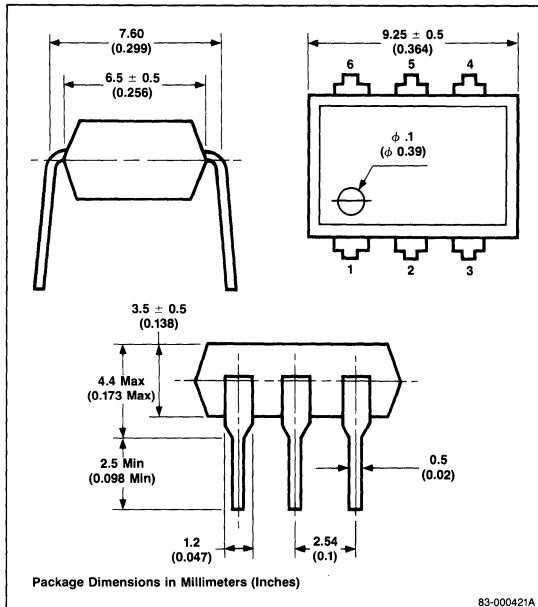


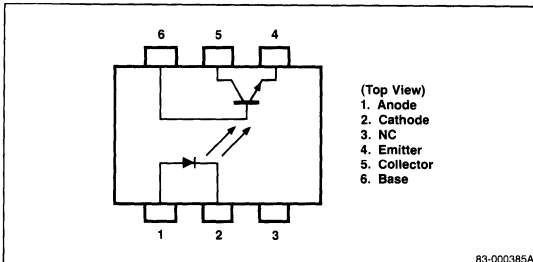
Description

The MCT2 is an optically coupled isolator containing a GaAs light emitting diode and an NPN silicon photo transistor.

Package Dimensions



Pin Connection



Features

- High isolation voltage: 2000V_{AC}, 2500V_{DC}
- High transfer ratio: 20% min
- High speed switching: $t_r, t_f = 4\mu s$ typ
- Economical, compact, dual in-line plastic package

Applications

- Interface circuit for various instruments and control equipment
- Chopper circuits
- Computer and peripheral manufacture
- Pulse transformers
- Data communication equipment

Absolute Maximum Ratings

$T_A = +25^\circ C$

Diode	
Reverse Voltage, V_R	5.0V
Forward Current (DC), I_F	80mA
Power Dissipation, P_D	150mW
Peak Forward Current (300 μs , 2% duty cycle), $I_{F(peak)}$	3A
Transistor	
Collector to Emitter Voltage, V_{CEO}	30V
Collector to Base Voltage, V_{CBO}	70V
Emitter to Collector Voltage, V_{ECO}	7V
Collector Current, I_C	100mA
Power Dissipation, P_D	150mW
Isolation Voltage ¹ , BV	2500V _{DC}
Isolation Voltage ¹ , BV	2000V _{AC}
Storage Temperature, T_{STG}	-55°C to +150°C
Operating Temperature, T_{OPT}	-55°C to +100°C
Lead Temperature (Soldering 10s)	260°C
Total Power Dissipation, P_T	250mW

