

Radiation Hardened Quad Voltage Comparator

June 1998

Features

- QML Qualified Per MIL-PRF-38535 Requirements
- Radiation Environment
 - Latch-up Free Under any Conditions
 - Total Dose 3×10^5 RAD(SI)
 - SEU LET Threshold TBD
- 100V Output Voltage Withstand Capability
- Differential Input Voltage Range Equal to the Supply Voltage
- Input Offset Voltage (V_{IO}) 2mV(max)
- Quiescent Supply Current..... 2mA(max)

Applications

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

Description

The Radiation Hardened HS-139RH 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 makes these comparators suitable for low power applications. These types were designed to directly interface with TTL and CMOS.

The HS-139RH 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 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.

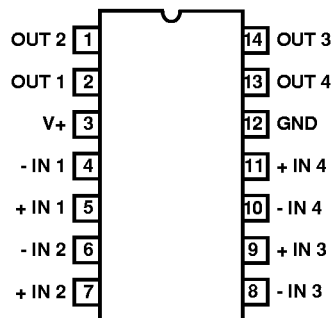
Detailed Electrical Specifications for the HS-139RH are contained in SMD 5962-98613. A "hot-link" is provided on our homepage with instructions for downloading.
<http://www.semi.harris.com/data/sm/index.htm>

Ordering Information

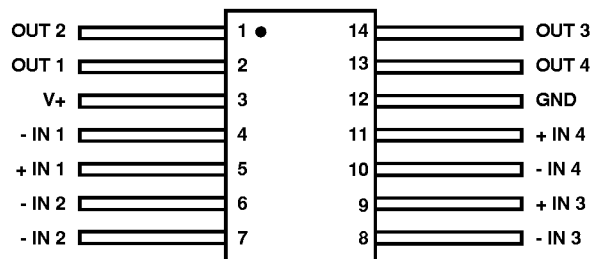
SMD PART NUMBER	HARRIS PART NUMBER	TEMP. RANGE (°C)	PACKAGE	CASE OUTLINE
5962F9861301VCC	HS1-139RH-Q	-55 to 125	14 Ld SBDIP	CDIP2-T14
5962F9861301QCC	HS1-139RH-8	-55 to 125	14 Ld SBDIP	CDIP2-T14
N/A	HS1-139RH/Sample	25	14 Ld SBDIP	CDIP2-T14
5962F9861301VXC	HS9-139RH-Q	-55 to 125	14 Ld Flatpack	CDFP3-F14
5962F9861301QXC	HS9-139RH-8	-55 to 125	14 Ld Flatpack	CDFP3-F14
N/A	HS9-139RH/Sample	25	14 Ld Flatpack	CDFP3-F14

Pinouts

HS-139RH (SBDIP)
TOP VIEW



HS-139RH (FLATPACK)
TOP VIEW



HS-139RH

Die Characteristics

DIE DIMENSIONS:

3750 μ m x 2820 μ m (148 mils x 111 mils)

483 μ m \pm 25.4 μ m (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

Backside Finish: Silicon

ASSEMBLY RELATED INFORMATION

Substrate Potential: Unbiased (DI)

ADDITIONAL INFORMATION

Worst Case Current Density: <2.0 x 10⁵ A/cm²

Transistor Count: 49

Metallization Mask Layout

