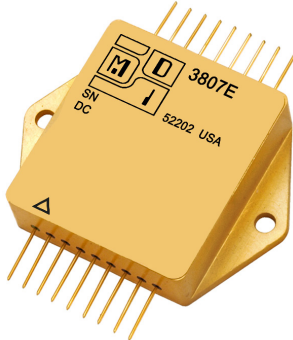


HYBRID SOLID STATE RELAY

MODEL 3807/3808



Features

- High Voltage/Low Resistance Figure of Merit
- Single Pole, Single Throw Form A
- Wide Band Gap Semiconductors for low Resistance
- 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 0°C to +55°C (EU Grade)

Operating -55°C to +85°C (M Grade)

Operating -55°C to +125°C (E 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 3807 and 3808 is limited to 4 watts provided the baseplate temperature is limited to the rated temperature.



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

Model 3807 is a SPST 300V/5A form A (normally open when de-energized) SSR.
Model 3808 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.

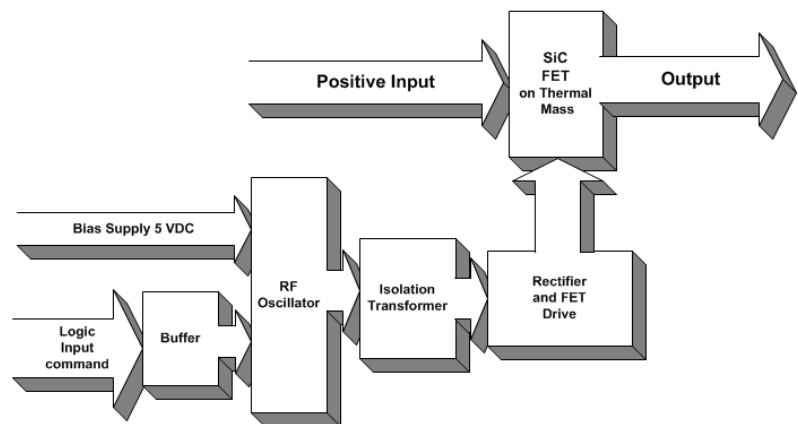
Wide band gap (WBG) semiconductors such as GaN (Gallium Nitride) and SiC (Silicon Carbide) provide an order of magnitude improvement in SSR voltage drop compared to SSRs using Silicon based power devices.

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.

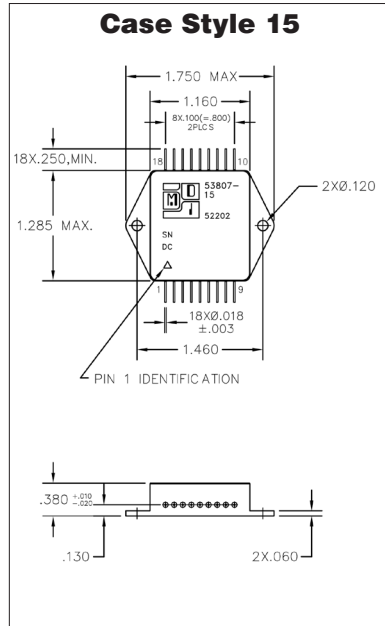


| Model 3807 300V/5A Form A SSR | | | | |
|-------------------------------|-----------|-------|-------|-------|
| PARAMETER | CONDITION | MIN | TYP | MA |
| Contact Rating V | Max | — | — | 500V |
| Contact Rating I | Max | — | — | 5A |
| Contact Resistance, 25°C | Energized | — | 0.15Ω | 0.25Ω |
| Contact 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 3808 50V/10A Form A SSR | | | | |
|-------------------------------|-----------|-------|--------|-------|
| PARAMETER | CONDITION | MIN | TYP | MA |
| Contact Rating V | Max | — | — | 100V |
| 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 |

3807/3808

HYBRID SOLID STATE RELAY



| 3807 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 |

| 3808 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 |
|-----------|------------|-----------|-------------------------------------|
| 3807/3808 | 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.

EU Engineering Units
M +85°C military/aerospace

E +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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