

BOD Driver Sample Code Reference Guide

V1.00.001

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Support Chips:

ISD9160

Support Platforms:

NuvotonPlatform_Keil

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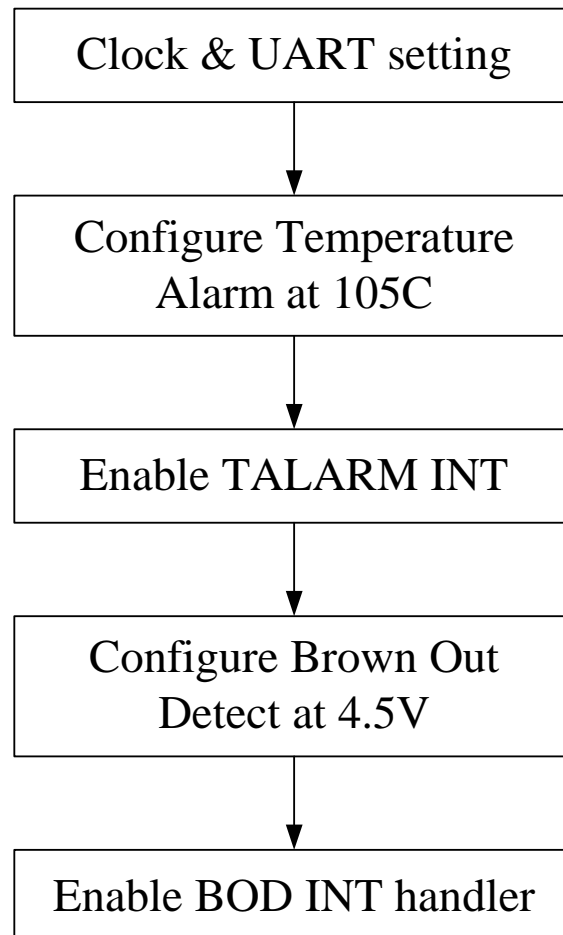
1. Introduction

This sample code will demo BOD IP on ISD9160 chip.

