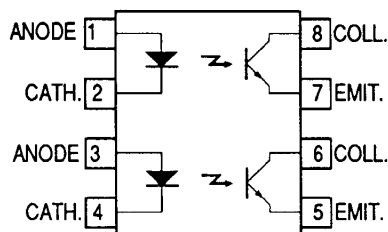
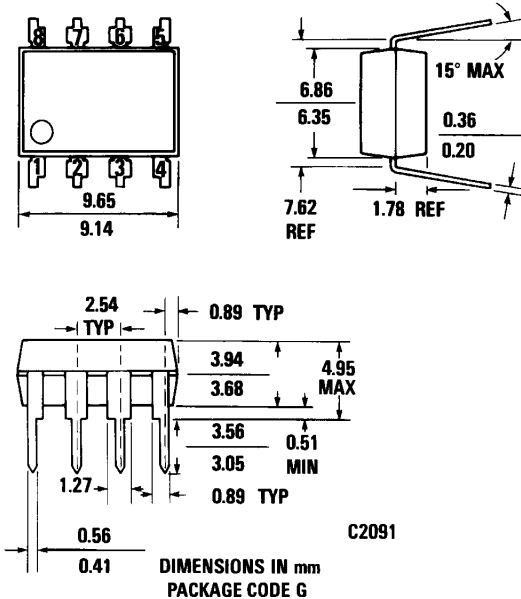


PACKAGE DIMENSIONS



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

DUAL PHOTOTRANSISTOR OPTOCOUPLER

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	$V_{CE(SAT)}$					

TRANSFER CHARACTERISTICS

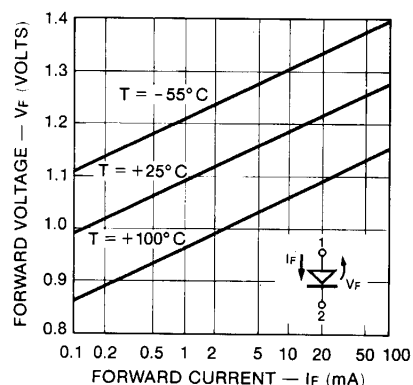
CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITION
SWITCHING TIMES						
Non-saturated						
Rise time	t_r		2.4		μs	$R_L = 100\Omega; I_C = 2 \text{ mA}; V_{CE} = 10 \text{ V}$
Fall time	t_f		2.4		μs	$V_{CE} = 10 \text{ V}$
Turn on time	t_{on}		3.0		μs	$R_L = 100\Omega; I_C = 2 \text{ mA}; V_{CE}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

ISOLATION CHARACTERISTICS

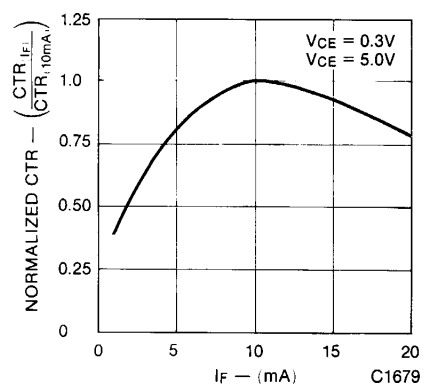
CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITION
Surge isolation voltage	V_{ISO}	4000			VDC	Relative humidity $\leq 50\%$; $I_{IO} \leq 10 \mu\text{A}$
		3000			VAC-rms	1 second
Steady state isolation voltage	V_{ISO}	3500			VDC	Relative humidity $\leq 50\%$; $I_{IO} \leq 10 \mu\text{A}$
		2500			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

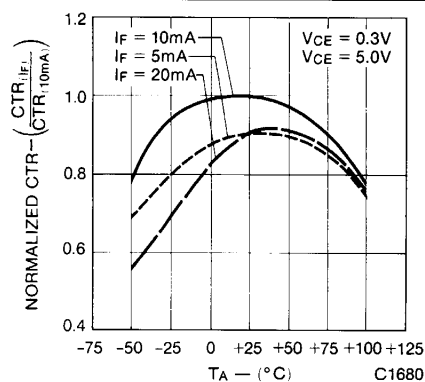
(25°C Free Air Temperature Unless Otherwise Specified)



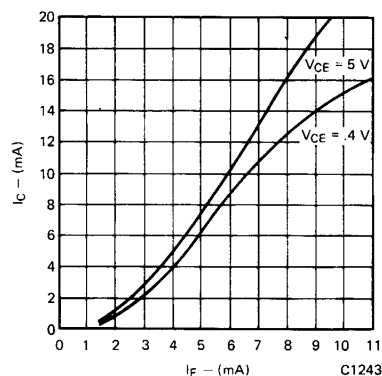
C1686



C1679



C1680



C1243

TYPICAL ELECTRICAL CHARACTERISTIC CURVES

(25°C Free Air Temperature Unless Otherwise Specified) (Cont'd)

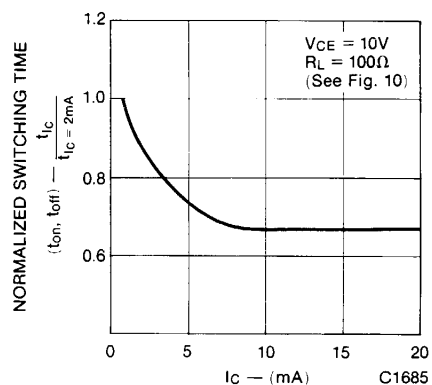


Fig. 5. Switching Time vs. I_C

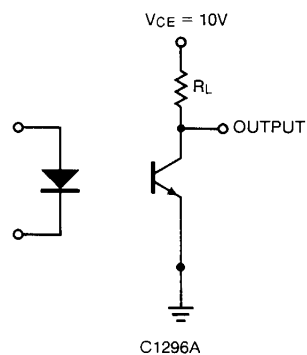


Fig. 6. Switching Time Test Circuit

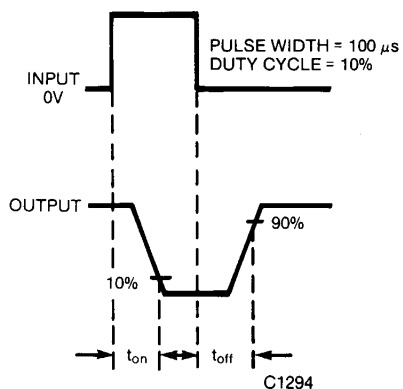


Fig. 7. Switching Time Waveforms