



System Level Protection for High-Voltage Multiplexers in Multi-Channel Data Acquisition Systems

Multiplexers with integrated fault protection

TMUX1072

2-Channel 2:1 Analog Switch with Overvoltage Detection and Protection

Features

- Wide Supply Range V_{CC} : 2.3V – 5.5V
- Supports I/O signals beyond V_{CC} up to 5.5V
- Input tolerance up to 18V
- Overvoltage triggering threshold: 6V
- Powered-off protection (I/O pins Hi-Z, when $V_{CC}=0V$)
- 1.8-V Compatible Control Inputs
- **Wide** bandwidth for differential high-speed data
 - Bandwidth: 1.2 GHz
 - Low C_{ON} : 4.5 pF (typ.)
 - Low R_{ON} : 6 Ω (typ.)
- Standby power down mode current consumption: 10 μ A (max)
- Operating Temperature Range: -40 to 125°C
- Package options:
 - QFN-12 Package (2mm x 1.7mm)
 - SOP-10 Package (3mm x 3mm)

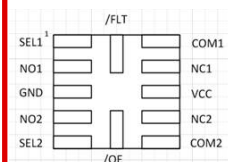
Applications

- Data acquisition (DAQ), Field Instrumentation
- Video Surveillance, Automotive Rear Camera
- Portable Data Terminal

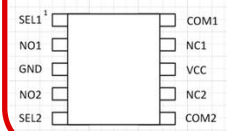
Benefits

- Ideal for 2.5V, 3.3V and 5V supply rails
- Pass I/O signals greater than V_{CC} (for eg. $V_{CC} = 3.3V$, and I/O signal = 5V)
- Protects systems up to 18V OVP short conditions
- Powered-off protection eliminates the need for power supply sequencing requirements
- 1.8-V logic support eliminates the need of a level translator between MCU and EN pin.
- Wide BW and low R_{ON} for minimal signal degradation

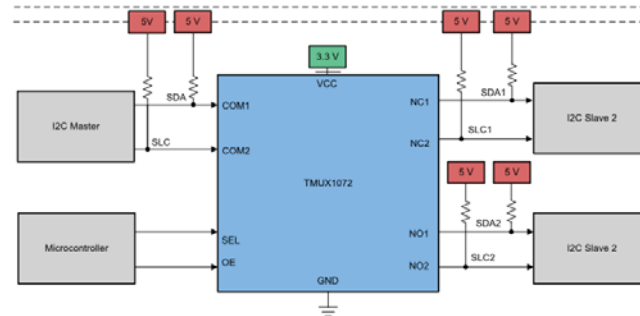
12-QFN (2mmx1.7mm)



10-SOP (3mmx3mm)



