



# THE DATASHEET OF H11B1SM





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

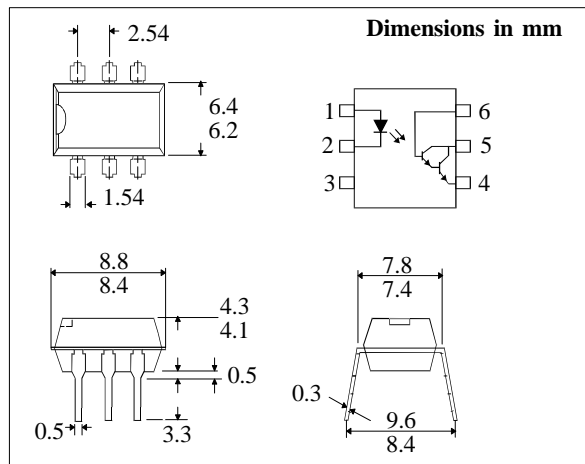
The H11B\_ series of optically coupled isolators consist of an infrared light emitting diode and NPN silicon photodarlington in a space efficient dual in line plastic package.

### 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 ( $5.3kV_{RMS}, 7.5kV_{PK}$ )
- 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

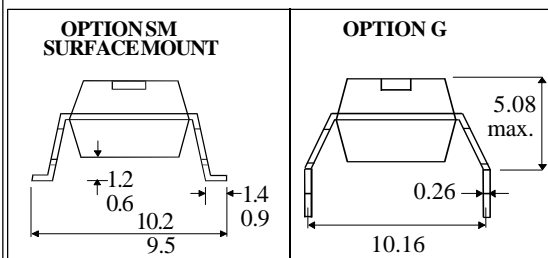
Forward Current	80mA
Reverse Voltage	5V
Power Dissipation	105mW

### OUTPUT TRANSISTOR

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

### POWER DISSIPATION

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



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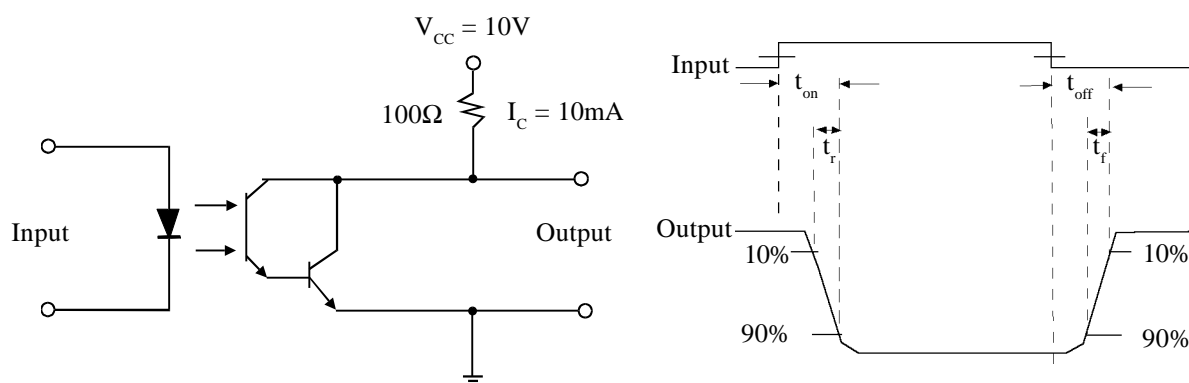
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

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)
	Input-output Isolation Resistance $R_{ISO}$	7500			$V_{PK}$	(note 1)
	$5 \times 10^{10}$			$\Omega$	$V_{IO} = 500\text{V}$ (note 1)	
Output Turn on Time	ton		125	$\mu\text{s}$	$V_{CC} = 10\text{V}, I_C = 10\text{mA}, R_L = 100\Omega$ , fig.1	
Output Turn off Time	toff		100	$\mu\text{s}$		

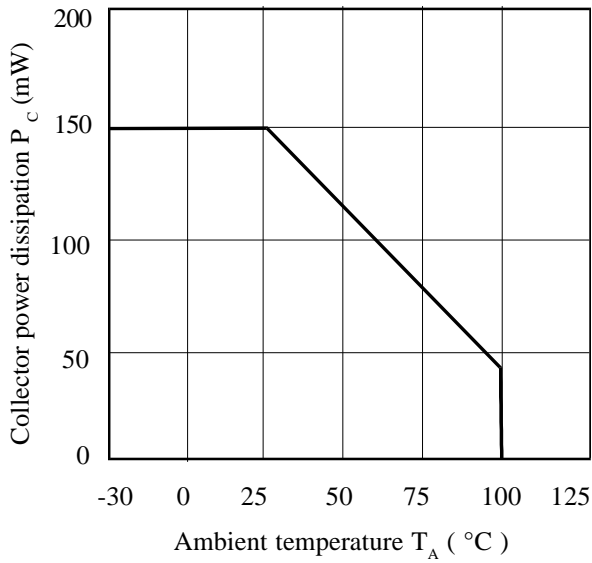
Note 1 Measured with input leads shorted together and output leads shorted together.

