



6-Pin DIP Optoisolator Transistor Output

The MOC8100 device consists of a gallium arsenide infrared emitting diode optically coupled to a monolithic silicon phototransistor detector. It is designed for applications requiring higher output collector current (I_C) with lower input drive current (I_F).

- Current Transfer Ratio Guaranteed to be > 50% at 1 mA LED Drive Level
- **To order devices that are tested and marked per VDE 0884 requirements, the suffix "V" must be included at end of part number. VDE 0884 is a test option.**

Applications

- Appliances, Measuring Instruments
- General Purpose Switching Circuits
- Programmable Controllers
- Portable Electronics
- Interfacing and coupling systems of different potentials and impedances
- Low Power Logic Circuits
- Telecommunications Equipment

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
--------	--------	-------	------

INPUT LED

Reverse Voltage	V_R	6	Volts
Forward Current — Continuous	I_F	60	mA
LED Power Dissipation @ $T_A = 25^\circ\text{C}$ with Negligible Power in Output Detector Derate above 25°C	P_D	120 1.41	mW mW/°C

OUTPUT TRANSISTOR

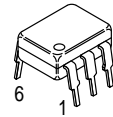
Collector–Emitter Voltage	V_{CEO}	30	Volts
Emitter–Base Voltage	V_{EBO}	7	Volts
Collector–Base Voltage	V_{CBO}	70	Volts
Collector Current — Continuous	I_C	150	mA
Detector Power Dissipation @ $T_A = 25^\circ\text{C}$ with Negligible Power in Input LED Derate above 25°C	P_D	150 1.76	mW mW/°C

TOTAL DEVICE

Isolation Surge Voltage ⁽¹⁾ (Peak ac Voltage, 60 Hz, 1 sec Duration)	V_{ISO}	7500	Vac(pk)
Total Device Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	250 2.94	mW mW/°C
Ambient Operating Temperature Rang	T_A	-55 to +100	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C
Soldering Temperature (10 sec, 1/16" from case)	T_L	260	°C

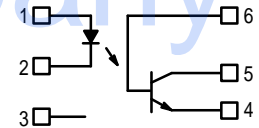
1. Isolation surge voltage is an internal device dielectric breakdown rating.
For this test, Pins 1 and 2 are common, and Pins 4, 5 and 6 are common.

MOC8100



STANDARD THRU HOLE

SCHEMATIC



- PIN 1. LED ANODE
2. LED CATHODE
3. N.C.
4. EMITTER
5. COLLECTOR
6. BASE

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)⁽¹⁾

Characteristic	Symbol	Min	Typ ⁽¹⁾	Max	Unit	
INPUT LED						
Forward Voltage ($I_F = 10\text{ mA}$)	V_F	—	$T_A = 0\text{--}70^\circ\text{C}$	1.15	1.4	Volts
			$T_A = -55^\circ\text{C}$	1.3	—	
			$T_A = 100^\circ\text{C}$	1.05	—	
Reverse Leakage Current ($V_R = 6\text{ V}$)	I_R	—	0.05	10	μA	
Capacitance ($V = 0\text{ V}$, $f = 1\text{ MHz}$)	C_J	—	18	—	pF	

OUTPUT TRANSISTOR

Collector–Emitter Dark Current ($V_{CE} = 5\text{ V}$, $T_A = 25^\circ\text{C}$) ($V_{CB} = 30\text{ V}$, $T_A = 70^\circ\text{C}$)	I_{CEO}	—	3	25	nA
	I_{CEO}	—	0.05	50	μA
Collector–Base Dark Current ($V_{CB} = 5\text{ V}$)	I_{CBO}	—	0.2	10	nA
Collector–Emitter Breakdown Voltage ($I_C = 1\text{ mA}$)	$V_{(BR)CEO}$	30	45	—	Volts
Collector–Base Breakdown Voltage ($I_C = 100\ \mu\text{A}$)	$V_{(BR)CBO}$	70	100	—	Volts
Emitter–Base Breakdown Voltage ($I_E = 100\ \mu\text{A}$)	$V_{(BR)EBO}$	7	7.8	—	Volts
DC Current Gain ($I_C = 1\text{ mA}$, $V_{CE} = 5\text{ V}$) (Typical Value)	h_{FE}	—	600	—	—
Collector–Emitter Capacitance ($f = 1\text{ MHz}$, $V_{CE} = 0$)	C_{CE}	—	7	—	pF
Collector–Base Capacitance ($f = 1\text{ MHz}$, $V_{CB} = 0$)	C_{CB}	—	19	—	pF
Emitter–Base Capacitance ($f = 1\text{ MHz}$, $V_{EB} = 0$)	C_{EB}	—	9	—	pF

