

## Radiation Hardened 8-Channel Source Driver



The Star\*Power Radiation Hardened IS-2981RH is a monolithic device designed for use in high-side switching applications that benefit

from separate grounds for the logic and loads. The device has a 5V to 80V operating supply voltage range and is capable of sourcing -200mA continuously from each output. The outputs are controlled by active-high inputs and may be paralleled to increase the drive current. Output clamp diodes prevent device damage, when switching inductive loads.

Constructed with the Intersil bonded wafer, dielectrically isolated HVTDL process, these single event latch-up immune devices have been specifically designed to provide highly reliable performance in harsh radiation environments. They are fully guaranteed for 100krad(Si) total dose performance through wafer-by-wafer radiation testing, and are production tested over the full military temperature range.

**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 these devices are contained in SMD 5962-00520. A "hot-link" is provided on our homepage for downloading.

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

## Ordering Information

| ORDERING NUMBER  | INTERNAL MKT. NUMBER | TEMP. RANGE (°C) |
|------------------|----------------------|------------------|
| 5962R0052001VVC  | IS1-2981RH-Q         | -55 to 125       |
| 5962R0052001QVC  | IS1-2981RH-8         | -55 to 125       |
| IS1-2981RH/Proto | IS1-2981RH/Proto     | -55 to 125       |

## Features

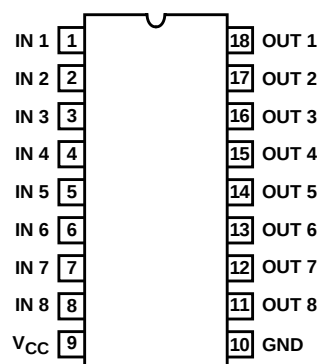
- Electrically Screened to SMD # 5962-00520
- QML Qualified Per MIL-PRF-38535 Requirements
- Radiation Environment
  - Single Event Latch-up Immune. . . . . DI Process
  - Total Dose. . . . .  $1 \times 10^5$  rad(Si) (Max)
- Input Voltage Range. . . . . 0.0V to  $V_{CC}$  (20V Max)
- Supply Voltage Range . . . . . 5V to 80V
- Turn-on Delay Time . . . . . 2 $\mu$ s (Max)
- Turn-off Delay Time . . . . . 11 $\mu$ s (Max)
- Output Clamp Diode,  $V_F$  . . . . . -1.75V (Max)

## Applications

- Drivers for Various Loads
  - Relays, Solenoids and Motors
- Reliable Replacement of Discrete Solutions
- Interfacing Between Low-Level Logic and High-Current Loads

## Pinout

IS1-2981RH-Q  
(CDIP2-T18, SBDIP)  
TOP VIEW



## Die Characteristics

### DIE DIMENSIONS:

2667 $\mu$ m x 5131 $\mu$ m (105 mils x 202 mils)  
 Thickness: 483 $\mu$ m  $\pm$  25.4 $\mu$ m (19 mils  $\pm$  1 mil)

### INTERFACE MATERIALS

#### Glassivation

Type: Nitride (Si<sub>3</sub>N<sub>4</sub>) over Silox (SiO<sub>2</sub>)  
 Nitride Thickness: 4.0kÅ  $\pm$  1.0kÅ  
 Silox Thickness: 12.0kÅ  $\pm$  4.0kÅ

#### Metallization

Top Metal 2: Ti/AlCu  
 Thickness: 1.6 $\mu$ m  $\pm$  0.02 $\mu$ m  
 Metal 1: Ti/AlCu  
 Thickness: 0.8 $\mu$ m  $\pm$  0.01 $\mu$ m

### Substrate

HVTDLM, Bonded Wafer, Dielectric Isolation

### Backside Finish

Silicon

### ASSEMBLY RELATED INFORMATION

#### Substrate Potential

Must be tied to GND.

### ADDITIONAL INFORMATION

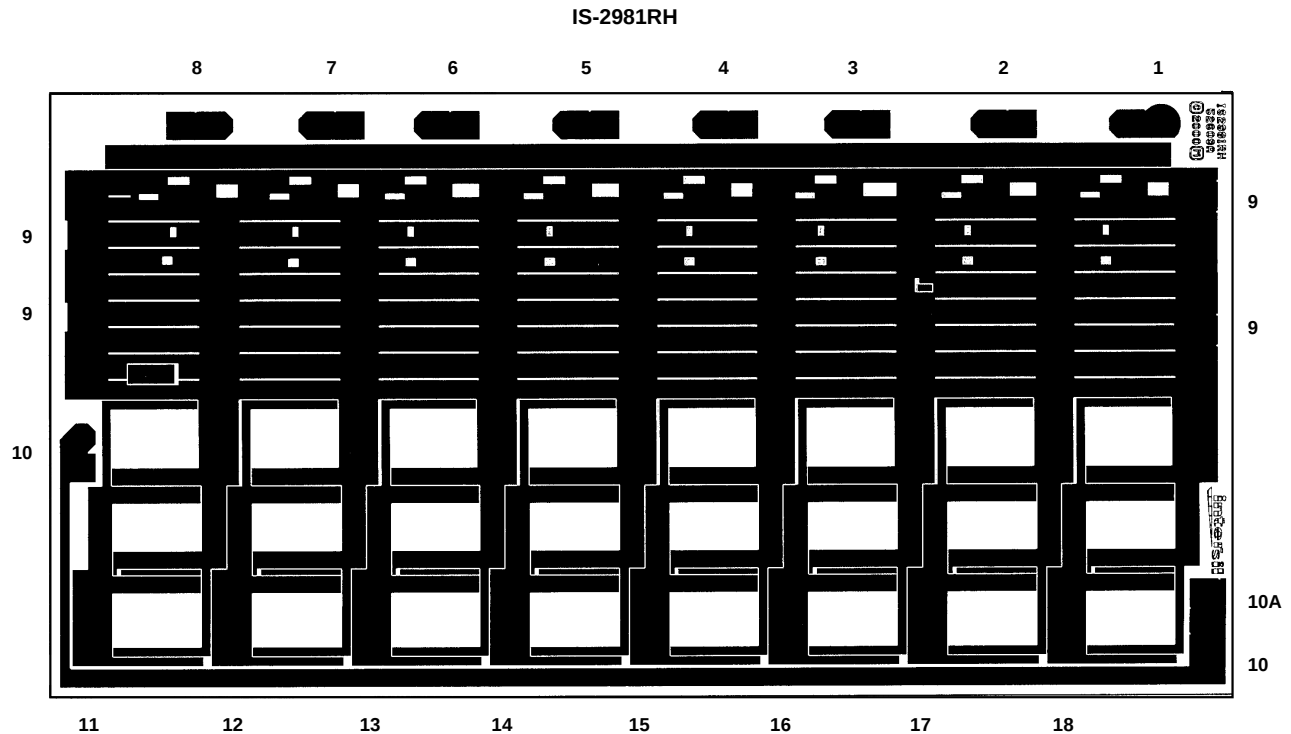
#### Worst Case Current Density

$<1.0 \times 10^5$  A/cm<sup>2</sup>

#### Transistor Count

68

## Metallization Mask Layout



### NOTES:

1. Pad numbers correspond to package pin functions.
2. Bond to all four pad 9 locations for V<sub>CC</sub> current sharing purposes.
3. Bond to both pad 10 locations for GND current sharing purposes.
4. Pad 10A is not used in die applications.
5. Die backside must be connected to GND.

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](http://www.intersil.com)