FEATURES

- **High Current Transfer Ratio, 75% to 450%**
- **Minimum Current Transfer Ratio, 10%**
- **Guaranteed at I_F=1.0mA**
- **High Collector-Emitter Voltage, BV_{CEO}=70V**
- **Long Term Stability**
- **Industry Standard DIP Package**
- **Underwriters Lab File #E52744**
- **VDE 0884 Available with Option 1**

DESCRIPTION

The IL201/202/203 are optically coupled pairs employing a Gallium Arsenide infrared LED and a Silicon NPN phototransistor. Signal information, including a DC level, can be transmitted by the device while maintaining a high degree of electrical isolation between input and output. The IL201/202/203 can be used to replace relays and transformers in many digital interface applications, as well as analog applications such as CRT modulation.

Maximum Ratings

Emitter

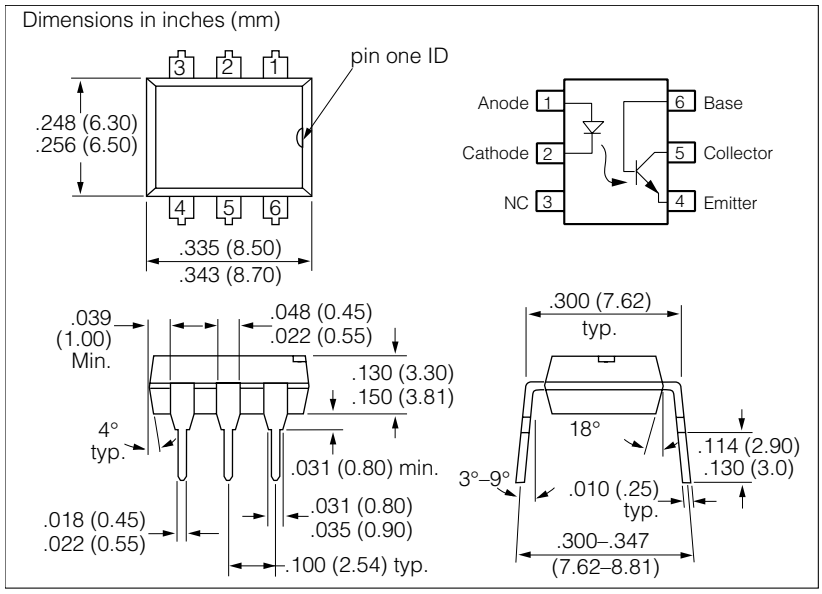
Peak Reverse Voltage ..... 6.0 V
Continuous Forward Current ..... 60 mA
Power Dissipation at 25°C..... 100 mW
Derate Linearly from 25°C ..... 1.33 mW/°C

Detector

Collector-Emitter Breakdown Voltage, BV_{CEO} ..... 70 V
Emitter-Collector Breakdown Voltage, BV_{ECO} ..... 7.0 V
Collector-Base Breakdown Voltage, BV_{CBO} ..... 70 V
Power Dissipation..... 200 mW
Derate Linearly from 25°C ..... 2.6 mW/°C

Package

Isolation Test Voltage (t=1.0 sec.) ..... 5300 V_{RMS}
Total Package Dissipation at 25°C A (LED + Detector)..... 250 mW
Derate Linearly from 25°C ..... 3.3 mW/°C
Creepage ..... ≥7.0 min
Clearance..... ≥7.0 min
Storage Temperature ..... –55°C to +150°C
Operating Temperature ..... –55°C to +100°C
Lead Soldering Time at 260°C ..... 10 sec.



Characteristics 0°C to 70°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Emitter						
Forward Voltage	V_F	—	1.2	1.5	V	I_F=20 mA
Forward Voltage		—	1.0	1.2		I_F=1.0 mA
Breakdown Voltage		6.0	20	—		I_R=10 µA
Reverse Current	I_R	—	0.1	10	µA	V_R=6.0 V T_A=25°C
Detector						
Transistor Gain	HFE	100	200	—	—	V_{CE}=5.0 V I_C=100 µA
Breakdown Voltage Collector-Emitter	BV_{CEO}	70	—	—	V	I_C=100 µA
Breakdown Voltage Emitter-Collector	BV_{ECO}	7.0	10	—		I_E=100 µA
Breakdown Voltage Collector-Base	BV_{CBO}	70	90	—		I_C=10 µA
Leakage Current Collector-Emitter	I_{CEO}	—	5.0	50	nA	V_{CE}=10 V, T_A=25°C
Package						
Base Current Transfer Ratio	CTRCB	0.15	—	—	%	I_F=10 mA V_{CB}=10 V
	V_{CEsat}	—	—	0.4	V	I_F=10 mA I_C=2.0 mA
DC Current Transfer Ratio IL201 IL202 IL203	CTR	 75 125 225	 100 200 300	 150 250 450	%	I_F=10 mA, V_{CE}=10 V
DC Current Transfer Ratio IL201 IL202 IL203	CTR	 10 30 50	—	—	%	I_F=1.0 mA, V_{CE}=10 V

