

TMUX9832 No High Voltage Bias, Beyond the Supply, 220V 1:1, 32-Channel Switch With Latch-Up Immunity

1 Features

- Only +5V bias supply required
 - Very low power: 9.5mW (typ) all 32CH switching at 50kHz
- Wide input signal range:
 - Up to $\pm 110V$, 220V_{PP}
 - $\pm 120V$, 240V_{PP} voltage overshoots supported
 - 305MHz small signal frequency range supported
 - $\geq 50MHz$ large signal frequency range supported
- Low off capacitance: 10.7pF
- Low on resistance
- Up to 100MHz data shift clock frequency
- Logic levels: 1.8V to 5V
- Integrated NDIN to invert input data polarity
- Fast turn-on time: 3 μ s (maximum)
- Excellent HD2PC performance: $\geq 50dB$ at 5MHz
- Excellent off isolation performance: $-68dB$ at 5MHz
- Small BGA and QFN package options with optimized pin-out
- Integrated thermal shutdown for improved system reliability
- Integrated bleed resistors on the outputs
- Latch-up immunity by device construction
- Extended temperature range: $-40^{\circ}C$ to $125^{\circ}C$

2 Applications

- [Medical ultrasound imaging](#)
- [Ultrasound smart probe](#)
- Non-destructive testing (NDT) metal flaw detection
- Piezoelectric transducer drivers
- [Ultrasonic flow transmitters](#)
- [Printers](#)
- [Optical MEMS modules](#)

3 Description

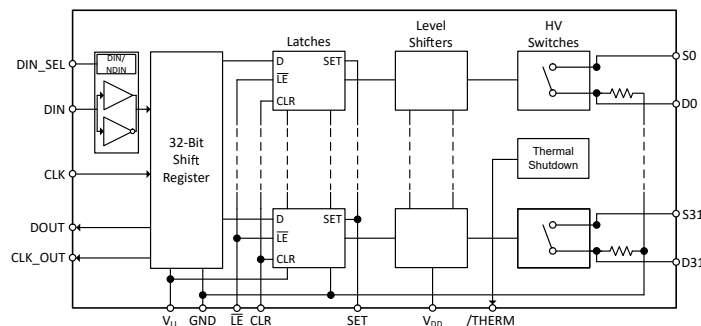
The TMUX9832 is a 32-channel low harmonic distortion, low resistance, low capacitance high-voltage analog switch integrated circuit (IC) with latch-up immunity. Each device has 32 independently selectable 1:1, single-pole, single-throw (SPST) switch channels. The device only requires a +5V supply, while still being able to support $\pm 110V$ analog signals. TMUX9832 also integrates bleed resistors on its drain (Dx) pins to discharge capacitive loads, like piezoelectric transducers. TMUX9832 is designed for medical ultrasound imaging and other piezoelectric transducer driver applications.

TMUX9832 integrates cascadable 32-bit shift register with latches for controlling each of the 32 switches. The daisy chain capability allows for many TMUX9832 devices to be controlled without requiring a separate chip-select for every device. To reduce noise in the signal path due to potential clock feed-through, the active low latch enable can be held high while data is loaded into the shift registers. The 32-bit shift register can operate off of a 1.8V – 5V power supply and support clock speeds up to 100MHz.

Package Information

PART NUMBER	PACKAGE ⁽¹⁾	PACKAGE SIZE ⁽²⁾
TMUX9832	RWF (VQFN)	10mm × 10mm
	ZEH (NFBGA)	7.5mm × 7.5mm

- (1) For all available packages, see the orderable addendum at the end of the data sheet.
- (2) The package size (length × width) is a nominal value and includes pins, where applicable.



Simplified Schematic



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4 Device and Documentation Support

4.1 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on ti.com. Click on *Notifications* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

4.2 Support Resources

[TI E2E™ support forums](#) are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

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4.3 Trademarks

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4.4 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

4.5 Glossary

[TI Glossary](#) This glossary lists and explains terms, acronyms, and definitions.

5 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Revision * (June 2023) to Revision A (May 2026)	Page
• Updated datasheet status from <i>Advanced Information</i> to <i>Production Data</i>	1
• Added bandwidth and off isolation specifications. Updated off capacitance and HD2PC specifications.....	1

DATE	REVISION	NOTES
June 2023	*	Initial Release

6 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

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