

**Radiation Hardened Quad Differential Line Receiver**

The Intersil HS-26C32RH is a differential line receiver designed for digital data transmission over balanced lines and meets the requirements of EIA Standard RS-422. Radiation hardened CMOS processing assures low power consumption, high speed, and reliable operation in the most severe radiation environments.

The HS-26C32RH has an input sensitivity typically of 200mV over the common mode input voltage range of  $\pm 7V$ . The receivers are also equipped with input fail safe circuitry, which causes the outputs to go to a logic "1" when the inputs are open. Enable and Disable functions are common to all four receivers.

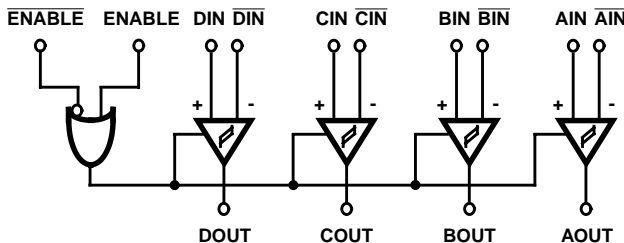
**Specifications for Rad Hard QML devices are controlled by the Defense Supply Center in Columbus (DSCC). The SMD numbers listed here must be used when ordering.**

Detailed Electrical Specifications for these devices are contained in SMD 5962-95689. A "hot-link" is provided on our homepage for downloading. [www.intersil.com/spacedefense/space.asp](http://www.intersil.com/spacedefense/space.asp)

**Ordering Information**

ORDERING NO.	INTERNAL MKT. NO.	TEMP. RANGE (°C)
5962F9568901QEC	HS1-26C32RH-8	-55 to 125
5962F9568901QXC	HS9-26C32RH-8	-55 to 125
5962F9568901V9A	HS0-26C32RH-Q	25
5962F9568901VEC	HS1-26C32RH-Q	-55 to 125
5962F9568901VXC	HS9-26C32RH-Q	-55 to 125
HS1-26C32RH/PROTO	HS1-26C32RH/PROTO	-55 to 125
HS9-26C32RH/PROTO	HS9-26C32RH/PROTO	-55 to 125

**Logic Diagram**

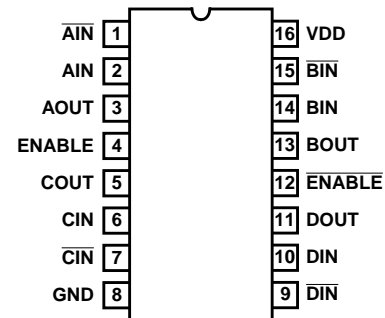


**Features**

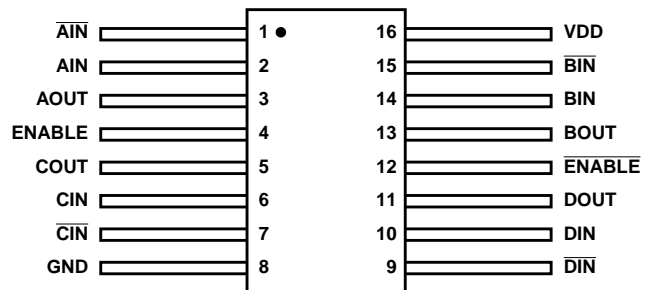
- Electrically Screened to SMD # 5962-95689
- QML Qualified per MIL-PRF-38535 Requirements
- 1.2 Micron Radiation Hardened CMOS
  - Total Dose . . . . . 300 krad(Si) (Max)
- Latchup Free
- EIA RS-422 Compatible Inputs
- CMOS Compatible Outputs
- Input Fail Safe Circuitry
- High Impedance Inputs when Disabled or Powered Down
- Low Power Dissipation 138mW Standby (Max)
- Single 5V Supply
- Full -55°C to 125°C Military Temperature Range

**Pinouts**

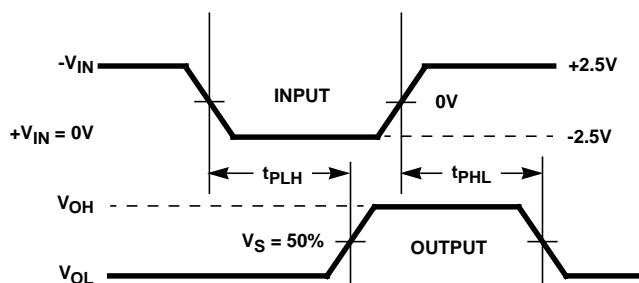
**HS1-26C32RH 16 LEAD CERAMIC SIDEBRAZE DIP  
MIL-STD-1835: CDIP2-T16  
TOP VIEW**



