

H11B1X, H11B2X, H11B3X

H11B1, H11B2, H11B3



## OPTICALLY COUPLED ISOLATOR PHOTODARLINGTON OUTPUT

### APPROVALS

- UL recognised, File No. E91231

### 'X' SPECIFICATION APPROVALS

- VDE 0884 in 2 available lead form :
  - STD
  - G form
- VDE 0884 in SMD approval pending
- SETI approved, reg. no.151786-18

### DESCRIPTION

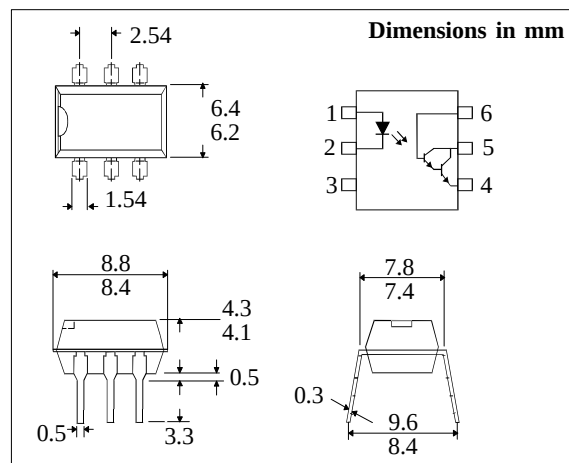
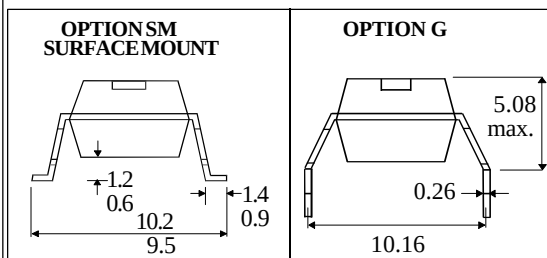
The H11B\_ series of optically coupled isolators consist of an infrared light emitting diode and NPN silicon photodarlington in a space efficient dual in line plastic package.

### FEATURES

- Options :-
  - 10mm lead spread - add G after part no.
  - Surface mount - add SM after part no.
  - Tape&reel - add SMT&R after part no.
- High Current Transfer Ratio
- High Isolation Voltage ( $5.3\text{kV}_{\text{RMS}}, 7.5\text{kV}_{\text{PK}}$ )
- All electrical parameters 100% tested
- Custom electrical selections available

### APPLICATIONS

- Computer terminals
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances



### ABSOLUTE MAXIMUM RATINGS (25°C unless otherwise specified)

Storage Temperature \_\_\_\_\_ -55°C to + 150°C  
Operating Temperature \_\_\_\_\_ -55°C to + 100°C  
Lead Soldering Temperature  
(1/16 inch (1.6mm) from case for 10 secs) 260°C

### INPUT DIODE

Forward Current \_\_\_\_\_ 80mA  
Reverse Voltage \_\_\_\_\_ 5V  
Power Dissipation \_\_\_\_\_ 105mW

### OUTPUT TRANSISTOR

Collector-emitter Voltage  $BV_{\text{CEO}}$  \_\_\_\_\_ 30V  
Collector-base Voltage  $BV_{\text{CBO}}$  \_\_\_\_\_ 50V  
Emitter-collector Voltage  $BV_{\text{ECO}}$  \_\_\_\_\_ 5V  
Power Dissipation \_\_\_\_\_ 150mW

### POWER DISSIPATION

Total Power Dissipation \_\_\_\_\_ 250mW  
(derate linearly 3.3mW/°C above 25°C)

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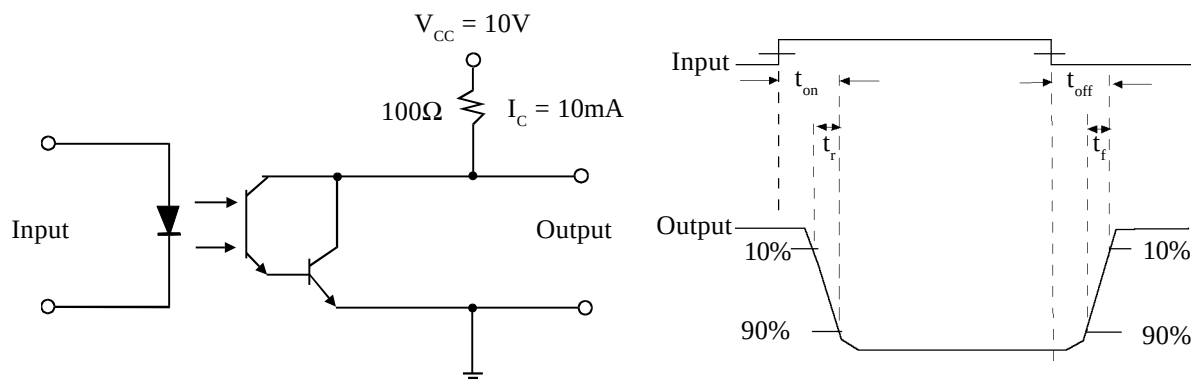
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

