



**DIONICS, INC.**

65 Rushmore Street  
Westbury, NY 11590

Phone: (516) 997-7474

Fax: (516) 997-7479

Website: www.dionics-usa.com

## DIH-1380 Power MOSFET SPDT Photovoltaic AC-DC Relay

### Features:

- Fast Switching Speeds, 60  $\mu$ s Max.
- Low Level Logic Compatibility
- Immune to False Triggering
- No False Turn-On
- Small size, Hermetic 6-pin Mini DIP Package
- High Isolation Voltage
- Designed to Meet MIL-R28750
- Y-Level MIL. Screening Available

### Applications:

- Replacement of Mechanical Relays
- 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:

The DIH-1380 is a State-of-the-Art Photovoltaic Solid State Relay designed for special AC-DC switching power applications where package space efficiency and high reliability are critical.

Each package contains two independent relays, controlled by a single input. One relay is normally closed (N/C) and the other is normally open (N/O). The relays are built with their input-LEDs internally connected in series and optically coupled to their power-MOSFET outputs. The N/C and N/O outputs are able to operate either AC or DC.

Each relay, A or B, is capable of carrying 200mA AC or DC continuous current and 350mA DC peak current. Each LED optically couples to a Photovoltaic (PV) IC chip which responds by generating a voltage. This voltage is internally connected to the Gate and Source terminals of the MOSFET outputs, thus controlling their current. The DIH-1380 is also available screened to military specifications, as required.

### ❖ Truth Table

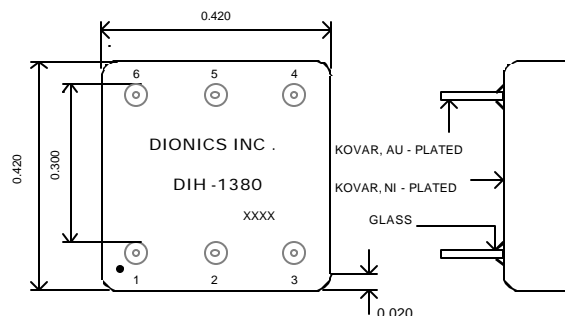
Relay	Input	Output
A Pins 2-3	Low	Closed
	High	Open
B Pins 4-5	Low	Open
	High	Closed

### ❖ Pin Designations

Function	Pin number	Relay	Status
Input +	1		
Input -	6		
Output	2	A	Normally
Output	3	(N/C)	Closed
Output	4	B	Normally
Output	5	(N/O)	Open

### \* Package Layout:

Weight 1.5 Grams



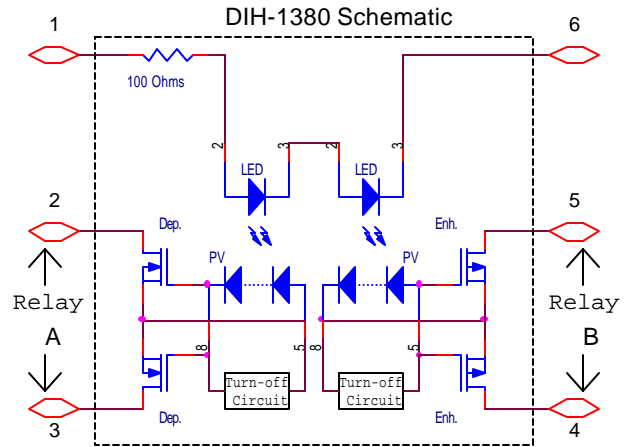
## DIH-1380: Power MOSFET SPDT Photovoltaic AC-DC Relay

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

- ❖ Relay A: Normally Closed (N/C)
- ❖ Relay B: Normally Open (N/O)

#### ❖ Input Control Characteristics

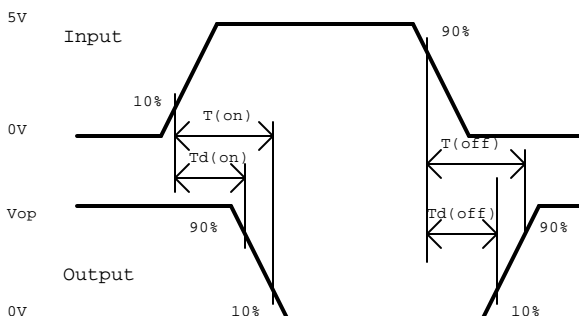
Symbol	Parameter	Min.	Typ.	Max.	Unit
$I_{in}$	Input Current	5.0	20.0	30.0	mA
$V_{in}$	Input Voltage Drop	2.6	—	3.0	V
$V_{rev.}$	Reverse Voltage	—	—	20.0	V
$V_{on}$	On State Voltage (A)	—	—	2.4	V
	On State Voltage (B)	3.5	—	—	V
$V_{off}$	OFF State Voltage (A)	3.5	—	—	V
	OFF State Voltage (B)	—	—	2.4	V



#### ❖ Output Characteristics

Symbol	Parameter	Relay	Typ.	Max.	Unit	Condition
$I_{load}$	Load Current	A	—	200 / 350	mA	Continuous / Peak
		B	—	200 / 350	mA	Continuous / Peak
$R_{on}$	On Resistance	A	8	20	W	$I_{in}=20$ (mA); $V_{op}=80$ (V)
		B	8	20	W	$I_{in}=20$ (mA); $V_{op}=80$ (V)
$V_{op}$	Operating Voltage	A or B	30	80	V	AC or DC
<b>BV</b>	Breakdown Voltage	A or B	—	100	V	DC
$T_{on}$	Turn-On Time	A	15	60	ms	$V_{in}=5.0$ V, P.W* = 100μs; $V_{op}=30$ V
		B	15	60	ms	$V_{in}=5.0$ V, P.W = 100μs; $V_{op}=30$ V
$T_{off}$	Turn-Off Time	A	40	60	ms	$V_{in}=5.0$ V, P.W = 100μs; $V_{op}=30$ V
		B	40	60	ms	$V_{in}=5.0$ V, P.W = 100μs; $V_{op}=30$ V
$V_{iso}$	Input-Output Isolation	A or B	—	400	VDC	
<b>P</b>	Maximum Power Dissipation	A or B	—	1000	mW	

PW\*: Pulse Width.



#### ❖ Environmental Ratings:

- Storage Temperature: -25°C to +125°C
- Constant Acceleration: 5000G
- Hermeticity: + Gross  $1 \times 10^{-5}$  atm cc/sec  
+ Fine  $5 \times 10^{-8}$  atm cc/s \*\*

\*\* When screened to MIL-Specs.