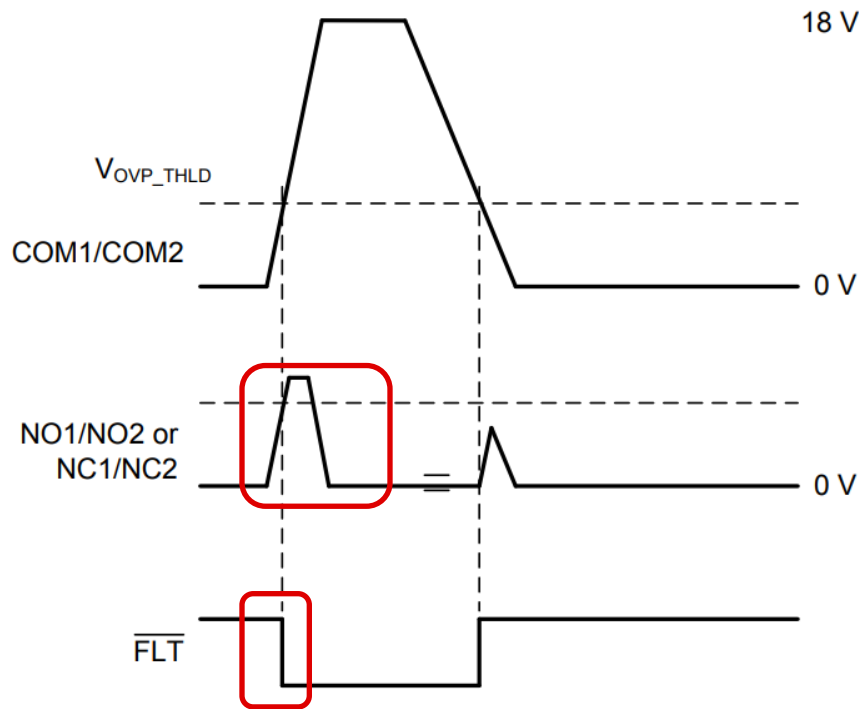
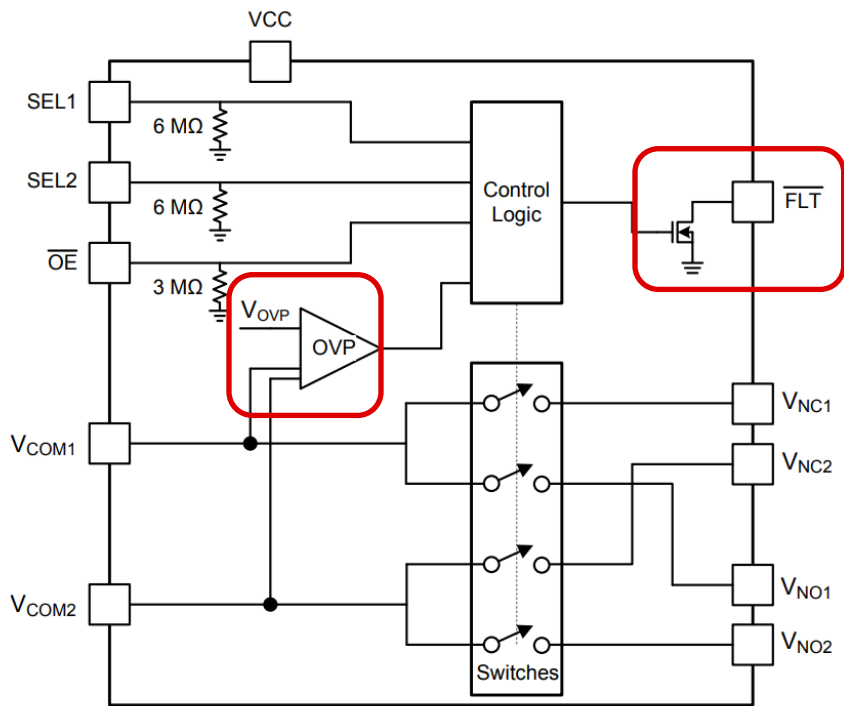
Application Use Case – Beyond V_{CC}





TMUX1072

Internal block diagram and fault protection behavior



Product Folder [here](#)

MPC50x

+36V VDD | $\pm 15V$ input signal | Overvoltage tolerance up to 70VPP

Features

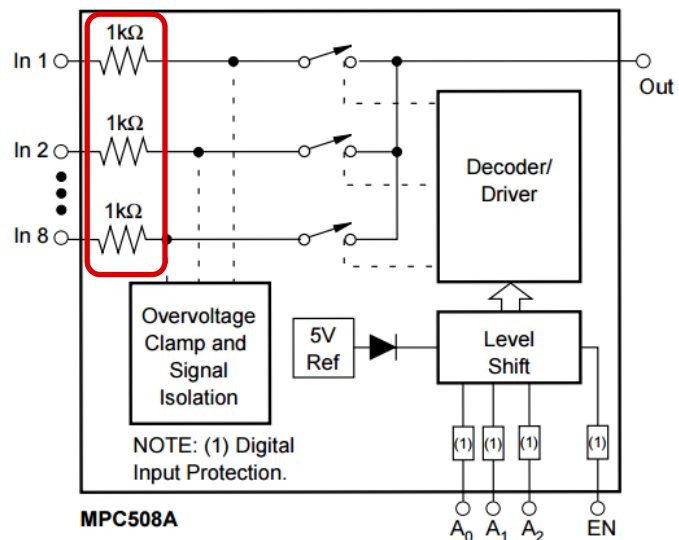
- Analog overvoltage protection: 70vpp (-36V to +36V)
- 1.3k Ω Ron (inc. 1k Ω series current limiting resistor)
- None-fault channel continues to operate normally
- Digital input tolerates up to 4V above supply
- 2nA (typ) ON leakage current
- 2uA OFF leakage current under fault condition
- Break-before-make switching

Applications

- Factory Automation, Programmable Logic Controllers (PLC), Analog Input Modules, ATE Test Equipment, Battery Monitoring

Benefits

- Integrated OVP prevents fault to impact downstream devices.
- Reduced BOM and board area
- Wide supply operation to provide native protection for over-voltage



Device	Configuration	#Ch.
MPC506	16:1	1
MPC507	8:1	2
MPC508	8:1	1
MPC509	4:1	2