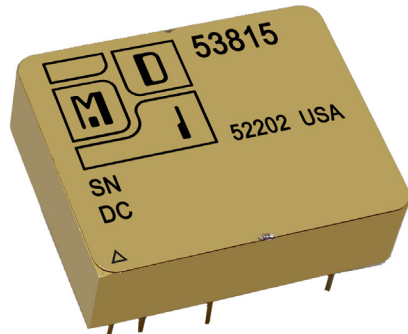


HYBRID SOLID STATE RELAY

Proton Rad Hard 100K+ Technology

MODELS 53814/53815



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>82Mev*cm²/mg
- 100K+ Rad Hard TID 100kRads (S and SE Grades)
- TID 45 krad (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 "Mini" Hermetic Package

Specifications:

Bias Input Voltage 4.7 to 5.3VDC

Bias current 25mA typical, 45mA maximum

Operate pin current 5mA maximum

Input/output and all pins to case isolation 1kV

Power Dissipation 2 watts at maximum rated case temperature

Case temperature range:

Operating -55°C to +85°C (L, S grade)

Operating -55°C to +125°C (LE, SE grade)

Storage -65°C to +150°C

Weight: 18 grams typical

To energize the SSR, connect 5VDC 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 53815 and 53814 is limited to 2 watts provided the baseplate temperature is limited to the rated temperature.

Model 53815 is a SPST form B (normally closed when de-energized) SSR.
Model 53814 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.

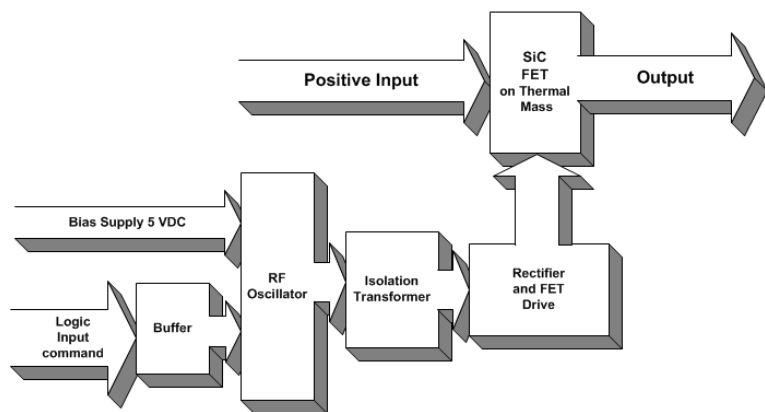
Wide band gap (WBG) semiconductors, such as GaN (Gallium Nitride) and SiC (Silicon Carbide) provide an order of magnitude improvement in SSR voltage drop compared to SSRs using Silicon based power devices.

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 a radiation environment. A second disadvantage of opto coupled drive is slow turn on and 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.



**300V/3A Solid State Relay
Model 53815 Form B
Model 53814 Form A**

PARAMETER	CONDITION	MIN	TYP	MAX
Contact Rating V	Max	—	—	300V
Contact Rating I	Max	—	—	3A
Contact Resistance, 25°C	Energized	—	0.2 Ω	0.25 Ω
Contact Resistance, 125°C	Energized	—	0.35 Ω	0.45 Ω
Leakage Current, 600V, 25°C	Off	—	—	60μA
Leakage Current, 600V, 125°C	Off	—	—	100μA
Bias Voltage	—	4.7V	5.0V	5.3V
Bias Current	—	—	30mA	50mA
Command Current	—	0.1mA	0.8mA	2.0mA
Delay Time, energized	—	—	12μS	30μS
Delay Time, de-energized	—	—	20μS	40μS
Energize Time, dynamic	—	—	12μS	30μS
De-energize time, dynamic	—	—	5μS	20μS

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



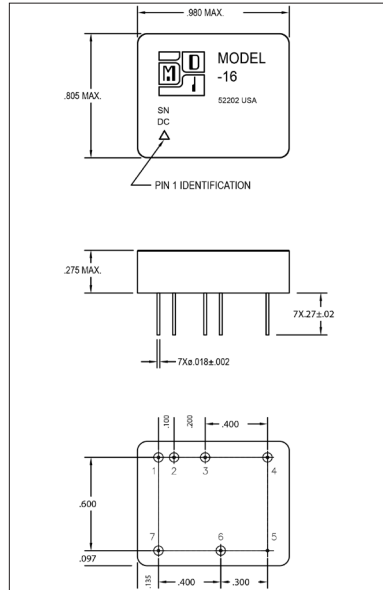
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53814/53815

HYBRID SOLID STATE RELAY

Case Style 16



Pin Out Chart

Pin 1	Bias +5 VDC
Pin 2	Bias Gnd
Pin 3	Coil
Pin 4	N/C
Pin 5	Case
Pin 6	Switch Positive
Pin 7	Switch Negative

Model No.	Case Style	Pin Count	Mounting
53814/53815 -	16	7	Seam Weld Flangeless PCB Mount

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+™, +85°C space
L	45K, +85°C aerospace	SE	100K+™, +125°C space
LE	45K, +125°C aerospace		



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