COUPLED

Output Collector Current ($I_F = 1\text{ mA}$, $V_{CE} = 5\text{ V}$) ($I_F = 1\text{ mA}$, $V_{CE} = 5\text{ V}$, $T_A = 0\text{ to }+70^\circ\text{C}$)	$I_C\text{ (CTR)}^{(2)}$	0.5 (50)	1 (100)	—	$\text{mA } (\%)$
		0.3 (30)	0.6 (60)	—	
Collector–Emitter Saturation Voltage ($I_C = 100\ \mu\text{A}$, $I_F = 1\text{ mA}$)	$V_{CE(sat)}$	—	0.22	0.5	Volts
Turn–On Time ($I_C = 2\text{ mA}$, $V_{CC} = 10\text{ V}$, $R_L = 100\ \Omega$) ⁽³⁾	t_{on}	—	9	20	μs
Turn–Off Time ($I_C = 2\text{ mA}$, $V_{CC} = 10\text{ V}$, $R_L = 100\ \Omega$) ⁽³⁾	t_{off}	—	7	20	μs
Rise Time ($I_C = 2\text{ mA}$, $V_{CC} = 10\text{ V}$, $R_L = 100\ \Omega$) ⁽³⁾	t_r	—	3.8	—	μs
Fall Time ($I_C = 2\text{ mA}$, $V_{CC} = 10\text{ V}$, $R_L = 100\ \Omega$) ⁽³⁾	t_f	—	5.6	—	μs
Isolation Voltage ($f = 60\text{ Hz}$, $t = 1\text{ sec}$) ⁽⁴⁾	V_{ISO}	7500	—	—	Vac(pk)
Isolation Resistance ($V = 500\text{ V}$) ⁽⁴⁾	R_{ISO}	10^{11}	—	—	Ω
Isolation Capacitance ($V = 0\text{ V}$, $f = 1\text{ MHz}$) ⁽⁴⁾	C_{ISO}	—	0.2	2	pF

1. Always design to the specified minimum/maximum electrical limits (where applicable).
2. Current Transfer Ratio (CTR) = $I_C/I_F \times 100\%$.
3. For test circuit setup and waveforms, refer to Figure 11.
4. For this test, Pins 1 and 2 are common, and Pins 4, 5 and 6 are common.

