Data Sheet June 2000 File Number 4869.1

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 HVTDLM 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

Ordering Information

ORDERING NUMBER	INTERNAL MKT. NUMBER	TEMP. RANGE (^{o}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

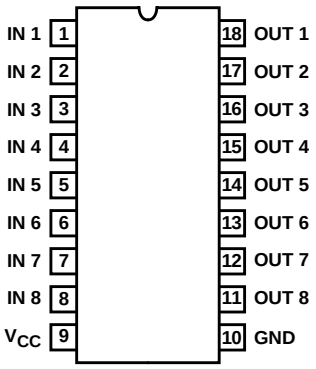
- Electrically Screened to SMD # 5962-00520
- QML Qualified Per MIL-PRF-38535 Requirements
- Radiation Environment
  - Single Event Latch-up Immune . . . . . DI Process
  - Total Dose . . . . . 1 x 10^5 rad(Si) (Max)
- Input Voltage Range . . . . . 0.0V to V_{CC} (20V Max)
- Supply Voltage Range . . . . . 5V to 80V
- Turn-on Delay Time . . . . . 2µs (Max)
- Turn-off Delay Time . . . . . 11µs (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:

2667µm x 5131µm (105 mils x 202 mils)
Thickness: 483µm ± 25.4µm (19 mils ± 1 mil)

INTERFACE MATERIALS

Glassivation

Type: Nitride (Si_3N_4) over Silox (SiO_2)
Nitride Thickness: 4.0kÅ ± 1.0kÅ
Silox Thickness: 12.0kÅ ± 4.0kÅ

Metallization

Top Metal 2: Ti/AlCu
Thickness: 1.6µm ± 0.02µm
Metal 1: Ti/AlCu
Thickness: 0.8µm ± 0.01µm

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

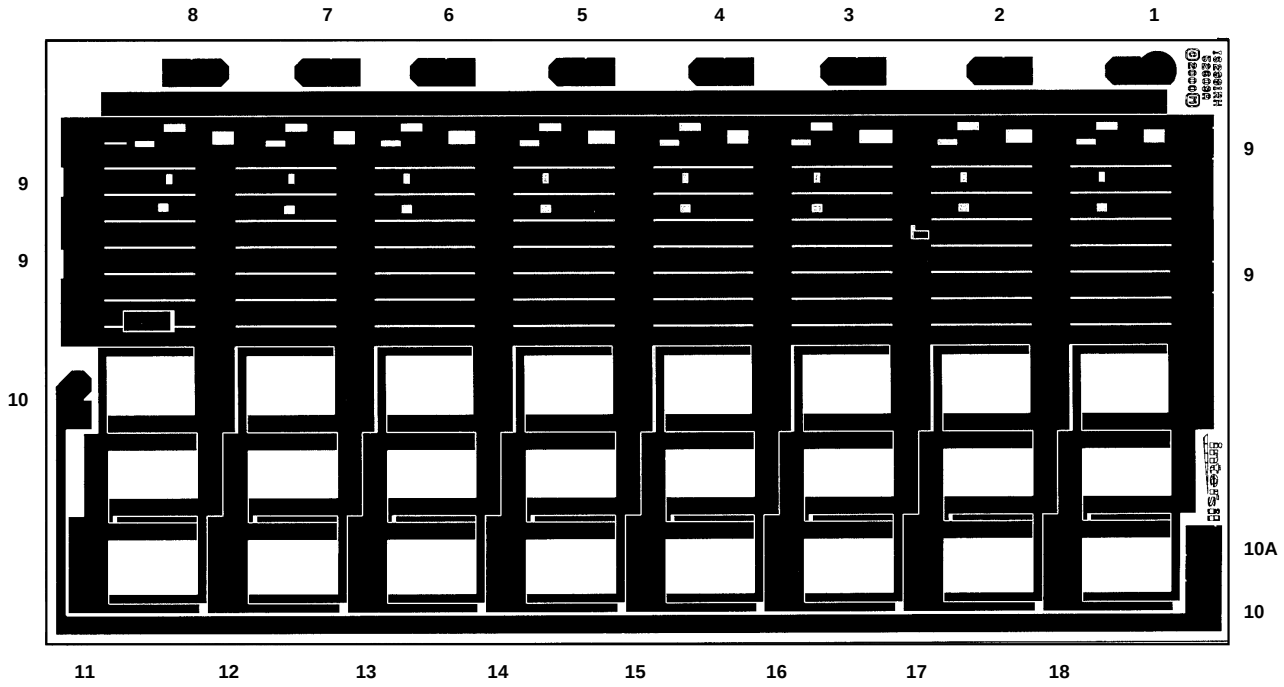
$<1.0 \times 10^5$ A/cm^2

Transistor Count

68

Metallization Mask Layout

IS-2981RH



NOTES:

1. Pad numbers correspond to package pin functions.
2. Bond to all four pad 9 locations for V_{CC} 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.