HS-390RH-T

Radiation HardenedCMOS Dual SPDT Analog Switch

FN4604
Rev 1.00
July 1999

Intersil's Satellite Applications Flow™ (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 (^oC)
5962R9581303TEC	HS1-390RH-T	-55 to 125
5962R9581303TYC	HS9-390RH-T	-55 to 125

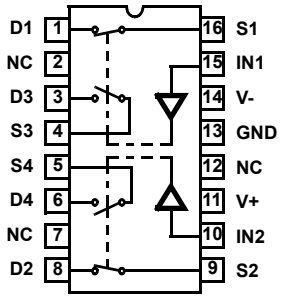
NOTE: ***Minimum order quantity for -T is 150 units through distribution, or 450 units direct.***

Features

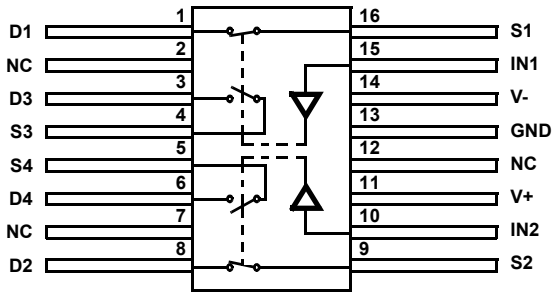
- QML Class T, Per MIL-PRF-38535
- Radiation Performance
  - Gamma Dose (γ) 1 x 10^5 RAD(Si)
  - No Latch-Up, Dielectrically Isolated Device Islands
- Pin for Pin Compatible with Intersil HI-390 Series Analog Switches
- Analog Signal Range 15V
- Low Leakage . . . . . 100nA (Max, Post Rad)
- Low r_{ON} . . . . . 60Ω (Max, Post Rad)
- Low Operating Power. . . . . 100μA (Max, Post Rad)

Pinouts

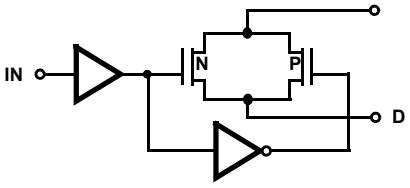
HS1-390RH (SBDIP), CDIP2-T16
TOP VIEW



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:

(2130µm x 1930µm x 279µm ±25.4µm)

84 x 76 x 11mils ±1mil

METALLIZATION:

Type: Al

Thickness: 12.5kÅ ±2kÅ

SUBSTRATE POTENTIAL:

Unbiased (DI)

BACKSIDE FINISH:

Gold

PASSIVATION:

Type: Silox (S_iO_2)

Thickness: 8.0kÅ ±1.0kÅ

WORST CASE CURRENT DENSITY:

< 2.0e5 A/cm^2

TRANSISTOR COUNT:

76

PROCESS:

Metal Gate CMOS, Dielectric Isolation

Metallization Mask Layout

HS-390RH-T