

NEW

FEATURES

- High Current Transfer Ratio, $I_F=1$ mA, IL221A, 100% Minimum
IL222A, 200% Minimum
IL223A, 500% Minimum
- Withstand Test Voltage, 2500 VAC_{RMS}
- Electrical Specifications Similar to Standard 6 Pin Coupler
- Industry Standard SOIC-8 Surface Mountable Package
- Standard Lead Spacing, .05"
- Available in Tape and Reel Option (Conforms to EIA Standard RS481A)
- Compatible with Dual Wave, Vapor Phase and IR Reflow Soldering
- Underwriters Lab File #E52744 (Code Letter P)

DESCRIPTION

The IL221A/IL222A/IL223A is a high current transfer ratio (CTR) optocoupler with a Gallium Arsenide infrared LED emitter and a silicon NPN photodarlington transistor detector.

This device has a CTR tested at an 1 mA LED current. This low drive current permits easy interfacing from CMOS to LSTTL or TTL.

This optocoupler is constructed in a standard SOIC-8 foot print which makes it ideally suited for high density applications. In addition to eliminating through-holes requirements, this package conforms to standards for surface mounted devices.

Maximum Ratings

Emitter

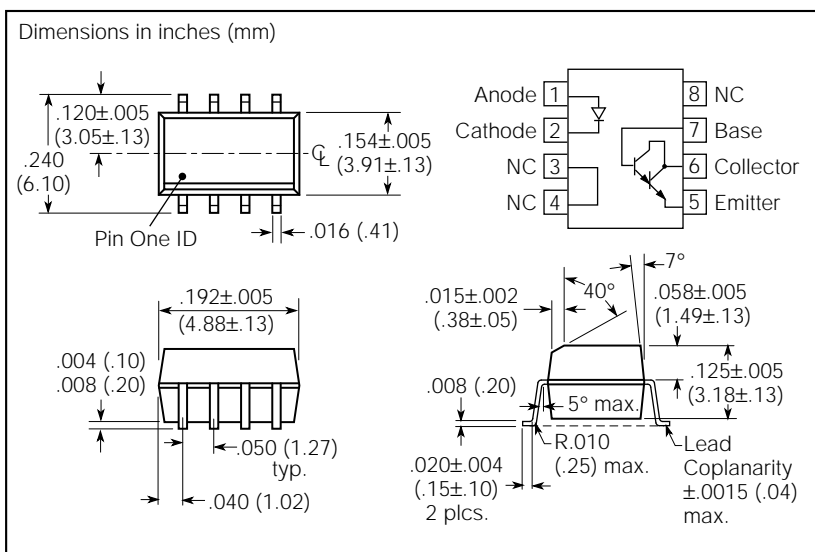
Peak Reverse Voltage 6.0 V
 Continuous Forward Current 60 mA
 Power Dissipation at 25°C 90 mW
 Derate Linearly from 25°C 1.2 mW/°C

Detector

Collector-Emitter Breakdown Voltage 30 V
 Emitter-Collector Breakdown Voltage 5 V
 Collector-Base Breakdown Voltage 70 V
 Power Dissipation 150 mW
 Derate Linearly from 25°C 2.0 mW/°C

Package

Total Package Dissipation at 25°C Ambient (LED + Detector) 240 mW
 Derate Linearly from 25°C 3.3 mW/°C
 Storage Temperature -55°C to +150°C
 Operating Temperature -55°C to +100°C
 Soldering Time at 260°C 10 sec.



Characteristics (T_A=25°C)

	Symbol	Min.	Typ.	Max.	Unit	Condition
Emitter						
Forward Voltage	V _F		1.0	1.5	V	I _F =1 mA
Reverse Current	I _R		0.1	100	μA	V _R =6.0 V
Capacitance	C _O		25		pF	V _R =0 V, F=1 MHz
Detector						
Breakdown Voltage Collector-Emitter	B _{VCEO}	30			V	I _C =100 μA
Breakdown Voltage Emitter-Collector	B _{VECO}	5			V	I _E =100 μA
Voltage, Collector-Base	BV _{CBO}	70				I _C =10 μA
Capacitance, Collector-Emitter	C _{CE}		3.4		pF	V _{CE} =10 V
Package						
DC Current Transfer Ratio	CTR _{DC}					I _F =1 mA, V _{CE} =5 V
IL221A			100			
IL222A			200			
IL223A			300			
Saturation Voltage, Collector-Emitter	V _{CEsat}			1	V	I _{CE} =0.5 mA, I _F =1 mA
Isolation Test Voltage	V _{IO}	2500			VAC _{RMS}	t=1 sec.
Capacitance, Input to Output	C _{IO}		0.5		pF	
Resistance, Input to Output	R _{IO}		100		GΩ	

