



dsPIC33CH512MP508 FAMILY

48/64/80-Pin Dual Core, 16-Bit Digital Signal Controllers with High-Resolution PWM and CAN Flexible Data (FD)

Operating Conditions

- 3V to 3.6V, -40°C to +125°C:
 - Master: Up to 100 MIPS @ 200 MHz
 - Slave: Up to 120 MIPS @ 240 MHz

Core: Dual 16-Bit dsPIC33CH CPU

- Master/Slave Core Operation
- Independent Peripherals for Master Core and Slave Core
- Configurable Shared Resources for Master Core and Slave Core
- Master Core with 256-512 Kbytes of Program Flash with ECC and 32-48K Data RAM with BIST
- Slave Core with 72 Kbytes of Program RAM (PRAM) with ECC and 16K Data RAM with BIST
- Fast 6-Cycle Divide
- Live Update
- Message Boxes and FIFO to Communicate Between Master and Slave (MSI)
- Code Efficient (C and Assembly) Architecture
- 40-Bit Wide Accumulators
- Single-Cycle (MAC/MPY) with Dual Data Fetch
- Single-Cycle, Mixed-Sign MUL Plus Hardware Divide
- 32-Bit Multiply Support
- Five Sets of Interrupt Context Selected Registers per Core for Fast Interrupt Response
- Zero Overhead Looping

Clock Management

- Internal Oscillator
- Programmable PLLs and Oscillator Clock Sources
- Master Core Reference Clock Output
- Slave Core Reference Clock Output
- Fail-Safe Clock Monitor (FSCM)
- Fast Wake-up and Start-up
- Backup Internal Oscillator
- LPRC Oscillator

Power Management

- Low-Power Management Modes (Sleep, Idle, Doze)
- Integrated Power-on Reset and Brown-out Reset

High-Resolution PWM with Fine Edge Placement

- Up to 12 PWM Channels:
 - 4 channels for Master Core
 - 8 channels for Slave Core
- 250 ps PWM Resolution
- Applications include:
 - DC/DC Converters
 - AC/DC power supplies
 - Uninterruptable Power Supply (UPS)
 - Motor control: BLDC, PMSM, SR, ACIM

Timers/Output Compare/Input Capture

- 2 General Purpose 16-Bit Timers:
 - 1 each for Master and Slave cores
- Peripheral Trigger Generator (PTG) Module:
 - 1 module for Master core
 - Slave can interrupt on select PTG sources
 - Useful for automating complex sequences
- 12 SCCP Modules:
 - 8 modules for Master core
 - 4 modules for Slave core
 - Timer, Capture/Compare and PWM modes
 - 16 or 32-bit time base
 - 16 or 32-bit capture
 - 4-deep capture buffer
 - Fully asynchronous operation, available in Sleep modes

Advanced Analog Features

- 4 ADC Modules:
 - 1 module for Master core
 - 3 modules for Slave core
 - 12-bit, 4 Msps ADC
 - Up to 18 conversion channels
 - 250 ns conversion latency
 - Capacitive Voltage Divider (CVD) for touch sensing
- 4 DAC/Analog Comparator Modules:
 - 1 module for Master core
 - 3 modules for Slave core
 - 12-bit DACs with hardware slope compensation
 - 15 ns analog comparators
- 3 PGA Modules:
 - 3 modules for Slave core
 - Can be read by Master Core ADC
- Shared DAC/Analog Output:
 - DAC/analog comparator outputs
 - PGA outputs

Communication Interfaces

- 3 UART Modules:
 - 2 modules for Master core
 - 1 module for Slave core
 - Support for LIN/J2602 protocols and IrDA®
- Three 4-Wire SPI/I²S Modules:
 - 2 modules for Master core
 - 1 module for Slave core
- 2 CAN Flexible Data (FD) Modules for the Master Core
- 3 I²C Modules:
 - 2 modules for Master core
 - 1 module for Slave core
 - Support for SMBus
- PPS to Allow Function Remap
- Programmable Cyclic Redundancy Check (CRC) for the Master
- 2 SENT Modules for Master Core

Direct Memory Access (DMA)

- 8 DMA Channels:
 - 6 channels for Master core
 - 2 channels for Slave core

Debugger Development Support

- In-Circuit and In-Application Programming
- Simultaneous Debugging Support for Master and Slave
- Master Only Debug and Slave Only Debug Support
- Master with 3 Complex, 5 Simple Breakpoints and Slave with 1 Complex, 2 Simple Breakpoints
- IEEE 1149.2 Compatible (JTAG) Boundary Scan
- Trace Buffer and Run-Time Watch

Safety Features

- DMT (Deadman Timer)
- ECC (Error Correcting Code)
- WDT (Watchdog Timer)
- CodeGuard™ Security with Flash PED (Program Erase Disable)
- CRC (Cyclic Redundancy Check)
- RAM BIST (Built-In Self Test)

