

PIC12F(HV)752 and PIC16F(HV)753 Microcontrollers

8/14-pin MCUs for Closed-Loop Control Applications

Summary

Engineers are faced with the challenge of reducing system costs, increasing performance and efficiency while also increasing application requirements. This is especially true for newer LED lighting and power control applications. The PIC16F(HV)75X product family of microcontrollers brings the intelligent analog and core independent peripherals to the popular mid-range architecture. These MCUs will not only fit in various general purpose applications, but are also well suited for specific applications like LED lighting, ballast control, battery chargers, power supplies, etc.

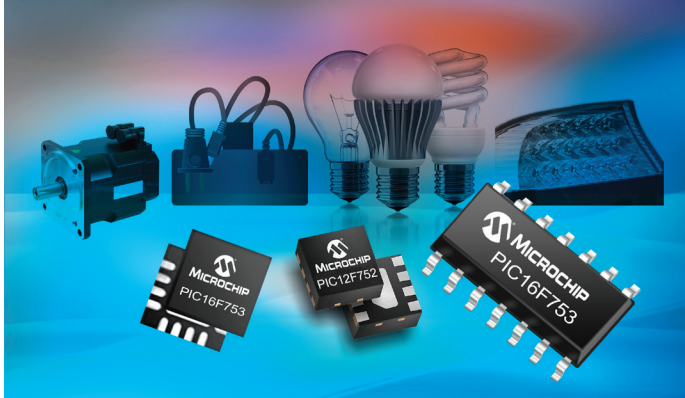
The 8-pin and 14-pin PIC16F(HV)75X family offers up to 3.5 KB of self read-write program memory, up to 128B of RAM, 10-bit ADC, 5-bit DAC, fast comparators, complementary output generator, capture compare and PWM module and multiple other features to support a wide variety of applications. The PIC16F(HV)753 adds a 9-bit DAC, op amp and slope compensation circuit which helps stabilize frequency in switch mode power supply applications. The PIC16HV75X, which is the high-voltage variant, incorporates a shunt regulator that allows operation from 2V to an unspecified, user-defined maximum voltage level. This high-voltage variant is ideal for cost-sensitive applications with high-voltage power rails.

Product Highlights

PIC16F(HV)75X

- **Reliable Mid-Range PIC® MCU Architecture**
Based on Microchip's mature 8-bit core to provide features like Power-On Reset (POR), Brown-Out Reset (BOR), Interrupts and Watch Dog Timer (WDT) to enable highly efficient circuits.
- **Self Read-Write Flash Program Memory**
Serves as a low-cost alternative to data EEPROM. Applications that would best benefit from this feature include those that require remote updates or those needing to store system data or look-up tables.
- **Analog Peripherals**
Offering up to 8 channels, 10-bit ADC can be used to implement various sensors and mTouch® applications. The fast comparators can be used to implement efficient switching circuits.
- **Complementary Output Generator (COG)**
Provides non-overlapping complementary waveform to enable synchronous switching and also delivers enhanced features like deadband control, auto shutdown, auto reset, phase control and blanking control.
- **Digital-to-Analog Converter**
The 5-bit DAC offers flexibility in output voltage range selection. The VDD or the external VREF pin can act as the reference to the circuit.
- **Capture Compare and PWM**
This module can be used to implement variety of motor control and lighting applications.
- **High Voltage VDD Support (HV variants only)**
Allows for connection to an application that has high-voltage rails without requiring an external regulator.
- **eXtreme Low Power (XLP)**

Low-Cost PIC® MCU with Intelligent Analog Small Form Factor



PIC16F(HV)753 Only

- **Slope Compensation**
Internal circuit designed to help stabilize frequency for fixed frequency, continuous current and current mode switched power supplies.
- **9-bit Digital-to-Analog Converter (DAC)**
Offers internal/external output voltage connections, output voltage range and reference selection.
- **Operational Amplifier (op amps)**
Offers a 3 MHz GBWP with three terminal operations and internal connections to DAC and FVR.

Applications

- LED/lamp ballast lighting
- LCD backlighting
- Switch mode power supply/power factor correction
- Battery monitoring and charging



MICROCHIP

The PIC16F75x family provides a low-cost development experience from code creation to integration into the end application.

- **Develop Your Code:** Using MPLAB® X IDE with the integrated MPLAB XC compiler allows you to develop your code and simulate your application with zero initial investment.
- **Program and Debug:** The PIC16F75X family supports In-Circuit Debug functionality without the use of an additional header. Connect the PICKIT™ 3, MPLAB ICD 3 (In-Circuit Debugger) to get started.

Development Tools from Microchip

Part Number	Development Tool
DV164130	PICKIT™ 3 Starter Kit
DM163045	PICDEM™ Lab Development Kit (with PICKIT 3)
DM164137	Curiosity Development Board

PIC16F(HV)75X Microcontrollers

Device	Package Pins	I/Os	Flash (KB)	Data RAM (B)	Op Amp	10-bit ADC Ch.	Comp	COG	DAC	CCP	Timers (8/16-bit)	Operating Voltage (V)	Packages	XLP
PIC12F752	8	6	1.75	64	–	4	2	✓	5-bit	1	3/1	2–5.5	SOIC, PDIP, 3 × 3 DFN	✓
PIC12HV752	8	6	1.75	64	–	4	2	✓	5-bit	1	3/1	2–user defined	SOIC, PDIP, 3 × 3 DFN	✓
PIC16F753	14	12	3.5	128	✓	8	2	✓	9-bit	1	3/1	2–5.5	SOIC, PDIP, TSSOP, 4 × 4 DFN	✓
PIC16HV753	14	12	3.5	128	✓	8	2	✓	9-bit	1	3/1	2–user defined	SOIC, PDIP, TSSOP, 4 × 4 DFN	✓

Additional Information

- *PIC12F(HV)752 Data Sheet*, DS40001576
- *PIC16F(HV)753 Data Sheet*, DS40001709
- *High-Power LED Flashlight Reference Design*, DS40001625
- *Designing with HV Microcontrollers*, AN01035
- *8-bit PIC Microcontroller Solutions Brochure*, DS30009630
- *Corporate Focus Product Selector Guide*, DS00001308
- *Quick Guide to Microchip Development Tools Brochure*, DS50001894

Learn more about Microchip's lighting solutions: www.microchip.com/lighting

Sample/Purchasing Information

- Online Sampling: sample.microchip.com
- Online Purchasing: www.microchipdirect.com



Visit our web site for additional product information and to locate your local sales office.

Microchip Technology Inc. • 2355 W. Chandler Blvd. • Chandler, AZ 85224-6199

Microcontrollers • Digital Signal Controllers • Analog • Memory • Wireless