Figure 1. Forward voltage versus forward current

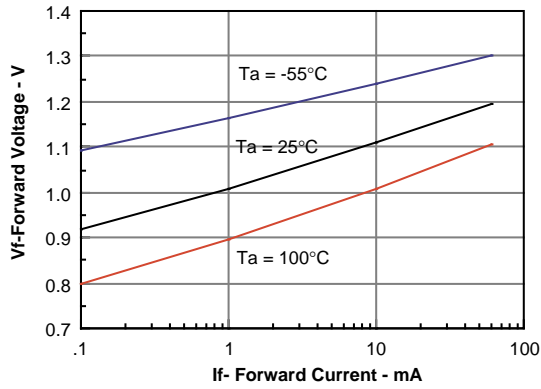


Figure 2. Peak LED current versus duty factor, Tau

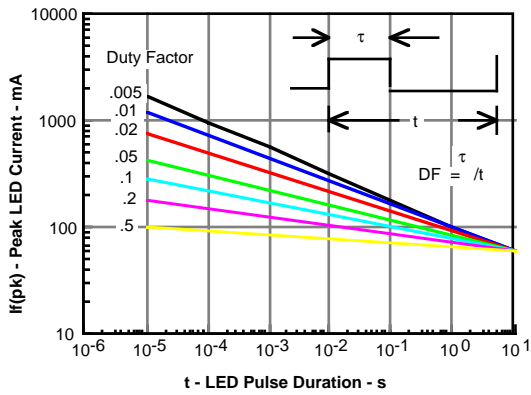


Figure 3. Normalized CTR_{CB} versus I_f

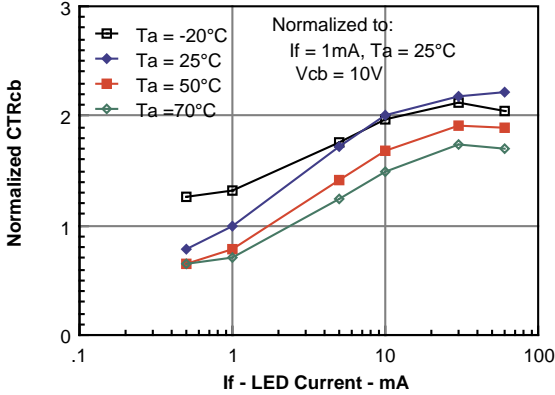


Figure 4. Normalized CTR_{CE} versus LED current

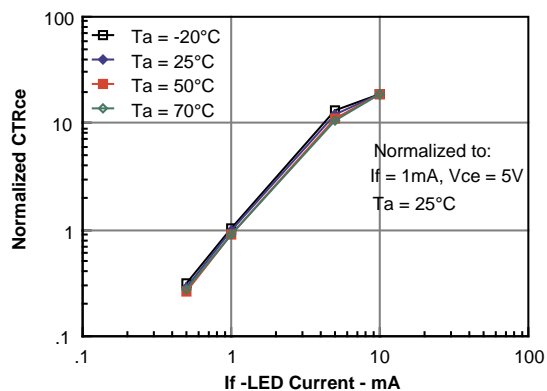


Figure 5. CTR_{CB} versus LED current

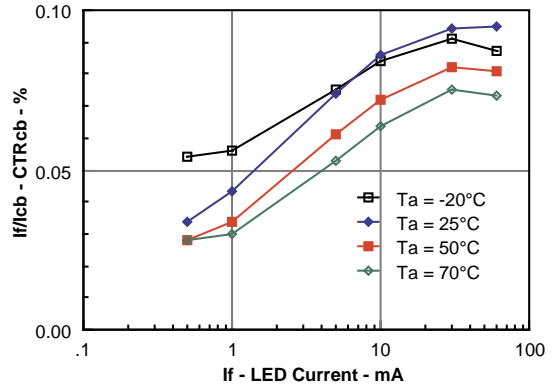


Figure 6. CTR versus LED current

