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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	MIPS32® M4K™
Core Size	32-Bit Single-Core
Speed	50MHz
Connectivity	I²C, IrDA, LINbus, PMP, SPI, UART/USART, USB OTG
Peripherals	Brown-out Detect/Reset, DMA, I²S, POR, PWM, WDT
Number of I/O	33
Program Memory Size	32KB (32K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	8K x 8
Voltage - Supply (Vcc/Vdd)	2.3V ~ 3.6V
Data Converters	A/D 13x10b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	44-VFTLA Exposed Pad
Supplier Device Package	44-VTLA (6x6)
Purchase URL	https://www.e-xfl.com/product-detail/microchip-technology/pic32mx220f032dt-50i-tl

TABLE 10: PIN NAMES FOR 44-PIN USB DEVICES

44-PIN QFN (TOP VIEW)[1,2,3,5]

PIC32MX210F016D
PIC32MX220F032D
PIC32MX230F064D
PIC32MX230F256D
PIC32MX250F128D
PIC32MX270F256D

44   1

Pin #	Full Pin Name	Pin #	Full Pin Name
1	RPB9/SDA1/CTED4/PMD3/RB9	23	AN4/C1INB/C2IND/RPB2/SDA2/CTED13/PMD2/RB2
2	RPC6/PMA1/RC6	24	AN5/C1INA/C2INC/RTCC/RPB3/SCL2/PMWR/RB3
3	RPC7/PMA0/RC7	25	AN6/RPC0/RC0
4	RPC8/PMA5/RC8	26	AN7/RPC1/RC1
5	RPC9/CTED7/PMA6/RC9	27	AN8/RPC2/PMA2/RC2
6	V_{SS}	28	V_{DD}
7	V_{CAP}	29	V_{SS}
8	PGED2/RPB10/D+/CTED11/RB10	30	OSC1/CLKI/RPA2/RA2
9	PGEC2/RPB11/D-/RB11	31	OSC2/CLKO/RPA3/RA3
10	V_{USB3V3}	32	TDO/RPA8/PMA8/RA8
11	AN11/RPB13/CTPLS/PMRD/RB13	33	SOSCI/RPB4/RB4
12	PGED4/TMS/PMA10/RA10	34	SOSCO/RPA4/T1CK/CTED9/RA4
13	PGEC4/TCK/CTED8/PMA7/RA7	35	TDI/RPA9/PMA9/RA9
14	CV_{REFOUT}/AN10/C3INB/RPB14/V_{BUSON}/SCK1/CTED5/RB14	36	AN12/RPC3/RC3
15	AN9/C3INA/RPB15/SCK2/CTED6/PMCS1/RB15	37	RPC4/PMA4/RC4
16	AV_{SS}	38	RPC5/PMA3/RC5
17	AV_{DD}	39	V_{SS}
18	$\overline{MCLR}$	40	V_{DD}
19	PGED3/V_{REF}+/CV_{REF}+/AN0/C3INC/RPA0/CTED1/PMD7/RA0	41	RPB5/USBID/RB5
20	PGEC3/V_{REF}-/CV_{REF}-/AN1/RPA1/CTED2/PMD6/RA1	42	V_{BUS}
21	PGED1/AN2/C1IND/C2INB/C3IND/RPB0/PMD0/RB0	43	RPB7/CTED3/PMD5/INT0/RB7
22	PGEC1/AN3/C1INC/C2INA/RPB1/CTED12/PMD1/RB1	44	RPB8/SCL1/CTED10/PMD4/RB8

Note 1: The RPn pins can be used by remappable peripherals. See Table 1 for the available peripherals and Section 11.3 "Peripheral Pin Select" for restrictions.
2: Every I/O port pin (RAx-RCx) can be used as a change notification pin (CNAx-CNCx). See Section 11.0 "I/O Ports" for more information.
3: The metal plane at the bottom of the device is not connected to any pins and is recommended to be connected to V_{SS} externally.
4: This pin function is not available on PIC32MX110F016D and PIC32MX120F032D devices.
5: Shaded pins are 5V tolerant.

