

## FEATURES

- Two Channel Optocoupler
- High Current Transfer Ratio at  $I_F=1$  mA, 500% Min.
- Isolation Test Voltage, 2500 VRMS
- Electrical Specifications Similar to Standard 6-pin Coupler
- Compatible with Dual Wave, Vapor Phase and IR Reflow Soldering
- Industry Standard SOIC-8 Surface Mountable Package
- Standard Lead Spacing, .05"
- Available in Tape and Reel Option (Conforms to EIA Standard 481-2)
- Underwriters Lab File #E52744

## DESCRIPTION

The ILD223 is a high current transfer ratio (CTR) optocoupler. It has a Gallium Arsenide infrared LED emitter and a silicon NPN photodarlington transistor detector.

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

The ILD223 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 (Each Channel)

#### Emitter

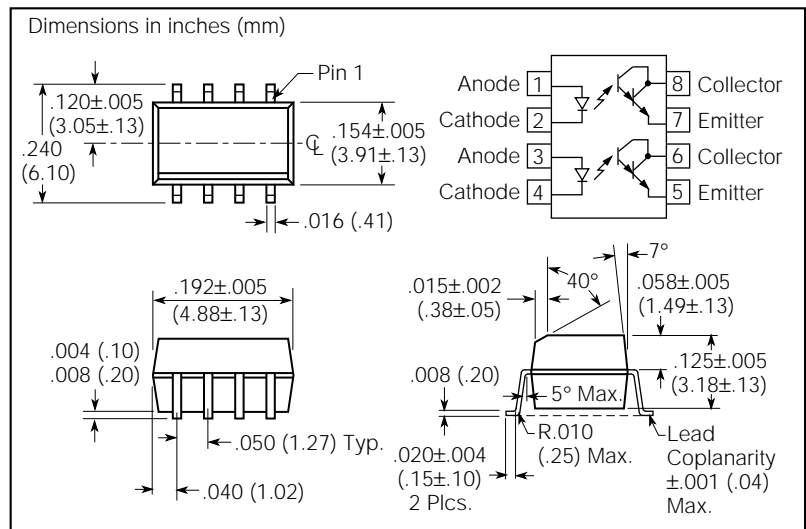
Peak Reverse Voltage ..... 6.0 V  
 Peak Pulsed Current (1  $\mu$ s, 300 pps) ..... 3 A  
 Continuous Forward Current per Channel .... 30 mA  
 Power Dissipation at 25°C ..... 45 mW  
 Derate Linearly from 25°C ..... 0.4 mW/°C

#### Detector

Collector-Emitter Breakdown Voltage ..... 30 V  
 Emitter-Collector Breakdown Voltage ..... 5 V  
 Power Dissipation per Channel ..... 75 mW  
 Derate Linearly from 25°C ..... 3.1 mW/°C

#### Package

Total Package Dissipation at 25°C Ambient  
 (2 LEDs + 2 Detectors, 2 Channels) ..... 240 mW  
 Derate Linearly from 25°C ..... 2 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
<b>Emitter</b>						
Forward Voltage	$V_F$			1.3	V	$I_F=1$ mA
Reverse Current	$I_R$		0.1	100	$\mu$ A	$V_R=6.0$ V
Capacitance	$C_O$		25		pF	$V_F=0$ V, $F=1$ MHz
<b>Detector</b>						
Breakdown Voltage Collector-Emitter Emitter-Collector	$BV_{CEO}$ $BV_{ECO}$	30 5			V V	$I_C=10$ mA $I_E=10$ mA
Current, Collector-Emitter	$I_{CEO}$			50	nA	$V_{CE}=5$ V, $I_F=0$
Capacitance, Collector-Emitter	$C_{CE}$		3.4		pF	$V_{CE}=5$ V
<b>Package</b>						
DC Current Transfer Ratio	$CTR_{DC}$	500			%	$I_F=1$ mA, $V_{CE}=5$ V
Saturation Voltage, Collector-Emitter	$V_{CEsat}$			1	V	$I_F=1$ mA, $I_{CE}=0.5$ mA
Capacitance, Input to Output	$C_{IO}$	0.5			pF	
Resistance, Input to Output	$R_{IO}$	100			G $\Omega$	
Turn-On Time	$t_{ON}$	15			$\mu$ s	$V_{CC}=10$ V $R_L=100\Omega$ $I_F=5$ mA
Turn-Off Time	$t_{OFF}$	30			$\mu$ s	
Isolation Test Voltage	$V_{IO}$					( $t=1$ min.) 2500 VAC <sub>RMS</sub>

