

FEATURES

- Current Transfer Ratio, 20% Minimum
- Two Isolated Channels Per Package
- Isolation Test Voltage, 5300 VAC_{RMS}
- Underwriters Lab File #E52744
- VDE #0884 Available with Option 1

DESCRIPTION

The MCT6 is an industry standard dual optocoupler consisting of a Gallium Arsenide infrared LED and a silicon phototransistor. The MCT6 is constructed with a high voltage insulation, double molded packaging process which offers 5300 VAC_{RMS} isolation test capability.

Maximum Ratings

Emitter (each channel)

Reverse Voltage..... 3 V
Continuous Forward Current..... 60 mA
Power Dissipation at 25°C Ambient..... 100 mW
Derate Linearly from 25°C 1.3 mW/°C

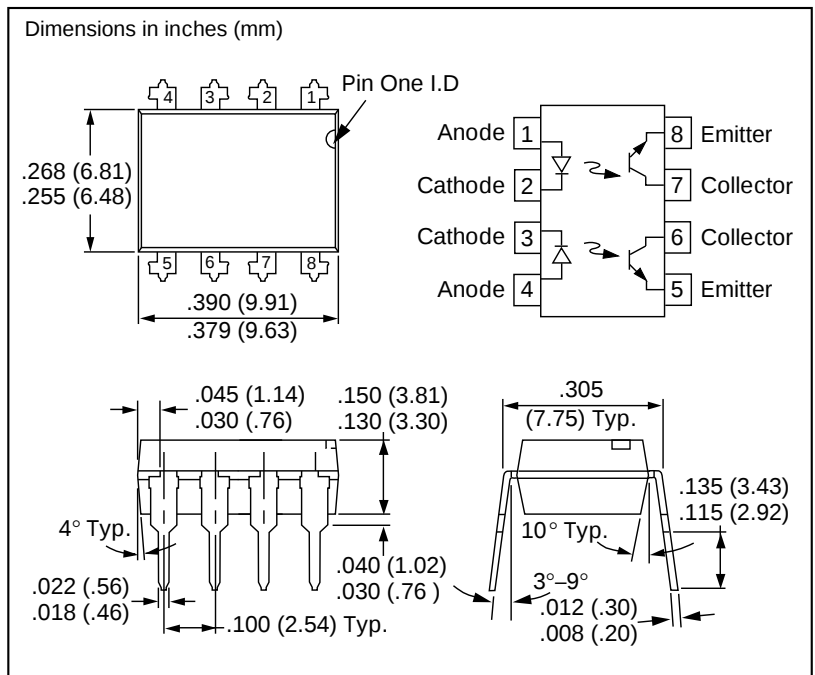
Detector (each channel)

Collector-Emitter Breakdown Voltage 30V
Emitter-Collector Breakdown Voltage 6V
Power Dissipation at 25°C Ambient..... 150 mW
Derate Linearly from 25°C 2 mW/°C

Package

Total Package Dissipation
at 25°C (LED + Detector). 400 mW
Derate Linearly from 25°C 5.33 mW/°C
Storage Temperature -55°C to +150°C
Operating Temperature -55°C to +100°C
Lead Soldering Time at 260°C 10 sec.
Isolation Test Voltage 5300 VAC_{RMS}
Pollution Degree (DIN VDE 0110) 2
Isolation Resistance

$V_{IO}=500\text{ V}, T_A=25^\circ\text{C} \dots\dots\dots R_{IO}=10^{12}\ \Omega$
 $V_{IO}=500\text{ V}, T_A=100^\circ\text{C} \dots\dots\dots R_{IO}=10^{11}\ \Omega$



