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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

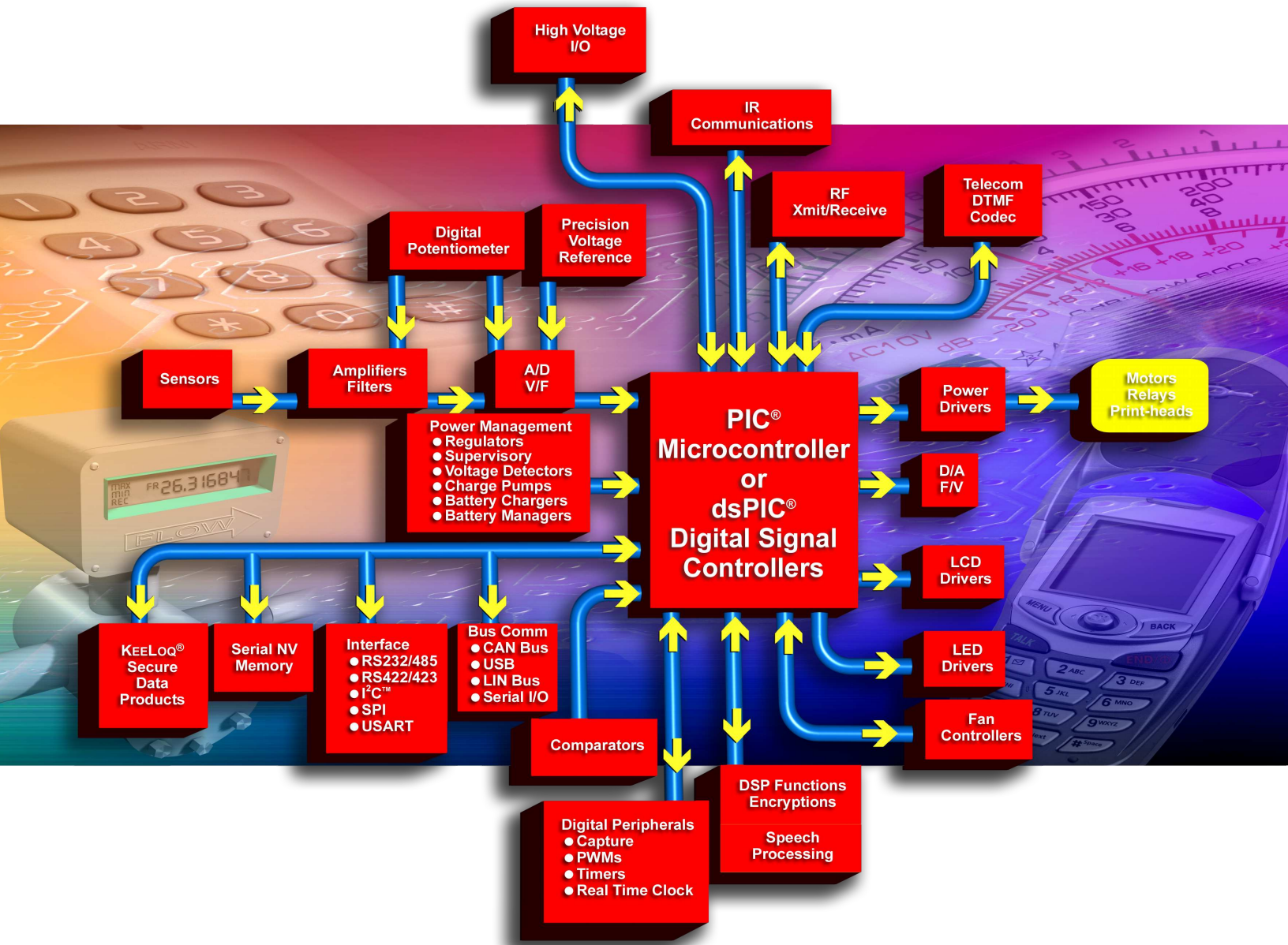
Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





# 2006 Product Selector Guide



# Product Profile

## **8-bit PIC® Microcontrollers**

Microchip's PIC® family of microcontrollers combine high-performance, low cost and small package size to offer the best price/performance ratio in the industry. Based on a powerful RISC core, these 8-bit PIC® microcontrollers fall into three product architecture categories, providing a variety of options for any application requirement:

- **Baseline 8-bit architecture:** 12-bit instruction set, 6-44 pin count, 384-3.5 Kbytes program memory, up to 5 MIPS
- **Mid-Range 8-bit architecture:** 14-bit instruction set, 8-68 pin count, 896-14 Kbytes program memory, up to 5 MIPS
- **High-Performance (PIC18) 8-bit architecture:** 16-bit instruction set, 18-100 pin count, 8K-128 Kbytes program memory, up to 16 MIPS

The common architecture provides users with an easy migration path from 6 to 100 pins among all families with little or no code change required. Advanced features available are:

- Sophisticated timing peripherals
- Embedded analog peripherals including A/D and D/A converters, comparators, PBOR, PLVD, DAC, V<sub>REF</sub>, Op Amps and PSMC
- Communications peripherals (I<sup>2</sup>C™/SPI/USB/CAN and USARTs)
- Low-power, single-chip RF solutions targeting RF connectivity for high-volume embedded control applications
- Battery management solutions
- Flexible programming options including In-Circuit Serial Programming™ (ICSP™) technology, self-programming (Enhanced Flash), One-Time-Programmable (OTP), QTP, SQTP and ROM

## **16-bit PIC® Microcontrollers**

The PIC24 microcontrollers build upon the high performance, wide selection of peripherals, Flash memory sizes and packaging choices found in the 8-bit PIC18 family. The PIC24 architecture, paired with the optimized MPLAB® C30 C Compiler, provides the high throughput and C code density needed to achieve system performance goals and product launch schedules.

- Leadership 16-bit microcontroller performance and C code efficiency
- Extension of the 8-bit PIC18 microcontroller performance, memory and peripherals
- Easy migration path to dsPIC® digital signal controllers with over 40 MIPS, DSP capability and MPLAB® IDE compatibility

## **16-bit dsPIC® Digital Signal Controllers (DSC)**

Microchip's 16-bit high-performance digital signal controllers combine in a single core the best features of microcontrollers with the best features of DSPs. These dsPIC DSC devices reach speeds of up to 40 MIPS, are very efficient for C programming, and have Flash, data EEPROM, powerful peripherals and a variety of software libraries that allow high performance embedded solutions to be designed effortlessly and rapidly. With a familiar microcontroller "feel", tools and design environment, these dsPIC DSCs target applications, such as motor control and power conversion, speech and audio, internet and modem connectivity, telecom, encryption, high-speed sensing and automotive applications.

## **Stand-Alone Analog & Interface Products**

Microchip offers a broad portfolio of analog and related products:

- **Linear and Mixed-Signal.** ADCs/DACs, digital potentiometers, op amps and comparators.
- **Power Management.** LDO and switching regulators, charge pumps, voltage references, CPU/system supervisors and voltage detectors, battery chargers and power MOSFET drivers.
- **Thermal Management.** Temperature sensors (logic output, voltage output, and serial output), brushless DC fan controllers and fan fault detectors.
- **Interface.** Peripheral products supporting industry-standard networking protocols like CAN, LIN and infrared (including IrDA® Standard infrared), as well as products that provide embedded system input/output expansion capability.

## **Secure Data Products**

Microchip's KEELoq® code hopping algorithm combines high security, a small package outline and a very low cost to make this an ideal solution for unidirectional RKE systems. The KEELoq code hopping technology creates a high degree of security using a long code word length together with encryption and synchronization techniques.

## **Memory Products**

Microchip offers one of the broadest selections of serial EEPROMs in densities from 128 bits to 1 Mbit, with operating voltages down to 1.8V, in all popular bus protocols (I<sup>2</sup>C™, Microwire and SPI compatible). They are available in all standard temperature ranges from -40°C to +125°C, up to 16 Kbits in 5-lead SOT-23 and up to 256 Kbits in 8-lead MSOP

## **Development Systems**

Microchip offers a full range of microcontroller development systems, including the MPLAB® ICE 2000 and ICE 4000 in-circuit emulators; MPLAB Integrated Development Environment; MPLAB C18 and C30 Compiler; the MPLAB ICD In-Circuit Debugger, MPLAB PM3 full-featured device programmer; PICSTART® low-cost development system; the PICkit™ 2 Flash Starter Kit, SEEVAL® Serial EEPROM Evaluation Kit and various demonstration boards. Microchip has shipped more than 432,000 development systems worldwide.

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## CURRENT 16-BIT CONTROLLER FAMILY PRODUCTS

