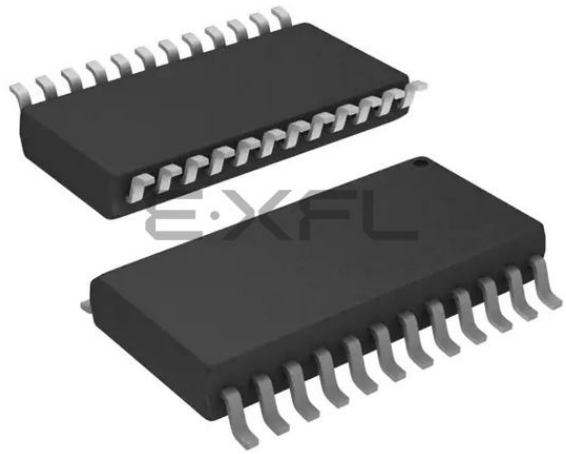

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What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Obsolete
Core Processor	ST7
Core Size	8-Bit
Speed	8MHz
Connectivity	I²C, SCI, USB
Peripherals	DMA, LVD, POR, PWM, WDT
Number of I/O	14
Program Memory Size	4KB (4K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	384 x 8
Voltage - Supply (Vcc/Vdd)	4V ~ 5.5V
Data Converters	-
Oscillator Type	External
Operating Temperature	0°C ~ 70°C (TA)
Mounting Type	Surface Mount
Package / Case	24-SOIC (0.295", 7.50mm Width)
Supplier Device Package	-
Purchase URL	https://www.e-xfl.com/product-detail/stmicroelectronics/st72f63be1m1

Figure 12. Low voltage detector functional diagram

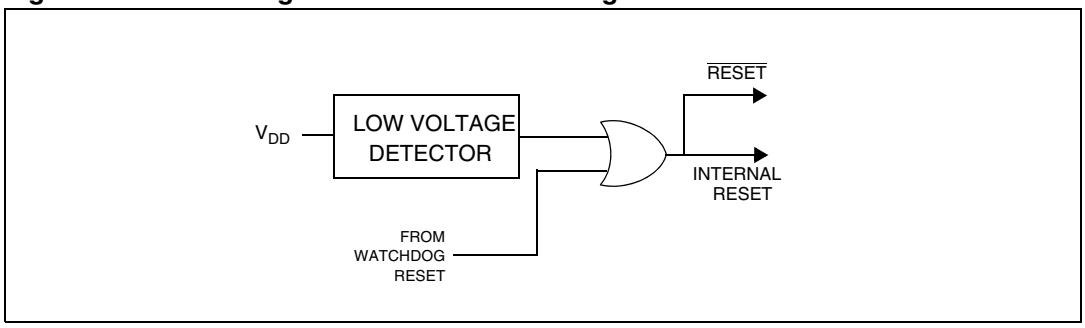
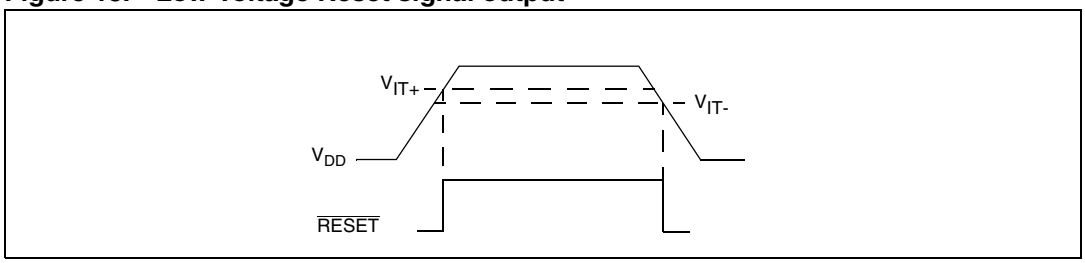


