

## 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# 5962-96719 and Harris' 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 = 0.8V Max
  - VIH = VCC/2 Min
- Input Current ≤ 1μA at VOL, VOH
- Fast Propagation Delay ..... 18ns (Max), 12ns (Typ)

### Description

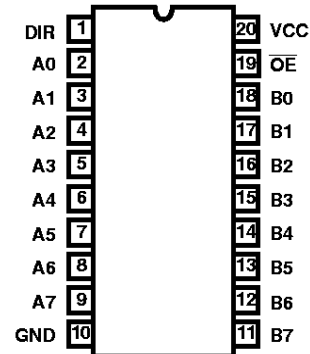
The Harris ACTS245MS is a Radiation Hardened octal non-inverting bidirectional bus transceiver intended for two-way asynchronous communication between data busses.

The ACTS245MS 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.

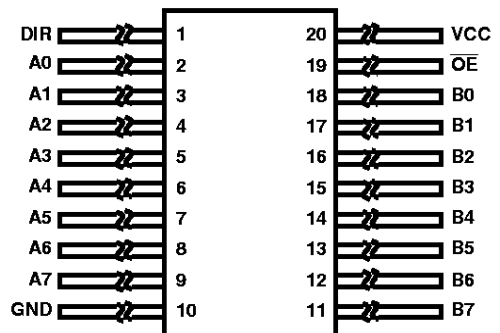
The ACTS245MS is supplied in a 20 lead Ceramic Flatpack (K suffix) or a Dual-In-Line Ceramic Package (D suffix).

### 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



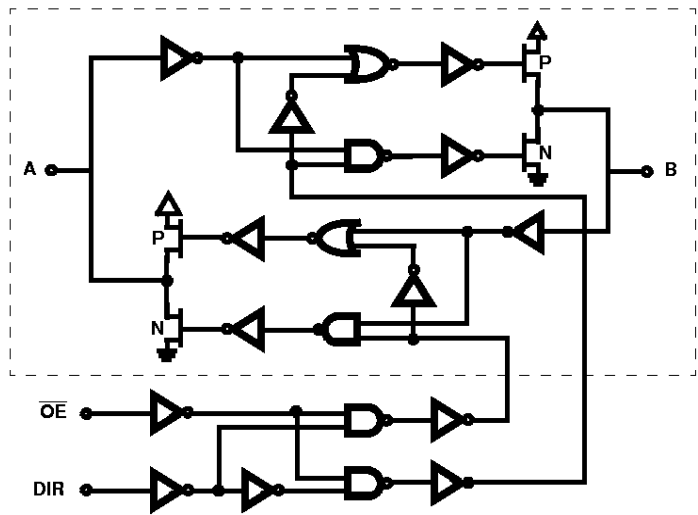
### Ordering Information

PART NUMBER	TEMPERATURE RANGE	SCREENING LEVEL	PACKAGE
5962F9671901VRC	-55°C to +125°C	MIL-PRF-38535 Class V	20 Lead SBDIP
5962F9671901VXC	-55°C to +125°C	MIL-PRF-38535 Class V	20 Lead Ceramic Flatpack
ACTS245D/Sample	25°C	Sample	20 Lead SBDIP
ACTS245K/Sample	25°C	Sample	20 Lead Ceramic Flatpack
ACTS245HMSR	25°C	Die	Die

# ACTS245MS

## Functional Diagram

NOTE: (1 of 8)



TRUTH TABLE

INPUTS		OPERATION
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

# ACTS245MS

## Die Characteristics

### DIE DIMENSIONS:

96 mils x 117 mils  
2.44 x 2.97 mm

### 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:

$110\mu\text{m} \times 110\mu\text{m}$   
4.4 mils x 4.4 mils

## Metallization Mask Layout