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

	Symbol	Min.	Typ.	Max.	Unit	Condition
Emitter						
Forward Voltage	V_F		1.1	1.5	V	$I_F=20\text{ mA}$
Reverse Current	I_R			10	μA	$V_R=3\text{ V}$
Junction Capacitance	C_J		25		pF	$V_F=0\text{ V}, f=1\text{ MHz}$
Detector						
Breakdown Voltage						
Collector-Emitter	BV_{CEO}	30			V	$I_C=10\ \mu\text{A}, I_F=0\text{ mA}$
Emitter-Collector	BV_{ECO}	6			V	$I_E=10\ \mu\text{A}, I_F=0\text{ mA}$
Package						
DC Current Transfer Ratio	CTR_{DC}	20	50		%	$V_{CE}=10\text{ V}, I_F=10\text{ mA}$
Saturation Voltage, Collector-Emitter	V_{CEsat}			0.4	V	$I_{CE}=2\text{ mA}, I_F=16\text{ mA}$
Switching Times	t_{on}		3		μs	$R_E=100\ \Omega, V_{CE}=10\text{ V}$
	t_{off}		15		μs	$I_C=2\text{ mA}$

Figure 1. Forward voltage versus forward current

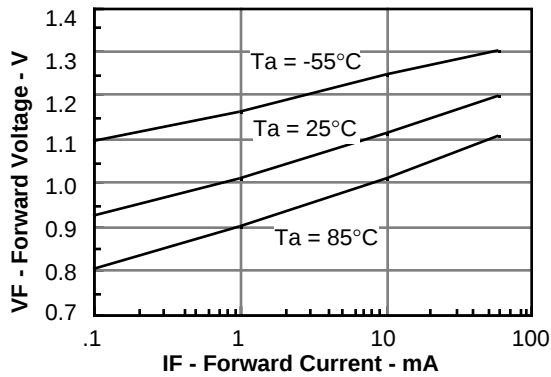


Figure 2. Normalized non-saturated and saturated CTR at $T_A = 25^\circ\text{C}$ versus LED current

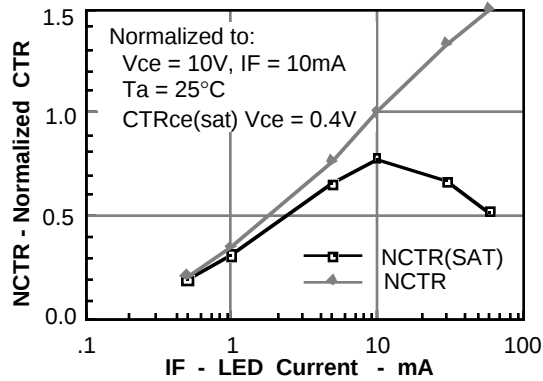


Figure 3. Normalized non-saturated and saturated CTR at $T_A = 50^\circ\text{C}$ versus LED current

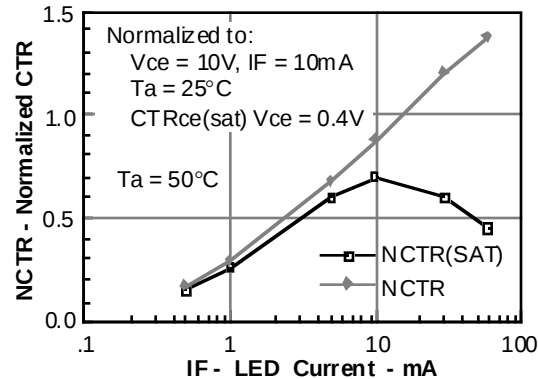


Figure 4. Normalized non-saturated and saturated CTR at $T_A = 70^\circ\text{C}$ versus LED current

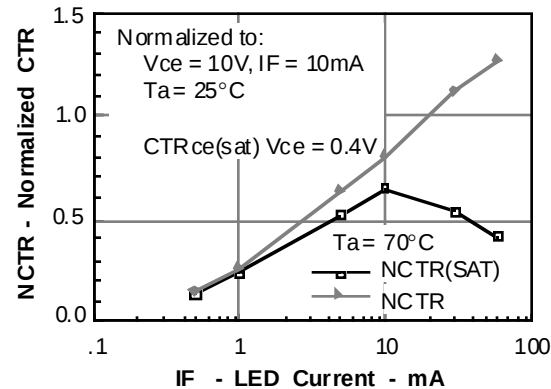


Figure 5. Normalized non-saturated and saturated CTR at $T_A = 85^\circ\text{C}$ versus LED current

