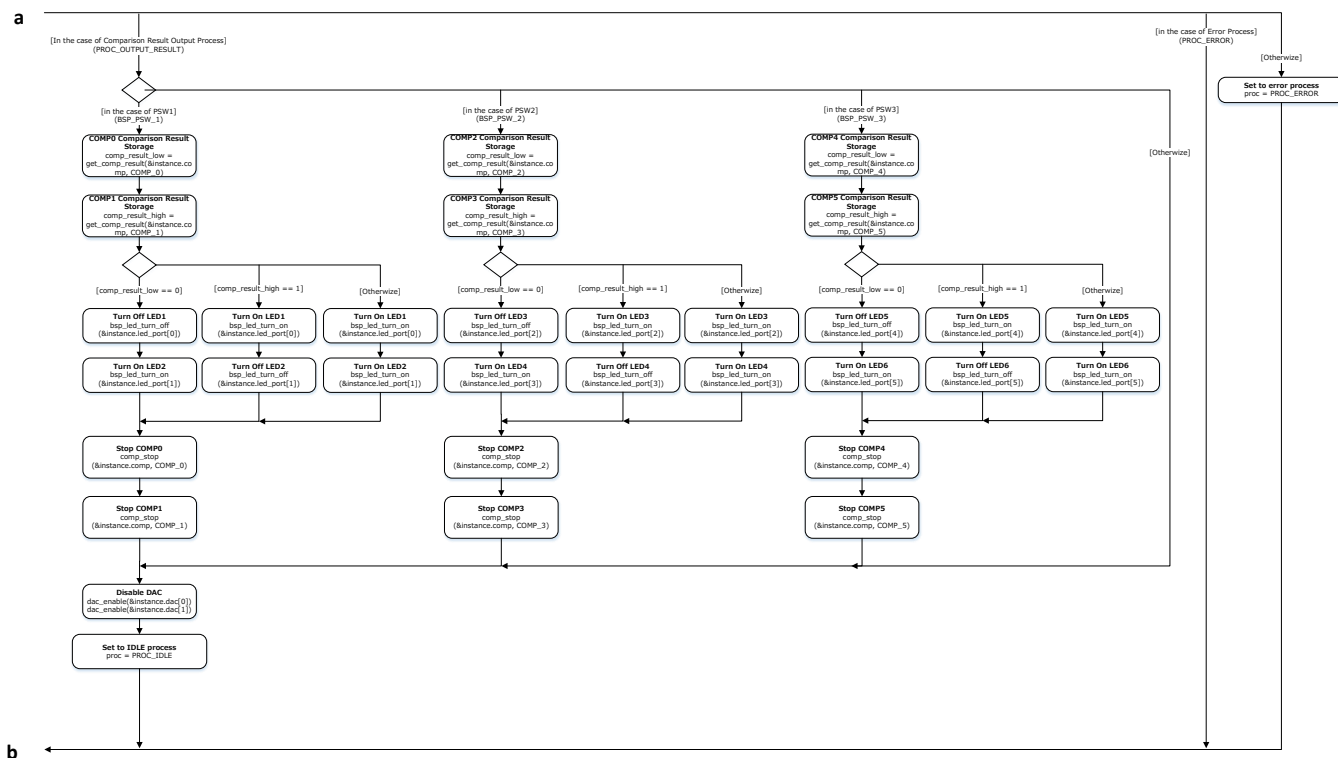
6.5. Example of Terminal Emulator Output

Nothing.

