

Features	Benefits
Clock Generation Module with Phase-Lock Loo	p (PLL)
 > Clock monitor with self clock mode in case of no external clock > Programmable clock frequency with 1024 options ranging from divide by 16 to multiply by 64 from base oscillator > Real-time interrupt > Watchdog 	 Reliable, robust operation Provides high performance using low-cost reference crystals Reduces generated noise Reduces power consumption Easily able to implement real-time clock
Enhanced Capture Timer	
 8-channel, 16-bit with input capture, output compare and pulse accumulator 16-bit modulus down counter 	> Flexible, programmable timer system
8-bit or 16-bit Pulse-Width Modulation (PWM)	
> 8-channel, 8-bit or 4-channel, 16-bit PWM> PWM supports center-aligned operation	 Efficiently implement motor control, battery charging or digital-to-analog (DAC) functions
Two Serial Communications Interfaces	
> 8192 prescaler options	 Asynchronous communication between the MCU and a terminal, computer or a network of MCUs Exact baud rate matching
Three Serial Peripheral Interfaces	
> Up to 6.25 Mbps	 High-speed synchronous communication between multiple MCUs or between MCU and serial peripherals
Inter-IC (I²C) Bus	
> 256 clock-rate options	 Provides a simple, efficient method of data exchange between devices Minimizes the need for large numbers of connections between devices and eliminates he need for an address decoder
Up to 91 Input/Output (I/O) Lines	
> Programmable pull-ups/pull-downs> Dual drive capability	 Reduce system cost Able to tailor application for minimum EMC or high current loads

Application Notes and Engineering Bulletins

AN2206	Security and Protection on the HCS12 Family
AN2213	Using Cosmic Software's M68HC12 Compiler for MC9S12DP256 Software Development
AN2216	MC9S12DP256 Software Development Using Metrowerks CodeWarrior™
AN2250	Audio Reproduction on HCS12 Microcontrollers
EB386	HCS12 D-Family Compatibility

Learn More: For more information about Freescale products, please visit www.freescale.com.

*Price indicated is MSRP.

Freescale™ and the Freescale logo are trademarks of Freescale Semiconductor, Inc. All other product or service names are the property of their respective owners. This product incorporates SuperFlash® technology licensed from SST. © Freescale Semiconductor, Inc. 2005

