

**OBSOLETE PRODUCT  
POSSIBLE SUBSTITUTE PRODUCT  
HS-508BRH, FN4824**

**Radiation Hardened 8 Channel CMOS Analog Multiplexer with Overvoltage Protection**

The HS-508ARH is a dielectrically isolated, radiation hardened, CMOS analog multiplexer incorporating an important feature; it withstands analog input voltages much greater than the supplies. This is essential in any system where the analog inputs originate outside the equipment. They can withstand a continuous input up to 10V greater than either supply, which eliminates the possibility of damage when supplies are off, but input signals are present. Equally important, it can withstand brief input transient spikes of several hundred volts; which otherwise would require complex external protection networks. Necessarily, ON resistance is somewhat higher than similar unprotected devices, but very low leakage current combine to produce low errors. Reference Application Notes 520 and 521, available from the Semiconductor Products Division of Intersil, for further information on the HS-508ARH multiplexer in general.

The HS-508ARH has been specifically designed to meet exposure to radiation environments. Operation from -55°C to 125°C is guaranteed.

**Product Information**

PRODUCT NUMBER	INTERNAL MKT. NUMBER	TEMP. RANGE (°C)
5962R9674201QEC	HS1-508ARH-8	-55 to 125
5962R9674201QXC	HS9-508ARH-8	-55 to 125
5962R9674201VEC	HS1-508ARH-Q	-55 to 125
5962R9674201VXC	HS9-508ARH-Q	-55 to 125
HS1-508ARH/PROTO	HS1-508ARH/PROTO	-55 to 125
HS9-508ARH/PROTO	HS9-508ARH/PROTO	-55 to 125

**Features**

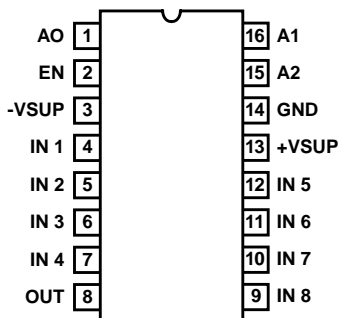
- Electrically Screened to SMD # 5962-96742
- QML Qualified per MIL-PRF-38535 Requirements
- Radiation Environment
  - Gamma Dose ( $\gamma$ ) . . . . .  $1 \times 10^5$ RAD(Si)
  - Dielectrically Isolated Device Islands
  - SEP >110 Mev-mg/cm<sup>2</sup>Analog/Digital Overvoltage Protection
- Fail Safe with Power Loss (No Latchup)
- Break-Before-Make Switching
- DTL/TTL and CMOS Compatible
- Analog Signal Range . . . . .  $\pm 15V$
- Fast Access Time
- Supply Current at 1MHz Address Toggle . . . . . 4mA (Typ)
- Standby Power . . . . . 7.5mW (Typ)

**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.**

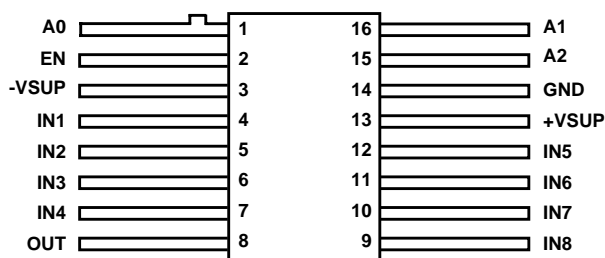
Detailed Electrical Specifications for these devices are contained in SMD 5962-96742. A “hot-link” is provided on our homepage for downloading. [www.intersil.com/spacedefense/newsafclasst.asp](http://www.intersil.com/spacedefense/newsafclasst.asp)

