

**Radiation Hardened Hex Inverter with Open Drain Outputs**

The Radiation Hardened ACS05MS is a Hex Inverter with open drain outputs. This device inverts a HIGH level on each input to a LOW level on the corresponding Y output. A LOW level on the input causes the corresponding Y output to enter a high impedance state, which can be pulled HIGH through a resistor to V<sub>CC</sub>. All inputs are buffered and the outputs are designed for balanced propagation delay and transition times.

The ACS05MS 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 ACS05MS are contained in SMD 5962-98602. A "hot-link" is provided on our homepage with instructions for downloading. [www.intersil.com/data/sm/index.asp](http://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 x 10<sup>5</sup> RAD (Si)
  - SEU Immunity . . . . . <1 x 10<sup>-10</sup> Errors/Bit/Day
  - SEU LET Threshold . . . . . >100MeV/(mg/cm<sup>2</sup>)
- Input Logic Levels . . . V<sub>IL</sub> = (0.3)(V<sub>CC</sub>), V<sub>IH</sub> = (0.7)(V<sub>CC</sub>)
- Output Current . . . . . ±8mA (Min)
- Quiescent Supply Current . . . . . 100µA (Max)
- Propagation Delay . . . . . 20ns (Max)

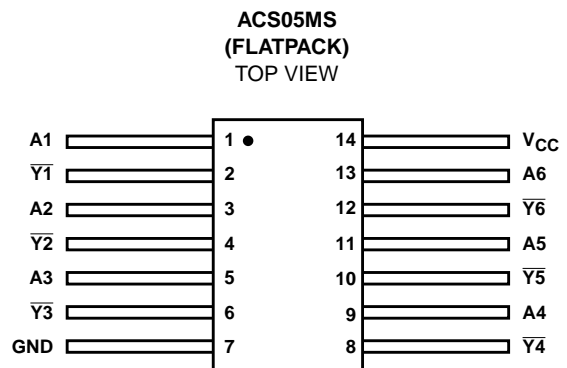
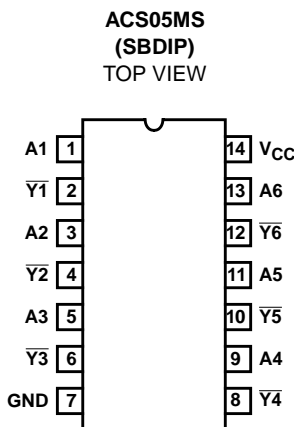
**Applications**

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

**Ordering Information**

ORDERING NUMBER	INTERNAL MKT. NUMBER	TEMP. RANGE (°C)	PACKAGE	DESIGNATOR
5962F9860201VCC	ACS05DMSR-03	-55 to 125	14 Ld SBDIP	CDIP2-T14
ACS05D/SAMPLE-03	ACS05D/SAMPLE-03	25	14 Ld SBDIP	CDIP2-T14
5962F9860201VXC	ACS05KMSR-03	-55 to 125	14 Ld Flatpack	CDFP4-F14
ACS05K/SAMPLE-03	ACS05K/SAMPLE-03	25	14 Ld Flatpack	CDFP4-F14
5962F9860201V9A	ACS05HMSR-03	25	Die	N/A

**Pinouts**



**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:**

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

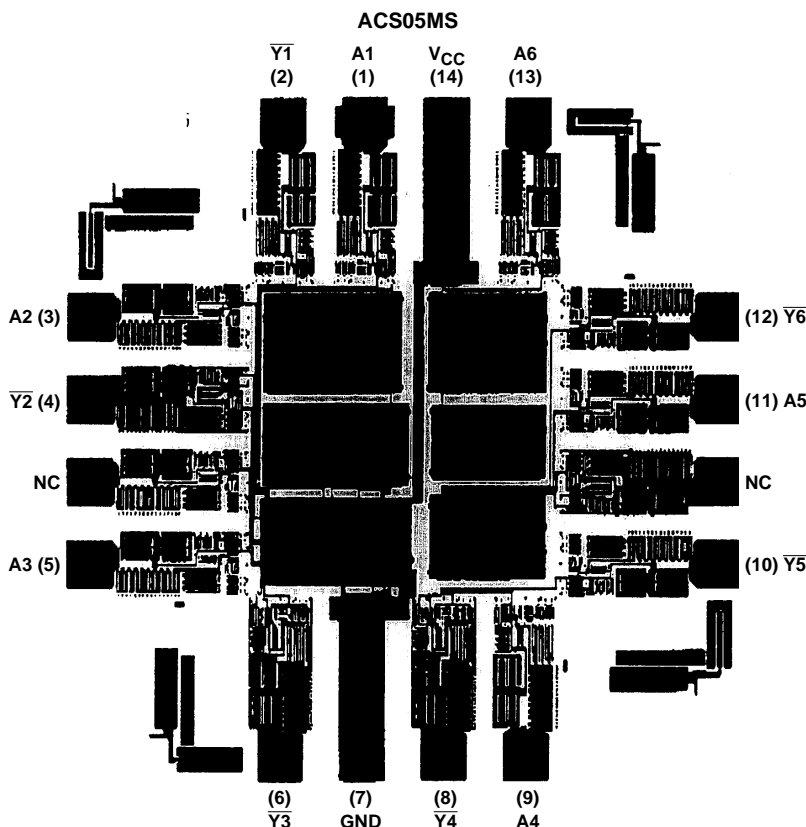
**SPECIAL INSTRUCTIONS:**

Bond V<sub>CC</sub> First

**ADDITIONAL INFORMATION:**

Worst Case Current Density: <math> < 2.0 \times 10^5 \text{ A/cm}^2 </math>  
 Transistor Count: 46

**Metallization Mask Layout**



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