Figure 1. Forward voltage versus forward current

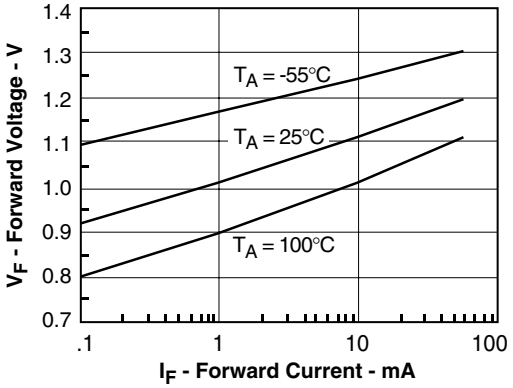


Figure 2. Normalized non-saturated and saturated CTR at T_A=25°C versus LED current

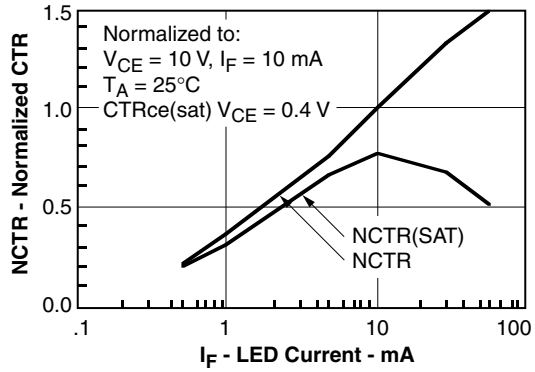


Figure 3. Normalized non-saturated and saturated CTR at T_A=50°C versus LED current

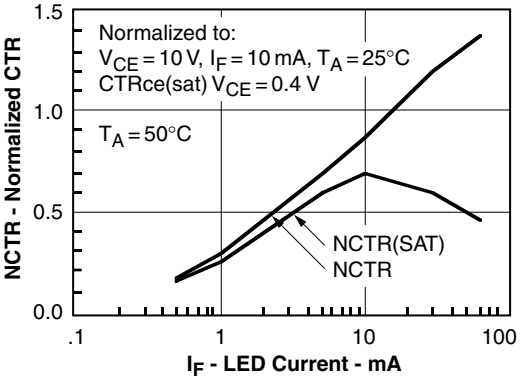


Figure 4. Normalized non-saturated and saturated CTR at T_A=70°C versus LED current

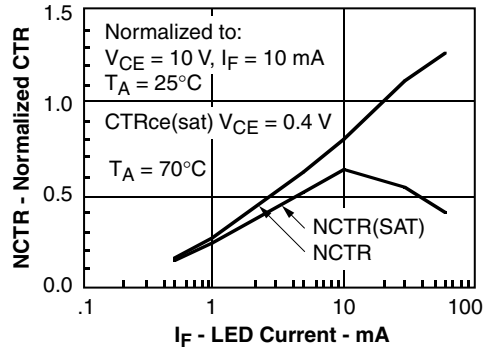


Figure 5. Normalized non-saturated and saturated CTR at T_A=85°C versus LED current

