



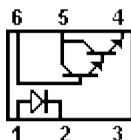
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H11B1, H11B2, H11B3 OPTICALLY COUPLED ISOLATORS

Circuit



Features

- Dual-In-Line Package
- High Sensitivity to Low Input Current
- High Input-Output Isolation Guaranteed - 5300 Volts Peak
- Various lead form options available

Description

The H11B1, H11B2, H11B3 are optically coupled isolators consisting of a Gallium Arsenide infrared emitter and a silicon photo darlington sensor. Switching can be accomplished while maintaining a high degree of isolation between driving and load circuits. They can be used to replace reed and mercury relays with advantages of long life, high speed switching and elimination of magnetic fields. Surface Mount Option Available.

All electrical parameters are 100% tested by manufacturing. Specifications are guaranteed to a cumulative 0.65% AQL.

Absolute Maximum Ratings: (Ta=25°C)

| | |
|--------------------------|--------------------------------|
| Storage Temperature: | -55°C to +150°C |
| Operating Temperature: | -55°C to +100°C |
| Lead Soldering: | 260°C for 10s, 1.6mm from case |
| Isolation Surge Voltage: | 5300Vac |

Input LED

| | |
|---------------------|----------------------|
| Forward DC Current: | 60mA |
| Reverse DC Voltage: | 3V |
| Power Dissipation: | 150mW |
| Derate Linearly: | 1.41mW/°C above 25°C |

Output Detector

| | |
|---------------------------------|----------------------|
| Collector-Emitter Voltage: | 25V |
| Emitter-Base Voltage: | 7V |
| Collector-Base Voltage: | 30V |
| Collector Current - Continuous: | 100V |
| Power Dissipation: | 150mW |
| Derate Linearly: | 1.76mW/°C above 25°C |

Electro-optical Characteristics: (Ta=25°C)

| INPUT | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNIT |
|----------------------|-------------------------------------|--|-----|------|-----|------|
| V _F | Forward Voltage H11B1, H11B2 | I _F =10mA | | 1.15 | 1.5 | V |
| | Forward Voltage H11B3 | I _F =50mA | | 1.34 | 1.5 | V |
| I _R | Reverse Leakage Current | V _R =3.0V | | | 10 | μA |
| V _R | Capacitance | I _R =100μA, V=0V, f=1MHz | | 18 | | pF |
| OUTPUT | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNIT |
| I _{CEO} | Collector-Emitter Dark Current | V _{CE} =10V | 30 | | | V |
| V _{(BR)CEO} | Collector-Emitter Breakdown Voltage | I _C =10mA | | | | |
| V _{(BR)CBO} | Collector-Base Breakdown Voltage | I _C =100μA | | | | |
| V _{(BR)ECO} | Emitter-Collector Breakdown Voltage | I _E =100μA | | | | |
| h _{FE} | DC Current Gain | I _C =5mA, V _{CE} =5V | | | | |
| C _{CE} | Collector-Emitter Capacitance | f=1MHz, V _{CE} =5V | 5 | | | V |
| C _{CB} | Collector-Base Capacitance | f=1MHz, V _{CB} =5V | | | 100 | nA |
| C _{EB} | Emitter-Base Capacitance | f=1MHz, V _{EB} =5V | | 10 | | pf |
| COUPLED | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNIT |
| I _C | Output Collector Current H11B1 | I _F =1mA, V _{CE} =5V | 5 | | | mA |
| | H11B2 | | 2 | | | mA |
| | H11B3 | | 1 | | | mA |

| | | | | | | |
|---------------|--------------------------------------|-----------------------------------|------|-----|----|---------|
| $V_{CE(SAT)}$ | Collector-Emitter Saturation Voltage | $I_C=1mA, I_F=1mA$ | | 0.7 | 1 | Volts |
| T_{ON} | Turn-On Time | $I_F=5mA, V_{CC}=10V, R_L=100ohm$ | | 3.5 | | μS |
| T_{OFF} | Turn-Off Time | $I_F=5mA, V_{CC}=10V, R_L=100ohm$ | | 95 | | μS |
| t_R | Rise Time | $I_F=5mA, V_{CC}=10V, R_L=100ohm$ | | 1 | | μS |
| t_F | Fall Time | $I_F=5mA, V_{CC}=10V, R_L=100ohm$ | | 2 | | μS |
| V_{ISO} | Isolation Voltage | $f=60Hz, t=1s$ (note 1) | 7500 | | 5 | Vac(pk) |
| R_{ISO} | Isolation Resistance | $V=500V$ (note 1) | 1E11 | | | ohm |
| C_{ISO} | Isolation Capacitance | $V=0V, f=1Mhz$ (note 1) | | 0.2 | 40 | pF |

1. For this test, Pins 1 and 2 are common, and Pins 4, 5 and 6 are common.

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