

## HS-2100RH

Radiation Hardened High Frequency Half Bridge Driver

FN4562  
Rev 3.00  
June 1999

The Radiation Hardened HS-2100RH is a high frequency, 100V Half Bridge N-Channel MOSFET Driver IC, which is a functional, pin-to-pin replacement for the Intersil HIP2500 and the industry standard 2110 types. The low-side and high-side gate drivers are independently controlled. This gives the user maximum flexibility in dead-time selection and driver protocol.

In addition, the device has on-chip error detection and correction circuitry, which monitors the state of the high-side latch and compares it to the HIN signal. If they disagree, a set or reset pulse is generated to correct the high-side latch. This feature protects the high-side latch from SEUs.

Undervoltage on the high-side supply forces HO low. When that supply returns to a valid voltage, HO will go to the state of HIN. Undervoltage on the low-side supply forces both LO and HO low. When that supply becomes valid, LO returns to the LIN state and HO returns to the HIN state.

**Specifications for Rad Hard QML devices are controlled by the Defense Supply Center in Columbus (DSCC). The SMD numbers listed here must be used when ordering.**

**Detailed Electrical Specifications for the HS-2100RH are contained in SMD 5962-99536. A "hot-link" is provided on our homepage for downloading.**

[www.intersil.com/spacedefense/space.asp](http://www.intersil.com/spacedefense/space.asp)

This link will not be available until the SMD is finalized.

### Ordering Information

ORDERING NUMBER	INTERSIL MKT. NUMBER	TEMP. RANGE (°C)
5962F9953601VXC	HS9-2100RH-Q	-55 to 125
5962F9953601QXC	HS9-2100RH-8	-55 to 125
HS9-2100RH/Proto	HS9-2100RH/Proto	-55 to 125

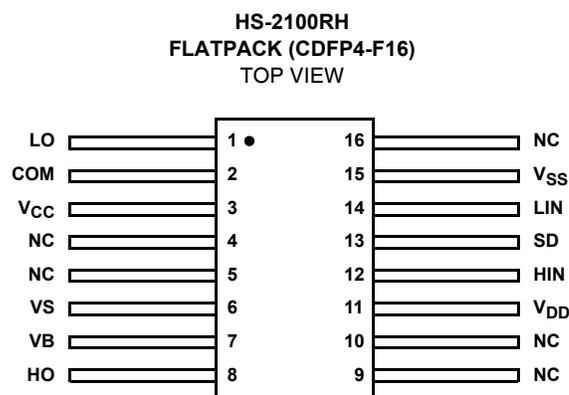
### Features

- Electrically Screened to DESC SMD # 5962-99536
- QML Qualified per MIL-PRF-38535 Requirements
- Radiation Environment
  - Maximum Total Dose . . . . .  $3 \times 10^5$  RAD(SI)
  - DI RSG Process Provides Latch-up Immunity
  - Vertical Architecture Provides Low Dose Rate Immunity
- Bootstrap Supply Max Voltage to 120V
- Drives 1000pF Load at 1MHz with Rise and Fall Times of 45ns (Typ)
- 1A (Typ) Peak Output Current
- Independent Inputs for Non-Half Bridge Topologies
- Low DC Power Consumption . . . . . 60mW (Typ)
- Operates with  $V_{DD} = V_{CC}$  Over 12V to 20V Range
- Supply Undervoltage Protection

### Applications

- High Frequency Switch-Mode Power Supplies
- Drivers for Inductive Loads
- DC Motor Drivers

### Pinout



### Die Characteristics

**DIE DIMENSIONS:**

4710µm x 3570µm (186 mils x 141 mils)  
Thickness: 483µm ±25.4µm (19 mils ±1 mil)

**INTERFACE MATERIALS:**

**Glassivation:**

Type: PSG (Phosphorous Silicon Glass)  
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:**

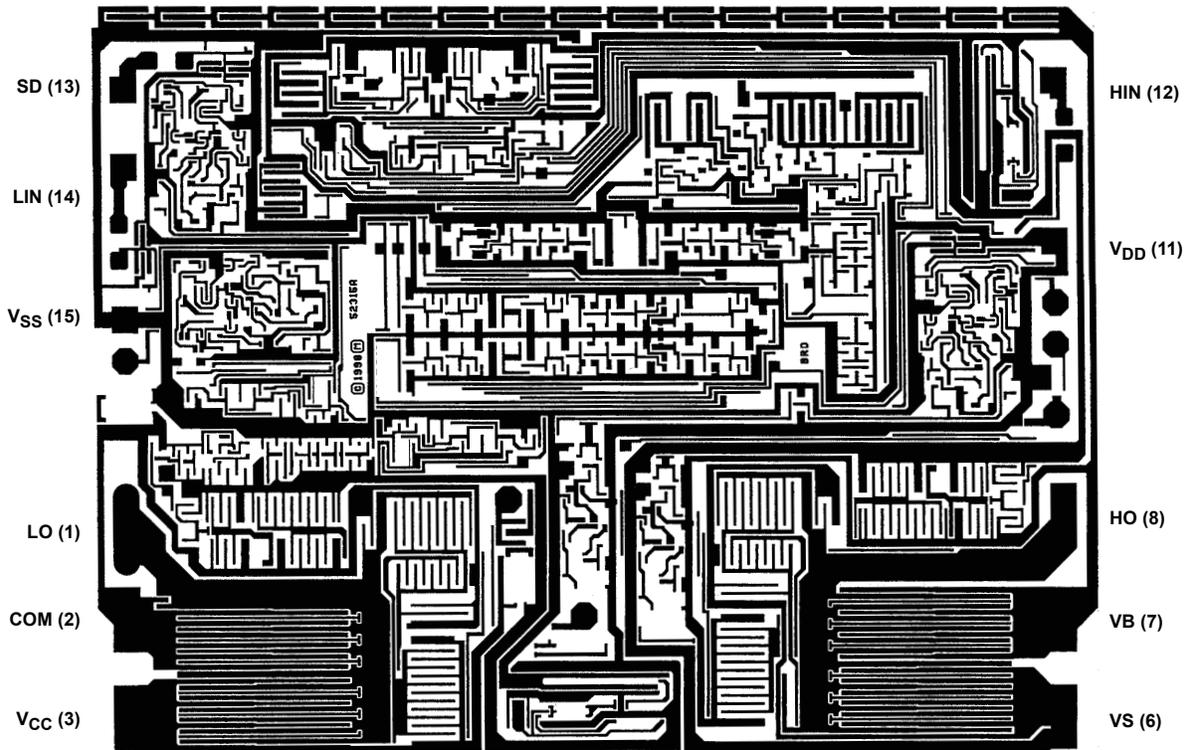
<2.0 x 10<sup>5</sup> A/cm<sup>2</sup>

**Transistor Count:**

125

### Metallization Mask Layout

HS-2100RH



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