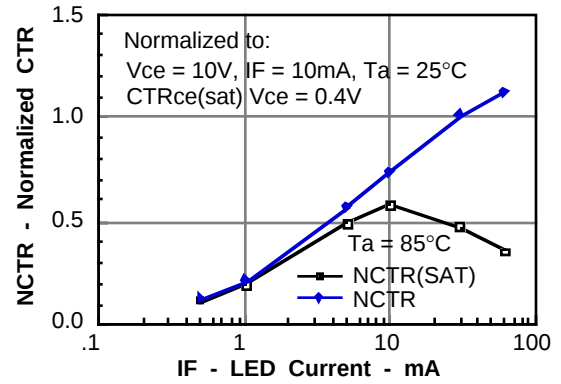


Figure 6. Collector-emitter leakage current versus temperature and LED current

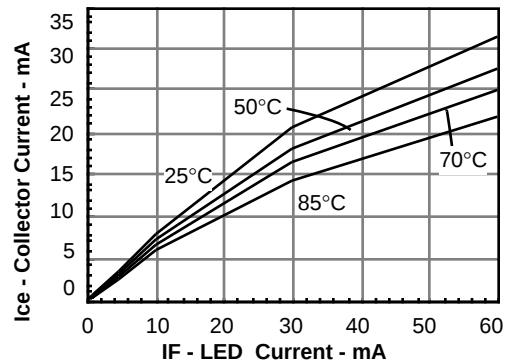


Figure 7. Collector-emitter leakage current versus temperature

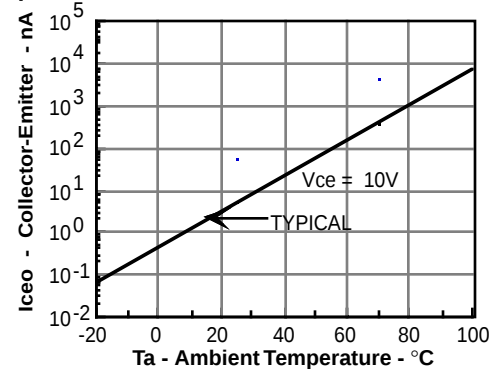


Figure 8. Propagation delay versus collector load resistor

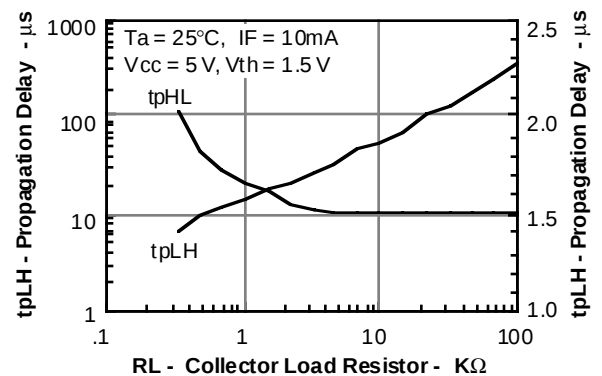


Figure 9. Non-saturated switching timing

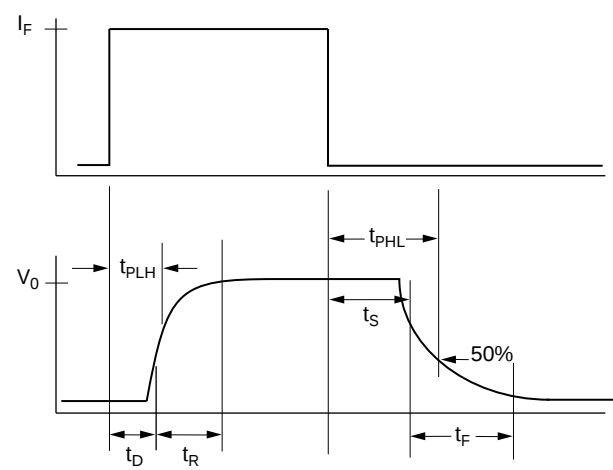


Figure 10. Switching schematic

