

## Radiation Hardened Octal Three-State Transparent Latch

January 1996

### Features

- Devices QML Qualified in Accordance with MIL-PRF-38535
- Detailed Electrical and Screening Requirements are Contained in SMD# 5962-96724 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

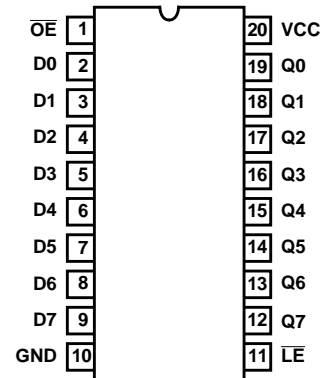
The Intersil ACS573MS is a Radiation Hardened Octal Transparent Latch with an active low output enable. The outputs are transparent to the inputs when the latch enable (LE) is High. When the latch goes low the data is latched. The output enable controls the three-state outputs. When the output enable pins ( $\overline{OE}$ ) are high the output is in a high impedance state. The latch operation is independent of the state of output enable.

The ACS573MS 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.

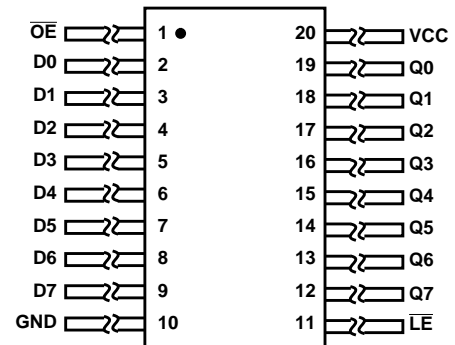
The ACS573MS is supplied in a 20 lead Ceramic Flatpack (K suffix) or a

### 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

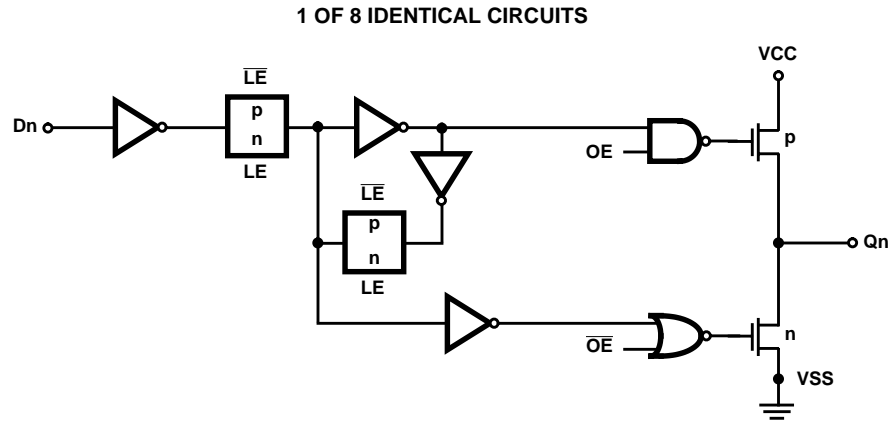


### Ordering Information

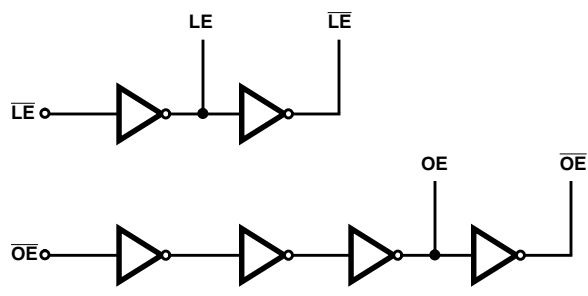
PART NUMBER	TEMPERATURE RANGE	SCREENING LEVEL	PACKAGE
5962F9672401VRC	-55°C to +125°C	MIL-PRF-38535 Class V	20 Lead SBDIP
5962F9672401VXC	-55°C to +125°C	MIL-PRF-38535 Class V	20 Lead Ceramic Flatpack
ACS573D/Sample	25°C	Sample	20 Lead SBDIP
ACS573K/Sample	25°C	Sample	20 Lead Ceramic Flatpack
ACS573HMSR	25°C	Die	Die

# ACS573MS

## Functional Diagram



### COMMON CONTROLS



### TRUTH TABLE

$\overline{OE}$	$\overline{LE}$	DATA	OUTPUT
L	H	H	H
L	H	L	L
L	L	l	L
L	L	h	H
H	X	X	Z

NOTE: L = Low Logic Level, H = High Logic Level, X = Don't Care, Z = High Impedance, l = Low Voltage Level Prior to High-to-Low Latch Enable Transition, h = High Voltage Level Prior to High-to-Low Latch Enable Transition.

