Radiation Hardened 8-Input NAND Gate

The Radiation Hardened ACS30MS is an 8-Input NAND Gate. A HIGH level on all inputs results in a LOW level on the $\overline{Y}$ output. A LOW level on any input results in a HIGH level on the $\overline{Y}$ output. All inputs are buffered and the outputs are designed for balanced propagation delay and transition times.

The ACS30MS 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 ACS30MS are contained in SMD 5962-98631. A "hot-link" is provided on our homepage for downloading.
http://www.intersil.com/spacedefense/spaceselect.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 (Max.) . . . . 3×10^5 RAD(Si)
  - SEU Immunity. . . . . <1×10^{-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 . . . . ±12mA (Min)
- Quiescent Supply Current . . . . 5.0µA (Max)
- Propagation Delay . . . . 16ns (Max)

Applications

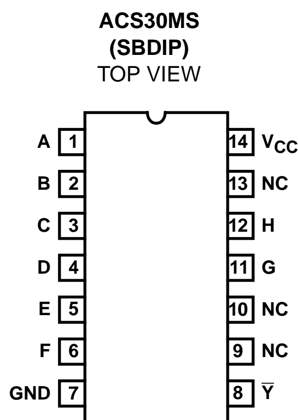
- High Speed Control Circuits
- Sensor Monitoring
- Low Power Designs

Ordering Information

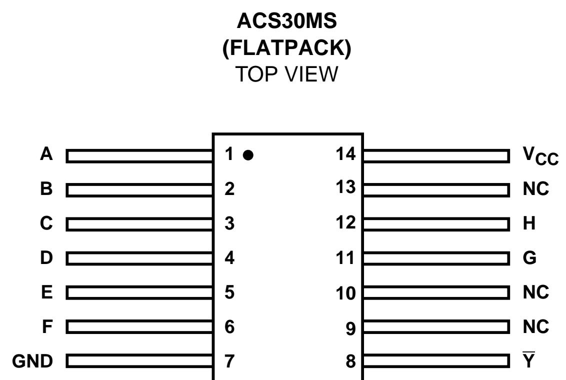
ORDERING NUMBER	INTERNAL MARKETING NUMBER	TEMP. RANGE (^oC)	PACKAGE	DESIGNATOR
5962F9863101VCC	ACS30DMSR-03	-55 to 125	14 Ld SBDIP	CDIP2-T14
ACS21D/SAMPLE-03	ACS30D/SAMPLE-03	25	14 Ld SBDIP	CDIP2-T14
5962F9863101VXC	ACS30KMSR-03	-55 to 125	14 Ld Flatpack	CDFP3-F14
ACS21K/SAMPLE-03	ACS30K/SAMPLE-03	25	14 Ld Flatpack	CDFP3-F14
5962F9863101V9A	ACS30HMSR-03	25	Die	NA

Pinouts

ACS30MS
(SBDIP)
TOP VIEW



ACS30MS
(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

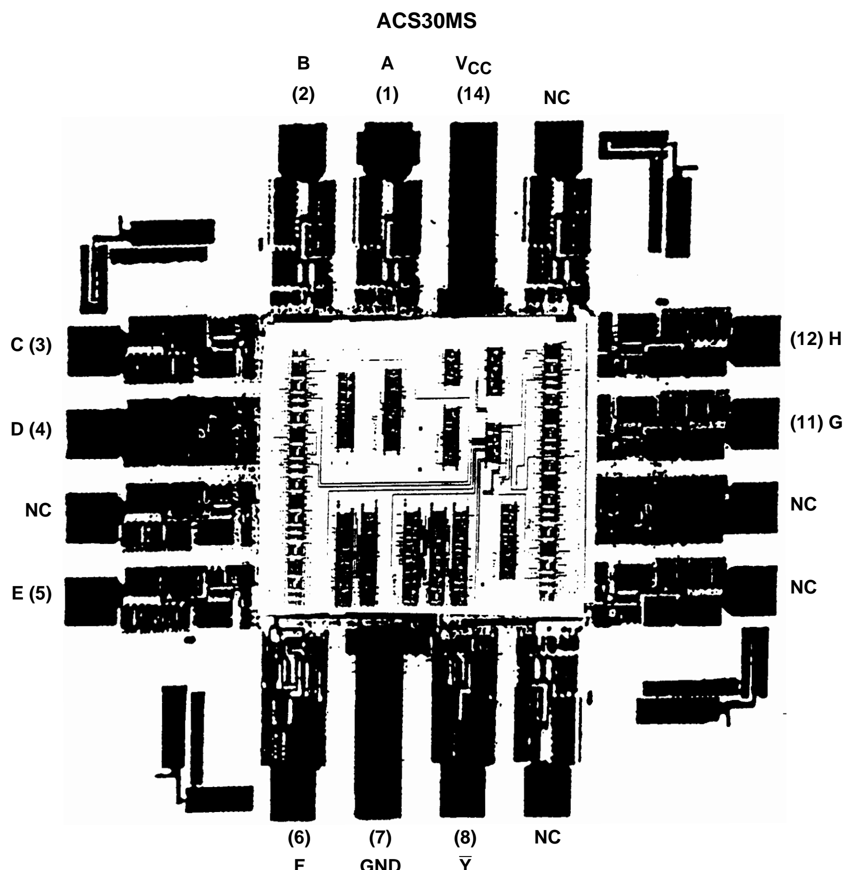
Bond V_{CC} First

ADDITIONAL INFORMATION:

Worst Case Current Density: <2.0 x 10^5 A/cm^2
Transistor Count: 86

Metallization Mask Layout

ACS30MS



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