

**Radiation Hardened
CMOS Dual SPDT Analog Switch**

The HS-303RH analog switch is a monolithic device fabricated using Radiation Hardened CMOS technology and the Intersil dielectric isolation process for latch-up free operation. Improved total dose hardness is obtained by layout (thin oxide tabs extending to a channel stop) and processing (hardened gate oxide). This switch offers low-resistance switching performance for analog voltages up to the supply rails. "ON" resistance is low and stays reasonably constant over the full range of operating voltage and current. "ON" resistance also stays reasonably constant when exposed to radiation, being typically 30Ω pre-rad and 35Ω post 100kRAD(Si). Break-before-make switching is controlled by 5V digital inputs.

Specifications

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 HS-303RH are contained in SMD 5962-95813. A "hot-link" is provided from our website for downloading

Ordering Information

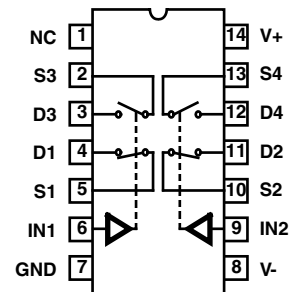
| ORDERING NUMBER | PART NUMBER | TEMP. RANGE (°C) |
|-----------------|-----------------|------------------|
| 5962R9581301QCC | HS1-303RH-8 | -55 to 125 |
| 5962R9581301QXC | HS9-303RH-8 | -55 to 125 |
| 5962R9581301VCC | HS1-303RH-Q | -55 to 125 |
| 5962R9581301VXC | HS9-303RH-Q | -55 to 125 |
| HS1-303RH/PROTO | HS1-303RH/PROTO | -55 to 125 |
| HS9-303RH/PROTO | HS9-303RH/PROTO | -55 to 125 |

Features

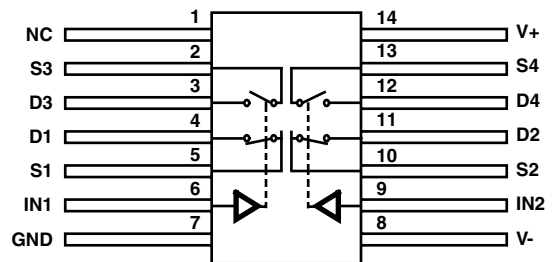
- QML, Per MIL-PRF-38535
- Radiation Performance
 - Gamma Dose (γ) 1 x 10⁵ RAD(Si)
- No Latch-Up, Dielectrically Isolated Device Islands
- Pin for Pin Compatible with Intersil HI-303 Series Analog Switches
- Analog Signal Range 15V
- Low Leakage 100nA (Max, Post Rad)
- Low r_{ON} 60Ω (Max, Post Rad)
- Low Operating Power 100μA (Max, Post Rad)

Pinouts

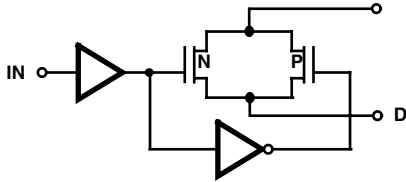
**HS1-303RH (SBDIP), CDIP2-T14
TOP VIEW**



**HS9-303RH (FLATPACK) CDFP3-F14
TOP VIEW**



Functional Diagram



SBDIP TRUTH TABLE

| LOGIC | SW1 AND SW2 | SW3 AND SW4 |
|-------|-------------|-------------|
| 0 | OFF | ON |
| 1 | ON | OFF |

Die Characteristics

DIE DIMENSIONS:

(2130 μ m x 1930 μ m x 279 μ m \pm 25.4 μ m)
84 x 76 x 11mils \pm 1mil

METALLIZATION:

Type: Al
Thickness: 12.5k \AA \pm 2k \AA

SUBSTRATE POTENTIAL:

Unbiased (DI)

BACKSIDE FINISH:

Gold

PASSIVATION:

Type: Silox (SiO₂)
Thickness: 8k \AA \pm 1k \AA

WORST CASE CURRENT DENSITY:

< 2.0e5 A/cm²

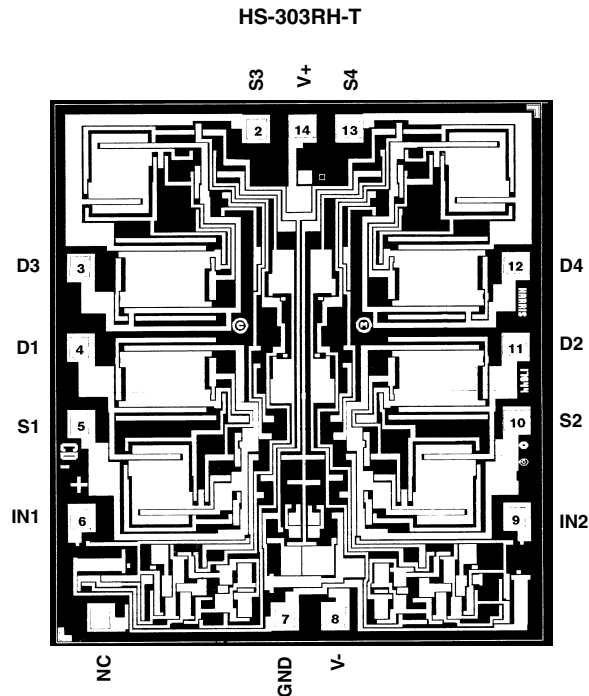
TRANSISTOR COUNT:

76

PROCESS:

Metal Gate CMOS, Dielectric Isolation

Metallization Mask Layout



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