TABLE 1: MASTER AND SLAVE CORE FEATURES

Feature	Master	Slave	Shared
Core Frequency	100 MIPS @ 200 MHz	120 MIPS @ 240 MHz	—
Program Memory	256-512 Kbytes	72 Kbytes (PRAM)	—
Internal Data RAM	32-48 Kbytes	16 Kbytes	—
16-Bit Timer	1	1	—
DMA	6	2	—
SCCP (Capture/Compare/Timer)	8	4	—
UART	2	1	—
SPI/I ² S	2	1	—
I ² C	2	1	—
CAN FD	2	—	—
SENT	2	—	—
CRC	1	—	—
CVD	1	1	—
QEI	1	1	—
PTG	1	—	—
CLC	4	4	—
16-Bit High-Resolution PWM	4	8	—
12-Bit ADC	1	3	—
Digital Comparator	4	4	—
12-Bit DAC/Analog CMP Module	1	3	—
Watchdog Timer	1	1	—
Deadman Timer	1	1	—
Input/Output	69	69	69
Simple Breakpoints	5	2	—
PGAs ⁽¹⁾	—	3	3
DAC Output Buffer	—	—	1
Oscillator	—	—	1

Note 1: Slave owns the peripheral/feature, but it is shared with the Master.

dsPIC33CH512MP50X/20X PRODUCT FAMILIES

The device names, pin counts, memory sizes and peripheral availability of each device are listed in [Table 2](#) and [Table 3](#). The following pages show their pinout diagrams.

TABLE 2: dsPIC33CH512MP508 MOTOR CONTROL/POWER SUPPLY FAMILIES

Product	Core	Pins	Flash/(PRAM)	Data RAM	ADC Modules	ADC Channels	CVD Channels	16-Bit Timers	SCCP	CAN FD	SENT	UART	SPI/I ² S	I ² C	QEI	CLC	PTG	CRC	PWM (High Resolution)	12-Bit DAC/Analog CMP	PGA	Current Bias Source	REFO
Devices with CAN FD																							
dsPIC33CH256MP505	Master	48	256K	32K	1	16	11	1	8	2	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	15	10	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1
dsPIC33CH512MP505	Master	48	512K	48K	1	16	11	1	8	2	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	15	10	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1
dsPIC33CH256MP506	Master	64	256K	32K	1	16	11	1	8	2	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	18	13	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1
dsPIC33CH512MP506	Master	64	512K	48K	1	16	11	1	8	2	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	18	13	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1
dsPIC33CH256MP508	Master	80	256K	32K	1	16	11	1	8	2	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	18	13	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1
dsPIC33CH512MP508	Master	80	512K	48K	1	16	11	1	8	2	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	18	13	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1

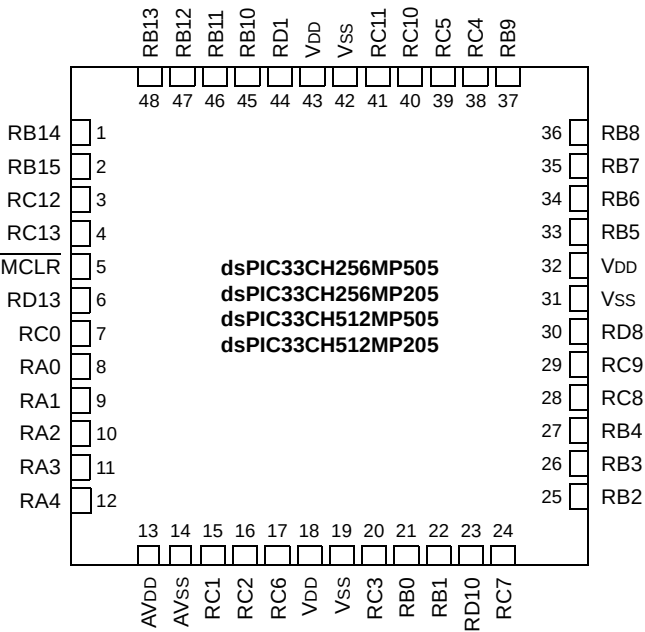
TABLE 3: dsPIC33CH512MP208 MOTOR CONTROL/POWER SUPPLY FAMILIES WITH NO CAN FD

Product	Core	Pins	Flash/(PRAM)	Data RAM	ADC Modules	ADC Channels	CVD Channels	16-Bit Timers	SCCP	CAN FD	SENT	UART	SPI/I ² S	I ² C	QEI	CLC	PTG	CRC	PWM (High Resolution)	12-Bit DAC/Analog CMP	PGA	Current Bias Source	REFO
Devices with No CAN FD																							
dsPIC33CH256MP205	Master	48	256K	32K	1	16	11	1	8	—	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	15	10	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1
dsPIC33CH512MP205	Master	48	512K	48K	1	16	11	1	8	—	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	15	10	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1
dsPIC33CH256MP206	Master	64	256K	32K	1	16	11	1	8	—	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	18	13	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1
dsPIC33CH512MP206	Master	64	512K	48K	1	16	11	1	8	—	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	18	13	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1
dsPIC33CH256MP208	Master	80	256K	32K	1	16	11	1	8	—	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	18	13	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1
dsPIC33CH512MP208	Master	80	512K	48K	1	16	11	1	8	—	2	2	2	2	1	4	1	1	4	1	—	1	1
	Slave		(72K)	16K	3	18	13	1	4	—	—	1	1	1	1	4	—	—	8	3	3	—	1

