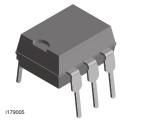
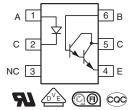


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Optocoupler, Photodarlington Output, High Gain, With Base Connection





FEATURES

- Isolation test voltage: 4420 V_{RMS}
- Coupling capacitance, 0.5 pF
- Material categorization: for definitions of compliance please see www.vishav.com/doc?99912





RoHS COMPLIAN

DESCRIPTION

The H11B1, H11B2, H11B3 are industry standard optocouplers, consisting of a gallium arsenide infrared LED and a silicon photodarlington.

AGENCY APPROVALS

- UL1577, file no. E52744
- cUL tested to CSA 22.2 bulletin 5A
- DIN EN 60747-5-5 (VDE 0884-5) available with option 1
- FIMKO EN60065, EN60950-1
- CQC: GB8898-2011, GB4943.1-2011

ORDERING INFORMATION			
H 1 1 B PART NUMBER	# - X PA	0 0 #	Option 7 Option 9
AGENCY CERTIFIED/PACKAGE		CTR (%)	
UL, FIMKO, CQC	> 500	> 200	> 100
DIP-6	H11B1	H11B2	H11B3
SMD-6, option 7	H11B1-X007T ⁽¹⁾	-	-
SMD-6, option 9	H11B1-X009	H11B2-X009T (1)	-
UL, FIMKO, CQC, VDE	> 500	> 200	> 100
SMD-6, option 7	H11B1-X017	-	-

Notes

- Additional options may be possible, please contact sales office.
- (1) Also available in tubes, no "T" in the end.

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT			
INPUT							
Reverse voltage		V _R	3	V			
Forward continuous current		I _F	60	mA			
Power dissipation		P _{diss}	100	mW			
Derate linearly from 25 °C			1.33	mW/°C			
OUTPUT							
Collector emitter breakdown voltage		BV _{CEO}	25	V			
Emitter collector breakdown voltage		BV _{ECO}	7	V			
Collector base breakdown voltage		BV _{CBO}	30	V			
Collector current (continuous)		I _C	100	mA			
Power dissipation		P _{diss}	150	mW			
Derate linearly from 25 °C			2	mW/°C			

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ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)									
PARAMETER TEST CONDITION SYMBOL VALUE UNIT									
COUPLER	COUPLER								
Total package dissipation (LED plus detector)		P _{tot}	260	mW					
Derate linearly from 25 °C			3.5	mW/°C					
Storage temperature		T _{stg}	-55 to +150	°C					
Operating temperature		T _{amb}	-55 to +100	°C					
Lead soldering time at 260 °C			10	S					

Note

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not
implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute
maximum ratings for extended periods of the time can adversely affect reliability

ELECTRICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION PART SYMBOL MIN. TYP. MAX.				UNIT		
INPUT							
	I _E = 50 mA	H11B1	V_{F}	ı	1.1	1.5	V
Forward voltage	IF = 30 IIIA	H11B2	V_{F}	-	1.1	1.5	V
	I _F = 10 mA	H11B3	V_{F}	-	1.1	1.5	V
Reverse current	V _R = 3 V		I _R	-	-	10	μΑ
Junction capacitance	$V_F = 0 V, f = 1 MHz$		Cj	-	50	-	pF
OUTPUT							
Collector emitter breakdown voltage	$I_C = 1 \text{ mA}, I_F = 0 \text{ mA}$		BV _{CEO}	30	-	-	V
Emitter collector breakdown voltage	$I_E = 100 \mu A, I_F = 0 \text{ mA}$		BV _{ECO}	7	-	-	V
Collector base breakdown voltage	$I_C = 100 \mu A, I_F = 0 mA$		BV _{CBO}	30	-	-	V
Collector emitter leakage current	$V_{CE} = 10 \text{ V}, I_F = 0 \text{ mA}$		I _{CEO}	-	-	100	nA
COUPLER							
Saturation voltage collector-emitter	$I_F = 1 \text{ mA}, I_C = 1 \text{ mA}$		V _{CEsat}	-	-	1	V
Capacitance (input to output)	rt) C _{IO} - 0.5 - pF					pF	

Note

• Minimum and maximum values were tested requirements. Typical values are characteristics of the device and are the result of engineering evaluations. Typical values are for information only and are not part of the testing requirements

CURRENT TRANSFER RATIO (T _{amb} = 25 °C, unless otherwise specified)							
PARAMETER TEST CONDITION PART SYMBOL MIN. TYP. MAX. UN							UNIT
DC current transfer ratio	V _{CE} = 5 V, I _F = 1 mA	H11B1	CTR _{DC}	500			%
		H11B2	CTR _{DC}	200			%
		H11B3	CTR _{DC}	100			%

SWITCHING CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION SYMBOL MIN. TYP. MAX. UNIT					
Switching times	I_F = 5 mA, V_{CE} = 10 V, R_L = 100 Ω	t _{on}		5		μs
Switching times		t _{off}		30		μs