Document Number: MC9S12DJ256FS REV 2

Data Sheets9S12DP256BDGV2MC9S12DP256 Device GuideS12DP256PIMV2MC9S12DP256 Port Integration Module Block GuideS12BDMV4HCS12 Background Debug (BDM) Block GuideS12BKVD1HCS12 Breakpoint (BKP) Block GuideS12CPUV2HCS12 CPU Reference ManualS12MSCANV2HCS12 Motorola Scalable Controller Area Network Block GuideS12ATD10B8CV2HCS12 10-bit 8-channel Analog to Digital Block GuideS12ECT16B8CV1HCS12 Clock Reset Generator Block GuideS12ECT16B8CV2HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12ET256KV2HCS12 16CB12 4K EEPROM Block GuideS12IICV2HCS12 1°C Block GuideS12INTV1HCS12 I°C Block GuideS12IMEV3HCS12 Nultiplexed External Bus Interface (MEBI) Block GuideS12PWM8B8CV1HCS12 8-bit 8-channel Pulse-Width Modulator Block GuideS12SPIV2HCS12 Serial Communications Interface Block GuideS12SPIV2HCS12 Serial Peripheral Interface Block GuideS12VREGV1HCS12 Voltage Regulator Block Guide		
S12DP256PIMV2MC9S12DP256 Port Integration Module Block GuideS12BDMV4HCS12 Background Debug (BDM) Block GuideS12BKVD1HCS12 Breakpoint (BKP) Block GuideS12CPUV2HCS12 CPU Reference ManualS12MSCANV2HCS12 CPU Reference ManualS12ATD10B8CV2HCS12 10-bit 8-channel Analog to Digital Block GuideS12CRGV3HCS12 16-bit 8-channel Analog to Block GuideS12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12ET54KV2HCS12 256K Flash Block GuideS12INTV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12INTV1HCS12 16-bit 8-channel Pulse-Width Modulator Block GuideS12PWM8B8CV1HCS12 Notule Mapping Control (MMC) Block GuideS12SCIV2HCS12 Serial Communications Interface Block GuideS12SPIV2HCS12 Serial Peripheral Interface Block GuideS12VREGV1HCS12 Voltage Regulator	Data Sheets	
Module Block Guide\$12BDMV4HCS12 Background Debug (BDM) Block Guide\$12BKVD1HCS12 Breakpoint (BKP) Block Guide\$12DKVD1HCS12 Dru Reference Manual\$12CPUV2HCS12 Motorola Scalable Controller Area Network Block Guide\$12ATD10B8CV2HCS12 10-bit 8-channel Analog to Digital Block Guide\$12CRGV3HCS12 Clock Reset Generator Block Guide\$12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block Guide\$12EET54KV2HCS12 16-bit 8-channel Enhanced Capture Timer Block Guide\$12ET256KV2HCS12 256K Flash Block Guide\$12IICV2HCS12 I°C Block Guide\$12IICV2HCS12 I°C Block Guide\$12IMTV1HCS12 Multiplexed External Bus Interface (MEBI) Block Guide\$12PWM8B8CV1HCS12 Nodule Mapping Control (MMC) Block Guide\$12SCIV2HCS12 Serial Communications Interface Block Guide\$12SPIV2HCS12 Serial Peripheral Interface Block Guide\$12SPIV2HCS12 Voltage Regulator	9S12DP256BDGV2	MC9S12DP256 Device Guide
S12BDMV4HCS12 Background Debug (BDM) Block GuideS12BKVD1HCS12 Breakpoint (BKP) Block GuideS12CPUV2HCS12 CPU Reference ManualS12MSCANV2HCS12 Notorola Scalable Controller Area Network Block GuideS12ATD10B8CV2HCS12 10-bit 8-channel Analog to Digital Block GuideS12ECT16B8CV1HCS12 Clock Reset Generator Block GuideS12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12ET256KV2HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12ICV2HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12ET16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12ET256KV2HCS12 266K Flash Block GuideS12IICV2HCS12 PC Block GuideS12IMEBIV3HCS12 Interrupt (INT) Block GuideS12PWM8B8CV1HCS12 Module Mapping Control (MMC) Block GuideS12SCIV2HCS12 Serial Communications Interface Block GuideS12SPIV2HCS12 Serial Communications Interface Block GuideS12VREGV1HCS12 Voltage Regulator	S12DP256PIMV2	MC9S12DP256 Port Integration
Block GuideS12BKVD1S12BKVD1HCS12 Breakpoint (BKP) Block GuideS12CPUV2HCS12 CPU Reference ManualS12MSCANV2HCS12 Motorola Scalable Controller Area Network Block GuideS12ATD10B8CV2HCS12 10-bit 8-channel Analog to Digital Block GuideS12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12EET16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12ET16B8CV2HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12ET256KV2HCS12 16C Block GuideS12IICV2HCS12 1°C Block GuideS12INTV1HCS12 Interrupt (INT) Block GuideS12MMCV4HCS12 8-bit 8-channel Pulse-Width Modulator Block GuideS12SCIV2HCS12 8-rial Communications Interface Block GuideS12SPIV2HCS12 Serial Peripheral Interface Block GuideS12VREGV1HCS12 Voltage Regulator		Module Block Guide
