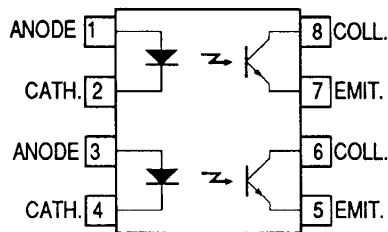
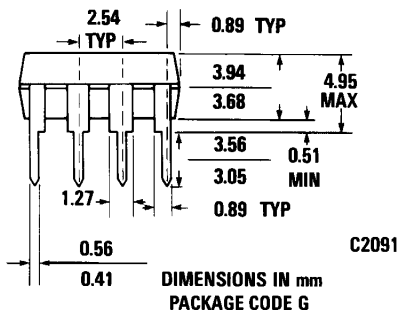
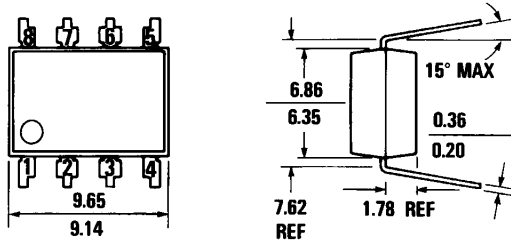


PACKAGE DIMENSIONS



DESCRIPTION

The MCT9001 is a two channel optocoupler in a standard, end stackable, 8 pin dual-in-line package. This part offers the same packing density as 4 pin optocouplers, while minimizing component count and insertion costs.

FEATURES

- Two isolated channels per package
- Two packages fit into a 16 lead DIP socket
- Underwriters Laboratory (UL) recognized File E50151

APPLICATIONS

- High voltage isolation
- Ground loop elimination
- Transient protection
- Common mode noise reduction
- AC line to logic interface
- Telephone line receiver
- Isolated feedback control
- Logic to power interface

ABSOLUTE MAXIMUM RATINGS

Storage temperature -55°C to 150°C
 Operating temperature -55°C to 100°C
 Lead temperature (soldering, 10 sec) 250°C

INPUT DIODE (each channel)

Forward current 60 mA
 Reverse voltage 5.0 V
 Peak forward current
 (1 μ s pulse, 300 pps) 3 A

TOTAL INPUT

Power dissipation 25°C ambient 100 mW
 Derate linearly from 25°C 1.1 mW/°C

OUTPUT TRANSISTOR (each channel)

Power dissipation at 25°C ambient 150 mW
 Derate linearly from 25°C 1.67 mW/°C
 Collector current 50 mA

COUPLED

Input to output breakdown voltage 2500V_{RMS}
 Total package power dissipation
 at 25°C ambient 400 mW
 Derate linearly from 25°C 4.83 mW/°C

TYPICAL ELECTRICAL CHARACTERISTIC CURVES (25°C Free Air Temperature Unless Otherwise Specified)

INDIVIDUAL COMPONENT CHARACTERISTICS						
CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITION
INPUT DIODE						
Forward voltage	V_F		1.0	1.3	V	$I_F = 10 \text{ mA}$
Junction capacitance	C_j		50		pF	$V_F = 0\text{V}; f = 1\text{MHz}$
Reverse leakage current	I_R			10	μA	$V_R = 5.0\text{V}$
OUTPUT TRANSISTOR						
Breakdown voltage						
Collector to emitter	BV_{CEO}	55			V	$I_C = 0.5 \text{ mA}; I_E = 0$
Emitter to collector	BV_{ECO}	7			V	$I_E = 100 \mu\text{A}$
Leakage current						
Collector to emitter	I_{CEO}			100	nA	$V_{CE} = 24\text{V}; I_F = 0$
				50	μA	$V_{CE} = 24\text{V}; T_A = 85^\circ\text{C}$
Capacitance						
Collector to emitter			8		pF	$V_{CE} = 0; f = 1\text{MHz}$

TRANSFER CHARACTERISTICS						
DC CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITION
Current transfer ratio	CTR_{CE}	50		600	%	$I_F = 5 \text{ mA}; V_{CE} = 5 \text{ V}$
Saturated current	$CTR_{CE(SAT)}$	30			%	$I_F = 8 \text{ mA}; V_{CE} = .4\text{V}$
transfer ratio				0.4	V	$I_F = 8 \text{ mA}; I_C = 2.4 \text{ mA}$
Saturation voltage	$V_{CE(SAT)}$				V	

TRANSFER CHARACTERISTICS						
CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITION
SWITCHING TIMES						
Non-saturated						
Rise time	t_r		2.4		μs	$R_L = 100\Omega; I_C = 2 \text{ mA};$
Fall time	t_f		2.4		μs	$V_{CE} = 10 \text{ V}$
Turn on time	t_{on}		3.0		μs	$R_L = 100\Omega; I_C = 2 \text{ mA};$
Turn off time	t_{off}		3.0		μs	$V_{CE} = 10 \text{ V}$
Saturated						
Turn on time	t_{on}		2.4		μs	$I_F = 16 \text{ mA}; R_L = 1.9\text{K}\Omega$
Turn off time	t_{off}		25.0		μs	$V_{CE} = 5 \text{ V}$

