



FMD6800

PROGRAMMABLE CMOS

HIGH PIN COUNT ARRAY

DESCRIPTION

The FMD6800 is a mask programmable CMOS array optimized for analog and mixed-signal applications with high pin counts.

The core of the array consists of Flexible Analog Building Blocks (FABBs), capacitors, and switches, that surround an area optimized for digital applications.

Predefined TILES (Templates for Interconnecting Loose Elements) allow the FABBs to be configured as analog cells opamps, comparators, OTA's and other functional blocks for signal processing applications.

Other peripheral FABBs provide added flexibility. They are ideal for internal voltage reference generation and analog / mixed-signal conditioning. In addition dedicated cells are provided for clock generation and interfacing digital signals to the array.

Continuous time, as well as switched-capacitor filters can be implemented. Control systems, sensors, audio, and telecommunications are among other applications for which the FMD6800 is ideally suited.

The FMD6800 mask programmable CMOS array architecture makes it an extremely versatile mixed-signal ASIC. The array offers 58 I/Os that can be programmed as Inputs or Outputs, yet the die is small enough to fit in most surface mount packages.

FEATURES

- Operating voltage range (2.7 to 5 Volts)
- 1.2 micron double poly, double metal, N-well CMOS process with Hi ohm Poly .
- Architecture allows over 80% component utilization
- Low development cost and quick turnaround
- Ideal for high pin count devices
- Over one thousand equivalent gates for glue logic and timing
- Voltage regulator and Oscillator on board
- Excellent component matching for tight specifications
- Low-Noise, Low-power, High-performance
- Extensive MacroTile library simplifies circuit design

APPLICATIONS

- Sensors/Transducers
- Controls
- Telecommunications
- ARINC 429 Line Receivers
- Signal conditioning
- LCD drivers

COMPONENTS

CORE

- ◆ **FLEXIBLE ANALOG BUILDING BLOCKS (FABBs)**

16 Type 10 FABBs contain multi-gate transistor structures optimized for flexibility & interconnect. Matching N-Channel and P-Channel transistors can be configured to obtain single ended or differential circuits depending on the connection scheme.

- ◆ **DIGITAL SECTION**

Over one thousand equivalent gates in a gate-array configuration are available for clock dividers, counters and other logic functions.

- ◆ **CAPACITORS AND SWITCHES**

Over 500 unit, and 60 fractional capacitors add flexibility without sacrificing accuracy. 240 switches for SC and sample and hold applications are available.

PERIPHERY

- ◆ **FLEXIBLE ANALOG BUILDING BLOCKS (FABBs)**

One additional Type 10 FABBs, structure with matched P-Channel and N-Channel transistors optimized for low power applications (Option for separate bias)

- ◆ **REFERENCE VOLTAGE GENERATOR**

Type 14 FABBs, similar to core FABB and with additional bipolar structures. The components on these FABBs are optimized for the generation of bandgap and internal voltage references.

- ◆ **BIPOLAR CELLS**

12 lateral PNP bipolar transistors for voltage reference plus 14 more for other applications.

- ◆ **RESISTOR CELLS**

High Value poly-silicon resistors are located throughout the device. High value resistors are ideal for low current applications. Low parasitic resistors can be arranged to set voltage gains, thresholds and voltage dividers.

- ◆ **INPUT / OUTPUT and POWER PADS**

58 I/O Pads with standard CMOS protection and digital output driver capability fill the periphery. Power pads are strategically located in the center and corners for better power distribution. Separate runs for analog and digital power.

- ◆ **DIGITAL SUPPORT CELLS**

Crystal oscillator, VCO and PLL cells.
I/O cells and digital level shifter output drivers (Schmitt Trigger Input buffers available).
Power on reset (POR) cell to support digital and mixed-signal applications.

MACROTILE LIBRARY

The following is a partial list of MacroTiles designed for the FMD6000 Mixed-Signal Array

- BIS110 Cascode Bias Network
- BIS113 PTAT Bias Network
- OPA116 Folded Cascode Opamp
- OPA118 Folded Cascode Opamp
- OPA119 Folded Cascode Opamp
- CMP111 Folded Cascode Comaprator
- REF110 Bandgap Reference
- OTA110 Operational Transconductance Amplifier
- FMD6800-048 ARIN 429 line receiver with test controls (octal)
- FMD6800-045 ARIN 429 line receiver (quad)
- FMD6800-151 LCD display driver for 30, 32 or 38 segments.
- FMD6800-012 SPI interface

For an updated list of MacroTiles available or for more information contact your local representative or FMD.

NOTE

- Existing MacroTiles for the FMD6800 High pin count Analog/Mixed-Signal Array can be modified and adapted for new applications.
- FMD will design custom MacroTiles to meet your particular specification.

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