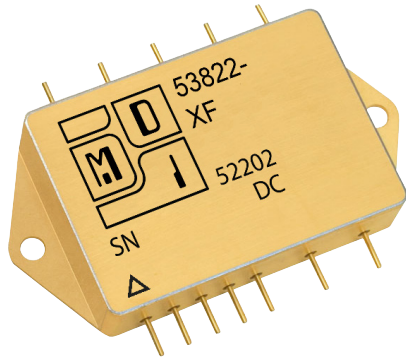


HYBRID SOLID STATE RELAY

Bi-Directional Proton Rad Hard 100K +™ Technology

MODELS 53821/53822



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
- No SEE LET>82 MeV*cm²/mg
- 100K+ rad Hard TID 100kRads (S and SE Grades)
- TID 45Krad (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 and all pins to case isolation 1kV
 Power Dissipation 20 watts (53821) or 30 watts (53822) at maximum rated case temperature
 Case temperature range:
 Operating -55°C to +85°C (L or S grade)
 Operating -55°C to +125°C (LE or SE grade)
 Operating 0°C to +55°C (EU Grade)
 Storage -65°C to +150°C
 Weight WF: 50 grams typical 53821
 Weight XF: 60 grams typical 53822
 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 53821 is limited to 20 watts provided the baseplate temperature is limited to the rated temperature. Total steady state power dissipation of the model 53822 is limited to 30 watts provided the baseplate temperature is limited to the rated temperature.

Model 53821 is a 15A SPST Form A (normally closed when de-energized) Bi-directional SSR

Model 53822 is a 25A SPST Form A (normally closed when de-energized) Bi-directional SSR

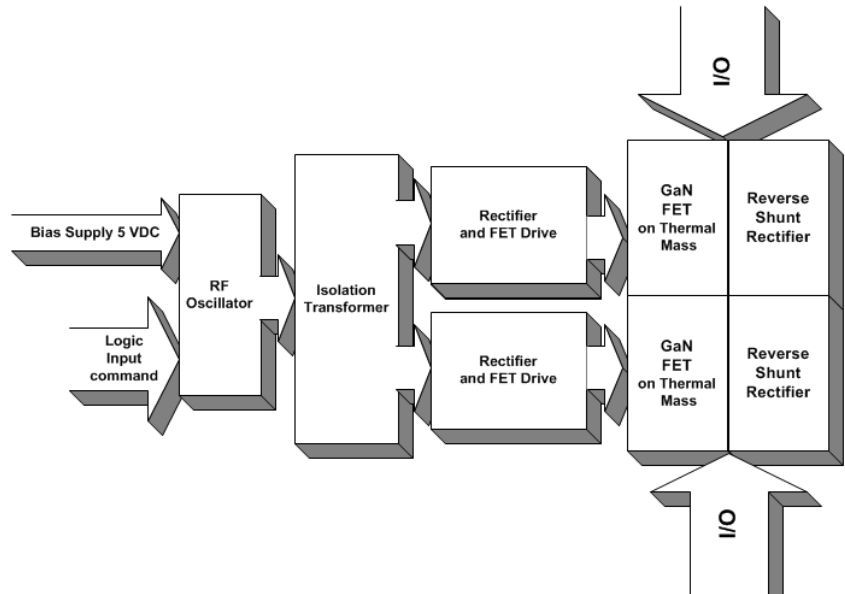
Both types use Wide Bandgap power semiconductors for high performance, are magnetically coupled

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.



15 A / 25 A Bi-directional SSR - Solid State Relay					
Model 53821 Form A					
Model 53822 Form A					
PARAMETER	CONDITION	MIN	TYP	MAX	MODEL
Contact Rating V	Max	—	—	300V	
Contact Rating I	Max	—	—	15A	53821
Contact Rating I	Max	—	—	25A	53822
Contact Resistance, 25°C	Energized	—	0.08 Ω	0.1 Ω	53821
Contact Resistance, 25°C	Energized	—	0.04 Ω	—	53822
Contact Resistance, 125°C	Energized	—	0.15 Ω	0.2 Ω	53821
Contact Resistance, 125°C	Energized	—	0.08 Ω	0.1 Ω	53822
Leakage Current, 300V, 25°C	Off	—	—	60µA	
Leakage Current, 300V, 125°C	Off	—	—	100µA	
Bias Voltage	—	4.7	5.0	5.3V	
Bias Current	—	—	30	50mA	
Command Current	—	1	2	3.0mA	
Delay Time, energized	—	—	5	15µS	
Delay Time, de-energized	—	—	10	20µS	
Energize Time, dynamic	—	—	10	20µS	
De-energize time, dynamic	—	—	10	20µS	



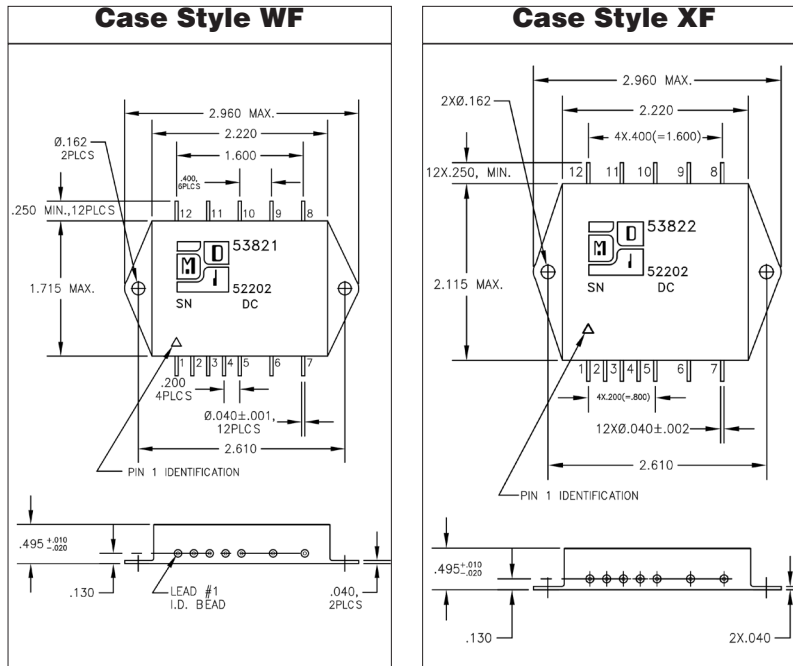
Modular Devices, Inc.
 Power Conversion for Space and Military/Aerospace

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For Heat Removal and Mounting Recommendations See MDI application notes on mounting considerations for DC-DC Converters. Model 53821 is packaged in an WF package and 53822 is packaged in a XF package.

53821/53822

HYBRID BI-DIRECTIONAL SOLID STATE RELAY



Pin Out Chart

Pin 1	Bias +5 VDC
Pin 2	Bias Return
Pin 3	Coil, Ground To Operate
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 Gnd

Model No.	Case Style	Pin Count	Mounting
53821 WF	8	12	Seam Weld Chassis Mount with Flange
53822 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.

EU	0°C to +55°C Engineering Units	S	100 K+, -55°C to +125°C Space
L	45 K, -55°C to +85°C Military/Aerospace	SE	100 K+, -55°C to +125°C Space
LE	45 K, -55°C to +125°C Military/Aerospace		



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