

## Rad-Hard Arbiter IC Stops Propagation Of Power Supply Failures

[Apogee Semiconductor's](#) AP54RHC288 dual two-input arbiter is being introduced as the industry's first IC designed to prevent propagation of failure modes in power supply, motor control and other half-bridge and full-bridge applications. The IC prevents cross-conduction and shoot-through in these applications by preventing FET drivers from seeing two high control signals, regardless of the state of the input control signals. The AP54RHC288 is SEE resilient and can be used to improve fault containment in mission critical applications (Figs. 1 and 2). This device is a member of the company's AP54RHC logic family operating across a voltage supply range of 1.65 V to 5.5 V.

"Since its founding, Apogee Semiconductor has been focused on changing the economics of space and enabling small satellite and large constellations. Our RelBridge family is an extension of our founding philosophy" states Anton Quiroz, CRO of Apogee Semiconductor, "The RelBridge components serve as a crucial bridge between non-radiation tolerant components in systems and more stringent reliability requirements our customers are often working to achieve."

"In addition to the AP54RHC288, the other component in the RelBridge family is the AP54RHC301. The AP54RHC301 voter enables triple-mode redundancy for mission critical applications by providing reliable arbitration between redundant channels. It is the industry's first standalone voter IC that enables more reliable systems without customers resorting to purchasing a slew of radiation hardened components for their small satellite systems. The AP54RHC301 is also designed to prevent fault propagation between non-radiation tolerant components in systems," added Quiroz.

For customers requiring higher levels of radiation tolerance, 300-krad (Si) variants are available for GEO and deep space applications. Explore the RelBridge family [here](#) and email the [company](#) for orders.

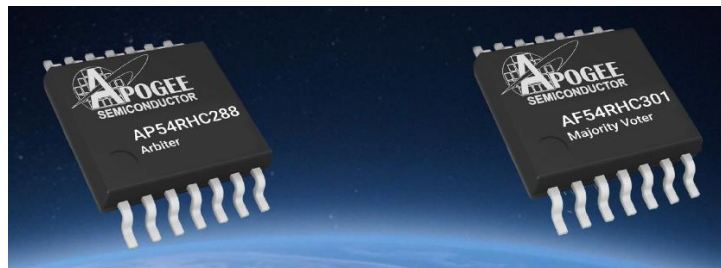


Fig. 1. The AP54RHC288 is a radiation-hardened-by-design two-channel dual-input arbiter that is well suited for space, medical imaging and other applications demanding radiation tolerance and high reliability. It is fabricated in a 180-nm CMOS process utilizing proprietary radiation-hardening techniques, delivering high resiliency to single-event effects (SEE) and to a total ionizing dose (TID) up to 30 krad (Si). Another RelBridge family member, the AP54RHC301 voter enables triple-mode redundancy for mission critical applications by providing reliable arbitration between redundant channels.

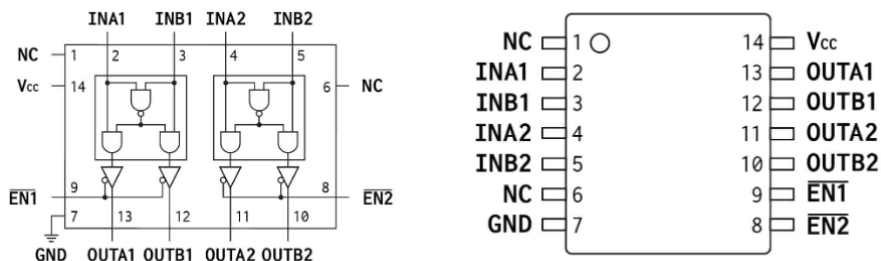


Fig. 2. The AP54RHC288 provides protection for critical applications by ensuring that on each channel only one output can be high, regardless of the signal state at the inputs. This feature is well suited for half-bridge drivers, power supplies, thrusters, and other applications where cross conduction must be avoided.