



**DIONICS, INC.**

65 Rushmore Street  
Westbury, NY 11590

Phone: (516) 997-7474

Fax: (516) 997-7479

Website: [www.dionics-usa.com](http://www.dionics-usa.com)

## DIH-143 Power MOSFET SPST Photovoltaic DC N/O Relay

### Features:

- Low Level Logic Compatibility
- Thermal Protection With Hysteresis
- Optical Isolation to 500VDC
- Low On Resistance, Low Offset Voltage
- Meet 28V DC System Surge and Spike Requirements of Mil STD-704.
- Space Efficient 6 Mini Pin DIP Hermetic Package.
- Current Limiting
- Designed To Meet MIL-R-28750
- Y-Level MIL Screening Available

### Applications:

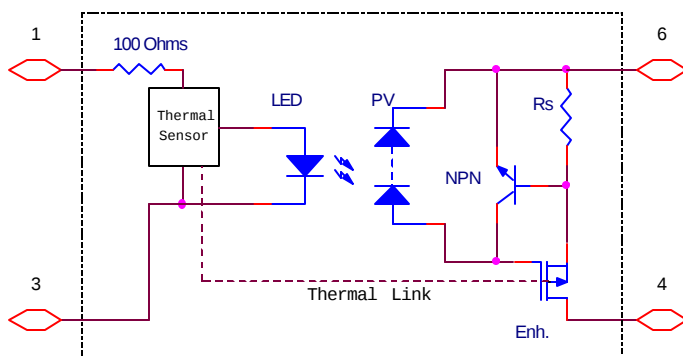
- 28V DC Aircraft Power Control & Distribution
- Motor Control & Power Control
- Aircraft Flight Control Systems
- A.T.E. (Automatic Test Equipment)
- Load Control From Processor I/O Ports
- High-side DC Power Switching
- Power Supply Circuits
- Medical Electronics

### Description:

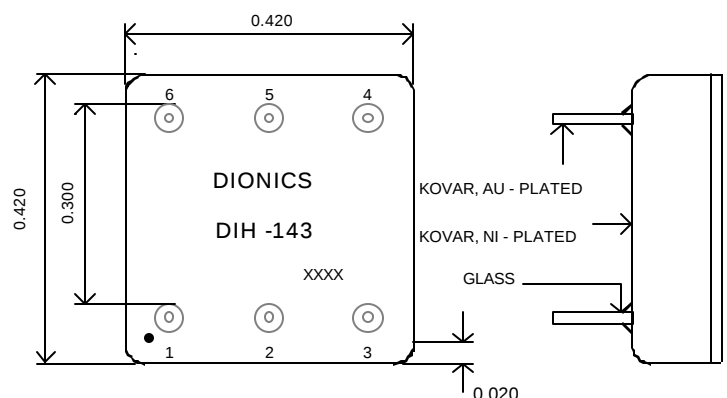
DIH-143 is State of the Art Solid State Relay designed for 28V DC aircraft power applications where speed, efficiency, current overload protection and immunity to transient voltages are critical.

DIH-143 is Normally Opened (N/O) relay capable of continuous current of 1.5A. DIH-143 contains current limiting networks and thermally sensitive integrated circuits that disable the outputs, if the output MOSFET approaches an unsafe operating temperature. Because the thermally sensitive integrated circuits have built-in hysteresis, the output MOSFET is automatically restarted when a safe temperature is reached. This auto restart feature eliminates the need for system restart signals. If the overload condition continues to exist, the cycle is repeated; If the overload condition is removed, the relay returns to normal operation.

### \* DIH-143 Schematic

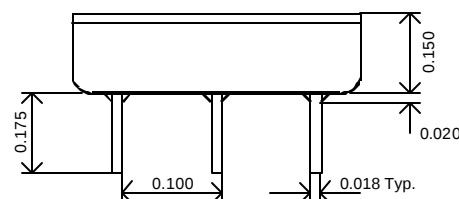


### \* Package Lay out:



### ❖ Pin Designation

| Pin number | Function        |
|------------|-----------------|
| 1          | Input +         |
| 2          | Not Connected   |
| 3          | Input -         |
| 4          | Output Drain +  |
| 5          | Not Connected   |
| 6          | Output Source - |



