

## Radiation Hardened 9A, Non-Inverting Power MOSFET Drivers

The Radiation Hardened ISL4422ARH is a non-inverting, monolithic high-speed MOSFET driver designed to convert a 5V CMOS level input signal into a high current output at voltages up to 18V. Its fast rise times and high current output allow very quick control of even the largest power MOSFETs in high frequency applications.

The input of the ISL4422ARH can be directly driven by our HS-1825ARH and IS-1845ASRH PWM devices. The 9A high current output minimizes power losses in MOSFETs by rapidly charging and discharging high gate capacitances.

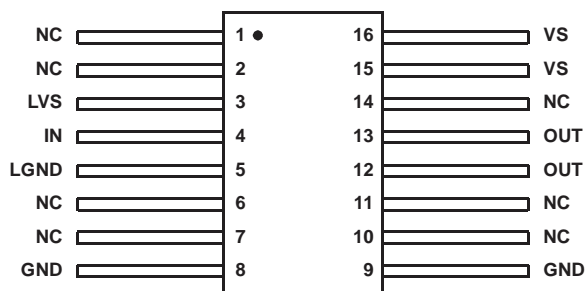
Constructed with the Intersil dielectrically isolated Rad Hard Silicon Gate (RSG) BiCMOS process, these devices are immune to Single Event Latch-up and have been specifically designed to provide highly reliable performance in harsh radiation environments.

**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 5962-01521. A "hot-link" is provided on our homepage for downloading.**  
[www.intersil.com/spacedefense/space.asp](http://www.intersil.com/spacedefense/space.asp)

## Pinout

**ISL74422ARH-F (FLATPACK CDFP4-F16)**  
TOP VIEW



### NOTES:

- Pin 3 provides the supply voltage for the control logic. It is not internally connected to Pins 15 and 16 for noise immunity purposes, but may be connected externally.
- Pin 5 is the control logic return. It is not internally connected to Pins 8 and 9 for noise immunity purposes, but may be connected externally.
- Pins 8 and 9 MUST both be connected to GND.
- Pins 12 and 13 MUST both be connected to the output.
- Pins 15 and 16 MUST both be connected to VS.

## Features

- QML Qualified per MIL-PRF-38535 Requirements
- Electrically Screened to DSCC SMD # 5962-01521
- Radiation Environment
  - Total Dose (Max) . . . . . 300krad(SI)
  - Latch-Up Immune
  - Negligible Sensitivity to Low Dose Rates
- $I_{PEAK}$  . . . . . 9A(Min)
- $T_F$  ( $C_L = 10,000pF$ ) . . . . . 70ns(Typ); 90ns(Max)
- $T_R$  ( $C_L = 10,000pF$ ) . . . . . 90ns(Typ); 105ns(Max)
- Prop Delay High-Low ( $C_L = 10,000pF$ ) . . . . . 75ns(Max)  
55ns(Typ)
- Prop Delay Low-High ( $C_L = 10,000pF$ ) . . . . . 50ns(Max)  
30ns(Typ)
- Consistent Delay Times with  $V_{CC}$  Changes
- Wide Supply Voltage Range . . . . . 7V to 18V
- Low Stand-by Power Consumption
  - Input Low . . . . . <2mW(Max)
  - Inputs High . . . . . <18mW(Max)
- ESD Protected . . . . . >1750V

## Applications

- Switching Power Supplies
- DC/DC Converters
- Motor Controllers

## Ordering Information

ORDERING NUMBER	INTERNAL MKT. NUMBER	TEMP. RANGE (°C)
5962F0152101VXC	ISL74422ARHVF	-55 to 125
5962F0152101QXC	ISL74422ARHQF	-55 to 125
ISL74422ARHF/Proto	ISL74422ARHF/Proto	-55 to 125

## Die Characteristics

### DIE DIMENSIONS:

3838 $\mu$ m x 4829 $\mu$ m (151.1 mils x 190.1mils)  
 Thickness: 483 $\mu$ m  $\pm$  25.4 $\mu$ m (19 mils  $\pm$  1 mil)

### INTERFACE MATERIALS:

#### Glassivation:

Type: PSG (Phosphorous Silicon Glass)  
 Thickness: 8.0kÅ  $\pm$  1.0kÅ

#### Top Metallization:

Type: AlSiCu  
 Thickness: 16.0kÅ  $\pm$  2kÅ

#### Substrate:

Radiation Hardened Silicon Gate,  
 Dielectric Isolation

### Backside Finish:

Silicon

### ASSEMBLY RELATED INFORMATION:

#### Substrate Potential:

Unbiased (DI)

### ADDITIONAL INFORMATION:

#### Worst Case Current Density:

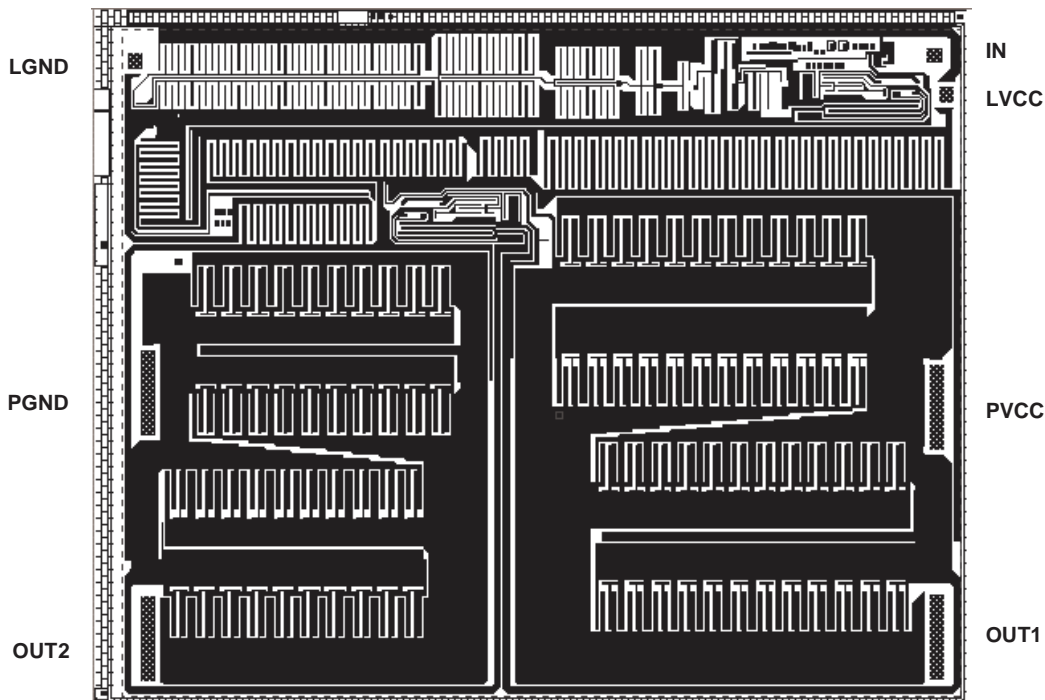
$<2.0 \times 10^5$  A/cm<sup>2</sup>

#### Transistor Count:

30

## Metallization Mask Layout

ISL74422ARH



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