

FOR ENERGY EFFICIENT INNOVATIONS

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**THINK ON.**

# Overcurrent Protection for Industrial Automation

eFuse

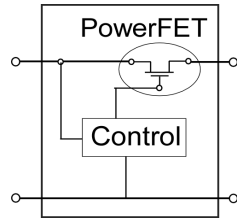
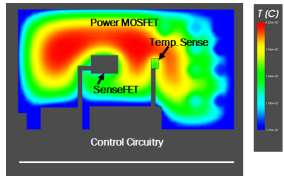
Public Information



# eFuse – Electronic Fuses

## What?

Integrated Overcurrent, thermal & Overvoltage protection solution



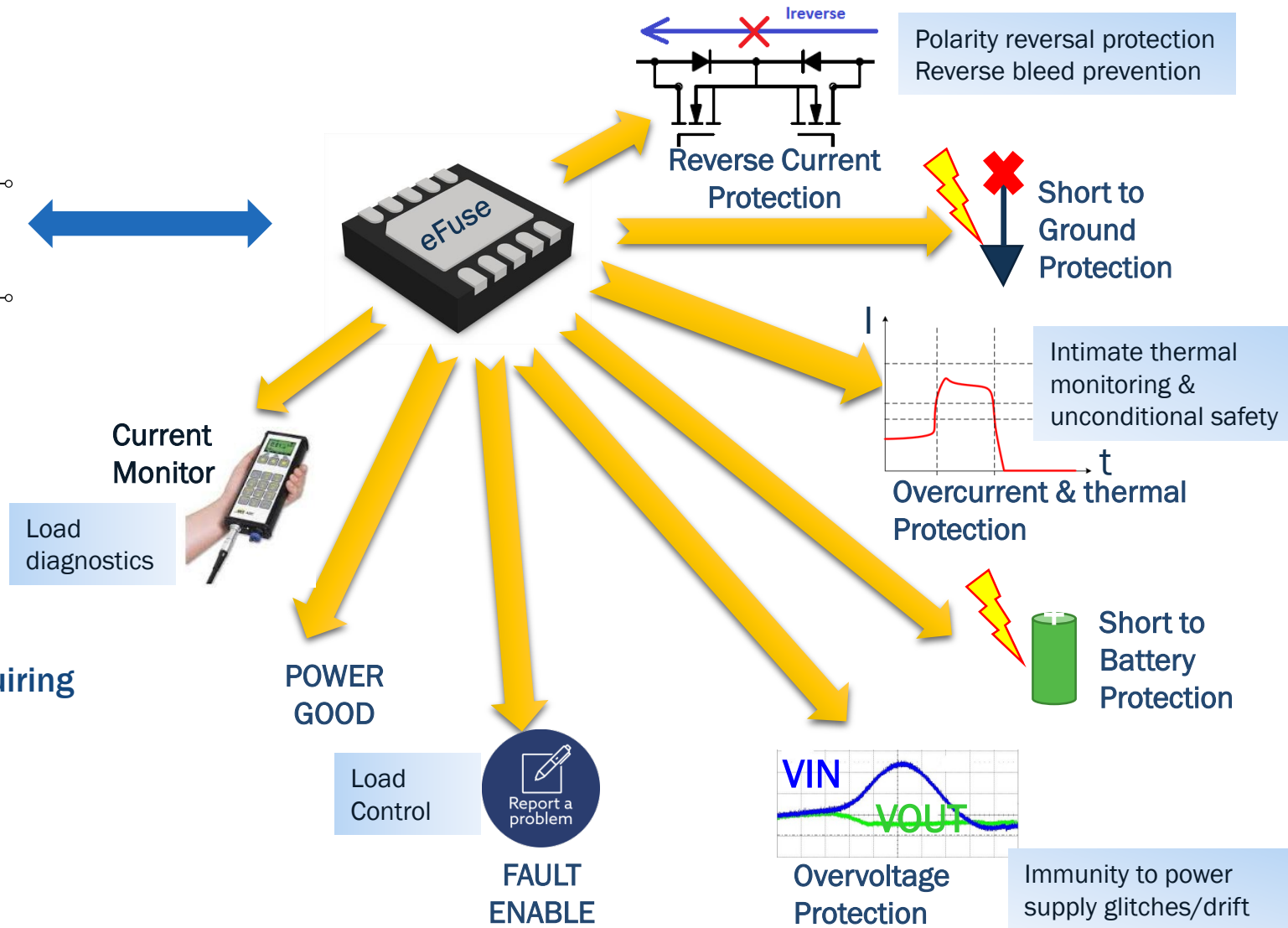
## Why?

