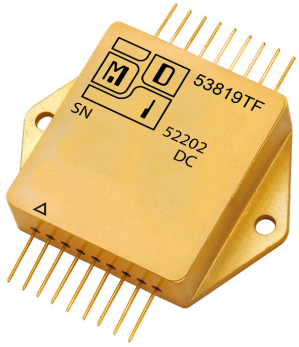
HYBRID SOLID STATE RELAY

Bi-Directional Proton Rad Hard 100K + ™ Technology



MODEL 53819

Model 53819 is a 5 A SPST form A (closed when energized) Bi-directional SSR.

Model 53819 uses Wide Bandgap power semiconductors for high performance and is magnetically coupled

Wide band gap (WBG) semiconductors, such as GaN (Gallium Nitride) provide an order of magnitude reduction 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.

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.

Series 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 45 Krads (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 8 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)

Operating -0°C to +55°C (EU Grade)

Storage -65°C to +150°C

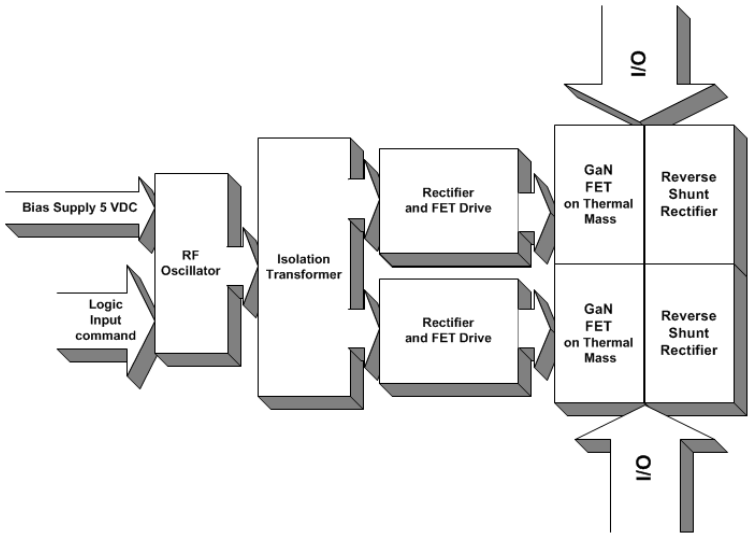
Weight 32 grams typical

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

Ground pin 3 and to energize the SSR.

Power Dissipation:

Total steady state power dissipation of the Model 53819 is limited to 8 watts provided the baseplate temperature is limited to the rated temperature.



300V Solid State Relay
Model 53819 5A Bi-directional Form A

PARAMETER	CONDITION	MIN	TYP	MAX
Contact Ratng V	Max	—	—	300V
Contact Rating I	Max	—	—	5A
Contact Resistance, 25°C	Energized	—	0.3 Ω	0.4 Ω
Contact Resistance, 125°C	Energized	—	0.5Ω	0.8 Ω
Leakage Current, 300V, 25°C	Off	—	—	30µA
Leakage Current, 300V, 125°C	Off	—	—	50µA
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

For Heat Removal and Mounting Recommendations See MDI application notes on mounting considerations for DC-DC Converters. Model 53819 is packaged in a case style 15 package.

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

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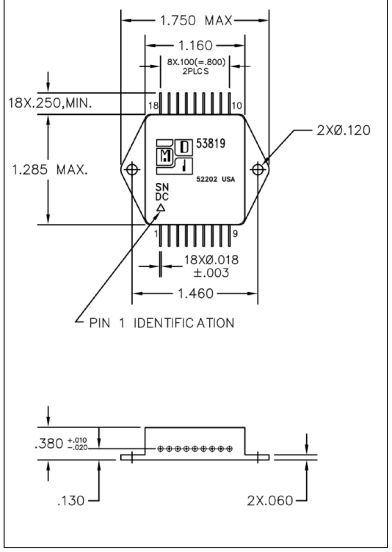
53819

HYBRID BI-DIRECTIONAL SOLID STATE RELAY

Case Style 15



Pin Out Chart	
Pin 1	N/C
Pin 2	N/C
Pin 3	I/O #1
Pin 4	I/O #1
Pin 5	I/O #1
Pin 6	N/C
Pin 7	I/O #2
Pin 8	I/O #2
Pin 9	I/O #2
Pin 10	Bias +5 VDC
Pin 11	Bias +5 VDC
Pin 12	Bias Return
Pin 13	Bias Return
Pin 14	N/C
Pin 15	Coil, Ground to Energize
Pin 16	N/C
Pin 17	N/C
Pin 18	Case Ground

Model No.	Case Style	Pin Count	Mounting
53819 TF	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
L 45 K, -55°C to +85°C Military/Aerospace
S 100 K+™ , -55°C to +85°C Space
LE 45 K, -55°C to +125°C Military/Aerospace
SE 100 K+™ , -55°C to +125°C Space

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