

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

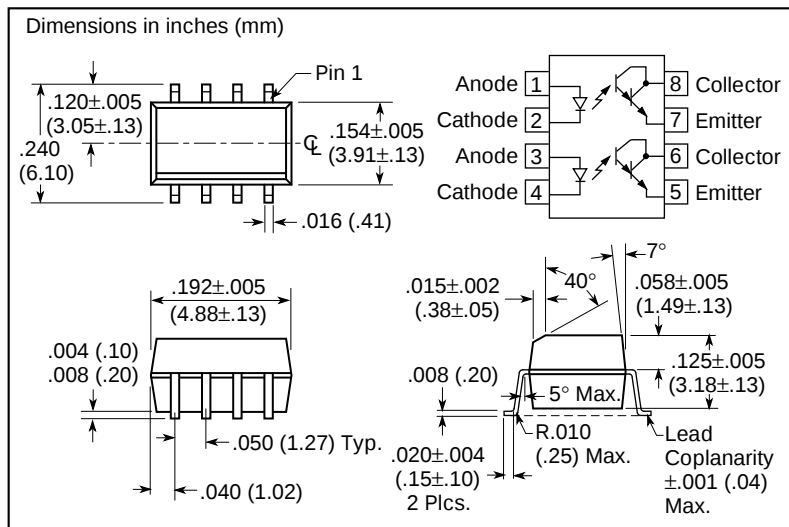
Peak Reverse Voltage	6.0 V
Peak Pulsed Current (1 μ s, 300 pps)	3 A
Continuous Forward Current per Channel	30 mA
Power Dissipation at 25°C	45 mW
Derate Linearly from 25°C	0.4 mW/°C

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°C2 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			1.3	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	$V_F=0\text{ V}$, $F=1\text{ MHz}$
Detector						
Breakdown Voltage Collector-Emitter Emitter-Collector	BV_{CEO} BV_{ECO}	30 5			V V	$I_C=10\text{ mA}$ $I_E=10\text{ mA}$
Current, Collector-Emitter	I_{CEO}			50	nA	$V_{CE}=5\text{ V}$, $I_F=0$
Capacitance, Collector-Emitter	C_{CE}		3.4		pF	$V_{CE}=5\text{ V}$
Package						
DC Current Transfer Ratio	CTR_{DC}	500			%	$I_F=1\text{ mA}$, $V_{CE}=5\text{ V}$
Saturation Voltage, Collector-Emitter	V_{CEsat}			1	V	$I_F=1\text{ mA}$, $I_{CE}=0.5\text{ mA}$
Capacitance, Input to Output	C_{IO}	0.5		pF		
Resistance, Input to Output	R_{IO}	100		$G\Omega$		
Turn-On Time	t_{ON}	15		μs		$V_{CC}=10\text{ V}$ $R_L=100\Omega$ $I_F=5\text{ mA}$
Turn-Off Time	t_{OFF}	30		μs		
Isolation Test Voltage	V_{IO}					($t=1\text{ min.}$) 2500 VAC_{RMS}

