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DIH-134-SM 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
- Hermetic Gull-Wing Surface Mount Package
- Y-Level MIL-Screening Available (**DIH-134-SMY**)
- Designed to Meet MIL-R28750 and 28V DC System Surge and Spike Requirement of MIL STD-704.
- Operation Temp. -40°C to 85°C @ 200mA Load (*Above 85°C Derate Load $5\text{mA}/^{\circ}\text{C}$*)

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
- Tactical Aircraft

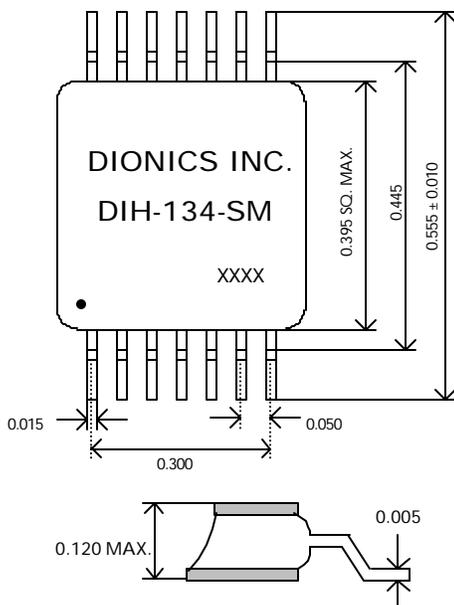
Description:

The DIH-134-SM 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.

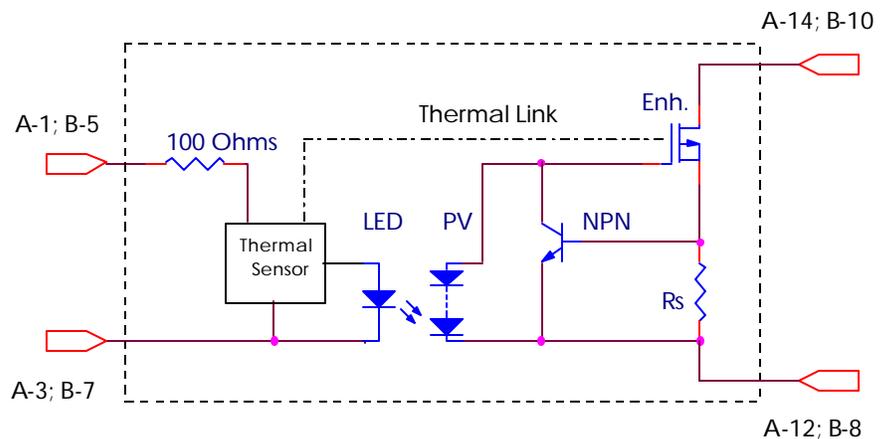
The DIH-134-SM contains current limiting networks and thermally sensitive integrated circuits that disable the output, if the output MOSFETs approach an unsafe operating temperature. Because the thermally sensitive integrated circuits have built-in hysteresis, the output MOSFETs are automatically restarted 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 gull-wing surface mount 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-SM is also available screened to military specifications, as required.

Package Layout:



DIH-134-SM Equivalent Circuit:



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

Electrical Characteristics: (Per Relay @ 25⁰C unless otherwise specified)

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

❖ Pin Designations

Relay	Pin Number	Inputs	Pin Number	Outputs
Relay A	1	A +	14	Drain A +
	3	A -	12	Source A -
Relay B	5	B +	10	Drain B +
	7	B -	8	Source B -
	2,4,6	NC	9,11,13	NC

❖ Input Characteristics

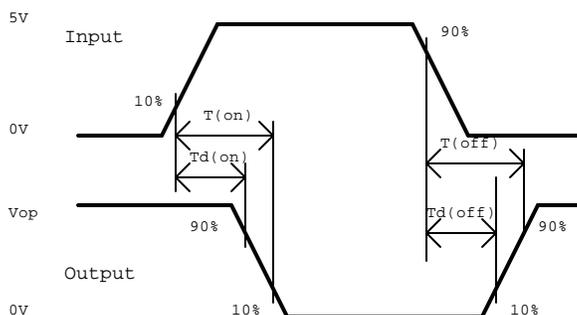
Symbol	Parameter	Min.	Typ.	Max.	Unit
I_{in}	Input Current	5.0	15.0	24.0	mA
V_{in}	Input Voltage Drop	1.3	—	1.5	V
V_{rev.}	Reverse Voltage	—	—	10.0	V
V_{on}	On State Voltage	3.5	—	—	V
V_{off}	Off State Voltage	—	—	1.5	V

❖ Output Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Conditions
I_{load}	Load Current	—	350 / 500	mA	Continuous / Peak
R_{on}	On Resistance @ T _a = 85 °C	—	2	W	I _{in} =18 (mA); I _{load} = 100mA
		—	3	W	I _{in} =18 (mA); I _{load} = 100mA
I_{leak}	Leakage Current	—	10	mA	V _{op} =90 (V)
R_{iso}	Input/Output Resistance	10 ⁸	—	W	
V_{op}	Operating Voltage	28	60	VDC	Limited by Power Dissipation
BV	Breakdown Voltage	—	95	VDC	At 100 μA
T_{on}	Turn-On Time	150	300	ms	V _{in} = 4.5V, P.W* = 100ms; V _{op} = 30V
T_{off}	Turn-Off Time	20	40	ms	V _{in} = 4.5V, P.W = 100ms; V _{op} = 30V
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: -55⁰C to +125⁰C
- Constant Acceleration: 5000G
- Hermeticity: + Gross 1x10⁻⁵ atm cc/sec
+ Fine 5 x 10⁻⁸ atm cc/s **

** When screened to MIL-Specs.