**H11D1X, H11D2X, H11D3X, H11D4X**
**H11D1, H11D2, H11D3, H11D4**

# HIGH VOLTAGE OPTICALLY COUPLED ISOLATOR PHOTOTRANSISTOR OUTPUT

## 'X' SPECIFICATION APPROVALS

- VDE 0884 in 3 available lead forms : -
  - STD
  - G form
  - SMD approved to CECC 00802

## DESCRIPTION

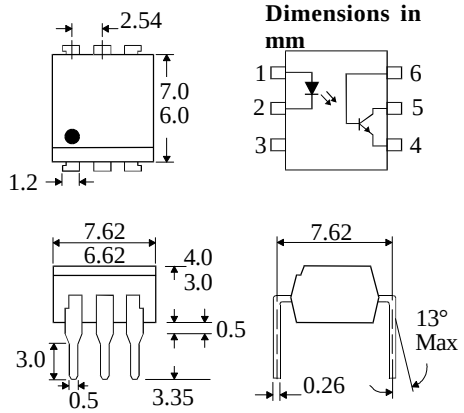
The H11D series of optically coupled isolators consist of infrared light emitting diode and NPN silicon photo transistor in a standard 6 pin dual in line plastic package.

## 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 Isolation Voltage ($5.3kV_{RMS}$ ,$7.5kV_{PK}$ )
- High $BV_{CER}$ ( 300V - H11D1, H11D2 )
  ( 200V - H11D3, H11D4 )
- All electrical parameters 100% tested
- Custom electrical selections available

## APPLICATIONS

- DC motor controllers
- 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 | 60mA |
| Reverse Voltage | 6V |
| Power Dissipation | 100mW |

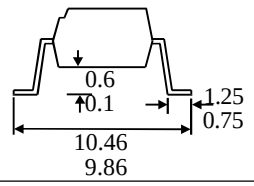
## OUTPUT TRANSISTOR

| | |
|---|---|
| Collector-emitter Voltage $BV_{CER}$ ($R_{BE}$ = 1MΩ ) | |
| H11D1, H11D2 | 300V |
| H11D3, H11D4 | 200V |
| Collector-base Voltage $BV_{CBO}$ | |
| H11D1, H11D2 | 300V |
| H11D3, H11D4 | 200V |
| Emitter-collector Voltage $BV_{ECO}$ | 6V |
| Power Dissipation | 300mW |

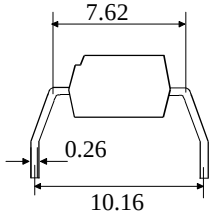
## POWER DISSIPATION

| | |
|---|---|
| Total Power Dissipation | 260mW |
| (derate linearly 2.67mW/°C above 25°C) | |

**OPTION SM**
**SURFACE MOUNT**




**OPTION G**





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**ELECTRICAL CHARACTERISTICS ( $T_A$= 25°C Unless otherwise noted )**

