

Data Sheet

July 1999 File Number 4646.1

# Radiation Hardened Quad Voltage Comparator

interci

Intersil's Satellite Applications Flow<sup>™</sup> (SAF) devices are fully tested and guaranteed to 100kRAD total dose. These QML Class T devices are 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 Radiation Hardened HS-139RH-T consists of four independent single or dual supply voltage comparators on a single monolithic substrate. The common mode input voltage range includes ground, even when operated from a single supply, and the low supply current make these comparators suitable for low power applications. These types were designed to directly interface with TTL and CMOS.

The HS-139RH-T is fabricated on our dielectrically isolated Rad Hard Silicon Gate (RSG) process, which provides an immunity to Single Event Latch-up and the capability of highly reliable performance in any radiation environment.

# 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-139RH-T are contained in SMD 5962-98613. A "hot-link" is provided on our homepage with instructions for downloading.

#### www.intersil.com/spacedefense/newsafclasst.asp

Intersil' 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 ( <sup>o</sup> C)
5962R9861301TCC	HS1-139RH-T	-55 to 125
5962R9861301TXC	HS9-139RH-T	-55 to 125

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

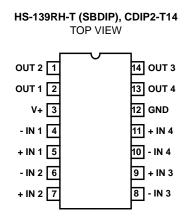
## Features

- QML Qualified Per MIL-PRF-38535 Requirements
- Radiation Environment
  - Latch-up Free Under Any Conditions
  - Total Dose......3 x 10<sup>5</sup> RAD(Si)
  - SEU LET ..... 20MEV/cm<sup>2</sup>/mg
- 100V Output Voltage Withstand Capability
- Differential Input Voltage Range Equal to the Supply Voltage
- Input Offset Voltage (VIO)..... 2mV(max)
- Quiescent Supply Current ..... 2mA(max)

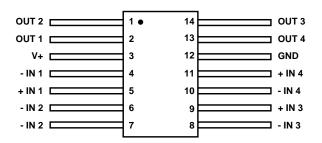
## Applications

- Pulse Generators
- Timing Circuitry
- Level Shifting
- · Analog to Digital Conversion

#### **Pinouts**







CAUTION: These devices are sensitive to electrostatic discharge; follow proper IC Handling Procedures. www.intersil.com or 407-727-9207 | Copyright © Intersil Corporation 1999 Satellite Applications Flow™ (SAF) is a trademark of Intersil Corporation.

# **Die Characteristics**

#### DIE DIMENSIONS:

3750µm x 2820µm (148 mils x 111 mils) 483µm  $\pm$  25.4µm (19 mils  $\pm$  1 mil)

#### INTERFACE MATERIALS

#### Glassivation

Type: Nitride (Si3N4) over Silox (SiO2 Nitride Thickness: 4.0kA +/- 0.5kA Silox Thickness: 12.0kA +/- 1.3kA

#### **Top Metallization**

Type: AL Si Cu Thickness: 16.0kA +/- 2kA

#### Substrate:

Radiation Hardened Silicon Gate, Dielectric Isolation

# Metallization Mask Layout

### Backside Finish:

Silicon

## ASSEMBLY RELATED INFORMATION

#### Substrate Potential:

Unbiased (DI)

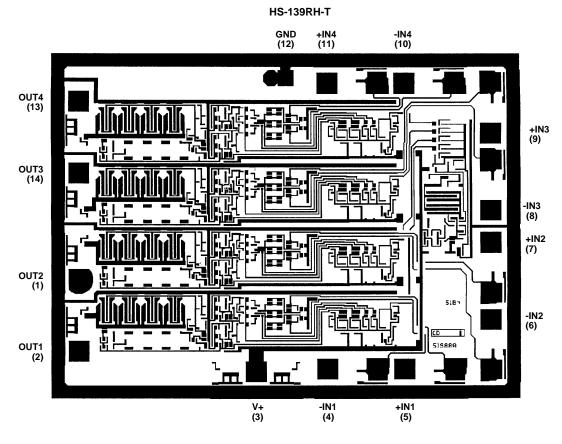
## ADDITIONAL INFORMATION

Worst Case Current Density:  $<2.0 \times 10^5 \text{ A/cm}^2$ 

<2.0 X 10° A/CIII

# Transistor Count:

49



All Intersil semiconductor products are manufactured, assembled and tested under ISO9000 quality systems certification.

Intersil semiconductor products are sold by description only. Intersil Corporation reserves the right to make changes in circuit design and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that data sheets are current before placing orders. Information furnished by Intersil is believed to be accurate and reliable. However, no responsibility is assumed by Intersil or its subsidiaries for its use; nor for any infringements of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Intersil or its subsidiaries.

For information regarding Intersil Corporation and its products, see web site http://www.intersil.com

