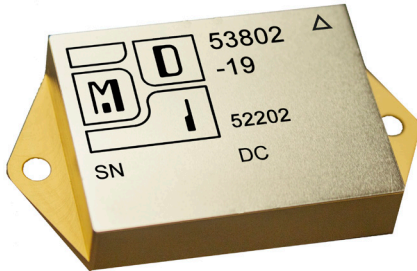


HYBRID SOLID STATE RELAY



MODELS 53802/53803

Model 53802 is a SPST form B (normally closed when de-energized) SSR.
Model 53803 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.

Both the LED's and photovoltaic stacks are challenged by radiation environments. A second disadvantage of opto coupled drive is slow turn on and turn off response.

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.

Features:

- High Voltage/Low Resistance
- Single Pole, Single Throw Available in Form A or Form B
- Wide Band Gap Semiconductors for low Resistance
- No SEE LET>82 MeV*cm²/mg
- 100K + Rad Hard TID 100 kRads (S and SE Grades)
- TID 45 Krads (L and LE grades)
- 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 (L or S grades)

Operating -55°C to +125°C (LE or SE grades)

Operating 0° to -55°C (EU Grade)

Storage -65°C to +150°C

Weight 32 grams typical

For continuous operation, connect 5 VDC bias from pin 1 (Case Style 18, 19) pins 4/5 (Case Style) to bias ground pin 2 (Case Style 18, 19) pins 6/7 (Case Style 20) .

Ground pin 3 (Case Style 18, 19) pin 9 (Case Style 20) and apply +5 VDC to pin 4 (Case Style 18, 19) pin 11 (Case Style 20) to energize the SSR.

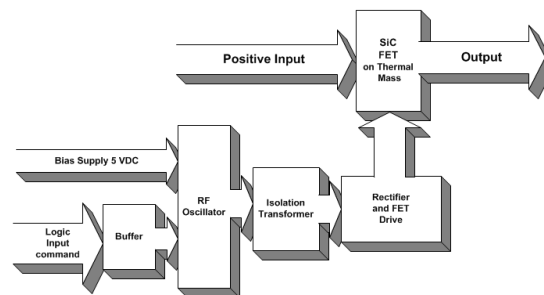
For latch operation, leave pin 3 (Case Style 18, 19) pin 9 (Case Style 20) open, connect +5 VDC bias from pin 1 (Case Style 18, 19) pins 4/5 (Case Style 20) to bias ground pin 2 (Case Style 18, 19) pins 6/7 (Case Style 20).

To energize apply +5 VDC pulse, 25 microseconds minimum to pin 5 (Case Style 18,19) pin 11 (Case Style 20).

To de-energize apply +5 VDC pulse, 25 microseconds minimum to pin 4 (Case Style 18, 19) pin 11 (Case Style 20).

Power Dissipation:

Total steady state power dissipation of the model 53802 and 53803 is limited to 10 watts provided the baseplate temperature is limited to the rated temperature.



600V/20A Solid State Relay
Model 53802 Form B
Model 53803 Form A

PARAMETER	CONDITION	MIN	TYP	MAX
Contact Rating V	Max	—	—	600V
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



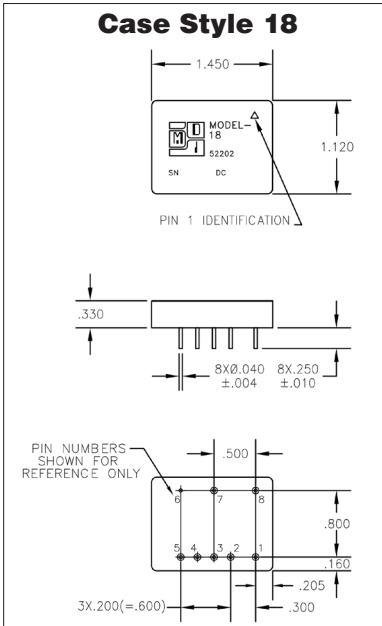
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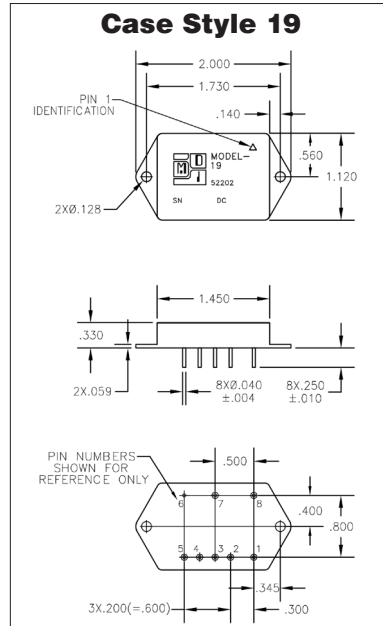
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53802/53803

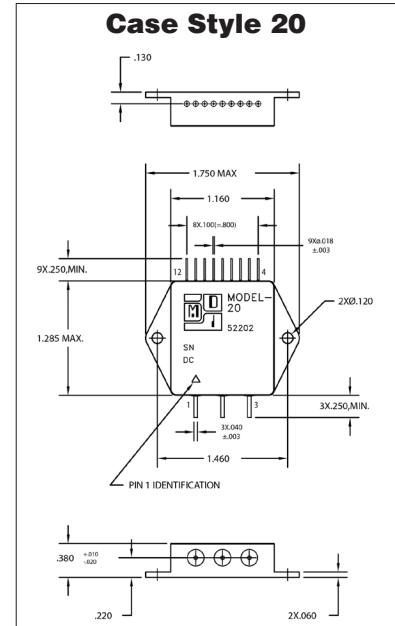
HYBRID SOLID STATE RELAY



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
53802/53803 -	18	8	Seam Weld Flangeless PCB Mount
53802/53803 -	19	8	Seam Weld PCB Mount with Flange
53802/53803 -	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.

EU	Engineering Units	S	100K TM , +85°C space
L	45K, +85°C aerospace	SE	100K TM , +100K TM , +125°C space
LE	45K +85°C aerospace		



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