

HYBRID SOLID STATE RELAY

MODELS 3802/3803



Features:

- High Voltage/Low Resistance
- Single Pole, Single Throw Available in Form A or Form B
- Wide Band Gap Semiconductors for low Resistance
- Magnetically Coupled Command for fast response
- No Optocoupler, no optocoupler issues
- Selectable Continuous or Mag Latch Function
- 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 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)

Operating -40°C to +85°C (Industrial Grade)

Storage -65°C to +150°C

Weight 32 grams typical

For continuous operation, connect 5 VDC bias from pin 1 to bias ground pin 2.

Ground pin 3 and apply +5 VDC to pin 4 to energize the SSR.

For latch operation, leave pin 3 open, connect 5 VDC bias from pin 1 to bias ground pin 2.

To energize apply +5 VDC pulse, 25 microseconds minimum to pin 5.

To de-energize apply +5 VDC pulse, 25 microseconds minimum to pin 4.

Power Dissipation:

Total steady state power dissipation of the model 3802 and 3803 is limited to 10 watts provided the baseplate temperature is limited to the rated temperature.

Model 3802 is a SPST form B (normally closed when de-energized) SSR.
Model 3803 is a SPST form A (normally open when de-energized) SSR.

Both types use Wide Bandgap power semiconductors for high performance, are magnetically coupled and can be user configured for continuous or pulse latching.

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.

Many 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 opto coupled drive is slow turn on and turn off response and wide variations with temperature.

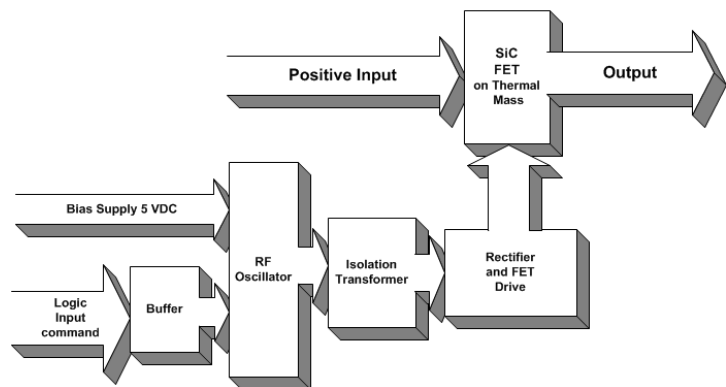
MDI replaces the optocoupler function with a tiny, transformer isolated RF drive signal. This solves the opto coupler problems and gives faster, more temperature stable operation, as well as excellent radiation resistance.

Latching configuration:

Some electromechanical relays have a magnetic latching function. The relay armature has two stable states and two relay coils. A short pulse on one of the coils causes the relay to change state. The last selected state persists even after power is removed.

The magnetically isolated SSR can have a somewhat similar mag latch function in that it can be energized either by a continuous signal, or by a short duration pulse. However, unlike an electromechanical relay, after removal of bias power the DC SSR reverts back to its initial state.

The MDI DC SSR can be user configured to the latching function by connecting a jumper or leaving the jumper open for continuous operation.



1000V/20A Solid State Relay
Model 3802 Form B
Model 3803 Form A

PARAMETER	CONDITION	MIN	TYP	MAX
Contact Rating V	Max	—	—	1000V
Contact Rating I	Max	—	—	20A
Contact Resistance, 25°C	Energized	—	0.075 Ω	0.1 Ω
Contact Resistance, 125°C	Energized	—	0.15 Ω	0.2 Ω
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 Inputs on	—	3.0	5.0	6.0V
Command/Pulse Inputs off	—	0	0.5	1.0V
Command Current	—	0.1	0.8	2.0mA
Delay Time, energized	—	—	12	30μS
Delay Time, de-energized	—	—	20	40μS
Energize Time, dynamic	—	—	12	30μS
De-energize time, dynamic	—	—	5	20μS
Latch/Unlatch Pulse Width	Minimum	25μS	—	—

