



# ACS541MS

## Radiation Hardened Octal Buffer/ Line Driver Three-State

January 1996

### Features

- Devices QML Qualified in Accordance with MIL-PRF-38535
- Detailed Electrical and Screening Requirements are Contained in SMD# 5962-96710 and Intersil's QM Plan
- 1.25 Micron Radiation Hardened SOS CMOS
- Total Dose ..... >300K RAD (Si)
- Single Event Upset (SEU) Immunity: <math> < 1 \times 10^{-10}</math> Errors/Bit/Day (Typ)
- SEU LET Threshold ..... >100 MEV-cm<sup>2</sup>/mg
- Dose Rate Upset ..... >10<sup>11</sup> RAD (Si)/s, 20ns Pulse
- Dose Rate Survivability ..... >10<sup>12</sup> RAD (Si)/s, 20ns Pulse
- Latch-Up Free Under Any Conditions
- Military Temperature Range ..... -55°C to +125°C
- Significant Power Reduction Compared to ALSTTL Logic
- DC Operating Voltage Range ..... 4.5V to 5.5V
- Input Logic Levels
  - VIL = 30% of VCC Max
  - VIH = 70% of VCC Min
- Input Current ≤ 1μA at VOL, VOH
- Fast Propagation Delay ..... 17ns (Max), 12ns (Typ)

### Description

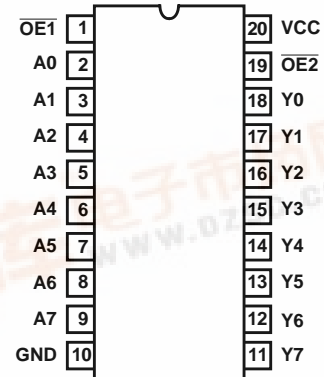
The Intersil ACS541MS is a Radiation Hardened Octal Buffer/Line Driver, with three-state outputs. The output enable pins  $\overline{OE}1$ ,  $\overline{OE}2$  control the Three-State outputs. If either enable is high the output will be in a high impedance state. For data output both enables must be low.

The ACS541MS utilizes advanced CMOS/SOS technology to achieve high-speed operation. This device is a member of a radiation hardened, high-speed, CMOS/SOS Logic family.

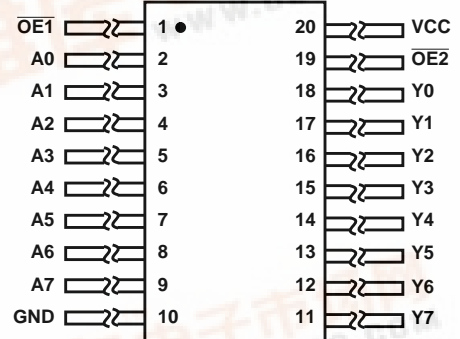
The ACS541MS is supplied in a 20 lead Ceramic Flatpack (K suffix) or a Ceramic Dual-In-Line package (D suffix).