S12BKVD1HCS12 Breakpoint (BKP) Block GuideS12CPUV2HCS12 CPU Reference ManualS12MSCANV2HCS12 Motorola Scalable Controller Area Network Block GuideS12ATD10B8CV2HCS12 10-bit 8-channel Analog to Digital Block GuideS12CRGV3HCS12 Clock Reset Generator Block GuideS12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12EET34KV2HCS12 266K Flash Block GuideS12IICV2HCS12 I°C Block GuideS12IINV1HCS12 I°C Block GuideS12INV1HCS12 I°C Block GuideS12INV1HCS12 I°C Block GuideS12INV1HCS12 Multiplexed External Bus Interface (MEBI) Block GuideS12PWM8B8CV1HCS12 8-bit 8-channel Pulse-Width Modulator Block GuideS12SCIV2HCS12 Serial Communications Interface Block GuideS12SPIV2HCS12 Not Block GuideS12SPIV2HCS12 Voltage Regulator	S12BDMV4	
S12CPUV2HCS12 CPU Reference ManualS12MSCANV2HCS12 Motorola Scalable Controller Area Network Block GuideS12ATD10B8CV2HCS12 10-bit 8-channel Analog to Digital Block GuideS12CRGV3HCS12 Clock Reset Generator Block GuideS12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12EET54KV2HCS12 266K Flash Block GuideS12IICV2HCS12 I°C Block GuideS12IICV2HCS12 I°C Block GuideS12INTV1HCS12 I°C Block GuideS12INTV1HCS12 I°C Block GuideS12MMCV4HCS12 Multiplexed External Bus Interface (MEBI) Block GuideS12PWM8B8CV1HCS12 8-bit 8-channel Pulse-Width Modulator Block GuideS12SCIV2HCS12 Serial Communications Interface Block GuideS12SPIV2HCS12 Notage Regulator		
S12MSCANV2HCS12 Motorola Scalable Controller Area Network Block GuideS12ATD10B8CV2HCS12 10-bit 8-channel Analog to Digital Block GuideS12CRGV3HCS12 Clock Reset Generator Block GuideS12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12EETS4KV2HCS12 4K EEPROM Block GuideS12INTV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12INTV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12ET34KV2HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12INTV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12INTV1HCS12 1256K Flash Block GuideS12INTV1HCS12 12°C Block GuideS12MMCV4HCS12 Multiplexed External Bus Interface (MEBI) Block GuideS12PWM8B8CV1HCS12 Nodule Mapping Control (MMC) Block GuideS12SCIV2HCS12 Serial Communications Interface Block GuideS12SPIV2HCS12 Serial Communications Interface Block GuideS12VREGV1HCS12 Voltage Regulator		
Area Network Block Guide\$12ATD10B8CV2HCS12 10-bit 8-channel Analog to Digital Block Guide\$12CRGV3HCS12 Clock Reset Generator Block Guide\$12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block Guide\$12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block Guide\$12ETS4KV2HCS12 4K EEPROM Block Guide\$12FT256KV2HCS12 256K Flash Block Guide\$12IICV2HCS12 I^2C Block Guide\$12IICV1HCS12 ICC Block Guide\$12IMEV1HCS12 Multiplexed External Bus Interface (MEBI) Block Guide\$12MMCV4HCS12 Module Mapping Control (MMC) Block Guide\$12PWM8B8CV1HCS12 Serial Communications Interface Block Guide\$12SPIV2HCS12 Serial Communications Interface Block Guide\$12SPIV2HCS12 Serial Peripheral Interface Block Guide\$12VREGV1HCS12 Voltage Regulator	S12CPUV2	
S12ATD10B8CV2HCS12 10-bit 8-channel Analog to Digital Block GuideS12CRGV3HCS12 Clock Reset Generator Block GuideS12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12EET54KV2HCS12 4K EEPROM Block GuideS12FT256KV2HCS12 1°C Block GuideS12IICV2HCS12 I°C Block GuideS12INTV1HCS12 Interrupt (INT) Block GuideS12MMCV4HCS12 Multiplexed External Bus Interface (MEBI) Block GuideS12PWM8B8CV1HCS12 8-bit 8-channel Pulse-Width Modulator Block GuideS12SPIV2HCS12 Serial Communications Interface Block GuideS12VREGV1HCS12 Voltage Regulator	S12MSCANV2	
Digital Block GuideS12CRGV3HCS12 Clock Reset Generator Block GuideS12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12EET54KV2HCS12 4K EEPROM Block GuideS12FT256KV2HCS12 256K Flash Block GuideS12IICV2HCS12 I°C Block GuideS12IINTV1HCS12 Interrupt (INT) Block GuideS12MMCV4HCS12 Multiplexed External Bus Interface (MEBI) Block GuideS12PWM8B8CV1HCS12 8-bit 8-channel Pulse-Width Modulator Block GuideS12SCIV2HCS12 Serial Communications Interface Block GuideS12SPIV2HCS12 Serial Peripheral Interface Block GuideS12VREGV1HCS12 Voltage Regulator		
S12CRGV3HCS12 Clock Reset Generator Block GuideS12ECT16B8CV1HCS12 16-bit 8-channel Enhanced Capture Timer Block GuideS12EET34KV2HCS12 4K EEPROM Block GuideS12FT256KV2HCS12 256K Flash Block GuideS12IICV2HCS12 1°C Block GuideS12INTV1HCS12 Interrupt (INT) Block GuideS12MMCV4HCS12 Multiplexed External Bus Interface (MEBI) Block GuideS12PWM8B8CV1HCS12 8-bit 8-channel Pulse-Width Modulator Block GuideS12SCIV2HCS12 Serial Communications Interface Block GuideS12VREGV1HCS12 Voltage Regulator	S12ATD10B8CV2	