Figure 1. Forward voltage versus forward current

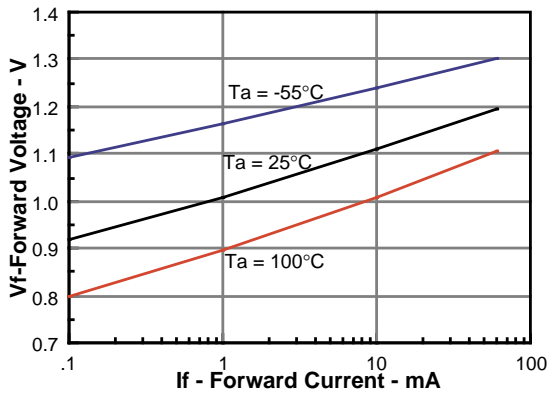


Figure 2. Peak LED current versus duty factor, Tau

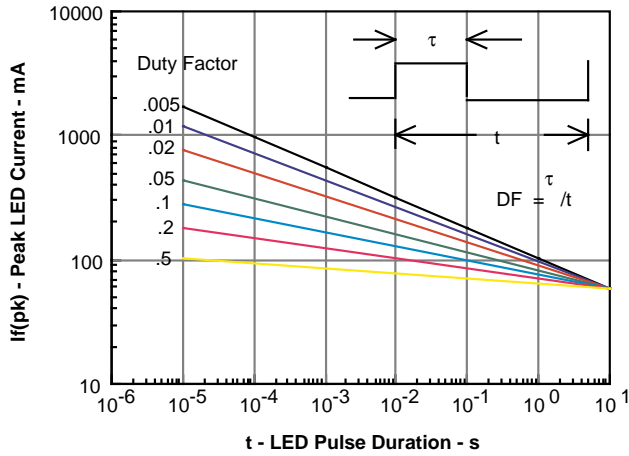


Figure 3. Normalized  $CTR_{CE}$  versus LED current

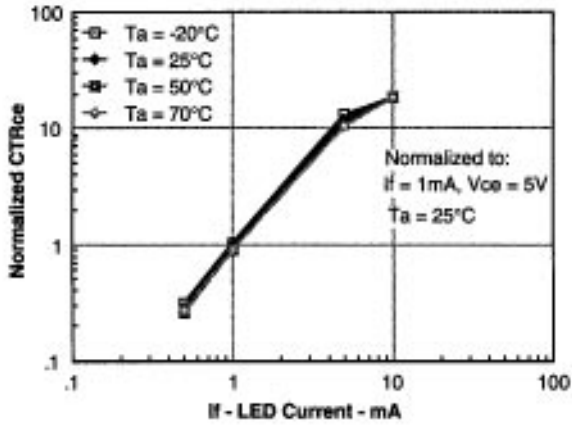


Figure 4.  $CTR_{CE}$  versus LED current

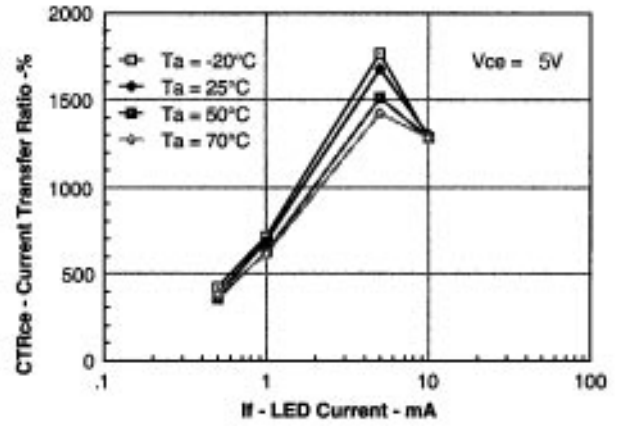


Figure 5. Collector current versus LED current

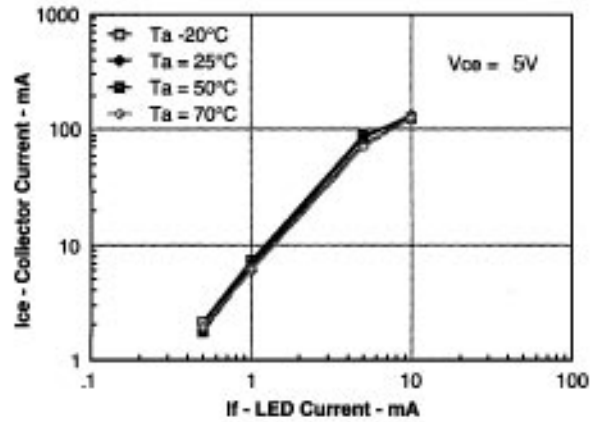
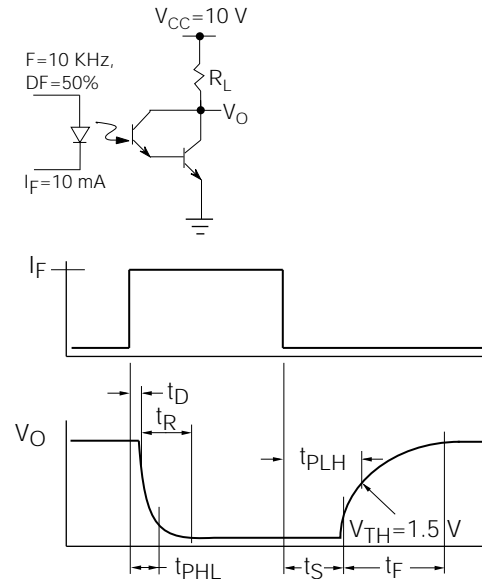


Figure 6. Switching schematic and switching timing





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