Data Sheet | November 1998 | File Number 4541

## Radiation Hardened Hex Inverter

The Radiation Hardened ACS04MS is a Hex Inverter. This device simply inverts the level present on each input. All inputs are buffered and the outputs are designed for balanced propagation delay and transition times.

The ACS04MS 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 ACS04MS are contained in SMD 5962-98603. A "hot-link" is provided on our homepage with instructions for downloading. www.intersil.com/data/sm/index.asp**

## 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 . . . . . $3 \times 10^5$ RAD(Si)
  - SEU Immunity . . . . . $<1 \times 10^{-10}$ 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 . . . . . ±8mA (Min)
- Quiescent Supply Current . . . . . 100µA (Max)
- Propagation Delay . . . . . .15ns (Max)

## Applications

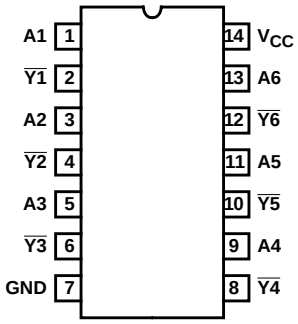
- High Speed Control Circuits
- Sensor Monitoring
- Low Power Designs

## Ordering Information

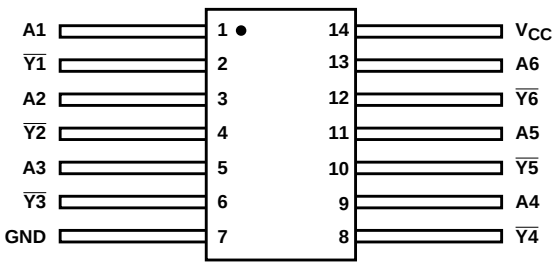
| ORDERING NUMBER | INTERNAL MKT. NUMBER | TEMP. RANGE ($^o$C) | PACKAGE | DESIGNATOR |
|---|---|---|---|---|
| 5962F9860301VCC | ACS04DMSR-03 | -55 to 125 | 14 Ld SBDIP | CDIP2-T14 |
| ACS04D/SAMPLE-03 | ACS04D/SAMPLE-03 | 25 | 14 Ld SBDIP | CDIP2-T14 |
| 5962F9860301VXC | ACS04KMSR-03 | -55 to 125 | 14 Ld Flatpack | CDFP4-F14 |
| ACS04K/SAMPLE-03 | ACS04K/SAMPLE-03 | 25 | 14 Ld Flatpack | CDFP4-F14 |
| 5962F9860301V9A | ACS04HMSR-03 | 25 | Die | N/A |

## Pinouts

**ACS04MS**
**(SBDIP)**
TOP VIEW




**ACS04MS**
**(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: AI**

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

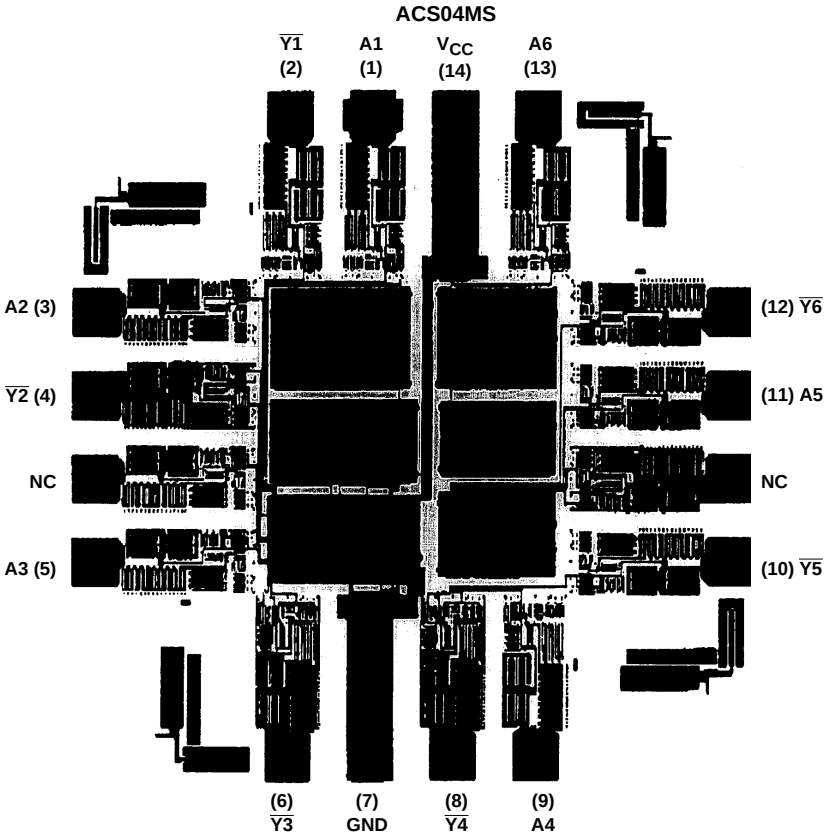
**SPECIAL INSTRUCTIONS:**

Bond $V_{CC}$ First

**ADDITIONAL INFORMATION:**

Worst Case Current Density: $<2.0 \times 10^5$ A/cm$^2$
Transistor Count: 82

## Metallization Mask Layout




All Intersil semiconductor products are manufactured, assembled and tested under **ISO9000** quality systems certification.



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