Product	Program Memory (Kbytes)	Self-Write	Data EEPROM (Bytes)	RAM (Bytes)	I/O Pins	Packages	A/D 12-Bit 200 ksps	A/D 10-Bit 1 Msps	Timer 16-Bit	Input Cap	Output Comp/Std PWM	Motor Control PWM	QEI	UART	SPI	I <sup>2</sup> C™	CAN	Codec Interface
dsPIC30F3014	24	✓	1024	2048	30	40P, 44PT, 44ML (8x8)	13 ch	—	3	2	2	—	—	2	1	1	—	—
dsPIC30F4013	48	✓	1024	2048	30	40P, 44PT, 44ML (8x8)	13 ch	—	5	4	4	—	—	2	1	1	1	AC97, I <sup>2</sup> S
dsPIC30F5011	66	✓	1024	4096	52	64PT	16 ch	—	5	8	8	—	—	2	2	1	2	AC97, I <sup>2</sup> S
dsPIC30F5013	66	✓	1024	4096	68	80PT	16 ch	—	5	8	8	—	—	2	2	1	2	AC97, I <sup>2</sup> S
dsPIC30F6011A	132	✓	2048	6144	52	64PF, 64PT	16 ch	—	5	8	8	—	—	2	2	1	2	—
dsPIC30F6012A	144	✓	4096	8192	52	64PF, 64PT	16 ch	—	5	8	8	—	—	2	2	1	2	AC97, I <sup>2</sup> S
dsPIC30F6013A	132	✓	2048	6144	68	80PF, 80PT	16 ch	—	5	8	8	—	—	2	2	1	2	—
dsPIC30F6014A	144	✓	4096	8192	68	80PF, 80PT	16 ch	—	5	8	8	—	—	2	2	1	2	AC97, I <sup>2</sup> S
dsPIC30F2010	12	✓	1024	512	20	28SO, 28SP, 28MM (6x6)	—	6 ch	3	4	2	6	✓	1	1	1	—	—
dsPIC30F3010	24	✓	1024	1024	20	28SO, 28SP, 44ML (8x8)	—	6 ch	5	4	2	6	✓	1	1	1	—	—
dsPIC30F4012	48	✓	1024	2048	20	28SO, 28SP, 44ML (8x8)	—	6 ch	5	4	2	6	✓	1	1	1	1	—
dsPIC30F3011	24	✓	1024	1024	30	40P, 44PT, 44ML (8x8)	—	9 ch	5	4	4	6	✓	2	1	1	—	—
dsPIC30F4011	48	✓	1024	2048	30	40P, 44PT, 44ML (8x8)	—	9 ch	5	4	4	6	✓	2	1	1	1	—
dsPIC30F5015	66	✓	1024	2048	52	64PT	—	16 ch	5	4	4	8	✓	1	2	1	1	—
NEW dsPIC30F6015	144	✓	4096	8192	52	64PT	—	16 ch	5	8	8	8	✓	2	2	1	1	—
NEW dsPIC30F5016	66	✓	1024	2048	68	80PT	—	16 ch	5	4	4	8	✓	1	2	1	1	—
dsPIC30F6010A	144	✓	4096	8192	68	80PF, 80PT	—	16 ch	5	8	8	8	✓	2	2	1	2	—
dsPIC30F2011	12	✓	0	1024	12	18SO, 18P, 28ML (6x6)	8 ch	—	3	2	2	—	—	1	1	1	—	—
dsPIC30F3012	24	✓	1024	2048	12	18SO, 18P, 44ML (8x8)	8 ch	—	3	2	2	—	—	1	1	1	—	—
dsPIC30F2012	12	✓	0	1024	20	28SO, 28SP, 28ML (6x6)	10 ch	—	3	2	2	—	—	1	1	1	—	—
dsPIC30F3013	24	✓	1024	2048	20	28SO, 28SP, 44ML (8x8)	10 ch	—	3	2	2	—	—	2	1	1	—	—

Abbreviations are found on the last page of the Selector Guide.

dsPIC <sup>®</sup> Digital Signal Controller (DSC) Family (continued)																		
Product	Program Memory (Kbytes)	Self-Write	RAM (Kbytes)	DMA	I/O Pins	Packages	A/D Config. as 10-Bit @ 1.1 Msps or 12-Bit @ 500 ksps <sup>(1,2)</sup>	Timer 16-Bit	Input Cap	Output Comp/Std PWM	Motor Control PWM	QEI	UART	SPI	I <sup>2</sup> C™	ECAN™ Technology	Codec Interface	
<b>dsPIC33F General Purpose Family: 40 MIPS, V<sub>DD</sub> = 3.0V-3.6V</b>																		
<b>NEW</b>	dsPIC33FJ64GP206	64	✓	8	8 ch	53	64PT	1 A/D, 18 ch, 4 S/H max	9	8	8	—	—	2	2	1	0	1
<b>NEW</b>	dsPIC33FJ64GP310*	64	✓	16	8 ch	85	100PT, 100PF	1 A/D, 32 ch, 4 S/H max	9	8	8	—	—	2	2	2	0	1
<b>NEW</b>	dsPIC33FJ64GP706	64	✓	16	8 ch	53	64PT	2 A/D, 18 ch, 8 S/H max	9	8	8	—	—	2	2	2	2	1
<b>NEW</b>	dsPIC33FJ64GP708	64	✓	16	8 ch	69	80PT	2 A/D, 24 ch, 8 S/H max	9	8	8	—	—	2	2	2	2	1
<b>NEW</b>	dsPIC33FJ64GP710	64	✓	16	8 ch	85	100PT, 100PF	2 A/D, 32 ch, 8 S/H max	9	8	8	—	—	2	2	2	2	1
<b>NEW</b>	dsPIC33FJ128GP706	128	✓	16	8 ch	53	64PT	2 A/D, 18 ch, 8 S/H max	9	8	8	—	—	2	2	2	2	1
<b>NEW</b>	dsPIC33FJ128GP708	128	✓	16	8 ch	69	80PT	2 A/D, 24 ch, 8 S/H max	9	8	8	—	—	2	2	2	2	1
<b>NEW</b>	dsPIC33FJ128GP710*	128	✓	16	8 ch	85	100PT, 100PF	2 A/C, 32 ch, 8 S/H max	9	8	8	—	—	2	2	2	2	1
<b>NEW</b>	dsPIC33FJ256GP506	256	✓	16	8 ch	53	64PT	1 A/D, 18 ch, 4 S/H max	9	8	8	—	—	2	2	2	1	1
<b>NEW</b>	dsPIC33FJ256GP710	256	✓	30	8 ch	85	100PT, 100PF	2 A/D, 32 ch, 8 S/H max	9	8	8	—	—	2	2	2	2	1
<b>dsPIC33F Motor Control Family: 40 MIPS, V<sub>DD</sub> = 3.0V-3.6V</b>																		
<b>NEW</b>	dsPIC33FJ64MC506*	64	✓	8	8 ch	53	64PT	1 A/D, 16 ch, 4 S/H max	9	8	8	8	✓	2	2	2	1	—
<b>NEW</b>	dsPIC33FJ64MC508	64	✓	8	8 ch	69	80PT	1 A/D, 18 ch, 4 S/H max	9	8	8	8	✓	2	2	2	1	—
<b>NEW</b>	dsPIC33FJ64MC510*	64	✓	8	8 ch	85	100PT, 100PF	1 A/D, 24 ch, 4 S/H max	9	8	8	8	✓	2	2	2	1	—

NOTE 1: dsPIC33F devices with 2 A/D converters can achieve 2.2 Msps conversion rate.  
 2: Each A/D configured as 10-bit has 4 S/H. Each A/D configured as 12-bit has 1 S/H.  
 \*Contact Microchip Technology for availability date.  
 Abbreviations are found on the last page of the Selector Guide.

## Controller Family

### dsPIC® Digital Signal Controller (DSC) Family (continued)

Product	Program Memory (Kbytes)	Self-Write	RAM (Kbytes)	DMA	I/O Pins	Packages	A/D Config. as 10-Bit @ 1.1 Msps or 12-Bit @ 500 ksps <sup>(1,2)</sup>	Timer 16-Bit	Input Cap	Output Comp/Std PWM	Motor Control PWM	QEI	UART	SPI	I <sup>2</sup> C™	ECAN™ Technology	Codec Interface	
<b>dsPIC33F Motor Control Family: 40 MIPS, V<sub>DD</sub> = 3.0V-3.6V (continued)</b>																		
<b>NEW</b>	dsPIC33FJ64MC706	64	✓	16	8 ch	53	64PT	2 A/D, 16 ch, 8 S/H max	9	8	8	8	✓	2	2	2	1	—
<b>NEW</b>	dsPIC33FJ64MC710	64	✓	16	8 ch	85	100PT, 100PF	2 A/D, 24 ch, 8 S/H max	9	8	8	8	✓	2	2	2	2	—
<b>NEW</b>	dsPIC33FJ128MC506*	128	✓	8	8 ch	53	64PT	1 A/D, 16 ch, 4 S/H max	9	8	8	8	✓	2	2	2	1	—
<b>NEW</b>	dsPIC33FJ128MC706	128	✓	16	8 ch	53	64PT	2 A/D, 16 ch, 8 S/H max	9	8	8	8	✓	2	2	2	1	—
<b>NEW</b>	dsPIC33FJ128MC708	128	✓	16	8 ch	69	80PT	2 A/D, 18 ch, 8 S/H max	9	8	8	8	✓	2	2	2	1	—
<b>NEW</b>	dsPIC33FJ128MC710*	128	✓	16	8 ch	85	100PT, 100PF	2 A/D, 24 ch, 8 S/H max	9	8	8	8	✓	2	2	2	2	—
<b>NEW</b>	dsPIC33FJ256MC710	256	✓	30	8 ch	85	100PT, 100PF	2 A/D, 24 ch, 8 S/H max	9	8	8	8	✓	2	2	2	2	—

**NOTE 1:** dsPIC33F devices with 2 A/D converters can achieve 2.2 Msps conversion rate.

**NOTE 2:** Each A/D configured as 10-bit has 4 S/H. Each A/D configured as 12-bit has 1 S/H.

\*Contact Microchip Technology for availability date.

Abbreviations are found on the last page of the Selector Guide.

### PIC24 16-Bit Microcontroller (MCU) Family

Product	Program Memory (Kbytes/ K words)	Self-Write	RAM (Kbytes)	I/O Pins	Packages	Analog		Digital								IntOSC	PMP	nW	Other Features	
						ADC	Comp.	Timers 16-Bit	Input Cap	Output Comp/PWM	RTCC	UART w/IrDA®	SPI	I <sup>2</sup> C™	ECAN™ Technology					
<b>PIC24FJ Family 16-Bit Flash MCUs: 16 MIPS, V<sub>DD</sub> = 2.0V-3.6V</b>																				
<b>NEW</b>	PIC24FJ64GA006	64	✓	8	53	64PT	16x10-bit 500 ksps	2	5	5	5	✓	2	2	2	—	8 MHz 32 kHz	✓	✓	JTAG
<b>NEW</b>	PIC24FJ64GA008	64	✓	8	69	80PT	16x10-bit 500 ksps	2	5	5	5	✓	2	2	2	—	8 MHz 32 kHz	✓	✓	JTAG
<b>NEW</b>	PIC24FJ64GA010	64	✓	8	85	100PT, 100PF	16x10-bit 500 ksps	2	5	5	5	✓	2	2	2	—	8 MHz 32 kHz	✓	✓	JTAG

**NOTE:** PIC24H devices with 2 A/D converters can achieve 2.2 Msps conversion rate.

\*Contact Microchip Technology for availability date.

Abbreviations are found on the last page of the Selector Guide.

