


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 $I_F=2\text{ mA}$, $V_{CE}=10\text{ V}$
 - 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

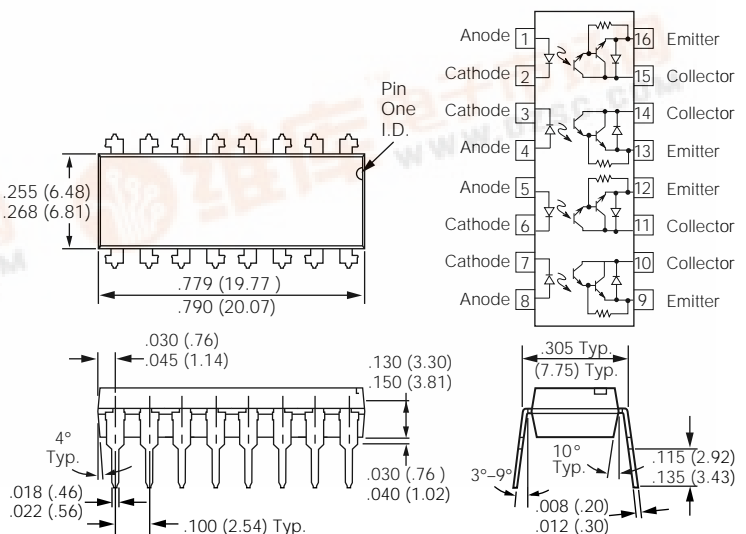
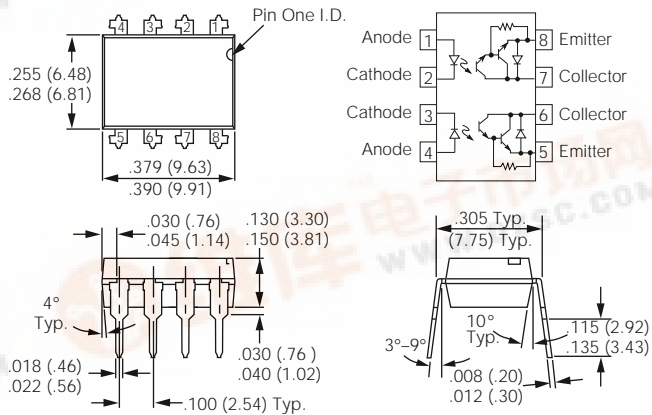
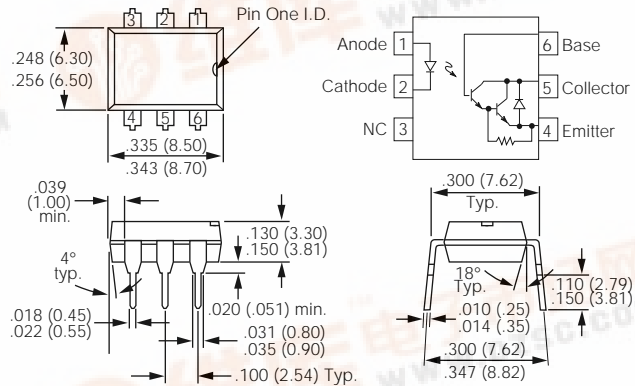
Detector (Each Channel)

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

Package

Isolation Test Voltage
 (t=1 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°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
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

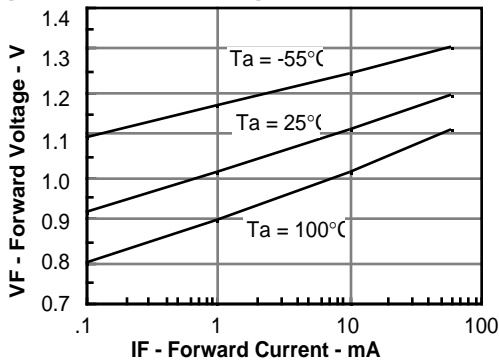


Figure 2. Normalized non-saturated and saturated CTR_{ce} versus LED current

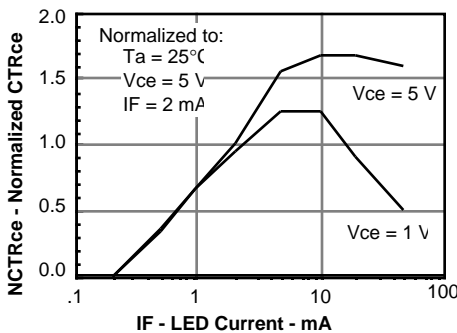


Figure 3. Normalized non-saturated and saturated CTR_{ce} versus LED current

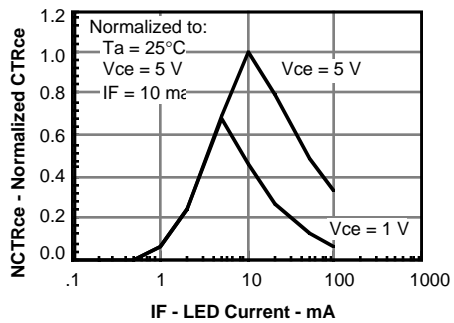


Figure 4. Non-saturated and saturated collector emitter current versus LED current