### Pinouts

20 LEAD CERAMIC DUAL-IN-LINE  
MIL-STD-1835 DESIGNATOR,  
CDIP2-T20, LEAD FINISH C  
TOP VIEW



20 LEAD CERAMIC FLATPACK  
MIL-STD-1835 DESIGNATOR,  
CDFP4-F20, LEAD FINISH C  
TOP VIEW



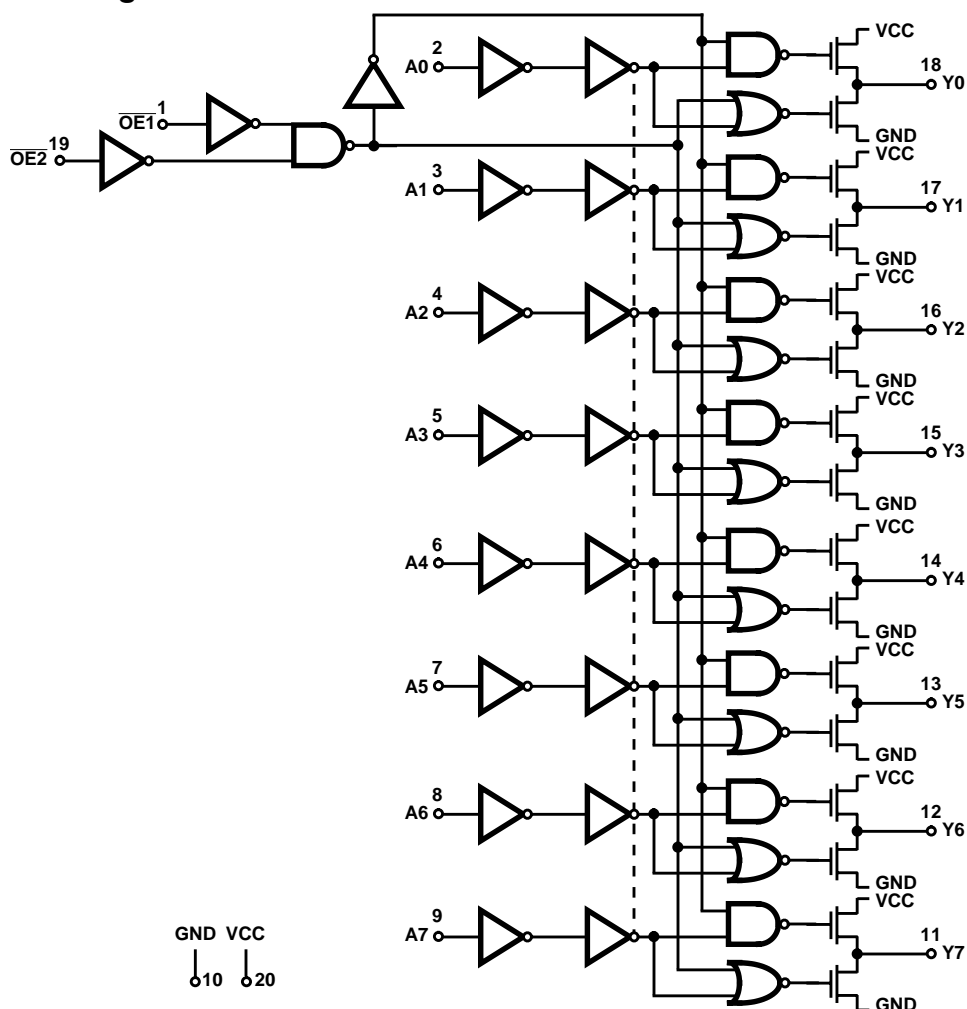
### Ordering Information

| PART NUMBER     | TEMPERATURE RANGE | SCREENING LEVEL       | PACKAGE                  |
|-----------------|-------------------|-----------------------|--------------------------|
| 5962F9671001VRC | -55°C to +125°C   | MIL-PRF-38535 Class V | 20 Lead SBDIP            |
| 5962F9671001VXC | -55°C to +125°C   | MIL-PRF-38535 Class V | 20 Lead Ceramic Flatpack |
| ACS541D/Sample  | 25°C              | Sample                | 20 Lead SBDIP            |
| ACS541K/Sample  | 25°C              | Sample                | 20 Lead Ceramic Flatpack |
| ACS541HMSR      | 25°C              | Die                   | Die                      |



# ACS541MS

## Functional Diagram



TRUTH TABLE

| INPUTS           |                  |       | OUTPUTS |
|------------------|------------------|-------|---------|
| $\overline{OE1}$ | $\overline{OE2}$ | $A_n$ | $Y_n$   |
| L                | L                | H     | H       |
| L                | L                | L     | L       |
| H                | X                | X     | Z       |
| X                | H                | X     | Z       |

NOTE: L = Low Logic Level, H = High Logic Level, Z = High Impedance

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# ACS541MS

## Die Characteristics

### DIE DIMENSIONS:

102 mils x 102 mils  
2,600mm x 2,600mm

### METALLIZATION:

Type: AlSi  
Metal 1 Thickness:  $7.125\text{k}\text{\AA} \pm 1.125\text{k}\text{\AA}$   
Metal 2 Thickness:  $9\text{k}\text{\AA} \pm 1\text{k}\text{\AA}$

### GLASSIVATION:

Type:  $\text{SiO}_2$   
Thickness:  $8\text{k}\text{\AA} \pm 1\text{k}\text{\AA}$

### WORST CASE CURRENT DENSITY:

$< 2.0 \times 10^5 \text{ A/cm}^2$

### BOND PAD SIZE:

$> 4.3 \text{ mils} \times 4.3 \text{ mils}$   
 $> 110\mu\text{m} \times 110\mu\text{m}$

## Metallization Mask Layout

ACS541MS

