

March 1998

**Features**

- QML Qualified Per MIL-PRF-38535 Requirements
- 1.25Micron 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 .....  $>100\text{MeV}/(\text{mg}/\text{cm}^2)$
- Input Logic Levels  $V_{IL} = (0.3V)(V_{CC})$ ,  $V_{IH} = (0.7V)(V_{CC})$
- Output Current .....  $\pm 16\text{mA}$
- Quiescent Supply Current .....  $20\mu\text{A}$
- Propagation Delay ..... 11.5ns

**Applications**

- Databus Driving
- Data Routing
- Redundant Data Control Circuitry

**Description**

The Radiation Hardened ACS240MS is an Inverting, Octal, Three-State Buffer/Line Driver with two active-LOW Enable inputs (A $\bar{E}$  and B $\bar{E}$ ). Each Enable input controls four outputs. When an Enable input is LOW, the corresponding outputs are active and input signals are inverted. A HIGH on an Enable input causes the corresponding outputs to be high impedance, regardless of the input levels.

The ACS240MS 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.

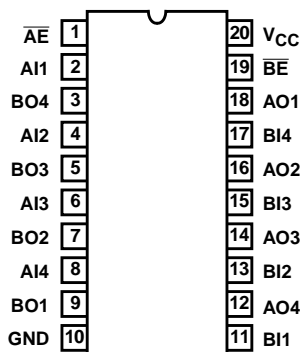
Detailed Electrical Specifications for the ACS240 are contained in SMD 5962-98540. A "hot-link" is provided on our homepage with instructions for downloading. <http://www.intersil.com/data/sm/index.htm>

**Ordering Information**

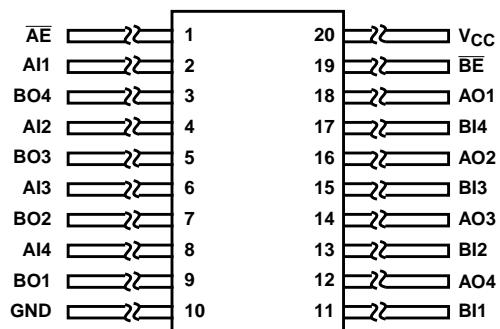
SMD PART NUMBER	INTERSIL PART NUMBER	TEMP. RANGE (°C)	PACKAGE	CASE OUTLINE
5962F9854001VRC	ACS240DMSR-02	-55 to 125	20 Ld SBDIP	CDIP2-T20
N/A	ACS240D/Sample-02	25	20 Ld SBDIP	CDIP2-T20
5962F9854001VXC	ACS240KMSR-02	-55 to 125	20 Ld Flatpack	CDFP4-F20
N/A	ACS240K/Sample-02	25	20 Ld Flatpack	CDFP4-F20
N/A	ACS240HMSR-02	25	Die	N/A

**Pinouts**

**ACS240 (SBDIP)**  
TOP VIEW



**ACS240 (FLATPACK)**  
TOP VIEW



# ACS240MS

## Die Characteristics

### DIE DIMENSIONS:

Size: 2540 $\mu$ m x 2540 $\mu$ m (100 mils x 100mils)  
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

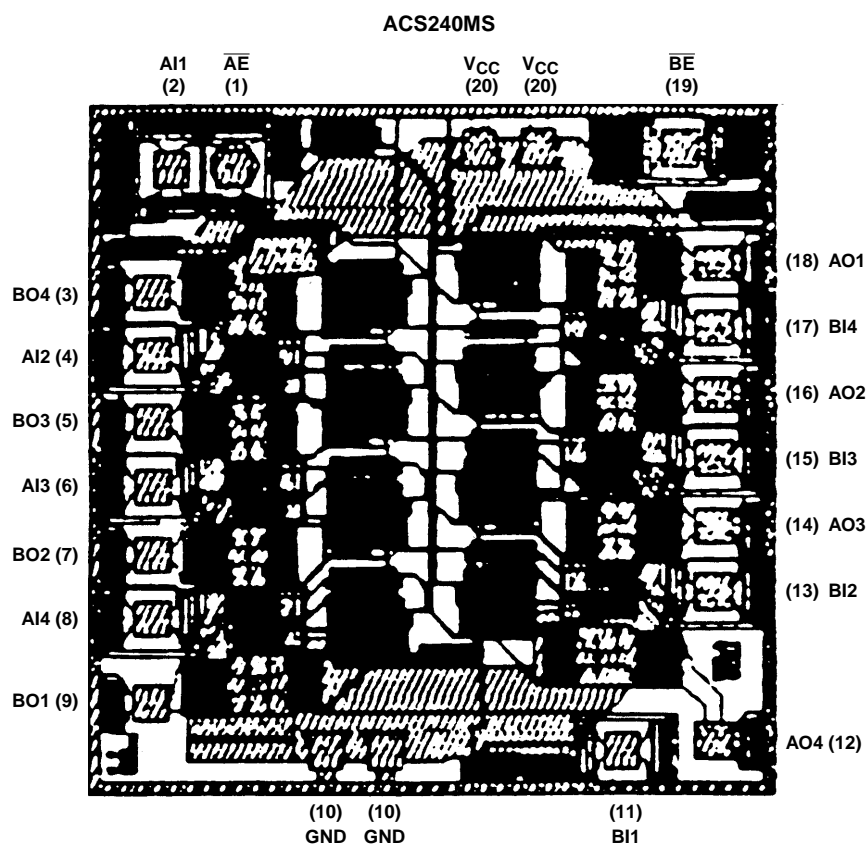
### SPECIAL INSTRUCTIONS:

Bond V<sub>CC</sub> First

### ADDITIONAL INFORMATION:

Worst Case Density: <2.0 x 10<sup>5</sup> A/cm<sup>2</sup>  
Transistor Count: 198

## Metallization Mask Layout



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