dsPIC33CH512MP508 FAMILY

Pin Diagrams

48-Pin UQFN 6x6x0.5 mm/TQFP 7x7x1 mm



dsPIC33CH512MP508 FAMILY

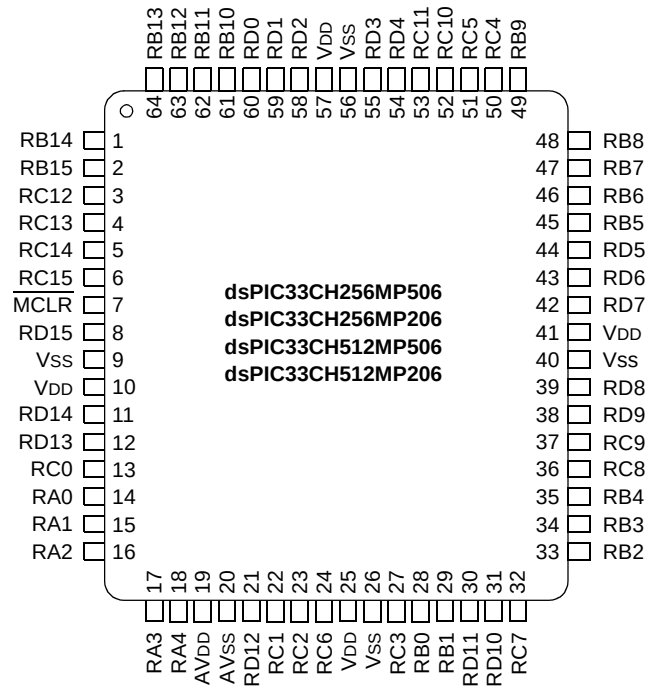
TABLE 4: 48-PIN UQFN/TQFP

Pin #	Master Core	Slave Core
1	RP46/PWM1H/RB14	S1RP46/S1PWM6L/S1RB14
2	RP47/PWM1L/RB15	S1RP47/S1PWM6H/S1RB15
3	RP60/RC12	S1RP60/S1PWM3H/S1RC12
4	RP61/RC13	S1RP61/S1PWM3L/S1RC13
5	MCLR	MCLR
6	RD13	S1ANN0/S1PGA1N2/S1RD13
7	AN12/IBIAS3/RP48/RC0	S1AN10/S1RP48/S1RC0
8	AN0/CMP1A/RA0	S1RA0
9	AN1/RA1	S1AN15/S1RA1
10	AN2/RA2	S1AN16/S1RA2
11	AN3/IBIAS0/RA3	S1AN0/S1CMP1A/S1PGA1P1/S1RA3
12	AN4/IBIAS1/RA4	S1MCLR3/S1AN1/S1CMP2A/S1PGA2P1/S1PGA3P2/S1RA4
13	AVDD	AVDD
14	AVSS	AVSS
15	AN13/ISRC0/RP49/RC1	S1ANA1/S1RP49/S1RC1
16	AN14/ISRC1/RP50/RC2	S1ANA0/S1RP50/S1RC2
17	RP54/RC6	S1AN11/S1CMP1B/S1RP54/S1RC6
18	VDD	VDD
19	VSS	VSS
20	CMP1B/RP51/RC3	S1AN8/S1CMP3B/S1RP51/S1RC3
21	OSCI/CLKI/AN5/RP32/RB0	S1AN5/S1RP32/S1RB0
22	OSCO/CLKO/AN6/IBIAS2/RP33/RB1	S1AN4/S1RP33/S1RB1
23	ISRC3/RD10	S1AN13/S1CMP2B/S1RD10
24	AN15/ISRC2/RP55/RC7	S1AN12/S1RP55/S1RC7
25	DACOUT/AN7/CMP1D/RP34/INT0/RB2	S1MCLR2/S1AN3/S1ANC0/S1ANC1/S1CMP1D/S1CMP2D/S1CMP3D/S1RP34/S1INT0/S1RB2
26	PGD2/AN8/RP35/RB3	S1PGD2/S1AN18/S1CMP3A/S1PGA3P1/S1RP35/S1RB3
27	PGC2/RP36/RB4	S1PGC2/S1AN9/S1RP36/S1PWM5L/S1RB4
28	RP56/ASDA1/SCK2/RC8	S1RP56/S1ASDA1/S1SCK1/S1RC8
29	RP57/ASCL1/SDI2/RC9	S1RP57/S1ASCL1/S1SDI1/S1RC9
30	SDO2/PCI19/RD8	S1SDO1/S1PCI19/S1RD8
31	VSS	VSS
32	VDD	VDD
33	PGD3/RP37/SDA2/RB5	S1PGD3/S1RP37/S1RB5
34	PGC3/RP38/SCL2/RB6	S1PGC3/S1RP38/S1RB6
35	TDO/AN9/RP39/RB7	S1MCLR1/S1AN6/S1RP39/S1PWM5H/S1RB7
36	PGD1/AN10/RP40/SCL1/RB8	S1PGD1/S1AN7/S1RP40/S1SCL1/S1RB8
37	PGC1/AN11/RP41/SDA1/RB9	S1PGC1/S1RP41/S1SDA1/S1RB9
38	RP52/RC4	S1RP52/S1PWM2H/S1RC4
39	RP53/RC5	S1RP53/S1PWM2L/S1RC5
40	RP58/RC10	S1RP58/S1PWM1H/S1RC10
41	RP59/RC11	S1RP59/S1PWM1L/S1RC11
42	VSS	VSS
43	VDD	VDD
44	RP65/RD1	S1RP65/S1PWM4H/S1RD1
45	TMS/RP42/PWM3H/RB10	S1RP42/S1PWM8L/S1RB10
46	TCK/RP43/PWM3L/RB11	S1RP43/S1PWM8H/S1RB11
47	TDI/RP44/PWM2H/RB12	S1RP44/S1PWM7L/S1RB12
48	RP45/PWM2L/RB13	S1RP45/S1PWM7H/S1RB13

