

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

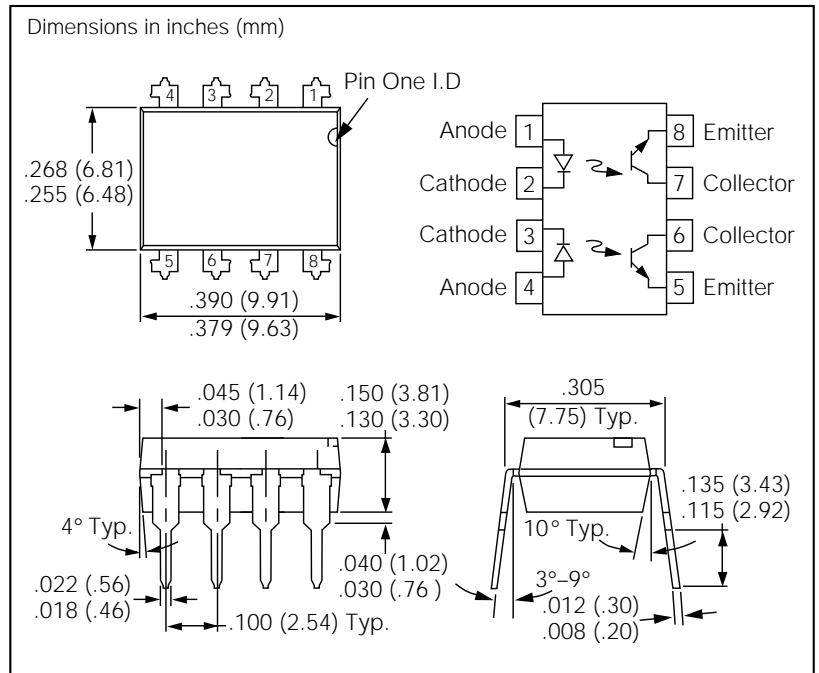
Detector (each channel)

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°C)

| | Symbol | Min. | Typ. | Max. | Unit | Condition |
|---------------------------------------|--------------------|------|------|------|------|--|
| Emitter | | | | | | |
| Forward Voltage | V _F | | 1.1 | 1.5 | V | I _F =20 mA |
| Reverse Current | I _R | | | 10 | μA | V _R =3 V |
| Junction Capacitance | C _J | | 25 | | pF | V _F =0 V, f=1 MHz |
| Detector | | | | | | |
| Breakdown Voltage | | | | | | |
| Collector-Emitter | BV _{CEO} | 30 | | | V | I _C =10 μA, I _F =0 mA |
| Emitter-Collector | BV _{ECO} | 6 | | | V | I _E =10 μA, I _F =0 mA |
| Package | | | | | | |
| DC Current Transfer Ratio | CTR _{DC} | 20 | 50 | | % | V _{CE} =10 V, I _F =10 mA |
| Saturation Voltage, Collector-Emitter | V _{CEsat} | | | 0.4 | V | I _{CE} =2 mA, I _F =16 mA |
| Switching Times | t _{on} | | 3 | | μs | R _E =100 Ω, V _{CE} =10 V |
| | t _{off} | | 15 | | μs | I _C =2 mA |

Figure 1. Forward voltage versus forward current

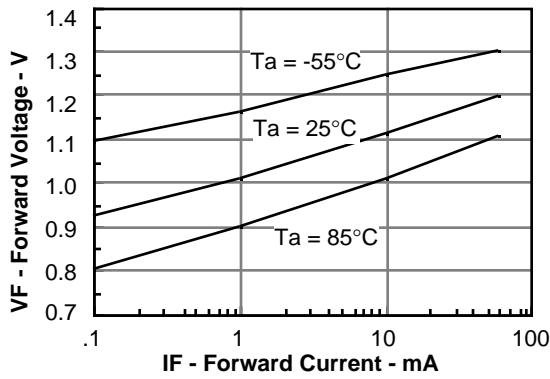


Figure 2. Normalized non-saturated and saturated CTR at $T_A = 25^\circ\text{C}$ versus LED current

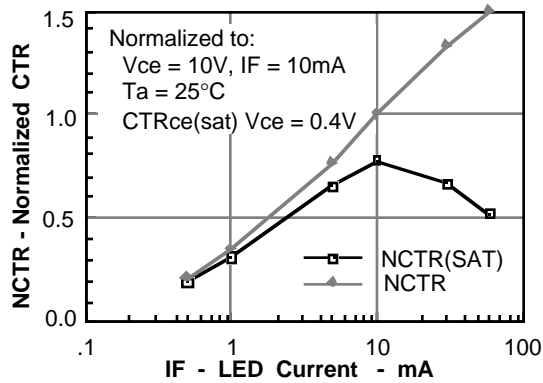


Figure 3. Normalized non-saturated and saturated CTR at $T_A = 50^\circ\text{C}$ versus LED current

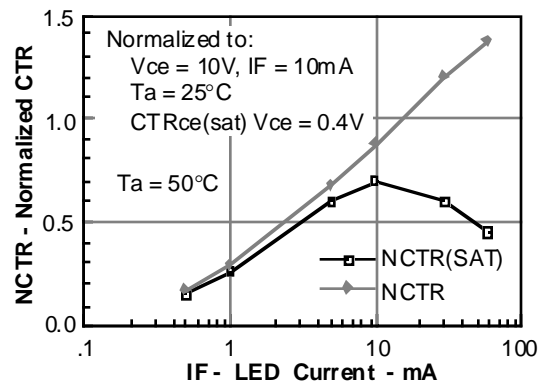


Figure 4. Normalized non-saturated and saturated CTR at $T_A = 70^\circ\text{C}$ versus LED current