Prevent damage to connectors, PCB traces and downstream components

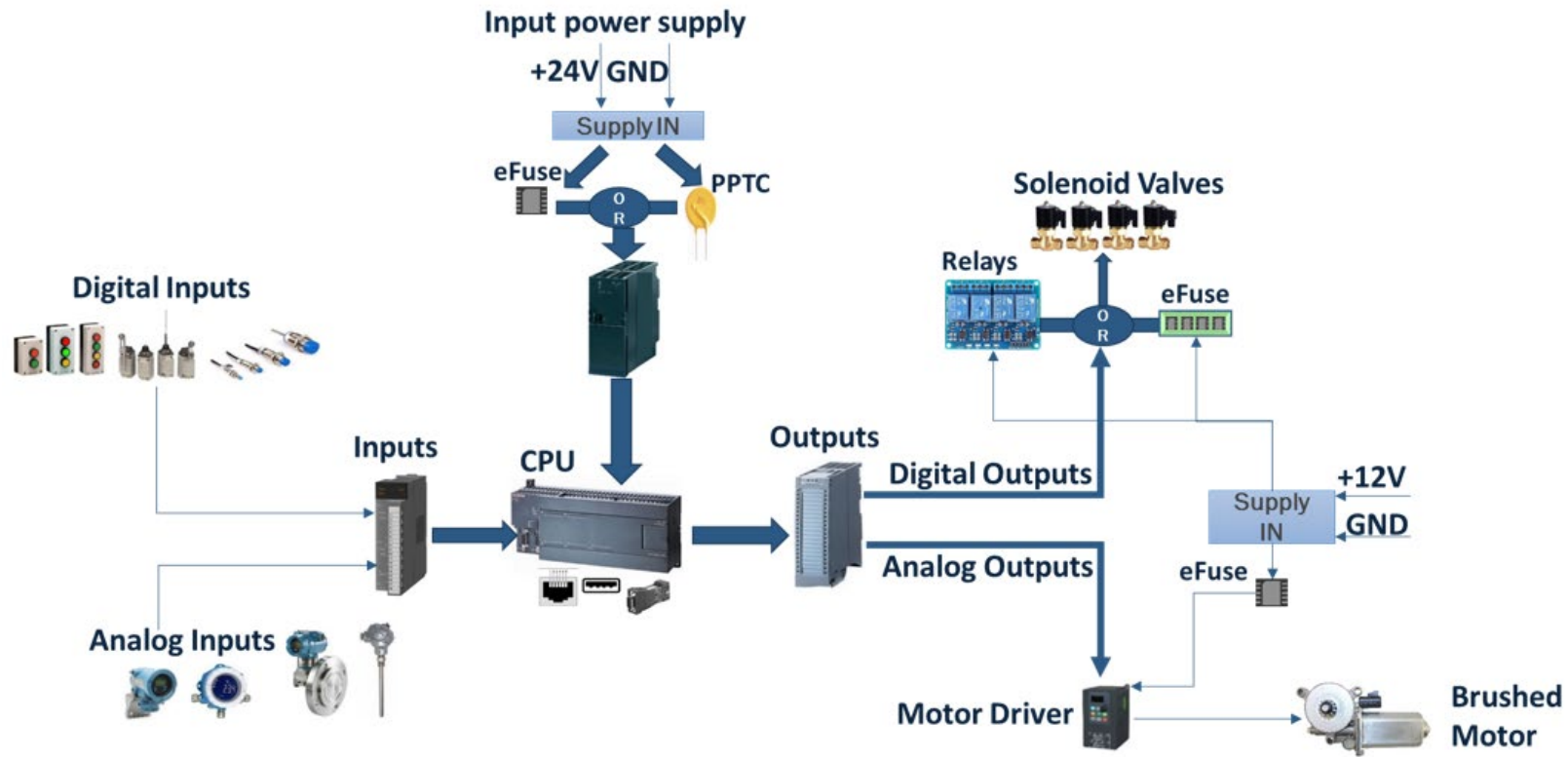


## Where?

Any hot-swappable application and any system requiring inrush/outrush current limiting



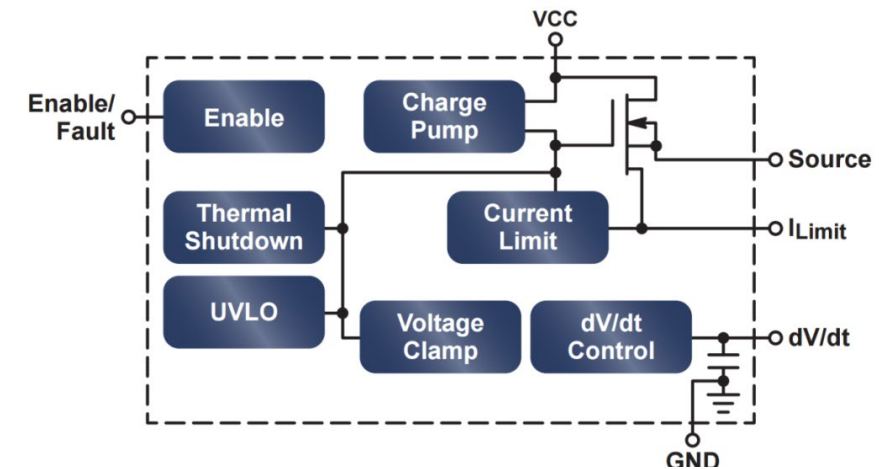
# Protected eRelay and eFuse



- ✓ Unconditional safety
- ✓ Programmability
- ✓ Fault reporting and diagnostics
- ✓ Easy installation
- ✓ Small footprint

Showcases three eFuses for industrial applications:

- NIS5020/NIS3320 – Relay Replacement
- NIS5021 – Motor Protection
- NIS4461 – Power Supply Protection



