

OBSOLETE PRODUCT
POSSIBLE SUBSTITUTE PRODUCT
HS-508BRH, FN4824

December 1999

File Number 4097.2

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

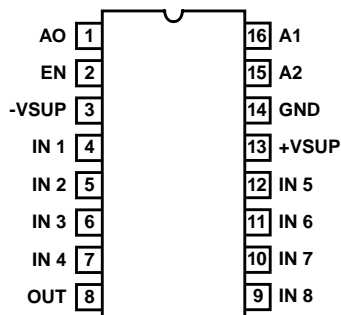
- Electrically Screened to SMD # 5962-96742
- QML Qualified per MIL-PRF-38535 Requirements
- Radiation Environment
 - Gamma Dose (γ) 1×10^5 RAD(Si)
 - Dielectrically Isolated Device Islands
 - SEP >110 Mev-mg/cm² Analog/Digital Overvoltage Protection
- Fail Safe with Power Loss (No Latchup)
- Break-Before-Make 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.

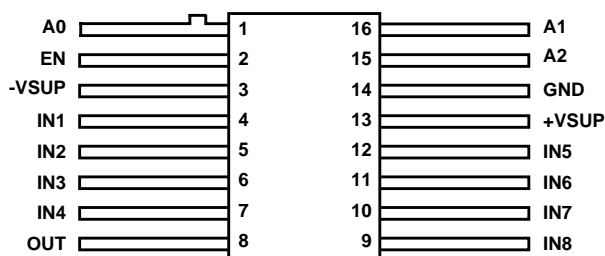
Detailed Electrical Specifications for these devices are contained in SMD 5962-96742. A "hot-link" is provided on our homepage for downloading.
www.intersil.com/spacedefense/newsafclasst.asp

