

RadHard-by-Design RHD5980 Octal Bus Transceiver Bidirectional Voltage Level Shifter

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FEATURES

- Bidirectional Voltage translator with two separate supply rails.
- Radiation performance
 - Total dose: $>1\text{Mrad}(\text{Si})$; Dose rate = 50 - 300 rads(Si)/s
 - ELDRS Immune
 - SEL Immune $>100\text{ MeV}\cdot\text{cm}^2/\text{mg}$
 - Neutron Displacement Damage $>10^{14}\text{ neutrons}/\text{cm}^2$
- Full military temperature range
- Designed for aerospace and high reliability space applications
- Packaging – Hermetic ceramic SOIC
 - 24-pin, .614"L x .299"W x .120"Ht
 - Weight - 2.0 grams max
- Aeroflex Plainview's Radiation Hardness Assurance Plan is DLA Certified to MIL-PRF-38534, Appendix G.

GENERAL DESCRIPTION

Aeroflex's RHD5980 is a radiation hardened, Octal Level Shifter in a 24-pin SOIC package. The RHD5980 design uses specific circuit topology and layout methods to mitigate total ionizing dose effects and single event latchup. These characteristics make the RHD5980 especially suited for the harsh environment encountered in Deep Space missions. It is guaranteed operational from -55°C to $+125^{\circ}\text{C}$. Available screened in accordance with MIL-PRF-38534 Class K, the RHD5980 is ideal for demanding military and space applications.

ORGANIZATION AND APPLICATION

The RHD5980 Octal Level Shifter is a radiation hard replacement for the industry standard Bidirectional Voltage Translators. It is capable of level shifting from the A-to-B or B-to-A input ports for nominal logic voltages on either port of 5.0 or 3.3 volts.

The RHD5980 can level shift from 5.0V to 3.3V or 3.3V to 5.0V, and also buffer from 5.0V to 5.0V or 3.3V to 3.3V. Ports A and B can be inputs or outputs depending on the value of DIR_AB_H.

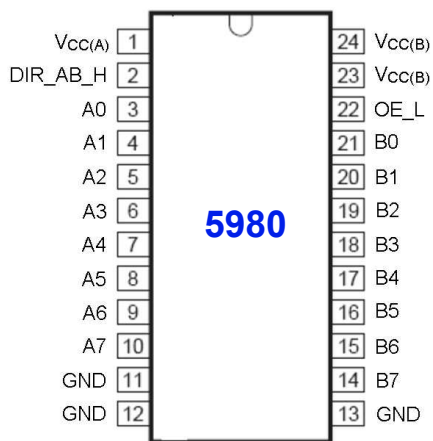
Control inputs are the standard tri-state enable (OE_L active low) and direction control DIR_AB_H where a HIGH logic steers data from A-to-B and active LOW steers the data from B-to-A.

The control inputs are powered from VCCA and accept inputs at the A bus logic levels (either 3.3V or 5.0V). All delay parameters are less than 10nS over full -55°C to $+125^{\circ}\text{C}$ military temperature range and logic levels. All bus and control inputs have Schmitt trigger buffers to implement low-to-high transition at approximately 60% of the corresponding logic supply and high-to-low transition at approximately 40% providing considerable noise immunity for slow input signals

The devices will not latch with SEU events to above $100\text{ MeV}\cdot\text{cm}^2/\text{mg}$. Total dose degradation is minimal to above $1\text{Mrad}(\text{Si})$. Displacement damage environments to neutron fluence equivalents in the mid 10^{14} neutrons per cm^2 range are readily tolerated. There is no sensitivity to low-dose rate (ELDRS) effects. SEU effects are application dependant.

ORDERING INFORMATION

Model	DLA SMD #	Screening	Package
RHD5980-7	-	Commercial Flow, +25°C testing only	24-pin SOIC Package
RHD5980-S	-	Military Temperature, -55°C to +125°C Screened in accordance with the individual Test Methods of MIL-STD-883 for Space Applications	
RHD5980-201-1S	Pending	DLA SMD Pending	
RHD5980-201-2S	Pending		
RHD5980-901-1S	Pending	DLA SMD and Radiation Certification Pending	
RHD5980-901-2S	Pending		



24-Pin SOIC

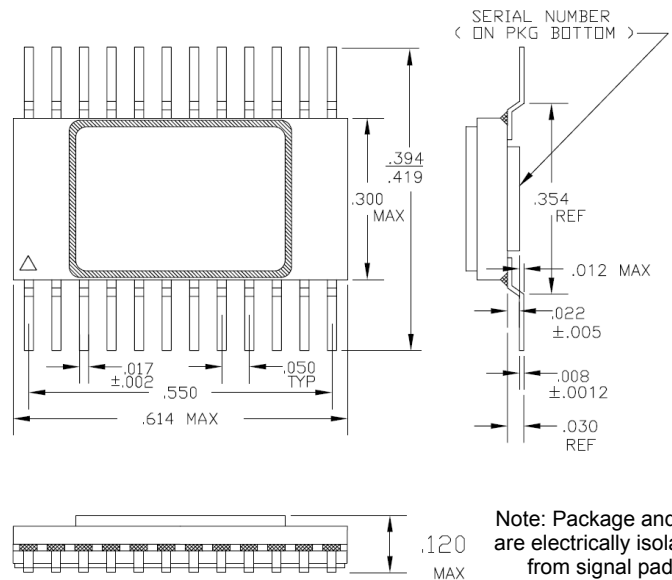


FIGURE 2: PACKAGE OUTLINE

FIGURE 1: PACKAGE PIN-OUT

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