



MICROCHIP

**PIC18F87K22 Family
Data Sheet**

64/80-Pin, High-Performance,
1-Mbit Enhanced Flash Microcontrollers
with 12-Bit A/D and
nanoWatt XLP Technology

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PIC18F87K22 FAMILY

64/80-Pin, High-Performance, 1-Mbit Enhanced Flash MCUs with 12-Bit A/D and nanoWatt XLP Technology

Low-Power Features:

- Power-Managed modes:
 - Run: CPU on, peripherals on
 - Idle: CPU off, peripherals on
 - Sleep: CPU off, peripherals off
- Two-Speed Oscillator Start-up
- Fail-Safe Clock Monitor
- Power-Saving Peripheral Module Disable (PMD)
- Ultra Low-Power Wake-up
- Fast Wake-up, 1 μ s Typical
- Low-Power WDT, 300 nA Typical
- Ultra Low 50 nA Input Leakage
- Run mode Currents Down to 5.5 μ A, Typical
- Idle mode Currents Down to 1.7 μ A Typical
- Sleep mode Currents Down to Very Low 20 nA, Typical
- RTCC Current Downs to Very Low 700 nA, Typical

Special Microcontroller Features:

- Operating Voltage Range: 1.8V to 5.5V
- On-Chip 3.3V Regulator
- Operating Speed up to 64 MHz
- Up to 128 Kbytes On-Chip Flash Program Memory
- Data EEPROM of 1,024 Bytes
- 4K x 8 General Purpose Registers (SRAM)
- 10,000 Erase/Write Cycle Flash Program Memory, Minimum
- 1,000,000 Erase/write Cycle Data EEPROM Memory, Typical
- Flash Retention: 40 Years, Minimum
- Three Internal Oscillators: LF-INTRC (31 kHz), MF-INTOSC (500 kHz) and HF-INTOSC (16 MHz)
- Self-Programmable under Software Control
- Priority Levels for Interrupts
- 8 x 8 Single-Cycle Hardware Multiplier
- Extended Watchdog Timer (WDT):
 - Programmable period from 4 ms to 4,194s (about 70 minutes)
- In-Circuit Serial Programming™ (ICSP™) via Two Pins
- In-Circuit Debug via Two Pins
- Programmable:
 - BOR
 - LVD

Device	Program Memory		Data Memory		I/O	12-Bit A/D (ch)	CCP/ECCP (PWM)	MSSP		EUSART	Comparators	Timers 8/16-Bit	External Bus	CTMU	RTCC	
	Flash (bytes)	# Single-Word Instructions	SRAM (bytes)	EEPROM (bytes)				SPI	Master I ² C™							
PIC18F65K22	32K	16,383	2K	1K	53	16	5/3	2	Y	Y	2	3	4/4	N	Y	Y
PIC18F66K22	64K	32,768	4K	1K	53	16	7/3	2	Y	Y	2	3	6/5	N	Y	Y
PIC18F67K22	128K	65,536	4K	1K	53	16	7/3	2	Y	Y	2	3	6/5	N	Y	Y
PIC18F85K22	32K	16,383	2K	1K	69	24	5/3	2	Y	Y	2	3	4/4	Y	Y	Y
PIC18F86K22	64K	32,768	4K	1K	69	24	7/3	2	Y	Y	2	3	6/5	Y	Y	Y
PIC18F87K22	128K	65,536	4K	1K	69	24	7/3	2	Y	Y	2	3	6/5	Y	Y	Y

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Peripheral Highlights:

- Up to Ten CCP/ECCP modules:
 - Up to seven Capture/Compare/PWM (CCP) modules
 - Three Enhanced Capture/Compare/PWM (ECCP) modules
- Up to Eleven 8/16-Bit Timer/Counter modules:
 - Timer0 – 8/16-bit timer/counter with 8-bit programmable prescaler
 - Timer1,3 – 16-bit timer/counter
 - Timer2,4,6,8 – 8-bit timer/counter
 - Timer5,7 – 16-bit timer/counter for 64k and 128k parts
 - Timer10,12 – 8-bit timer/counter for 64k and 128k parts
- Three Analog Comparators
- Configurable Reference Clock Output
- Hardware Real-Time Clock and Calendar (RTCC) module with Clock, Calendar and Alarm Functions
- Charge Time Measurement Unit (CTMU):
 - Capacitance measurement for mTouch™ sensing solution
 - Time measurement with 1 ns typical resolution
 - Integrated temperature sensor
- High-Current Sink/Source 25 mA/25 mA (PORTB and PORTC)
- Up to Four External Interrupts
- Two Master Synchronous Serial Port (MSSP) modules:
 - 3/4-wire SPI (supports all four SPI modes)
 - I²C™ Master and Slave modes
- Two Enhanced Addressable USART modules:
 - LIN/J2602 support
 - Auto-Baud Detect (ABD)
- 12-Bit A/D Converter with up to 24 Channels:
 - Auto-acquisition and Sleep operation
 - Differential input mode of operation
- Integrated Voltage Reference

PIC18F87K22 FAMILY

Pin Diagrams – PIC18F6XK22

64-Pin TQFP, QFN



- Note 1:** The ECCP2 pin placement depends on the CCP2MX Configuration bit setting and whether the device is in Microcontroller or Extended Microcontroller mode.
- Note 2:** Not available on the PIC18F65K22 and PIC18F85K22 devices.

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Pin Diagrams – PIC18F8XK22



PIC18F87K22 FAMILY

Table of Contents

1.0	Device Overview	9
2.0	Guidelines for Getting Started with PIC18FXXXKXX Microcontrollers	37
3.0	Oscillator Configurations	43
4.0	Power-Managed Modes	57
5.0	Reset	73
6.0	Memory Organization	87
7.0	Flash Program Memory	111
8.0	External Memory Bus	121
9.0	Data EEPROM Memory	133
10.0	8 x 8 Hardware Multiplier	139
11.0	Interrupts	141
12.0	I/O Ports	165
13.0	Timer0 Module	193
14.0	Timer1 Module	197
15.0	Timer2 Module	209
16.0	Timer3/5/7 Modules	211
17.0	Timer4/6/8/10/12 Modules	223
18.0	Real-Time Clock and Calendar (RTCC)	227
19.0	Capture/Compare/PWM (CCP) Modules	245
20.0	Enhanced Capture/Compare/PWM (ECCP) Module	259
21.0	Master Synchronous Serial Port (MSSP) Module	281
22.0	Enhanced Universal Synchronous Asynchronous Receiver Transmitter (EUSART)	327
23.0	12-Bit Analog-to-Digital Converter (A/D) Module	351
24.0	Comparator Module	367
25.0	Comparator Voltage Reference Module	375
26.0	High/Low-Voltage Detect (HLVD)	379
27.0	Charge Time Measurement Unit (CTMU)	385
28.0	Special Features of the CPU	403
29.0	Instruction Set Summary	431
30.0	Development Support	481
31.0	Electrical Characteristics	485
32.0	Packaging Information	525
	Appendix A: Revision History	533
	Appendix B: Migration From PIC18F87J11 and PIC18F8722 to PIC18F87K22	534
	Index	535
	The Microchip Web Site	547
	Customer Change Notification Service	547
	Customer Support	547
	Reader Response	548
	Product Identification System	549

PIC18F87K22 FAMILY

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