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



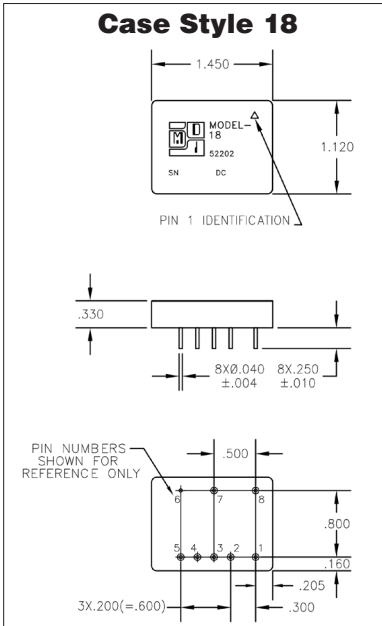
Modular Devices, Inc.

Power Conversion for Space and Military/Aerospace

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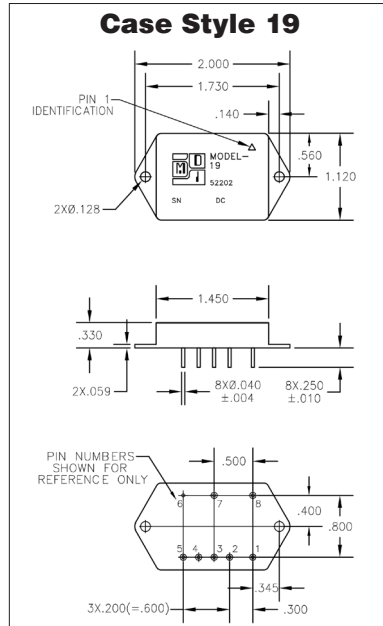
3802/3803

HYBRID SOLID STATE RELAY



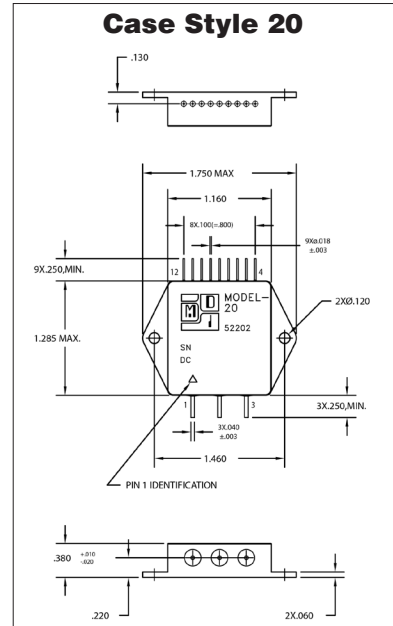
Pin Out Chart

- Pin 1 Bias +5 VDC
- Pin 2 Bias Gnd
- Pin 3 Latch/No Latch
- Pin 4 Pulse Off
- Pin 5 Pulse On
- Pin 6 Case
- Pin 7 Switch Positive
- Pin 8 Switch Negative



Pin Out Chart

- Pin 1 Bias +5 VDC
- Pin 2 Bias Gnd
- Pin 3 Latch/No Latch
- Pin 4 Pulse Off
- Pin 5 Pulse On
- Pin 6 Case
- Pin 7 Switch Positive
- Pin 8 Switch Negative



Pin Out Chart

- Pin 1 N/C
- Pin 2 Switch Positive
- Pin 3 Switch Negative
- Pin 4 Bias +5 VDC
- Pin 5 Bias +5 VDC
- Pin 6 Bias Gnd
- Pin 7 Bias Gnd
- Pin 8 N/C
- Pin 9 Latch/No Latch
- Pin 10 N/C
- Pin 11 Pulse Off
- Pin 12 Pulse On

Model No.	Case Style	Pin Count	Mounting
3802/3803 -	18	8	Seam Weld Flangeless PCB Mount
3802/3803 -	19	8	Seam Weld PCB Mount with Flange
3802/3803 -	20	12	Seam Weld Chassis Mount with Flange

GRADE LEVELS:

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

- I Industrial -55°C to +85°C
- M Military -55°C to +85°C

- E Military -55°C to +125°C



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