# Demo description

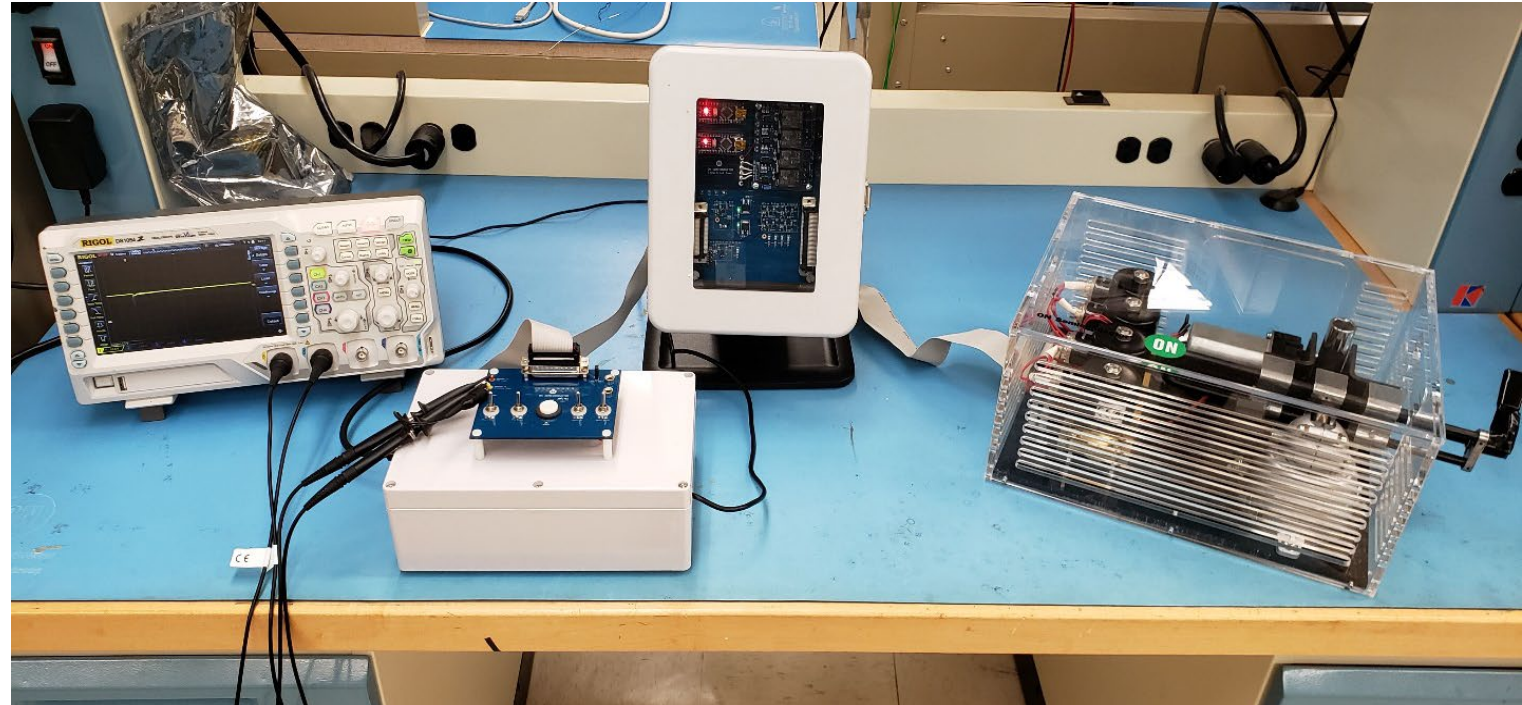
## Innovation

Showcasing eFuse as replacement of traditional fuses as well as relays for industrial automation applications with inbuilt overcurrent, overvoltage, inrush current and over temperature protection in a smaller footprint with faster response and no SOA concerns.

