Data Sheet | May 19, 2009 | FN3573.4

Radiation Hardened Quad Voltage Comparator

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

Features

- QML Qualified Per MIL-PRF-38535 Requirements
- Radiation Environment
  - Latch-up Free Under any Conditions
  - Total Dose (Max) . . . . . 3×10^5 RAD(Si)
  - SEU LET Threshold . . . . . 20MeV/cm^2/mg
  - Low Dose Rate Effects Immunity
- 100V Output Voltage Withstand Capability
- ESD Protection to >3000V
- Differential Input Voltage Range Equal to the Supply Voltage
- Input Offset Voltage (V_{IO}). . . . . 2mV (Max)
- Quiescent Supply Current . . . . . 2mA (Max)
- Pb-Free (RoHS Compliant)

Applications

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

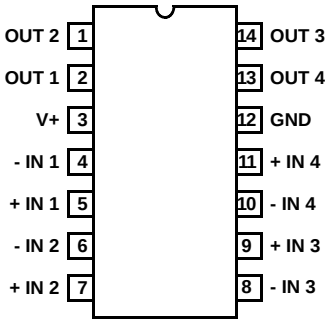
Ordering Information

ORDERING NUMBER (Note)	INTERNAL MKT. NUMBER	PART MARKING	TEMP. RANGE (°C)	PACKAGE (Pb-Free)	PACKAGE DRAWING NUMBER
5962F9861301VCC	HS1-139RH-Q	Q 5962F98 61301VCC	-55 to +125	14 Ld SBDIP	D14.3
5962F9861301QCC	HS1-139RH-8	Q 5962F98 61301QCC	-55 to +125	14 Ld SBDIP	D14.3
HS1-139RH/PROTO	HS1-139RH/PROTO	HS1-139RH /PROTO	-55 to +125	14 Ld SBDIP	D14.3
5962F9861301VXC	HS9-139RH-Q	Q 5962F98 61301VXC	-55 to +125	14 Ld FLATPACK	K14.A
5962F9861301QXC	HS9-139RH-8	Q 5962F98 61301QXC	-55 to +125	14 Ld FLATPACK	K14.A
HS9-139RH/PROTO	HS9-139RH/PROTO	HS9-139RH /PROTO	-55 to +125	14 Ld FLATPACK	K14.A

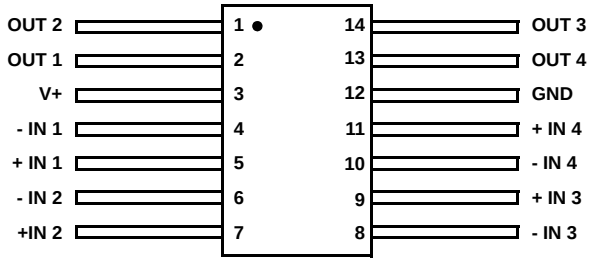
NOTE: These Intersil Pb-free Hermetic packaged products employ 100% Au plate - e4 termination finish, which is RoHS compliant and compatible with both SnPb and Pb-free soldering operations.

Pinouts

HS-139RH
(SBDIP CDIP2-T14)
TOP VIEW



HS-139RH
(FLATPACK CDFP3-F14)
TOP VIEW



Die Characteristics

DIE DIMENSIONS:

3750µm x 2820µm (148 mils x 111 mils)
483µm ±25.4µm (19 mils ±1 mil)

INTERFACE MATERIALS:

Glassivation:

Type: Silox (SiO_2)
Thickness: 8.0kÅ ±1.0kÅ

Top Metallization:

Type: AlSiCu
Thickness: 16.0kÅ ±2kÅ

Substrate:

Radiation Hardened Silicon Gate, Dielectric Isolation

Backside Finish:

Silicon

ASSEMBLY RELATED INFORMATION:

Substrate Potential:

Unbiased (DI)

ADDITIONAL INFORMATION:

Worst Case Current Density:

$<2.0 \times 10^5$ A/cm^2

Transistor Count:

49

Metallization Mask Layout

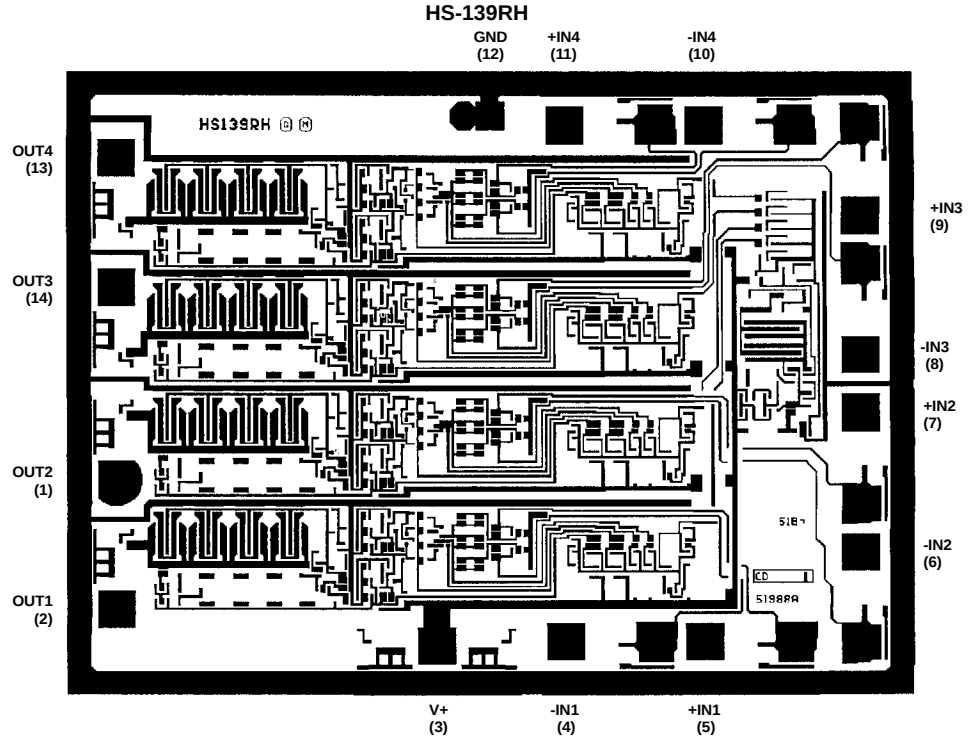


TABLE 1. HS-139RH PAD COORDINATES

		RELATIVE TO PIN 1	
PIN NUMBER	PAD NAME	X COORDINATES	Y COORDINATES
1	OUT 2	0	0
2	OUT 1	0	-535
3	V+	1323	-688
4	-IN 1	1862	-670
5	+IN 1	2439	-670
6	-IN 2	3084	-299
7	+IN 2	3084	278
8	-IN 3	3084	518
9	+IN 3	3084	1095
10	-IN 4	2439	1466
11	+IN 4	1862	1466
12	GND	1550	1503
13	OUT 4	0	1331
14	OUT 3	0	796

NOTE: Dimensions in microns