DSM2180 Family

DSM (DSP System Memory)
For Analog Devices ADSP-218x Family

www.st.com/psd

DESCRIPTION

DSM2180 devices bring In-System Programmable flash memory, programmable logic and additional I/O to Analog Devices ADSP-218x family of DSPs. The result is a simple, flexible, two-chip solution featuring the flexibility of flash memories and smart JTAG programming techniques for manufacturing and field updates. The on-chip memory and decode and paging logic make it easy to add large amounts of external flash memory to the ADSP-218x family for boot memory and/or Data Overlay Memory.

JTAG In-System Programming (ISP) reduces development time, simplifies manufacturing flow and lowers the cost of field upgrades. DSM devices also add programmable logic (PLD) and additional configurable I/O pins to the DSP system. The state of each I/O pin can be driven by DSP software or PLD logic. PLD and I/O configuration are programmable by JTAG ISP, just like the flash memory. Common uses for the PLD include chip selects for external devices (i.e. UART), state-machines, simple shifters and counters, keypad and control panel interfaces, clock dividers, hand-shake delay, muxes, etc. This eliminates the need for small external PLDs and logic devices.

Configuration of PLD, I/O and flash memory mapping are easily entered in a point-and-click environment using our software development tool, PSDsoft Express™. This software is available at no charge from www.st.com/psd

The two-chip combination of a DSP and a DSM device is ideal for systems which have limitations on size, EMI levels and power consumption. DSM memory and logic are “zero-power”, this means they automatically go to standby between memory accesses or logic input changes. This produces low active and standby current consumption, which is ideal for battery powered products.

KEY FEATURES

- 128 KByte flash memory
- General purpose PLD with over 3,000 gates of PLD with 16 macro cells
- Up to 16 individually re-configurable I/O pins
- In-System Programming via JTAG
- Programmable Power Management
- Programmable Security Bit

KEY BENEFITS

- Glueless interface to ADSP-218x family of DSPs
- Flash memory accessible as Byte DMA (BDMA) or as Data Overlay with no DMA setup required
- Eliminate PLDs and external logic devices
- JTAG ISP allows easy product testing and Just-In-Time manufacturing
- Easy-to-use software development tools downloadable from web

To guarantee 100% compatibility with the ADSP-218x family of DSPs, this device was developed in conjunction with Analog Devices.

ANALOG DEVICES

STMicroelectronics
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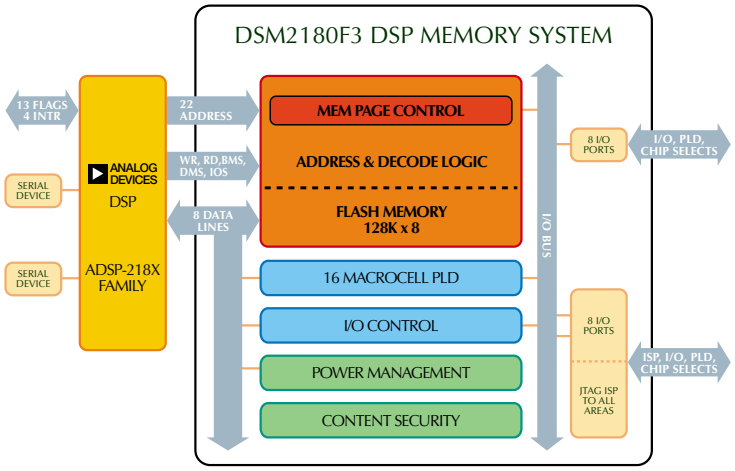
DSM21XX Family

FEATURES AND BENEFITS

- **Glueless connection to ADSP-218x family**
  - Easily add memory, logic and I/O to DSP
- **128 KByte flash memory**
  - For bootloading and/or Data Overlay Memory.
  - Programmable decoding and paging logic allows the access to flash memory as either Byte DMA (BDMA) or as External Data Overlay Memory.
  - Rapidly access flash memory with BDMA for booting and loading internal DSP Overlay Memory. Alternatively access the same flash memory as External Data Overlay Memory or efficiently write flash with code updates and data, a byte at a time, with no DMA setup overhead.
  - Individual 16 KByte flash sectors match size of DSP External Data Overlay window for efficient data management. Integrated page logic provides easy DSP access to all 128 KByte.
  - DSM connects to upper byte of 16-bit DSP data bus. Byte-wide access to 8-bit BDMA space. Half-word access to 16-bit Data Overlay Memory and 16-bit I/O memory space.
- **5V and 3.3V devices (± 10%)**
- **Up to 16 I/O pins**
  - Increase total DSP system I/O capability.
  - I/O controlled by DSP software or PLD logic.
  - 8 mA I/O pin drive at 5V Vcc; 4 mA at 3.3V Vcc.
- **General purpose PLD**
  - Over 3,000 gates of PLD with 16 macro cells.
  - Used for peripheral glue logic to keypads, control panel, displays, LCD, UART devices.
  - Eliminates PLDs and external logic devices.
  - Creates state machines, chip selects, simple shifters and counters, clock dividers and delays.
  - Easy-to-use software development with PSDsoft Express… Free to download!

Two-Chip Solution System



- **In-System Programming (ISP) via JTAG**
  - Programs entire chip in 10-20 seconds with no DSP involvement.
  - Efficient programming allows easy product testing and Just-In-Time manufacturing.
  - Eliminates sockets for pre-programmed memory and logic devices.
  - Uses low-cost FlashLINK™ cable with PC.
- **Zero-Power technology**
  - 75µA standby at 5V Vcc and 25µA standby at 3V Vcc.
- **Content security**
  - Programmable security bit blocks the access from device programmers and readers.
- **Small packaging**
  - 52-lead PQFP, or 52-lead PLCC
- **Memory speed**
  - 90 ns at 5V Vcc, 150 ns at 3.3V Vcc

DSM2180F3 DSP System Memory Product Matrix

Part Number	ISP Flash Memory	Flash Partitioning	PLD	I/O Ports	Vcc & I/O	Speed	Package
DSM2180F3-90K6	128K Bytes	Eight 16K Byte Sectors	16 macrocells	Up to 16	5V +/- 10%	90 ns 52p	PLCC52
DSM2180F3-90T6	128K Bytes	Eight 16K Byte Sectors	16 macrocells	Up to 16	5V +/- 10%	90 ns 52p	PQFP52
DSM2180F3V-15K6	128K Bytes	Eight 16K Byte Sectors	16 macrocells	Up to 16	3.3V +/- 10%	150 ns 52p	PLCC52
DSM2180F3V-15T6	128K Bytes	Eight 16K Byte Sectors	16 macrocells	Up to 16	3.3V +/- 10%	150 ns 52p	PQFP52

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Full product information at www.st.com

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