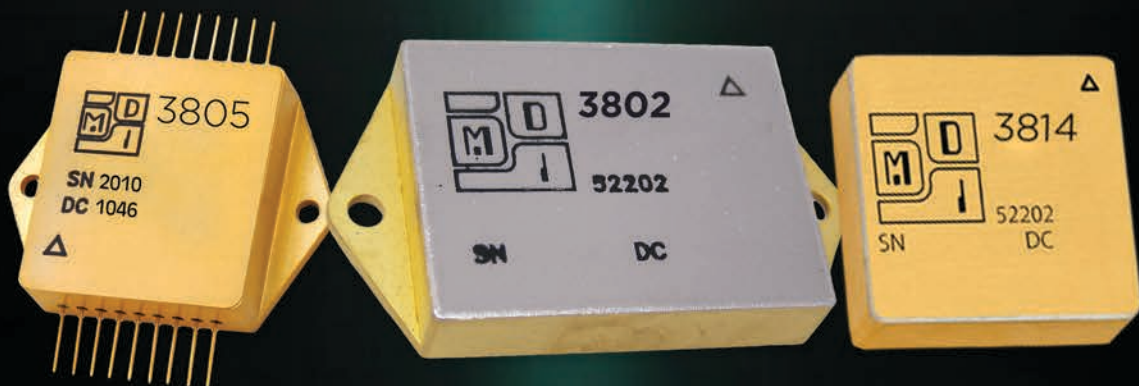




# Modular Devices, Inc.

## MDI Solid State Relays (SSRs)



**INDUSTRIAL • MIL/AERO • NAVAL • SPACE**

# MDI Solid State Relays (SSRs)

Industrial • Mil/Aero • Naval • Space



## MDI SOLUTION

### Wide Band Gap Semiconductors

Wide Band Gap Semiconductors, such as GaN (Gallium Nitride) and SiC (Silicon Carbide) offer an order of magnitude improvement in DC SSR voltage drop over legacy Silicon-based power devices.

- High operating temperature, higher voltage capabilities, and lower ON resistance.
- Wide band gap semiconductors withstand higher electric fields with lower channel resistances and reduced drive requirements.

### RF Coupled SSR Drive

RF Coupled SSR Drive replaces the PV function with a transformer-isolated RF drive and provides a faster, more temperature-stable and temperature-resistant operation.

The magnetically isolated RF drive can be factory configured to operate from a wide range of control voltages from approximately 3.3 volts to 100 VDC and higher.

### Mag Latch Drive

The magnetically isolated SSR can have a mag latch function, meaning it can be energized either by a continuous signal or by a short duration pulse. However, unlike an electromechanical relay, after removal of bias power the DC SSR reverts back to its initial state.

Certain models of the MDI DC SSR can be jumper configured for a latching relay function, or used without the latch.

The MDI SSR's are packaged in a hermetically sealed case able to withstand severe environments. The units are available with and without mounting flanges.

The trend in onboard electronic power systems is moving to higher voltage and power requirements across most systems. These include 270V and 540V Mil/Aero platforms, as well as Naval Surface and Subsurface and Space platforms. Recent developments in electric propulsion, directed energy, and photonic-based communications systems across these platforms require high voltage and high current switching with mission reliability.

The majority of commercially available DC SSRs use Silicon FETs and photovoltaic opto-coupler drive circuitry, but these previously available devices have had two major performance drawbacks:

- Higher contact voltage drop in the FET SSR's compared to electro-mechanical relays. The higher voltage drop causes higher power dissipation and requires more efforts to cool the SSR to maintain usable junction temperatures.
- The disadvantages in the use of Photo-Voltaic (PV) opto-couplers to provide drive and isolation for the SSR's are slow response time, limited drive power, and environmental limitations of this type of component.

## Specifications

Operating temperature Range -55°C to 85°C or 125°C

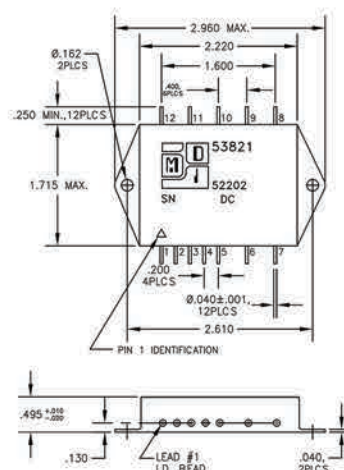
Storage temperature Range -65°C to 150°C

