

Radiation Hardened High Frequency Half Bridge Driver

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

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

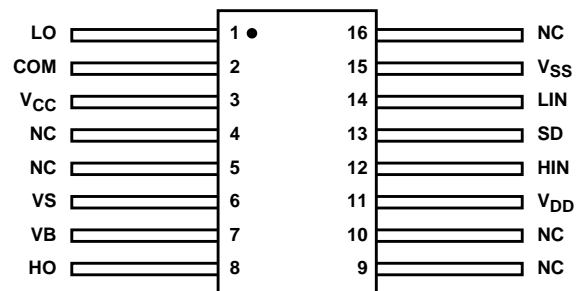
- Electrically Screened to DESC SMD # 5962-99536
- QML Qualified per MIL-PRF-38535 Requirements
- Radiation Environment
 - Maximum Total Dose 3×10^5 RAD(SI)
 - DI RSG Process Provides Latch-up Immunity
 - Vertical Architecture Provides Low Dose Rate Immunity
- Bootstrap Supply Max Voltage to 120V
- Drives 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

**HS-2100RH
FLATPACK (CDFP4-F16)
TOP VIEW**



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:

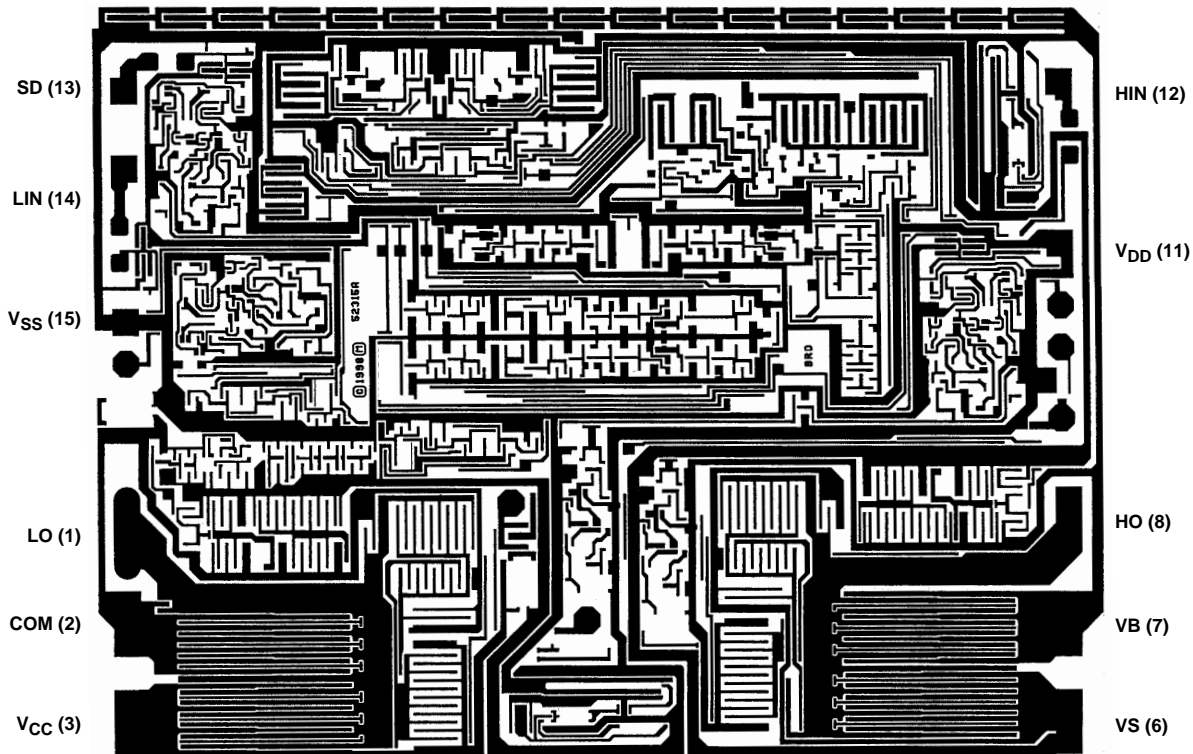
<2.0 x 10⁵ A/cm²

Transistor Count:

125

Metallization Mask Layout

HS-2100RH



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 www.intersil.com