

**PRODUCT BRIEF**

# MM9100

## 150 V / 10 A SPST Power Relay Prototype

The Menlo Microsystems MM9100, normally open power relay utilizes Menlo's Ideal Switch™ fabrication process and applies it to AC/DC power relay applications. The MM9100 allows customers to evaluate Menlo's Ideal Switch technology for power applications. It is intended for evaluation and prototyping purposes and is not qualified for high volume production.

The MM9100 utilizes small MOSFET devices in parallel with a high voltage MEMS relay to ensure zero-volt conditions across the relay during switch transitions (opening or closing). The parallel MOSFETs conduct only during switch transitions so that applications benefit from the exceptionally low on resistance, off-state capacitance and leakage, and the high reliability of Menlo's Ideal Switch technology. Galvanic isolation is assured by isolation transformers between the control and the power sections.

**FEATURES**

- Rated Voltage: 120V AC/DC (Scalable to kV)
- Rated Carry Current: 10A (Scalable to 100A)
- On Resistance: <30 mΩ
- Galvanic Isolation 2,500VAC
- Control Current: <1.0mA
- No Heat Sink Required
- Max Switching Frequency: 10 kHz

**APPLICATIONS**

- AC/DC Power Distribution & Controls
- Mini-circuit breaker, protection

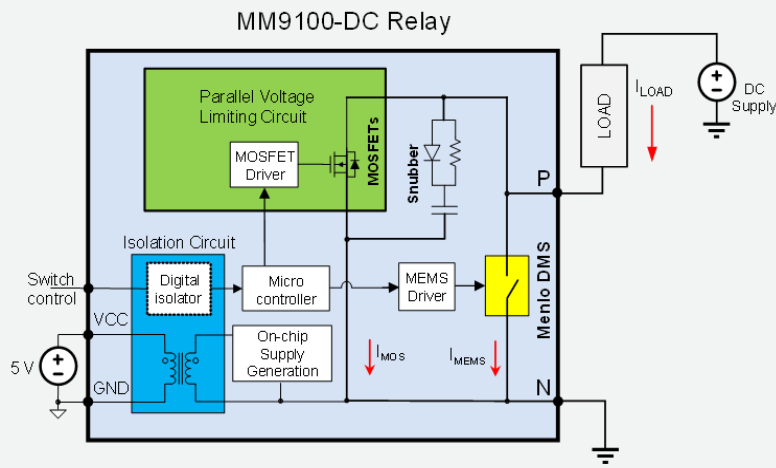
**MARKETS**

- Home, Industrial Automation, Lighting
- Battery Management, Charging
- Automotive
- UPS, Solar, PV

**VERSIONS AVAILABLE**

- AC Relay – MM9100-AC
- DC Relay – MM9100-DC

**FIG. 1** MM9100-DC Relay



**DESIGN ADVANTAGES**

- 99% reduction in size and weight compared to EMR or SSR power relay solutions
- Fast switching (<20 us) and zero-crossing switching (AC) options
- Long-life actuator, for billions of switching operations
- Ultra-low loss down to 5mΩ, for superior thermal performance in high current applications
- Integrated smart controls for overcurrent, overvoltage protections
- Scalable architectures to 100 A and > 1000 V

**FIG. 2** Future Integration Path

**TODAY**  
**SMART POWER RELAY PROTOTYPE DFD**

**66MM**  
**48MM**

- Up to 4 switches per relay
- 48 contacts/switch, 3.5A/switch
- 192 contacts in total
- Ron < 30mΩ, 10A

**FUTURE**  
**SMART POWER RELAY PRODUCT DFD**  
**SURFACE MOUNT MODULE**

**20MM**  
**10MM**

- Multiple switches + integrated controller
- 400 contacts/switch, 10A/switch
- 1000+ contacts in total
- Ron < 5mΩ, 10A to 100A, to 1000V total