

**Radiation Hardened Quad Differential Line Driver**

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-26CT31RH-T is a Quad Differential Line Driver 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-26CT31RH-T accepts TTL inputs and converts them to RS-422 compatible outputs. This circuit uses special outputs that enable the drivers to power down without loading down the bus. Enable and disable pins allow several devices to be connected to the same data source and addressed independently.

**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-26CT31RH-T are contained in SMD 5962-95632.** 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)
5962R9563201TEC	HS1-26CT31RH-T	-55 to 125
HS1-26C31RH/Proto	HS1-26C31RH/Proto	-55 to 125
5962R9563201TXC	HS9-26C31RH-T	-55 to 125
HS9-26C31RH/Proto	HS9-26C31RH/Proto	-55 to 125

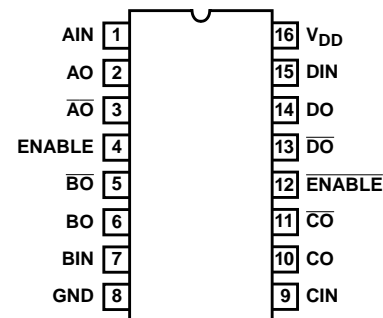
NOTE: **Minimum order quantity for -T is 150 units through distribution, or 450 units direct.**

**Features**

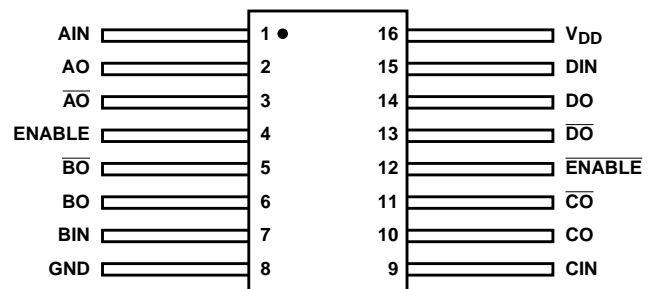
- QML Class T, Per MIL-PRF-38535
- Radiation Performance
  - Gamma Dose . . . . . 1 x 10<sup>5</sup> RAD(Si)
  - SEU and SEL . . . . . Immune to 100MeV/mg/cm<sup>2</sup>
- EIA RS-422 Compatible Outputs (Except for IOS)
- TTL Compatible Inputs
- High Impedance Outputs when Disabled or Powered Down
- Low Power Dissipation 2.75mW Standby (Max)
- Single 5V Supply
- Low Output Impedance 10Ω or Less
- Full -55°C to 125°C Military Temperature Range

**Pinouts**

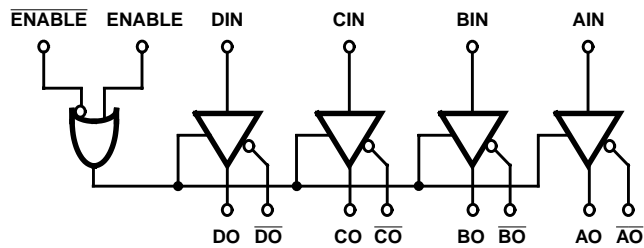
**HS1-26CT31RH-T (SBDIP), CDIP2-T16**  
TOP VIEW



**HS9-26CT31RH-T (FLATPACK), CDFP4-F16**  
TOP VIEW



Functional Diagram



TRUTH TABLE

DEVICE POWER ON/OFF	INPUTS			OUTPUT	
	ENABLE	$\overline{\text{ENABLE}}$	IN	OUT	$\overline{\text{OUT}}$
ON	0	1	X	HI-Z	HI-Z
ON	1	X	0	0	1
ON	X	0	0	0	1
ON	1	X	1	1	0
ON	X	0	1	1	0
OFF (0V)	X	X	X	HI-Z	HI-Z

**Die Characteristics**

**DIE DIMENSIONS:**

2450 $\mu$ m x 4950 $\mu$ m x 533 $\mu$ m  $\pm$ 25.4 $\mu$ m  
(97 x 195 x 21 mils  $\pm$ 1 mil)

**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>

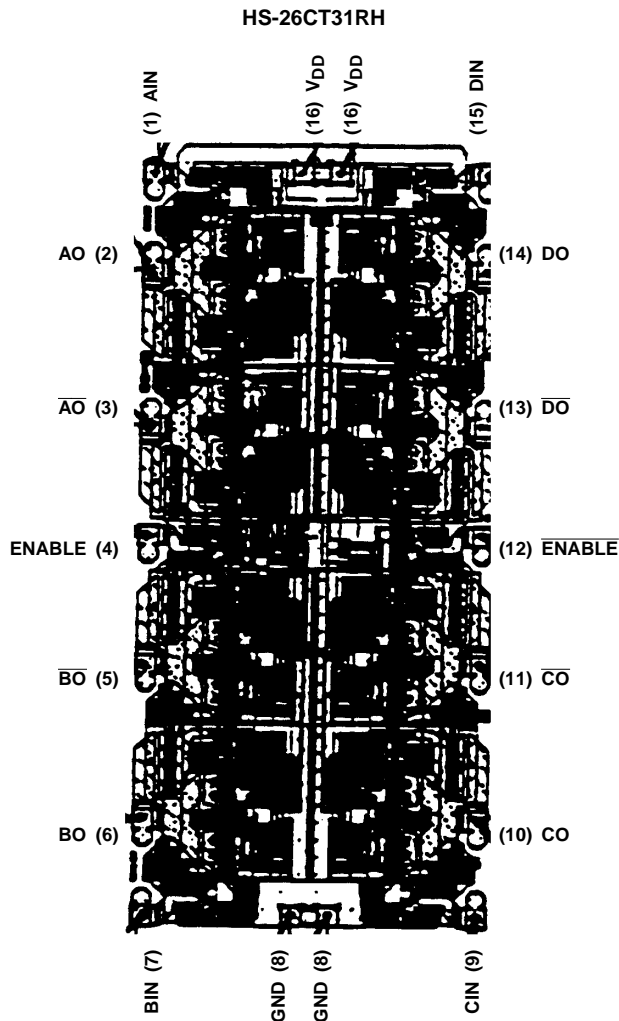
**TRANSISTOR COUNT:**

285

**PROCESS:**

Radiation Hardened CMOS, AVLSI

**Metallization Mask Layout**



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

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