

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

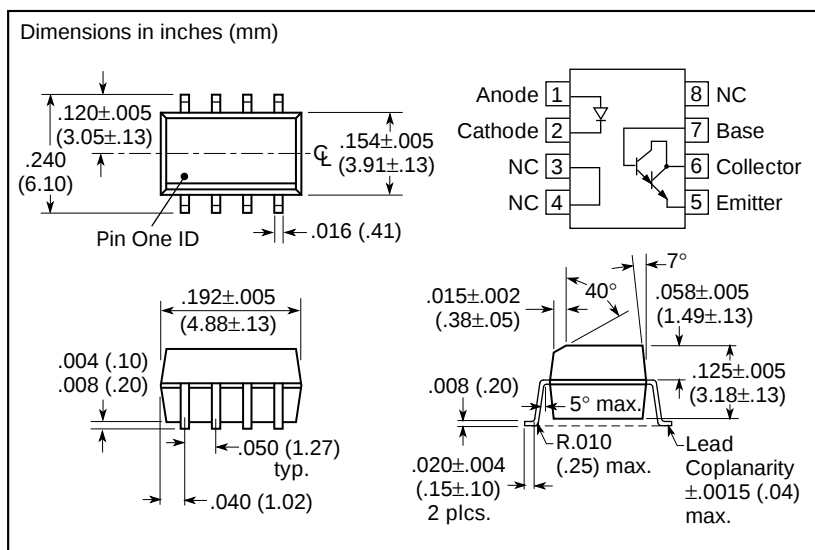
Peak Reverse Voltage	6.0 V
Continuous Forward Current	60 mA
Power Dissipation at 25°C.....	90 mW
Derate Linearly from 25°C.....	1.2 mW/°C

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 ($T_A=25^{\circ}\text{C}$)

	Symbol	Min.	Typ.	Max.	Unit	Condition
Emitter						
Forward Voltage	V_F		1.0	1.5	V	$I_F=1\text{ mA}$
Reverse Current	I_R		0.1	100	μA	$V_R=6.0\text{ V}$
Capacitance	C_O		25		pF	$V_R=0\text{ V}$, $F=1\text{ MHz}$
Detector						
Breakdown Voltage Collector-Emitter Emitter-Collector	$B_{V_{CEO}}$ $B_{V_{ECO}}$	30 5			V V	$I_C=100\text{ }\mu\text{A}$ $I_E=100\text{ }\mu\text{A}$
Voltage, Collector-Base	BV_{CBO}	70				$I_C=10\text{ }\mu\text{A}$
Capacitance, Collector-Emitter	C_{CE}		3.4		pF	$V_{CE}=10\text{ V}$
Package						
DC Current Transfer Ratio IL221A IL222A IL223A	CTR_{DC}	100 200 300				$I_F=1\text{ mA}$, $V_{CE}=5\text{ V}$
Saturation Voltage, Collector-Emitter	V_{CEsat}			1	V	$I_{CE}=0.5\text{ mA}$, $I_F=1\text{ mA}$
Isolation Test Voltage	V_{IO}	2500			$V_{AC_{RMS}}$	$t=1\text{ sec.}$
Capacitance, Input toOutput	C_{IO}		0.5		pF	
Resistance, Input to Output	R_{IO}		100		$G\Omega$	

