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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	ARM7®
Core Size	32-Bit Single-Core
Speed	80MHz
Connectivity	EBI/EMI, Ethernet, UART/USART, USB
Peripherals	DMA, POR, WDT
Number of I/O	21
Program Memory Size	-
Program Memory Type	ROMless
EEPROM Size	-
RAM Size	10K x 8
Voltage - Supply (Vcc/Vdd)	1.62V ~ 3.6V
Data Converters	-
Oscillator Type	External
Operating Temperature	0°C ~ 70°C (TA)
Mounting Type	Surface Mount
Package / Case	176-LQFP
Supplier Device Package	-
Purchase URL	https://www.e-xfl.com/product-detail/nuvoton-technology-corporation-america/w90n740cdg

Pins Description, continued

NAME	IO TYPE	PAD TYPE	DESCRIPTION
USB Interface			
DP	IO	-	Differential Positive USB IO signal
DN	IO	-	Differential Negative (Minus) USB IO signal
Miscellaneous			
GP[20:17] / nIRQ[3:0]	IO	-	External Interrupt Request or General Purpose I/O
GP16 / nXDREQ	IO	-	External DMA Request or General Purpose I/O
GP15 /nXDACK	IO	-	External DMA Acknowledge or General Purpose I/O
GP14 / TIMER1/SPEED	IO	-	Timer 1 or General Purpose I/O. This pin is also used as SPEED, Speed mode control for external USB transceiver
GP13 / TIMER0/STDBY	IO	-	Timer 0 or General Purpose I/O. This pin is also used as STDBY, StandBy control for external USB transceiver
GP12 /nWDOG	IO	-	Watchdog Timer Timeout Flag (active-low) or General Purpose I/O
GP11 /RxD	IO	-	UART Receive Data or General Purpose I/O
GP10 /TxD	IO	-	UART Transmit Data or General Purpose I/O
GP9/nDSR/nTOE	IO	-	UART Receive Clock or General Purpose I/O. This pin is also used as nTOE, Output Enable control (active-low) for external USB transceiver.
GP8 /nDTR/FSE0	IO	-	UART Transmit Clock or General Purpose I/O. This pin is also used as SE0, Differential Data Transceiver Output for external USB transceiver. T
GP7 /nCD /VO	IO	-	UART Carrier Detector or General Purpose I/O. This pin is also used as VO, Data Output for external USB transceiver.
GP6 /nCTS/ VM	IO	-	UART Clear to Send or General Purpose I/O. This pin is also used as VM, Data Negative (Minus) Input for external USB receiver.
GP5 /nRTS/ VP	IO	-	UART Ready to Send or General Purpose I/O. This pin is also used as VP, Data Positive Input for external USB receiver.
GP4 /nRI /RCV	IO	-	UART Ring Indicator or General Purpose I/O. This pin is also used as RCV, Difference Receiver Input.
GP[3:0]	IO	-	General Purpose I/O.
Power/Ground			
VDD18	P	-	Core Logic power (1.8V)
VSS18	G	-	Core Logic ground (0V)
VDD33	P	-	IO Buffer power (3.3V)
VSS33	G	-	IO Buffer ground (0V)
USBVDD	P	-	USB power (3.3V)
USBVSS	G	-	USB ground (0V)
DVDD18	P	-	PLL Digital power (1.8V)
DVSS18	G	-	PLL Digital ground (0V)
AVDD18	P	-	PLL Analog power (1.8V)
AVSS18	G	-	PLL Analog ground (0V)

31	30	29	28	27	26	25	24
BASADDR							
23	22	21	20	19	18	17	16
BASADDR					RESERVED		
15	14	13	12	11	10	9	8
MRSET	RESERVED	AUTOPR	LATENCY		RESERVED		
7	6	5	4	3	2	1	0
COMPBK	DBWD		COLUMN		SIZE		

BASADDR [31:19] ─ Base address pointer of SDRAM bank 0/1

The start address is calculated as SDRAM bank 0/1 base pointer << 18. The SDRAM base address pointer together with the "SIZE" bits constitutes the whole address range of each SDRAM bank.

