

## FEATURES

- **Current Transfer Ratio, 20% Minimum**
- **Two Isolated Channels Per Package**
- **Isolation Test Voltage, 5300 VAC<sub>RMS</sub>**
- **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<sub>RMS</sub> isolation test capability.

### Maximum Ratings

#### Emitter (each channel)

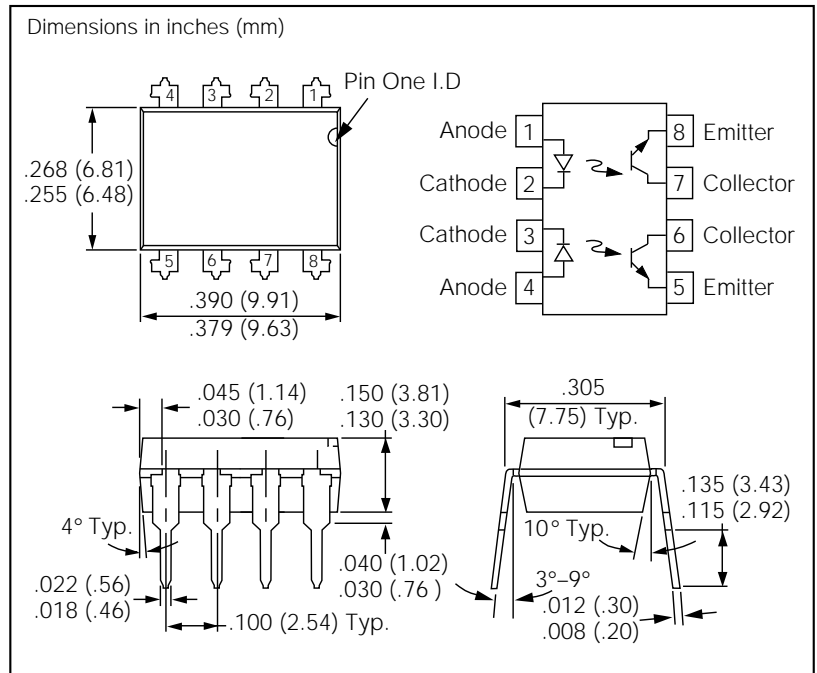
Reverse Voltage ..... 3 V  
 Continuous Forward Current ..... 60 mA  
 Power Dissipation at 25°C Ambient ..... 100 mW  
 Derate Linearly from 25°C ..... 1.3 mW/°C

#### 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<sub>RMS</sub>  
 Pollution Degree (DIN VDE 0110) ..... 2  
 Isolation Resistance  
 V<sub>IO</sub>=500 V, T<sub>A</sub>=25°C ..... R<sub>IO</sub>=10<sup>12</sup> Ω  
 V<sub>IO</sub>=500 V, T<sub>A</sub>=100°C ..... R<sub>IO</sub>=10<sup>11</sup> Ω



## Electrical Characteristics (T<sub>A</sub>=25°C)

	Symbol	Min.	Typ.	Max.	Unit	Condition
<b>Emitter</b>						
Forward Voltage	V <sub>F</sub>		1.1	1.5	V	I <sub>F</sub> =20 mA
Reverse Current	I <sub>R</sub>			10	μA	V <sub>R</sub> =3 V
Junction Capacitance	C <sub>J</sub>		25		pF	V <sub>F</sub> =0 V, f=1 MHz
<b>Detector</b>						
Breakdown Voltage						
Collector-Emitter	BV <sub>CEO</sub>	30			V	I <sub>C</sub> =10 μA, I <sub>F</sub> =0 mA
Emitter-Collector	BV <sub>ECO</sub>	6			V	I <sub>E</sub> =10 μA, I <sub>F</sub> =0 mA
<b>Package</b>						
DC Current Transfer Ratio	CTR <sub>DC</sub>	20	50		%	V <sub>CE</sub> =10 V, I <sub>F</sub> =10 mA
Saturation Voltage, Collector-Emitter	V <sub>CEsat</sub>			0.4	V	I <sub>CE</sub> =2 mA, I <sub>F</sub> =16 mA
Switching Times	t <sub>on</sub>		3		μs	R <sub>E</sub> =100 Ω, V <sub>CE</sub> =10 V
	t <sub>off</sub>		15		μs	I <sub>C</sub> =2 mA