Figure 1. Forward voltage versus forward current

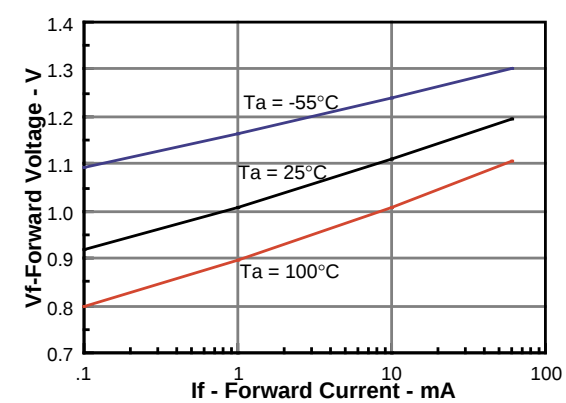


Figure 2. Peak LED current versus duty factor, Tau

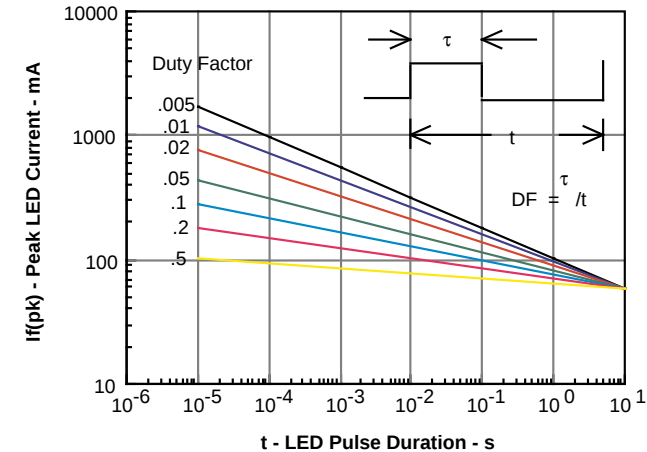


Figure 3. Normalized CTR_{CE} versus LED current

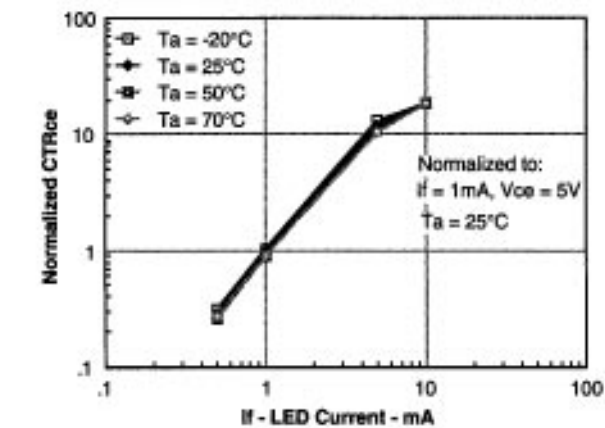


Figure 4. CTR versus LED current

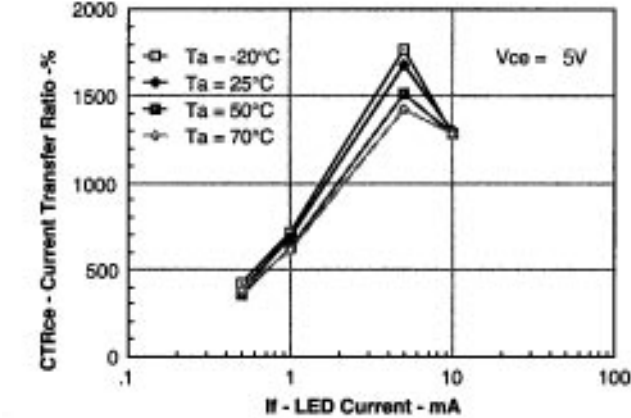


Figure 5. Collector current versus LED current

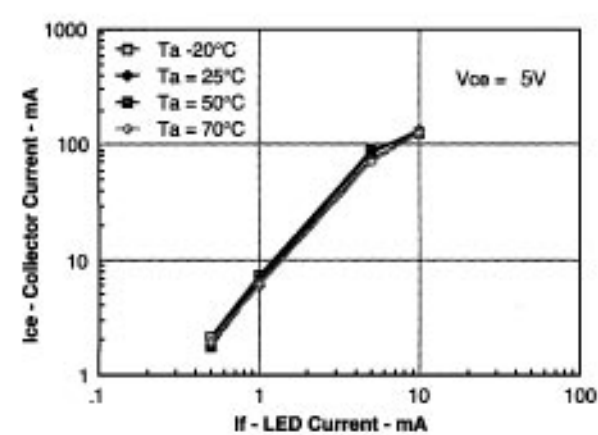


Figure 6. Switching schematic and switching timing

