

# 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

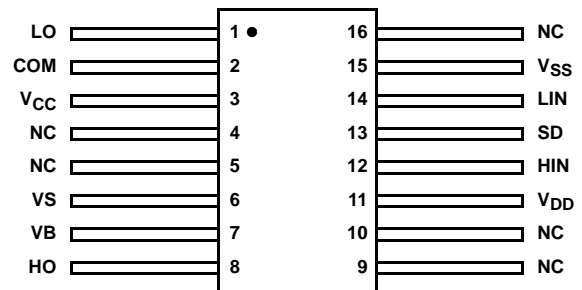
- Electrically Screened to DLA SMD # [5962-99536](#)
- QML Qualified per MIL-PRF-38535 Requirements
- Radiation Environment
  - Maximum Total Dose . . . . . 300krad(SI)
  - DI RSG Process Provides Latch-up Immunity
  - SEU Rating . . . . . 82MeV/mg/cm<sup>2</sup>
  - Vertical Device Architecture Reduces 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<sub>DD</sub> = V<sub>CC</sub> 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



# IS-2100ARH, IS-2100AEH

## Die Characteristics

### DIE DIMENSIONS:

4820 $\mu$ m x 3300 $\mu$ m (190 mils x 130 mils)  
Thickness: 483 $\mu$ m  $\pm$ 25.4 $\mu$ m (19 mils  $\pm$ 1 mil)

### INTERFACE MATERIALS:

#### Glassivation:

Type: PSG (Phosphorous Silicon Glass)  
Thickness: 8.0k $\text{Å}$   $\pm$ 1.0k $\text{Å}$

#### Top Metallization:

Type: ALSiCu  
Thickness: 16.0k $\text{Å}$   $\pm$ 2k $\text{Å}$

#### Substrate:

Radiation Hardened Silicon Gate,  
Dielectric Isolation

### Backside Finish:

Silicon

### ASSEMBLY RELATED INFORMATION:

#### Substrate Potential:

Unbiased (DI)

### ADDITIONAL INFORMATION:

#### Worst Case Current Density:

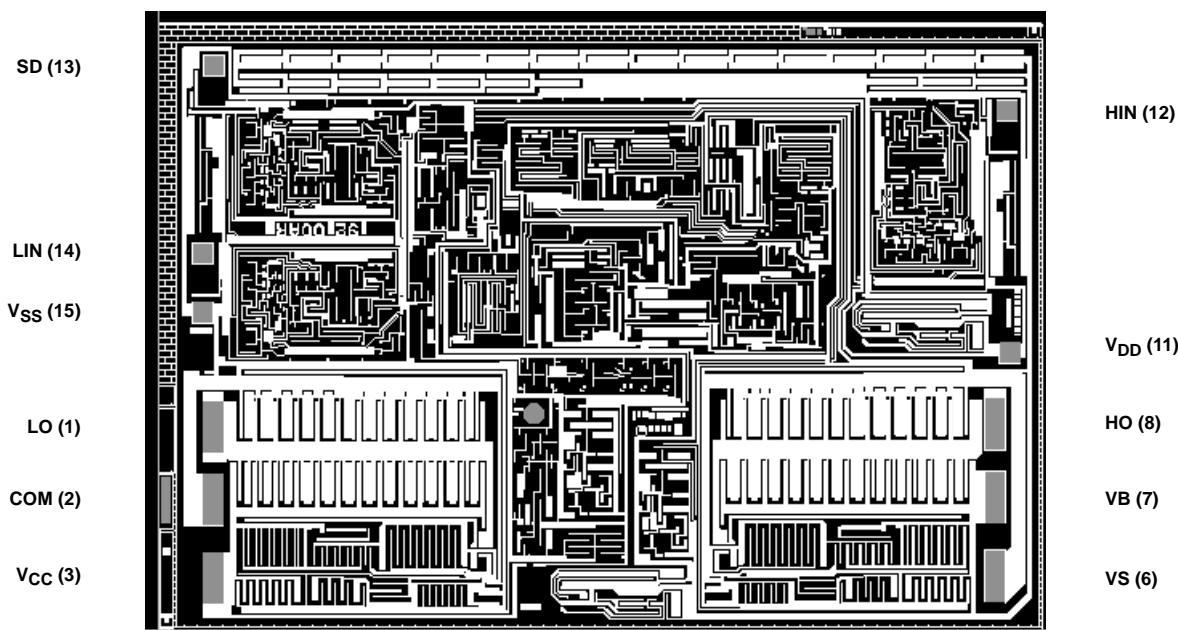
$<2.0 \times 10^5$  A/cm<sup>2</sup>

#### Transistor Count:

542

## Metallization Mask Layout

IS-2100ARH, IS-2100AEH



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