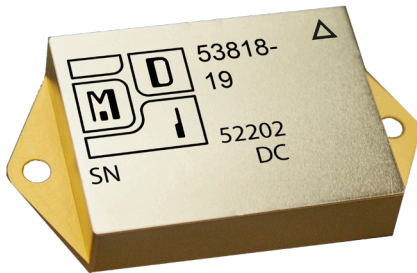


HYBRID SOLID STATE RELAY

Proton Rad Hard 100K+ Technology

MODEL 53818 Form C (SPDT)



Features:

- Rated at 10A and 600 VDC
- Single Pole, Double Throw
- One NO Switch contact, one NC switch contact in the same package
- Two isolated unconnected switches for connection flexibility
- Contacts break before make for safety
- Two unconnected isolated switches for connection flexibility
- Silicon Carbide Semiconductors for low resistance
- No SEE LET>82 MeV*cm²/mg
- 100K+ Rad Hard TID 100kRads (R,S,RE and SE Grades)
- TID 45 Krads (L and LE grades)
- Magnetically Coupled Command for fast response
- No Optocoupler, no optocoupler issues
- Logic Level Drive
- Rugged Hermetic Package

Specifications:

Bias Input Voltage 4.7 to 5.3 VDC

Bias input current 30 mA typical, 50 mA maximum

Command input 1 mA compatible with TTL logic levels

Input/output, output to output and all pins to case isolation 1kV

Power Dissipation 10 watts at maximum rated case temperature

Case temperature range:

Operating -55°C to +85°C (M grade)

Operating -55°C to +125°C (E grade)

Storage -65°C to +150°C

Weight 32 grams typical

To energize, after applying +5 VDC bias, apply ground to coil pin

Model 53818 uses Wide Band gap power semiconductors for high performance, is magnetically coupled and can be externally wired for different user requirements.

If the two loads to be switched have a common ground, connect the two positive switch inputs to plus, and the two negative outputs to the switched loads. If the two loads to be switched have a common positive connection, connect the two negative switch outputs, inputs to ground, and the two positive inputs to the switched loads.

In addition, since the Form A and Form B SSR sections are galvanically isolated, the SSR sections can be used independently, without a common connection.

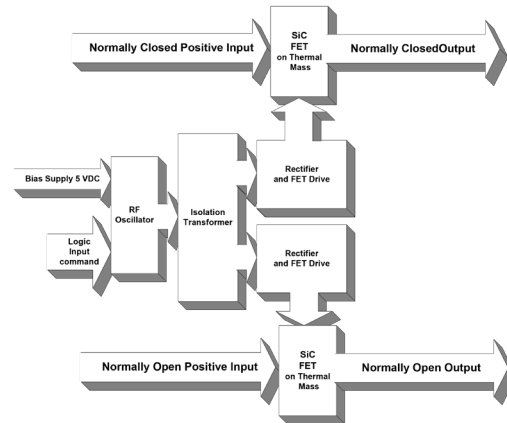
Wide Band gap (WBG) semiconductors, such as GaN (Gallium Nitride) and SiC (Silicon Carbide) provide an order of magnitude improvement in SSR voltage drop compared to SSRs using Silicon based power devices.

Also, WBG semiconductors of a given dimension can withstand higher electric fields than Silicon semiconductors, the physical dimensions of these WBG parts are considerably smaller than their Silicon competitors. The result of WBG is much lower channel resistances and reduced drive requirements.

Most SSR manufacturers drive their SSR power device with opto couplers consisting of an LED emitter driving a multi-diode photo-voltaic stack.

A major disadvantage of an opto coupled drive is slow turn on and turn off response and wide variations with temperature.

MDI replaces the optocoupler function with a tiny, transformer isolated RF drive signal. This solves the opto coupler problems and gives faster, more temperature stable operation, as well as excellent radiation resistance.



