

Dual Interlocked Logic (DIL) Circuit

Summary

Vanderbilt researchers have developed a novel combinatorial logic circuit that prevents the propagation of signal glitches such as those caused by radiation-induced transients. The interlocked-feedback circuit accomplishes this without the loss of any speed. The circuit is designed for robustness in both combinatorial and sequential logic applications.

Addressed Need

This circuit was originally developed to protect logic circuits from the harmful effects of upsets caused by single event radiation effects. However, due to its robustness, the circuit should be beneficial for the amelioration of effects of upsets arising from any source. The scope of integrated circuit applications ranges from spacecraft to smart phones.

Unique Features

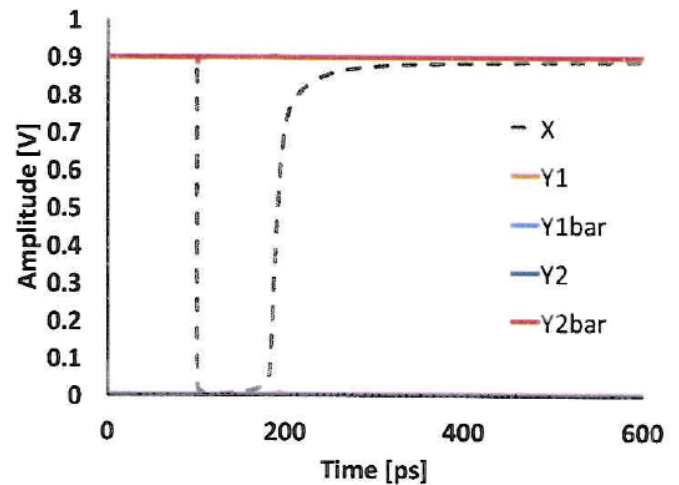
- ◇ Robust to single-node glitches arising from any source.
- ◇ Low circuit complexity leading to area efficiency.
- ◇ No additional speed delay
- ◇ Resistant to glitches of any duration

Technology Development Status

Initial laboratory testing has been successfully completed. A chip containing this circuit logic has been fabricated and characterized. Radiation testing of the same is imminent.

Intellectual Property Status

- ◇ Provisional patent application filed.



The transient produced at a node does not propagate to any of the outputs.

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VU REFERENCE: VU 17017

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