**PIC24 16-Bit Microcontroller (MCU) Family (continued)**

Product	Program Memory (Kbytes/ K words)	Self-Write	RAM (Kbytes)	I/O Pins	Packages	Analog		Digital								IntOSC	PMP	nW	Other Features	
						ADC	Comp.	Timers 16-Bit	Input Cap	Output Comp/PWM	RTCC	UART w/IrDA®	SPI	I <sup>2</sup> C™	ECAN™ Technology					
<b>PIC24FJ Family 16-Bit Flash MCUs: 16 MIPS, V<sub>DD</sub> = 2.0V-3.6V (continued)</b>																				
<b>NEW</b>	PIC24FJ96GA006	96	✓	8	53	64PT	16x10-bit 500 ksps	2	5	5	5	✓	2	2	2	—	8 MHz 32 kHz	✓	✓	JTAG
<b>NEW</b>	PIC24FJ96GA008	96	✓	8	69	80PT	16x10-bit 500 ksps	2	5	5	5	✓	2	2	2	—	8 MHz 32 kHz	✓	✓	JTAG
<b>NEW</b>	PIC24FJ96GA010	96	✓	8	85	100PT, 100PF	16x10-bit 500 ksps	2	5	5	5	✓	2	2	2	—	8 MHz 32 kHz	✓	✓	JTAG
<b>NEW</b>	PIC24FJ128GA006	128	✓	8	53	64PT	16x10-bit 500 ksps	2	5	5	5	✓	2	2	2	—	8 MHz 32 kHz	✓	✓	JTAG
<b>NEW</b>	PIC24FJ128GA008	128	✓	8	69	80PT	16x10-bit 500 ksps	2	5	5	5	✓	2	2	2	—	8 MHz 32 kHz	✓	✓	JTAG
<b>NEW</b>	PIC24FJ128GA010	128	✓	8	85	100PT, 100PF	16x10-bit 500 ksps	2	5	5	5	✓	2	2	2	—	8 MHz 32 kHz	✓	✓	JTAG
<b>PIC24HJ Family 16-Bit Flash MCUs: 40 MIPS, V<sub>DD</sub> = 3.0V-3.6V</b>																				
<b>NEW</b>	PIC24HJ64GP206	64	✓	8	53	64PT	18x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	1	—	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)
<b>NEW</b>	PIC24HJ64GP210	64	✓	8	85	100PT, 100PF	32x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	—	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)
<b>NEW</b>	PIC24HJ64GP506*	64	✓	8	53	64PT	18x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	1	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)
<b>NEW</b>	PIC24HJ64GP510*	64	✓	8	85	100PT, 100PF	32x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	1	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)

**NOTE:** PIC24H devices with 2 A/D converters can achieve 2.2 Msps conversion rate.

\*Contact Microchip Technology for availability date.

Abbreviations are found on the last page of the Selector Guide.

<b>PIC24 16-Bit Microcontroller (MCU) Family (continued)</b>																				
Product	Program Memory (Kbytes/ K words)	Self-Write	RAM (Kbytes)	I/O Pins	Packages	Analog		Digital								IntOSC	PMP	nW	Other Features	
						ADC	Comp.	Timers 16-Bit	Input Cap	Output Comp/PWM	RTCC	UART w/IrDA®	SPI	I <sup>2</sup> C™	ECAN™ Technology					
<b>PIC24HJ Family 16-Bit Flash MCUs: 40 MIPS, VDD = 3.0V-3.6V (continued)</b>																				
<b>NEW</b>	PIC24HJ128GP206	128	✓	8	53	64PT	18x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	—	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)
<b>NEW</b>	PIC24HJ128GP306*	128	✓	16	53	64PT	18x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	—	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)
<b>NEW</b>	PIC24HJ128GP310*	128	✓	16	85	100PT, 100PF	32x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	—	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)
<b>NEW</b>	PIC24HJ128GP506	128	✓	8	53	64PT	18x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	1	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)
<b>NEW</b>	PIC24HJ256GP206	256	✓	16	53	64PT	18x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	—	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)
<b>NEW</b>	PIC24HJ256GP610	256	✓	16	85	100PT, 100PF	(2) 32x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	2	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)

**NOTE:** PIC24H devices with 2 A/D converters can achieve 2.2 Msps conversion rate.  
 \*Contact Microchip Technology for availability date.  
 Abbreviations are found on the last page of the Selector Guide.

## FUTURE 16-BIT CONTROLLER FAMILY PRODUCTS

Product	Program Memory (Kbytes)	Self-Write	RAM (Bytes)	Packages	A/D 10-Bit 2 Msps	# of S/H	High-Speed SMPS PWM (10-Bit @ 937 kHz)	High-Speed Analog Comp.	Timer 16-Bit	Input Cap	Output Comp/Std PWM	UART	SPI	I <sup>2</sup> C™
<b>dsPIC30F SMPS (Switched Mode power Supplies and Other Applications): 30 MIPS, V<sub>DD</sub> = 2.5V-5.5V</b>														
dsPIC30F1010	6	✓	256	28SP, 28SO, 28MM	8 ch	2	2 x 2	2	2	—	1	1	1	1
dsPIC30F2020	12	✓	512	28SP, 28SO, 28MM	8 ch	4	4 x 2	4	3	1	2	1	1	1
dsPIC30F2023	12	✓	512	44PT, 44ML	12 ch	4	4 x 2	4	3	1	2	1	1	1

Abbreviations are found on the last page of the Selector Guide.

Product	Program Memory (Kbytes)	Self-Write	RAM (Kbytes)	DMA	I/O Pins	Packages	A/D Config. as 10-Bit @ 1.1 Msps or 12-bit @ 500 ksps	Timer 16-Bit	Input Cap	Output Comp/Std PWM	Motor Control PWM	QEI	UART	SPI	I <sup>2</sup> C™	ECAN™ Technology	Codec Interface
<b>dsPIC33F General Purpose Family: 40 MIPS, V<sub>DD</sub> = 3.0V-3.6V</b>																	
dsPIC33FJ12GP201	12	✓	1	—	13	18P, 18SO, 20SS	1 A/D, 10 ch, 4 S/H max	3	4	2	—	—	1	1	1	—	—
dsPIC33FJ12GP202	12	✓	1	—	21	28SP, 28SO, 28SS, 28ML	1 A/D, 10 ch, 4 S/H max	3	4	2	—	—	1	1	1	—	—
dsPIC33FJ64GP306	64	✓	16	8 ch	53	64PT	1 A/D, 18 ch, 4 S/H max	9	8	8	—	—	2	2	2	—	1
dsPIC33FJ128GP206	128	✓	8	8 ch	53	64PT	1 A/D, 18 ch, 4 S/H max	9	8	8	—	—	2	2	1	—	1
dsPIC33FJ128GP306	128	✓	16	8 ch	53	64PT	1 A/D, 18 ch, 4 S/H max	9	8	8	—	—	2	2	2	—	1
dsPIC33FJ128GP310	128	✓	16	8 ch	85	100PT, 100PF	1 A/D, 32 ch, 4 S/H max	9	8	8	—	—	2	2	2	—	1
dsPIC33FJ256GP510	256	✓	16	8 ch	85	100PT, 100PF	1 A/D, 32 ch, 4 S/H max	9	8	8	—	—	2	2	2	1	1
<b>dsPIC33F Motor Control Family: 40 MIPS, V<sub>DD</sub> = 3.0V-3.6V</b>																	
dsPIC33FJ12MC201	12	✓	1	—	15	20SP, 20SO, 20SS	1 A/D, 10 ch, 4 S/H max	3	4	2	6	1	1	1	1	—	—
dsPIC33FJ12MC202	12	✓	1	—	21	28SP, 28SO, 28SS, 28ML	1 A/D, 10 ch, 4 S/H max	3	4	2	6	1	1	1	1	—	—
dsPIC33FJ128MC510	128	✓	8	8 ch	85	100PT, 100PF	1 A/D, 24 ch, 4 S/H max	9	8	8	8	✓	2	2	2	1	—
dsPIC33FJ256MC510	256	✓	16	8 ch	85	100PT, 100PF	1 A/D, 16 ch, 4 S/H max	9	8	8	8	✓	2	2	2	1	—

NOTE 1: dsPIC33F devices with 2 A/D converters can achieve 2.2 Msps conversion rate.

NOTE 2: Each A/D configured as 10-bit has 4 S/H. Each A/D configured as 12-bit has 1 S/H.

Abbreviations are found on the last page of the Selector Guide.

# Controller Family

PIC24 16-Bit Microcontroller (MCU) Family																			
Product	Program Memory (Kbytes)	Self-Write	RAM (Kbytes)	I/O Pins	Packages	Analog		Digital								IntOSC	PMP	nW	Other Features
						ADC	Comp.	Timers 16-Bit	Input Cap	Output Comp/PWM	RTCC	UART w/IrDA®	SPI	I <sup>2</sup> C™	Peripheral-to-Pin Map				
<b>PIC24FJ Family 16-Bit Flash MCUs: 16 MIPS, V<sub>DD</sub> = 2.0V-3.6V</b>																			
PIC24FJ32GA002	32	✓	8	21	28SP, 28SO, 28ML	10x10-bit 500 ksps	2	5	5	5	✓	2	2	2	✓	8 MHz 32 kHz	✓	✓	JTAG
PIC24FJ64GA002	64	✓	8	21	28SP, 28SO, 28ML	10x10-bit 500 ksps	2	5	5	5	✓	2	2	2	✓	8 MHz 32 kHz	✓	✓	JTAG
PIC24FJ32GA004	32	✓	8	35	44ML, 44PT	13x10-bit 500 ksps	2	5	5	5	✓	2	2	2	✓	8 MHz 32 kHz	✓	✓	JTAG
PIC24FJ64GA004	64	✓	8	35	44ML, 44PT	13x10-bit 500 ksps	2	5	5	5	✓	2	2	2	✓	8 MHz 32 kHz	✓	✓	JTAG
<b>PIC24HJ Family 16-Bit Flash MCUs: 40 MIPS, V<sub>DD</sub> = 3.0V-3.6V</b>																			
PIC24HJ12GP201	12	✓	1	13	18P, 18SO, 20SS	10x10-bit 1.1 Msps or 12-bit 500 ksps	—	3	4	2	—	1	1	1	—	8 MHz 32 kHz	—	✓	
PIC24HJ12GP202	12	✓	1	21	28SP, 28SO, 28SS, 28ML	10x10-bit 1.1 Msps or 12-bit 500 ksps	—	3	4	2	—	1	1	1	—	8 MHz 32 kHz	—	✓	JTAG
PIC24HJ128GP210	128	✓	8	85	100PT, 100PF	32x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	—	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)
PIC24HJ128GP510	128	✓	8	85	100PT, 100PF	32x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	1	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)
PIC24HJ256GP210	256	✓	18	85	100PT, 100PF	32x10-bit 1.1 Msps or 12-bit 500 ksps	—	9	8	8	—	2	2	2	2	8 MHz 32 kHz	—	✓	JTAG, DMA (8 ch)

Abbreviations are found on the last page of the Selector Guide.

