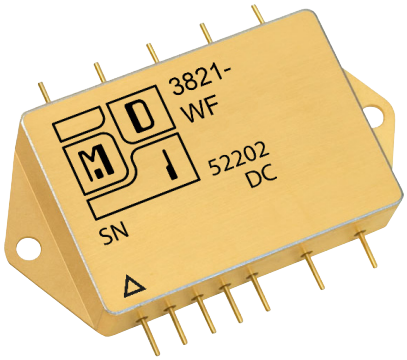
HYBRID SOLID STATE RELAY

Bi-Directional Solid State Realy

MODELS 3821/3822



Model 3821 is a 15 A SPST form A (normally closed when de-energized) Bi-directional SSR.
Model 3822 is a 25 A SPST form A (normally closed when de-energized) Bi-directional SSR.

Both types use Wide Bandgap power semiconductors for high performance and are magnetically coupled.

Wide band gap (WBG) semiconductors, such as GaN (Gallium Nitride) 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 wide temperature range 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.

Features:

- High Voltage/Low Resistance
- Single Pole, Single Throw Form normally open
- Bi-directional current flow when energized
- Wide Band Gap Semiconductors for low Resistance
- 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 and all pins to case isolation 1kV

Power Dissipation 20 watts (3821) or 30 watts (3822) 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 -55°C to +55°C (Industrial Grade)

Storage -65°C to +150°C

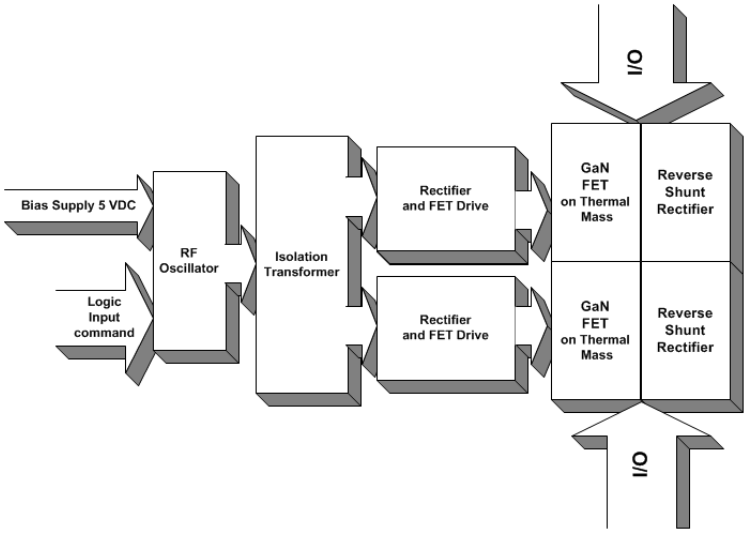
Weight grams typical

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

Ground pin 3 to energize the SSR.

Power Dissipation:

Total steady state power dissipation of the model 3821 is limited to 20 watts provided the baseplate temperature is limited to the rated temperature. Total steady state power dissipation of the model 3822 is limited to 30 watts provided the baseplate temperature is limited to the rated temperature.



500V Solid State Relay
Model 3821 Form A
Model 3822 Form A

PARAMETER	CONDITION	MIN	TYP	MAX	MODEL
Contact Ratng V	Max	—	—	500V	
Contact Rating I	Max	—	—	15A	3821
Contact Rating I	Max	—	—	25A	3822
Contact Resistance, 25°C	Energized	—	0.075 Ω	0.1 Ω	3821
Contact Resistance, 25°C	Energized	—	0.04 Ω	—	3822
Contact Resistance, 125°C	Energized	—	0.15 Ω	0.2 Ω	3821
Contact Resistance, 125°C	Energized	—	0.08 Ω	0.1 Ω	3822
Leakage Current, 500V, 25°C	Off	—	—	60µA	
Leakage Current, 500V, 125°C	Off	—	—	100µA	
Bias Voltage	—	4.7	5.0	5.3V	
Bias Current	—	—	30	50mA	
Command Current	—	1.0	2.0	3.0mA	
Delay Time, energized	—	—	5	15µS	
Delay Time, de-energized	—	—	10	20µS	
Energize Time, dynamic	—	—	10	20µS	
De-edergize time, dynamic	—	—	10	20µS	

For Heat Removal and Mounting Recommendations See MDI application notes on mounting considerations for DC-DC Converters. Model 3821 is packaged in an WF package and 3822 is packaged in an XF package.

Modular Devices, Inc.
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3821/3822

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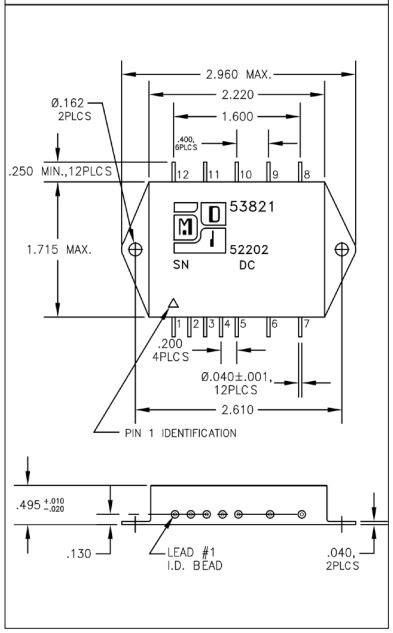
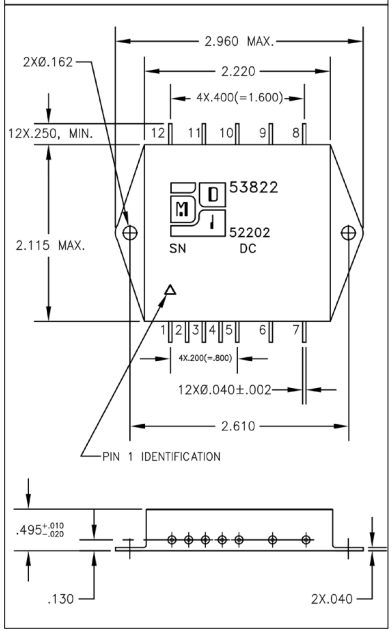
Case Style WF



Case Style XF



Pin Out Chart	
Pin 1	Bias +5 VDC
Pin 2	Bias Return
Pin 3	Ground to Energize
Pin 4	N/C
Pin 5	N/C
Pin 6	I/O #1
Pin 7	I/O #1
Pin 8	I/O #2
Pin 9	I/O #2
Pin 10	N/C
Pin 11	N/C
Pin 12	Case Ground

Model No.	Case Style	Pin Count	Mounting
3821 WF	8	12	Seam Weld Chassis Mount with Flange
3822 XF	8	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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