Radiation Hardened High Frequency Half Bridge Drivers

IS-2100ARH, IS-2100AEH

The Radiation Hardened IS-2100ARH, IS-2100AEH are high frequency, 130V Half Bridge N-Channel MOSFET Driver ICs, which are functionally similar to 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 devices have 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 single event upsets (SEUs).

Specifications for Rad Hard QML devices are controlled by the Defense Logistics Agency Land and Maritime (DLA). The SMD numbers listed here must be used when ordering.

Detailed Electrical Specifications for the IS-2100ARH, IS-2100AEH are contained in SMD 5962-99536. A "hotlink" is also provided on our website for downloading.

Ordering Information

ORDERING NUMBER	INTERSIL MKT. NUMBER	TEMP. RANGE (°C)
5962F9953602V9A	IS0-2100ARH-Q	-55 to +125
5962F9953602VXC	IS9-2100ARH-Q	-55 to +125
5962F9953602QXC	IS9-2100ARH-8	-55 to +125
IS9-2100ARH/Proto	IS9-2100ARH/Proto	-55 to +125
5962F9953603VXC	IS9-2100AEH-Q	-55 to +125
5962F9953603V9A	IS0-2100AEH-Q	-55 to +125

Features

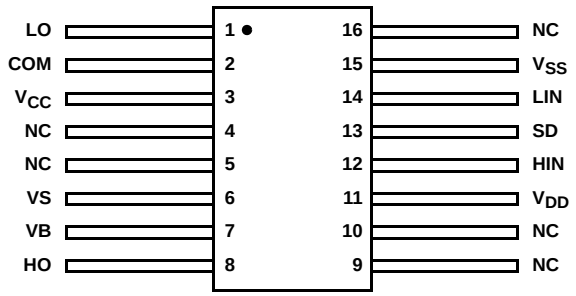
- Electrically Screened to DLA SMD # 5962-99536
- QML Qualified per MIL-PRF-38535 Requirements
- Radiation Environment
  - Maximum Total Dose. . . . . 300krad(SI)
  - DI RSG Process Provides Latch-up Immunity
  - SEU Rating . . . . . 82MeV/mg/cm^2
  - Vertical Device Architecture Reduces Sensitivity to Low Dose Rates
- Bootstrap Supply Max Voltage to 150V
- Drives 1000pF Load at 1MHz with Rise and Fall Times of 30ns (Typ)
- 1.5A (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
- Low-side Supply Undervoltage Protection

Applications

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

Pin Configuration

IS-2100ARH, IS-2100AEH
FLATPACK (CDFP4-F16)
TOP VIEW



CAUTION: These devices are sensitive to electrostatic discharge; follow proper IC Handling Procedures.
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Die Characteristics

DIE DIMENSIONS:

4820µm x 3300µm (190 mils x 130 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:

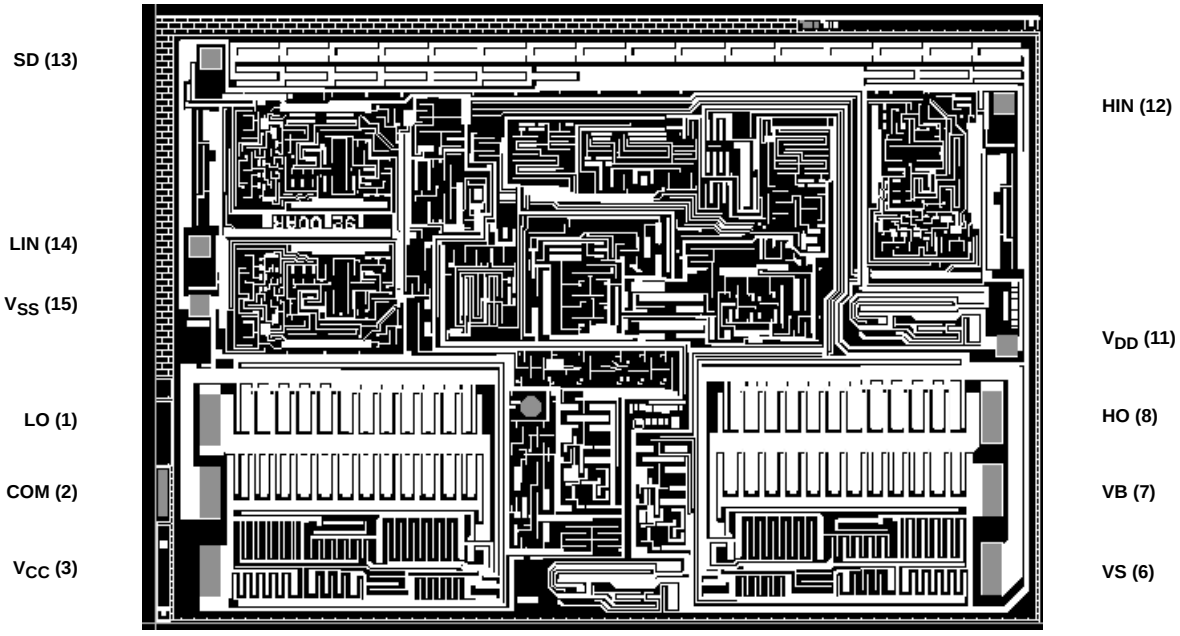
$< 2.0 \times 10^5$ A/cm^2

Transistor Count:

542

Metallization Mask Layout

IS-2100ARH, IS-2100AEH



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