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### **Embedded - System On Chip (SoC): The Heart of Modern Embedded Systems**

**Embedded - System On Chip (SoC)** refers to an integrated circuit that consolidates all the essential components of a computer system into a single chip. This includes a microprocessor, memory, and other peripherals, all packed into one compact and efficient package. SoCs are designed to provide a complete computing solution, optimizing both space and power consumption, making them ideal for a wide range of embedded applications.

### **What are Embedded - System On Chip (SoC)?**

**System On Chip (SoC)** integrates multiple functions of a computer or electronic system onto a single chip. Unlike traditional multi-chip solutions, SoCs combine a central

#### **Details**

Product Status	Active
Architecture	MCU, FPGA
Core Processor	ARM® Cortex®-M3
Flash Size	256KB
RAM Size	64KB
Peripherals	DDR, PCIe, SERDES
Connectivity	CANbus, Ethernet, I <sup>2</sup> C, SPI, UART/USART, USB
Speed	166MHz
Primary Attributes	FPGA - 10K Logic Modules
Operating Temperature	0°C ~ 85°C (TJ)
Package / Case	400-LFBGA
Supplier Device Package	400-VFBGA (17x17)
Purchase URL	<a href="https://www.e-xfl.com/product-detail/microchip-technology/m2s010ts-1vfg400">https://www.e-xfl.com/product-detail/microchip-technology/m2s010ts-1vfg400</a>

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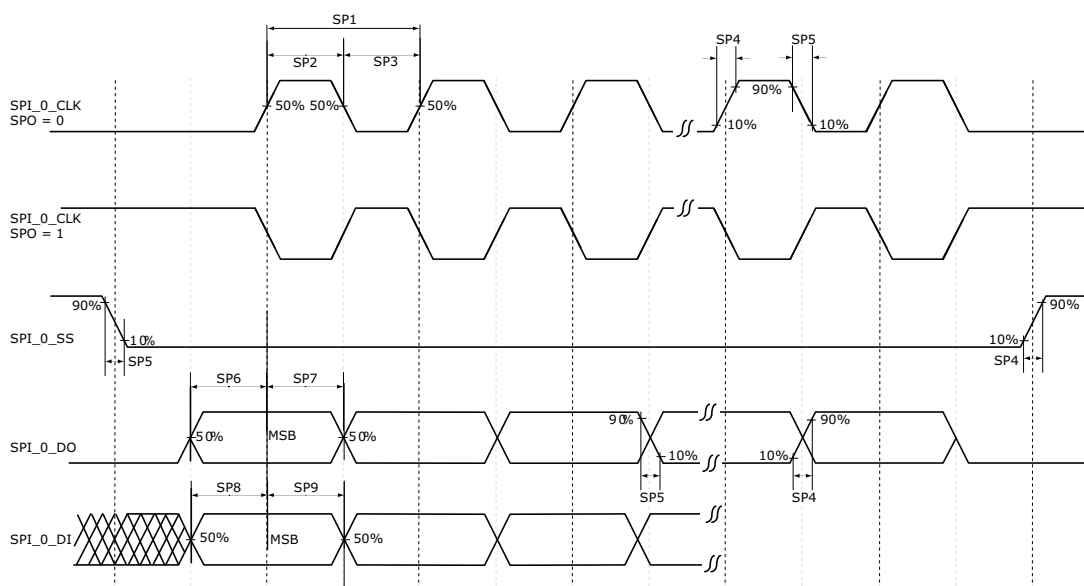








Figure 22 • SPI Timing for a Single Frame Transfer in Motorola Mode (SPH = 1)



### 2.3.32 CAN Controller Characteristics

The following table lists the CAN controller characteristics in worst-case industrial conditions when  $T_J = 100\text{ }^\circ\text{C}$ ,  $V_{DD} = 1.14\text{ V}$ .

Table 306 • CAN Controller Characteristics

Parameter	Description	-1	-Std	Unit
FCANREFCLK <sup>1</sup>	Internally sourced CAN reference clock frequency	160	136	MHz
BAUDCANMAX	Maximum CAN performance baud rate	1	1	Mbps
BAUDCANMIN	Minimum CAN performance baud rate	0.05	0.05	Mbps

1. PCLK to CAN controller must be a multiple of 8 MHz.

### 2.3.33 USB Characteristics

The following table lists the USB characteristics in worst-case industrial conditions when  $T_J = 100\text{ }^\circ\text{C}$ ,  $V_{DD} = 1.14\text{ V}$ .

Table 307 • USB Characteristics

Parameter	Description	-1	-Std	Unit
FUSBREFCLK	Internally sourced USB reference clock frequency	166	142	MHz
TUSBCLK	USB clock period	16.66	16.66	ns
TUSBPD	Clock to USB data propagation delay	9.0	9.0	ns
TUSBSU	Setup time for USB data	6.0	6.0	ns
TUSBHD	Hold time for USB data	0	0	ns