

FEATURES

- Current Transfer Ratio, 20% Min.
- AC or Polarity Insensitive Input
- Built-in Reverse Polarity Input Protection
- I/O Compatible with Integrated Circuits
- Industry Standard DIP Package
- Underwriters Lab File #E52744
-  VDE Approval #0884 (Available with Option 1)

DESCRIPTION

The H11AA1 is a bi-directional input optically coupled isolator consisting of two Gallium Arsenide infrared LEDs coupled to a silicon NPN phototransistor in a 6-pin DIP package. The H11AA1 has a minimum CTR of 20% and a CTR symmetry of 1:3 and is designed for applications requiring detection or monitoring of AC signals.

Maximum Ratings

Emitter

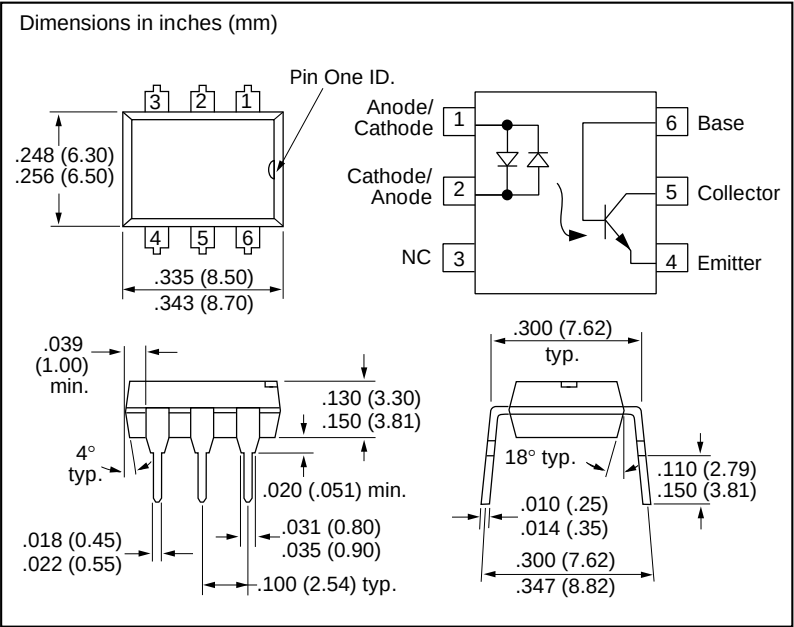
Continuous Forward Current60 mA
Power Dissipation at 25°C.....100 mW
Derate Linearly from 25°C.....1.3 mW/°C

Detector

Power Dissipation at 25°C Ambient200 mW
Derate Linearly from 25°C.....2.6 mW/°C
Collector-Emitter Breakdown Voltage, BV_{CEO} 30 V
Emitter-Base Breakdown Voltage, BV_{EBO} 5 V
Collector-Base Breakdown Voltage, BV_{CBO}.... 70 V

Package

Isolation Test Voltage (between emitter and detector referred to standard climate 23°C/50%RH, DIN 50014)5300 VAC_{RMS}
Creepage min. 7 mm
Clearance min. 7 mm
Comparative Tracking Index per DIN IEC 112/VDE 0303, part 1175
Isolation Resistance
V_{IO}=500 V, T_A=25°C≥10¹² Ω
V_{IO}=500 V, T_A=100°C≥10¹¹ Ω
Storage Temperature-55°C to +150°C
Operating Temperature-55°C to +100°C
Lead Soldering Time at 260°C 10 sec.



Electrical Characteristics (T_A=25°C)

Parameter	Min.	Typ.	Max.	Unit	Condition
Emitter					
Forward Voltage, V _F		1.2	1.5	V	I _F =±10 mA
Detector					
Breakdown Voltage					
BV _{CEO}	30			V	I _C =1 m A
BV _{EBO}	7			V	I _E =100 μA
BV _{CBO}	70			V	I _C =100 μA
I _{CEO}		5	100	nA	V _{CE} =10 V
Package					
V _{CEsat}			0.4	V	I _F =±10 mA, I _C =0.5 mA
DC Current Transfer Ratio				%	I _F =±10 mA, V _{CE} =10 V
Symmetry CTR at + 10 mA CTR at - 10 mA	0.33	1.0	3.0		

Figure 1. LED forward current versus forward voltage

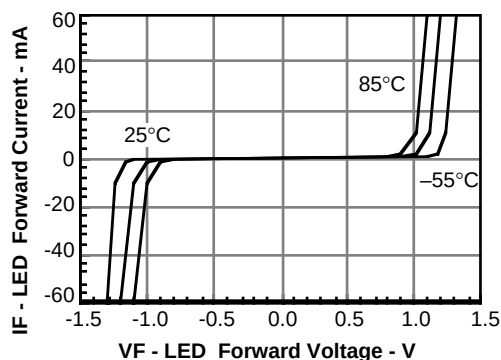


Figure 2. Normalized non-saturated and saturated CTR at $T_A=25^\circ\text{C}$ versus LED current

