

SIEMENS

SINGLE CHANNEL IL66 SERIES DUAL CHANNEL ILD66 SERIES QUAD CHANNEL ILQ66 SERIES PHOTODARLINGTON OPTOCOUPLER

FEATURES

- Internal R_{BE} 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)

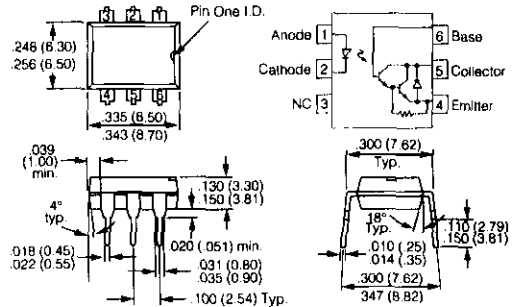
Power Dissipation at 25°C Ambient	150 mW
Derate Linearly from 25°C	2.0 mW/°C

Package

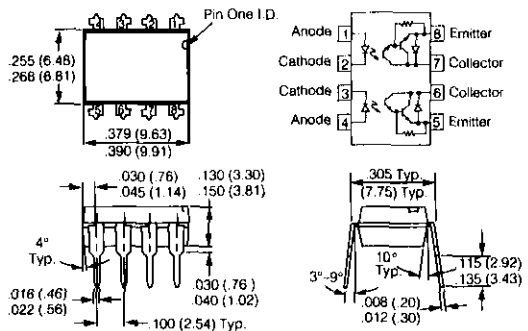
Isolation Test Voltage ($t=1$ sec.)	5300 VAC _{RMS}
Total Package Power Dissipation at 25°C	
IL66	250 mW
ILD66	400 mW
ILQ66	500 mW
Derate Linearly from 25°C	
IL66	3.3 mW/°C
ILD66	5.33 mW/°C
ILQ66	6.67 mW/°C
Creepage	7 min mm
Clearance	7 min mm
Comparative Tracking Index	175
Isolation Resistance	
$V_{IO}=500$ V, $T_A=25^\circ\text{C}$	$\geq 10^{12} \Omega$
$V_{IO}=500$ 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.

Package Dimensions in Inches (mm)

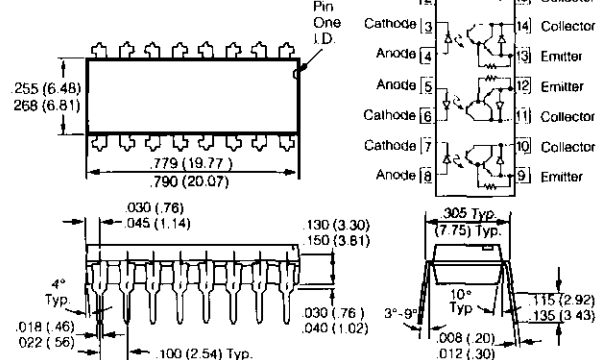
IL66 (Single Channel)



ILD66 (Dual Channel)



ILQ66 (Quad Channel)



Electrical Characteristics (T_A=25°C)

	Symbol	Min.	Typ.	Max.	Unit	Condition
GaAs Emitter						
Forward Voltage	V _F		1.25	1.5	V	I _F =20 mA
Reverse Current	I _R		0.1	10	μA	V _R =6.0 V
Capacitance	C _O		25		pF	V _R =0 V
Photodarlington						
Breakdown Voltage						
Collector-Emitter	BV _{CEO}	60			V	I _C =1 mA, I _F =0
Collector-Base (IL66)	BV _{CBO}	60			V	I _C =10 μA
Collector-Emitter						
Leakage Current	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	CTR					
IL/ILD/ILQ66-1		100	400		%	I _F =2 mA, V _{CE} =10 V
IL/ILD/ILQ66-2		300	500		%	I _F =2 mA, V _{CE} =10 V
IL/ILD/ILQ66-3		400	500		%	I _F =0.7 mA, V _{CE} =10 V
IL/ILD/ILQ66-4		500	750		%	I _F =2 mA, V _{CE} =5 V
Collector-Emitter						
Saturation Voltage	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

