

## Radiation Hardened Quad Differential Line Receiver

Intersil's Satellite Applications Flow™ (SAF) devices are fully tested and guaranteed to 100kRAD total dose. These QML Class T devices are processed to a standard flow intended to meet the cost and shorter lead-time needs of large volume satellite manufacturers, while maintaining a high level of reliability.

The Intersil HS-26C32RH-T is a Quad 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-T has an input sensitivity of 200mV (typ.) over the common mode input voltage range of ±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

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-26C32RH-T are contained in SMD 5962-95689.** A "hot-link" is provided from our website for downloading.

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

Intersil's Quality Management Plan (QM Plan), listing all Class T screening operations, is also 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 (°C)
5962R9568901TEC	HS1-26C32RH-T	-55 to 125
HS1-26C32RH/Proto	HS1-26C32RH/Proto	-55 to 125
5962R9568901TXC	HS9-26C32RH-T	-55 to 125
HS9-26C32RH/Proto	HS9-26C32RH/Proto	-55 to 125

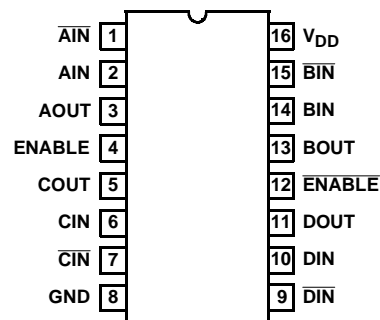
NOTE: **Minimum order quantity for -T is 150 units through distribution, or 450 units direct.**

### Features

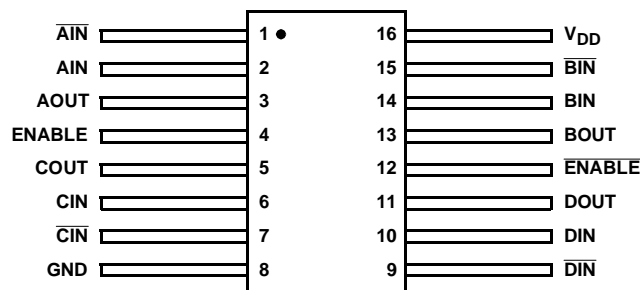
- QML Class T, Per MIL-PRF-38535
- Radiation Performance
  - Gamma Dose . . . . .  $1 \times 10^5$  RAD(Si)
  - SEU and SEL . . . . . Immune to 100MeV/mg/cm<sup>2</sup>
- EIA RS-422 Compatible Inputs
- CMOS Compatible Enable Inputs
- Input Fail Safe Circuitry
- High Impedance Inputs when Disabled or Powered Down
- Low Power Dissipation 138mW Standby (Max)
- Single 5V Supply
- Full -55°C to 125°C Military Temperature Range

### Pinouts

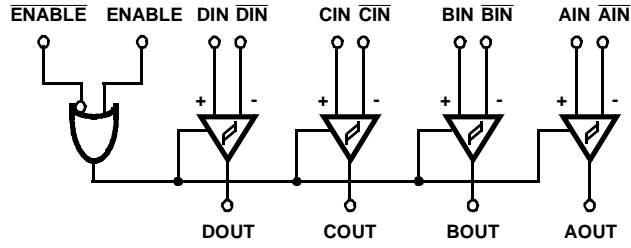
**HS1-26C32RH-T (SBDIP), CDIP2-T16**  
TOP VIEW



**HS9-26C32RH-T (FLATPACK), CDFP4-F16**  
TOP VIEW



Functional Diagram



TRUTH TABLE

DEVICE POWER ON/OFF	INPUTS			OUTPUT
	ENABLE	$\overline{\text{ENABLE}}$	INPUT	OUT
ON	0	1	X	HI-Z
ON	1	X	$\text{VID} \geq \text{VTH (Max)}$	1
ON	1	X	$\text{VID} \leq \text{VTH (Min)}$	0
ON	X	0	$\text{VID} \geq \text{VTH (Max)}$	1
ON	X	0	$\text{VID} \leq \text{VTH (Min)}$	0
ON	1	X	Open	1
ON	X	0	Open	1