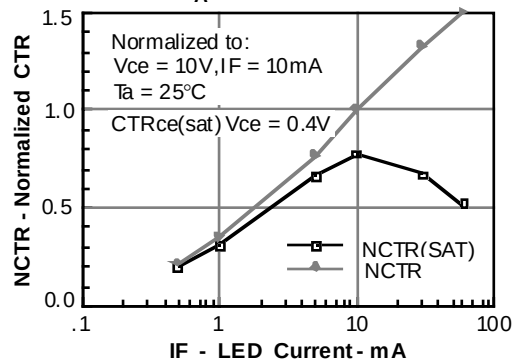


Figure 3. Normalized non-saturated and saturated CTR at $T_A=50^\circ\text{C}$ versus LED current

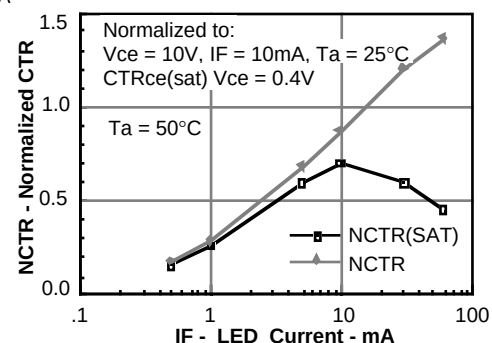


Figure 4. Normalized non-saturated and saturated CTR at $T_A=70^\circ\text{C}$ versus LED current

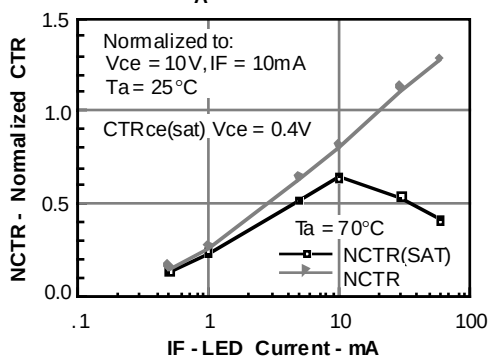


Figure 5. Normalized non-saturated and saturated CTR at $T_A=85^\circ\text{C}$ versus LED current

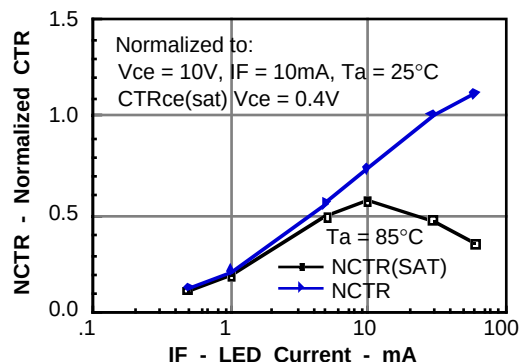


Figure 6. Collector-emitter current versus temperature and LED current

Figure 7. Collector-emitter leakage current versus temperature

Figure 8. Normalized CTR_{cb} versus LED current and temperature

Figure 9. Collector base photocurrent versus LED current

Figure 13. Propagation delay versus collector load resistor

Figure 10. Normalized photocurrent versus LED current

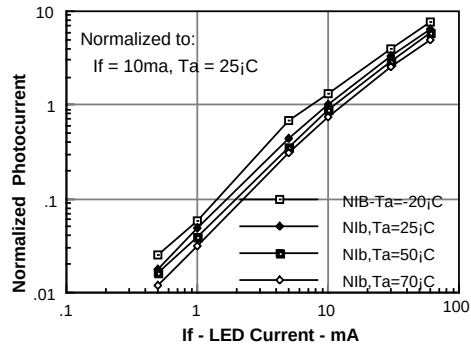


Figure 14. Switching waveform

Figure 11. Normalized saturated HFE versus base current and temperature

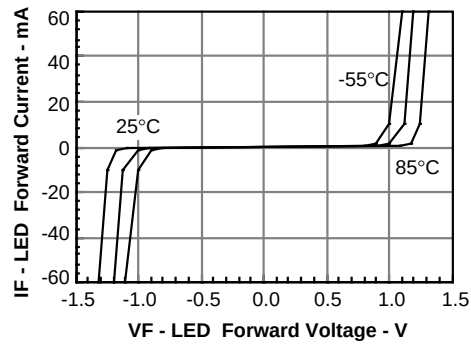


Figure 15. Switching schematic

Figure 12. Normalized saturated HFE versus base current and temperature