dsPIC33CH512MP508 FAMILY

Pin Diagrams (Continued)

64-Pin TQFP 10x10 mm/QFN 9x9 mm



dsPIC33CH512MP508 FAMILY

TABLE 5: 64-PIN TQFP/QFN

Pin #	Master Core	Slave Core
1	RP46/PWM1H/RB14	S1RP46/S1RB14
2	RP47/PWM1L/RB15	S1RP47/S1RB15
3	RP60/PWM4H/RC12	S1RP60/S1RC12
4	RP61/PWM4L/RC13	S1RP61/S1RC13
5	RP62/RC14	S1RP62/S1PWM7H/S1RC14
6	RP63/RC15	S1RP63/S1PWM7L/S1RC15
7	MCLR	MCLR
8	PCI22/RD15	S1PCI22/S1RD15
9	Vss	Vss
10	VDD	VDD
11	PCI21/RD14	S1ANN1/S1PGA2N2/S1PCI21/S1RD14
12	RD13	S1ANN0/S1PGA1N2/S1RD13
13	AN12/BIAS3/RP48/RC0	S1AN10/S1RP48/S1RC0
14	AN0/CMP1A/RA0	S1RA0
15	AN1/RA1	S1AN15/S1RA1
16	AN2/RA2	S1AN16/S1RA2
17	AN3/BIAS0/RA3	S1AN0/S1CMP1A/S1PGA1P1/S1RA3
18	AN4/BIAS1/RA4	S1MCLR3/S1AN1/S1CMP2A/S1PGA2P1/S1PGA3P2/S1RA4
19	AVDD	AVDD
20	AVss	AVss
21	RD12	S1AN14/S1PGA2P2/S1RD12
22	AN13/ISRC0/RP49/RC1	S1ANA1/S1RP49/S1RC1
23	AN14/ISRC1/RP50/RC2	S1ANA0/S1RP50/S1RC2
24	RP54/RC6	S1AN11/S1CMP1B/S1RP54/S1RC6
25	VDD	VDD
26	Vss	Vss
27	CMP1B/RP51/RC3	S1AN8/S1CMP3B/S1RP51/S1RC3
28	OSCI/CLKI/AN5/RP32/RB0	S1AN5/S1RP32/S1RB0
29	OSCO/CLKO/AN6/BIAS2/RP33/RB1	S1AN4/S1RP33/S1RB1
30	RD11	S1AN17/S1PGA1P2/S1RD11
31	ISRC3/RD10	S1AN13/S1CMP2B/S1RD10
32	AN15/ISRC2/RP55/RC7	S1AN12/S1RP55/S1RC7
33	DACOUT/AN7/CMP1D/RP34/INT0/RB2	S1MCLR2/S1AN3/S1ANC0/S1ANC1/S1CMP1D/S1CMP2D/S1CMP3D/S1RP34/S1INT0/S1RB2
34	PGD2/AN8/RP35/RB3	S1PGD2/S1AN18/S1CMP3A/S1PGA3P1/S1RP35/S1RB3
35	PGC2/RP36/RB4	S1PGC2/S1AN9/S1RP36/S1PWM5L/S1RB4
36	RP56/ASDA1/SCK2/RC8	S1RP56/S1ASDA1/S1SCK1/S1RC8
37	RP57/ASCL1/SDI2/RC9	S1RP57/S1ASCL1/S1SDI1/S1RC9
38	PCI20/RD9	S1PCI20/S1RD9
39	SDO2/PCI19/RD8	S1SDO1/S1PCI19/S1RD8
40	Vss	Vss
41	VDD	VDD
42	RP71/RD7	S1RP71/S1PWM8H/S1RD7
43	RP70/RD6	S1RP70/S1PWM6H/S1RD6
44	RP69/RD5	S1RP69/S1PWM6L/S1RD5
45	PGD3/RP37/SDA2/RB5	S1PGD3/S1RP37/S1RB5
46	PGC3/RP38/SCL2/RB6	S1PGC3/S1RP38/S1RB6
47	TDO/AN9/RP39/RB7	S1MCLR1/S1AN6/S1RP39/S1PWM5H/S1RB7
48	PGD1/AN10/RP40/SCL1/RB8	S1PGD1/S1AN7/S1RP40/S1SCL1/S1RB8
49	PGC1/AN11/RP41/SDA1/RB9	S1PGC1/S1RP41/S1SDA1/S1RB9
50	RP52/RC4	S1RP52/S1PWM2H/S1RC4
51	RP53/RC5	S1RP53/S1PWM2L/S1RC5