| PARAMETER | | MIN | TYP | MAX | UNITS | TEST CONDITION |
|---|---|---|---|---|---|---|
| Input | Forward Voltage ($V_F$) | | 1.2 | 1.5 | V | $I_F$ = 10mA |
| | Reverse Voltage ($V_R$) | 6 | | | V | $I_R$ = 10µA |
| | Reverse Current ($I_R$) | | | 10 | µA | $V_R$ = 6V |
| Output | Collector-emitter Breakdown ($BV_{CER}$) | | | | | |
| | H11D1, H11D2 | 300 | | | V | $I_C$ = 1mA, $R_{BE}$ = 1MΩ |
| | H11D3, H11D4 | 200 | | | V | ( note 2 ) |
| | Collector-base Breakdown ($BV_{CBO}$) | | | | | |
| | H11D1, H11D2 | 300 | | | V | $I_C$ = 100µA |
| | H11D3, H11D4 | 200 | | | V | |
| | Emitter-collector Breakdown ($BV_{ECO}$) | 6 | | | V | $I_E$ = 100µA |
| | Collector-emitter Dark Current ($I_{CER}$) | | | | | |
| | H11D1, H11D2 | | | 100 | nA | $V_{CE}$ = 200V,$R_{BE}$=1MΩ |
| | | | | 250 | µA | $V_{CE}$= 200V,$R_{BE}$=1MΩ, $T_A$=100°C |
| | H11D3, H11D4 | | | 100 | nA | $V_{CE}$ = 100V,$R_{BE}$=1MΩ |
| | | | | 250 | µA | $V_{CE}$= 100V,$R_{BE}$=1MΩ, $T_A$=100°C |
| Coupled | Current Transfer Ratio (CTR) | 20 | | | % | 10mA $I_F$, 10V $V_{CE}$, $R_{BE}$ = 1MΩ |
| | Collector-emitter Saturation Voltage $V_{CE(SAT)}$ | | | 0.4 | V | 10mA $I_F$, 0.5mA $I_C$, $R_{BE}$ = 1MΩ |
| | Input to Output Isolation Voltage $V_{ISO}$ | 5300 | | | $V_{RMS}$ | See note 1 |
| | | 7500 | | | $V_{PK}$ | See note 1 |
| | Input-output Isolation Resistance $R_{ISO}$ | $5x10^{10}$ | | | Ω | $V_{IO}$ = 500V (note 1) |
| | Turn-on Time ton | | 5 | | µs | $V_{CC}$ = 10V, $I_C$= 2mA, |
| | Turn-off Time toff | | 5 | | µs | $R_L$ = 100Ω , 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.

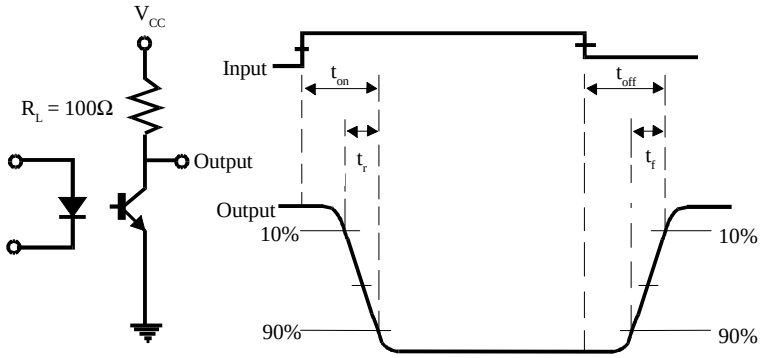
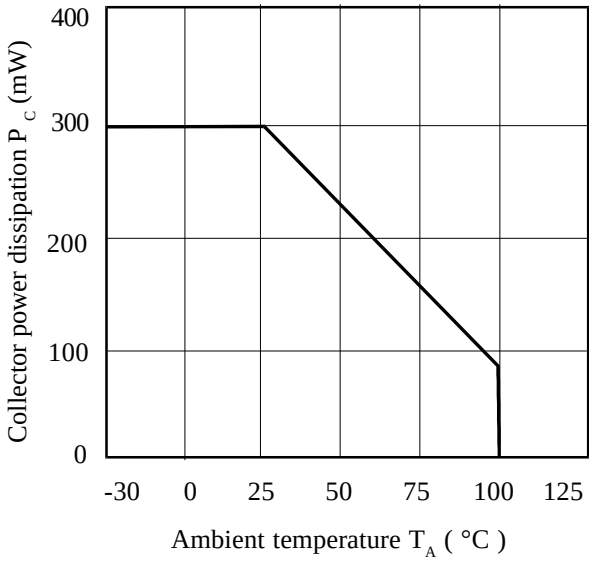
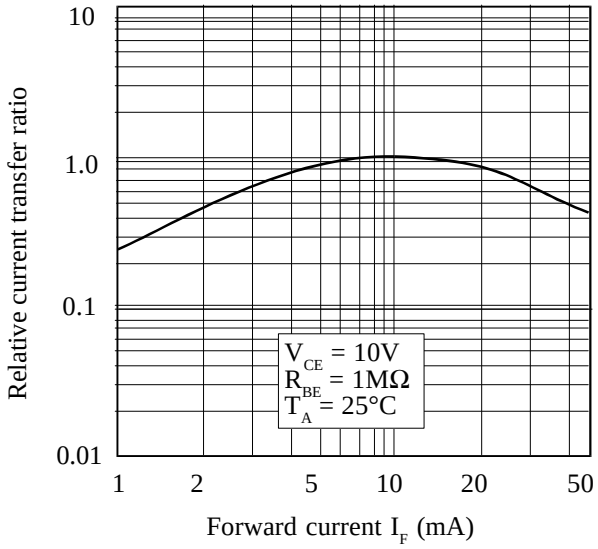