600V/10A Solid State Relay
Model 53818 Form C

PARAMETER	CONDITION	MIN	TYP	MAX
Contact R _{atg} V	Max	—	—	600V
Contact Rating I	Max	—	—	10A
Contact Resistance, 25°C	Energized	—	0.075Ω	0.1Ω
Contact Resistance, 125°C	Energized	—	0.15 Ω	0.2Ω
Leakage Current, 600V, 25°C	Off	—	—	60μA
Leakage Current, 600V, 125°C	Off	—	—	100μA
Bias Voltage	—	4.7	5.0	5.3V
Bias Current	—	—	30	50mA
Command/Pulse Input on	—	3.0	5.0	6.0V
Command/Pulse Input off	—	0	0.5	1.0V
Coil Current	—	3.0	5.0	7.0mA
Delay Time, energized	—	—	12	30μS
Delay Time, de-energized	—	—	20	40μS
Energize Time, dynamic	—	—	12	30μS
De-energize time, dynamic	—	—	5	20μS
Break before make dead time	—	1.0	5	20μS

Total steady state power dissipation of the model 53818 is limited to 10 watts provided the baseplate temperature is limited to the rated temperature.

For Heat Removal and Mounting Recommendations See MDI application notes on mounting considerations for DC-DC Converters

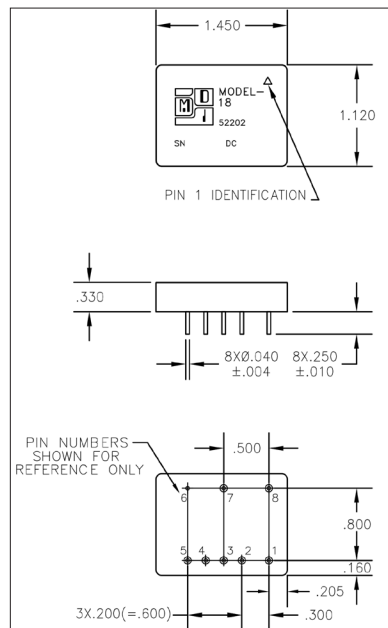


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HYBRID SOLID STATE RELAY

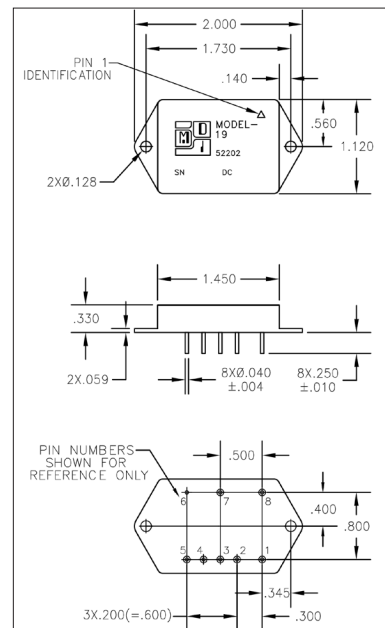
Case Style 18



Pin Out Chart

- Pin 1 NC switch negative
- Pin 2 NC switch positive
- Pin 3 +5 VDC Bias
- Pin 4 Bias ground
- Pin 5 Coil, ground to energize
- Pin 6 Case ground
- Pin 7 NO switch positive
- Pin 8 NO switch negative

Case Style 19



Pin Out Chart

- Pin 1 NC switch negative
- Pin 2 NC switch positive
- Pin 3 +5 VDC Bias
- Pin 4 Bias ground
- Pin 5 Coil, ground to energize
- Pin 6 Case ground
- Pin 7 NO switch positive
- Pin 8 NO switch negative

Model No.	Case Style	Pin Count	Mounting
53818	18	8	Seam Weld Flangeless PCB Mount
53818	19	8	Seam Weld PCB Mount with Flange

GRADE LEVELS:

Please specify grade level for your application. Industrial grade units will be shipped if no option is specified.

- Blank Industrial Grade
- E +125°C military/aerospace LE
- L 45 K, +85°C military/aerospace

- M +85°C military/aerospace
- LE 45 K, +125°C military/aerospace
- S 100 K+™, +85°C space
- SE 100 K+™, +125°C space



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