Data Sheet November 1998 File Number 4546

Radiation Hardened Quad 2-Input NAND Schmitt Trigger

The Radiation Hardened ACS132MS is a Quad 3-Input NAND Gate with Schmitt Trigger inputs. When any input to one of the gates is at a LOW level, the corresponding Y output will be HIGH. A HIGH level on both inputs will cause the output for that gate to be LOW. 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 ACS132MS 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 ACS132MS are contained in SMD 5962-98625. A “hot-link” is provided on our homepage with instructions for downloading. http://www.intersil.com/data/sm/index.htm

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 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})
- Hysteresis Voltage . . . . . 400mV (Min)
- Output Current . . . . . ±8mA (Min)
- Quiescent Supply Current . . . . . 100µA (Max)
- Propagation Delay . . . . . 12ns (Max)

Applications

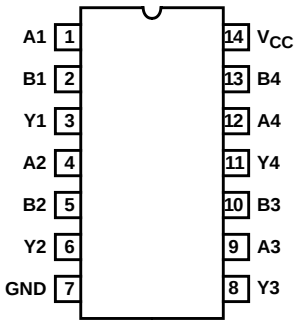
- High Speed Control Circuits
- Sensor Monitoring
- Low Power Designs

Ordering Information

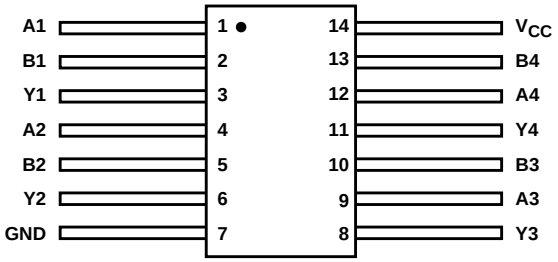
ORDERING NUMBER	INTERNAL MKT. NUMBER	TEMP. RANGE (^oC)	PACKAGE	DESIGNATOR
5962F9862501VCC	ACS132DMSR-03	-55 to 125	14 Ld SBDIP	CDIP2-T14
ACS132D/SAMPLE-03	ACS132D/SAMPLE-03	25	14 Ld SBDIP	CDIP2-T14
5962F9862501VXC	ACS132KMSR-03	-55 to 125	14 Ld Flatpack	CDFP4-F14
ACS132K/SAMPLE-03	ACS132K/SAMPLE-03	25	14 Ld Flatpack	CDFP4-F14
5962F9862501V9A	ACS132HMSR-03	25	Die	N/A

Pinouts

ACS132MS (SBDIP)
TOP VIEW



ACS132MS (FLATPACK)
TOP VIEW



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

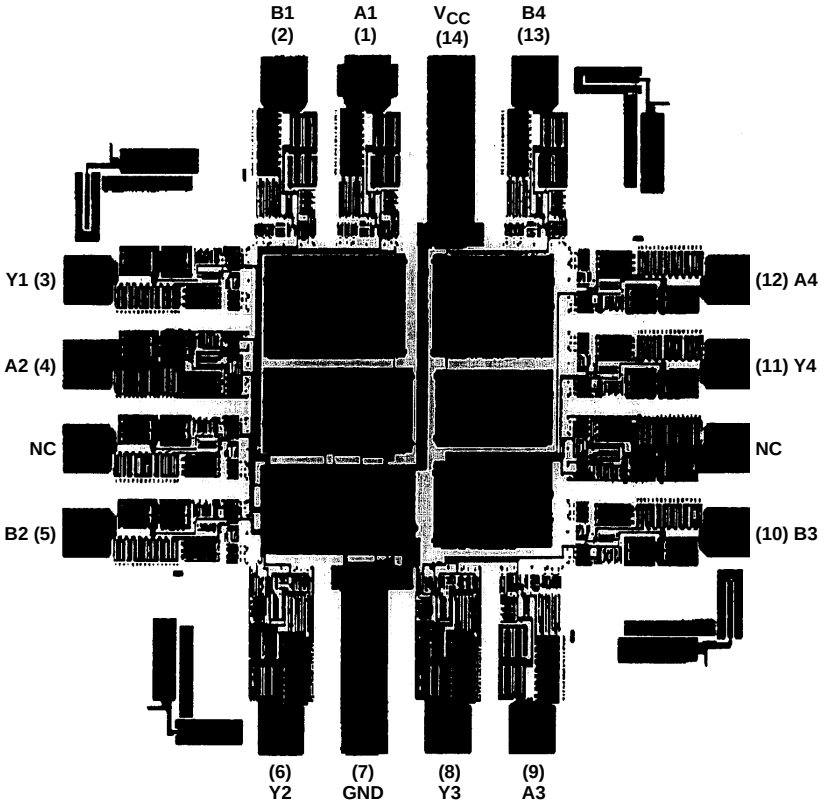
Bond V_{CC} First

ADDITIONAL INFORMATION:

Worst Case Current Density: $<2.0 \times 10^5$ A/cm^2
Transistor Count: 92

Metallization Mask Layout

ACS132MS



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