**Die Characteristics**

**DIE DIMENSIONS:**

2140 $\mu$ m x 3290 $\mu$ m x 533 $\mu$ m  $\pm$ 25.4 $\mu$ m  
 (85 x 130 x 21mils  $\pm$ 1mil)

**METALLIZATION:**

M1: Mo/Tiw  
 Thickness: 5800 $\text{\AA}$   
 M2: Al/Si/Cu  
 Thickness: 10k $\text{\AA}$   $\pm$ 1k $\text{\AA}$

**SUBSTRATE POTENTIAL:**

Internally connected to V<sub>DD</sub>. May be left floating.

**BACKSIDE FINISH:**

Silicon

**PASSIVATION:**

Type: SiO<sub>2</sub>  
 Thickness: 8k $\text{\AA}$   $\pm$ 1k $\text{\AA}$

**WORST CASE CURRENT DENSITY:**

< 2.0e5 A/cm<sup>2</sup>

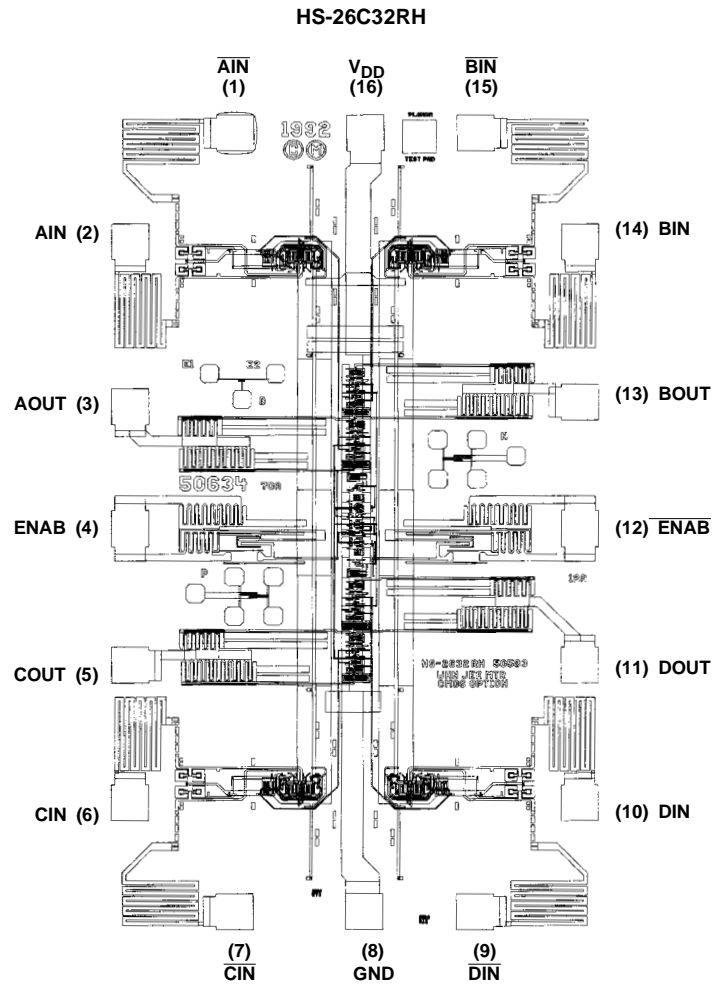
**TRANSISTOR COUNT:**

315

**PROCESS:**

Radiation Hardened CMOS, AVLSI

**Metallization Mask Layout**



All Intersil U.S. products are manufactured, assembled and tested utilizing ISO9000 quality systems. Intersil Corporation's quality certifications can be viewed at [www.intersil.com/design/quality](http://www.intersil.com/design/quality)

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