Technological Arts Inc.

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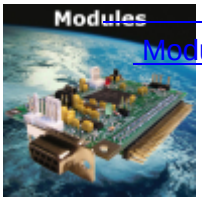
Adapt9S12E



Modules

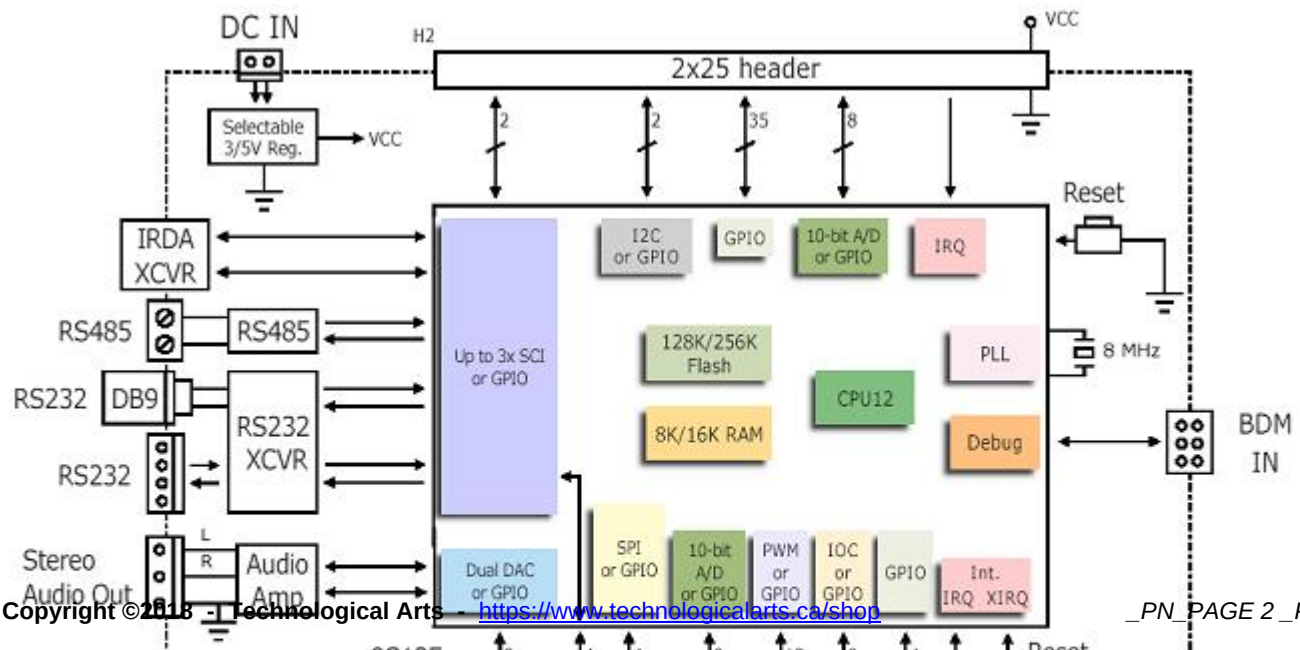
App Cards

Accessories

Overview

Adapt9S12E is a compact, modular implementation of Freescale's 9S12 **E** family-- utilizing the MC9S12E microcontroller chip. It is a member of the HCS12 family, and is backward-compatible with 68HC12 (and 68HC11). By shrinking feature size, more functionality can be put on a chip, reducing power consumption and cost, while increasing operating speed. Adapt9S12E is an ideal low-cost platform that brings these advantages within easy reach of engineers, students, and hobbyists. The flexible design of the entire **Adapt** series microcontroller products accommodates all aspects of training, evaluation, development, prototyping-- and even volume production.

