

**Radiation Hardened Programmable Low Power Op Amp**

The HS-3530ARH is a Low Power Operational Amplifier which is an internally compensated monolithic device offering a wide range of performance specifications. Parameters such as power dissipation, slew rate, bandwidth, noise and input DC parameters are programmed by selecting an external resistor or current source. Supply voltages as low as  $\pm 3V$  may be used with little degradation of AC performance. The HS-3530ARH has been specifically designed to meet exposure to space radiation environments. Operation from  $-55^{\circ}C$  to  $125^{\circ}C$  is guaranteed.

A major advantage of the HS-3530ARH is that operating characteristics remain virtually constant over a wide supply range ( $\pm 3V$  to  $\pm 15V$ ), allowing the amplifier to offer maximum performance in almost any system, including battery operated equipment. A primary application for this device is in active filtering and conditioning for a wide variety of signals that differ in frequency and amplitude. Also, by modulating the set current, it can be used for designs such as current controlled oscillators/modulators, sample and hold circuits and variable active filters.

**Specifications**

Specifications for Rad Hard QML devices are controlled by the Defense Supply Center in Columbus (DSCC). The SMD numbers listed below must be used when ordering.

**Detailed Electrical Specifications for the HS-3530ARH are contained in SMD 5962-95687.** A "hot-link" to the DSCC website is provided on our homepage for downloading the document.

[www.intersil.com/spacedefense/newsafclasst.asp](http://www.intersil.com/spacedefense/newsafclasst.asp)

The Intersil Quality Management Plan, listing all screening operations, is available on our website.

[www.intersil.com/quality/manuals.asp](http://www.intersil.com/quality/manuals.asp)

**Ordering Information**

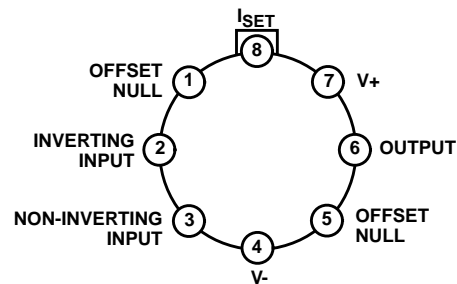
ORDERING NUMBER	PART NUMBER	TEMP. RANGE ( $^{\circ}C$ )
5962F9568701QGA	HS2-3530ARH-8	-55 to 125
5962F9568701VGA	HS2-3530ARH-Q	-55 to 125
5962F9568701VXC	HS9-3530ARH-Q	-55 to 125
5962F9568701V9A	HS0-3530ARH-Q	-55 to 125
NA	HS2-3530ARH/Proto	-55 to 125
NA	HS9-3530ARH/Proto	-55 to 125

**Features**

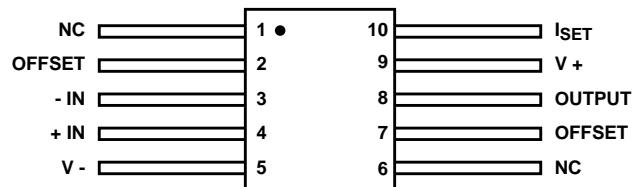
- Radiation Performance
  - Gamma Dose . . . . .  $3 \times 10^5$  RAD(Si)
  - SEL . . . . . Immune (RSG DI Process)
- Wide Range AC Programming
  - Slew Rate . . . . . 0.025 to 0.1V/ $\mu$ s
  - Gain X Bandwidth . . . . . 30kHz to 750kHz
- Wide Range DC Programming
  - Power Supply Range . . . . .  $\pm 3.0V$  to  $\pm 15V$
- Supply Current . . . . . 15 $\mu$ A to 150 $\mu$ A
- Output Current . . . . . 0.25mA to 2.5mA
- Quiescent Power . . . . . 4.8mW (Max)
- Dielectrically Isolated Device Islands
- Short Circuit Protection
- Full  $-55^{\circ}C$  to  $125^{\circ}C$  Military Temperature Range

**Pinouts**

**HS2-3530ARH (CAN), MACY1-X8**  
TOP VIEW



**HS9-3530ARH (FLATPACK), CDFP3-F10**  
TOP VIEW



# HS-3530ARH

## Die Characteristics

### DIE DIMENSIONS:

1720 $\mu$ m x 1390 $\mu$ m x 533 $\mu$ m  $\pm$ 25.4 $\mu$ m  
(68 mils x 55 mils x 21 mils  $\pm$ 1 mil)

### INTERFACE MATERIALS

#### GLASSIVATION

Type: Silox (SiO<sub>2</sub>)  
Thickness: 8.0kA  $\pm$ 1.0kA

#### TOP METALLIZATION

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

### 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>

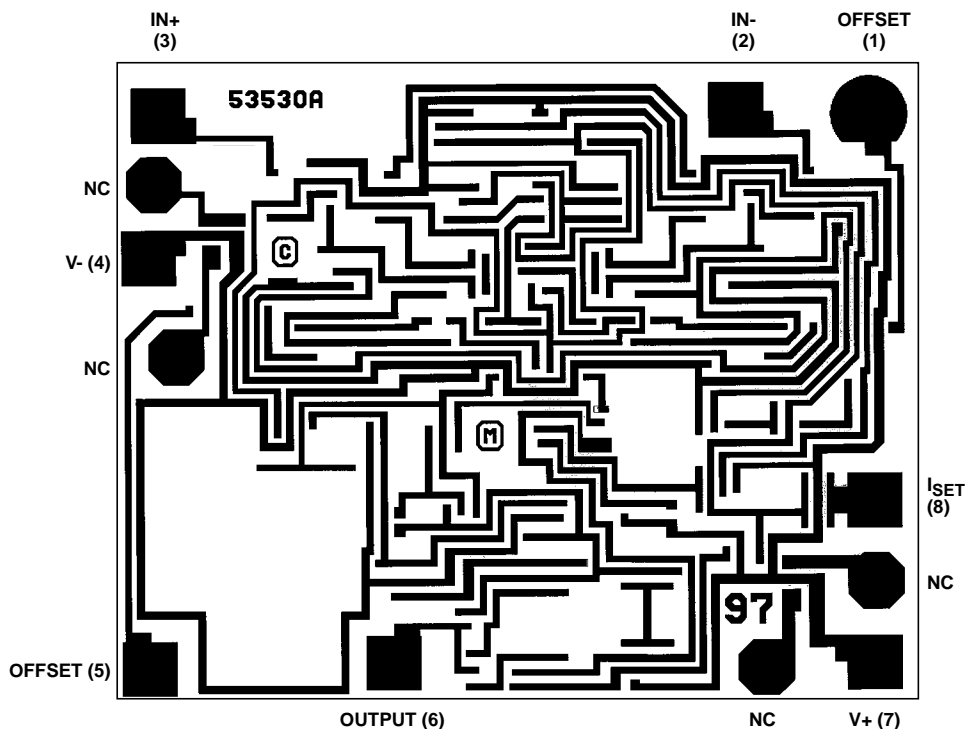
#### TRANSISTOR COUNT:

49

## Metallization Mask Layout

 Pin Numbers shown are for the Can Package

HS-3530ARH



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