ISOLATION CHARACTERISTICS						
CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITION
Surge isolation voltage	V_{ISO}	4000			VDC	Relative humidity $\leq 50\%$; $I_{IO} \leq 10\mu\text{A}$
		3000			VAC-rms	1 second
Steady state isolation voltage	V_{ISO}	3500			VDC	Relative humidity $\leq 50\%$; $I_{IO} \leq 10\mu\text{A}$
		2500			VAC-rms	1 minute
Isolation resistance	R_{ISO}	10^{11}			ohms	$V_{IO} = 500 \text{ VDC}$
Isolation capacitance	C_{ISO}		0.5		pF	$f = 1\text{MHz}$

TYPICAL ELECTRICAL CHARACTERISTIC CURVES

(25°C Free Air Temperature Unless Otherwise Specified)

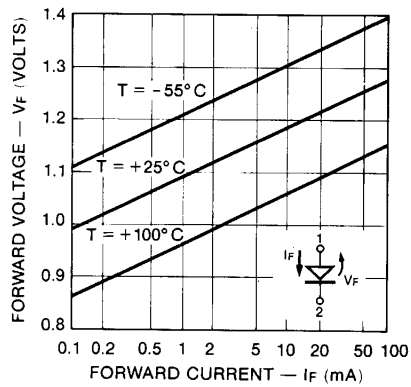


Fig. 1. Forward Voltage vs. Current

C1686

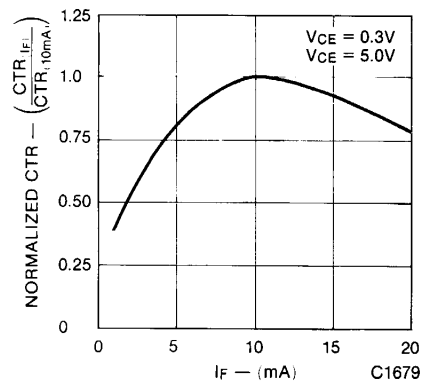


Fig. 2. Normalized CTR vs. Forward Current

C1679

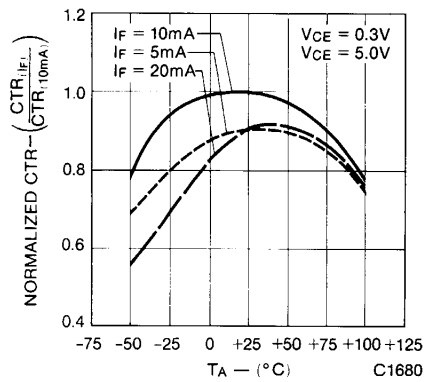


Fig. 3. Normalized CTR vs. Temperature

C1680

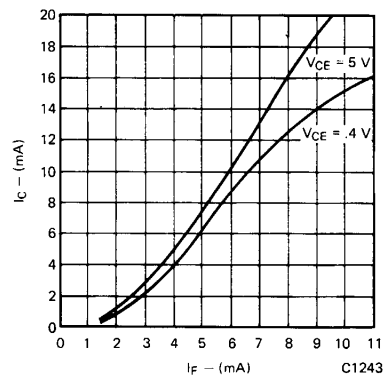


Fig. 4. Collector Current vs. Forward Current

C1243

TYPICAL ELECTRICAL CHARACTERISTIC CURVES
(25°C Free Air Temperature Unless Otherwise Specified) (Cont'd)

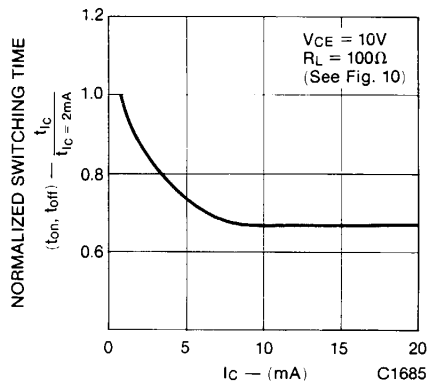


Fig. 5. Switching Time vs. IC

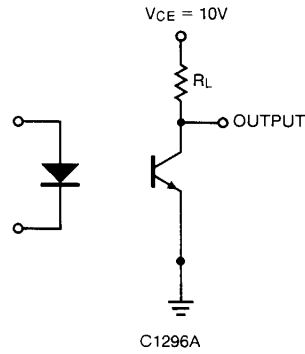


Fig. 6. Switching Time Test Circuit

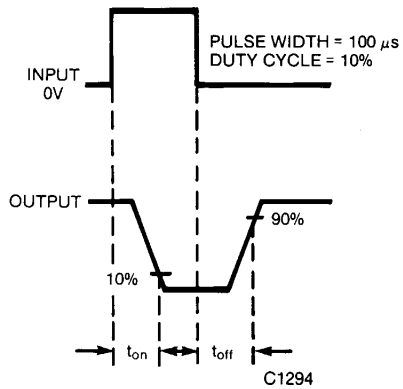


Fig. 7. Switching Time Waveforms