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## DIH-134 Power MOSFET Dual N/O SPST Photovoltaic DC Relay

### Features:

- Package Contains Two N/O DC Relays;
- Fast Switching Speeds
- Optically Isolated to 400V DC.
- Immune to False Triggering
- Small size, Hermetic 8-pin SIP Package
- Designed to Meet MIL-R28750 and 28V DC System Surge and Spike Requirement of MIL STD-704.
- Y-Level MIL-Screening Available (**DIH-134Y**)

### 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
- Power Supply Circuits
- Medical Electronics

### Description:

The DIH-134 is a State-of-the-Art Photovoltaic Solid State Relay designed for 28V DC Aircraft power applications where speed, current overload protection and immunity to transient voltages are critical.

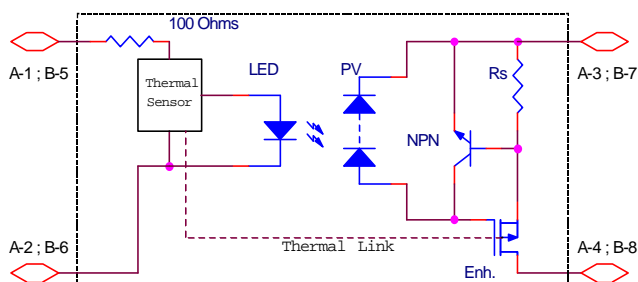
The DIH-134 contains current limiting networks and thermally sensitive integrated circuits that disable the output, if the output MOSFETs approach an unsafe operating temperature. Because the thermally sensitive integrated circuits have built-in hysteresis, the output MOSFETs are automatically restarted 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.

The package contains two independent N/O relays, with separate LED inputs and optically isolated power MOSFET outputs. Each relay, A or B, is capable of carrying 350mA DC continuous current and 500mA 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 output MOSFETs, thus controlling their current. The DIH-134 is also available screened to military specifications, as required.

### Pin Designations

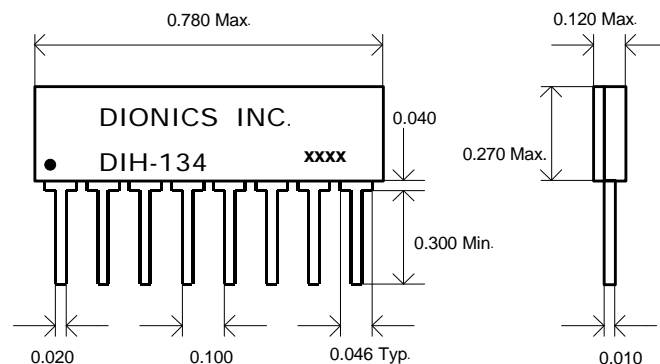
Relay A		Relay B	
1	Input +	5	Input +
2	Input -	6	Input -
3	Output -	7	Output -
4	Output +	8	Output +

### \* DIH-134 Equivalent Circuit



### \* Package Layout:

Weight 1.5 Grams



## DIH-134: Power MOSFET Dual SPST Photovoltaic DC Relay

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

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

### ❖ Input Characteristics

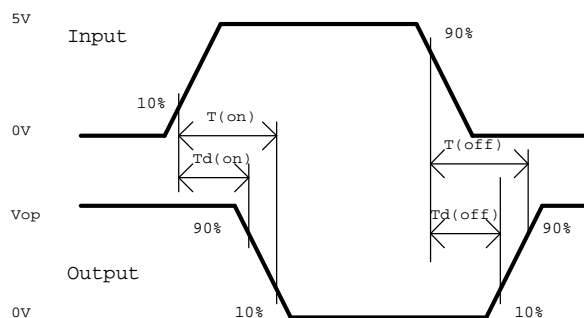
Symbol	Parameter	Min.	Typ.	Max.	Unit
$I_{in}$	Input Current	5.0	15.0	24.0	mA
$V_{in}$	Input Voltage Drop	1.3	—	1.5	V
$V_{rev.}$	Reverse Voltage	—	—	10.0	V
$V_{on}$	On State Voltage	3.5	—	—	V
$V_{off}$	Off State Voltage	—	—	1.5	V

### ❖ Output Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Condition
$I_{load}$	Load Current	—	350 / 500	mA	Continuous / Peak
$R_{on}$	On Resistance @ $T_a = 85^\circ\text{C}$	—	3	W	$I_{in}=18\text{ (mA)}; I_{load} = 100\text{mA}$
		—	4	W	$I_{in}=18\text{ (mA)}; I_{load} = 100\text{mA}$
$I_{leak}$	Leakage Current	—	10	mA	$V_{op}=75\text{ (V)}$
$R_{iso}$	Input/Output Resistance	$10^8$	—	W	
$V_{op}$	Operating Voltage	28	30.3	VDC	Limited by Power Dissipation
$BV$	Breakdown Voltage	—	80	VDC	At 100 $\mu\text{A}$
$T_{on}$	Turn-On Time	150	300	ms	$V_{in}= 4.5\text{V}$ , P.W* = 100 $\mu\text{s}$ ; $V_{op}= 30\text{V}$
$T_{off}$	Turn-Off Time	150	300	ms	$V_{in}= 4.5\text{V}$ , P.W =100 $\mu\text{s}$ ; $V_{op}= 30\text{V}$
$V_{iso}$	Input-Output Isolation	—	400	V	DC
$P$	Maximum Power Dissipation	—	400	mW	In Free Air

PW\*: Pulse Width.

### ❖ Timing Diagram



### ❖ Environmental Ratings:

- Storage Temperature:  $-25^\circ\text{C}$  to  $+125^\circ\text{C}$
- 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.