Figure 1. Forward voltage versus forward current

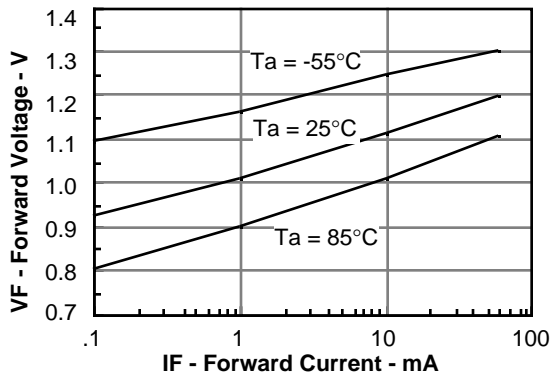


Figure 2. Normalized non-saturated and saturated CTR at  $T_A = 25^\circ\text{C}$  versus LED current

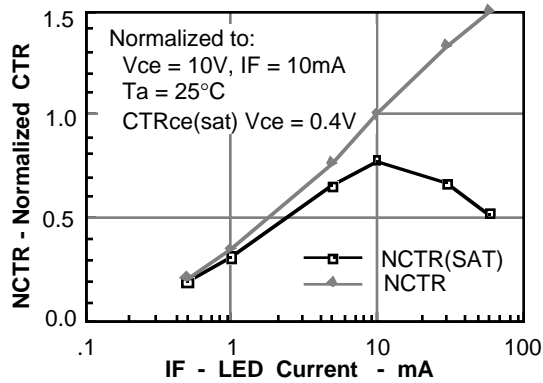


Figure 3. Normalized non-saturated and saturated CTR at  $T_A = 50^\circ\text{C}$  versus LED current

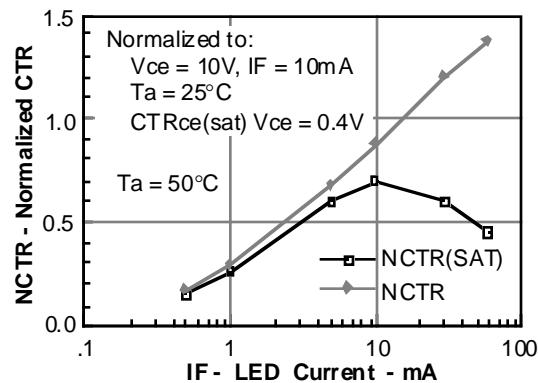


Figure 4. Normalized non-saturated and saturated CTR at  $T_A = 70^\circ\text{C}$  versus LED current

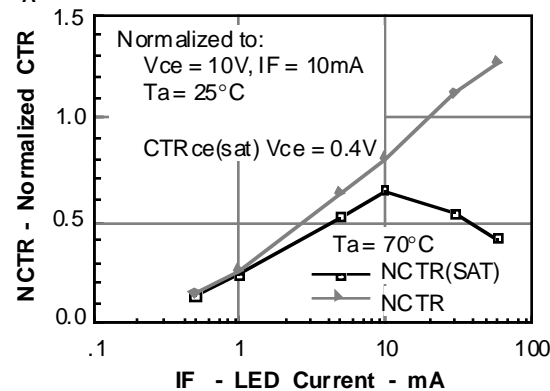


Figure 5. Normalized non-saturated and saturated CTR at  $T_A = 85^\circ\text{C}$  versus LED current

