



XS5A1T4157

Low Ron, No Overshoot 2:1 Switch

Overview

Nexperia offers a broad portfolio of analog switch designed to improve system performance, in industry standard pin compatible package. The recently released XS5A1T4157 is a general purpose SPDT (single pole-double throw) switch that supports bidirectional digital and analog signal switching through low Ron (40hm@VCC 4.5V) switch. The SPDT is controlled by a select pin that is 1.8V logic compatible, thereby ensuring both TTL and CMOS logic compatibility. The XS5A1T4157 operates from a supply in the range of 4.5V – 5.5V.

The XS5A1T4157 SPDT offers some differentiating features like: 1) Ultra low (7nA) quiescent current that is highly desirable in battery operated handheld equipment. 2) Delivers clean switching signal when switching between two voltage levels like Vcc and GND, by eliminating switching overshoot and undershoot spikes which greatly improves system performance especially in test and measurement and Radio equipment where even the tiniest switching noise is highly undesirable.

Key Features

- › V_{CC} Supply Range: 4.5V to 5.5V
- › 1.8V Logic Compatible
- › R_{ds} (ON): 4Ω(typ.)
- › Bidirectional Signal Path
- › Break before make switch
- › No overshoot at switching
- › Low quiescent Current: 7nA@V_{CC} 5V
- › High Output Current: 100mA max.
- › Rail to rail operation
- › Fail-safe logic
- › -40°C to +125°C Operating Temperature

Applications

- › Active Antenna Unit (AAU)
- › Analog and Digital Switching
- › I²C and SPI Bus Multiplexing
- › Analog input module
- › Server/Computing
- › Barcode scanner

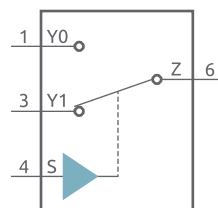


Figure 1. Simplified block diagram

Performance Example in AAU Application

Referring to Figure 2, the XS5A1T4157 is used to control the gate voltage of power amplifier LDMOS to bias it or not between 5V to GND.

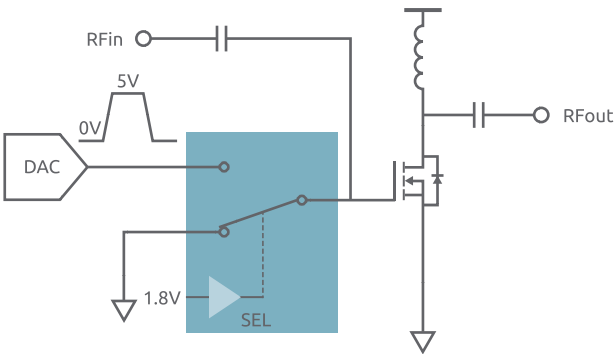


Figure 2: SPDT in Power Amplifier Application

In such applications it is critical that large signal changes (e.g. 5V to GND) happens with minimum overshoot/undershoot else it can cause ringing in the signal path due to board parasitics that can further lead to undesirable system performance effects.

Figure 3 shows no overshoot on XS5A1T4157 output when switching between GND and a 3.3 V input. Also shown the Select pin when toggles from GND to 1.8V the output switches with a transition time of <55ns.

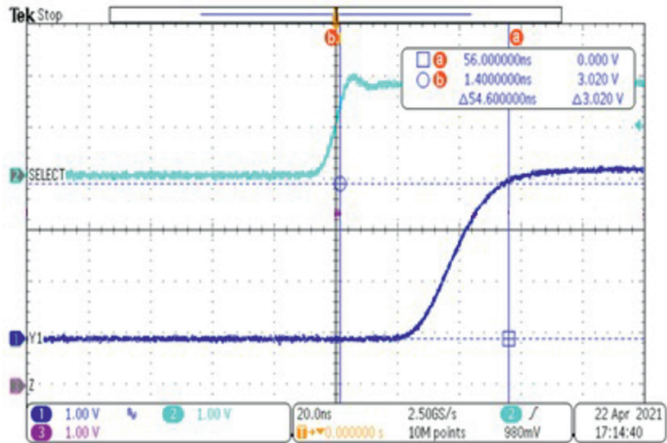


Figure 3: XS5A1T4157 Switching Performance – No Overshoot

Basic product information

Product	Description	Orderable P/N
XS5A1T4157	Low ohmic single-point double-throw analog switch	XS5A1T4157GW

Packages

SOT#	Suffix	Packages	No. of pins	Dimensions (W x L x Pitch)	
SOT363	GW	SC-88	6	2.1 x 2 x 0.65	