Block Diagram



Details

MCU Features:

- up to 90 I/O lines with multi-property programmability (eg. input/output, pull-up/pull-down, reduced drive, inverted polarity, etc.)
- up to 16 key wake-up interrupt inputs (with digital filtering)
- 3 x SCI with variable bit length, to support IrDA
- 1 x SPI
- IIC Bus
- 2 x 8-bit DAC
- 16-channel 10-bit ADCs
- multiple PWM channels with fault protection and current sense
- triple 4-channel timers supporting input capture/output compare, event counting, gated time accumulation, and simple PWM
- internal memory configuration:
  - 128K multi-sector Flash
  - 8K RAM
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- fast, high-endurance, (tens of thousands of erase/write cycles)
- PLL for bus operation up to 25 MHz (over entire voltage and temperature range)
- advanced security features for protecting program memory
- 3 V to 5 V operation
- on-chip LVI reset circuit saves external parts

Module Features:

- 2.30-inch x 3.25-inch AdaptS12 form-factor
- two 50-pin connectors bring out all I/O pins of the MCU
- all I/O pins on a 0.1-inch grid for easy interfacing to standard perfboard
- versatile connector design for use with solderless breadboards, prototyping cards, or embedding into your design
- RS232C transceivers provided for two SCI channels
- optional RS485 transceiver accomodated for second SCI channel
- optional IrDA physical-layer transceivers for third SCI channel
- supplied with 8 MHz crystal, but internal bus can run up to 24MHz (using on-chip PLL)
- selectable Colpitts/Pierce oscillator configuration
- on-chip single-wire Background Debug Module (BDM) fully supported for loading and debugging user code
- universal 6-pin/10-pin BDM connectors support BDM pods from multiple vendors
- code in C, BASIC, Forth, assembler, etc.
- no special Flash programming voltage or switch required
- fast in-circuit programming
- small footprint on-chip bootloader/monitor works with our free uBug12JE multi-platform GUI, for quick loading/debugging of user programs
- fully supported by Freescale's CodeWarrior
- Run/Load switch for choice of Standalone or Monitor operation following reset
- low-dropout 5V/3V regulator on-board (mounted underneath)
- user-selectable for 3V or 5V operation
- accommodates optional precision voltage reference chip for analog-to-digital converter
- second I/O connector accommodates memory expansion bus
- many accessories available:

    - prototyping cards and backplanes
    - low-cost demo card
    - full-featured Evaluation/Training board
    - Servo/Sensor Interface module for robotics/mecahtronics applications
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Resources

- 9S12E128 Fact Sheet
- 9S12E-Family Device User Guide
- Freescale 9S12E Webpage

- Adapt9S12E128 Data Sheet
- Adapt9S12E128 User Manual
- Application Note: Implementing the IrDA Interface on 9S12E128

- uBug12 multi-platform GUI for working with the on-chip Serial Monitor
- Linux command line tool **hcs12mem** for working with the Serial Monitor
- SynCode: Free Integrated Editor and GNU C Compiler package for Windows
- Special Edition C compiler for HCS12(X) from Freescale (32K C code limit; unlimited assembler)
- 45-day Demo C compiler from ImageCraft
- AsmIDE is a free Windows IDE for GNU Assembler, created by Eric Engler
- EmbeddedGNU is a free Windows IDE for GNU C, created by Eric Engler
- Using the GNU Development Tools for 68HC11 and 68HC12

- University of Texas library of C code for 68HC12 and HCS12 microcontrollers
- Support Library

Adapt9S12E128 Full Module with 112-pin MCU
USD $149.00

Adapt9S12 form-factor module based on 112-pin 9S12E128 MCU, populated with RS232, RS485, IrDA transceivers, and dual op amp for DAC channels. [Product Details...]

Adapt9S12E128 Module with 112-pin MCU, Minimal
USD $139.00

Adapt9S12 form-factor module based on 112-pin 9S12E128 MCU, minimally populated with RS232 transceiver. [Product Details...]

Adapt9S12E256 Fully-populated Module with 112-pin MCU
USD $159.00

Adapt9S12 form-factor module based on 112-pin 9S12E256 MCU, populated with RS232, RS485, IrDA transceivers, and dual op amp for DAC channels. [Product Details...]

Adapt9S12E256 Module with 112-pin MCU, Minimal
USD $149.00

[Product Details...]

Adapt9S12EQ128 w/ 80-pin MCU (no IrDA)
USD $99.00

OEM Adapt module featuring 80-pin version of 9S12E128 with RS232 and RS485 transceivers. Special low price while quantities last! [Product Details...]

Adapt9S12EQ128 OEM Module w/ 80-pin MCU, Minimal
USD $89.00

Low-cost OEM Adapt module populated with 80-pin 9S12E128 MCU and RS232 transceiver. Special low pricing while quantities last! [Product Details...]

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