FIGURE 4-4: MEMORY MAP ON RESET FOR PIC32MX150/250 DEVICES (32 KB RAM, 128 KB FLASH)
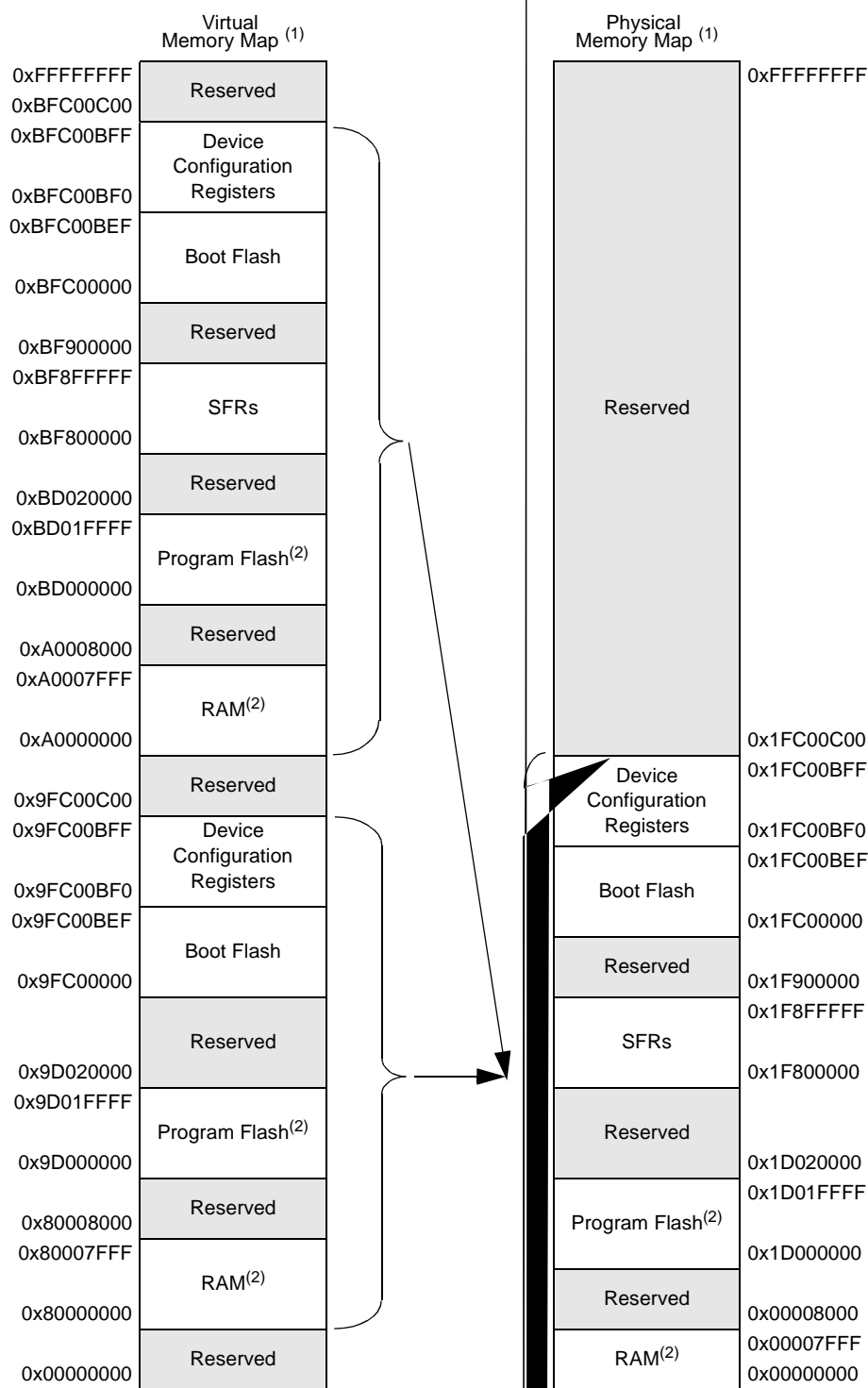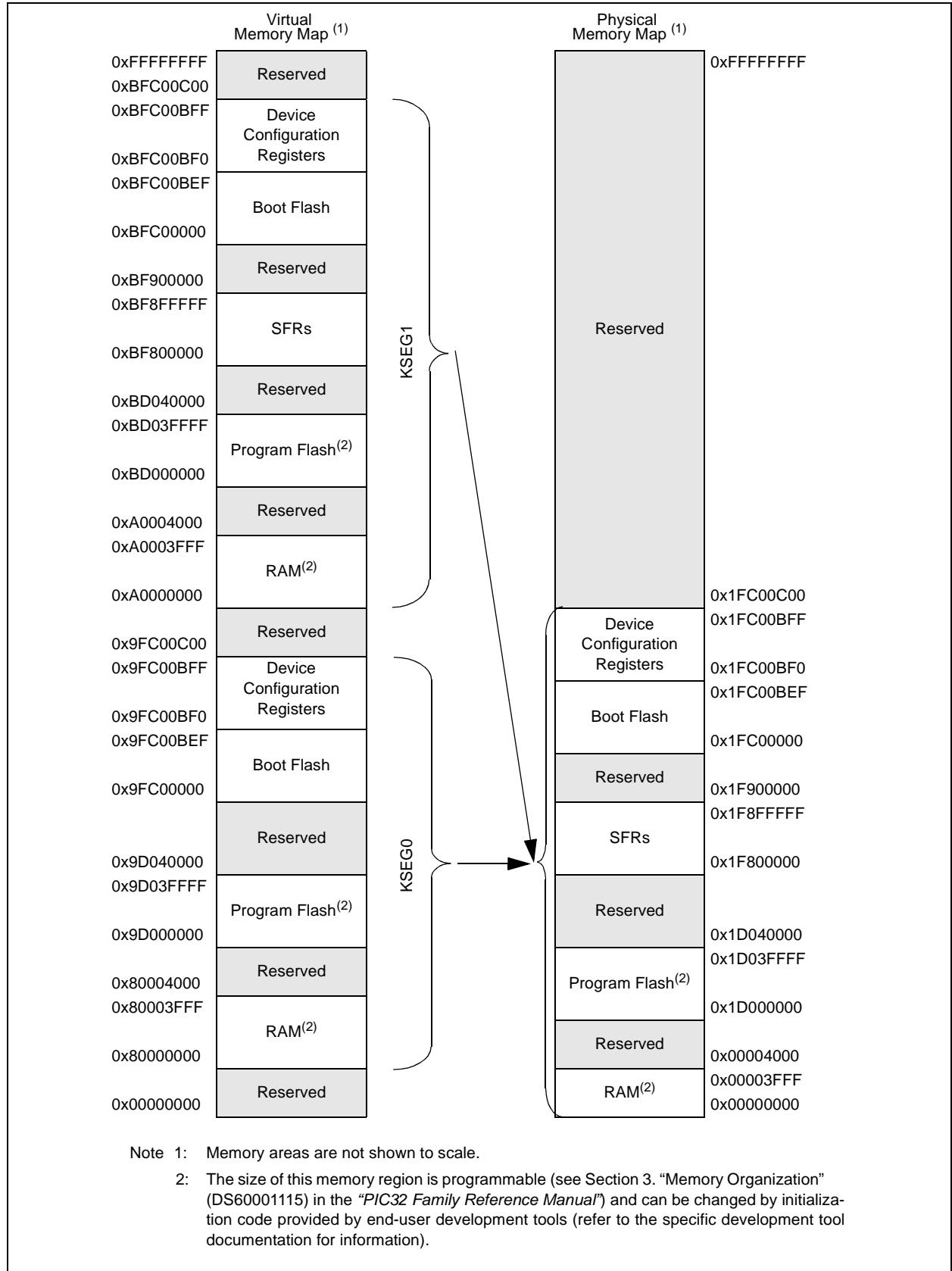