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H11B1, H11B2, H11B3

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SAFETY AND INSULATION RATINGS				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Climatic classification	According to IEC 68 part 1		55 / 100 / 21	
Comparative tracking index		CTI	175	
Maximum rated withstanding isolation voltage	t = 1 min	V _{ISO}	4420	V _{RMS}
Maximum transient isolation voltage		V _{IOTM}	10 000	V _{peak}
Maximum repetitive peak isolation voltage		V _{IORM}	890	V _{peak}
Isolation resistance	$V_{IO} = 500 \text{ V}, T_{amb} = 25 ^{\circ}\text{C}$	R _{IO}	≥ 10 ¹²	Ω
Isolation resistance	V _{IO} = 500 V, T _{amb} = 100 °C	R _{IO}	≥ 10 ¹¹	Ω
Output safety power		P _{SO}	400	mW
Input safety current		I _{SI}	275	mA
Safety temperature		T _S	175	°C
Creepage distance			≥ 7	mm
Clearance distance			≥ 7	mm
Insulation thickness		DTI	≥ 0.4	mm

Note

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

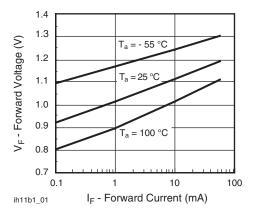


Fig. 1 - Forward Voltage vs. Forward Current

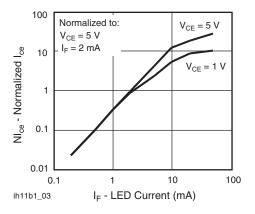


Fig. 3 - Normalized Non-Saturated and Saturated I_{CE} vs. LED Current

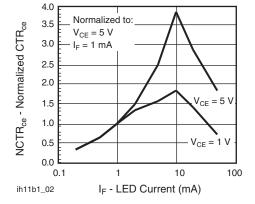


Fig. 2 - Normalized Non-Saturated and Saturated CTR_{CE} vs. LED Current

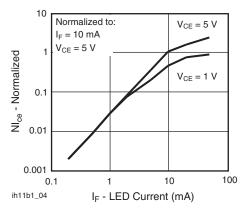


Fig. 4 - Normalized Non-Saturated and Saturated Collector Emitter Current vs. LED Current

As per IEC 60747-5-5, § 7.4.3.8.2, this optocoupler is suitable for "safe electrical insulation" only within the safety ratings. Compliance with the safety ratings shall be ensured by means of protective circuits



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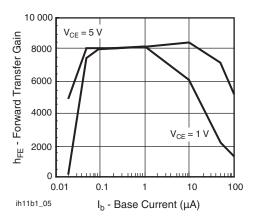


Fig. 5 - Non-Saturated and Saturated hFE vs. Base Current

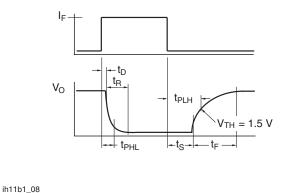


Fig. 8 - Switching Waveform

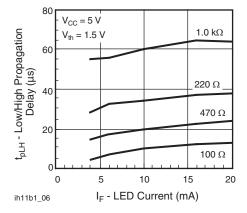


Fig. 6 - Low to High Propagation Delay vs. Collector Load Resistance and LED Current

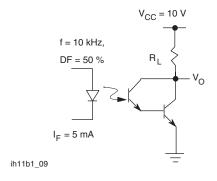


Fig. 9 - Switching Schematic

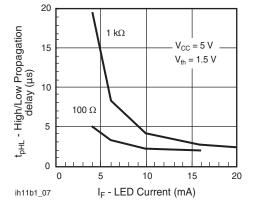
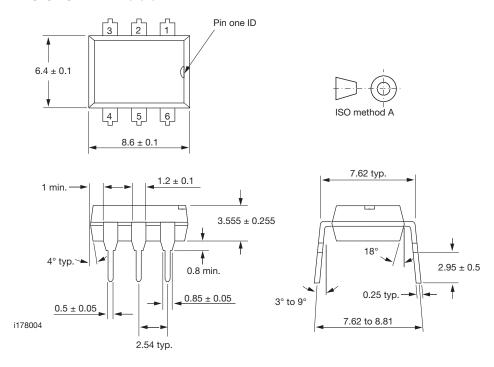


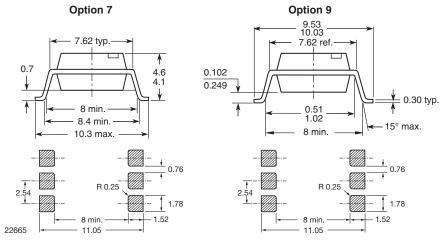
Fig. 7 - High to Low Propagation Delay vs. Collector Load Resistance and LED Current



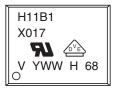
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PACKAGE DIMENSIONS in millimeters





PACKAGE MARKING (example)



Notes

- Only options 1, 7, and 9 are reflected in the package marking
- The VDE logo is only marked on option 1 parts
- Tape and reel suffix (T) is not part of the package marking



Legal Disclaimer Notice

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