## CURRENT ANALOG/INTERFACE PRODUCTS

Lead-free versions of many devices are currently offered. Check Microchip's web site for availability.

THERMAL MANAGEMENT PRODUCTS – Temperature Sensors							
Part #	Typical Accuracy (°C)	Maximum Accuracy @ 25°C (°C)	Maximum Temperature Range (°C)	Vcc Range (V)	Maximum Supply Current (µA)	Features	Packages
<b>Logic Output Temperature Sensors</b>							
TC6501	±0.5	±3	-55 to +125	+2.7 to +5.5	40	Cross to MAX6501, Open-drain	5-Pin SOT-23A
TC6502	±0.5	±3	-55 to +125	+2.7 to +5.5	40	Cross to MAX6502, Push-pull	5-Pin SOT-23A
TC6503	±0.5	±3	-55 to +125	+2.7 to +5.5	40	Cross to MAX6503, Open-drain	5-Pin SOT-23A
TC6504	±0.5	±3	-55 to +125	+2.7 to +5.5	40	Cross to MAX6504, Push-pull	5-Pin SOT-23A
TC620	±1	±3	-40 to +125	+4.5 to +18	400	Two resistor-programmable trip points	8-Pin PDIP, 8-Pin SOIC
TC621	<b>Note 1</b>	<b>Note 1</b>	-40 to +85	+4.5 to +18	400	Requires external thermistor, resistor-programmable trip points	8-Pin PDIP, 8-Pin SOIC
TC622	±1	±5	-40 to +125	+4.5 to +18	600	Dual output, TO-220 for heat sink mounting, resistor-programmable trip points	8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220
TC623	±1	±3	-40 to +125	+2.7 to +4.5	250	Two resistor-programmable trip points	8-Pin PDIP, 8-Pin SOIC
TC624	±1	±5	-40 to +125	+2.7 to +4.5	300	Dual output, resistor-programmable trip points	8-Pin PDIP, 8-Pin SOIC
<b>Voltage Output Temperature Sensors</b>							
MCP9700	±1	±4	-40 to +125	+2.3 to +5.5	12	Linear Active Thermistor™ IC, Temperature slope: 10 mV/°C	3-pin TO-92, 5-pin SC-70
MCP9701	±1	±4	-10 to +125	+3.1 to +5.5	12	Linear Active Thermistor™ IC, Temperature slope: 19.53 mV/°C, cross to MAX6612	3-pin TO-92, 5-pin SC-70
MCP9700A	±1	±2	-40 to +125	+2.3 to +5.5	12	Linear Active Thermistor™ IC, Temperature slope: 10 mV/°C	3-pin TO-92, 5-pin SC-70
MCP9701A	±1	±2	-40 to +125	+3.1 to +5.5	12	Linear Active Thermistor™ IC, Temperature slope: 19.53 mV/°C, cross to MAX6612	3-pin TO-92, 5-pin SC-70
TC1046	±0.5	±2	-40 to +125	+2.7 to +4.4	60	High precision temperature-to-voltage converter, 6.25 mV/°C	3-Pin SOT-23B
TC1047	±0.5	±2	-40 to +125	+2.7 to +4.4	60	High precision temperature-to-voltage converter, 10 mV/°C	3-Pin SOT-23B
TC1047A	±0.5	±2	-40 to +125	+2.5 to +5.5	60	High precision temperature-to-voltage converter, 10 mV/°C	3-Pin SOT-23B
<b>Serial Output Temperature Sensors</b>							
MCP9800	±0.5	±1	-55 to +125	+2.7 to +5.5	400	SMBus/I <sup>2</sup> C™ compatible interface, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement	5-Pin SOT-23
MCP9801	±0.5	±1	-55 to +125	+2.7 to +5.5	400	SMBus/I <sup>2</sup> C™ compatible interface, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement, multi-drop capability	8-Pin MSOP, 8-pin SOIC

**NOTE** 1: These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.  
 2: TCN75 idle current is 250 µA. This device also has a Software Shutdown mode that reduces supply current to <1 µA.  
 3: MCP9805 max. accuracy measured at 85°C.



**THERMAL MANAGEMENT PRODUCTS – Temperature Sensors (continued)**

Part #	Typical Accuracy (°C)	Maximum Accuracy @ 25°C (°C)	Maximum Temperature Range (°C)	Vcc Range (V)	Maximum Supply Current (µA)	Features	Packages
<b>Serial Output Temperature Sensors (continued)</b>							
MCP9802	±0.5	±1	-55 to +125	+2.7 to +5.5	400	SMBus/I <sup>2</sup> C™ compatible interface with time out, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement	5-Pin SOT-23
MCP9803	±0.5	±1	-55 to +125	+2.7 to +5.5	400	SMBus/I <sup>2</sup> C™ compatible interface with time out, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement, multi-drop capability	8-Pin MSOP, 8-Pin SOIC
MCP9805	±0.5	±1 <sup>(3)</sup>	-20 to +125	+3.0 to +3.6	400	JEDEC compatible register set, SMBus/I <sup>2</sup> C™ compatible interface, programmable, shutdown modes and EVENT output	8-Pin TSSOP, 8-Pin 2x3 DFN
TC77	±0.5	±1	-55 to +125	+2.7 to +5.5	400	SPI compatible interface, 0.0625°C temperature resolution	5-Pin SOT-23A, 8-Pin SOIC
TC72	±0.5	±1	-55 to +125	+2.65 to +5.5	400	SPI compatible interface, power saving one-shot temperature measurement, 0.25°C temperature resolution	8-Pin MSOP, 8-Pin 3x3 DFN
TC74	±0.5	±2	-40 to +125	+2.7 to +5.5	350	SMBus/I <sup>2</sup> C™ compatible interface, 1°C temperature resolution	5-Pin SOT-23A, 5-Pin TO-220
TCN75A	±0.5	±2	-40 to +125	+2.7 to +5.5	500	SMBus/I <sup>2</sup> C™ compatible interface, power-saving one-shot temperature measurement, multi-drop capability, 0.0625°C to 0.5°C adjustable temperature resolution	8-Pin SOIC, 8-Pin MSOP
TCN75	±0.5	±2	-55 to +125	+2.7 to +5.5	1,000 <sup>(2)</sup>	SMBus/I <sup>2</sup> C™ compatible interface, multi-drop capability, interrupt output, 0.5°C temperature resolution	8-Pin MSOP, 8-Pin SOIC

**NOTE 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.  
**NOTE 2:** TCN75 idle current is 250 µA. This device also has a Software Shutdown mode that reduces supply current to <1 µA.  
**NOTE 3:** MCP9805 max. accuracy measured at 85°C.

**THERMAL MANAGEMENT PRODUCTS – Brushless DC Fan Controllers and Fan Fault Detectors**

Part #	Description	Typical Accuracy (°C)	Maximum Accuracy @ 25°C (°C)	Maximum Temperature Range (°C)	Vcc Range (V)	Maximum Supply Current (µA)	Features	Packages
TC642	Fan Manager	<b>Note 1</b>	<b>Note 1</b>	-40 to +85	+3.0 to +5.5	1,000	FanSense™ Fan Monitor, minimum fan speed control	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC642B	Fan Manager	<b>Note 1</b>	<b>Note 1</b>	-40 to +85	+3.0 to +5.5	400	FanSense™ Fan Monitor, minimum fan speed control, fan auto-restart	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC646	Fan Manager	<b>Note 1</b>	<b>Note 1</b>	-40 to +85	+3.0 to +5.5	1,000	FanSense™ Fan Monitor, auto-shutdown	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC646B	Fan Manager	<b>Note 1</b>	<b>Note 1</b>	-40 to +85	+3.0 to +5.5	400	FanSense™ Fan Monitor, auto-shutdown, fan auto-restart	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP

**NOTE 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.

**THERMAL MANAGEMENT PRODUCTS – Brushless DC Fan Controllers and Fan Fault Detectors (continued)**

Part #	Description	Typical Accuracy (°C)	Maximum Accuracy @ 25°C (°C)	Maximum Temperature Range (°C)	Vcc Range (V)	Maximum Supply Current (µA)	Features	Packages
TC647	Fan Manager	Note 1	Note 1	-40 to +85	+3.0 to +5.5	1,000	FanSense™ Fan Monitor, minimum fan speed control	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC647B	Fan Manager	Note 1	Note 1	-40 to +85	+3.0 to +5.5	400	FanSense™ Fan Monitor, minimum fan speed control, fan auto-restart	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC648	Fan Manager	Note 1	Note 1	-40 to +85	+3.0 to +5.5	1,000	Over-temperature alert, auto-shutdown	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC648B	Fan Manager	Note 1	Note 1	-40 to +85	+3.0 to +5.5	400	Over-temperature alert, auto-shutdown, fan auto-restart	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC649	Fan Manager	Note 1	Note 1	-40 to +85	+3.0 to +5.5	1,000	FanSense™ Fan Monitor, auto-shutdown	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC649B	Fan Manager	Note 1	Note 1	-40 to +85	+3.0 to +5.5	400	FanSense™ Fan Monitor, auto-shutdown, fan auto-restart	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC650	Fan Manager	±1	±3	-40 to +125	+2.8 to +5.5	90	Over-temperature alert	8-Pin MSOP
TC651	Fan Manager	±1	±3	-40 to +125	+2.8 to +5.5	90	Over-temperature alert, auto-shutdown	8-Pin MSOP
TC652	Fan Manager	±1	±3	-40 to +125	+2.8 to +5.5	90	FanSense™ Fan Monitor, over-temperature alert	8-Pin MSOP
TC653	Fan Manager	±1	±3	-40 to +125	+2.8 to +5.5	90	FanSense™ Fan Monitor, over-temperature alert, auto-shutdown	8-Pin MSOP
TC654	Dual SMBus Fan Manager	Note 1	Note 1	-40 to +85	+3.0 to +5.5	320	FanSense™ Fan Monitor, RPM data	10-Pin MSOP
TC655	Dual SMBus Fan Manager	Note 1	Note 1	-40 to +85	+3.0 to +5.5	320	FanSense™ Fan Monitor, RPM data, over-temperature alert	10-Pin MSOP
TC664	Single SMBus Fan Manager	Note 1	Note 1	-40 to +85	+3.0 to +5.5	320	FanSense™ Fan Monitor, RPM data	10-Pin MSOP
TC665	Single SMBus Fan Manager	Note 1	Note 1	-40 to +85	+3.0 to +5.5	320	FanSense™ Fan Monitor, RPM data, over-temperature alert	10-Pin MSOP
TC670	Predictive Fan Fault Detector	N/A	N/A	-40 to +85	+3.0 to +5.5	150	FanSense™ Fan Monitor, programmable threshold	6-Pin SOT-23