| PARAMETER |                                                    | MIN                | TYP | MAX | UNITS         | TEST CONDITION                            |
|-----------|----------------------------------------------------|--------------------|-----|-----|---------------|-------------------------------------------|
| Input     | Forward Voltage ( $V_F$ )                          |                    | 1.2 | 1.5 | V             | $I_F = 10\text{mA}$                       |
|           | Reverse Voltage ( $V_R$ )                          | 3                  |     |     | V             | $I_R = 10\mu\text{A}$                     |
|           | Reverse Current ( $I_R$ )                          |                    |     | 10  | $\mu\text{A}$ | $V_R = 3\text{V}$                         |
| Output    | Collector-emitter Breakdown ( $BV_{CEO}$ )         | 30                 |     |     | V             | $I_C = 1\text{mA}$ (note 2)               |
|           | Collector-base Breakdown ( $BV_{CBO}$ )            | 30                 |     |     | V             | $I_C = 100\mu\text{A}$                    |
|           | Emitter-collector Breakdown ( $BV_{ECO}$ )         | 5                  |     |     | V             | $I_E = 100\mu\text{A}$                    |
|           | $H_{FE}$                                           |                    | 16K |     |               | $V_{CE} = 5\text{V}, I_C = 5\text{mA}$    |
|           | Collector-emitter Dark Current ( $I_{CEO}$ )       |                    |     | 100 | nA            | $V_{CE} = 10\text{V}$                     |
| Coupled   | Current Transfer Ratio ( CTR )(Note 2)             |                    |     |     |               |                                           |
|           | H11B1                                              | 500                |     |     | %             | $1\text{mA } I_F, 5\text{V } V_{CE}$      |
|           | H11B2                                              | 200                |     |     | %             | $1\text{mA } I_F, 5\text{V } V_{CE}$      |
|           | H11B3                                              | 100                |     |     | %             | $1\text{mA } I_F, 5\text{V } V_{CE}$      |
|           | Collector-emitter Saturation Voltage $V_{CE(SAT)}$ |                    |     | 1.0 | V             | $1\text{mA } I_F, 1\text{mA } I_C$        |
|           | Input to Output Isolation Voltage $V_{ISO}$        | 5300               |     |     | $V_{RMS}$     | (note 1)                                  |
|           |                                                    | 7500               |     |     | $V_{PK}$      | (note 1)                                  |
|           | Input-output Isolation Resistance $R_{ISO}$        | $5 \times 10^{10}$ |     |     | $\Omega$      | $V_{IO} = 500\text{V}$ (note 1)           |
|           | Output Turn on Time $t_{on}$                       |                    | 125 |     | $\mu\text{s}$ | $V_{CC} = 10\text{V}, I_C = 10\text{mA},$ |
|           | Output Turn off Time $t_{off}$                     |                    | 100 |     | $\mu\text{s}$ | $R_L = 100\Omega$ , fig.1                 |

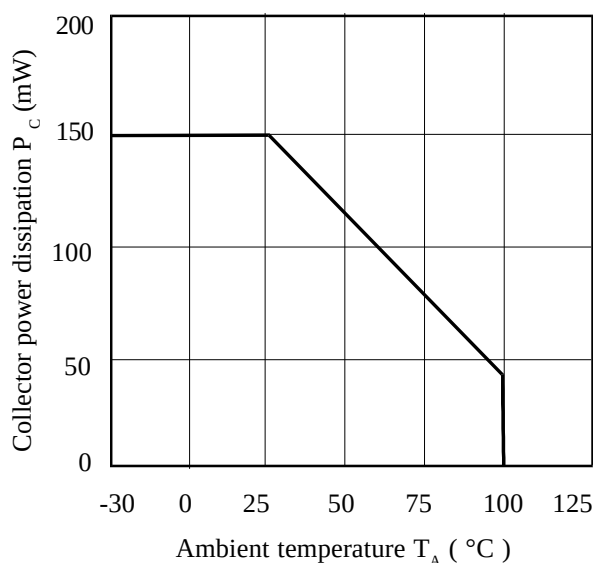
Note 1 Measured with input leads shorted together and output leads shorted together.

Note 2 Special Selections are available on request. Please consult the factory.