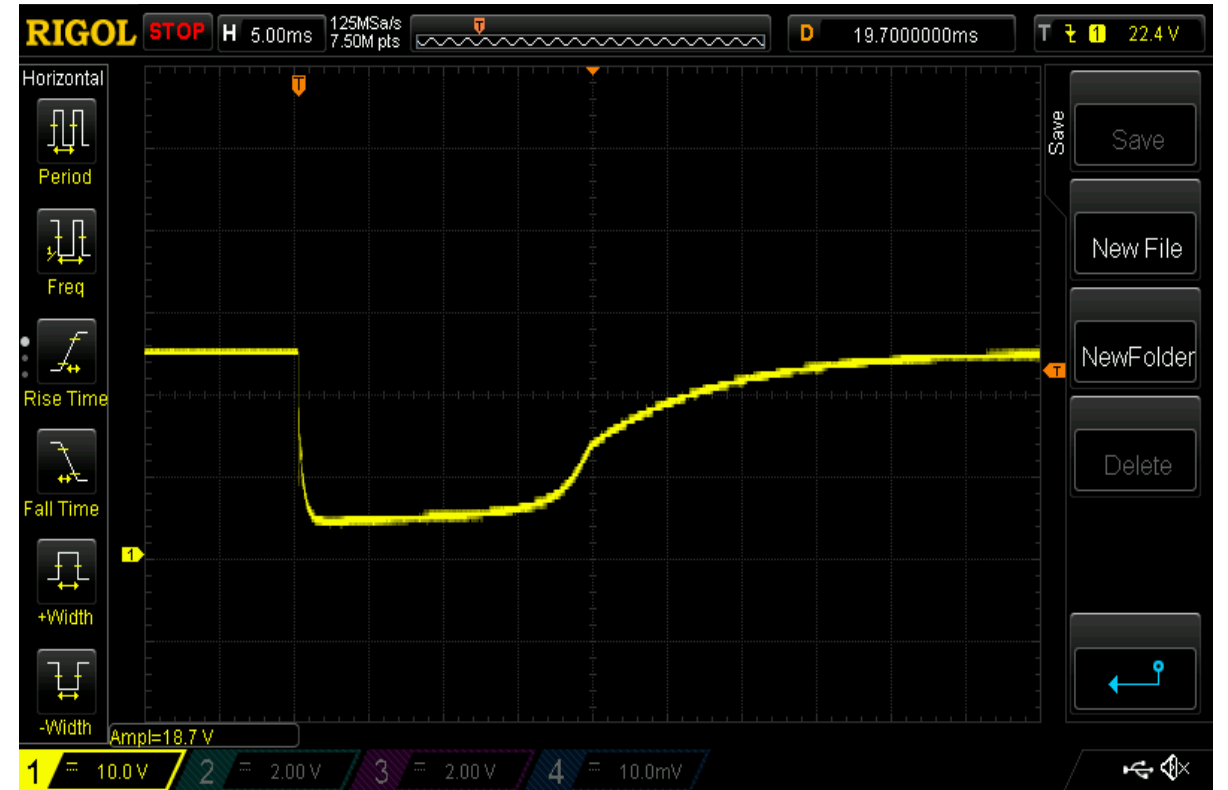
