

SINGLE CHANNEL IL66 SERIES DUAL CHANNEL ILD66 SERIES QUAD CHANNEL ILQ66 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 $I_F=2\text{ mA}$, $V_{CE}=10\text{ V}$
 - 2, 300% min. at $I_F=2\text{ mA}$, $V_{CE}=10\text{ V}$
 - 3, 400% min. at $I_F=0.7\text{ mA}$, $V_{CE}=10\text{ V}$
 - 4, 500% min. at $I_F=2\text{ mA}$, $V_{CE}=5\text{ V}$
- Four Available CTR Categories per Package Type
- $BV_{CEO} > 60\text{ V}$
- 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

($t=1\text{ sec.}$)..... 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

$V_{IO}=500\text{ V}$, $T_A=25^\circ\text{C}$ $\geq 10^{12}\ \Omega$

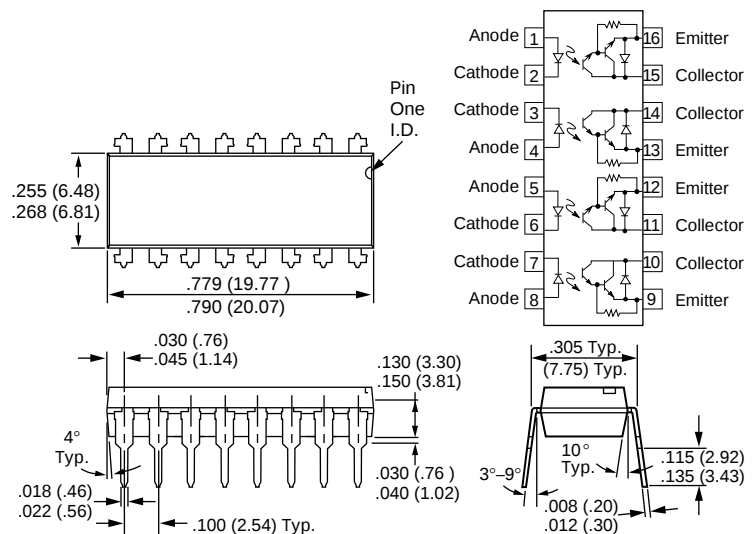
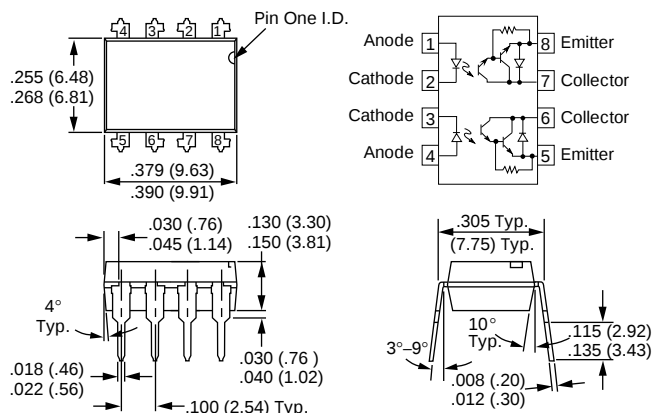
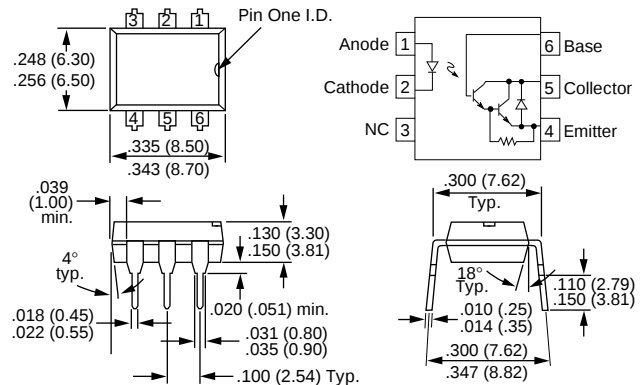
$V_{IO}=500\text{ V}$, $T_A=100^\circ\text{C}$ $\geq 10^{11}\ \Omega$

Storage Temperature..... -55°C to $+125^\circ\text{C}$

Operating Temperature..... -55°C to $+100^\circ\text{C}$

Lead Soldering Time at 260°C..... 10 sec.

Dimensions in inches (mm)



Electrical Characteristics (T_A=25°C)

	Symbol	Min.	Typ.	Max..	Unit	Condition
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