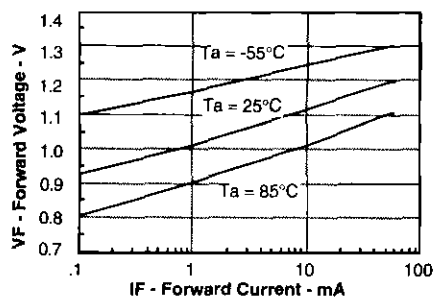


Figure 3. Normalized non-saturated and saturated CTRce versus LED current

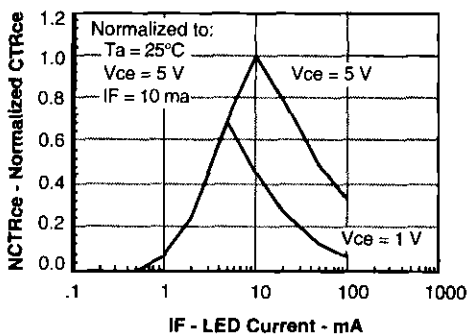


Figure 2. Normalized non-saturated and saturated CTRce versus LED current

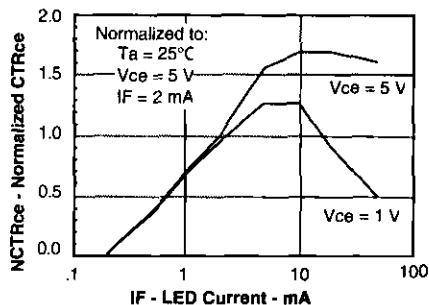
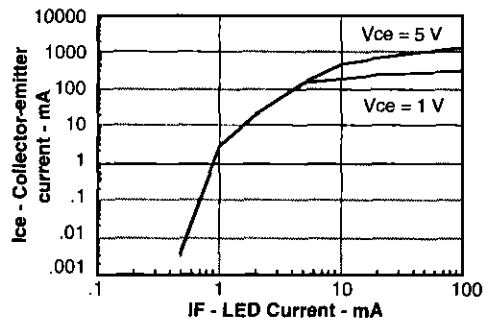


Figure 4. Non-saturated and saturated collector emitter current versus LED current



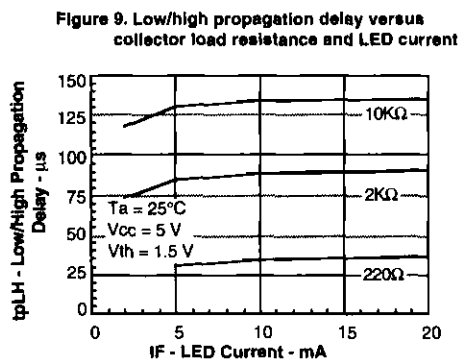
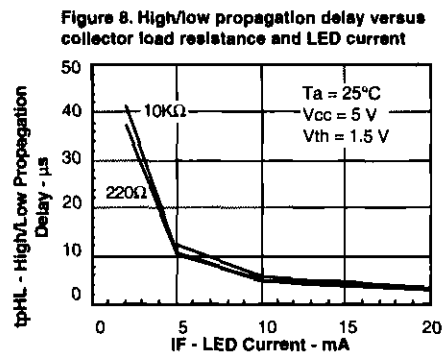
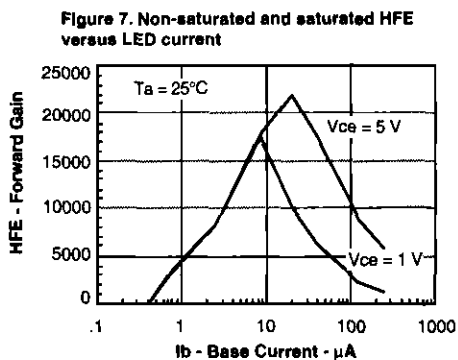
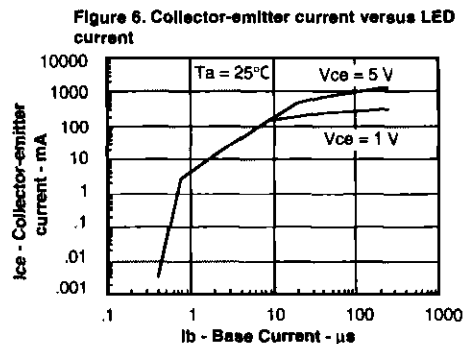
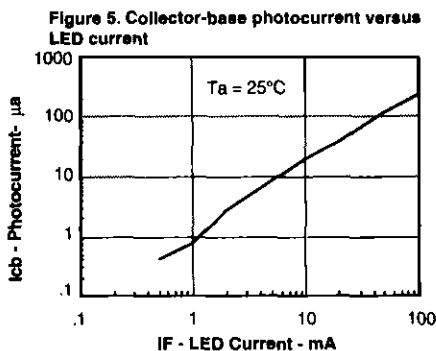


Figure 10. Switching Waveform

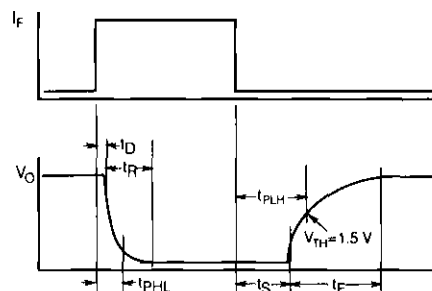


Figure 11. Switching Schematic