Figure 13. Low Voltage Reset signal output



1. Hysteresis (V_{IT+}-V_{IT-}) = V_{hys}

Figure 14. Temporization timing diagram after an internal Reset

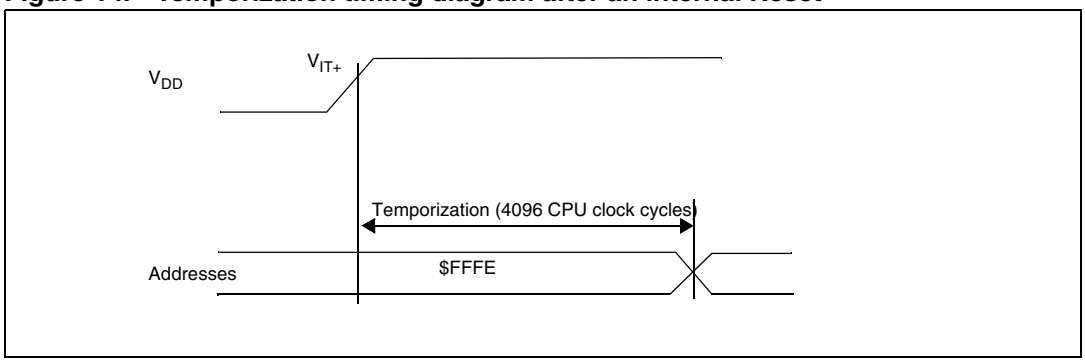
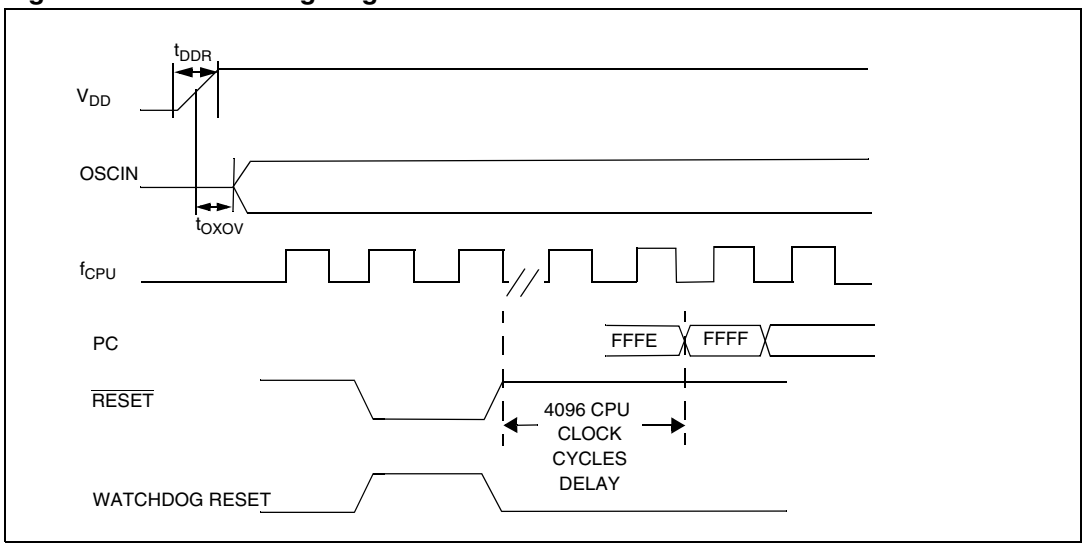


Figure 15. Reset timing diagram



1. Refer to Electrical Characteristics for values of t_{DDR}, t_{OXOV}, V_{IT+}, V_{IT-} and V_{hys}

6.2 Clock system

6.2.1 General description

The MCU accepts either a crystal or ceramic resonator, or an external clock signal to drive the internal oscillator. The internal clock (f_{CPU}) is derived from the external oscillator frequency (f_{OSC}), which is divided by 3 (and by 2 or 4 for USB, depending on the external clock used). The internal clock is further divided by 2 by setting the SMS bit in the miscellaneous register.

Using the OSC24/12 bit in the option byte, a 12 MHz or a 24 MHz external clock can be used to provide an internal frequency of either 2, 4 or 8 MHz while maintaining a 6 MHz for the USB (refer to *Figure 18*).

The internal clock signal (f_{CPU}) is also routed to the on-chip peripherals. The CPU clock signal consists of a square wave with a duty cycle of 50%.

The internal oscillator is designed to operate with an AT-cut parallel resonant quartz or ceramic resonator in the frequency range specified for f_{osc}. The circuit shown in *Figure 17* is recommended when using a crystal, and *Table 8* lists the recommended capacitance. The crystal and associated components should be mounted as close as possible to the input pins in order to minimize output distortion and start-up stabilization time.