**NOTE 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.

**POWER MANAGEMENT – Voltage References**

Part #	Vcc Range (V)	Output Voltage (V)	Max. Load Current (mA)	Initial Accuracy (max.%)	Temperature Coefficient (ppm/°C)	Max. Supply Current (µA @ 25°C)	Packages
MCP1525	2.7 to 5.5	2.5	±2	±1	50	100	3-Pin TO-92, 3-Pin SOT-23B
MCP1541	4.3 to 5.5	4.096	±2	±1	50	100	3-Pin TO-92, 3-Pin SOT-23B

**POWER MANAGEMENT – Linear Regulators**

Part #	Max. Input Voltage (V)	Output Voltage (V)	Output Current (mA)	Junction Temperature Range (°C)	Typical Active Current (µA)	Typical Dropout Voltage @ Max. I <sub>OUT</sub> (mV)	Typical Output Voltage Accuracy (%)	Features	Packages
<b>50 mA to 250 mA Low Dropout Linear Regulators</b>									
TC2014	6.0	1.8, 2.7, 2.8, 3.0, 3.3	50	-40 to +125	55	45	±0.4	Shutdown, Reference bypass input	5-Pin SOT-23A
TC1014	6.0	1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0	50	-40 to +125	50	85	±0.5	Shutdown, Reference bypass input	5-Pin SOT-23A
TC2054	6.0	1.8, 2.7, 2.8, 3.0, 3.3	50	-40 to +125	55	45	±0.4	Shutdown, Error output	5-Pin SOT-23A
TC1054	6.0	1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0	50	-40 to +125	50	85	±0.5	Shutdown, Error output	5-Pin SOT-23A
TC1070	6.0	1.23 → V <sub>IN</sub>	50	-40 to +125	50	85	—	Shutdown, Adjustable	5-Pin SOT-23A
TC1072	6.0	2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0	50	-40 to +125	50	85	±0.5	Shutdown, Reference bypass input, Error output	6-Pin SOT-23A
TC1223	6.0	2.5, 2.7, 2.8, 3.0, 3.3, 3.6, 4.0, 5.0	50	-40 to +125	50	85	±0.5	Shutdown	5-Pin SOT-23A
TC1016	6.0	1.8, 2.7, 2.8, 3.0	80	-40 to +125	50	150	±0.5	Shutdown	5-Pin SC-70
TC2015	6.0	1.8, 2.7, 2.8, 3.0, 3.3	100	-40 to +125	55	90	±0.4	Shutdown, Reference bypass input	5-Pin SOT-23A
TC1015	6.0	1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0	100	-40 to +125	50	180	±0.5	Shutdown, Reference bypass input	5-Pin SOT-23A
TC2055	6.0	1.8, 2.7, 2.8, 3.0, 3.3	100	-40 to +125	55	90	±0.4	Shutdown, Error output	5-Pin SOT-23A
TC1055	6.0	1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0	100	-40 to +125	50	180	±0.5	Shutdown, Error output	5-Pin SOT-23A
TC1071	6.0	1.23 → V <sub>IN</sub>	100	-40 to +125	50	180	—	Shutdown, Adjustable	5-Pin SOT-23A
TC1073	6.0	2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0	100	-40 to +125	50	180	±0.5	Shutdown, Reference bypass input, Error output	6-Pin SOT-23A
TC1224	6.0	2.5, 2.7, 2.8, 3.0, 3.3, 3.6, 4.0, 5.0	100	-40 to +125	50	180	±0.5	Shutdown	5-Pin SOT-23A
TC1188	6.0	1.8, 2.8, 2.84, 3.15	120	-40 to +125	50	130	±0.5	Shutdown	5-Pin SOT-23A
TC1189	6.0	1.8, 2.8, 2.84, 3.15	120	-40 to +125	50	130	±0.5	Shutdown	5-Pin SOT-23A
TC2185	6.0	1.8, 2.7, 2.8, 3.0, 3.3	150	-40 to +125	55	140	±0.4	Shutdown, Reference bypass input	5-Pin SOT-23A
TC1185	6.0	1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0	150	-40 to +125	50	270	±0.5	Shutdown, Reference bypass input	5-Pin SOT-23A
TC2186	6.0	1.8, 2.7, 2.8, 3.0, 3.3	150	-40 to +125	55	140	±0.4	Shutdown, Error output	5-Pin SOT-23A
TC1186	6.0	1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0	150	-40 to +125	50	270	±0.5	Shutdown, Error output	5-Pin SOT-23A
TC1187	6.0	1.23 → V <sub>IN</sub>	150	-40 to +125	50	270	—	Shutdown, Adjustable	5-Pin SOT-23A
TC1017	6.0	1.8, 2.6, 2.7, 2.8, 2.85, 2.9, 3.3, 3.4	150	-40 to +125	53	285	±0.5	Shutdown	5-Pin SOT-23A, 5-Pin SC-70
MCP1700	6.0	1.2, 1.8, 2.5, 3.0, 3.3, 5.0	250	-40 to +125	1.0	300	±0.4	1.0 µF ceramic cap stable, Short-circuit protection	3-Pin TO-92, 3-Pin SOT-23A, 3-Pin SOT-89
MCP1701	10	1.8, 2.5, 3.0, 3.3, 5.0	250	-40 to +85	1.1	380	±0.5	10V max. input voltage	3-Pin SOT-23A, 3-Pin SOT-89, 3-Pin TO-92
MCP1702	12	1.2, 1.5, 1.8, 2.5, 2.8, 3.0, 3.5, 4.0, 5.0	250	-40 to +125	2	650	±0.4	Ultra-low ground current, 12V V <sub>IN</sub> max.	3-Pin SOT-23A, 3-Pin SOT-89, 3-Pin TO-92

**NOTE** 1: Depending on external transistor configuration.  
2: Each channel (for Dual and Quad LDOs).  
3: LDOs with shutdown (except Power-Management Combination Products as indicated) have typical shutdown currents of 0.05 µA.

**POWER MANAGEMENT – Linear Regulators (continued)**

Part #	Max. Input Voltage (V)	Output Voltage (V)	Output Current (mA)	Junction Temperature Range (°C)	Typical Active Current (µA)	Typical Dropout Voltage @ Max. I <sub>OUT</sub> (mV)	Typical Output Voltage Accuracy (%)	Features	Packages
<b>300 mA Low Dropout Linear Regulators</b>									
TC1107	6.0	2.5, 2.7, 2.8, 3.0, 3.3, 5.0	300	-40 to +125	50	240	±0.5	Shutdown, Reference bypass input	8-Pin MSOP, 8-Pin SOIC
TC1108	6.0	2.5, 2.7, 2.8, 3.0, 3.3, 5.0	300	-40 to +125	50	240	±0.5		3-Pin SOT-223
TC1173	6.0	2.5, 2.7, 2.8, 3.0, 3.3, 5.0	300	-40 to +125	50	240	±0.5	Shutdown, Reference bypass input, Error output	8-Pin MSOP, 8-Pin SOIC
TC1174	6.0	1.23 → V <sub>IN</sub>	300	-40 to +125	50	240	—	Shutdown, Reference bypass input, Adjustable	8-Pin MSOP, 8-Pin SOIC
TC1269	6.0	2.5, 2.8, 3.0, 3.3, 5.0	300	-40 to +125	50	240	±0.5	Shutdown, Reference bypass input	8-Pin MSOP
<b>500 mA to 800 mA Low Dropout Linear Regulators</b>									
TC1262	6.0	2.5, 2.8, 3.0, 3.3, 5.0	500	-40 to +125	80	350	±0.5		3-Pin TO-220, 3-Pin DDPAK, 3-Pin SOT-223
TC1263	6.0	2.5, 2.8, 3.0, 3.3, 5.0	500	-40 to +125	80	350	±0.5	Shutdown, Reference bypass input, Error output	8-Pin SOIC, 5-Pin TO-220, 5-Pin DDPAK
TC1268	6.0	2.5	500	-40 to +125	80	350	±0.5	Shutdown, Reference bypass input, Error output	8-Pin SOIC
TC1264	6.0	1.8, 2.5, 3.0, 3.3	800	-40 to +125	80	450	±0.5		3-Pin TO-220, 3-Pin DDPAK, 3-Pin SOT-223
TC1265	6.0	1.8, 2.5, 3.0, 3.3	800	-40 to +125	80	450	±0.5	Shutdown, Reference bypass input, Error output	8-Pin SOIC, 5-Pin TO-220, 5-Pin DDPAK
TC2117	6.0	1.8, 2.5, 3.0, 3.3	800	-40 to +125	80	600	±0.5		3-Pin SOT-223, 3-Pin DDPAK
<b>1A and Above Low Dropout Linear Regulators</b>									
MCP1726	6.0	Fixed: 5, 3.3, 3, 2.5, 1.8, 1.2, 0.8 Adjustable: 0.8 to 5.0	1000	-40 to +125	140	300	±0.4	Ceramic output capacitor stable, Shutdown, C <sub>delay</sub> , Power Good	8-Pin 3x3 DFN, 8-Pin SOIC
MCP1727	6.0	Fixed: 5, 3.3, 3, 2.5, 1.8, 1.2, 0.8 Adjustable: 0.8 to 5.0	1500	-40 to +125	140	330	±0.5	Ceramic output capacitor stable, Shutdown, C <sub>delay</sub> , Power Good	8-Pin 3x3 DFN, 8-Pin SOIC
MCP1827	6.0	Fixed: 5, 3.3, 3, 2.5, 1.8, 1.2, 0.8 Adjustable: 0.8 to 5.0	1500	-40 to +125	140	330	±0.5	Ceramic output capacitor stable, Shutdown, Power Good	5-Pin DDPAK, 5-Pin TO-220
MCP1827S	6.0	Fixed: 5, 3.3, 3, 2.5, 1.8, 1.2, 0.8	1500	-40 to +125	140	330	±0.5	Ceramic output capacitor stable	3-Pin DDPAK, 3-Pin TO-220
<b>Application Specific Low Dropout Linear Regulators</b>									
TC1266	6.0	3.3	200	-5 to +70	230	200	±1.0	PCI compliant	8-Pin SOIC, 8-Pin MSOP
TC1267	6.0	3.3	400	-5 to +70	230	300	±1.0	PCI compliant	5-Pin DDPAK
TC57	8	2.5, 3.0, 3.3	4,000 <sup>(1)</sup>	-40 to +85	50	100 <sup>(1)</sup>	±2.0	Shutdown, External transistor	5-Pin SOT-23A
TC59	-10	-3.0, -5.0	100	-40 to +85	3	380	±0.5	Negative LDO	3-Pin SOT-23A
<b>Power Management Combination Products</b>									
TC1300 <sup>(3)</sup>	6.0	2.5, 2.7, 2.8, 2.85, 3.0, 3.3	300	-40 to +125	80	210	±0.5	Shutdown, Reference bypass input, LDO plus Reset output	8-Pin MSOP
TC1301A <sup>(3)</sup>	6.0	LDO1: 1.5-3.3 LDO2: 1.5-3.3	LDO1: 300 LDO2: 150	-40 to +125	103	LDO1: 104 LDO2: 150	±0.5	Dual LDO plus Reset output, Shutdown, Reference bypass, Voltage detect	8-Pin MSOP, 8-Pin 3x3 DFN

NOTE 1: Depending on external transistor configuration.