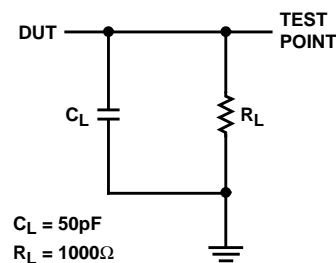
**HS9-26C32RH 16 LEAD FLATPACK  
MIL-STD-1835: CDFP4-F16  
TOP VIEW**



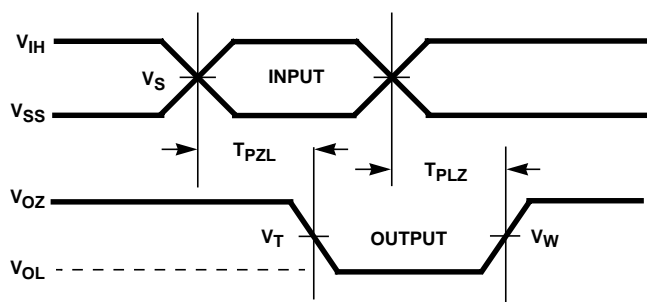
**Propagation Delay Timing Diagram**



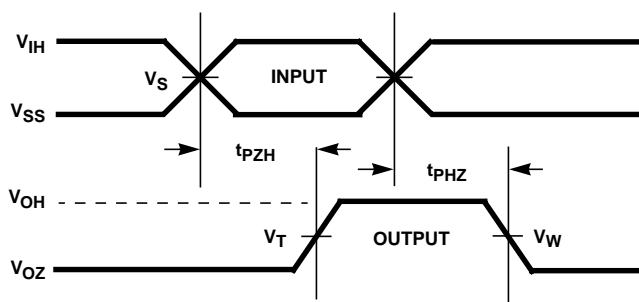
**Propagation Delay Load Circuit**



**Three-State Low Timing Diagram**



**Three-State High Timing Diagrams**



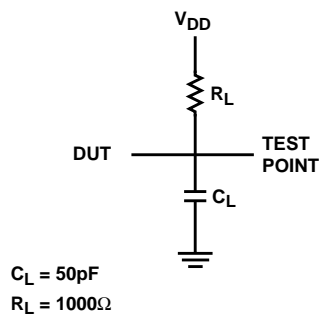
THREE-STATE LOW VOLTAGE LEVELS

PARAMETER	HS-26C32RH	UNITS
V <sub>DD</sub>	4.50	V
V <sub>IH</sub>	4.50	V
V <sub>S</sub>	2.25	V
V <sub>T</sub>	50	%
V <sub>W</sub>	V <sub>OL</sub> + 0.5	V
GND	0	V

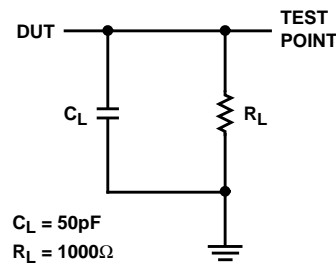
THREE-STATE HIGH VOLTAGE LEVELS

PARAMETER	HS-26C32RH	UNITS
V <sub>DD</sub>	4.50	V
V <sub>IH</sub>	4.50	V
V <sub>S</sub>	2.25	V
V <sub>T</sub>	50	%
V <sub>W</sub>	V <sub>OH</sub> - 0.5	V
GND	0	V

**Three-State Low Load Circuit**



**Three-State High Load Circuit**



# HS-26C32RH

## Die Characteristics

### DIE DIMENSIONS:

84 mils x 130 mils  
(2140 $\mu$ m x 3290 $\mu$ m)

### INTERFACE MATERIALS:

#### Glassivation:

Type: SiO<sub>2</sub>  
Thickness: 10k $\text{\AA}$   $\pm$  1k $\text{\AA}$

### Top Metallization:

M1: Mo/Tiw  
Thickness: 5800 $\text{\AA}$   
M2: Al/Si/Cu  
Thickness: 5800 $\text{\AA}$