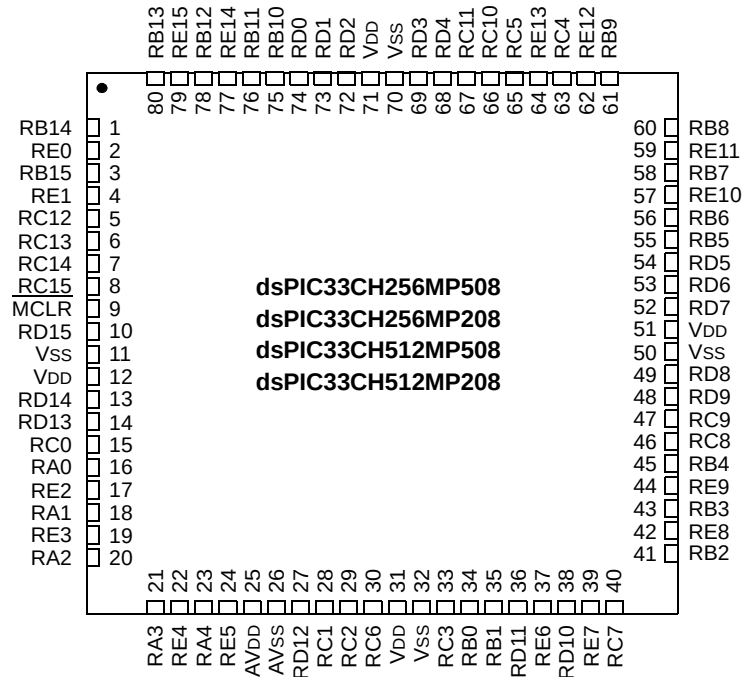
dsPIC33CH512MP508 FAMILY

TABLE 5: 64-PIN TQFP/QFN (CONTINUED)

Pin #	Master Core	Slave Core
52	RP58/RC10	S1RP58/S1PWM1H/S1RC10
53	RP59/RC11	S1RP59/S1PWM1L/S1RC11
54	RP68/RD4	S1RP68/S1PWM3H/S1RD4
55	RP67/RD3	S1RP67/S1PWM3L/S1RD3
56	Vss	Vss
57	VDD	VDD
58	RP66/RD2	S1RP66/S1PWM8L/S1RD2
59	RP65/RD1	S1RP65/S1PWM4H/S1RD1
60	RP64/RD0	S1RP64/S1PWM4L/S1RD0
61	TMS/RP42/PWM3H/RB10	S1RP42/S1RB10
62	TCK/RP43/PWM3L/RB11	S1RP43/S1RB11
63	TDI/RP44/PWM2H/RB12	S1RP44/S1RB12
64	RP45/PWM2L/RB13	S1RP45/S1RB13

Pin Diagrams (Continued)

