MAX4936A

Octal High-Voltage Transmit/Receive Switches

Integrated Transmit/Receive Switches Significantly Reduce Component Count While Reducing Power

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OVERVIEW

Description

The MAX4936A/MAX4937A are octal, high-voltage, transmit/receive (T/R) switches. The T/R switches are based on a diode bridge topology, and the amount of current in the diode bridges can be programmed by three digital inputs (S0, S1, and S2). Two control inputs (EN1 and EN2) allow enabling/disabling channels 1–4 and channels 5–8, respectively. The MAX4936A includes the T/R switch and grass-clipping diodes, performing both transmit and receive operations. The MAX4937A includes just the T/R switch and performs the receive operation only.

These devices feature low on-impedance in the entire ultrasound frequency range with extremely low power dissipation of 15mW (typ) per channel.

The receive path for both devices is low impedance during low-voltage receive and high impedance during high-voltage transmit, providing protection to the receive circuitry. The low-voltage receive path is high bandwidth, low noise, low distortion, and low jitter.

The MAX4936A SWC_ pins can be driven with high-voltage signals using the anti-parallel diodes as grass clippers while connecting the SWB_ pins to the low-noise amplifier (LNA). Connecting SWC_ to

GND allows the internal anti-parallel diodes to be used as clamps. Grass-clipping diodes can then be connected to SWB_ and the LNA to SWA_.

Both devices are available in a small, 42-pin, 3.5mm x 9mm TQFN package, and are specified over the commercial 0°C to +70°C temperature range.

Key Features

- Save Space—Optimized for High-Channel-Count Systems
  - High Density (Eight Transmit/Receive Switches per Package)
  - Two Banks of Four Channels with Independent Enable Control (EN1, EN2)
  - Low-Capacitance Anti-Parallel Diodes to Be Used as Grass-Clipping or Clamping Diodes (MAX4936A Only)
  - Small, 42-Pin, 3.5mm x 9mm, TQFN Package
- Save Power
  - Low 6Ω (typ) On-Impedance with 1.5mA Bias Current Only
  - Adjustable Bias Resistors Allow Operation with Different Voltage Supplies
- High Performance—Designed to Enhance Image Quality
  - Low Noise at Low Power Consumption (< 0.5nV/√Hz (typ) with 1.5mA Bias Current)
  - Wide -3dB Bandwidth 100MHz (typ)
- Low-Voltage Receive Path with High-Voltage Protection

Applications/Uses

- High-Voltage Transmit and Low-Voltage Isolation
- Medical/Industrial Imaging
- Ultrasound