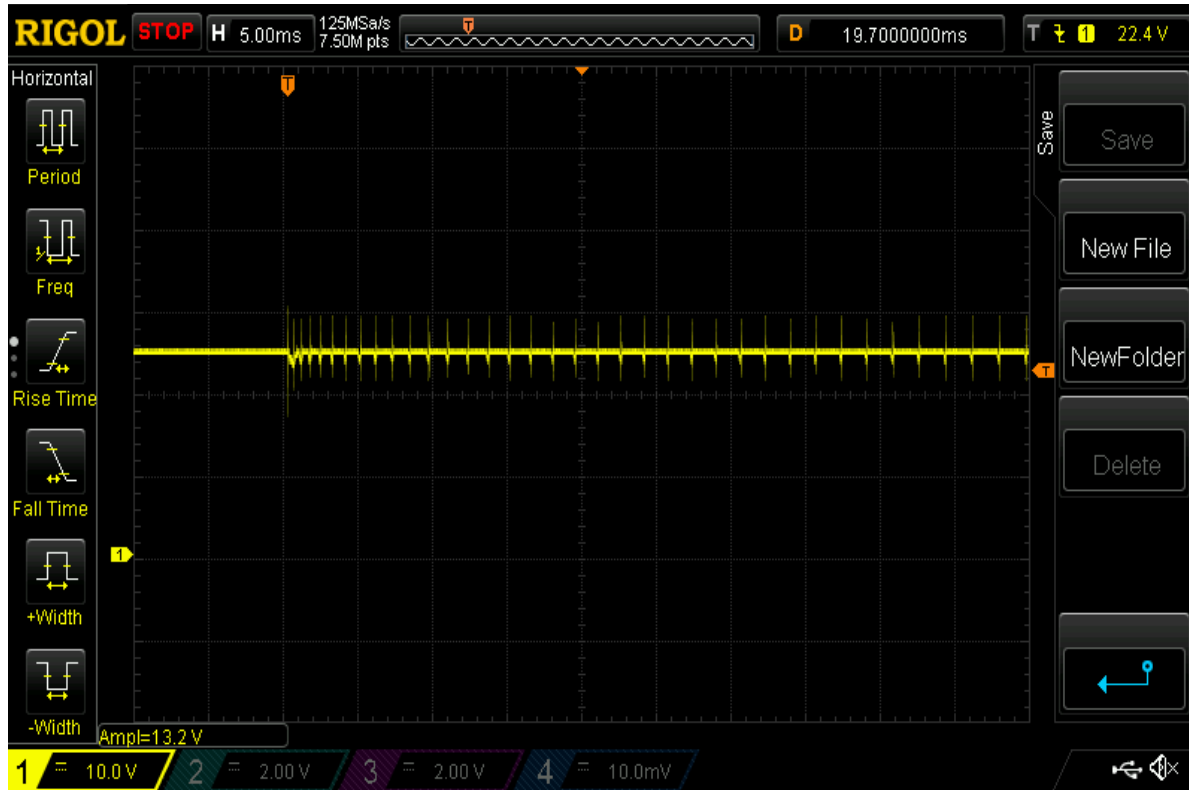
## Value Proposition