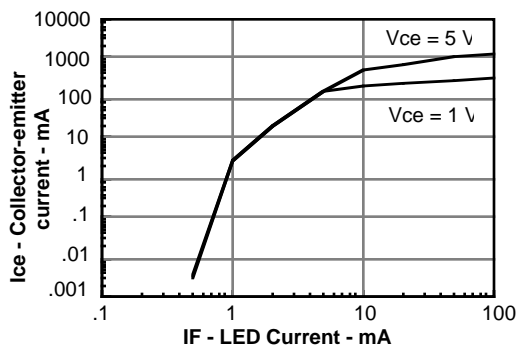


Figure 5. Collector-base photocurrent versus LED current

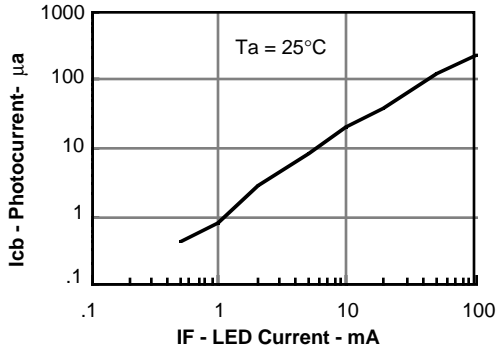


Figure 6. Collector-emitter current versus LED current

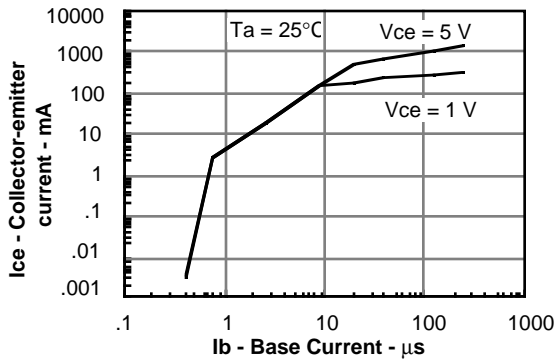


Figure 7. Non-saturated and saturated HFE versus LED current

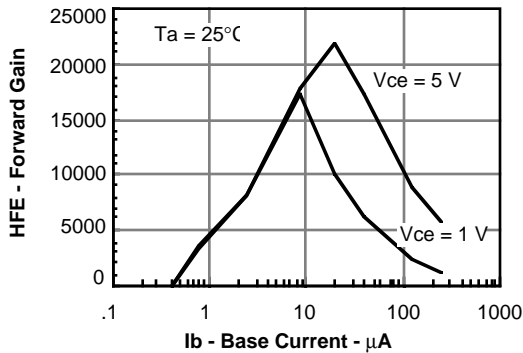


Figure 8. High/low propagation delay versus collector load resistance and LED current

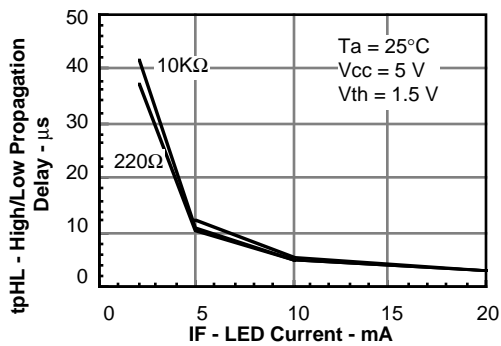


Figure 9. Low/high propagation delay versus collector load resistance and LED current

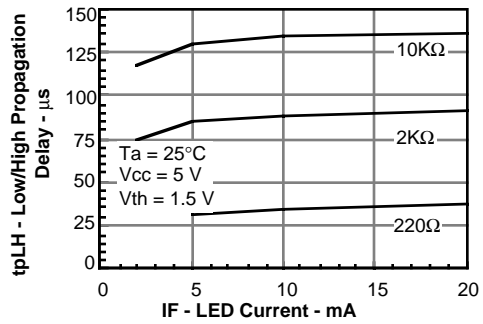


Figure 10. Switching waveform

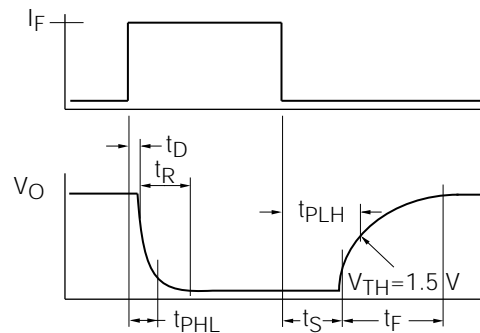


Figure 11. Switching schematic