**Pinouts**

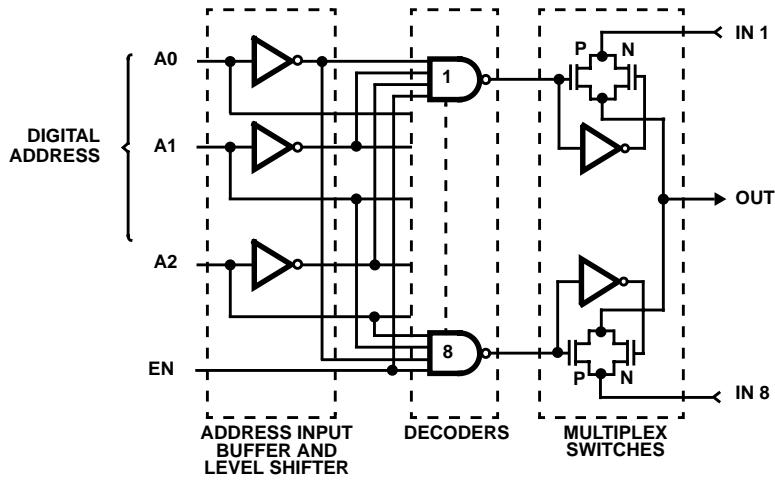
**HS1-508ARH 16 LEAD SIDEBRAZE DIP  
MIL-STD-1835, CDIP2-T16  
TOP VIEW**



**HS9-508ARH 16 LEAD FLATPACK  
MIL-STD-1835, CDFP4-F16  
TOP VIEW**



Functional Diagram



TRUTH TABLE

A2	A1	A0	EN	"ON" CHANNEL
X	X	X	L	NONE
L	L	L	H	1
L	L	H	H	2
L	H	L	H	3
L	H	H	H	4
H	L	L	H	5
H	L	H	H	6
H	H	L	H	7
H	H	H	H	8

Schematic Diagrams

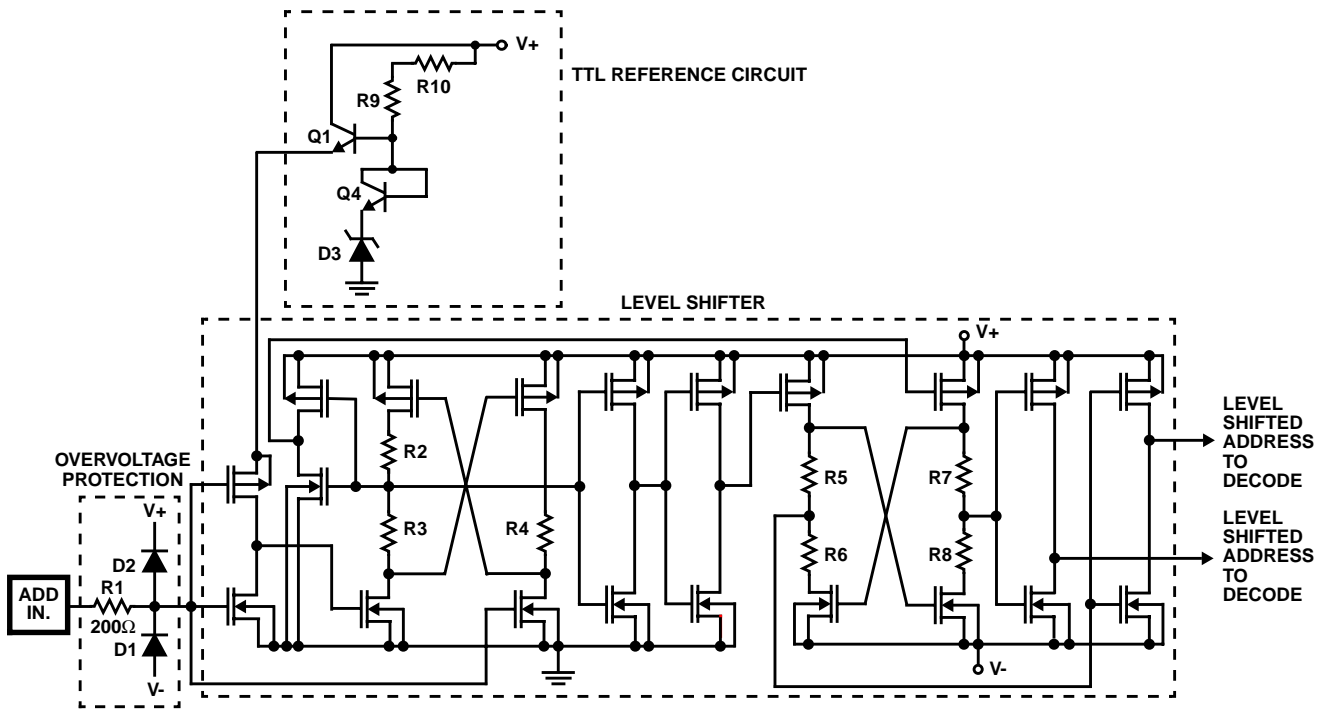


FIGURE 1. ADDRESS INPUT BUFFER AND LEVEL SHIFTER

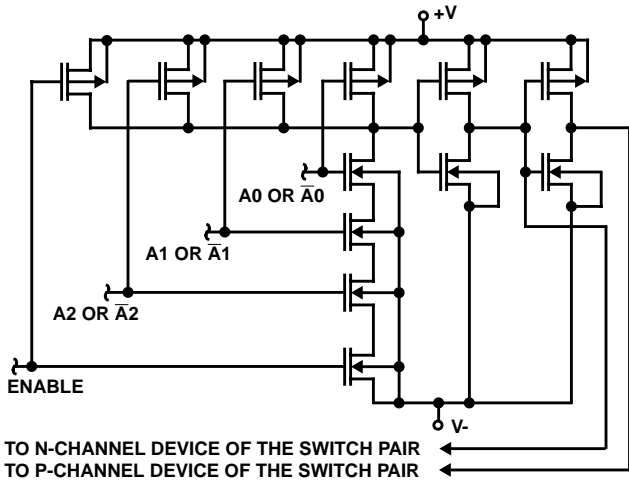


FIGURE 2. ADDRESS DECODER

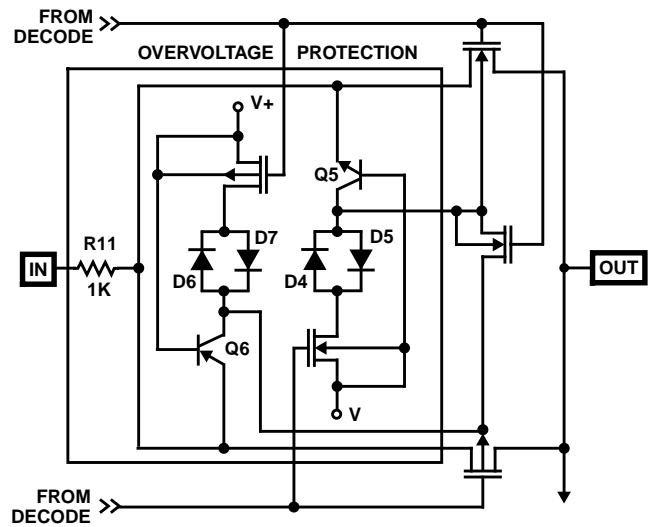


FIGURE 3. MULTIPLEX SWITCH

**Die Characteristics**

**DIE DIMENSIONS:**

83 mils x 108 mils x 19 mils