All the protection features along with programmability as well as fault reporting capability ensures unconditional safety with no SOA concerns.

- ✓ Unconditional safety
- ✓ Programmability
- ✓ Ultra fast response to faults
- ✓ Fault reporting and diagnostics
- ✓ Easy installation
- ✓ Small footprint
- ✓ Ability to synchronize or sequence power up/down

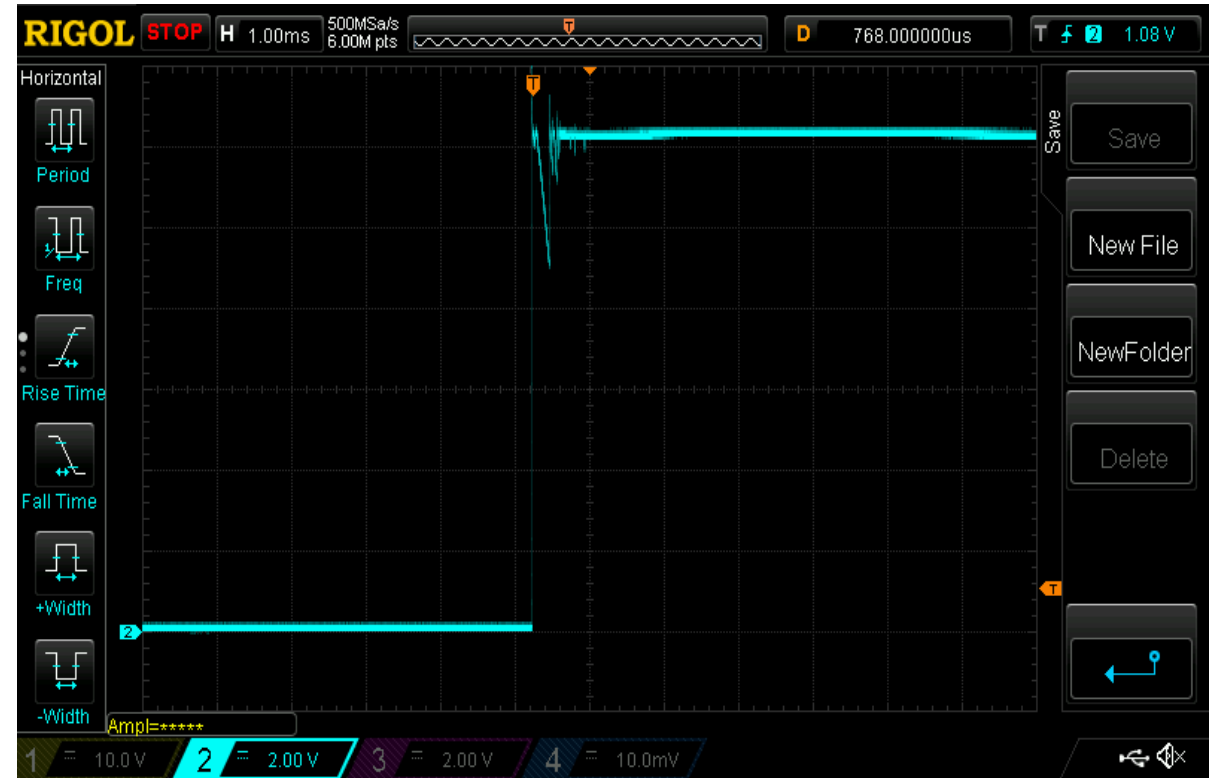
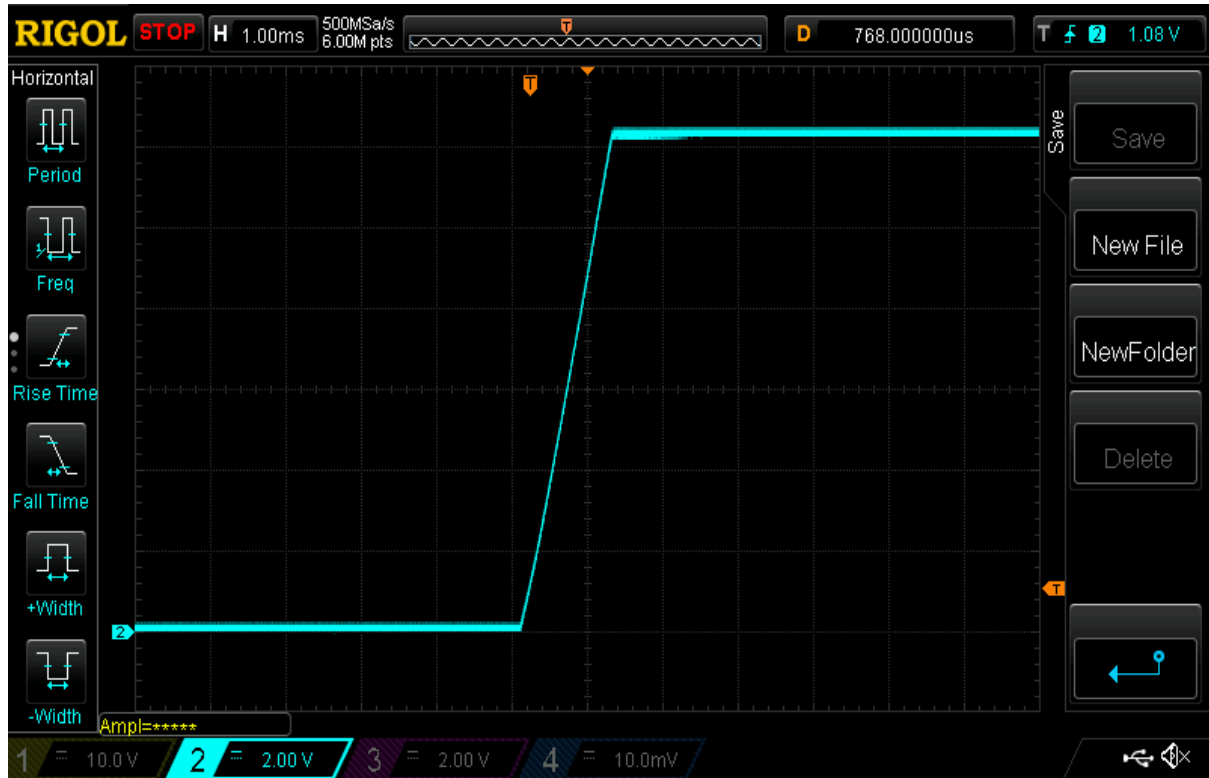


# eFuse vs PTC Comparison



The eFuse (left) responds much quicker than the PTC (right), preventing the input rail from sagging during a fault.

