

**Radiation Hardened
CMOS Dual SPDT Analog Switch**

Intersil's Satellite Applications FlowTM (SAF) devices are fully tested and guaranteed to 100kRAD total dose. This QML Class T device is processed to a standard flow intended to meet the cost and shorter lead-time needs of large volume satellite manufacturers, while maintaining a high level of reliability.

The HS-390RH-T 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). These switches offer 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-390RH-T are contained in SMD 5962-95813. A "hot-link" is provided from our website for downloading.

www.intersil.com/spacedefense/newsafclasst.asp

Intersil's Quality Management Plan (QM Plan), listing all Class T screening operations, is also available on our website.

www.intersil.com/quality/manuals.asp

Ordering Information

ORDERING NUMBER	PART NUMBER	TEMP. RANGE (°C)
5962R9581303TEC	HS1-390RH-T	-55 to 125
5962R9581303TYC	HS9-390RH-T	-55 to 125

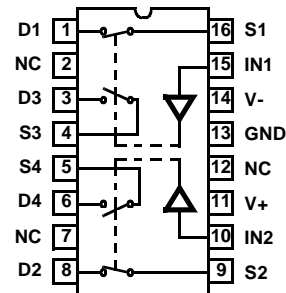
NOTE: **Minimum order quantity for -T is 150 units through distribution, or 450 units direct.**

Features

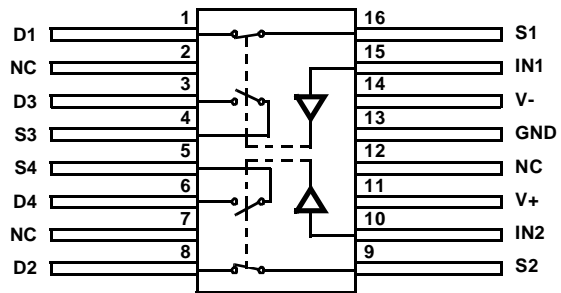
- QML Class T, Per MIL-PRF-38535
- Radiation Performance
 - Gamma Dose (γ) 1 x 10⁵ RAD(Si)
 - No Latch-Up, Dielectrically Isolated Device Islands
- Pin for Pin Compatible with Intersil HI-390 Series Analog Switches
- Analog Signal Range 15V
- Low Leakage 100nA (Max, Post Rad)
- Low r_{ON} 60Ω (Max, Post Rad)
- Low Operating Power. 100μA (Max, Post Rad)

Pinouts

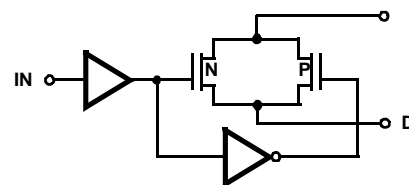
**HS1-390RH (SBDIP), CDIP2-T16
TOP VIEW**



**HS9-390RH (FLATPACK), CDFP4-F16
TOP VIEW**



Functional Diagram



TRUTH TABLE

LOGIC	SW1 SW2	SW3 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: 8.0k \AA \pm 1.0k \AA

WORST CASE CURRENT DENSITY:

< 2.0e5 A/cm²

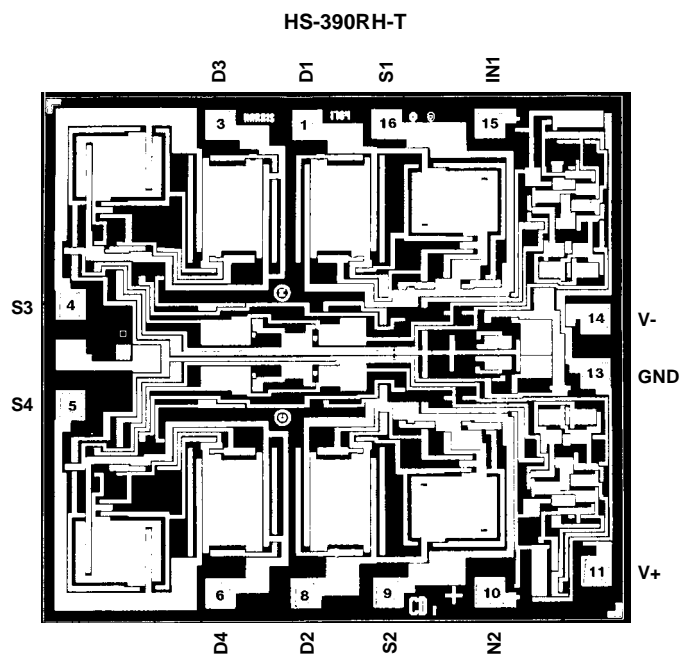
TRANSISTOR COUNT:

76

PROCESS:

Metal Gate CMOS, Dielectric Isolation

Metallization Mask Layout



All Intersil U.S. products are manufactured, assembled and tested utilizing ISO9000 quality systems. Intersil Corporation's quality certifications can be viewed at www.intersil.com/design/quality

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Sales Office Headquarters

NORTH AMERICA

Intersil Corporation
7585 Irvine Center Drive
Suite 100
Irvine, CA 92618
TEL: (949) 341-7000
FAX: (949) 341-7123

Intersil Corporation
2401 Palm Bay Rd.
Palm Bay, FL 32905
TEL: (321) 724-7000
FAX: (321) 724-7946

EUROPE

Intersil Europe Sarl
Ave. William Graisse, 3
1006 Lausanne
Switzerland
TEL: +41 21 6140560
FAX: +41 21 6140579

ASIA

Intersil Corporation
Unit 1804 18/F Guangdong Water Building
83 Austin Road
TST, Kowloon Hong Kong
TEL: +852 2723 6339
FAX: +852 2730 1433