Note 1: Memory areas are not shown to scale.

2: The size of this memory region is programmable (see Section 3. "Memory Organization" (DS60001115) in the *"PIC32 Family Reference Manual"*) and can be changed by initialization code provided by end-user development tools (refer to the specific development tool documentation for information).

FIGURE 4-6:   MEMORY MAP ON RESET FOR PIC32MX130/230 DEVICES (16 KB RAM, 256 KB FLASH)

Note 1: Memory areas are not shown to scale.

2: The size of this memory region is programmable (see Section 3. "Memory Organization" (DS60001115) in the *"PIC32 Family Reference Manual"*) and can be changed by initialization code provided by end-user development tools (refer to the specific development tool documentation for information).

NOTES:

44-Lead Plastic Thin Quad Flatpack (PT) 10X10X1 mm Body, 2.00 mm Footprint [TQFP]
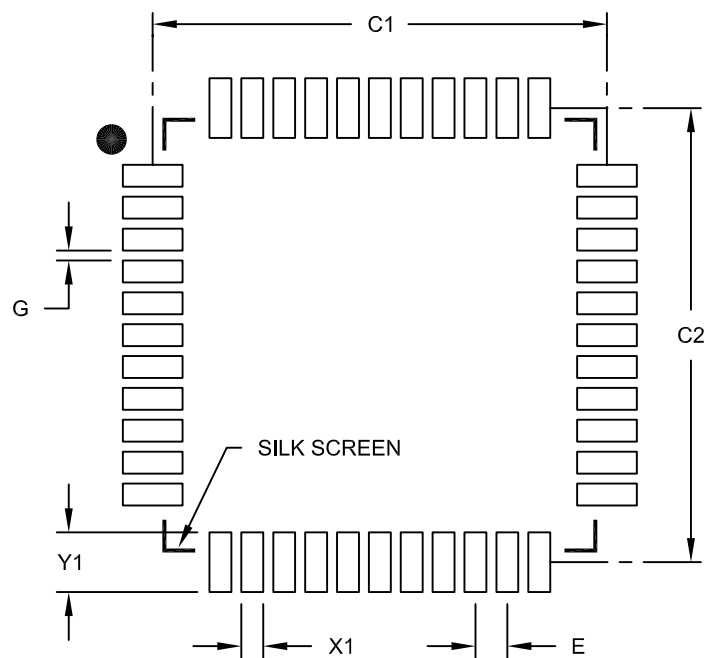
Contact				
Contact Pad Width (X44)	X1			
Contact Pad Length (X44)	Y1		1.50	
Distance Between Pads	G	0.25		

Revision J (April 2016)

This revision includes the following major changes as described in Table A-8, as well as minor updates to text and formatting, which were incorporated throughout the document.

TABLE A-8:   MAJOR SECTION UPDATES

Section	Update Description
" 32-bit Microcontrollers (up to 256 KB Flash and 64 KB SRAM) with Audio and Graphics Interfaces, USB, and Advanced Analog "	The PIC32MX270FDB device and Note 4 were added to TABLE 2: "PIC32MX2XX 28/36/44-pin USB Family Features" .
2.0 "Guidelines for Getting Started with 32-bit MCUs"	EXAMPLE 2-1: "Crystal Load Capacitor Calculation" was updated.
30.0 "Electrical Characteristics"	Parameter DO50a (C$_{SOSC}$) was removed from the Capacitive Loading Requirements on Output Pins AC Characteristics (see Table 30-16).
" Product Identification System "	The device mapping was updated to include type B for Software Targeting.