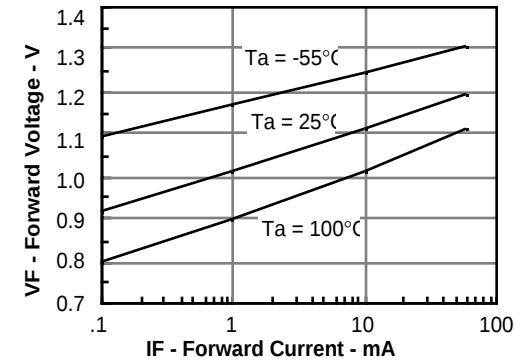


Figure 2. Normalized non-saturated and saturated CTRce versus LED current

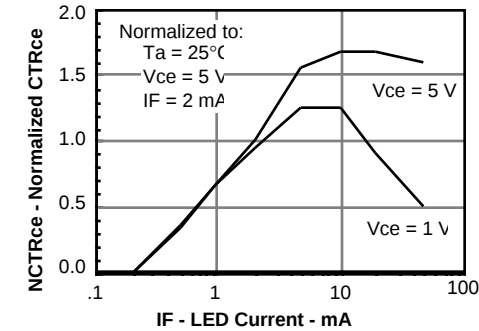


Figure 3. Normalized non-saturated and saturated CTRce versus LED current

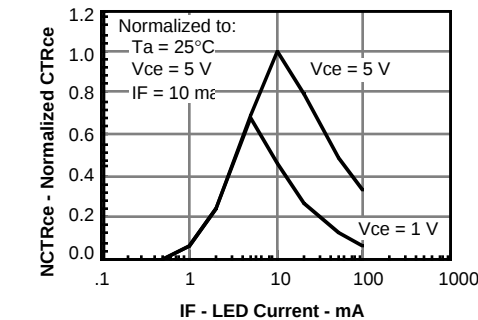


Figure 4. Non-saturated and saturated collector emitter current versus LED current

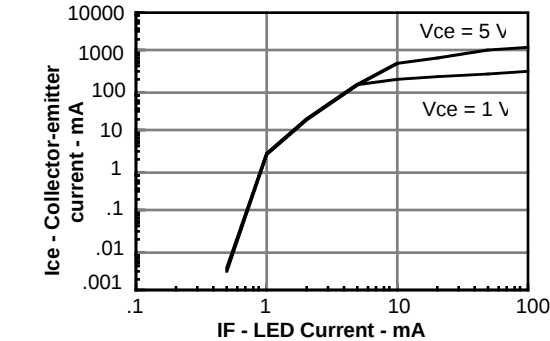


Figure 5. Collector-base photocurrent versus LED current

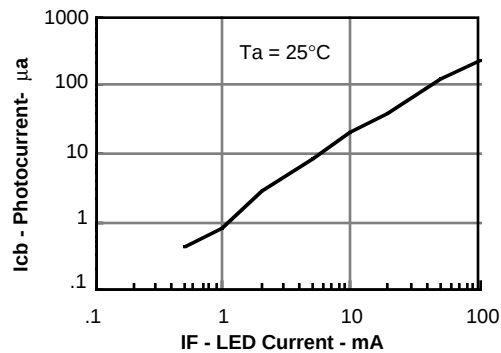


Figure 6. Collector-emitter current versus LED current

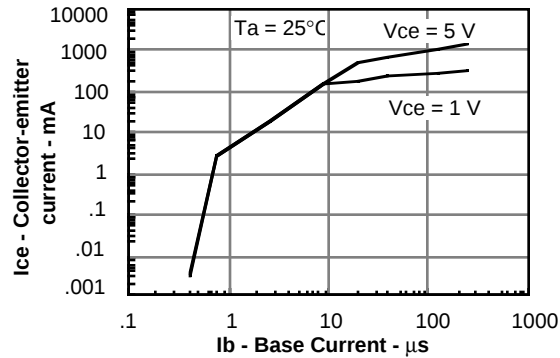


Figure 7. Non-saturated and saturated HFE versus LED current

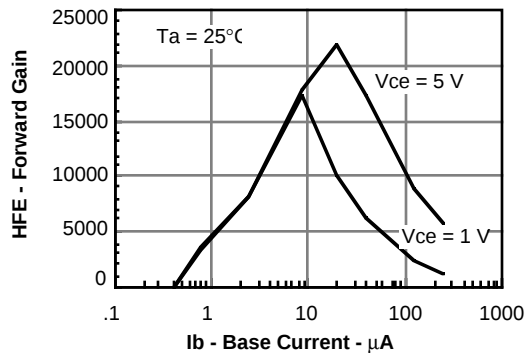


Figure 8. High/low propagation delay versus collector load resistance and LED current

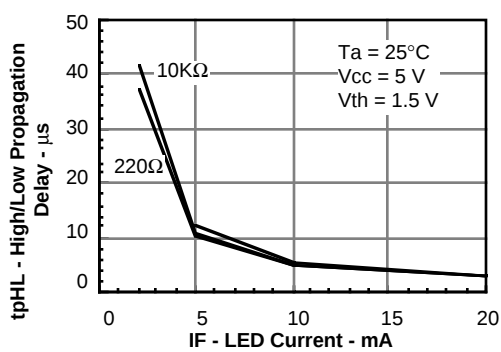


Figure 9. Low/high propagation delay versus collector load resistance and LED current

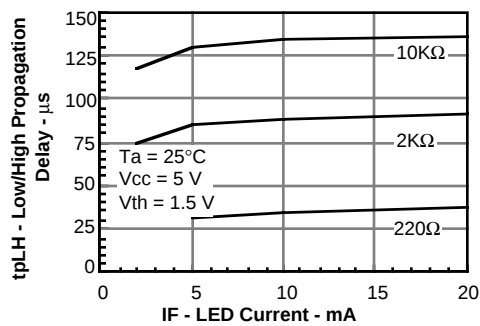


Figure 10. Switching waveform

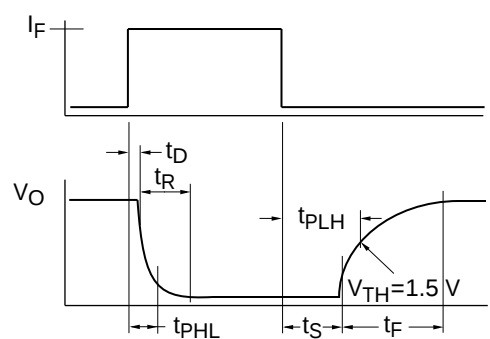


Figure 11. Switching schematic