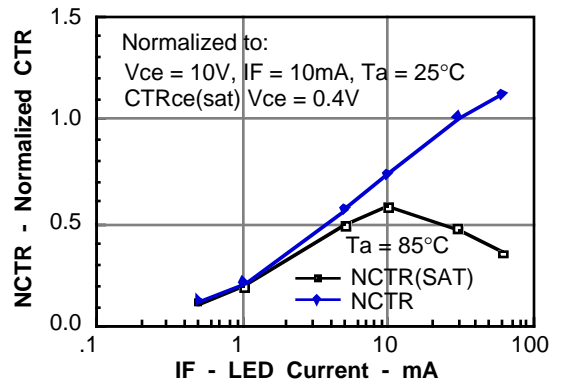


Figure 6. Collector-emitter leakage current versus temperature and LED current

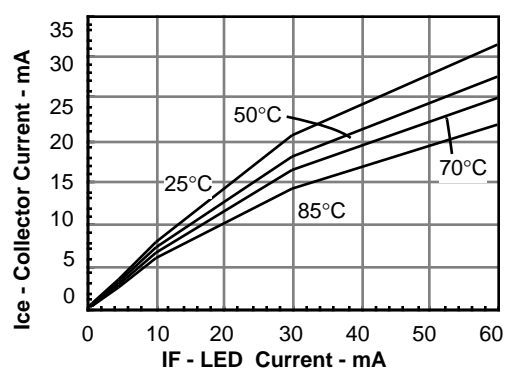


Figure 7. Collector-emitter leakage current versus temperature

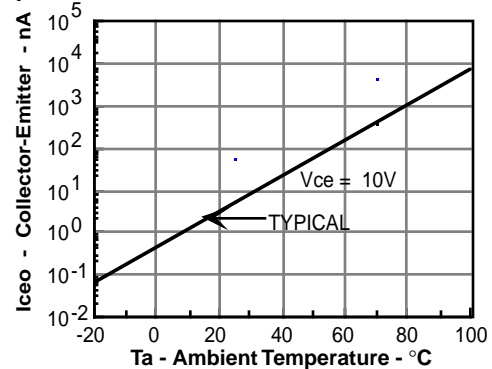


Figure 8. Propagation delay versus collector load resistor

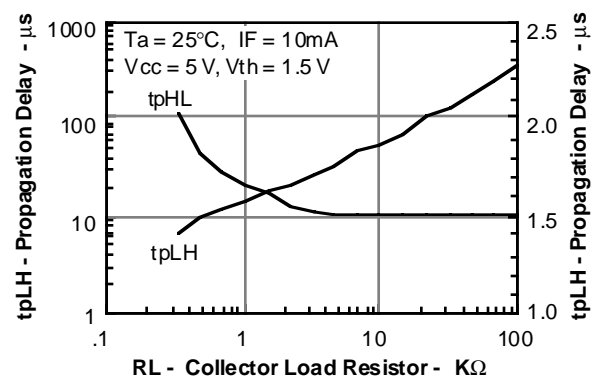


Figure 9. Non-saturated switching timing

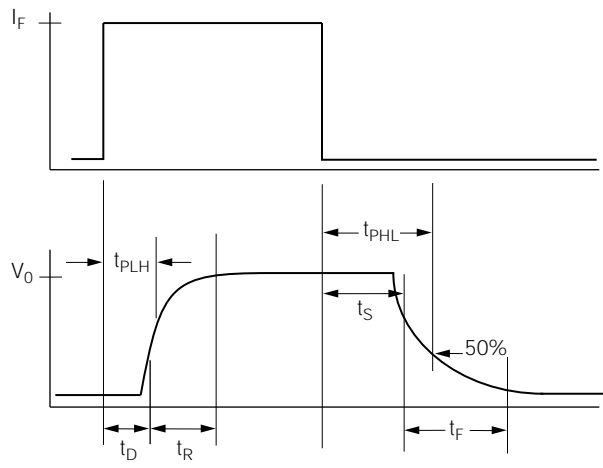


Figure 10. Switching schematic