2: Each channel (for Dual and Quad LDOs).

3: LDOs with shutdown (except Power-Management Combination Products as indicated) have typical shutdown currents of 0.05 µA.

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**POWER MANAGEMENT – Linear Regulators (continued)**

Part #	Max. Input Voltage (V)	Output Voltage (V)	Output Current (mA)	Junction Temperature Range (°C)	Typical Active Current (µA)	Typical Dropout Voltage @ Max. I <sub>OUT</sub> (mV)	Typical Output Voltage Accuracy (%)	Features	Packages
<b>Power-Management Combination Products (continued)</b>									
TC1301B <sup>(3)</sup>	6.0	LDO1: 1.5-3.3 LDO2: 1.5-3.3	LDO1: 300 LDO2: 150	-40 to +125	114	LDO1: 104 LDO2: 150	±0.5	Dual LDO plus Reset, per channel output shutdown, Reference bypass	8-Pin MSOP, 8-Pin 3x3 DFN
TC1302A <sup>(3)</sup>	6.0	LDO1: 1.5-3.3 LDO2: 1.5-3.3	LDO1: 300 LDO2: 150	-40 to +125	103	LDO1: 104 LDO2: 150	±0.5	Dual LDO, Output shutdown reference bypass, Voltage detect	8-Pin MSOP, 8-Pin 3x3 DFN
TC1302B <sup>(3)</sup>	6.0	LDO1: 1.5-3.3 LDO2: 1.5-3.3	LDO1: 300 LDO2: 150	-40 to +125	114	LDO1: 104 LDO2: 150	±0.5	Dual LDO, per channel output shutdown, Reference bypass	8-Pin MSOP, 8-Pin 3x3 DFN
TC1305	6.0	2.5, 2.8, 3.0	150 <sup>(2)</sup>	-40 to +125	120	240	±0.5	Dual LDO plus Reset output, Reference bypass input, Shutdown, Select Mode™ selectable output voltages	10-Pin MSOP
TC1306	6.0	1.8, 2.8, 3.0	150 <sup>(2)</sup>	-40 to +125	120	240	±0.5	Dual LDO plus Reset output, Shutdown, Select Mode™ selectable output voltages	8-Pin MSOP
TC1307 <sup>(3)</sup>	6.0	1.8, 2.5, 2.8, 3.0	150 <sup>(2)</sup>	-40 to +125	220	200	±0.5	Quad LDO plus Reset output, Shutdown, Select Mode™ selectable output voltage	16-Pin QSOP

- NOTE** 1: Depending on external transistor configuration.  
 2: Each channel (for Dual and Quad LDOs).  
 3: LDOs with shutdown (except Power-Management Combination Products as indicated) have typical shutdown currents of 0.05 µA.

**POWER MANAGEMENT – Switching Regulators**

Part #	Description	Input Voltage Range (V)	Output Voltage (V)	Operating Temperature Range (°C)	Control Scheme	Switching Frequency (kHz)	Typical Active Current (µA)	Output Current (mA)	Features	Packages
MCP1601	Synchronous Buck Regulator	2.7 to 5.5	0.9V to V <sub>IN</sub>	-40 to +85	PFM/PWM/LDO	750	825 (PWM) 125 (PFM)	500	UVLO, Auto-switching, LDO	8-Pin MSOP
MCP1612	Synchronous Buck DC/DC Regulator	2.7 to V <sub>IN</sub>	0.8 to 5.5	-40 to +85	Constant frequency PWM	1400	10,000	1000	Overall efficiency >94% soft start, over-temperature and over-current protection	8-Pin MSOP, 8-Pin 3x3 DFN
MCP1650	Step-up DC/DC Controller	2.7 to 5.5	2.5 to ext. tx limited	-40 to +125	Constant frequency, 2 fixed DC	750	120	560/440	2 duty cycles for min. and max. loads, shutdown control, UVLO, soft start	8-Pin MSOP
MCP1651	Step-up DC/DC Controller	2.7 to 5.5	2.5 to ext. tx limited	-40 to +125	Constant frequency, 2 fixed DC	750	120	560/440	2 duty cycles for min. and max. loads, shutdown control, low battery detect, UVLO, soft start	8-Pin MSOP
MCP1652	Step-up DC/DC Controller	2.7 to 5.5	2.5 to ext. tx limited	-40 to +125	Constant frequency, 2 fixed DC	750	120	560/440	2 duty cycles for min. and max. loads, shutdown control, Power Good indicator, UVLO, soft start	8-Pin MSOP
MCP1653	Step-up DC/DC Controller	2.7 to 5.5	2.5 to ext. tx limited	-40 to +125	Constant frequency, 2 fixed DC	750	120	560/440	2 duty cycles for min. and max. loads, shutdown control, low battery detect, Power Good indicator, UVLO, soft start	10-Pin MSOP
TC105	Step-down DC/DC Controller	2.2 to 10	3.0, 3.3, 5.0	-40 to +85	PFM/PWM	300	57	1,000	Low-Power Shutdown mode	5-Pin SOT-23A
TC120	Step-down Regulator/Controller Combination	1.8 to 10	3.0, 3.3, 5.0	-40 to +85	PFM/PWM	300	52	2,000	Soft-start, Low-Power Shutdown mode	8-Pin SOP
TC125	Step-up DC/DC Regulator	0.9 to 10	3.0, 3.3, 5.0	-40 to +85	PFM	100	20	80	Low-Power Shutdown mode	5-Pin SOT-23A
TC126	Step-up DC/DC Regulator	0.9 to 10	3.0, 3.3, 5.0	-40 to +85	PFM	100	20	80	Feedback voltage sensing	5-Pin SOT-23A

**POWER MANAGEMENT – Switching Regulators (continued)**

Part #	Description	Input Voltage Range (V)	Output Voltage (V)	Operating Temperature Range (°C)	Control Scheme	Switching Frequency (kHz)	Typical Active Current (µA)	Output Current (mA)	Features	Packages
TC115	Step-up DC/DC Regulator	0.9 to 10	3.0, 3.3, 5.0	-40 to +85	PFM/PWM	100	80	140	Feedback voltage sensing, Low-Power Shutdown mode	5-Pin SOT-89
TC110	Step-up DC/DC Controller	2.0 to 10	3.0, 3.3, 5.0	-40 to +85	PFM/PWM	100/300	50/120	300	Soft-start, Low-Power Shutdown mode	5-Pin SOT-23A
TC1303	Synchronous Buck Regulator, LDO w/Power Good	2.7 to 5.5	DC/DC: 0.8 to 4.5 LDO: 1.5 to 3.3	-40 to +85	PFM/PWM	2000	65/600	DC/DC: 500 mA LDO: 300 mA	PFM/PWM auto-switching, Power Good output	10-Pin MSOP, 10-Pin 3x3 DFN
TC1304	Synchronous Buck Regulator, LDO	2.7 to 5.5	DC/DC: 0.8 to 4.5 LDO: 1.5 to 3.3	-40 to +85	PFM/PWM	2000	65/600	DC/DC: 500 mA LDO: 300 mA	PFM/PWM auto-switching, Power sequencing	10-Pin MSOP, 10-Pin 3x3 DFN
TC1313	Synchronous Buck Regulator, LDO	2.7 to 5.5	DC/DC: 0.8 to 4.5 LDO: 1.5 to 3.3	-40 to +85	PFM/PWM	2000	65/600	DC/DC: 500 mA LDO: 300 mA	PFM/PWM auto-switching	10-Pin MSOP, 10-Pin 3x3 DFN

**POWER MANAGEMENT – PWM Controllers**

Part #	Description	Input Voltage Range (V)	Output Voltage (V)	Operating Temperature Range (°C)	Control Scheme	Switching Frequency (kHz)	Typical Active Supply (µA)	Output Current (mA)	Features	Packages
MCP1630	High-speed PWM to use with PIC® MCUs	2.7 to 5.5	V <sub>SS</sub> + 0.2V to V <sub>DD</sub> - 0.2V	-40 to +125	Cycle-by-Cycle DC control	1000	2.5	±10	UVLO, current sense to V <sub>EXT</sub> , response <25 ns	8-Pin MSOP
MCP1630V	High-speed PWM to use with PIC® MCUs	2.7 to 5.5	V <sub>SS</sub> + 0.2V to V <sub>DD</sub> - 0.2V	-40 to +125	Cycle-by-Cycle DC control	1000	2.5	±10	Voltage mode and Average Current mode	8-Pin MSOP

**POWER MANAGEMENT – Charge Pump DC-to-DC Converters**

Part #	Input Voltage Range (V)	Output Voltage (V)	Operating Temperature Range (°C)	Maximum Input Current <sup>(1)</sup> (µA)	Typical Active Output Current (mA)	Features	Packages
<b>Inverting or Doubling Charge Pumps</b>							
TC1044S	1.5 to 12	V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	160	20	85 kHz oscillator, Boost mode	8-Pin PDIP, 8-Pin SOIC
TC7660	1.5 to 10	V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	180	20	10 kHz oscillator	8-Pin PDIP, 8-Pin SOIC
TC7660H	1.5 to 10	V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	1,000	20	120 kHz oscillator	8-Pin PDIP, 8-Pin SOIC
TC7660S	1.5 to 12	V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	160	20	45 kHz oscillator, Boost mode	8-Pin PDIP, 8-Pin SOIC
TC7662B	1.5 to 15	V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	180	20	35 kHz oscillator, Boost mode	8-Pin PDIP, 8-Pin SOIC
TC1219	1.5 to 5.5	V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	115	25	12 kHz oscillator, Low-Power Shutdown mode	6-Pin SOT-23A
TC1220	1.5 to 5.5	V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	325	25	35 kHz oscillator, Low-Power Shutdown mode	6-Pin SOT-23A
TC1221	1.8 to 5.5	V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	600	25	Shutdown, 125 kHz oscillator	6-Pin SOT-23A
TC1222	1.8 to 5.5	V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	2,800	25	Shutdown, 750 kHz oscillator	6-Pin SOT-23A
TCM828	1.5 to 5.5	V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	90	25	12 kHz oscillator	5-Pin SOT-23A
TCM829	1.5 to 5.5	V <sub>OUT</sub> = -V <sub>IN</sub> or V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	260	25	35 kHz oscillator	5-Pin SOT-23A
TC1240	2.5 to 4.0	V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	900	40	Shutdown, 160 kHz oscillator	6-Pin SOT-23A
TC1240A	2.5 to 5.5	V <sub>OUT</sub> = 2 V <sub>IN</sub>	-40 to +85	900	40	Shutdown, 160 kHz oscillator	6-Pin SOT-23A

NOTE 1: Measured at V<sub>DD</sub> = 5.0V at 25°C and no load.