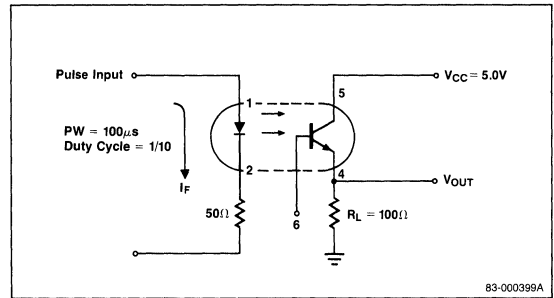
Electrical Characteristics

$T_A = +25^{\circ}\text{C}$

Parameter	Symbol	Limits			Unit	Test Conditions
		Min	Typ	Max		
Diode						
Forward Voltage	V_F		1.1	1.4	V	$I_F = 10\text{mA}$
Forward Voltage	V_F		1.2	1.5	V	$I_F = 50\text{mA}$
Reverse Current	I_R			10	μA	$V_R = 5\text{V}$
Junction Capacitance	C		50		pF	$V = 0$, $f = 1.0\text{MHz}$
Transistor						
Collector to Emitter Dark Current	I_{CEO}			50	nA	$V_{CE} = 10\text{V}$, $I_F = 0$
DC Current Gain	h_{FE}		700			$I_C = 2\text{mA}$, $V_{CE} = 5.0\text{V}$
Collector to Emitter Breakdown Voltage	BV_{CEO}	30	60		V	$I_C = 1\text{mA}$, $I_B = 0$
Collector to Base Breakdown Voltage	BV_{CBO}	70	120		V	$I_C = 100\mu\text{A}$, $I_E = 0$
Emitter to Collector Breakdown Voltage	BV_{ECO}	7	9		V	$I_E = 100\mu\text{A}$, $I_B = 0$
Coupled Current Transfer Ratio ²	CTR (I_C/I_F)	20			%	$I_F = 10\text{mA}$, $V_{CE} = 5.0\text{V}$
Collector Saturation Voltage	$V_{CE(sat)}$			0.3	V	$I_F = 10\text{mA}$, $I_C = 2.0\text{mA}$
Isolation Resistance	R_{1-2}	10^{11}			Ω	$V_{IN-OUT} = 1.0\text{kV}$
Isolation Capacitance	C_{1-2}		0.8		pF	$V = 0$, $f = 1.0\text{MHz}$
Rise Time ³	t_r		4		μs	$V_{CC} = 5.0\text{V}$, $I_C = 2\text{mA}$, $R_L = 100\Omega$
Fall Time ³	t_f		4		μs	$V_{CC} = 5.0\text{V}$, $I_C = 2\text{mA}$, $R_L = 100\Omega$

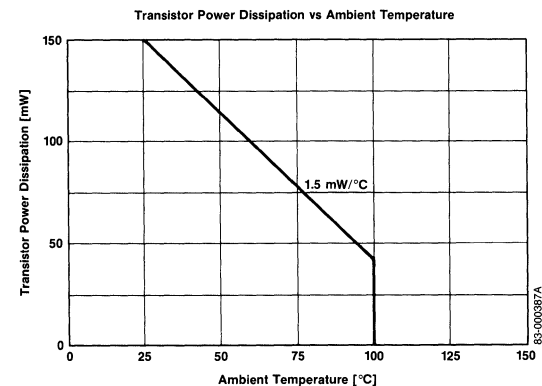
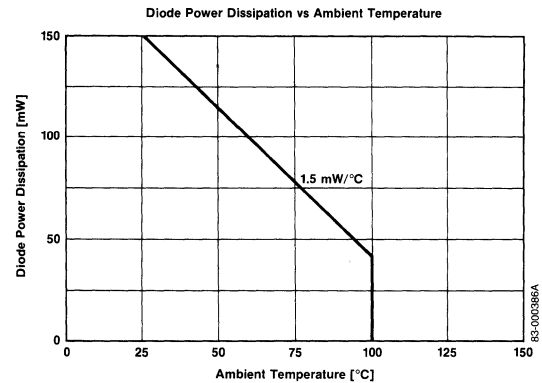
- Notes:**
1. Measuring Conditions: DC or AC voltage for 1 min at $T_A = +25^{\circ}\text{C}$, RH = 60% between input (pins 1, 2, and 3 common) and output (pins 4, 5, and 6 common).
 2. CTR rank: K: 80% ~ 210%, L: 50% ~ 110%, M: 20% ~ 70%.
 3. Test circuit for switching time.

