SIEMENS

IL66B
PHOTODARLINGTON OPTOCOUPLER

FEATURES

- **Internal RBE for High Stability**
- **High Current Transfer Ratio at I_F=2 mA, V_{CE}=5 V**
  IL66B-1, 200% min.
  IL66B-2, 750% min.
- **Withstand Test Voltage, 5300 VAC_{RMS}**
- **No Base Connection**
- **High Isolation Resistance**
- **Standard Plastic DIP Package**
- **Underwriters Lab Approval #E52744**
- **VDE 0884 Available with Option 1**

DESCRIPTION

The IL66B is an optically coupled isolator employing a Gallium Arsenide infrared emitter and a silicon photodarlington detector. Switching can be accomplished while maintaining a high degree of isolation between driving and load circuits. They can be used to replace reed and mercury relays with advantages of long life, high speed switching and elimination of magnetic fields.

Maximum Ratings (at 25°C)

Emitter

Peak Reverse Voltage .....6 V
Continuous Forward Current .....60 mA
Power Dissipation at 25°C.....100 mW
Derate Linearly from 55°C.....1.33 mW/°C

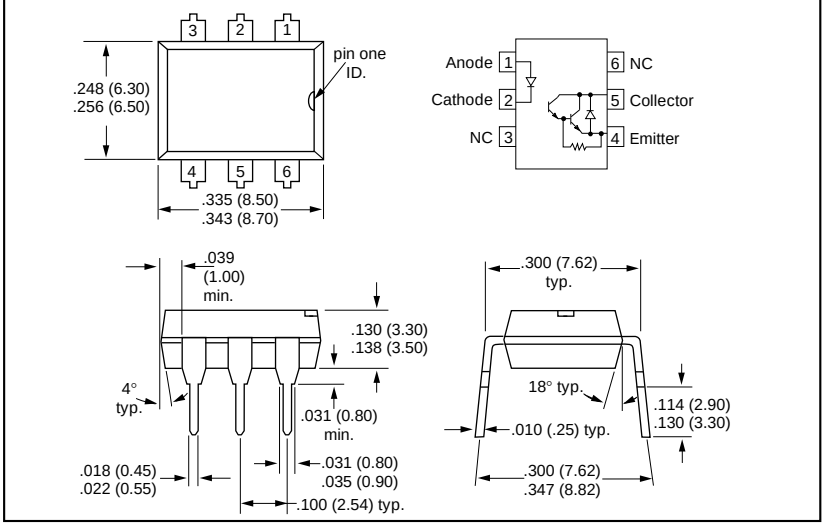
Detector

Collector-Emitter Breakdown Voltage..... 60 V
Emitter-Collector Breakdown Voltage..... 5 V
Power Dissipation at 25°C Ambient .....200 mW
Derate Linearly from 25°C.....2.6 mW/°C

Package

Isolation Test Voltage (t=1 sec.) .....5300 VAC_{RMS}
Isolation Resistance
V_{IO}=500 V, T_A=25°C .....$\geq 10^{12}$ Ω
V_{IO}=500 V, T_A=100°C .....$\geq 10^{11}$ Ω
Total Dissipation at 25°C .....250 mW
Derate Linearly from 25°C.....3.3 mW/°C
Creepage Path ..... 7 min mm
Clearance Path..... 7 min mm
Storage Temperature.....–55°C to +150°C
Operating Temperature .....–55°C to +100°C
Lead Soldering Time at 260°C ..... 10 sec.

