

**Radiation Hardened Octal Non-Inverting Bidirectional Bus Transceiver**

Intersil's Satellite Applications Flow<sup>TM</sup> (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 ACTS245T is a Radiation Hardened Octal Non-Inverting Bidirectional Bus Transceiver intended for two-way asynchronous communication between data busses.

**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 ACTS245T are contained in SMD 5962-96719.** For more information, visit our website at:

[www.intersil.com/](http://www.intersil.com/)

Intersil's Quality Management Plan (QM Plan), listing all Class T screening operations, is also available on our website.

[www.intersil.com/](http://www.intersil.com/)

**Ordering Information**

ORDERING NUMBER	PART NUMBER	TEMP. RANGE (°C)
5962R9671901TRC	ACTS245DTR	-55 to 125
5962R9671901TXC	ACTS245KTR	-55 to 125

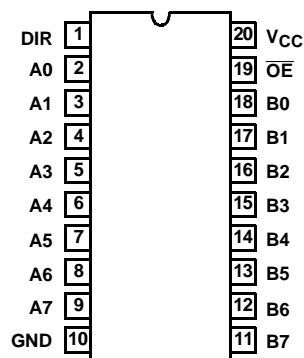
NOTE: **Minimum order quantity for -T is 150 units through distribution, or 450 units direct.**

**Features**

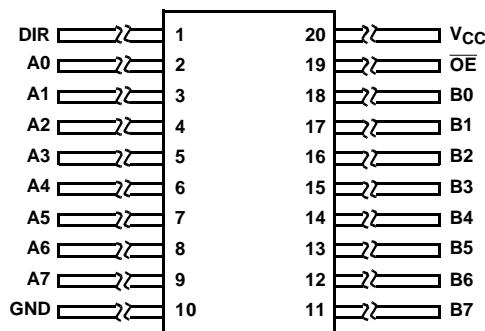
- QML Class T, Per MIL-PRF-38535
- Radiation Performance
  - Gamma Dose ( $\gamma$ )  $1 \times 10^5$  RAD(Si)
  - Latch-Up Free Under Any Conditions
  - Single Event Upset (SEU) Immunity:  $<1 \times 10^{-10}$  Errors/Bit/Day (Typ)
  - SEU LET Threshold . . . . .  $>100$  MEV-cm<sup>2</sup>/mg
- 1.25 Micron Radiation Hardened SOS CMOS
- Significant Power Reduction Compared to ALSTTL Logic
- DC Operating Voltage Range . . . . . 4.5V to 5.5V
- Input Logic Levels
  - $V_{IL} = 0.8V$  Max
  - $V_{IH} = V_{CC}/2$  Min
- Fast Propagation Delay . . . . . 18ns (Max), 12ns (Typ)

**Pinouts**

**ACTS245T (SBDIP), CDIP2-T20**  
TOP VIEW

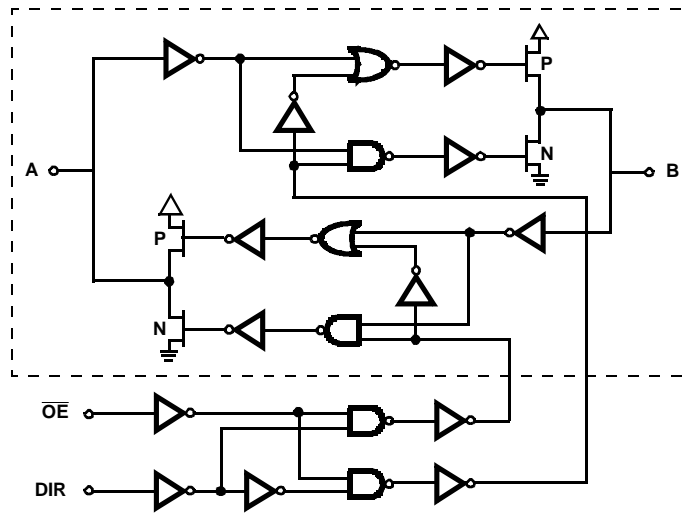


**ACTS245T (FLATPACK), CDFP4-F20**  
TOP VIEW



Functional Diagram

NOTE: (1 of 8)



TRUTH TABLE

INPUTS		OPERATION
$\overline{OE}$	DIR	
L	L	B Data to A Bus
L	H	A Data to B Bus
H	X	Isolation

NOTE:

H = High Voltage Level, L = Low Voltage Level, X = Immaterial.