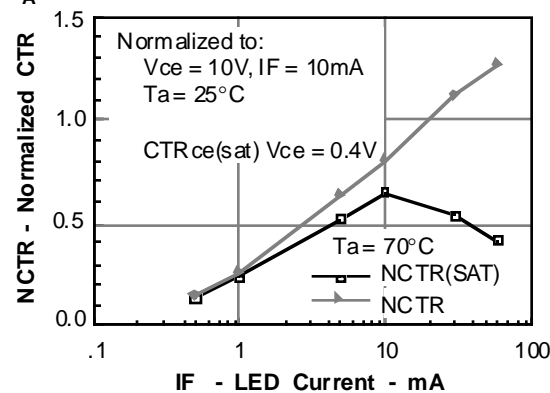


Figure 5. Normalized non-saturated and saturated CTR at $T_A = 85^\circ\text{C}$ versus LED current

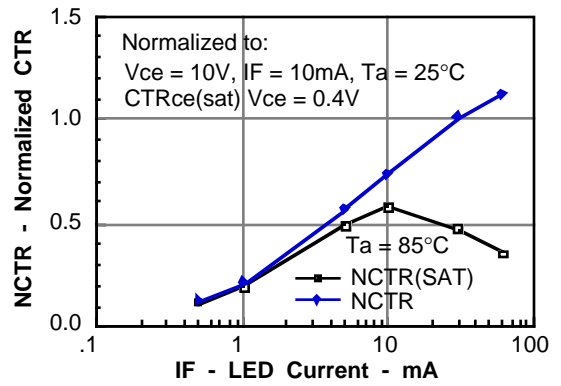


Figure 6. Collector-emitter leakage current versus temperature and LED current

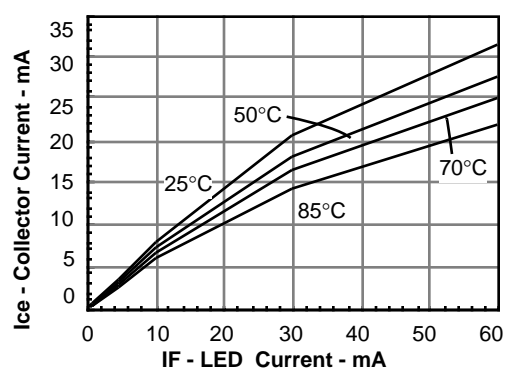


Figure 7. Collector-emitter leakage current versus temperature

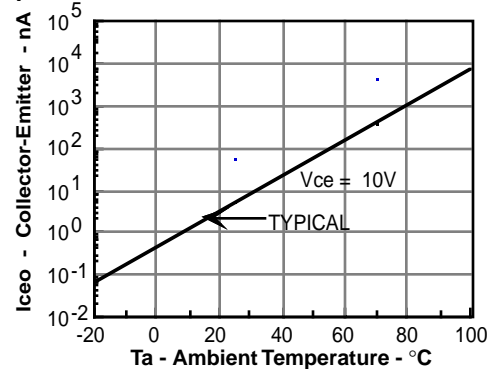


Figure 8. Propagation delay versus collector load resistor

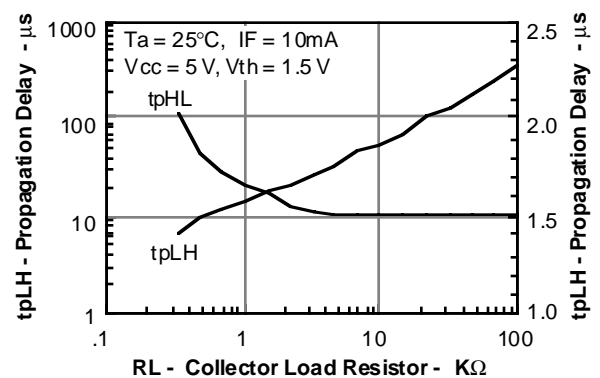


Figure 9. Non-saturated switching timing

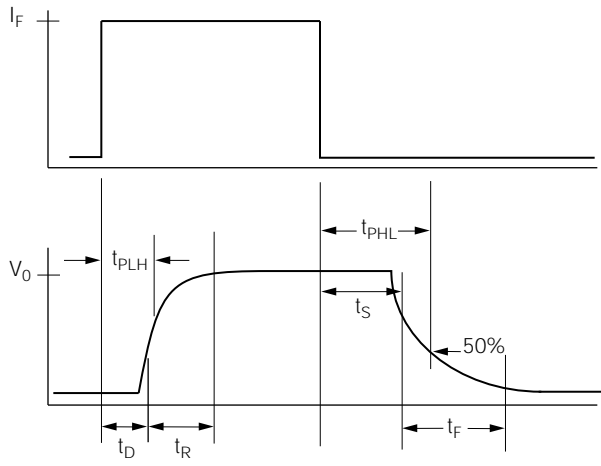


Figure 10. Switching schematic

