

**Radiation Hardened Dual 4-Input AND Gate**

The Radiation Hardened ACS21MS is a Dual 4-Input AND Gate. For each gate, a HIGH level on all inputs results in a HIGH level on the Y output. A LOW level on any input results in a LOW level on the Y output. All inputs are buffered and the outputs are designed for balanced propagation delay and transition times.

The ACS21MS 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 ACS21MS are contained in SMD 5962-98629. A “hot-link” is provided on our homepage for downloading.**  
[www.intersil.com/spacedefense/newsafclasst.asp](http://www.intersil.com/spacedefense/newsafclasst.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 (Max.) . . . . .  $3 \times 10^5$  RAD(Si)
  - SEU Immunity . . . . .  $<1 \times 10^{-10}$  Errors/Bit/Day
  - SEU LET Threshold . . . . .  $>100\text{MeV}/(\text{mg}/\text{cm}^2)$
- Input Logic Levels. . . . .  $V_{IL} = (0.3)(V_{CC})$ ,  $V_{IH} = (0.7)(V_{CC})$
- Output Current . . . . .  $\pm 12\text{mA}$  (Min)
- Quiescent Supply Current . . . . .  $5.0\mu\text{A}$  (Max)
- Propagation Delay . . . . . 15ns (Max)

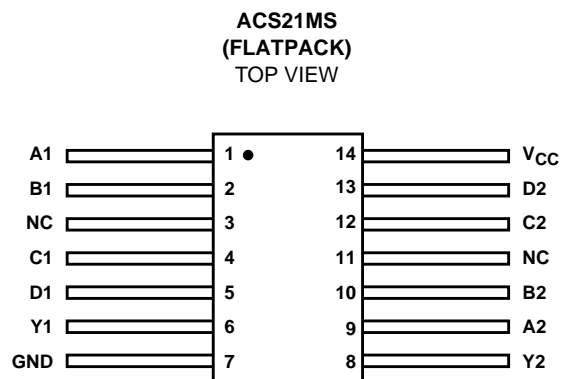
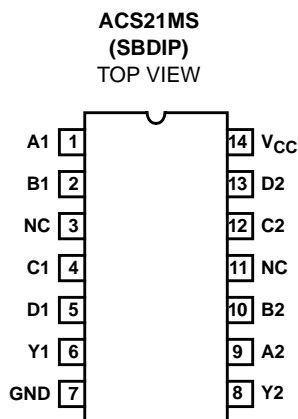
**Applications**

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

**Ordering Information**

ORDERING NUMBER	INTERNAL MARKETING NUMBER	TEMP. RANGE (°C)	PACKAGE	DESIGNATOR
5962F9862901VCC	ACS21DMSR-03	-55 to 125	14 Ld SBDIP	CDIP2-T14
ACS21D/SAMPLE-03	ACS21D/SAMPLE-03	25	14 Ld SBDIP	CDIP2-T14
5962F9862901VXC	ACS21KMSR-03	-55 to 125	14 Ld Flatpack	CDFP3-F14
ACS21K/SAMPLE-03	ACS21K/SAMPLE-03	25	14 Ld Flatpack	CDFP3-F14
5962F9862901V9A	ACS21HMSR-03	25	Die	NA

**Pinouts**



## Die Characteristics

### DIE DIMENSIONS:

Size: 2390 $\mu$ m x 2390 $\mu$ m (94 mils x 94 mils)  
 Thickness: 525 $\mu$ m  $\pm$ 25 $\mu$ m (20.6 mils  $\pm$ 1 mil)  
 Bond Pad: 110 $\mu$ m x 110 $\mu$ m (4.3 x 4.3 mils)

### METALLIZATION: Al

Metal 1 Thickness: 0.7 $\mu$ m  $\pm$ 0.1 $\mu$ m  
 Metal 2 Thickness: 1.0 $\mu$ m  $\pm$ 0.1 $\mu$ m

### SUBSTRATE POTENTIAL

Unbiased Insulator

### PASSIVATION:

Type: Phosphorous Silicon Glass (PSG)  
 Thickness: 1.30 $\mu$ m  $\pm$ 0.15 $\mu$ m

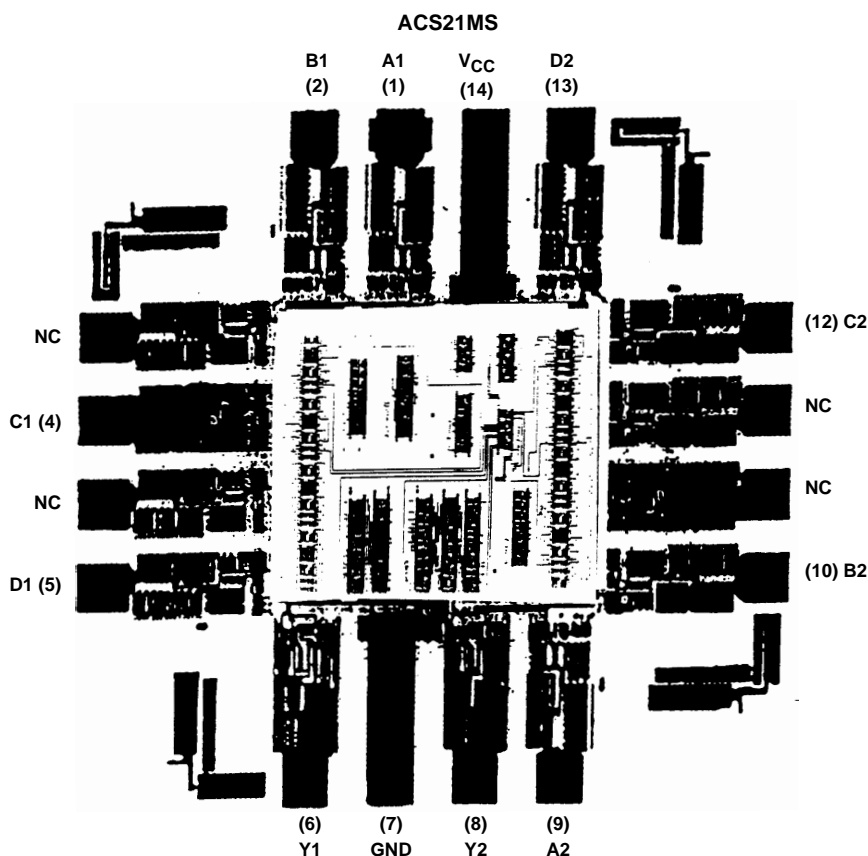
### SPECIAL INSTRUCTIONS

Bond V<sub>CC</sub> First

### ADDITIONAL INFORMATION:

Worst Case Current Density: <2.0 x 10<sup>5</sup> A/cm<sup>2</sup>  
 Transistor Count: 92

## Metallization Mask Layout



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