ACS14MS

Radiation Hardened Hex Inverting Schmitt Trigger

FN4544
Rev.0.00
November 1998

The Radiation Hardened ACS14MS is a Hex Inverting Schmitt Trigger. This device simply inverts the level present on each input. The Schmitt Trigger input stage provides 400mV (Min) of hysteresis and permits input signals with longer rise times. All inputs are buffered and the outputs are designed for balanced propagation delay and transition times.

The ACS14MS 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 ACS14MS are contained in SMD 5962-98623.

Features

- QML Qualified Per MIL-PRF-38535 Requirements
- 1.25 Micron Radiation Hardened SOS CMOS
- Radiation Environment
  - Latch-Up Free Under any Conditions
  - Total Dose . . . . . 3×10^5 RAD (Si)
  - SEU Immunity. . . . . $<1 \times 10^{-10}$ Errors/Bit/Day
  - SEU LET Threshold . . . . . >100MeV/(mg/cm^2)
- Input Logic Levels . . . . $V_{IL} = (0.3)(V_{CC})$, $V_{IH} = (0.7)(V_{CC})$
- Hysteresis Voltage . . . . . 400mV (Min)
- Output Current . . . . . $\pm$8mA (Min)
- Quiescent Supply Current . . . . . 100μA (Max)
- Propagation Delay . . . . . 14ns (Max)

Applications

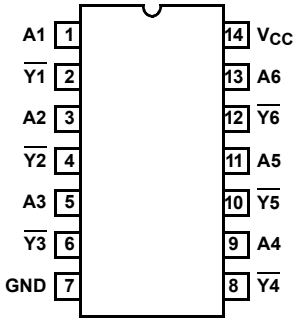
- High Speed Control Circuits
- Sensor Monitoring
- Low Power Designs

Ordering Information

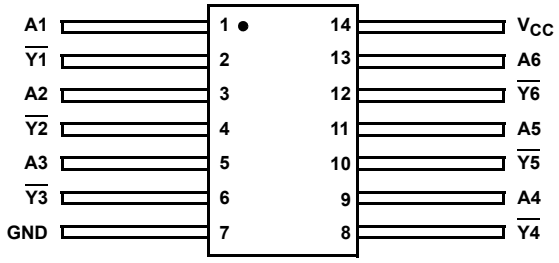
ORDERING NUMBER	INTERNAL MKT. NUMBER	TEMP. RANGE (^{o}C)	PACKAGE	DESIGNATOR
5962F9862301VCC	ACS14DMSR-03	-55 to 125	14 Ld SBDIP	CDIP2-T14
ACS14D/SAMPLE-03	ACS14D/SAMPLE-03	25	14 Ld SBDIP	CDIP2-T14
5962F9862301VXC	ACS14KMSR-03	-55 to 125	14 Ld Flatpack	CDFP4-F14
ACS14K/SAMPLE-03	ACS14K/SAMPLE-03	25	14 Ld Flatpack	CDFP4-F14
5962F9862301V9A	ACS14HMSR-03	25	Die	N/A

Pinouts

ACS14MS
(SBDIP)
TOP VIEW



ACS14MS
(FLATPACK)
TOP VIEW



Die Characteristics

DIE DIMENSIONS:

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

METALLIZATION: AL

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

SUBSTRATE POTENTIAL:

Unbiased Insulator

PASSIVATION

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

SPECIAL INSTRUCTIONS:

Bond V_{CC} First

ADDITIONAL INFORMATION:

Worst Case Current Density: $<2.0 \times 10^5$ A/cm^2
Transistor Count: 130

Metallization Mask Layout

ACS14MS