SIEMENS

SINGLE CHANNEL IL66 SERIES
DUAL CHANNEL ILD66 SERIES
QUAD CHANNEL ILQ 66 SERIES
PHOTODARLINGTON OPTOCOUPLER

FEATURES

- **Internal RBE for High Stability**
- **Current Transfer Ratio is Tested at 2.0 mA and 0.7 mA Input**
  IL/ILD/ILQ66 Series:
  - **1, 100% min. at I_F=2 mA, V_{CE}=10 V**
  - **2, 300% min. at I_F=2 mA, V_{CE}=10 V**
  - **3, 400% min. at I_F=0.7 mA, V_{CE}=10 V**
  - **4, 500% min. at I_F=2 mA, V_{CE}=5 V**
- **Four Available CTR Categories per Package Type**
- **BV_{CEO}>60 V**
- **Standard DIP Packages**
- **Underwriters Lab File #E52744**
- **VDE 0884 Available with Option 1**

DESCRIPTION

IL66, ILD66, and ILQ66 are optically coupled isolators employing Gallium Arsenide infrared emitters and silicon photodarlington detectors. Switching can be accomplished while maintaining a high degree of isolation between driving and load circuits, with no crosstalk between channels.

Maximum Ratings

Emitter (Each Channel)

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

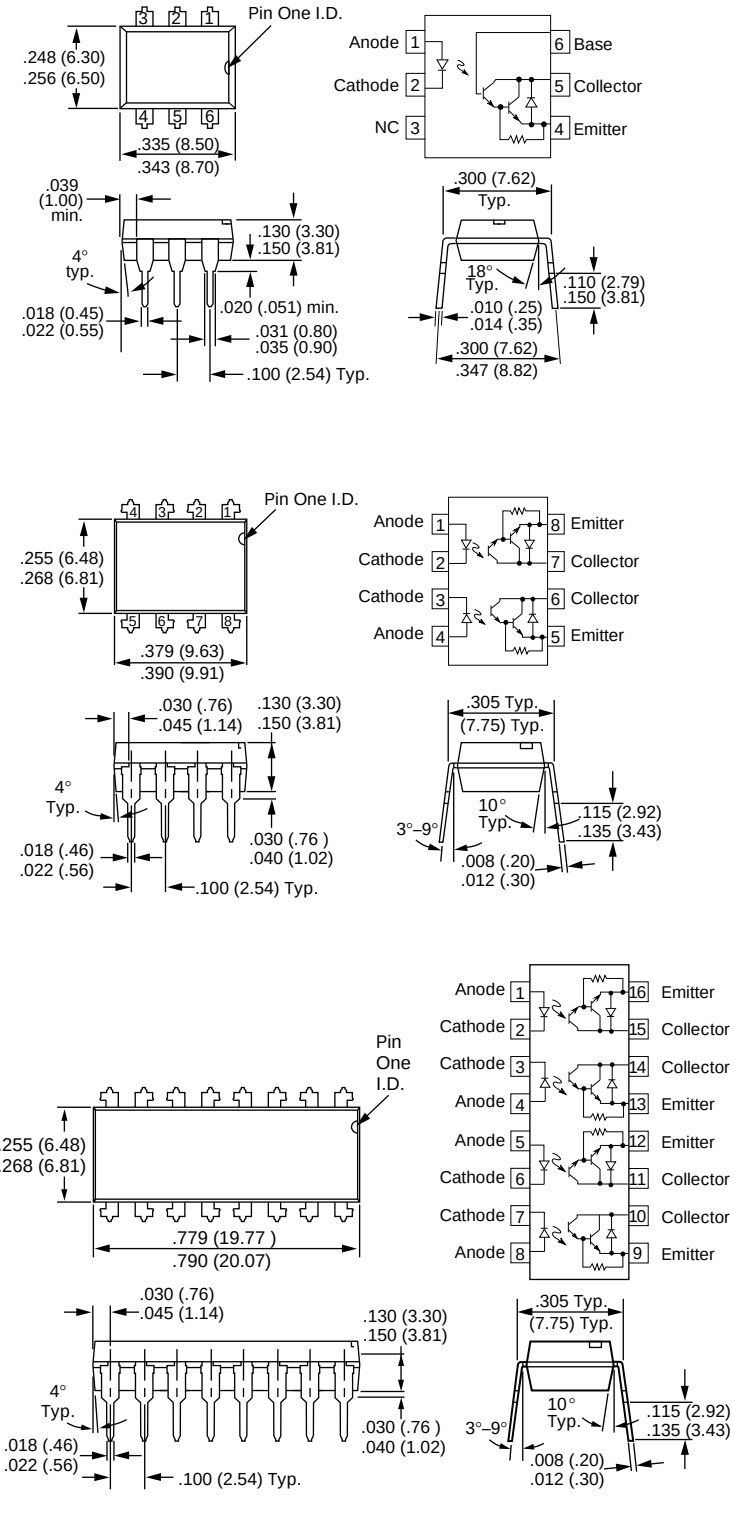
Detector (Each Channel)

