

## Radiation Hardened 8-Bit Magnitude Comparator

January 1996

### Features

- Devices QML Qualified in Accordance with MIL-PRF-38535
- Detailed Electrical and Screening Requirements are Contained in SMD# 5962-96709 and Intersil' QM Plan
- 1.25 Micron Radiation Hardened SOS CMOS
- Total Dose ..... >300K RAD (Si)
- Single Event Upset (SEU) Immunity: <1 x 10<sup>-10</sup> 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 ..... 15ns (Max), 10ns (Typ)

### Description

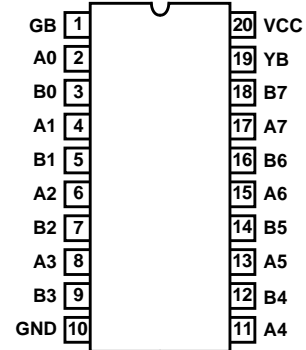
The Intersil ACS521MS is a Radiation Hardened 8 bit magnitude comparator device. It provides a low output YB when Word A equals word B and input GB is low. All other input states cause a high output.

The ACS521MS utilizes advanced CMOS/SOS technology to achieve high-speed operation. This device is a member of radiation hardened, high-speed, CMOS/SOS Logic Family.

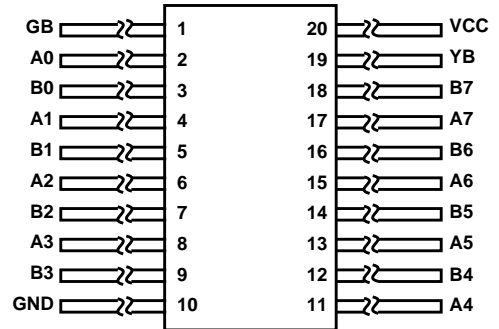
The ACS521MS is supplied in a 20 lead Ceramic Flatpack (K suffix) or a Ceramic Dual-In-Line Package (D suffix).

### 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

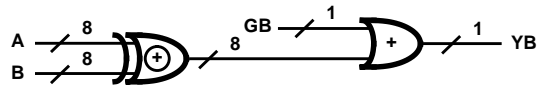


### Ordering Information

PART NUMBER	TEMPERATURE RANGE	SCREENING LEVEL	PACKAGE
5962F9670901VRC	-55°C to +125°C	MIL-PRF-38535 Class V	20 Lead SBDIP
5962F9670901VXC	-55°C to +125°C	MIL-PRF-38535 Class V	20 Lead Ceramic Flatpack
ACS521D/Sample	25°C	Sample	20 Lead SBDIP
ACS521K/Sample	25°C	Sample	20 Lead Ceramic Flatpack
ACS521HMSR	25°C	Die	Die

# ACS521MS

## Functional Diagram



TRUTH TABLE

INPUTS			OUTPUT
GB	A	B	YB
0	A = B		L
0	A ≠ B		H
1	X	X	H

NOTE: L = Low, H = High, X = Don't Care

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# ACS521MS

## Die Characteristics

### DIE DIMENSIONS:

102mils x 102mils  
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