80-Pin TQFP 12x12 mm



dsPIC33CH512MP508 FAMILY

TABLE 6: 80-PIN TQFP

Pin #	Master Core	Slave Core
1	RP46/PWM1H/RB14	S1RP46/S1RB14
2	RE0	S1RE0
3	RP47/PWM1L/RB15	S1RP47/S1RB15
4	RE1	S1RE1
5	RP60/PWM4H/RC12	S1RP60/S1RC12
6	RP61/PWM4L/RC13	S1RP61/S1RC13
7	RP62/RC14	S1RP62/S1PWM7H/S1RC14
8	RP63/RC15	S1RP63/S1PWM7L/S1RC15
9	MCLR	MCLR
10	PCI22/RD15	S1PCI22/S1RD15
11	Vss	Vss
12	VDD	VDD
13	PCI21/RD14	S1ANN1/S1PGA2N2/S1PCI21/S1RD14
14	RD13	S1ANN0/S1PGA1N2/S1RD13
15	AN12/IBIAS3/JP48/RC0	S1AN10/S1RP48/S1RC0
16	AN0/CMP1A/RA0	S1RA0
17	RE2	S1RE2
18	AN1/RA1	S1AN15/S1RA1
19	RE3	S1RE3
20	AN2/RA2	S1AN16/S1RA2
21	AN3/IBIAS0/RA3	S1AN0/S1CMP1A/S1PGA1P1/S1RA3
22	RE4	S1RE4
23	AN4/IBIAS1/RA4	S1MCLR3/S1AN1/S1CMP2A/S1PGA2P1/S1PGA3P2/S1RA4
24	RE5	S1RE5
25	AVDD	AVDD
26	AVSS	AVSS
27	RD12	S1AN14/S1PGA2P2/S1RD12
28	AN13/ISRC0/JP49/RC1	S1ANA1/S1RP49/S1RC1
29	AN14/ISRC1/JP50/RC2	S1ANA0/S1RP50/S1RC2
30	RP54/RC6	S1AN11/S1CMP1B/S1RP54/S1RC6
31	VDD	VDD
32	VSS	VSS
33	CMP1B/JP51/RC3	S1AN8/S1CMP3B/S1RP51/S1RC3
34	OSCI/CLKI/AN5/JP32/RB0	S1AN5/S1RP32/S1RB0
35	OSCO/CLKO/AN6/IBIAS2/JP33/RB1	S1AN4/S1RP33/S1RB1
36	RD11	S1AN17/S1PGA1P2/S1RD11
37	RE6	S1PGA3N2/S1RE6
38	ISRC3/RD10	S1AN13/S1CMP2B/S1RD10
39	RE7	S1RE7
40	AN15/ISRC2/JP55/RC7	S1AN12/S1RP55/S1RC7
41	DACOUT/AN7/CMP1D/JP34/INT0/RB2	S1MCLR2/S1AN3/S1ANC0/S1ANC1/S1CMP1D/S1CMP2D/S1CMP3D/S1RP34/S1INT0/S1RB2
42	RE8	S1RE8
43	PGD2/AN8/JP35/RB3	S1PGD2/S1AN18/S1CMP3A/S1PGA3P1/S1RP35/S1RB3

dsPIC33CH512MP508 FAMILY

TABLE 6: 80-PIN TQFP (CONTINUED)

Pin #	Master Core	Slave Core
44	RE9	S1RE9
45	PGC2/RP36/RB4	S1PGC2/S1AN9/S1RP36/S1PWM5L/S1RB4
46	RP56/ASDA1/SCK2/RC8	S1RP56/S1ASDA1/S1SCK1/S1RC8
47	RP57/ASCL1/SDI2/RC9	S1RP57/S1ASCL1/S1SDI1/S1RC9
48	PCI20/RD9	S1PCI20/S1RD9
49	SDO2/PCI19/RD8	S1SDO1/S1PCI19/S1RD8
50	Vss	Vss
51	VDD	VDD
52	RP71/RD7	S1RP71/S1PWM8H/S1RD7
53	RP70/RD6	S1RP70/S1PWM6H/S1RD6
54	RP69/RD5	S1RP69/S1PWM6L/S1RD5
55	PGD3/RP37/SDA2/RB5	S1PGD3/S1RP37/S1RB5
56	PGC3/RP38/SCL2/RB6	S1PGC3/S1RP38/S1RB6
57	RE10	S1RE10
58	TDO/AN9/RP39/RB7	S1MCLR1/S1AN6/S1RP39/S1PWM5H/S1RB7
59	RE11	S1RE11
60	PGD1/AN10/RP40/SCL1/RB8	S1PGD1/S1AN7/S1RP40/S1SCL1/S1RB8
61	PGC1/AN11/RP41/SDA1/RB9	S1PGC1/S1RP41/S1SDA1/S1RB9
62	ASCL2/RE12	S1RE12
63	RP52/RC4	S1RP52/S1PWM2H/S1RC4
64	ASDA2/RE13	S1RE13
65	RP53/RC5	S1RP53/S1PWM2L/S1RC5
66	RP58/RC10	S1RP58/S1PWM1H/S1RC10
67	RP59/RC11	S1RP59/S1PWM1L/S1RC11
68	RP68/RD4	S1RP68/S1PWM3H/S1RD4
69	RP67/RD3	S1RP67/S1PWM3L/S1RD3
70	Vss	Vss
71	VDD	VDD
72	RP66/RD2	S1RP66/S1PWM8L/S1RD2
73	RP65/RD1	S1RP65/S1PWM4H/S1RD1
74	RP64/RD0	S1RP64/S1PWM4L/S1RD0
75	TMS/RP42/PWM3H/RB10	S1RP42/S1RB10
76	TCK/RP43/PWM3L/RB11	S1RP43/S1RB11
77	RE14	S1RE14
78	TDI/RP44/PWM2H/RB12	S1RP44/S1RB12
79	RE15	S1RE15
80	RP45/PWM2L/RB13	S1RP45/S1RB13

