# ACS245MS

## Radiation Hardened Octal Non-Inverting Bidirectional Bus Transceiver

January 1996

### Features

- Devices QML Qualified in Accordance with MIL-PRF-38535
- Detailed Electrical and Screening Requirements are Contained in SMD# 5962-96707 and Intersil' QM Plan
- 1.25 Micron Radiation Hardened SOS CMOS
- Total Dose . . . . . >300K RAD (Si)
- Single Event Upset (SEU) Immunity: <1 x $10^{-10}$ Errors/Bit/Day (Typ)
- SEU LET Threshold . . . . . >100 MEV-$cm^2$/mg
- Dose Rate Upset . . . . . >$10^{11}$ RAD (Si)/s, 20ns Pulse
- Dose Rate Survivability . . . . . >$10^{12}$ 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 . . . . . 15ns (Max), 10ns (Typ)

### Description

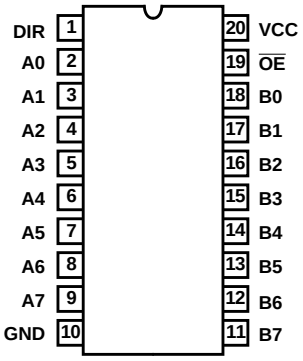
The Intersil ACS245MS is a Radiation Hardened octal non-inverting bidirectional bus transceiver intended for two-way asynchronous communication between data busses.

The ACS245MS utilizes advanced CMOS/SOS technology to achieve high-speed operation. This device is a member of radiation hardened, high-speed, CMOS/SOS Logic Family.

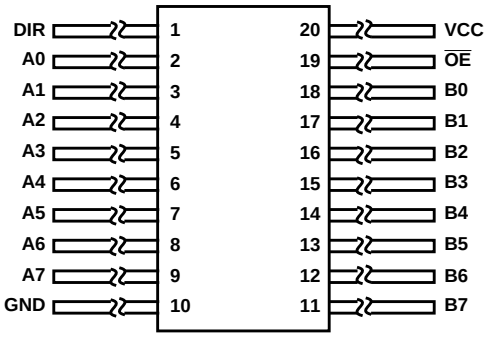
The ACS245MS is supplied in a 20 lead Ceramic Flatpack (K suffix) or a Dual-In-Line Ceramic Package (D suffix).

### Pinouts

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




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




### Ordering Information

| PART NUMBER | TEMPERATURE RANGE | SCREENING LEVEL | PACKAGE |
|---|---|---|---|
| 5962F9670701VRC | -55°C to +125°C | MIL-PRF-38535 Class V | 20 Lead SBDIP |
| 5962F9670701VXC | -55°C to +125°C | MIL-PRF-38535 Class V | 20 Lead Ceramic Flatpack |
| ACS245D/Sample | 25°C | Sample | 20 Lead SBDIP |
| ACS245K/Sample | 25°C | Sample | 20 Lead Ceramic Flatpack |
| ACS245HMSR | 25°C | Die | Die |

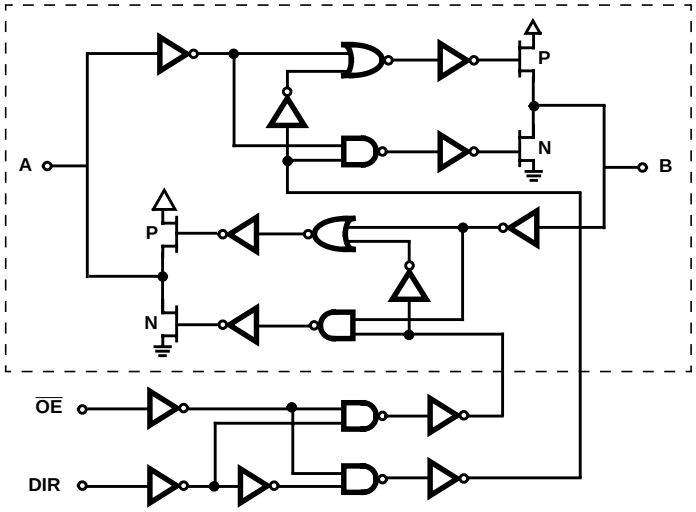




Spec Number **518780**
File Number **3198.1**

## Functional Diagram

NOTE: (1 of 8)




**TRUTH TABLE**

| INPUTS | | OPERATION |
|---|---|---|
| $\overline{OE}$ | DIR | |
| L | L | B Data to A Bus |
| L | H | A Data to B Bus |
| H | X | Isolation |

NOTE:

H = High Voltage Level, L = Low Voltage Level, X = Immaterial

## Die Characteristics

**DIE DIMENSIONS:**

96 mils x 117 mils
2.44mm x 2.97mm

**METALLIZATION:**

Type: AlSi
Metal 1 Thickness: 7.125kÅ ±1.125kÅ
Metal 2 Thickness: 9kÅ ±1kÅ

**GLASSIVATION:**

Type: $SiO_2$
Thickness: 8kÅ ±1kÅ

**WORST CASE CURRENT DENSITY:**

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

**BOND PAD SIZE:**

110µm x 110µm
4.4 mils x 4.4 mils

## Metallization Mask Layout

**ACS245MS**