ACS151MS

November 1997

Radiation Hardened 8-Input Multiplexer

Features

- **QML Qualified Per MIL-PRF-38535 Requirements**
- **1.25Micron Radiation Hardened SOS CMOS**
- **Radiation Environment**
  - **Latch-up Free Under any Conditions**
  - **Total Dose . . . . . 3 x 10^5 RAD(Si)**
  - **SEU Immunity . . . . . <1 x 10^{-10} Errors/Bit/Day**
  - **SEU LET Threshold . . . . . >100MeV/(mg/cm^2)**
- **Input Logic Levels . . . V_{IL} = (0.3)(V_{CC}), V_{IH} = (0.7)(V_{CC})**
- **Output Current . . . . . ±8mA**
- **Quiescent Supply Current. 400μA**
- **Propagation Delay**
  - **Enable to Output 12ns**
  - **Input or Address to Output 20ns**

Applications

- **Sensor Input Selection**
- **Data Routing**
- **High Frequency Switching**

Description

The Radiation Hardened ACS151MS is an 8-Channel Multiplexer having three binary control inputs and an active low enable input. The three binary input signals select the input from 1 of 8 channels.

Complementary data outputs are provided for ease of system design. If the enable input is high, the input signals are disregarded, the $\overline{Y}$ output is set high and the Y output is set low. All inputs and outputs are buffered and are designed for balanced propagation delay and transition times.

The ACS151MS is fabricated on a CMOS Silicon on Sapphire (SOS) process, which provides an immunity to Single Event Latch-up and the capability of highly reliable performance in any radiation environment. These devices offer significant power reduction and faster performance when compared to ALSTTL types.

Specifications for Rad Hard QML devices are controlled by the Defense Supply Center in Columbus (DSCC). The SMD numbers listed below must be used when ordering.

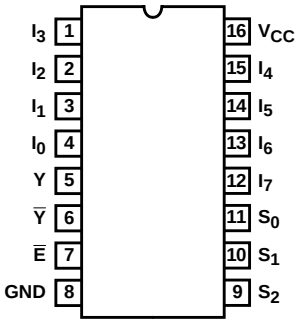
Detailed Electrical Specifications for the ACS151 are contained in SMD 5962-97640. A "hot-link" is provided on our homepage with instructions for downloading. http://www.intersil.com/data/sm/index.htm

Ordering Information

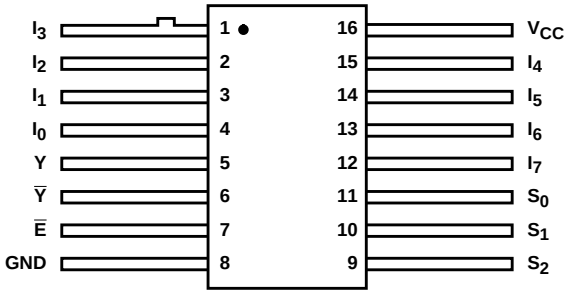
SMD PART NUMBER	INTERSIL PART NUMBER	TEMP. RANGE (^oC)	PACKAGE	CASE OUTLINE
5962F9764001VEC	ACS151DMSR-02	-55 to 125	16 Ld SBDIP	CDIP2-T16
N/A	ACS151D/Sample-02	25	16 Ld SBDIP	CDIP2-T16
5962F9764001VXC	ACS151KMSR-02	-55 to 125	16 Ld Flatpack	CDFP4-F16
N/A	ACS151K/Sample-02	25	16 Ld Flatpack	CDFP4-F16
N/A	ACS151HMSR-02	25	Die	N/A

Pinouts

ACS151 (SBDIP)
TOP VIEW



ACS151 (FLATPACK)
TOP VIEW



CAUTION: These devices are sensitive to electrostatic discharge; follow proper IC Handling Procedures.

File Number **4430**

Die Characteristics

DIE DIMENSIONS:

Size: 2390µm x 2390µm (94mils x 94mils)
Thickness: 525µm ±25µm (20.6mils ±1mil)
Bond Pad: 110µm x 110µm (4.3mils x 4.3 mils)

METALLIZATION:

Type: Al
Metal 1 Thickness: 0.7µm ±0.1µm
Metal 2 Thickness: 1.0µm ±0.1µm

SUBSTRATE:

Silicon on Sapphire (SOS)

SUBSTRATE POTENTIAL:

Unbiased Insulator

BACKSIDE FINISH:

Sapphire

PASSIVATION:

Type: Phosphorous Silicon Glass (PSG)
Thickness: 1.30µm ±0.15µm

SPECIAL INSTRUCTIONS

Bond V_{CC} First

ADDITIONAL INFORMATION:

Worst Case Density: $<2.0 \times 10^5$ A/cm^2
Transistor Count: 166

Metallization Mask Layout

ACS151MS