7. Activity diagram

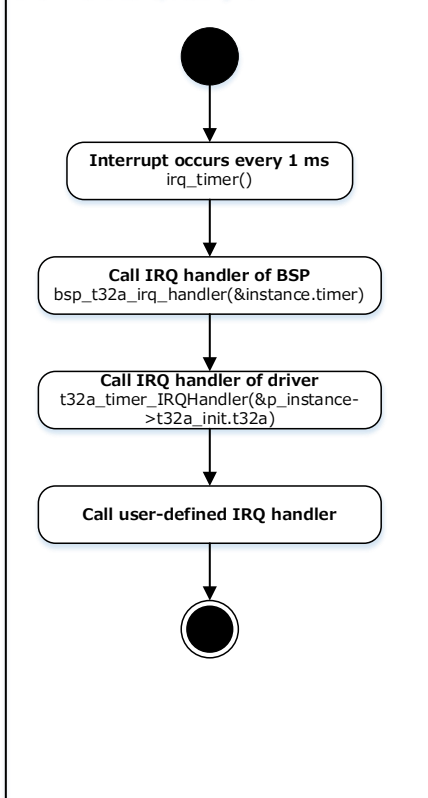
7.1. main



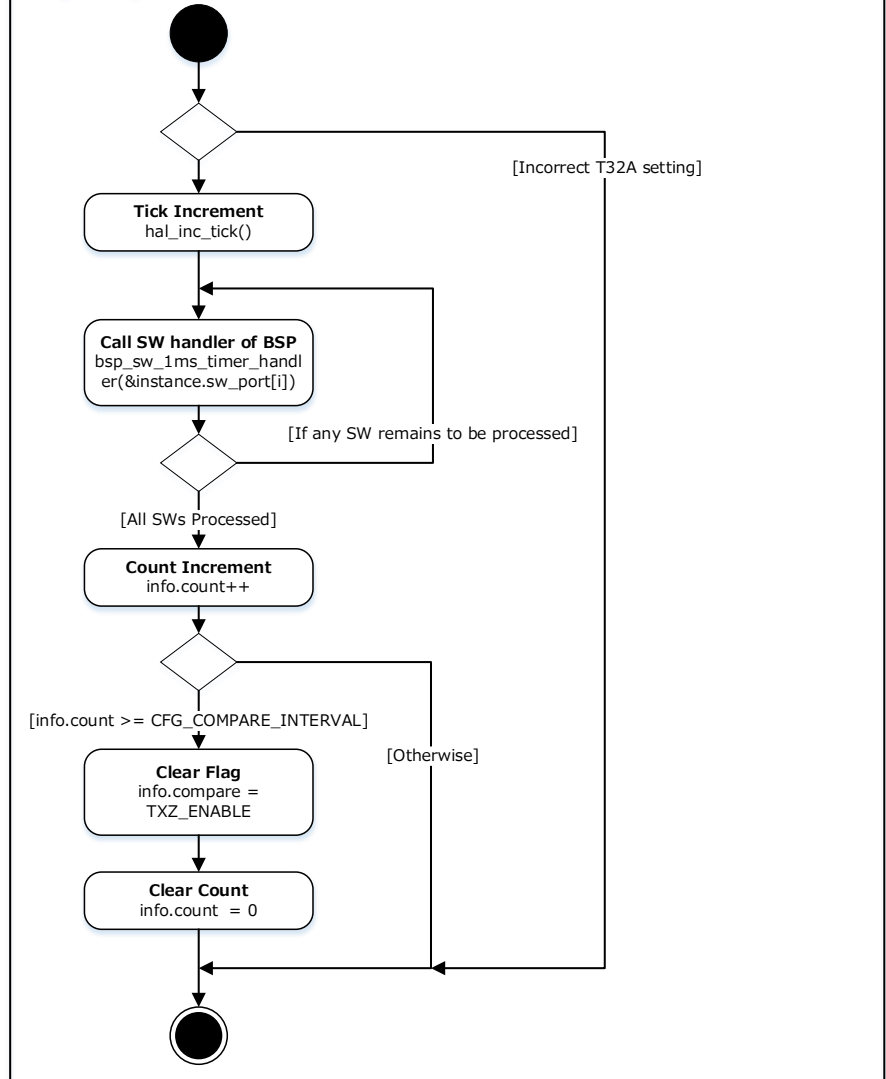


7.2. Interrupt

1ms Timer Interrupt calling flow



timer_interval_handler



8. Revision History

Revision	Date	Description
1.0	2026-07-30	First release

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