MRSET [15] ─ SDRAM Mode register set command for SDRAM bank 0/1

This bit set will issue a mode register set command to SDRAM.

AUTOPR [13] ─ Auto pre-charge mode of SDRAM for SDRAM bank 0/1

Enable the auto pre-charge function of external SDRAM bank 0/1

0 = Auto pre-charge

1 = No auto pre-charge

LATENCY [12:11] ─ The CAS Latency of SDRAM bank 0/1

Defines the CAS latency of external SDRAM bank 0/1

LATENCY [12:11]		MCLK
0	0	1
0	1	2
1	0	3
1	1	REVERSED

COMPBK [7] ─ Number of component bank in SDRAM bank 0/1

Indicates the number of component bank (2 or 4 banks) in external SDRAM bank 0/1.

0 = 2 banks

1 = 4 banks

DBWD [6:5] ─ Data bus width for SDRAM bank 0/1

Indicates the external data bus width connect with SDRAM bank 0/1

REGISTER	OFFSET	R/W	DESCRIPTION	RESET VALUE
Address Lookup and Replacement Registers				
MASAD0	0xFFF0.6800	R/W	NAT Masquerading IP Address Entry 0	0x0000.0000
MASPN0	0xFFF0.6804	R/W	NAT Masquerading Port Number Entry 0	0x0000.0000
LSAD0	0xFFF0.6808	R/W	Local Station IP Address Entry 0	0x0000.0000
LSPN0	0xFFF0.680C	R/W	Local Station Port Number Entry 0	0x0000.0000
LSMAC0M	0xFFF0.6810	R/W	Local Station MAC Address Most Significant Word Register for Entry 0	0x0000.0000
LSMAC0L	0xFFF0.6814	R/W	Local Station MAC Address Least Significant Word Register for Entry 0	0x0000.0000
RSMAC0M	0xFFF0.6818	R/W	Remote Station MAC Address Most Significant Word Register for Entry 0	0x0000.0000
RSMAC0L	0xFFF0.681C	R/W	Remote Station MAC Address Least Significant Word Register for Entry 0	0x0000.0000
MASAD1	0xFFF0.6820	R/W	NAT Masquerading IP Address Entry 1	0x0000.0000
MASPN1	0xFFF0.6824	R/W	NAT Masquerading Port Number Entry 1	0x0000.0000
LSAD1	0xFFF0.6828	R/W	Local Station IP Address Entry 1	0x0000.0000
LSPN1	0xFFF0.682C	R/W	Local Station Port Number Entry 1	0x0000.0000
LSMAC1M	0xFFF0.6830	R/W	Local Station MAC Address Most Significant Word Register for Entry 1	0x0000.0000
LSMAC1L	0xFFF0.6834	R/W	Local Station MAC Address Least Significant Word Register for Entry 1	0x0000.0000
RSMAC1M	0xFFF0.6838	R/W	Remote Station MAC Address Most Significant Word Register for Entry 1	0x0000.0000
RSMAC1L	0xFFF0.683C	R/W	Remote Station MAC Address Least Significant Word Register for Entry 1	0x0000.0000
…	…	…	…	…
MASAD63	0xFFF0.6FE0	R/W	NAT Masquerading IP Address Entry 63	0x0000.0000
MASPN63	0xFFF0.6FE4	R/W	NAT Masquerading Port Number Entry 63	0x0000.0000
LSAD63	0xFFF0.6FE8	R/W	Local Station IP Address Entry 63	0x0000.0000
LSPN63	0xFFF0.6FEC	R/W	Local Station Port Number Entry 63	0x0000.0000
LSMAC63M	0xFFF0.6FF0	R/W	Local Station MAC Address Most Significant Word Register for Entry 63	0x0000.0000
LSMAC63L	0xFFF0.6FF4	R/W	Local Station MAC Address Least Significant Word Register for Entry 63	0x0000.0000
RSMAC63M	0xFFF0.6FF8	R/W	Remote Station MAC Address Most Significant Word Register for Entry 63	0x0000.0000
RSMAC63L	0xFFF0.6FFC	R/W	Remote Station MAC Address Least Significant Word Register for Entry 63	0x0000.0000