Power Dissipation at 25°C Ambient..... 150 mW
Derate Linearly from 25°C ..... 2.0 mW/°C

Package

Isolation Test Voltage
(t=1 sec.).....5300 VAC_{RMS}
Total Package Power Dissipation at 25°C
IL66..... 250 mW
ILD66 ..... 400 mW
ILQ66 ..... 500 mW
Derate Linearly from 25°C
IL66..... 3.3 mW/°C
ILD66 ..... 5.33 mW/°C
ILQ66 ..... 6.67 mW/°C
Creepage.....7 min mm
Clearance .....7 min mm
Comparative Tracking Index.....175
Isolation Resistance
V_{IO}=500 V, T_A=25°C.....$\geq 10^{12}\ \Omega$
V_{IO}=500 V, T_A=100°C.....$\geq 10^{11}\ \Omega$
Storage Temperature ..... –55°C to +125°C
Operating Temperature..... –55°C to +100°C
Lead Soldering Time at 260°C .....10 sec.

Dimensions in inches (mm)



Electrical Characteristics (T_A=25C)

	Symbol	Min.	Typ.	Max..	Unit	Condition
GaAs Emitter						
Forward Voltage			1.25	1.5	V	I_F=20 mA
Reverse Current			0.1	10	µA	V_R=6.0 V
Capacitance			25		pF	V_R=0 V
Photodarlington						
Breakdown Voltage Collector-Emitter Collector-Base (IL66)	 BV_{CEO} BV_{CBO}	 60 60			 V V	 I_C=1 mA, I_F=0 I_C=10 µA
Leakage Current, Collector-Emitter	I_{CEO}		1.0	100	nA	V_{CE}=50 V, I_F=0
Capacitance, Collector-Emitter			3.4		pF	V_{CE}=10 V
Coupled Characteristics						
Current Transfer Ratio IL/ILD/ILQ66-1 IL/ILD/ILQ66-2 IL/ILD/ILQ66-3 IL/ILD/ILQ66-4	CTR	 100 300 400 500	 400 500 500 750		 % % % %	 I_F=2 mA,V_{CE}=10 V I_F=2 mA,V_{CE}=10 V I_F=0.7 mA, V_{CE}=10 V I_F=2 mA, V_{CE}=5 V
Saturation Voltage, Collector-Emitter	V_{CEsat}		0.9	1.0	V	I_C=10 mA, I_F=10 mA
Rise Time -1, -2, -4	t_R			200	µs	V_{CC}=10 V
Fall Time -1, -2, -4	t_F			200	µs	I_F=2 mA, R_C=100 Ω
Rise Time -3	t_R			200	µs	I_F=0.7 mA
Fall Time -3	t_F			200	µs	V_{CC}=10 V, R_L=100 Ω

Figure 1. Forward voltage versus forward current

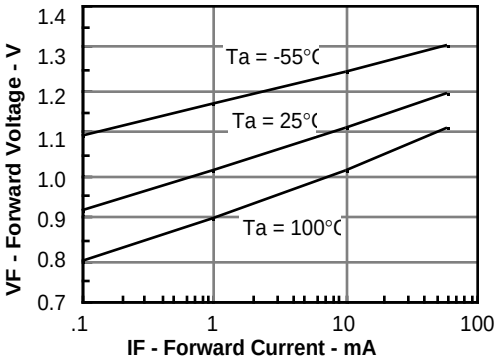


Figure 2. Normalized non-saturated and saturated CTRce versus LED curren

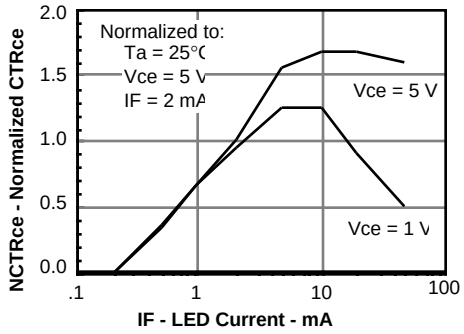


Figure 3. Normalized non-saturated and saturated CTRce versus LED current

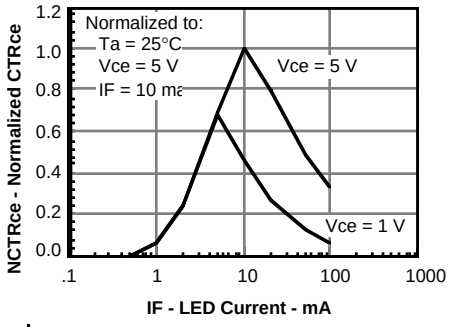


Figure 4. Non-saturated and saturated collector emitter current versus LED current