# eFuse vs Relay Comparison

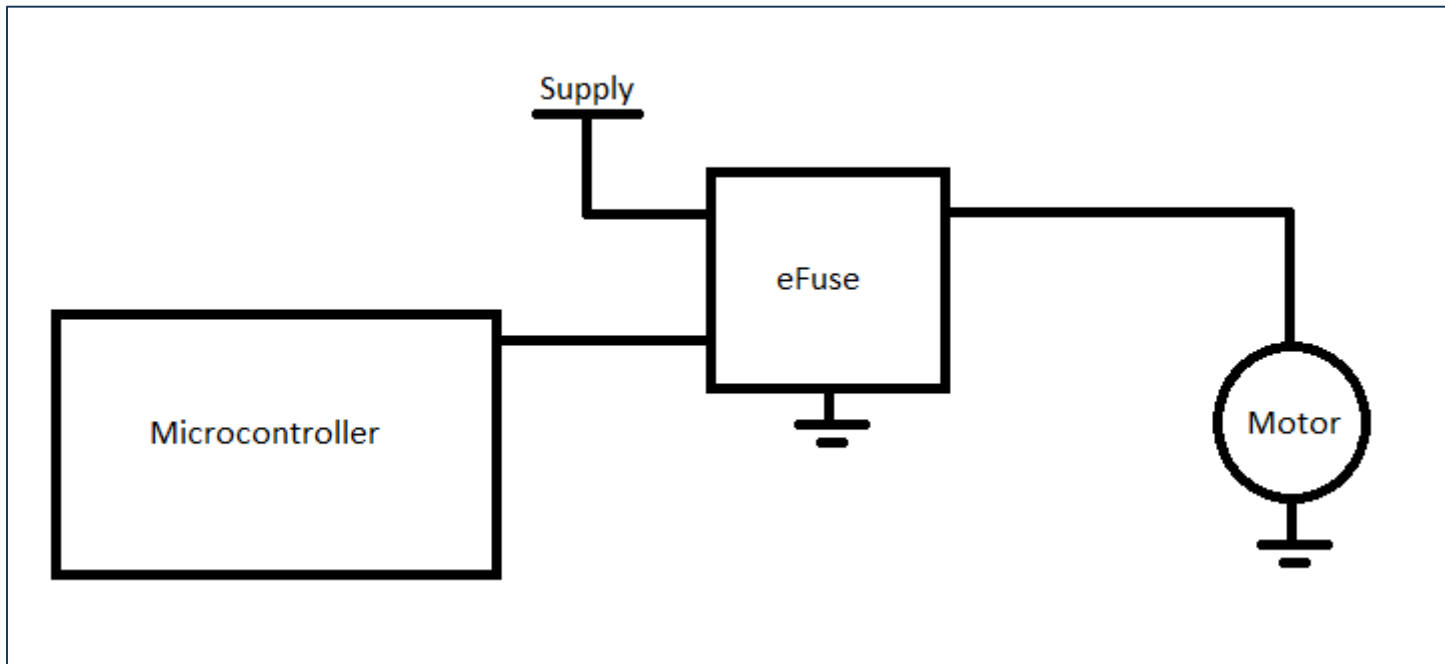


The eFuse (left) has a controlled and adjustable slew rate, reducing inrush current. The relay (right) produces noise and chatters, resulting in power loss.



# eFuse in Motor Protection

- eFuses can be used for motor protection providing protections as well as diagnostics.
- In a locked rotor condition or with partially jammed shaft, the motor enters an overcurrent condition causing the eFuse to trip and shutdown the motor.
- A microcontroller is easily integrated to both read the status of the eFuse and control its output of eFuse.
- Once the fault or jam has been cleared, a signal can be sent to power the eFuse back on.



In addition to current limiting other protection features provided by the eFuse are:

- Over voltage clamping
- Under voltage lock out
- Fault reporting capabilities
- Diagnostics
- Controlled output slew