Dimensions in inches (mm)



Electrical Characteristics (T_A=25°C)

	Symbol	Min.	Typ.	Max.	Unit	Condition
Emitter						
Forward Voltage	V_F		1.25	1.5	V	I_F=10 mA
Reverse Current	I_R		0.01	100	µA	V_R=3.0 V
Capacitance	C_O		25		pF	V_R=0 V
Detector						
Breakdown Voltage Collector-Emitter	BV_{CEO}	60			V	I_C=100 µA, I_F=0
Leakage Current Collector-Emitter	I_{CEO}		1.0	100	nA	V_{CE}=50 V, I_F=0
Package						
Current Transfer Ratio IL66B-1 IL66B-2	CTR	 200 750	 1000		 % %	I_F=2 mA, V_CE=5 V
Saturation Voltage Collector-Emitter	V_{CEsat}			1.0	V	I_C=10 mA, I_F=10 mA
Turn-On,Turn-Off Time	t_{on},t_{off}			200	µs	V_{CC}=10 V I_F=2 mA, R_L=100 Ω

Figure 1. Forward voltage versus forward current

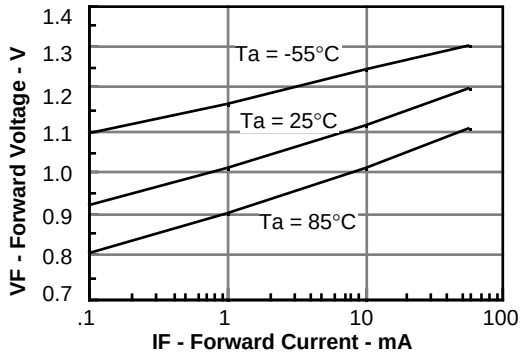


Figure 2. Normalized non-saturated and saturated CTRce versus LED current

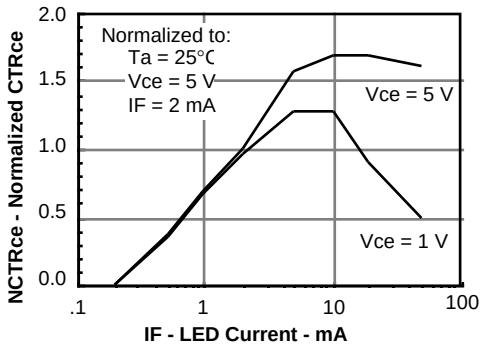


Figure 3. Normalized non-saturated and saturated CTRce versus LED current

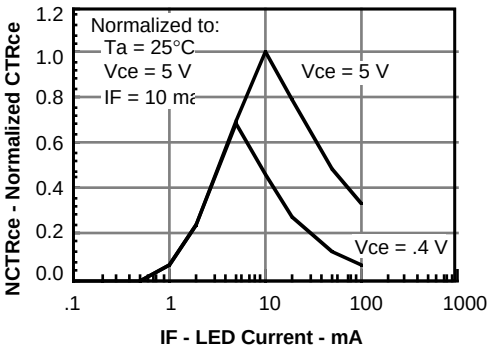


Figure 4. Non-saturated and saturated collector emitter current versus LED current

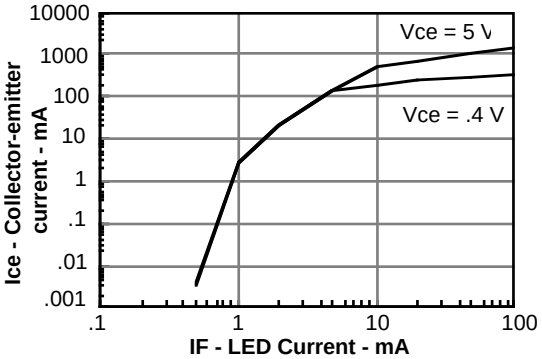


Figure 5. High/low propagation delay versus collector load resistance and LED current

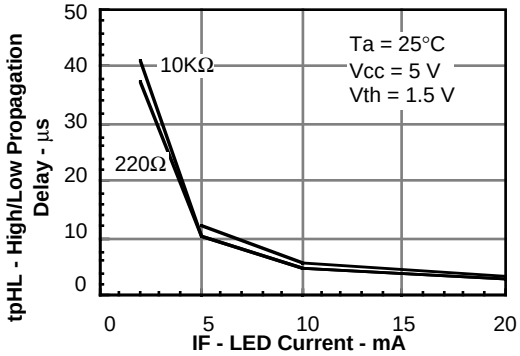


Figure 6. Low/high propagation delay versus collector load resistance and LED current