Data Sheet | January 2001 | File Number 4824.1

Radiation Hardened 8 Channel CMOS Analog Multiplexer with Overvoltage Protection

The HS-508BRH 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 for further information on the HS-508BRH multiplexer in general.

The HS-508BRH has been specifically designed to meet exposure to radiation environments. Operation from -55^{o}C to 125^{o}C is guaranteed.

Ordering Information

ORDERING NUMBER	INTERNAL MKT. NUMBER	TEMP. RANGE (^{o}C)
5962F9674202QEC	HS1-508BRH-8	-55 to 125
5962F9674202QXC	HS9-508BRH-8	-55 to 125
5962F9674202VEC	HS1-508BRH-Q	-55 to 125
5962F9674202VXC	HS9-508BRH-Q	-55 to 125
HS1-508BRH/PROTO	HS1-508BRH/PROTO	-55 to 125
HS9-508BRH/PROTO	HS9-508BRH/PROTO	-55 to 125

Features

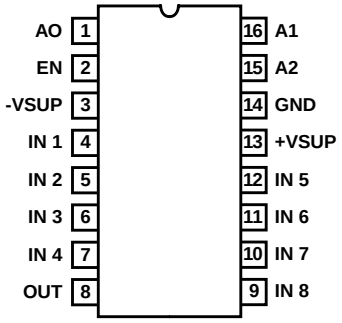
- Electrically Screened to SMD # 5962-96742
- QML Qualified per MIL-PRF-38535 Requirements
- Radiation Environment
  - Gamma Dose (γ) . . . . . 3 x 10^5 Rad (Si)
  - Dielectrically Isolated Device Islands
  - SEP >100 Mev-mg/cm^2
- Analog/Digital Overvoltage Protection
- ESD Rated to 3kV
- Fail Safe with Power Loss (No Latchup)
- Break-Before-Make Switching
- DTL/TTL and CMOS Compatible
- Analog Signal Range . . . . . .±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.

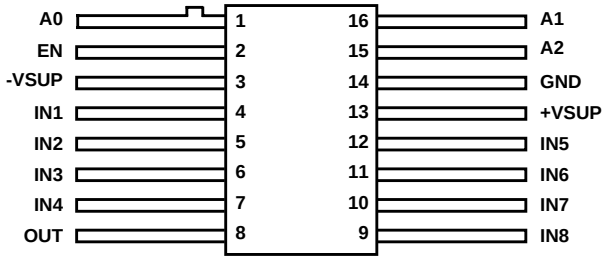
Detailed Electrical Specifications for these devices are contained in SMD 5962-96742. A “hot-link” is provided on our homepage for downloading. www.intersil.com/spacedefense/newsafclasst.asp

Pinouts

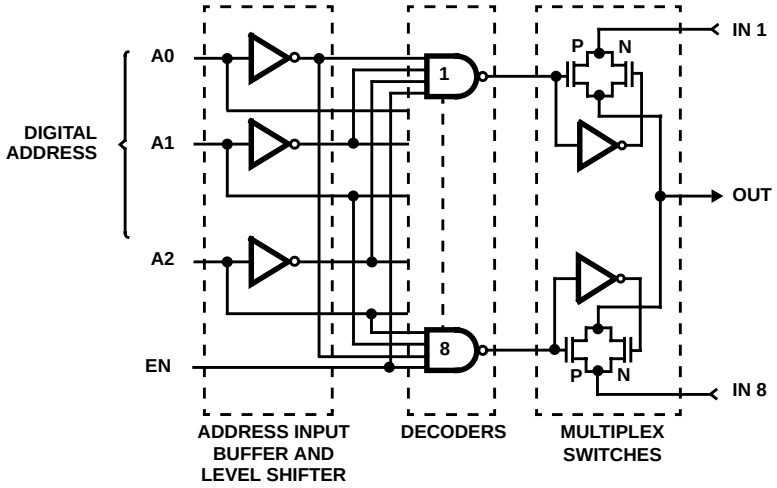
HS1-508BRH 16 LEAD SIDEBRAZE DIP
MIL-STD-1835, CDIP2-T16
TOP VIEW



HS9-508BRH 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

Die Characteristics

DIE DIMENSIONS

120 mils x 93 mils x 19 mils

INTERFACE MATERIALS

Glassivation

Type: Phosphorus Silicon Glass (PSG)
Thickness: 8kÅ ±1kÅ

Top Metallization

Type: AlSiCu
Thickness: 16kÅ ±2kÅ

Substrate

Rad Hard Silicon Gate
Dielectric Isolation

Backside Finish

Silicon

ASSEMBLY RELATED INFORMATION

Substrate Potential

Unbiased (DI)

ADDITIONAL INFORMATION

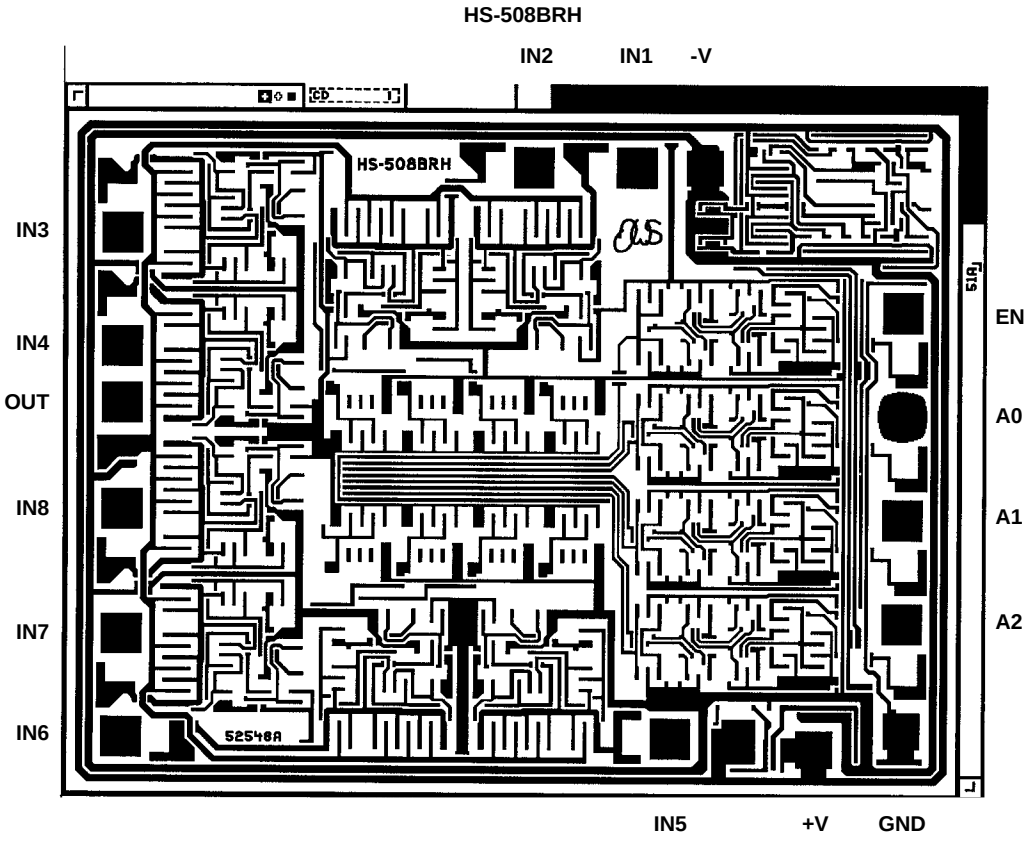
Worst Case Current Density

6.68e04 A/cm^2

Transistor Count

506

Metallization Mask Layout



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