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

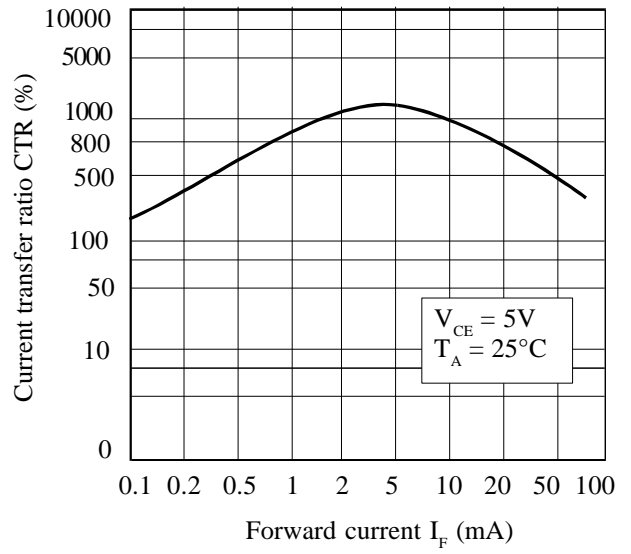
**FIGURE 1**



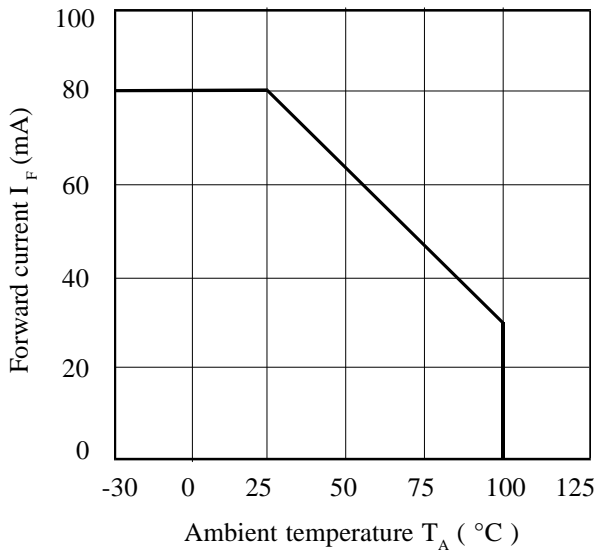
**Collector Power Dissipation vs. Ambient Temperature**



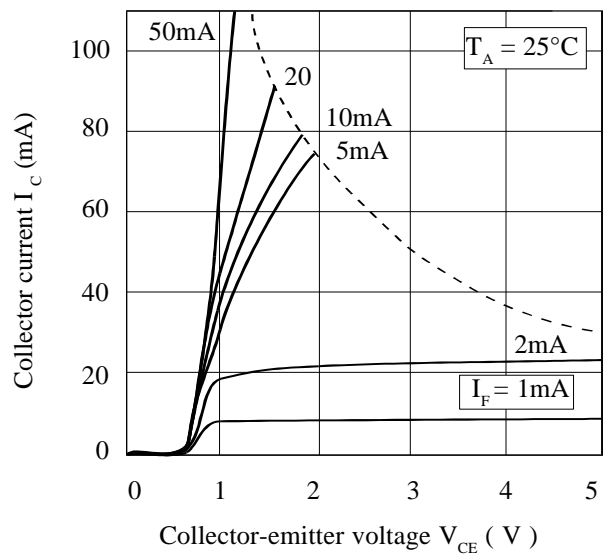
**Current Transfer Ratio vs. Forward Current**



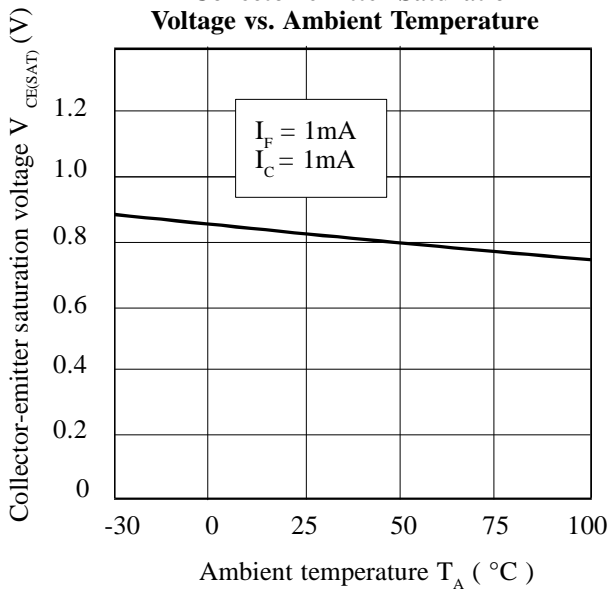
**Forward Current vs. Ambient Temperature**



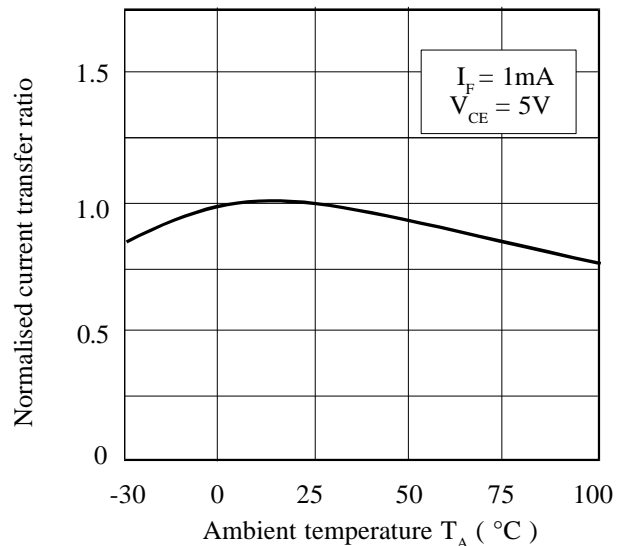
**Collector Current vs. Collector-emitter Voltage**



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



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



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- [Fairchild/ON Semiconductor Information](#)

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