## DIH-143: Power MOSFET SPST Photovoltaic DC N/O Relay

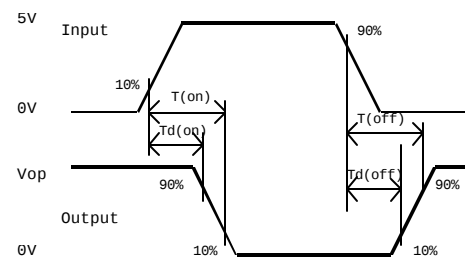
**Electrical Characteristics** (@ 25 °C unless otherwise specified):

| ❖ Input Characteristics |                                 |         |      |
|-------------------------|---------------------------------|---------|------|
| Parameter               | Conditions                      | Value   | Unit |
| Control Voltage         | —                               | 4 to 6  | V    |
| Control Current         | —                               | 18 Max. | mA   |
|                         | -40 °C ≤ T <sub>a</sub> ≤ 85 °C | 30 Max. | mA   |
| Reverse Voltage         | —                               | 10 Max. | V    |

| ❖ Output Characteristics        |                                 |      |      |      |  |
|---------------------------------|---------------------------------|------|------|------|--|
| Parameter                       | Conditions                      | Min. | Max  | Unit |  |
| Peak Current                    | 1% Duty Cycle, 50 ms Pulse      | —    | 2.5  | A    |  |
| Constant Current                | T <sub>a</sub> = 25 °C          | —    | 1.5  | A    |  |
|                                 | T <sub>a</sub> = 85 °C          | —    | 0.6  | A    |  |
| On- Resistance                  | T <sub>a</sub> = 25 °C          | —    | 0.50 | W    |  |
|                                 | -40 °C ≤ T <sub>a</sub> ≤ 85 °C | —    | 0.85 | W    |  |
| Operating Voltage               | —                               | —    | 32.5 | V    |  |
| Breakdown Voltage               | Output = Open                   | 100  | —    | V    |  |
| Leakage Current                 | V <sub>out</sub> = 80V          | —    | 100  | mA   |  |
| Turn-On Time                    | —                               | 150  | 350  | ms   |  |
| Turn-Off Time                   | —                               | —    | 50   | ms   |  |
| Short Circuit Protection        | —                               | —    | 3.4  | A    |  |
| Thermal Resistance              | —                               | —    | 100  | °C/W |  |
| Thermal Tripping Temp. Junction | —                               | —    | 130  | °C   |  |
| Thermal Recovery Temp. Junction | —                               | —    | 100  | °C   |  |
| Thermal Hysteresis              | —                               | —    | 30   | °C   |  |

### ❖ Environmental Conditions:

|                                     |                                 |
|-------------------------------------|---------------------------------|
| <u>Operating Temp. :</u>            | -20 to 75 °C (Comm.)            |
| (Y-Level Mil.)                      | -55 to 125 °C                   |
| <u>Storage Temp. :</u>              | -20 to 85 °C (Comm.)            |
| (Y-Level Mil.)                      | -55 to 125 °C                   |
| <u>Shock:</u> (Y-Level Mil.)        | 50 G, MIL-STD-202<br>Method 202 |
| <u>Hermeticity:</u>                 | Gross Leak (Comm.)              |
| (Y-Level Mil.)                      | 10 <sup>-5</sup> atm cc/sec     |
|                                     | Fine Leak                       |
|                                     | 5x10 <sup>-8</sup> atm cc/sec   |
| <u>Vibration:</u> (Y-Level Mil.)    | 20G, 10 to 2000 Hz              |
| <u>Acceleration:</u> (Y-Level Mil.) | 100 G                           |
| <u>Weight:</u>                      | 1.5 Grams                       |



### ❖ General Characteristics:

|                                                 |                      |
|-------------------------------------------------|----------------------|
| Minimum Input/Output Isolation:                 | 500 VDC              |
| Minimum Input/Output Resistance:                | 10 <sup>8</sup> Ohms |
| Typical Input/Output capacitance:               | 10pF                 |
| Min. Transient Protection Capability (dv /dt ): | 100V/μs              |
| Maximum Power Dissipation @ 25 °C:              | 1W                   |