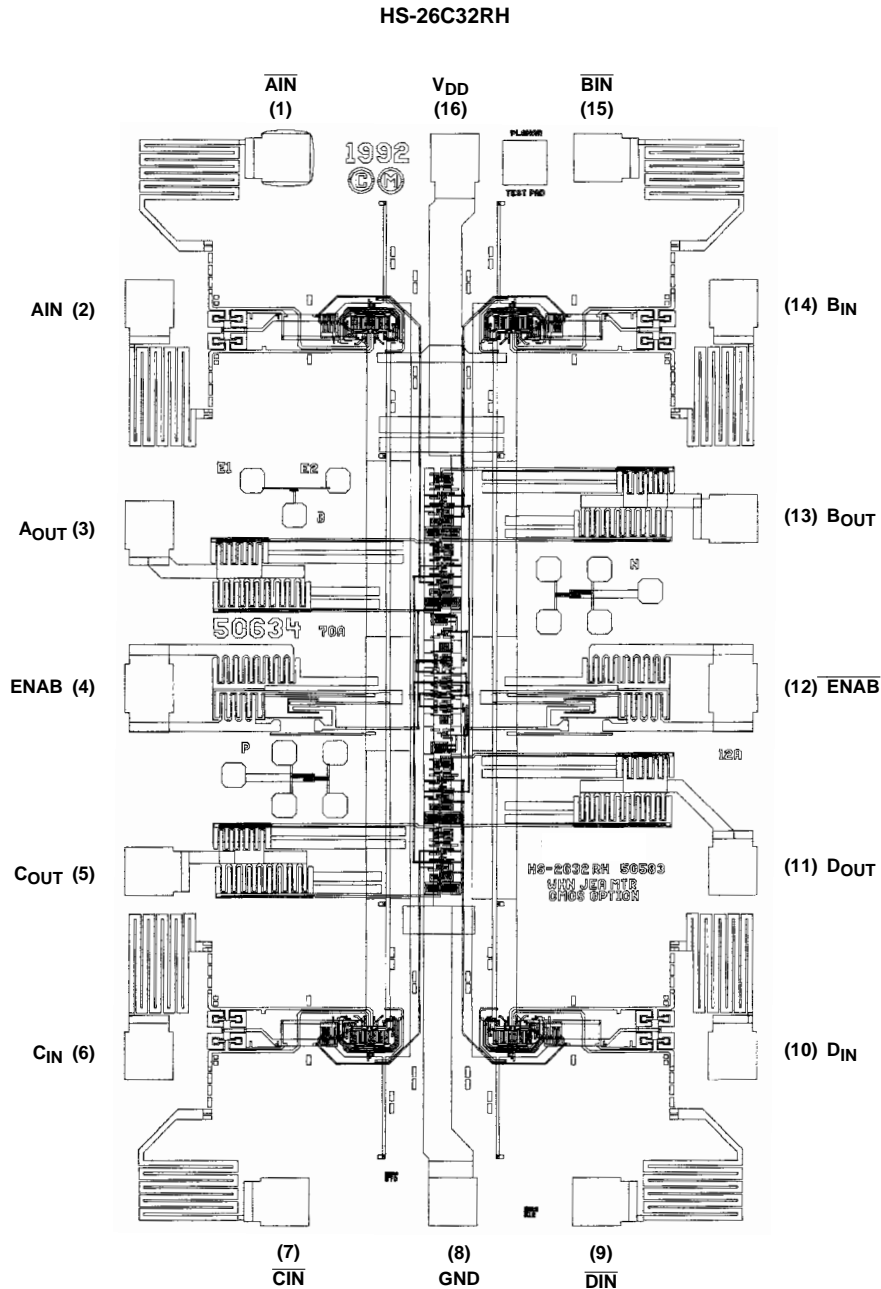
### Worst Case Current Density:

$<2.0 \times 10^5 \text{A/cm}^2$

### Bond Pad Size:

110 $\mu$ m x 100 $\mu$ m

## Metallization Mask Layout



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 **www.intersil.com**

### **Sales Office Headquarters**

#### **NORTH AMERICA**

Intersil Corporation  
P. O. Box 883, Mail Stop 53-204  
Melbourne, FL 32902  
TEL: (321) 724-7000  
FAX: (321) 724-7240

#### **EUROPE**

Intersil SA  
Mercure Center  
100, Rue de la Fusee  
1130 Brussels, Belgium  
TEL: (32) 2.724.2111  
FAX: (32) 2.724.22.05

#### **ASIA**

Intersil Ltd.  
8F-2, 96, Sec. 1, Chien-kuo North,  
Taipei, Taiwan 104  
Republic of China  
TEL: 886-2-2515-8508  
FAX: 886-2-2515-8369