# ACS573MS

## 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:  $8\text{k}\text{\AA} \pm 1\text{k}\text{\AA}$

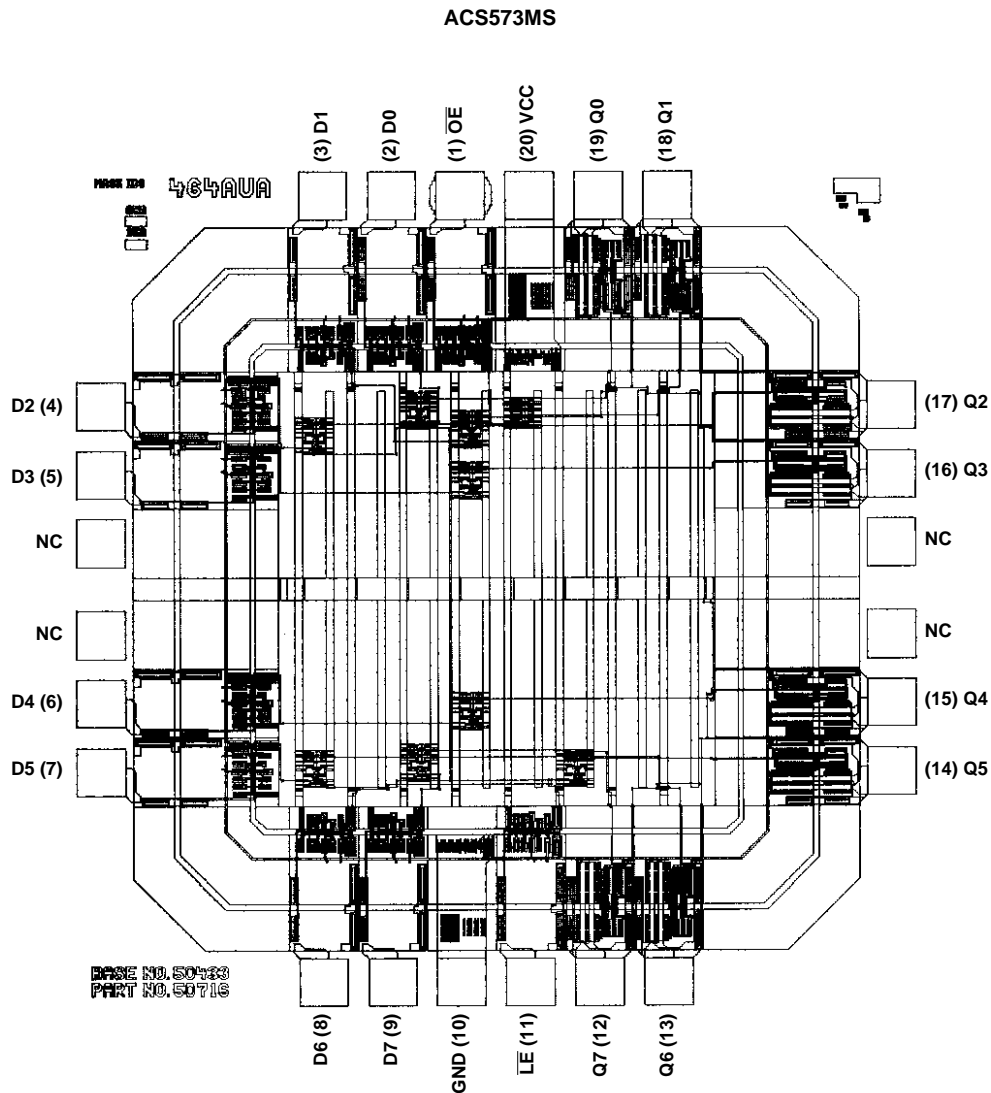
### WORST CASE CURRENT DENSITY:

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

### BOND PAD SIZE:

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

## Metallization Mask Layout



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**Sales Office Headquarters**

**NORTH AMERICA**

Intersil Corporation  
P. O. Box 883, Mail Stop 53-204  
Melbourne, FL 32902  
TEL: (321) 724-7000  
FAX: (321) 724-7240

**EUROPE**

Intersil SA  
Mercure Center  
100, Rue de la Fusee  
1130 Brussels, Belgium  
TEL: (32) 2.724.2111  
FAX: (32) 2.724.22.05

**ASIA**

Intersil (Taiwan) Ltd.  
Taiwan Limited  
7F-6, No. 101 Fu Hsing North Road  
Taipei, Taiwan  
Republic of China  
TEL: (886) 2 2716 9310  
FAX: (886) 2 2715 3029