

**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**

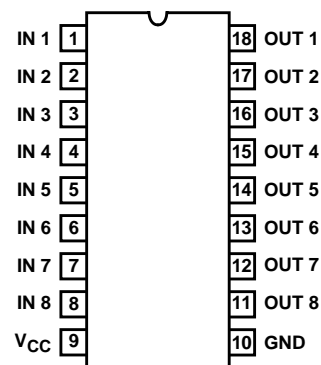
- Electrically Screened to SMD # 5962-00520
- QML Qualified Per MIL-PRF-38535 Requirements
- Radiation Environment
  - Single Event Latch-up Immune. . . . . DI Process
  - Total Dose. . . . .  $1 \times 10^5$  rad(Si) (Max)
- Input Voltage Range. . . . . 0.0V to V<sub>CC</sub> (20V Max)
- Supply Voltage Range . . . . . 5V to 80V
- Turn-on Delay Time . . . . . 2μs (Max)
- Turn-off Delay Time . . . . . 11μs (Max)
- Output Clamp Diode, V<sub>F</sub> . . . . . -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: 4.0k $\text{Å}$   $\pm$  1.0k $\text{Å}$   
 Silox Thickness: 12.0k $\text{Å}$   $\pm$  4.0k $\text{Å}$

#### Metallization

Top Metal 2: Ti/AICu  
 Thickness: 1.6 $\mu$ m  $\pm$  0.02 $\mu$ m  
 Metal 1: Ti/AICu  
 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

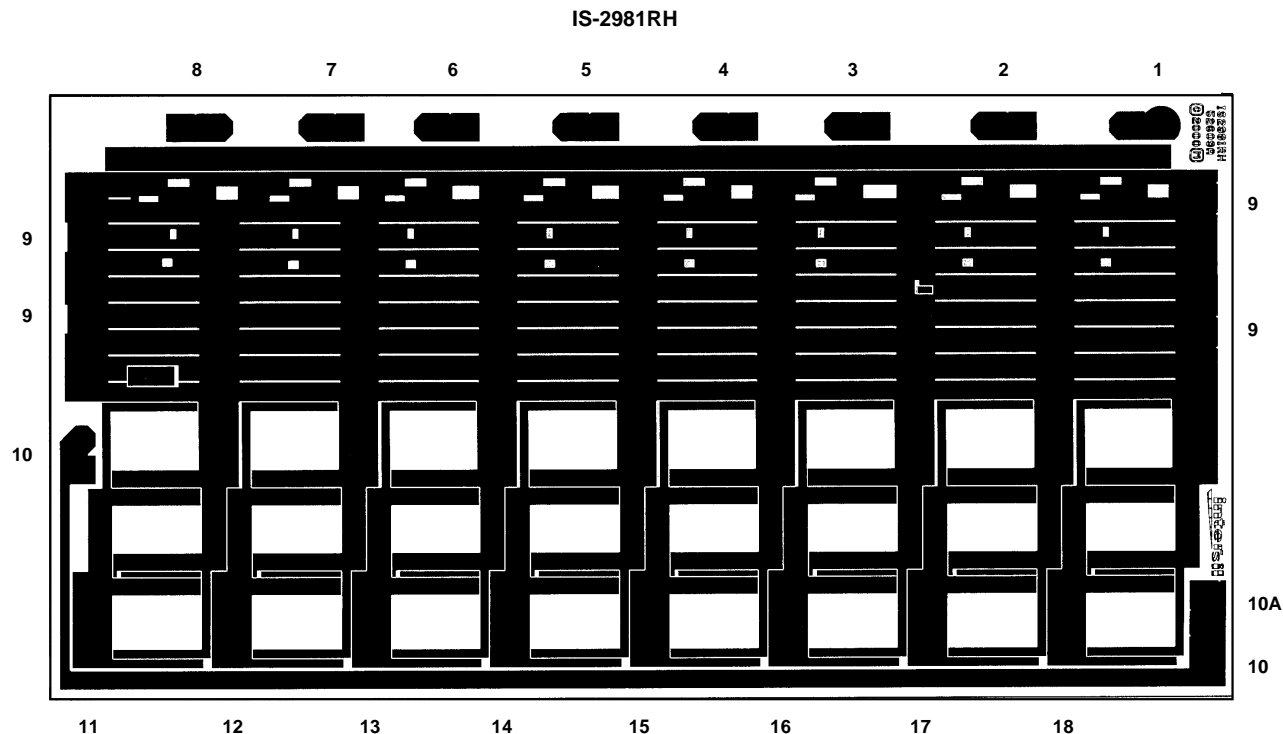
#### Worst Case Current Density

$<1.0 \times 10^5$  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.





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**IS-2981RH**[Printer Friendly Version](#)**Rad-Hard 8-Channel Source Driver**

 <a href="#">Datasheets, Related Docs &amp; Simulations</a>	 <a href="#">Description</a>	 <a href="#">Key Features</a>	 <a href="#">Parametric Data</a>	 <a href="#">Application Diagrams</a>	 <a href="#">Related Devices</a>
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**Ordering Information** **RoHS/Pb-Free/Green Device**

Part No.	Design-In Status	Temp.	Package	MSL	SMD	Price US \$	
IS0-2981RH-Q 	Active	-	<a href="#">18 Ld Die (Military Visual)</a>	N/A	-	Contact Us	
IS1-2981RH-8 	Active	-	<a href="#">18 Ld SBDIP</a>	N/A	5962R0052001QVC	Contact Us	
IS1-2981RH-Q 	Active	-	<a href="#">18 Ld SBDIP</a>	N/A	5962R0052001VVC	Contact Us	

The price listed is the manufacturer's suggested retail price for quantities between 100 and 999 units. However, prices in today's market are fluid and may change without notice.

**MSL** = Moisture Sensitivity Level - per IPC/JEDEC J-STD-020

**SMD** = Standard Microcircuit Drawing

**Description**

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**Key Features**

- Electrically Screened to SMD # 5962-00520
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- Radiation Environment
- Single Event Latch-up Immune DI Process
- Total Dose  $1 \times 10^5$  rad(Si) (Max)
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- 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, VF -1.75V (Max)

**Related Documentation**

- DS** Datasheet(s):
- [Radiation Hardened 8-Channel Source Driver](#)

- SMD** Military SMD(s):
- [SMD for IS-2981RH](#)

- TH** Technical Homepage:
- [Military/Space ICs](#)

**PT** **Parametric Data**

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RH Level	100
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**Application Block Diagrams**

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- [Satellite Power Management](#)

**Applications**

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