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**POWER MANAGEMENT – Charge Pump DC-to-DC Converters (continued)**

Part #	Input Voltage Range (V)	Output Voltage (V)	Operating Temperature Range (°C)	Maximum Input Current <sup>(1)</sup> (μA)	Typical Active Output Current (mA)	Features	Packages
<b>Inverting or Doubling Charge Pumps (continued)</b>							
TC7662A	3 to 18	VOUT = -VIN or VOUT = 2 VIN	-40 to +85	200	40	12 kHz oscillator	8-Pin PDIP
TC962	3 to 18	VOUT = -VIN or VOUT = 2 VIN	-40 to +85	200	80		8-Pin PDIP, 16-Pin SOIC
TC1121	2.4 to 5.5	VOUT = -VIN or VOUT = 2 VIN	-40 to +85	100	100	Low-Power Shutdown mode	8-Pin MSOP, 8-Pin PDIP, 8-Pin SOIC
<b>Multi-Function Charge Pumps</b>							
TCM680	2.0 to 5.5	VOUT = ±2 VIN	-40 to +85	1,000	±10	Generates ±6V from +3V or ±10V from +5V	8-Pin PDIP, 8-Pin SOIC
<b>Inverting and Doubling Charge Pumps</b>							
TC682	2.4 to 5.5	VOUT = -2 VIN	-40 to +85	400	10	12 kHz oscillator	8-Pin PDIP, 8-Pin SOIC
<b>Regulated Charge Pumps</b>							
MCP1252	2.1/2.7 to 5.5 2.0 to 5.5	Selectable 3.3V or 5.0V or Adjustable 1.5V to 5.5V	-40 to +85	120	120 mA for VIN>3.0V	Power Good output, 650 kHz oscillator	8-Pin MSOP
MCP1253	2.1/2.7 to 5.5 2.0 to 5.5	Selectable 3.3V or 5.0V or Adjustable 1.5V to 5.5V	-40 to +85	120	120 mA for VIN>3.0V	Power Good output, 1 MHz oscillator	8-Pin MSOP
MCP1256	1.8 to 3.6	3.3	-40 to +85	100	100	Power Good, Sleep mode	10-Pin MSOP, 10-Pin 3x3 DFN
MCP1257	1.8 to 3.6	3.3	-40 to +85	100	100	Sleep mode, low battery indication	10-Pin MSOP, 10-Pin 3x3 DFN
MCP1258	1.8 to 3.6	3.3	-40 to +85	100	100	Power Good output, input/output bypass	10-Pin MSOP, 10-Pin 3x3 DFN
MCP1259	1.8 to 3.6	3.3	-40 to +85	100	100	Low battery indication, input/output bypass	10-Pin MSOP, 10-Pin 3x3 DFN

**NOTE 1:** Measured at VDD = 5.0V at 25°C and no load.

**POWER MANAGEMENT – CPU/System Supervisors**

Part #	VCC Range (V)	Operating Temperature Range (°C)	Nominal Reset Voltage (V)	Reset Type	Output	Typical Reset Pulse Width (ms)	Typical Supply Current (μA)	Additional Features	Packages	Bond Options
MCP102	1.0 to 5.5	-40 to +125	4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.9	Active-Low	CMOS Push-Pull	120	1		3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92	N/A
MCP103	1.0 to 5.5	-40 to +125	4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.9	Active-Low	CMOS Push-Pull	120	1	Max. 809 Pinout	3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92	N/A
TC1272	1.2 to 5.5	-40 to +85	4.62, 4.37, 4.12	Active-Low	CMOS Push-Pull	200	17		3-Pin SOT-23B	N/A
TC1275	1.2 to 5.5	-40 to +85	3.06, 2.88, 2.55	Active-Low	CMOS Push-Pull	200	20		3-Pin SOT-23B	N/A
TCM809	1.2 to 5.5	-40 to +85	4.63, 4.38, 4.00, 3.08, 2.93, 2.63, 2.32	Active-Low	CMOS Push-Pull	240	12		3-Pin SOT-23B, 3-Pin SC-70	N/A
TC1270	1.2 to 5.5	-40 to +85	4.63, 4.38, 3.08, 2.93, 2.63, 1.75	Active-Low	CMOS Push-Pull	280	7	Manual Reset	4-Pin SOT-143	N/A
TCM811	1.0 to 5.5	-40 to +85	4.63, 4.38, 3.08, 2.93, 2.63, 1.75	Active-Low	CMOS Push-Pull	280	6	Manual Reset	4-Pin SOT-143	N/A
MCP100	1.0 to 5.5	-40 to +85	4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62	Active-Low	CMOS Push-Pull	350	45		3-Pin TO-92, 3-Pin SOT-23B	D, H
MCP809	1.0 to 5.5	-40 to +85	4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62	Active-Low	CMOS Push-Pull	350	45		3-Pin SOT-23B	N/A
TC1274	1.8 to 5.5	-40 to +85	4.62, 4.37, 4.13	Active-High	CMOS Push-Pull	200	17		3-Pin SOT-23B	N/A
TC1277	1.8 to 5.5	-40 to +85	3.06, 2.88, 2.55	Active-High	CMOS Push-Pull	200	20		3-Pin SOT-23B	N/A

**POWER MANAGEMENT – CPU/System Supervisors (continued)**

Part #	Vcc Range (V)	Operating Temperature Range (°C)	Nominal Reset Voltage (V)	Reset Type	Output	Typical Reset Pulse Width (ms)	Typical Supply Current (µA)	Additional Features	Packages	Bond Options
TCM810	1.2 to 5.5	-40 to +85	4.63, 4.38, 3.08, 2.93, 2.63, 2.32	Active-High	CMOS Push-Pull	240	12		3-Pin SOT-23B, 3-Pin SC-70	N/A
TC1271	1.2 to 5.5	-40 to +85	4.63, 4.38, 3.08, 2.93, 2.63, 1.75	Active-High	CMOS Push-Pull	280	7	Manual Reset	4-Pin SOT-143	N/A
TCM812	1.1 to 5.5	-40 to +85	4.63, 4.38, 3.08, 2.93, 2.63, 1.75	Active-High	CMOS Push-Pull	280	6	Manual Reset	4-Pin SOT-143	N/A
MCP101	1.0 to 5.5	-40 to +85	4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62	Active-High	CMOS Push-Pull	350	45		3-Pin TO-92, 3-Pin SOT-23B	D, H
MCP810	1.0 to 5.5	-40 to +85	4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62	Active-High	CMOS Push-Pull	350	45		3-Pin SOT-23B	N/A
MCP121	1.0 to 5.5	-40 to +125	1.9, 2.32, 2.63, 2.93, 3.08, 4.38, 4.63	Active-Low	Open-Drain	120	1		3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92	N/A
TC1273	1.2 to 5.5	-40 to +85	4.62, 4.37, 4.12	Active-Low	Open-Drain	200	17		3-Pin SOT-23B	N/A
TC1276	1.2 to 5.5	-40 to +85	3.06, 2.88, 2.55	Active-Low	Open-Drain	200	20		3-Pin SOT-23B	N/A
MCP120	1.0 to 5.5	-40 to +85	4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62	Active-Low	Open-Drain	350	45		3-Pin TO-92, 3-Pin SOT-23, 8-Pin SOIC	D, G, H
TC1279	1.2 to 5.5	-40 to +85	4.62, 4.37, 4.125	Active-Low	Open-Drain	350	900		3-Pin SOT-23B	N/A
MCP131	1.0 to 5.5	-40 to +125	1.9, 2.32, 2.63, 2.93, 3.08, 4.38, 4.63	Active-Low	Open-Drain	120	1	100kΩ Internal Pull-up Resistor	3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92	N/A
MCP130	1.0 to 5.5	-40 to +85	4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62	Active-Low	Open-Drain w/ 5 kΩ Pull-up	350	45		3-Pin TO-92, 3-Pin SOT-23, 8-Pin SOIC	D, F, H
TC1278	1.2 to 5.5	-40 to +85	4.62, 4.37, 4.125	Active-High	Open-Drain	350	900		3-Pin SOT-23B	N/A
MCP1316	1.0 to 5.5	-40 to +125	2.9, 4.6	Active-Low	CMOS Push-Pull	200	5	Watchdog Input (WDI), Time-out = 1.6 sec., Manual reset	5-Pin SOT-23	N/A
MCP1317	1.0 to 5.5	-40 to +125	2.9, 4.6	Active-High	CMOS Push-Pull	200	5	Watchdog Input (WDI), Time-out = 1.6 sec., Manual reset	5-Pin SOT-23	N/A
MCP1318	1.0 to 5.5	-40 to +125	4.6	Active-Low/High	CMOS Push-Pull	200	5	Watchdog Input (WDI), Time-out = 1.6 sec.	5-Pin SOT-23	N/A
MCP1319	1.0 to 5.5	-40 to +125	4.6	Active-Low/High	CMOS Push-Pull	200	1	Manual reset	5-Pin SOT-23	N/A
MCP1320	1.0 to 5.5	-40 to +125	2.9, 4.6	Active-Low	Open-Drain	200	5	Watchdog Input (WDI), Time-out = 1.6 sec., Manual Reset	5-Pin SOT-23	N/A
MCP1321	1.0 to 5.5	-40 to +125	4.6	Active-Low	Open-Drain/CMOS Push-Pull	200	5	Watchdog Input (WDI), Time-out = 1.6 sec., Manual Reset (Active-Low Open-Drain, Active-High Push-Pull)	5-Pin SOT-23	N/A
MCP1322	1.0 to 5.5	-40 to +125	4.6	Active-High	Open-Drain/CMOS Push-Pull	200	1	Manual Reset, two Reset outputs (Active-Low Open-Drain, Active-High Push-Pull)	5-Pin SOT-23	N/A
TC1232	4.5 to 5.5	-40 to +85	4.62, 4.37	Active-Low/High	Open-Drain	610	50	Watchdog Timer	8-Pin PDIP, 8-Pin SOIC, 16-Pin SOIC	N/A
TC32M	4.5 to 5.5	-40 to +85	4.5	Active-Low	Open-Drain	700	50	Watchdog Timer	3-Pin TO-92, 3-Pin SOT-223	N/A