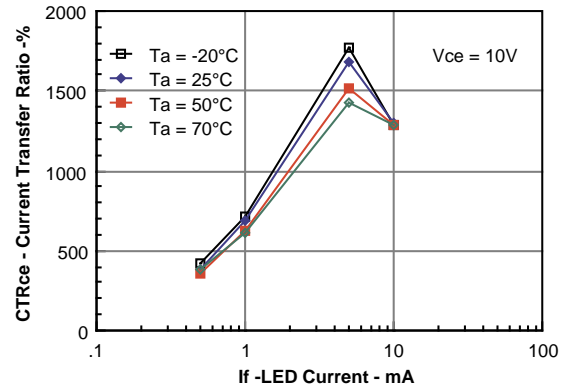


Figure 7. Collector current versus LED current

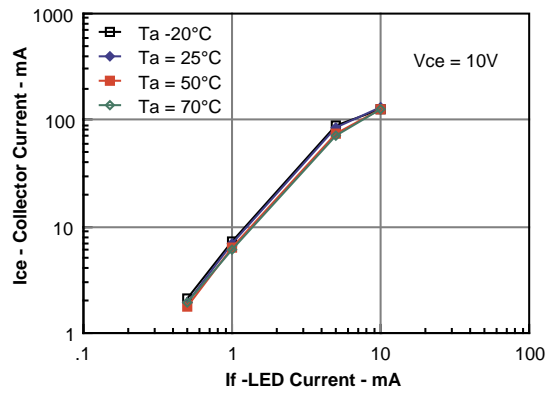


Figure 8. Photocurrent versus LED current

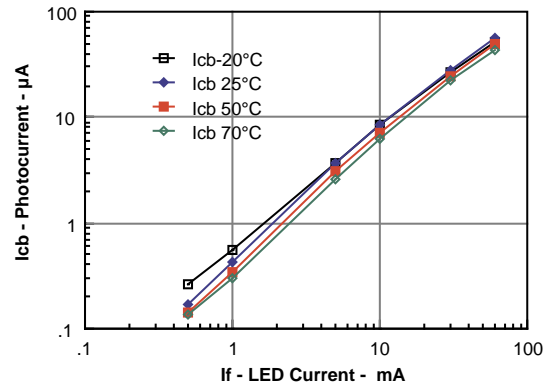


Figure 9. Normalized I_{CB} versus I_F

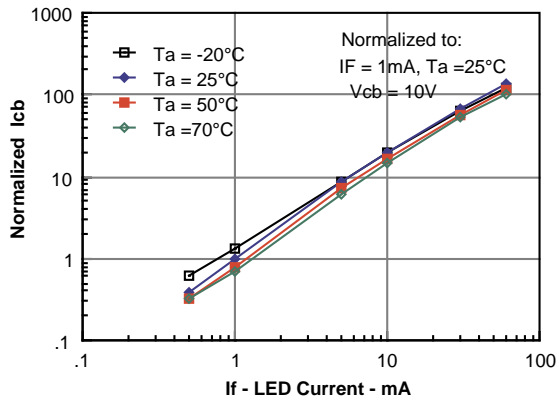


Figure 11. Switching schematic

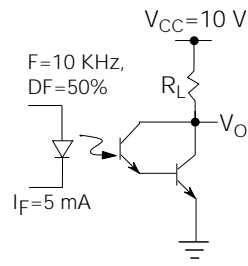
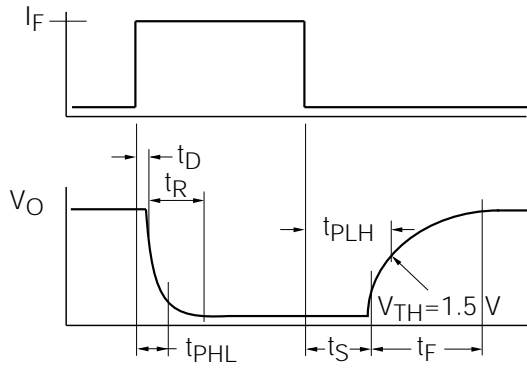


Figure 10. Switching timing



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