Total Ionizing Dose 100K+<sup>TM\*</sup>

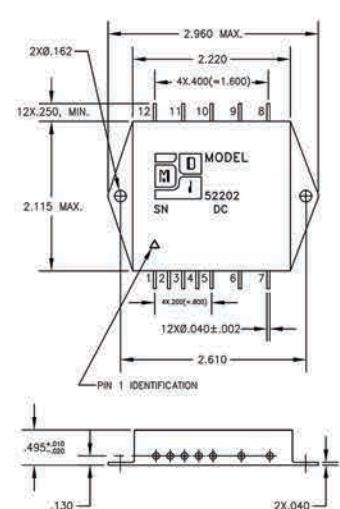
SEE 82 MEV\*CM2/mG\*

\*Rad Hard Units Only

### CASE STYLE 8WF



### CASE STYLE 8XF

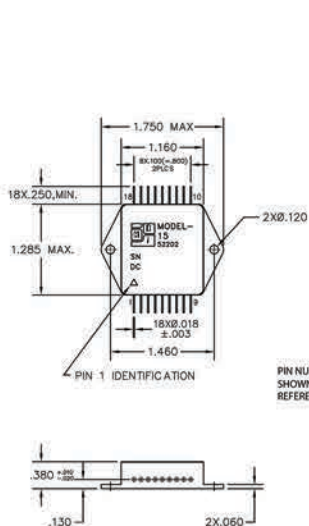




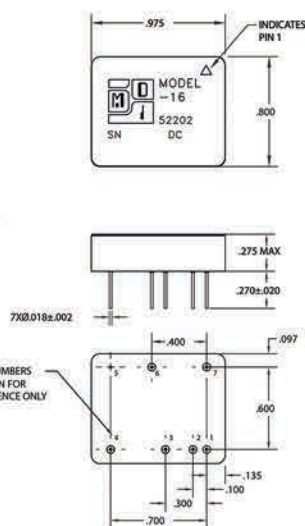
M/N	Config.	Voltage Rating	Current Rating	Latch	Rad Hard	MIL/AERO	Package
3802	N.C.	1000	20	YES		YES	18,19,20
3803	N.O.	1000	20	YES		YES	18,19,20
3804	N.C.	1000	10	YES		YES	18,19,20
3805	N.O.	1000	10	YES		YES	18,19,20
3807	N.O.	500	5			YES	15
3808	N.O.	100	10			YES	15
3814	N.O.	500	3			YES	16
3815	N.C.	500	3			YES	16
3817	SPDT	500	5			YES	18,19
3818	SPDT	1000	10			YES	18,19
3819	N.O. Bi	500	5			YES	15
3821	N.O. Bi	300	15			YES	8
3822	N.O. Bi	300	25			YES	8
53802	N.C.	600	20	YES	YES		18,19,20
53803	N.O.	600	20	YES	YES		18,19,20
53804	N.C.	600	10	YES	YES		18,19,20
53805	N.O.	600	10	YES	YES		18,19,20
53807	N.O.	300	5		YES		15
53808	N.O.	50	10		YES		15
53814	N.O.	300	3		YES		16
53815	N.C.	300	3		YES		16
53817	SPDT	300	5		YES		18,19,20
53818	SPDT	600	10		YES		18,19
53819	N.O. Bi	300	5		YES		15
53821	N.O. Bi	300	15		YES		8
53822	N.O. Bi	300	25		YES		8

The SSR's are available in EU (I), M & S (+85°C), E (+85°C), LE (+125°C and 45kRads) and SE (+125°C and 100kRads) operating and screening grades.

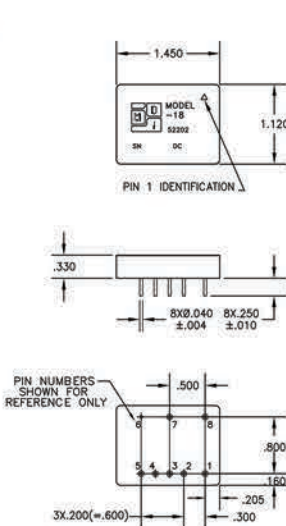
## CASE STYLE 15



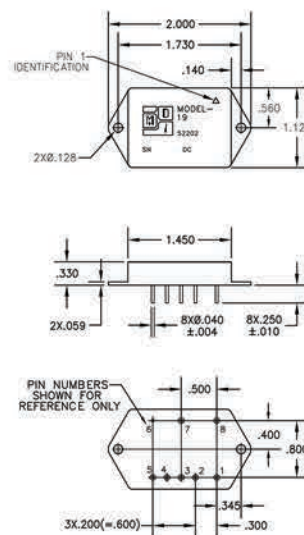
## CASE STYLE 16



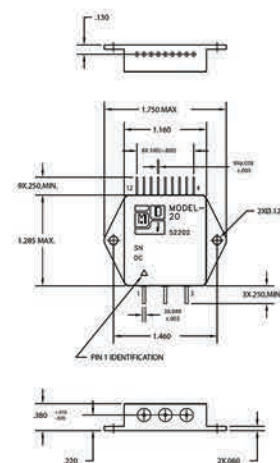
## CASE STYLE 18



## CASE STYLE 19



## CASE STYLE 20





Modular Devices, Inc. (MDI) is an ISO 9001:2008 registered, privately owned U.S. Company.

MDI specializes in the rapid design, development, and manufacture of robust, state-of-the-art DC-DC converters, power supplies, power controller and power distribution products for the military, space and aerospace communities, worldwide.

The year 2019 marks our forty-sixth year as a pre-eminent supplier for some of the industry's most discriminating customers in the most demanding applications. They are all designed, engineered, developed, manufactured, and tested here in Shirley, New York, USA.

MDI's unusually comprehensive range of in-house engineering and production capabilities allow the company to be exceptionally responsive to its customers diverse requirements. These same facilities and experience mean that MDI can efficiently modify and quickly produce new devices from the company's huge catalog of heritage designs.

The professional staff at MDI is organized for optimal performance to military and space-level quality assurance requirements. Modular Devices, Inc. is uniquely capable of coordinating its advanced power conversion technology with professional management to meet or exceed your most challenging specifications.

Modular Devices Inc. is proud of our long record of accomplishments, customer support, and satisfaction. We remain highly responsive to all of our customers while we continue to:

- Provide cutting edge technology with low-risk options
- Maintain rigorous space-quality standards and quality control
- Create lasting relationships built on commitment, communication, and trust.

Henry F. Striegl, Jr.  
Vice President and General Manager



## Modular Devices, Inc.

Power Conversion for Military/Commercial Space/Aerospace

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We proudly manufacture  
our products in Shirley, NY.