**INTERFACE MATERIALS:**

**Glassivation:**

Type: SiO<sub>2</sub>  
 Thickness: 8kÅ ±1kÅ

**Top Metallization:**

Type: AlCu  
 Thickness: 12.5kÅ ±2kÅ

**Substrate:**

CMOS  
 Dielectric Isolation

**Backside Finish:**

Silicon

**ASSEMBLY RELATED INFORMATION:**

**Substrate Potential:**

Unbiased (DI)

**ADDITIONAL INFORMATION:**

**Worst Case Current Density:**

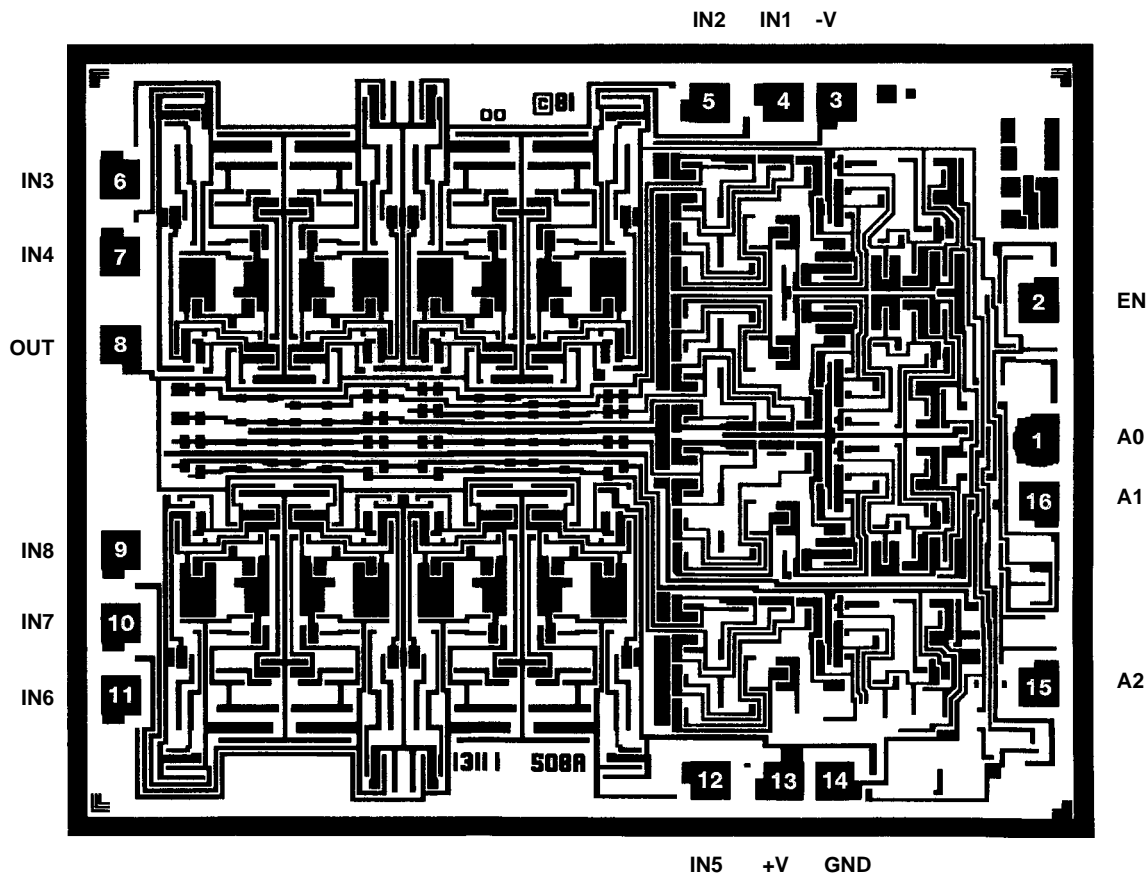
6.68e04 A/cm<sup>2</sup>

**Transistor Count:**

506

**Metallization Mask Layout**

HS-508ARH



All Intersil semiconductor products are manufactured, assembled and tested under ISO9000 quality systems certification.

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