Block Guide S12ECT16B8CV1 HCS12 16-bit 8-channel Enhanced Capture Timer Block Guide S12ETS4KV2 HCS12 16-bit 8-channel Enhanced S12ETS4KV2 HCS12 16-bit 8-channel Enhanced S12FT256KV2 HCS12 256K Flash Block Guide S12INTV1 HCS12 16-bit 8-channel Enhanced S12INTV1 HCS12 256K Flash Block Guide S12INTV1 HCS12 16-bit 8-channel Enhanced S12INTV1 HCS12 16-bit 8-channel Bus Interface (MEBI) Block Guide S12MMCV4 HCS12 Multiplexed External Bus Interface (MEBI) Block Guide S12PWM8B8CV1 HCS12 8-bit 8-channel Pulse-Width Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1		0
S12ECT16B8CV1 HCS12 16-bit 8-channel Enhanced Capture Timer Block Guide S12ETS4KV2 HCS12 4K EEPROM Block Guide S12FT256KV2 HCS12 256K Flash Block Guide S12IICV2 HCS12 1°C Block Guide S12IICV3 HCS12 1°C Block Guide S12IICV4 HCS12 1°C Block Guide S12MEBIV3 HCS12 Interrupt (INT) Block Guide S12MMCV4 HCS12 Multiplexed External Bus Interface (MEBI) Block Guide S12PWM8B8CV1 HCS12 8-bit 8-channel Pulse-Width Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator	S12CRGV3	
Capture Timer Block Guide S12EETS4KV2 HCS12 4K EEPROM Block Guide S12FT256KV2 HCS12 256K Flash Block Guide S12IICV2 HCS12 I ² C Block Guide S12INTV1 HCS12 Interrupt (INT) Block Guide S12MEBIV3 HCS12 Multiplexed External Bus Interface (MEBI) Block Guide S12MMCV4 HCS12 Nodule Mapping Control (MMC) Block Guide S12PWM8B8CV1 HCS12 8-bit 8-channel Pulse-Width Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator	0	
S12EETS4KV2HCS12 4K EEPROM Block GuideS12FT256KV2HCS12 256K Flash Block GuideS12IICV2HCS12 1°C Block GuideS12INTV1HCS12 IrC Block GuideS12MEBIV3HCS12 Multiplexed External Bus Interface (MEBI) Block GuideS12MMCV4HCS12 Module Mapping Control (MMC) Block GuideS12PWM8B8CV1HCS12 8-bit 8-channel Pulse-Width Modulator Block GuideS12SCIV2HCS12 Serial Communications Interface Block GuideS12SPIV2HCS12 Serial Peripheral Interface Block GuideS12VREGV1HCS12 Voltage Regulator	S12ECI16B8CV1	
S12FT256KV2 HCS12 256K Flash Block Guide S12IICV2 HCS12 I*C Block Guide S12INTV1 HCS12 Interrupt (INT) Block Guide S12MEBIV3 HCS12 Multiplexed External Bus Interface (MEBI) Block Guide S12MMCV4 HCS12 Module Mapping Control (MMC) Block Guide S12PWM8B8CV1 HCS12 8-bit 8-channel Pulse-Width Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator		
S12IICV2 HCS12 I°C Block Guide S12INTV1 HCS12 Interrupt (INT) Block Guide S12MEBIV3 HCS12 Multiplexed External Bus Interface (MEB)) Block Guide S12MMCV4 HCS12 Module Mapping Control (MMC) Block Guide S12PWM8B8CV1 HCS12 8-bit 8-channel Pulse-Width Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator		
S12INTV1 HCS12 Interrupt (INT) Block Guide S12INTV1 HCS12 Interrupt (INT) Block Guide S12MEBIV3 HCS12 Multiplexed External Bus Interface (MEBI) Block Guide S12MMCV4 HCS12 Module Mapping Control (MMC) Block Guide S12PWM8B8CV1 HCS12 8-bit 8-channel Pulse-Width Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator	• • • • • • • • • • • • • • • • • • • •	
S12MEBIV3 HCS12 Multiplexed External Bus Interface (MEBI) Block Guide S12MMCV4 HCS12 Module Mapping Control (MMC) Block Guide S12PWM8B8CV1 HCS12 8-bit 8-channel Pulse-Width Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator	• • • • • • • •	
Interface (MEBI) Block Guide S12MMCV4 HCS12 Module Mapping Control (MMC) Block Guide S12PWM8B8CV1 HCS12 8-bit 8-channel Pulse-Width Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator	0.2	
S12MMCV4 HCS12 Module Mapping Control (MMC) Block Guide S12PWM8B8CV1 HCS12 8-bit 8-channel Pulse-Width Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator	S12MEBIV3	
(MMC) Block Guide S12PWM8B8CV1 HCS12 8-bit 8-channel Pulse-Width Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator	0.4.01.01.01.4	. ,
S12PWM8B8CV1 HCS12 8-bit 8-channel Pulse-Width Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator	S12MMCV4	
Modulator Block Guide S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator		
S12SCIV2 HCS12 Serial Communications Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator	S12PVVIVI8B8CV1	
Interface Block Guide S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator	C10CCIV0	
S12SPIV2 HCS12 Serial Peripheral Interface Block Guide S12VREGV1 HCS12 Voltage Regulator	51250172	
Block Guide S12VREGV1 HCS12 Voltage Regulator		
S12VREGV1 HCS12 Voltage Regulator	01201102	
	S12VREGV1	
	01201LOVI	