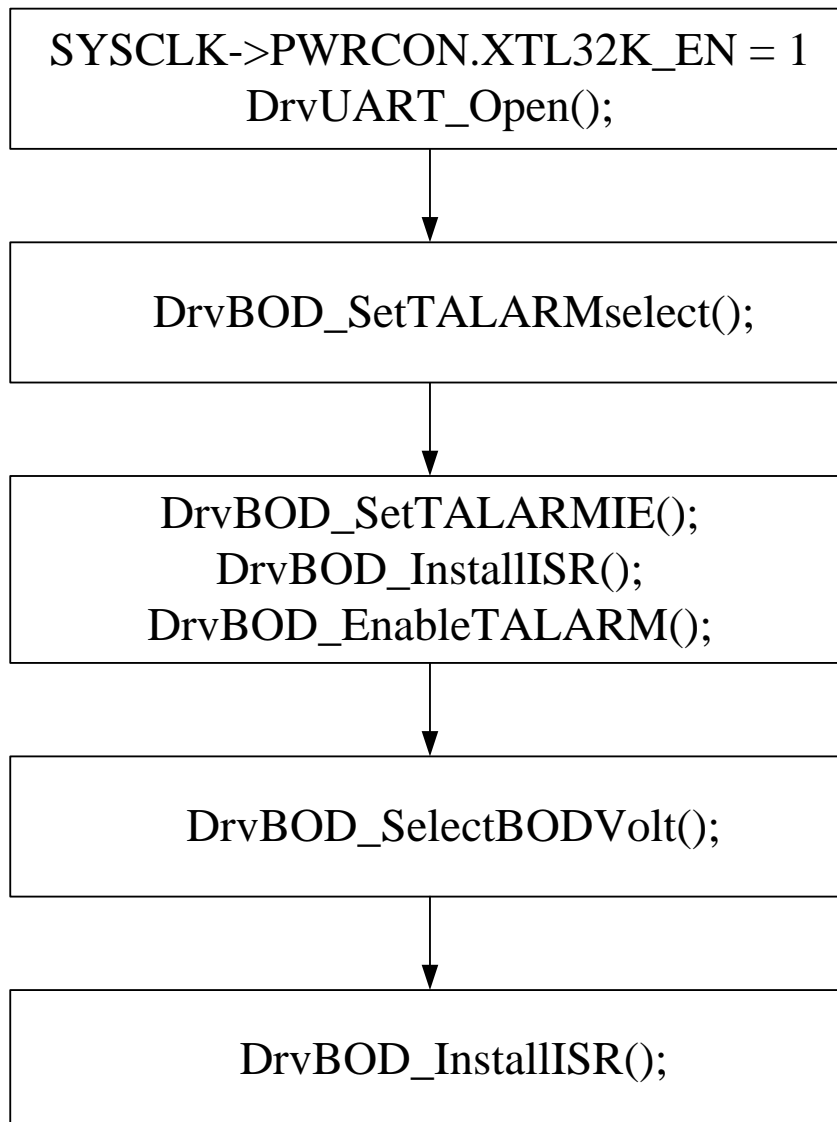
1.1 Feature

- Configure Temperature Alarm at 105C to protect the chip from dangerously high internal temperatures, generally associated with excessive load (or short circuit) on the speaker driver.
- Configure Brown Out Detection at 4.5V.
- Wait for INT, and Debug messages will show the trigger function.

2. Block Diagram



3. Calling Sequence



4. Code Section –Smpl_DrvBODTALARM.c

```

/*-----*/
/* Global variables */
/*-----*/
char *cBODvol={"2.12.22.42.52.72.83.04.5"};

/*-----*/
/* Define functions prototype */
/*-----*/

void SysTimerDelay(uint32_t us)
{
    SysTick->LOAD = us * 22; /* Assume the internal 22MHz RC used */
    SysTick->VAL    = (0x00);
    SysTick->CTRL = (1 << SYSTICK_CLKSOURCE) | (1<<SYSTICK_ENABLE);

    /* Waiting for down-count to zero */
    while((SysTick->CTRL & (1 << 16)) == 0);
}

void DrvBODTALARM_BODISR(void)
{
    char cBuffer[3];
    uint8_t u8addr;

    u8addr = 3*(BOD->BOD_SEL.BOD_LVL);
    cBuffer[0] = *(cBODvol+u8addr);
    cBuffer[1] = *(cBODvol+u8addr+1);
    cBuffer[2] = *(cBODvol+u8addr+2);
    printf("Brown Out Detect voltage level below %s\n",cBuffer);

    if(BOD->BOD_SEL.BOD_LVL > 0)
        BOD->BOD_SEL.BOD_LVL--;
}

void DrvBODTALARM_TALARMISR(void)
{
    printf("Temperature Sense event occurs\n");
}

```

```

/*-----*/
/* BODTALARM Test Sample */
/* Test Item */
/* It sends the messages to HyperTerminal. */
/*-----*/

int32_t main()
{
    STR_UART_T sParam;
    uint32_t u32config0;

    UNLOCKREG();
    SYSCLK->PWRCON.XTL32K_EN = 1;
    LOCKREG();
    /* Waiting for 12M Xtal stable */
    SysTimerDelay(5000);

    /* Set UART Pin */
    DrvGPIO_InitFunction(FUNC_UART0);

    /* UART Setting */
    sParam.u32BaudRate      = 115200;
    sParam.u8cDataBits      = DRVUART_DATABITS_8;
    sParam.u8cStopBits      = DRVUART_STOPBITS_1;
    sParam.u8cParity        = DRVUART_PARITY_NONE;
    sParam.u8cRxTriggerLevel= DRVUART_FIFO_1BYTES;

    DrvUART_Open(UART_PORT0,&sParam);

    printf("+-----+\n");
    printf("|          BOD&TALAM Sample Code          |\n");
    printf("+-----+\n");
    printf("| Brown out detection from 4.5V to 2.1V      |\n");
    printf("| Temperature Alarm Sense Level = 105C      |\n");
    printf("+-----+\n");
    printf("\n");
}

```



```

/* Configure Temperature Alarm */
DrvBOD_SetTALARMselect(TALARM_SEL_105C);
DrvBOD_SetTALARMIE(TALARM_EN_IEENABLE);
DrvBOD_InstallISR(DrvBODTALARM_TALARMISR,1);
DrvBOD_EnableTALARM(TALARM_EN_ENENABLE);

/* Configure BOD */
DrvBOD_SelectBODVolt(BODLVL_45V);
DrvFMC_Read(CONFIG_BASE, &u32config0);
u32config0 |= 0x00800000; //BOD enable
DrvFMC_Write(CONFIG_BASE, u32config0);
DrvBOD_InstallISR(DrvBODTALARM_BODISR,0);
printf("Set Config0[23] = 1, Please reset again...\n");

while(1);
}

```

5. Execution Environment Setup and Result

- Prepare ISD9160 EVB board.
- Compile&Download the sample code.
- Console window will show the results of BOD&TALARM.

6. Revision History

Version	Date	Description
V1.00.01	Sep. 2011	Created