Test circuit for switching time



Typical Characteristics

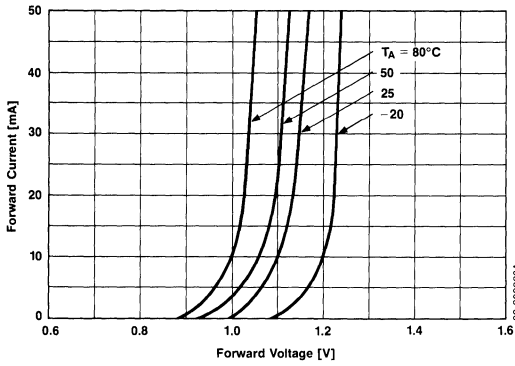
$T_A = +25^{\circ}\text{C}$



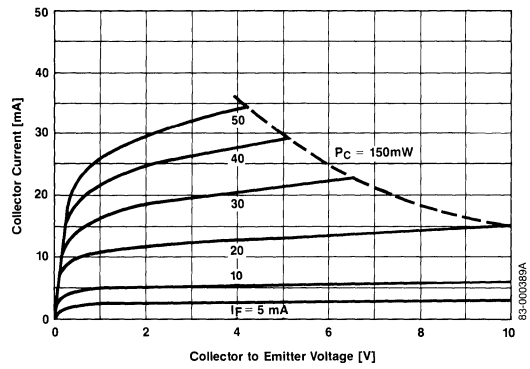
Typical Characteristics (cont)

$T_A = +25^\circ\text{C}$

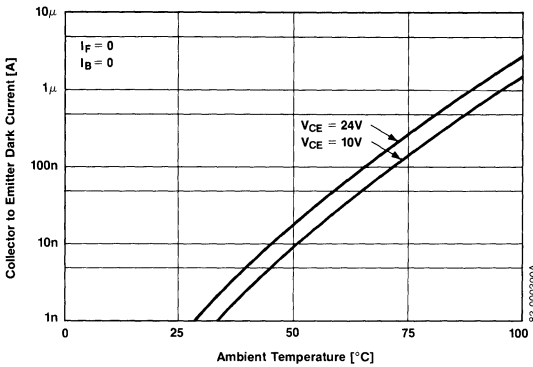
Forward Current vs Forward Voltage



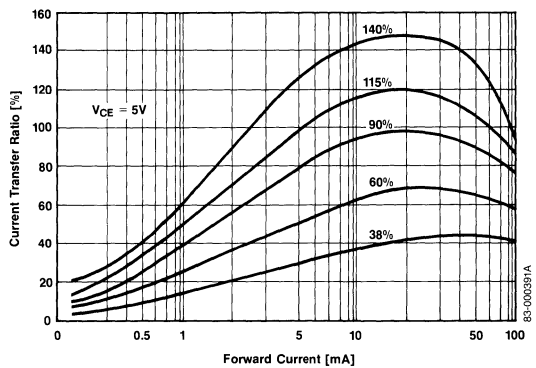
Collector Current vs Collector to Emitter Voltage



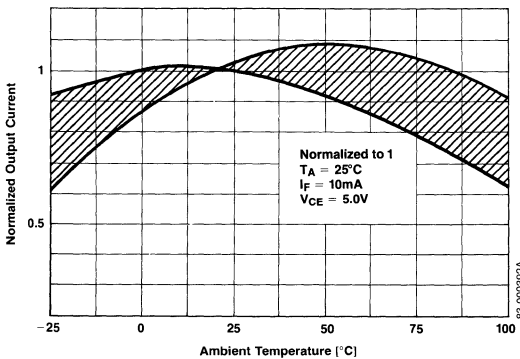
Collector to Emitter Dark Current vs Ambient Temperature



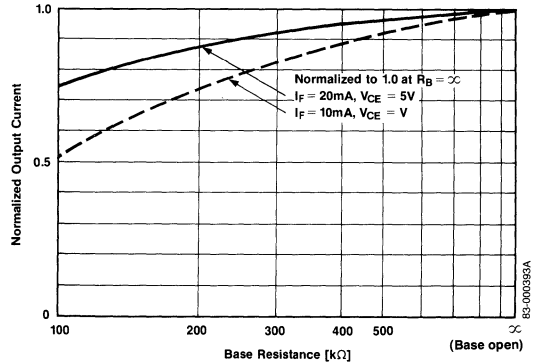
Current Transfer Ratio vs Forward Current



Normalized Output Current vs Ambient Temperature



Normalized Output Current vs Base Resistance



Typical Characteristics (cont)

$T_A = +25^\circ\text{C}$