Cost-Effective Development Tools

For more information on development tools, please refer to the Freescale Development Tool Selector Guide (SG1011).

M68KIT912DP256 \$495*	Evaluation kit for development and evaluation of HCS12 application code that includes the M68EVB912DP256 and USBMULTILINKBDM
M68CYCLONEPRO \$499*	HC08/HCS08/HC12/HCS12 stand-alone Flash programmer or in-circuit emulator, debugger, Flash programmer; USB, serial or Ethernet interface options
USBMULTILINKBDM \$99*	Universal HCS08/HCS12 in-circuit emulator, debugger, and Flash programmer; USB PC interface
CWX-H12-SE Free*	CodeWarrior [™] Special Edition for HCS12 MCUs; includes integrated development environment (IDE), linker, debugger, unlimited assembler, Processor Expert [™] auto-code generator, full-chip simulation and limited C compiler

Package Options

Package	Temp. Range	
80 QFP	-40°C to +85°C	
80 LQFP	-40°C to +105°C	
80 QFP	-40°C to +125°C	
112 LQFP	-40°C to +85°C	
112 LQFP	-40°C to +105°C	
112 LQFP	-40°C to +125°C	
112-Lead LQFP		
	80 QFP 80 LQFP 80 QFP 112 LQFP 112 LQFP 112 LQFP 112 LQFP	