**FIG 1**

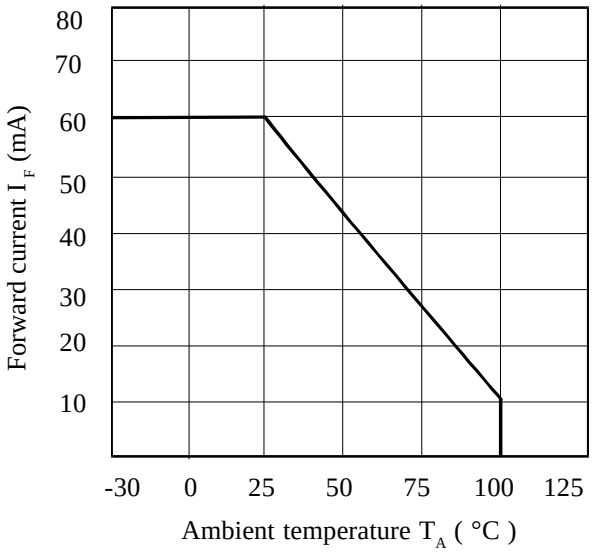
**Collector Power Dissipation vs. Ambient Temperature**



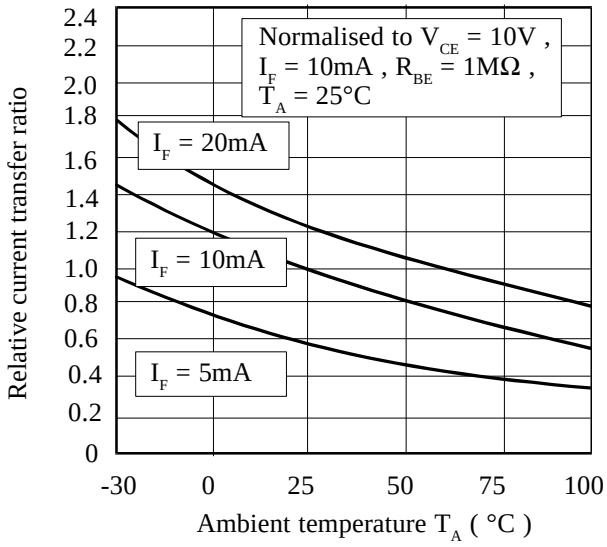

**Relative Current Transfer Ratio vs. Forward Current ( normalised to 10mA $I_F$ )**



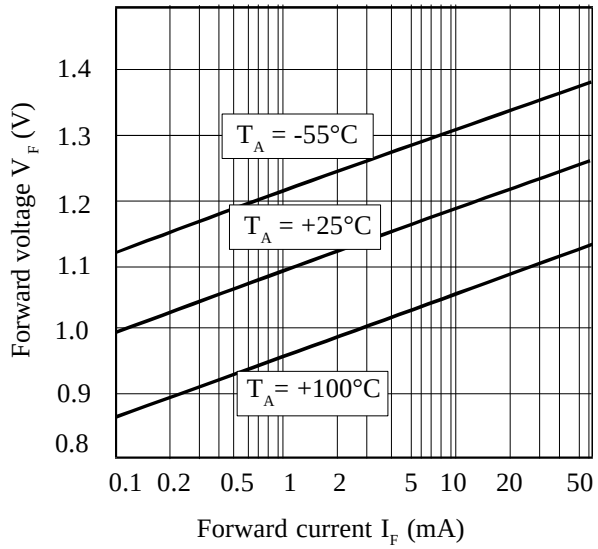

**Forward Current vs. Ambient Temperature**




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




**Forward Voltage vs. Forward Current**




**Collector-base Current vs. Ambient Temperature**