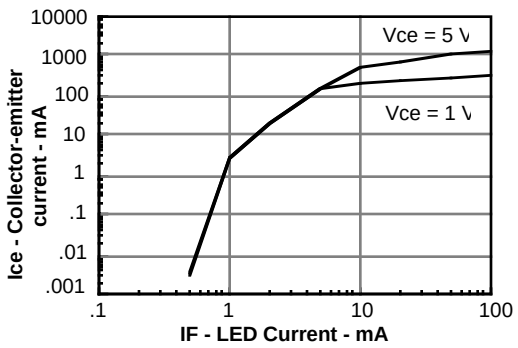


Figure 5. Collector-base photocurrent versus LED current

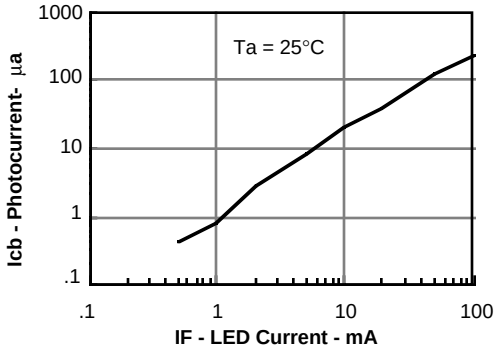


Figure 6. Collector-emitter current versus LED current

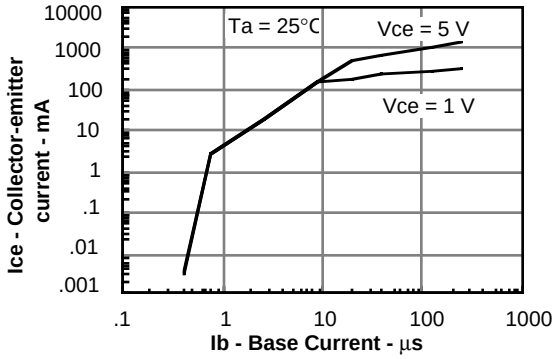


Figure 7. Non-saturated and saturated HFE versus LED current

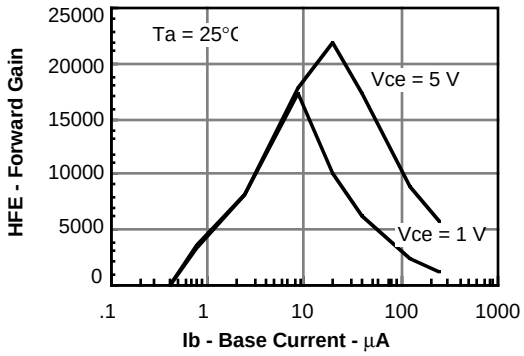


Figure 8. High/low propagation delay versus collector load resistance and LED current

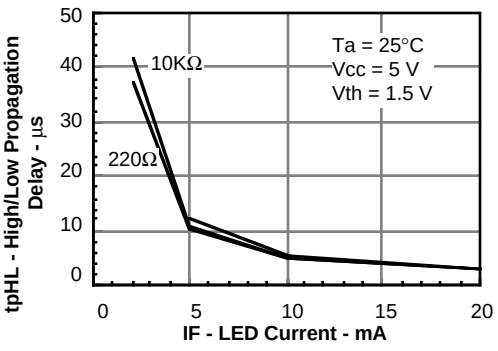


Figure 9. Low/high propagation delay versus collector load resistance and LED current

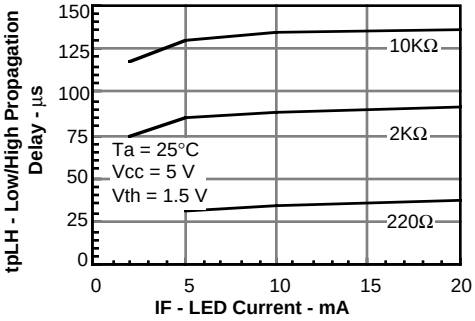


Figure 10. Switching waveform

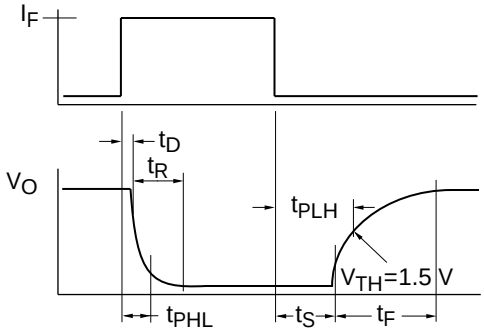


Figure 11. Switching schematic