Figure 1. Forward voltage versus forward current

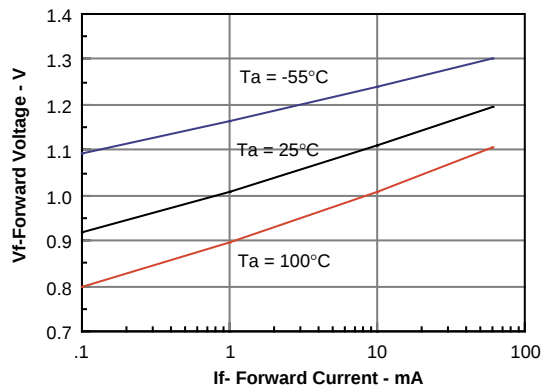


Figure 5. CTR_{CB} versus LED current

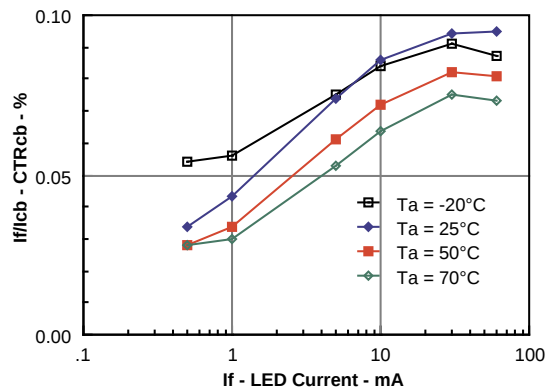


Figure 2. Peak LED current versus duty factor, Tau

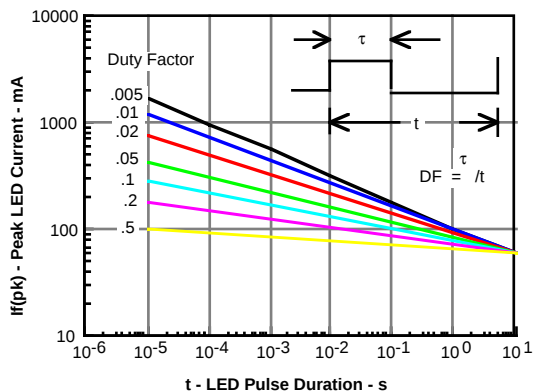


Figure 6. CTR versus LED current

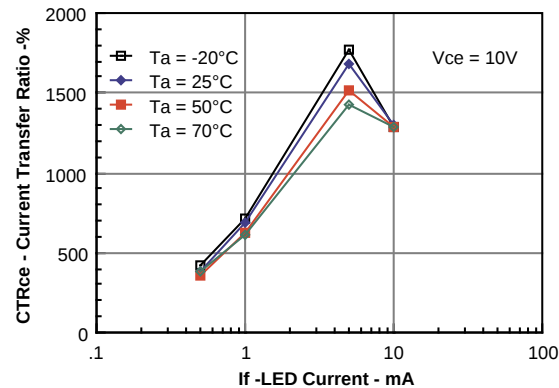


Figure 3. Normalized CTR_{CB} versus I_f

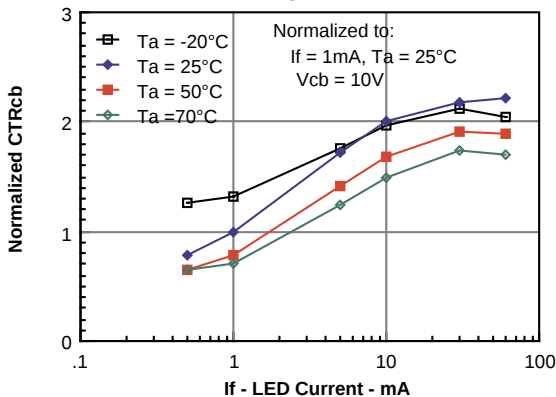


Figure 7. Collector current versus LED current

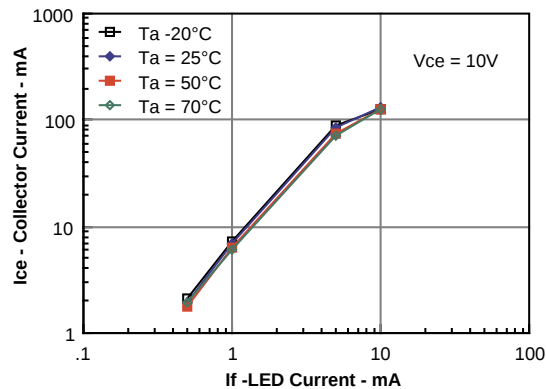


Figure 4. Normalized CTR_{CE} versus LED current

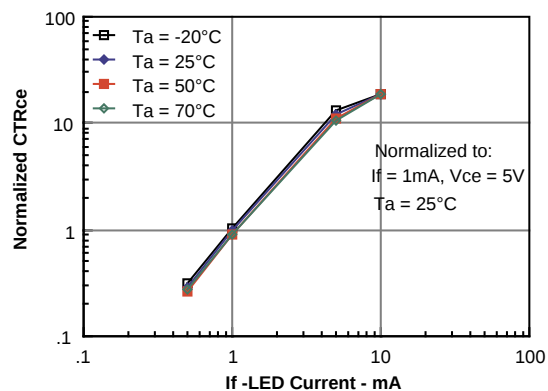


Figure 8. Photocurrent versus LED current

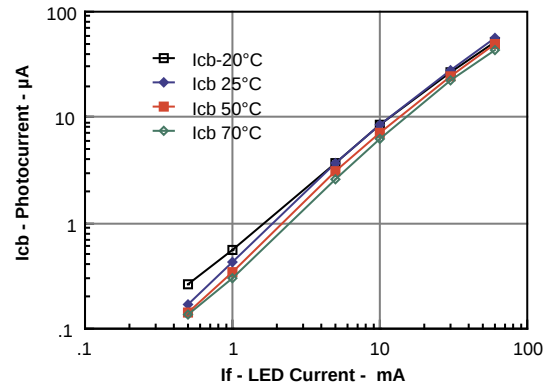


Figure 9. Normalized I_{CB} versus I_F

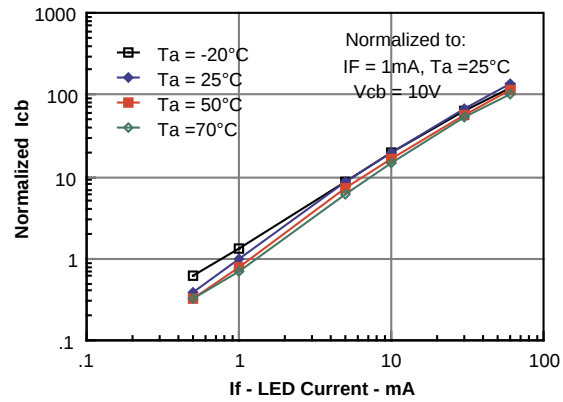


Figure 11. Switching schematic

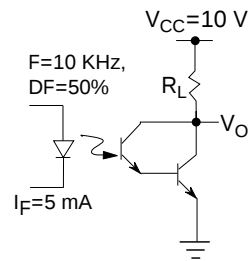


Figure 10. Switching timing