Pinouts

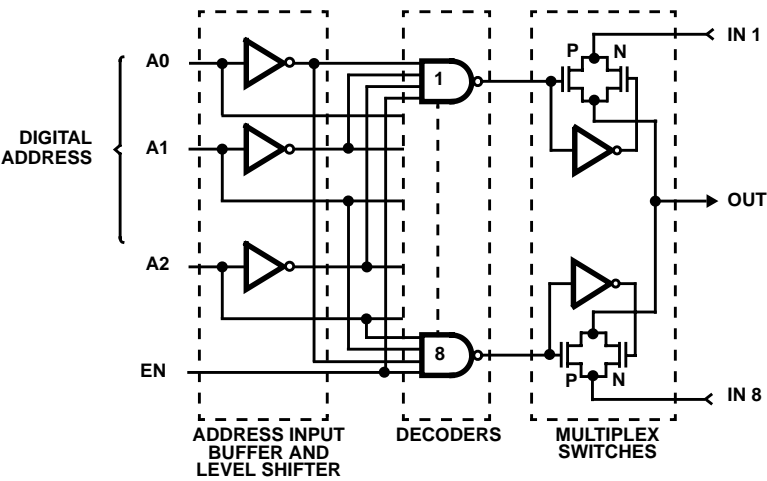
HS1-508ARH 16 LEAD SIDEBRAZE DIP
MIL-STD-1835, CDIP2-T16
TOP VIEW



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

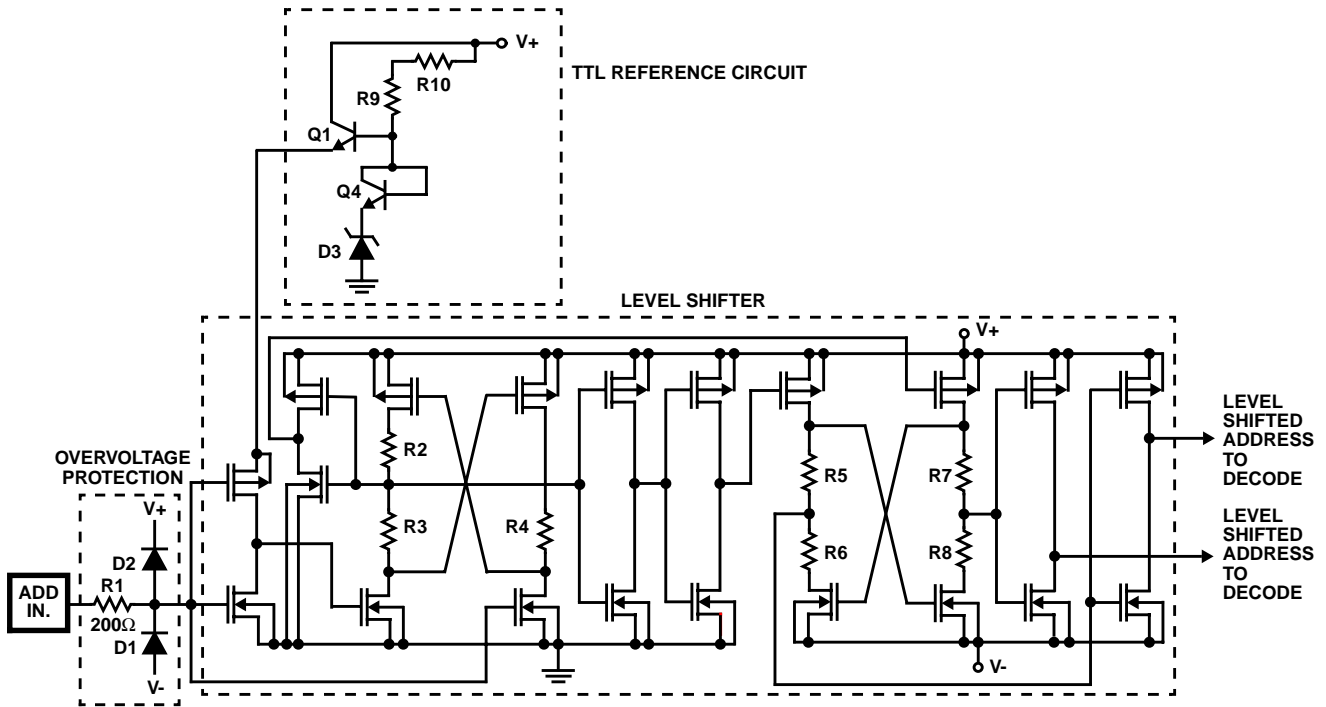


FIGURE 1. ADDRESS INPUT BUFFER AND LEVEL SHIFTER

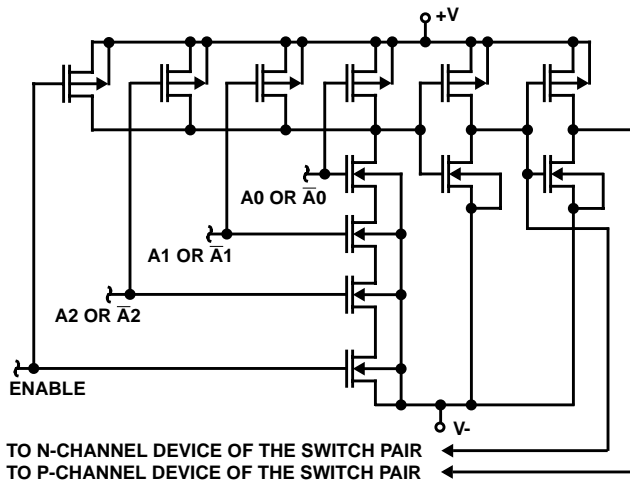


FIGURE 2. ADDRESS DECODER

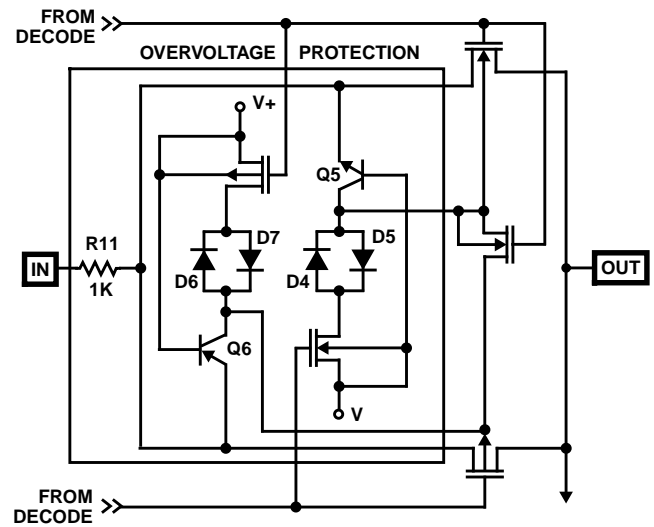


FIGURE 3. MULTIPLEX SWITCH

Die Characteristics

DIE DIMENSIONS:

83 mils x 108 mils x 19 mils

INTERFACE MATERIALS:

Glassivation:

Type: SiO₂

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:

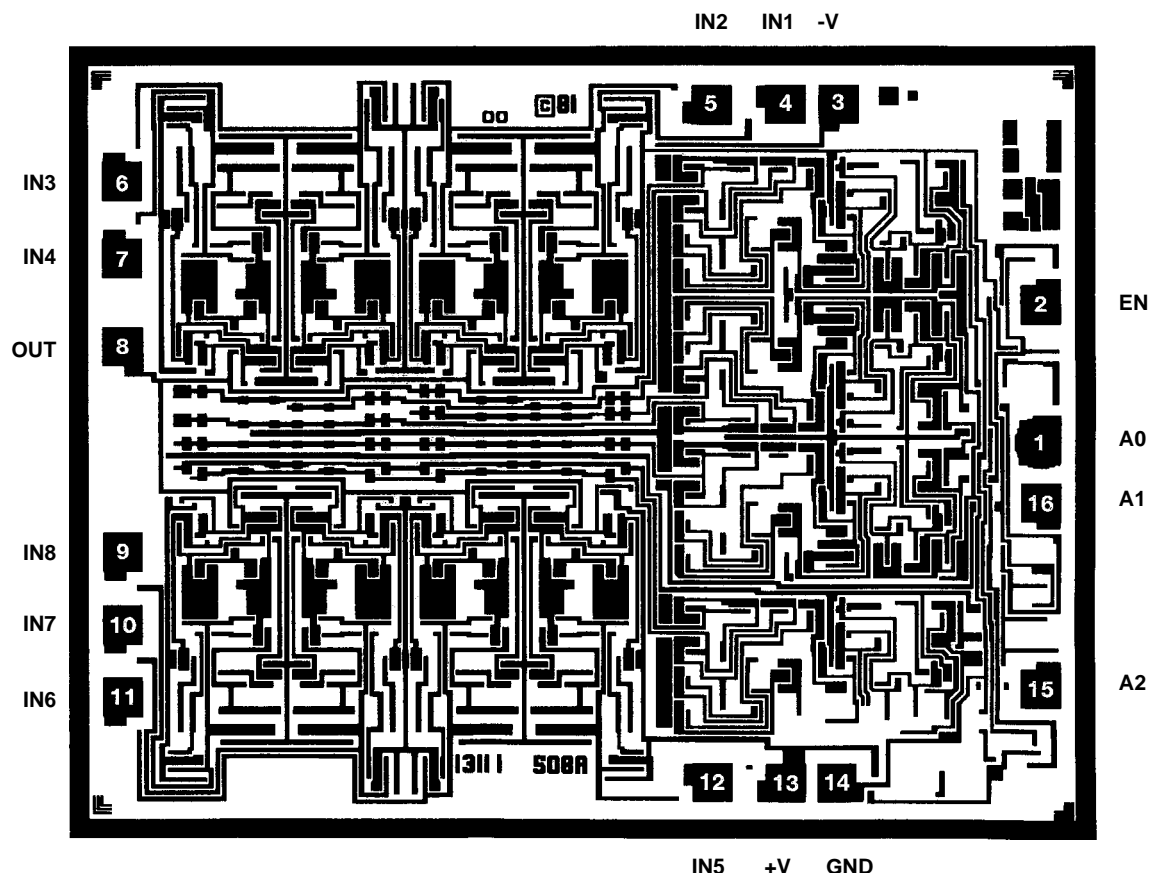
6.68e04 A/cm²

Transistor Count:

506

Metallization Mask Layout

HS-508ARH



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

Intersil semiconductor products are sold by description only. Intersil Corporation reserves the right to make changes in circuit design and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that data sheets are current before placing orders. Information furnished by Intersil is believed to be accurate and reliable. However, no responsibility is assumed by Intersil or its subsidiaries for its use; nor for any infringements of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Intersil or its subsidiaries.

For information regarding Intersil Corporation and its products, see web site <http://www.intersil.com>