**POWER MANAGEMENT – Voltage Detectors**

Part #	Vcc Range (V)	Operating Temperature Range (°C)	Nominal Reset Voltage (V)	Reset Type	Output	Minimum Reset Pulse Width (ms)	Typical Supply Current (µA)	Features	Packages
MCP111	1.0 to 5.5	-40 to +125	4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.90	Active-Low	Open-Drain	—	1		3-Pin SOT-23B, 3-Pin TO-92, 3-Pin SC-70, 3-Pin SOT-89
MCP112	1.0 to 5.5	-40 to +125	4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.90	Active-Low	CMOS Push-Pull	—	1		3-Pin SOT-23B, 3-Pin TO-92, 3-Pin SC-70, 3-Pin SOT-89
TC51	0.7 to 10	-40 to +85	3.0, 2.7, 2.2	Active-Low	Open-Drain	50	1	Reset delay	3-Pin SOT-23A
TC52	1.5 to 10	-40 to +85	4.5/2.7, 3.0/2.7	Active-Low	Open-Drain	—	2	Dual channel	5-Pin SOT-23A
TC53	1.5 to 10	-40 to +85	2.9, 2.7, 2.2	Active-Low	CMOS Push-Pull or Open-Drain	—	1		5-Pin SOT-23A
TC54	0.7 to 10	-40 to +85	4.3, 4.2, 3.0, 2.9, 2.7, 2.1, 1.4	Active-Low	CMOS Push-Pull or Open-Drain	—	1		3-Pin SOT-23A, 3-Pin SOT-89, 3-Pin TO-92

**POWER MANAGEMENT – Power MOSFET Drivers**

Part #	Configuration	Operating Temperature Range (°C)	Peak Output Current (A)	Output Resistance (R <sub>H</sub> /R <sub>L</sub> ) (Max. Ω @ 25°C)	Max. Supply Voltage (V)	Input/Output Delay (td1, td2) <sup>(1)</sup> (ns)	Packages
<b>Low-Side Drivers, 0.5A to 1.2A Peak Output Current</b>							
TC1410	Single, Inverting	-40 to +85	0.5	22/22	16	30/30	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC1410N	Single, Non-inverting	-40 to +85	0.5	22/22	16	30/30	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC1411	Single, Inverting	-40 to +85	1	11/11	16	30/30	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC1411N	Single, Non-inverting	-40 to +85	1	11/11	16	30/30	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC1426	Dual, Inverting	0 to +70	1.2	18/18	16	75/75	8-Pin PDIP, 8-Pin SOIC
TC1427	Dual, Non-inverting	0 to +70	1.2	18/18	16	75/75	8-Pin PDIP, 8-Pin SOIC
TC1428	Dual, Inverting and Non-inverting	0 to +70	1.2	18/18	16	75/75	8-Pin PDIP, 8-Pin SOIC
TC4467	Quad, Inverting	-40 to +85	1.2	15/15	18	40/40	14-Pin PDIP, 16-Pin SOIC (W)
TC4468	Quad, Non-inverting	-40 to +85	1.2	15/15	18	40/40	14-Pin PDIP, 16-Pin SOIC (W)
TC4469	Quad, Non-inverting	-40 to +85	1.2	15/15	18	40/40	14-Pin PDIP, 16-Pin SOIC (W)
<b>Low-Side Drivers, 1.5A Peak Output Current</b>							
TC4403	Single, Non-inverting Floating Load Driver	-40 to +85	1.5	5/5	18	33/38	8-Pin PDIP
TC4426A	Dual, Inverting	-40 to +125	1.5	9/9	18	30/30	8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN
TC4427A	Dual, Non-inverting	-40 to +125	1.5	9/9	18	30/30	8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN
TC4428A	Dual, Inverting and Non-inverting	-40 to +125	1.5	9/9	18	30/30	8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN
TC4426	Dual, Inverting	-40 to +125	1.5	10/10	18	20/40	8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN, 8-Pin MSOP
TC4427	Dual, Non-inverting	-40 to +125	1.5	10/10	18	20/40	8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN, 8-Pin MSOP
TC4428	Dual, Inverting and Non-inverting	-40 to +125	1.5	10/10	18	20/40	8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN, 8-Pin MSOP
TC426	Dual, Inverting	-40 to +85	1.5	15/10	18	50/75	8-Pin PDIP, 8-Pin SOIC

**NOTE 1:** \*td1 = delay time from input low-to-high transition to output transition. td2 = delay time from input high-to-low transition to output transition.

**POWER MANAGEMENT – Power MOSFET Drivers (continued)**

Part #	Configuration	Operating Temperature Range (°C)	Peak Output Current (A)	Output Resistance (RH/RL) (Max. $\Omega$ @ 25°C)	Max. Supply Voltage (V)	Input/Output Delay (td1, td2) <sup>(1)</sup> (ns)	Packages
<b>Low-Side Drivers, 1.5A Peak Output Current (continued)</b>							
TC427	Dual, Non-inverting	-40 to +85	1.5	15/10	18	50/75	8-Pin PDIP, 8-Pin SOIC
TC428	Dual, Inverting and Non-inverting	-40 to +85	1.5	15/10	18	50/75	8-Pin PDIP, 8-Pin SOIC
TC4404	Dual, Inverting	-40 to +85	1.5	10/10	18	15/32	8-Pin PDIP, 8-Pin SOIC
TC4405	Dual, Non-inverting	-40 to +85	1.5	10/10	18	15/32	8-Pin PDIP, 8-Pin SOIC
<b>Low-Side Drivers, 2.0A to 12.0A Peak Output Current</b>							
TC1412	Single, Inverting	-40 to +85	2	6/6	16	35/35	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC1412N	Single, Non-inverting	-40 to +85	2	6/6	16	35/35	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC1413	Single, Inverting	-40 to +85	3	4/4	16	35/35	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC1413N	Single, Non-inverting	-40 to +85	3	4/4	16	35/35	8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP
TC4423A	Dual, Inverting	-40 to +125	3	3 (typ)/4 (typ)	18	40 (typ)/40 (typ)	8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN
TC4424A	Dual, Non-inverting	-40 to +125	3	3 (typ)/4 (typ)	18	40 (typ)/40 (typ)	8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN
TC4425A	Dual, Inverting and Non-inverting	-40 to +125	3	3 (typ)/4 (typ)	18	40 (typ)/40 (typ)	8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN
TC4423	Dual, Inverting	-40 to +125	3	5/5	18	33/38	8-Pin PDIP, 16-Pin SOIC (W), 8-Pin DFN
TC4424	Dual, Non-inverting	-40 to +125	3	5/5	18	33/38	8-Pin PDIP, 16-Pin SOIC (W), 8-Pin DFN
TC4425	Dual, Inverting and Non-inverting	-40 to +125	3	5/5	18	33/38	8-Pin PDIP, 16-Pin SOIC (W), 8-Pin DFN
TC429	Single, Inverting	-40 to +85	6	2.5/2.5	18	53/60	8-Pin PDIP, 8-Pin DFN, 8-Pin SOIC
TC4420	Single, Non-inverting	-40 to +125	6	2.8/2.5	18	55/55	8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220, 8-Pin DFN
TC4429	Single, Inverting	-40 to +125	6	2.8/2.5	18	55/55	8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220, 8-Pin DFN
TC4421	Single, Inverting	-40 to +125	9	1.4 (typ)/1.7	18	30/33	8-Pin PDIP, 5-Pin TO-220, 8-Pin DFN
TC4421A	Single, Inverting	-40 to +125	9	1.25 (typ)/1.5	18	38/42	8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220, 8-Pin 6x5 DFN
TC4422	Single, Non-inverting	-40 to +125	9	1.4 (typ)/1.7	18	30/33	8-Pin PDIP, 5-Pin TO-220, 8-Pin DFN
TC4422A	Single, Non-inverting	-40 to +125	9	1.25 (typ)/1.5	18	38/42	8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220, 8-Pin 6x5 DFN
TC4451	Single, Inverting	-40 to +125	12	0.6 (typ)/1.5	18	15/15	8-Pin SOIC, 8-Pin PDIP, 8-Pin 6x5 DFN, 5-Pin TO-220, 5-Pin DPAK
TC4452	Single, Non-inverting	-40 to +125	12	0.6 (typ)/1.5	18	15/15	8-Pin SOIC, 8-Pin PDIP, 8-Pin 6x5 DFN, 5-Pin TO-220, 5-Pin DPAK
<b>High-Side/Low-Side Drivers</b>							
TC4626	Single, Inverting	-40 to +85	1.5	15/10	6	35/45	8-Pin PDIP, 16-Pin SOIC (W)
TC4627	Single, Non-inverting	-40 to +85	1.5	15/10	6	35/45	8-Pin PDIP, 16-Pin SOIC (W)
TC4431	Single, Inverting	-40 to +85	1.5	10/10	30	62/78	8-Pin PDIP, 8-Pin SOIC
TC4432	Single, Non-inverting	-40 to +85	1.5	10/10	30	62/78	8-Pin PDIP, 8-Pin SOIC

**NOTE 1:** \*td1 = delay time from input low-to-high transition to output transition. td2 = delay time from input high-to-low transition to output transition.