Data Sheet **July 1999** **File Number 4762**

Radiation Hardened Hex D-Type Flip-Flop with Reset

The Radiation Hardened ACS174MS is a Hex D-Type Flip-Flop with Reset. Information at the D input is transferred to the Q output on the positive-going transition of the clock. All six flip-flops are controlled by a common clock (CP) and a common reset ($\overline{MR}$). Resetting is accomplished by a LOW level independent of the clock. All inputs are buffered and the outputs are designed for balanced propagation delay and transition times.

The ACS174MS is fabricated on a CMOS Silicon on Sapphire (SOS) process, which provides an immunity to Single Event Latch-up and the capability of highly reliable performance in any radiation environment. These devices offer significant power reduction and faster performance when compared to ALSTTL types.

Specifications for Rad Hard QML devices are controlled by the Defense Supply Center in Columbus (DSCC). The SMD numbers listed below must be used when ordering.

Detailed Electrical Specifications for the ACS174MS are contained in SMD 5962-98634. A "hot-link" is provided on our homepage for downloading.
http://www.intersil.com/spacedefense/spaceselect.htm

Features

- QML Qualified Per MIL-PRF-38535 Requirements
- 1.25 Micron Radiation Hardened SOS CMOS
- Radiation Environment
  - Latch-Up Free Under Any Conditions
  - Total Dose (Max.) . . . . 3 x 10^5 RAD(Si)
  - SEU Immunity. . . . . <1 x 10^{-10} Errors/Bit/Day
  - SEU LET Threshold . . . . >100MeV/(mg/cm^2)
- Input Logic Levels. . . . $V_{IL} = (0.3)(V_{CC})$, $V_{IH} = (0.7)(V_{CC})$
- Output Current . . . . ±12mA (Min)
- Quiescent Supply Current . . . . 10µA (Max)
- Propagation Delay . . . . 23ns (Max)

Applications

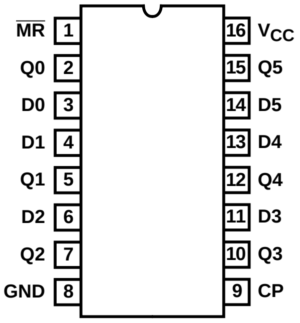
- High Speed Control Circuits
- Sensor Monitoring
- Low Power Designs

Ordering Information

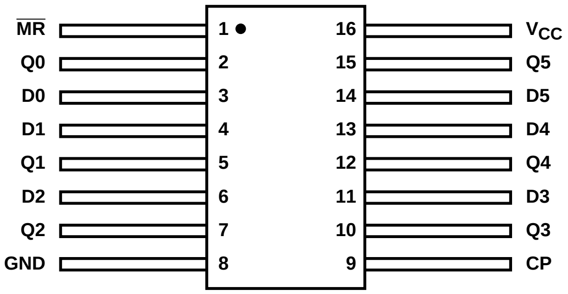
ORDERING NUMBER	INTERNAL MARKETING NUMBER	TEMP. RANGE (°C)	PACKAGE	DESIGNATOR
5962F9863401VCC	ACS174DMSR-03	-55 to 125	16 Ld SBDIP	CDIP2-T16
ACS174D/SAMPLE-03	ACS174D/SAMPLE-03	25	16 Ld SBDIP	CDIP2-T16
5962F9863401VXC	ACS174KMSR-03	-55 to 125	16 Ld Flatpack	CDFP4-F16
ACS174K/SAMPLE-03	ACS174K/SAMPLE-03	25	16 Ld Flatpack	CDFP4-F16
5962F9863401V9A	ACS174HMSR-03	25	Die	NA

Pinouts

ACS174MS
(SBDIP)
TOP VIEW



ACS174MS
(FLATPACK)
TOP VIEW



Die Characteristics

DIE DIMENSIONS:

Size: 2390µm x 2390µm (94 mils x 94 mils)
Thickness: 525µm ±25µm (20.6 mils ±1 mil)
Bond Pad: 110µm x 110µm (4.3 x 4.3 mils)

METALLIZATION: Al

Metal 1 Thickness: 0.7µm ±0.1µm
Metal 2 Thickness: 1.0µm ±0.1µm

SUBSTRATE POTENTIAL

Unbiased Insulator

PASSIVATION:

Type: Phosphorous Silicon Glass (PSG)
Thickness: 1.30µm ±0.15µm

SPECIAL INSTRUCTIONS

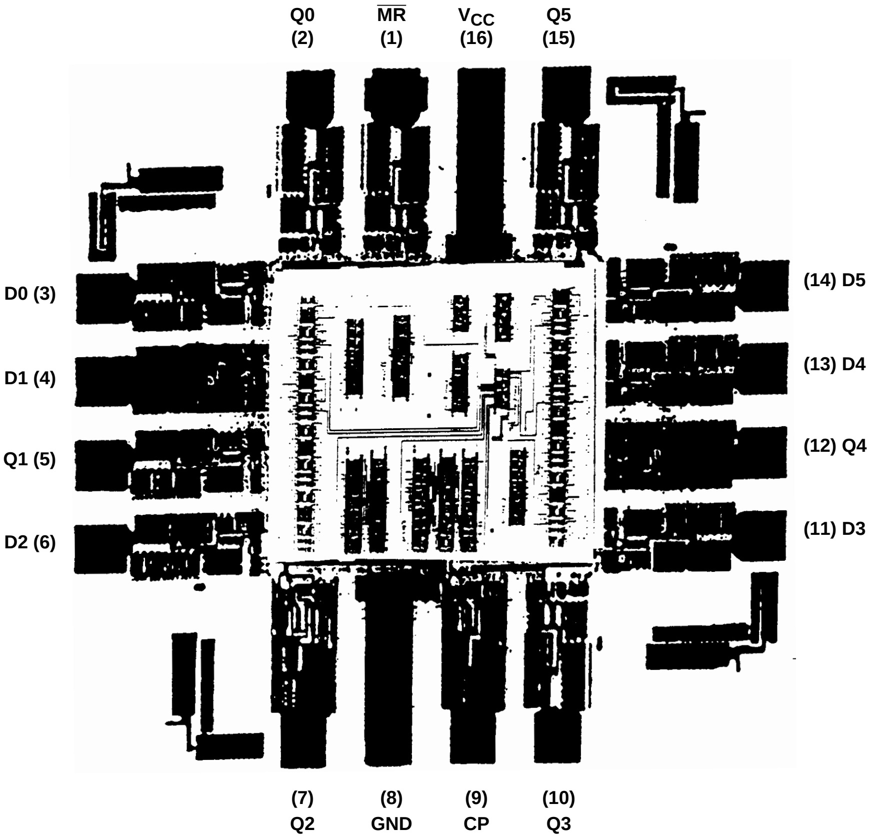
Bond V_{CC} First

ADDITIONAL INFORMATION:

Worst Case Current Density: $<2.0 \times 10^5$ A/cm^2
Transistor Count: 358

Metallization Mask Layout

ACS174MSX



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