**Die Characteristics**

**DIE DIMENSIONS:**

(2440 $\mu$ m x 2970 $\mu$ m x 533 $\mu$ m  $\pm$ 51 $\mu$ m)  
 96 x 117 x 21mils  $\pm$ 2mil

**METALLIZATION:**

Type: Al Si Cu  
 Thickness: 10.0k $\text{\AA}$   $\pm$ 2k $\text{\AA}$

**SUBSTRATE POTENTIAL:**

Unbiased (Silicon on Sapphire)  
 Bond Pad #20 (V<sub>CC</sub>) First  
 Bond Pad #20 (V<sub>CC</sub>) Uses Two Bond Wires  
 Bond Pad #10 (GND) Uses Two Bond Wires

**BACKSIDE FINISH:**

Sapphire

**PASSIVATION:**

Type: Silox (SiO<sub>2</sub>)  
 Thickness: 8.0k $\text{\AA}$   $\pm$ 1.0k $\text{\AA}$

**WORST CASE CURRENT DENSITY:**

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

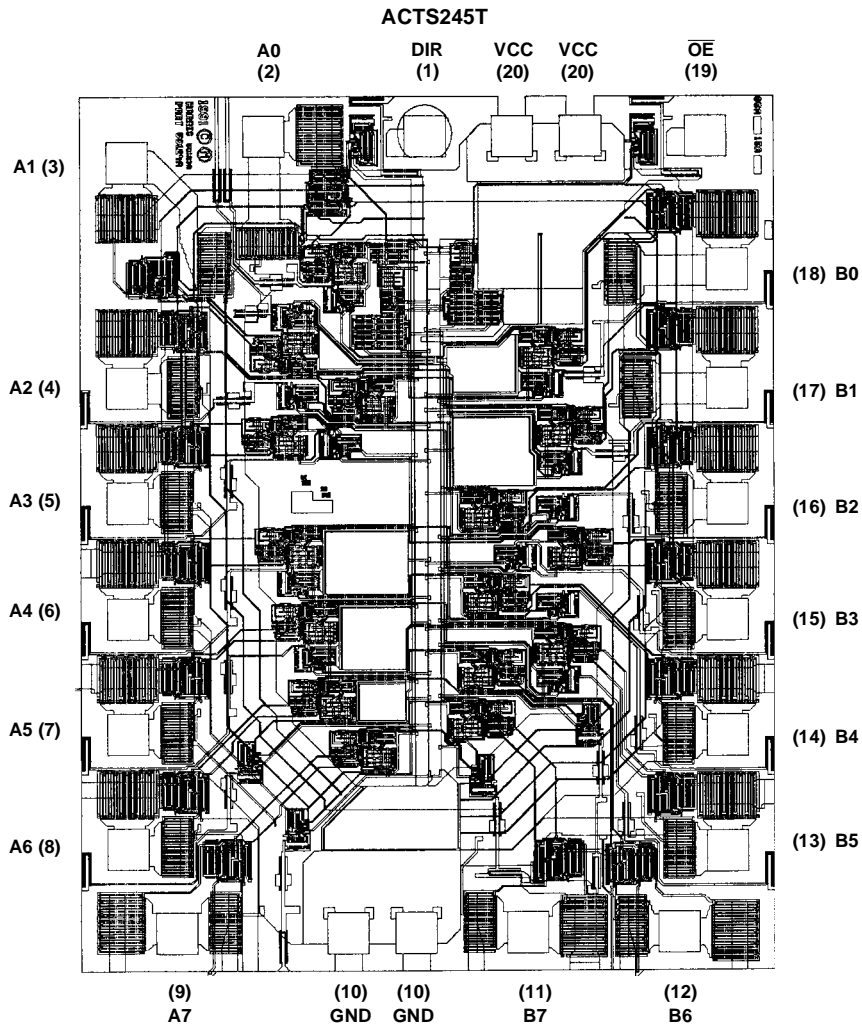
**TRANSISTOR COUNT:**

420

**PROCESS:**

CMOS SOS

**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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