

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

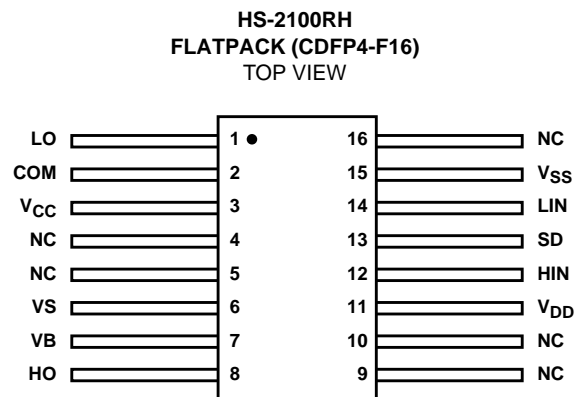
Features

- 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



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:

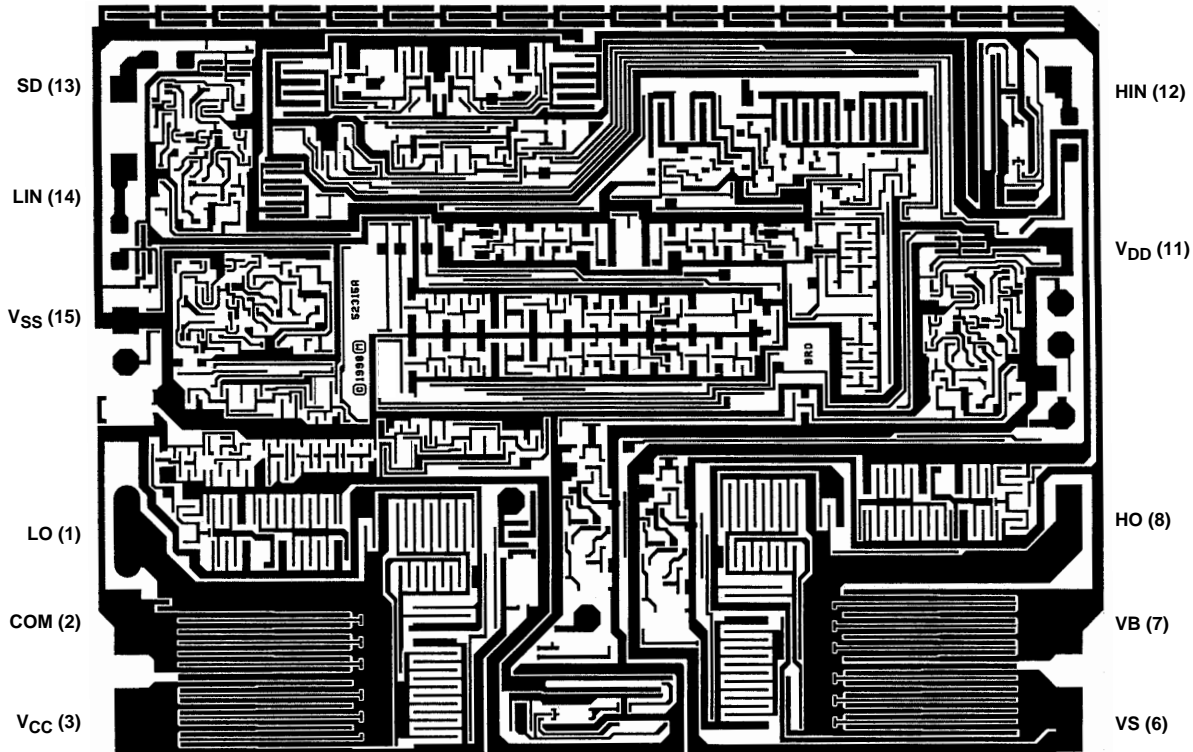
$<2.0 \times 10^5 \text{ A/cm}^2$

Transistor Count:

125

Metallization Mask Layout

HS-2100RH



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