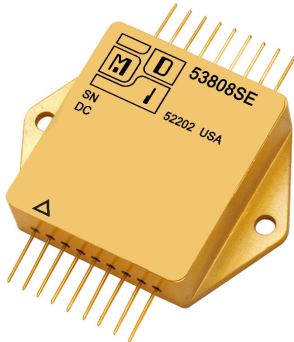


# HYBRID SOLID STATE RELAY

**Proton Rad Hard 100K+ Technology**

## MODEL 53807/53808



### Features

- High Voltage/Low Resistance Figure of Merit
- Single Pole, Single Throw Form A
- Wide Band Gap Semiconductors for low Resistance
- No SEE LET>82 MeV\*cm<sup>2</sup>/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  
10 Megohms minimum at 500V

Power Dissipation 4 watts at maximum rated case temperature

Case temperature range:

Operating -55°C to +85°C (L and S Grades)

Operating -55°C to +125°C (LE and SE Grade)

Storage -65°C to +150°C

Weight 30 grams typical

For continuous operation, connect 5 VDC to bias pins and bias ground pins to control ground. Apply +5 VDC to command input to energize the SSR. With +5 VDC connected to +5 VDC, connect pin 15 to bias return to disable.

Power Dissipation:

Total steady state power dissipation of the model 53807 and 53808 is limited to 4 watts provided the baseplate temperature is limited to the rated temperature.

Model 53807 is a SPST 300V/5A form A (normally open when de-energized) SSR.  
Model 53808 is a SPST 50V/10A form A (normally open when de-energized) SSR.

Both uses a Wide Bandgap power semiconductor for high performance, are magnetically coupled and can be user configured for continuous or pulse latching.

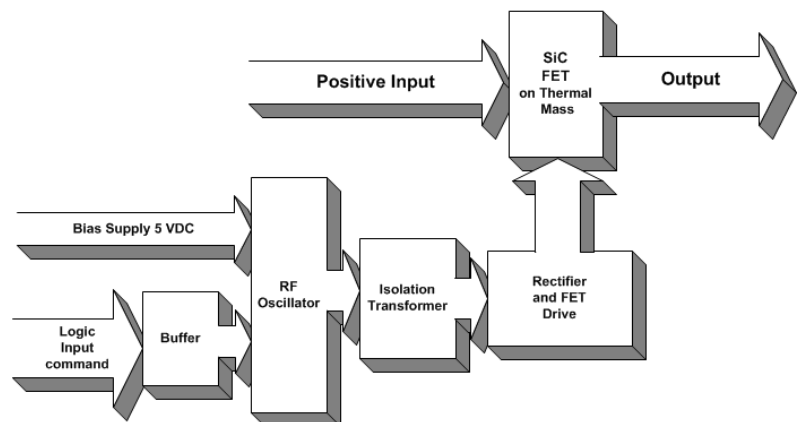
Wide band gap (WBG) semiconductors such as GaN (Gallium Nitride) and SiC (Silicon Carbide) provide an order of magnitude improvement in SSR voltage drop compared to SSRs using Silicon based power devices.

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 disadvantage of opto coupled drive is slow turn on and turn off response and variation of on and off times 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.



Model 53807 300V/5A Form A SSR				
PARAMETER	CONDITION	MIN	TYP	MA
Contact Rating V	Max	—	—	300V
Contact Rating I	Max	—	—	5A
Contact Resistance, 25°C	Energized	—	0.15Ω	0.25Ω
Contact Resistance, 125°C	Energized	—	0.3 Ω	0.5Ω
Leakage Current, 500V, 25°C	Off	—	—	60μA
Leakage Current, 500V, 125°C	Off	—	—	100μA
Bias Voltage	—	4.7V	5.0V	5.3V
Bias Current	—	—	30mA	50mA
Command on	—	3.0V	5.0V	6.0V
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

Model 53808 50V/10A Form A SSR				
PARAMETER	CONDITION	MIN	TYP	MA
Contact Rating V	Max	—	—	50V
Contact Rating I	Max	—	—	10A
Contact Resistance, 25°C	Energized	—	0.075Ω	0.1Ω
Contact Resistance, 125°C	Energized	—	0.15 Ω	0.2Ω
Leakage Current, 500V, 25°C	Off	—	—	60μA
Leakage Current, 500V, 125°C	Off	—	—	100μA
Bias Voltage	—	4.7V	5.0V	5.3V
Bias Current	—	—	30mA	50mA
Command on	—	3.0V	5.0V	6.0V
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

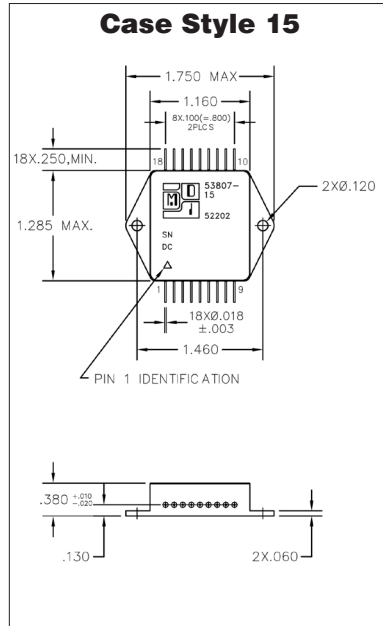


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# 53807/53808

## HYBRID SOLID STATE RELAY



53807 Pin Out Chart	
Pin 1	Cext Rise Time Capacitor
Pin 2	N/C
Pin 3	+Switched Input
Pin 4	+Switched Input
Pin 5	+Switched Input
Pin 6	N/C
Pin 7	+Switched Input Return
Pin 8	+Switched Input Return
Pin 9	+Switched Input Return
Pin 10	Bias +5VDC
Pin 11	Bias +5VDC
Pin 12	Bias Return
Pin 13	Bias Return
Pin 14	N/C
Pin 15	Ground To Disable
Pin 16	Command Input +
Pin 17	N/C
Pin 18	N/C

53808 Pin Out Chart	
Pin 1	Cext Rise Time Capacitor
Pin 2	N/C
Pin 3	+Switched Input
Pin 4	+Switched Input
Pin 5	+Switched Input
Pin 6	N/C
Pin 7	+Switched Input Return
Pin 8	+Switched Input Return
Pin 9	+Switched Input Return
Pin 10	Bias +5VDC
Pin 11	Bias +5VDC
Pin 12	Bias Gnd
Pin 13	Bias Gnd
Pin 14	N/C
Pin 15	Ground To Disable
Pin 16	Command Input +
Pin 17	N/C
Pin 18	N/C

Model No.	Case Style	Pin Count	Mounting
53807/53808	15	18	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.

<b>EU</b>	Engineering Units	<b>S</b>	100K+™, +125°C military/aerospace
<b>L</b>	45K, +85°C military/aerospace	<b>SE</b>	100K+™, +125°C military/aerospace
<b>LE</b>	45K, +125°C military/aerospace		

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



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