Table 8. Recommended Values for 24 MHz crystal resonator

Recommended capacitance and resistance			
R_{SMAX}(1)	20 Ω	25 Ω	70 Ω
C_{OSCIN}	56pF	47pF	22pF
C_{OSCOUT}	56pF	47pF	22pF
R_P	1-10 MΩ	1-10 MΩ	1-10 MΩ

1. R_{SMAX} is the equivalent serial resistor of the crystal (see crystal specification).

6.2.2 External clock

An external clock may be applied to the OSCIN input with the OSCOUT pin not connected, as shown on *Figure 16*. The t_{OXOV} specifications do not apply when using an external clock input. The equivalent specification of the external clock source should be used instead of t_{OXOV} (see *Table 62: Control timing characteristics*).

Figure 16. External clock source connections

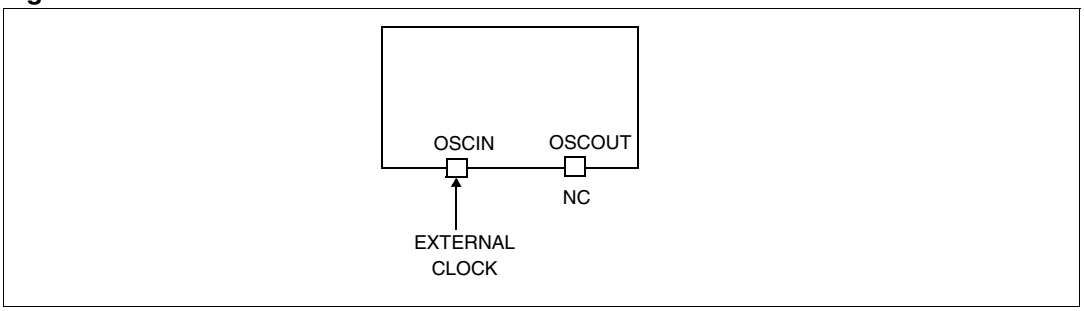
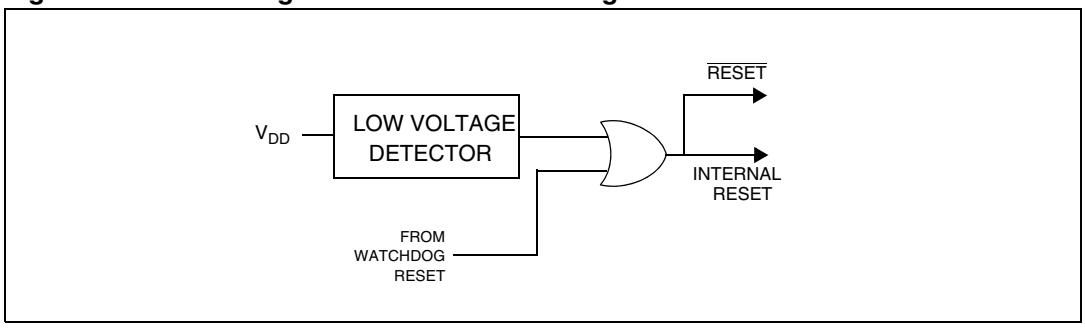


Figure 12. Low voltage detector functional diagram



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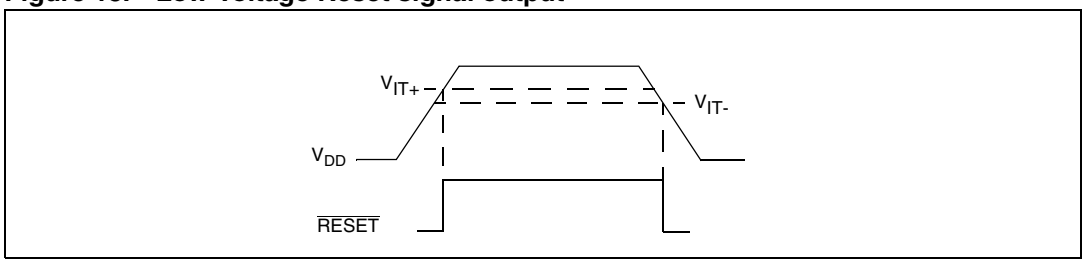

1. Hysteresis (V_{IT+}-V_{IT-}) = V_{hys}

Figure 14. Temporization timing diagram after an internal Reset