dsPIC33CH512MP508 FAMILY

NOTES:

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is one of the most secure families of its kind on the market today, when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.
- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as "unbreakable."

Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE. Microchip disclaims all liability arising from this information and its use. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights unless otherwise stated.

Microchip received ISO/TS-16949:2009 certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona; Gresham, Oregon and design centers in California and India. The Company's quality system processes and procedures are for its PIC® MCUs and dsPIC® DSCs, KEELOQ® code hopping devices, Serial EEPROMs, microperipherals, nonvolatile memory and analog products. In addition, Microchip's quality system for the design and manufacture of development systems is ISO 9001:2000 certified.

QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
== ISO/TS 16949 ==

Trademarks

The Microchip name and logo, the Microchip logo, AnyRate, AVR, AVR logo, AVR Freaks, BeaconThings, BitCloud, CryptoMemory, CryptoRF, dsPIC, FlashFlex, flexPWR, Helder, JukeBlox, KEELOQ, KEELOQ logo, Kleer, LANCheck, LINK MD, maxStylus, maxTouch, MediaLB, megaAVR, MOST, MOST logo, MPLAB, OptoLyzer, PIC, picoPower, PICSTART, PIC32 logo, Prochip Designer, QTouch, RightTouch, SAM-BA, SpyNIC, SST, SST Logo, SuperFlash, tinyAVR, UNI/O, and XMEGA are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

ClockWorks, The Embedded Control Solutions Company, EtherSynch, Hyper Speed Control, HyperLight Load, IntelliMOS, mTouch, Precision Edge, and Quiet-Wire are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Adjacent Key Suppression, AKS, Analog-for-the-Digital Age, Any Capacitor, AnyIn, AnyOut, BodyCom, chipKIT, chipKIT logo, CodeGuard, CryptoAuthentication, CryptoCompanion, CryptoController, dsPICDEM, dsPICDEM.net, Dynamic Average Matching, DAM, ECAN, EtherGREEN, In-Circuit Serial Programming, ICSP, Inter-Chip Connectivity, JitterBlocker, KleerNet, KleerNet logo, Mindi, MiWi, motorBench, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICKit, PICtail, PureSilicon, QMatrix, RightTouch logo, REAL ICE, Ripple Blocker, SAM-ICE, Serial Quad I/O, SMART-I.S., SQI, SuperSwitcher, SuperSwitcher II, Total Endurance, TSHARC, USBCheck, VariSense, ViewSpan, WiperLock, Wireless DNA, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

Silicon Storage Technology is a registered trademark of Microchip Technology Inc. in other countries.

GestIC is a registered trademark of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2017, Microchip Technology Incorporated, All Rights Reserved.
ISBN: 978-1-5224-1674-6

Worldwide Sales and Service

AMERICAS

Corporate Office
2355 West Chandler Blvd.
Chandler, AZ 85224-6199
Tel: 480-792-7200
Fax: 480-792-7277
Technical Support:
<http://www.microchip.com/support>

Web Address:
www.microchip.com

Atlanta
Duluth, GA
Tel: 678-957-9614
Fax: 678-957-1455

Austin, TX
Tel: 512-257-3370

Boston
Westborough, MA
Tel: 774-760-0087
Fax: 774-760-0088

Chicago
Itasca, IL
Tel: 630-285-0071
Fax: 630-285-0075

Dallas
Addison, TX
Tel: 972-818-7423
Fax: 972-818-2924

Detroit
Novi, MI
Tel: 248-848-4000

Houston, TX
Tel: 281-894-5983

Indianapolis
Noblesville, IN
Tel: 317-773-8323
Fax: 317-773-5453
Tel: 317-536-2380

Los Angeles
Mission Viejo, CA
Tel: 949-462-9523
Fax: 949-462-9608
Tel: 951-273-7800

Raleigh, NC
Tel: 919-844-7510

New York, NY
Tel: 631-435-6000

San Jose, CA
Tel: 408-735-9110
Tel: 408-436-4270

Canada - Toronto
Tel: 905-695-1980
Fax: 905-695-2078

ASIA/PACIFIC

Asia Pacific Office
Suites 3707-14, 37th Floor
Tower 6, The Gateway
Harbour City, Kowloon