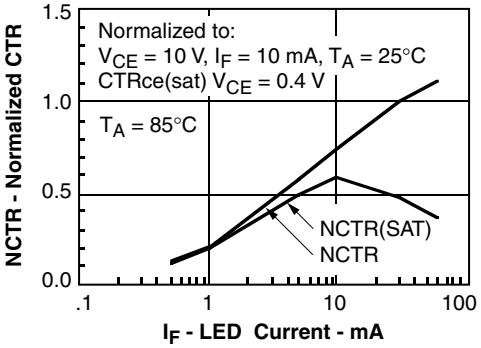


Figure 6. Collector-emitter current versus temperature and LED current

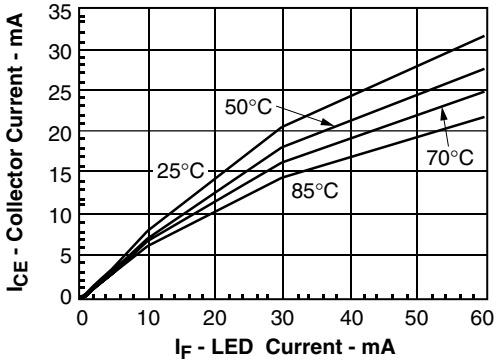


Figure 7. Collector-emitter leakage current versus temperature

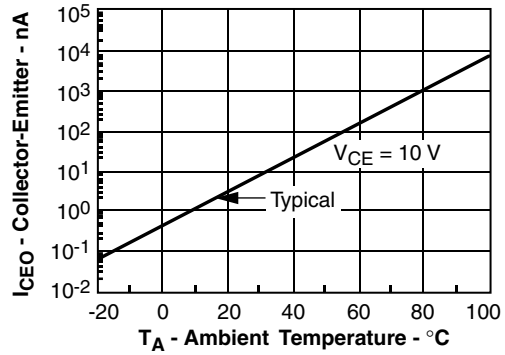


Figure 8. Normalized CTRcb versus LED current and temperature

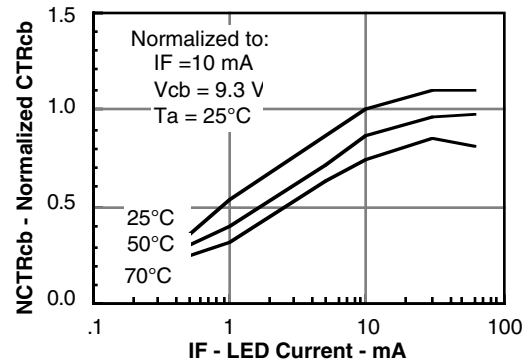


Figure 9. Collector base photocurrent versus LED current

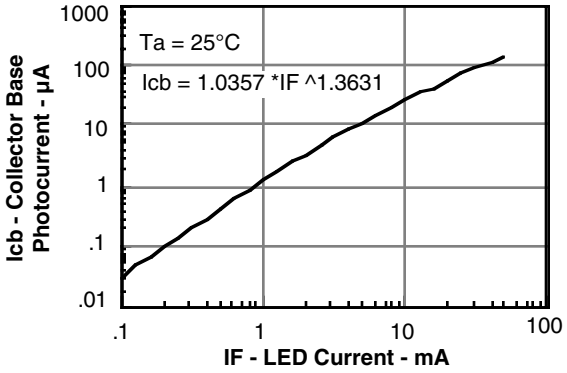


Figure 10. Normalized photocurrent versus I_F and temperature

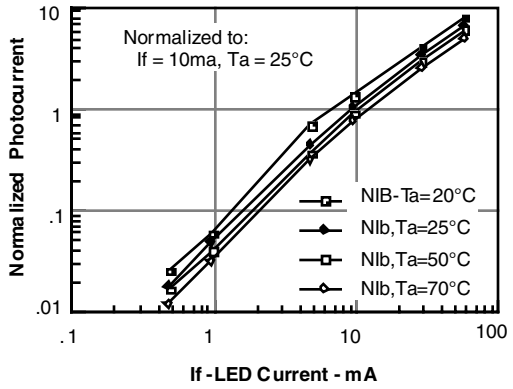


Figure 11. Normalized saturated HFE versus base current and temperature

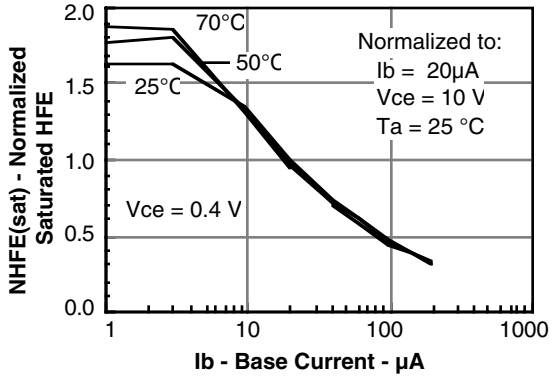


Figure 12. Propagation delay versus collector load resistor

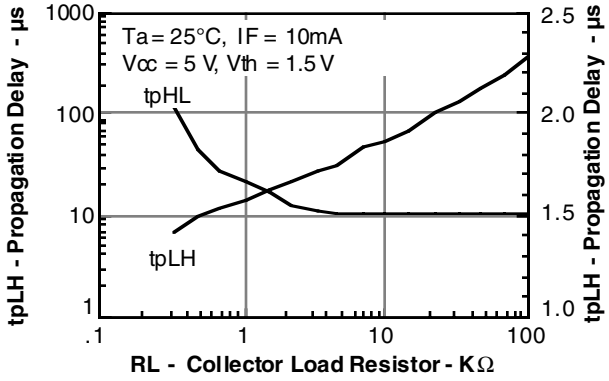


Figure 13. Normalized non-saturated and saturated CTR_{ce} versus LED current

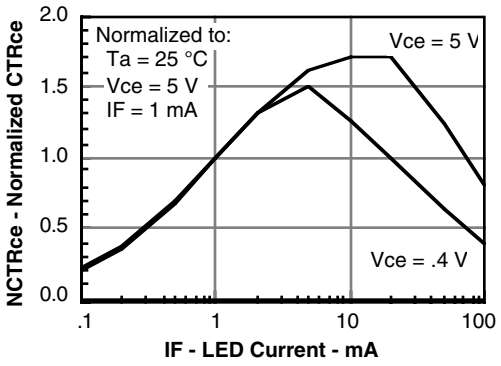


Figure 14. Normalized non-saturated HFE versus base current and temperature