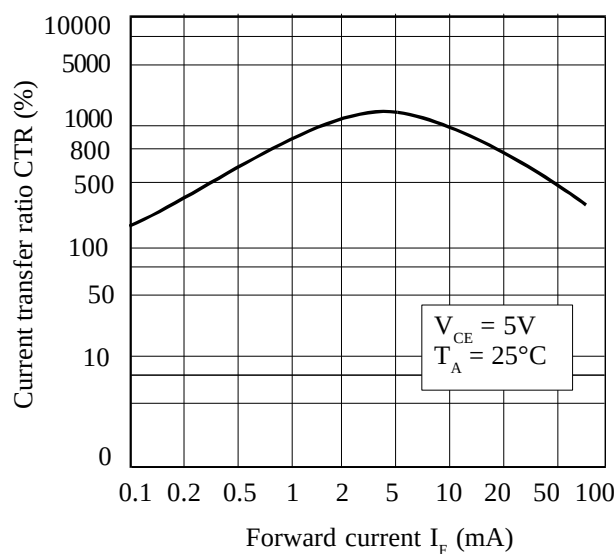
**FIGURE 1**



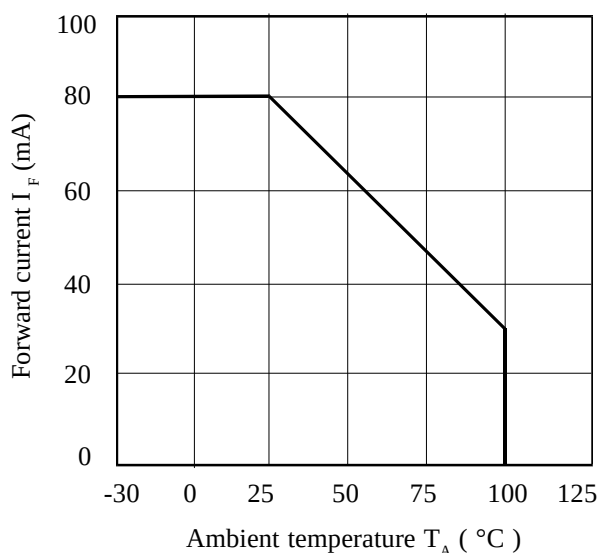
**Collector Power Dissipation vs. Ambient Temperature**



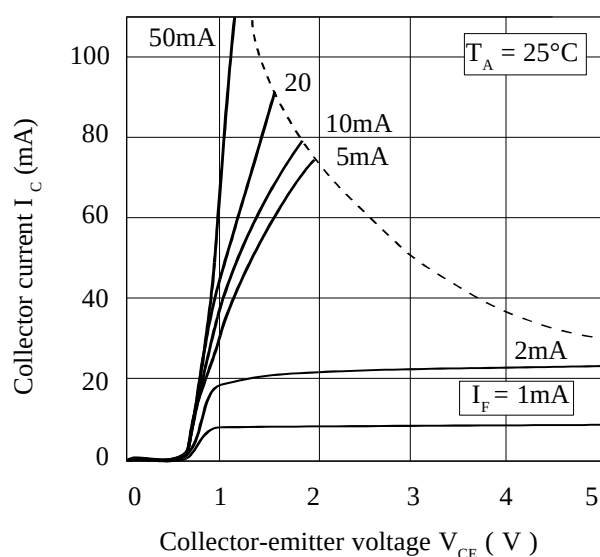
**Current Transfer Ratio vs. Forward Current**



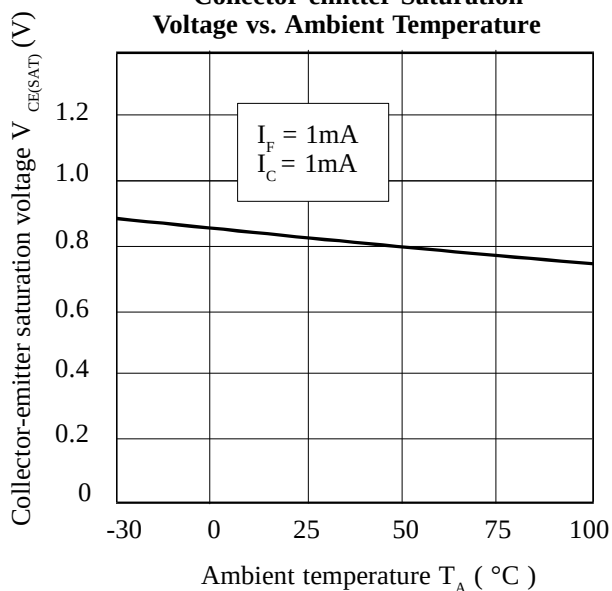
**Forward Current vs. Ambient Temperature**



**Collector Current vs. Collector-emitter Voltage**



**Collector-emitter Saturation Voltage vs. Ambient Temperature**



**Normalised Current Transfer Ratio vs. Ambient Temperature**