Hong Kong
Tel: 852-2943-5100
Fax: 852-2401-3431

Australia - Sydney
Tel: 61-2-9868-6733
Fax: 61-2-9868-6755

China - Beijing
Tel: 86-10-8569-7000
Fax: 86-10-8528-2104

China - Chengdu
Tel: 86-28-8665-5511
Fax: 86-28-8665-7889

China - Chongqing
Tel: 86-23-8980-9588
Fax: 86-23-8980-9500

China - Dongguan
Tel: 86-769-8702-9880

China - Guangzhou
Tel: 86-20-8755-8029

China - Hangzhou
Tel: 86-571-8792-8115
Fax: 86-571-8792-8116

China - Hong Kong SAR
Tel: 852-2943-5100
Fax: 852-2401-3431

China - Nanjing
Tel: 86-25-8473-2460
Fax: 86-25-8473-2470

China - Qingdao
Tel: 86-532-8502-7355
Fax: 86-532-8502-7205

China - Shanghai
Tel: 86-21-3326-8000
Fax: 86-21-3326-8021

China - Shenyang
Tel: 86-24-2334-2829
Fax: 86-24-2334-2393

China - Shenzhen
Tel: 86-755-8864-2200
Fax: 86-755-8203-1760

China - Wuhan
Tel: 86-27-5980-5300
Fax: 86-27-5980-5118

China - Xian
Tel: 86-29-8833-7252
Fax: 86-29-8833-7256

ASIA/PACIFIC

China - Xiamen
Tel: 86-592-2388138
Fax: 86-592-2388130

China - Zhuhai
Tel: 86-756-3210040
Fax: 86-756-3210049

India - Bangalore
Tel: 91-80-3090-4444
Fax: 91-80-3090-4123

India - New Delhi
Tel: 91-11-4160-8631
Fax: 91-11-4160-8632

India - Pune
Tel: 91-20-3019-1500

Japan - Osaka
Tel: 81-6-6152-7160
Fax: 81-6-6152-9310

Japan - Tokyo
Tel: 81-3-6880-3770
Fax: 81-3-6880-3771

Korea - Daegu
Tel: 82-53-744-4301
Fax: 82-53-744-4302

Korea - Seoul
Tel: 82-2-554-7200
Fax: 82-2-558-5932 or
82-2-558-5934

Malaysia - Kuala Lumpur
Tel: 60-3-6201-9857
Fax: 60-3-6201-9859

Malaysia - Penang
Tel: 60-4-227-8870
Fax: 60-4-227-4068

Philippines - Manila
Tel: 63-2-634-9065
Fax: 63-2-634-9069

Singapore
Tel: 65-6334-8870
Fax: 65-6334-8850

Taiwan - Hsin Chu
Tel: 886-3-5778-366
Fax: 886-3-5770-955

Taiwan - Kaohsiung
Tel: 886-7-213-7830

Taiwan - Taipei
Tel: 886-2-2508-8600
Fax: 886-2-2508-0102

Thailand - Bangkok
Tel: 66-2-694-1351
Fax: 66-2-694-1350

EUROPE

Austria - Wels
Tel: 43-7242-2244-39
Fax: 43-7242-2244-393

Denmark - Copenhagen
Tel: 45-4450-2828
Fax: 45-4485-2829

Finland - Espoo
Tel: 358-9-4520-820

France - Paris
Tel: 33-1-69-53-63-20
Fax: 33-1-69-30-90-79

France - Saint Cloud
Tel: 33-1-30-60-70-00

Germany - Garching
Tel: 49-8931-9700

Germany - Haan
Tel: 49-2129-3766400

Germany - Heilbronn
Tel: 49-7131-67-3636

Germany - Karlsruhe
Tel: 49-721-625370

Germany - Munich
Tel: 49-89-627-144-0
Fax: 49-89-627-144-44

Germany - Rosenheim
Tel: 49-8031-354-560

Israel - Ra'anana
Tel: 972-9-744-7705

Italy - Milan
Tel: 39-0331-742611
Fax: 39-0331-466781

Italy - Padova
Tel: 39-049-7625286

Netherlands - Drunen
Tel: 31-416-690399
Fax: 31-416-690340

Norway - Trondheim
Tel: 47-7289-7561

Poland - Warsaw
Tel: 48-22-3325737

Romania - Bucharest
Tel: 40-21-407-87-50

Spain - Madrid
Tel: 34-91-708-08-90
Fax: 34-91-708-08-91

Sweden - Gothenberg
Tel: 46-31-704-60-40

Sweden - Stockholm
Tel: 46-8-5090-4654

UK - Wokingham
Tel: 44-118-921-5800
Fax: 44-118-921-5820