TYPICAL CHARACTERISTICS

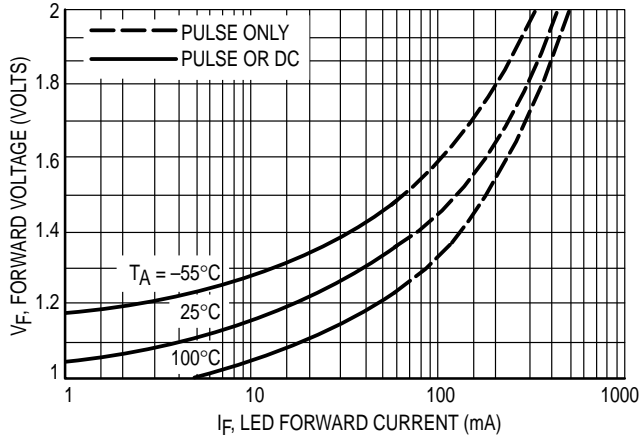


Figure 1. LED Forward Voltage versus Forward Current

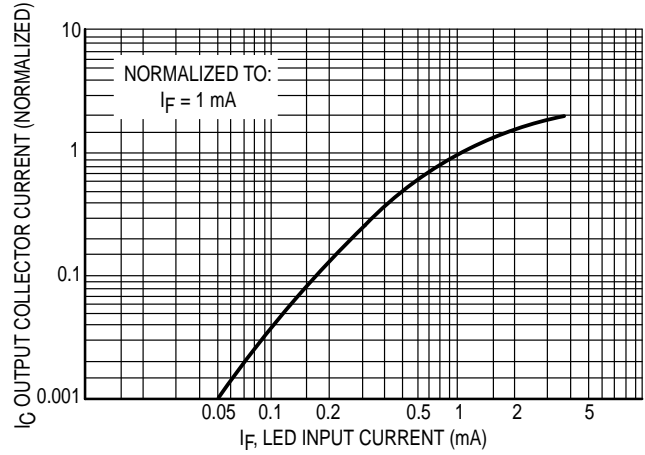


Figure 2. Output Current versus Input Current

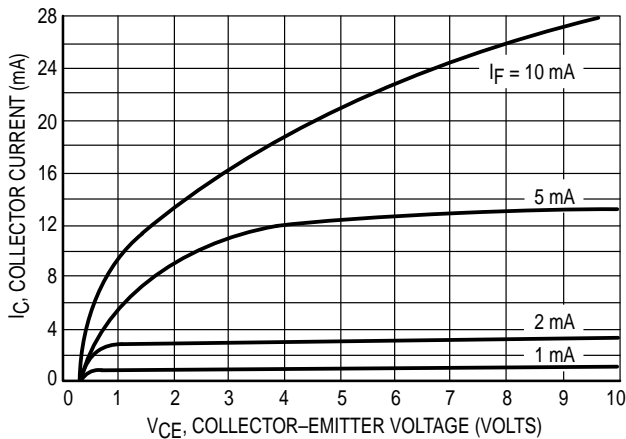


Figure 3. Collector Current versus Collector-Emitter Voltage

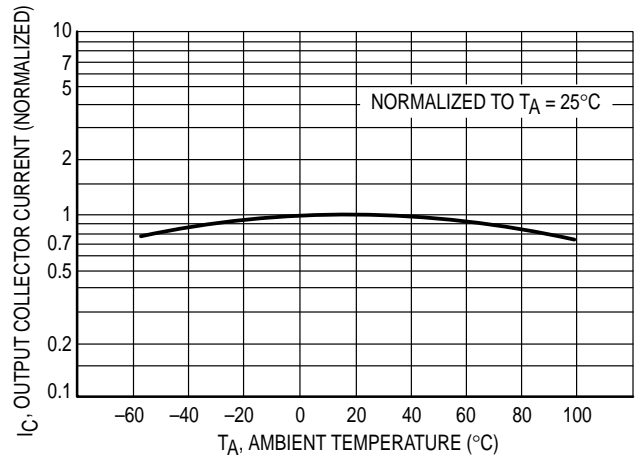


Figure 4. Output Current versus Ambient Temperature

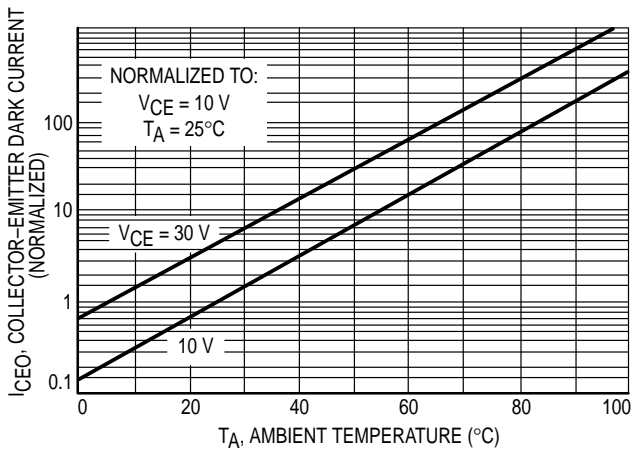


Figure 5. Dark Current versus Ambient Temperature

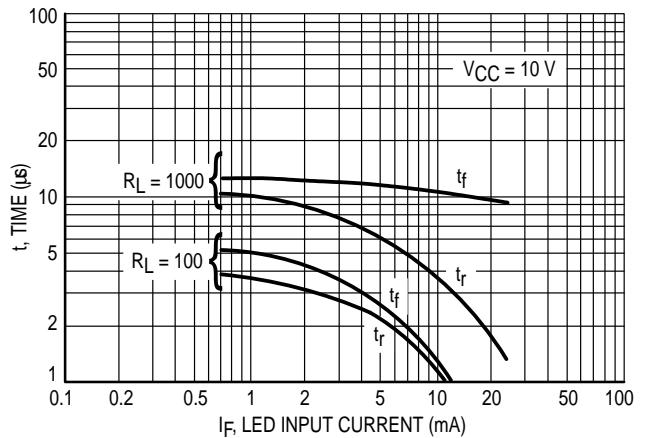


Figure 6. Rise and Fall Times (Typical Values)

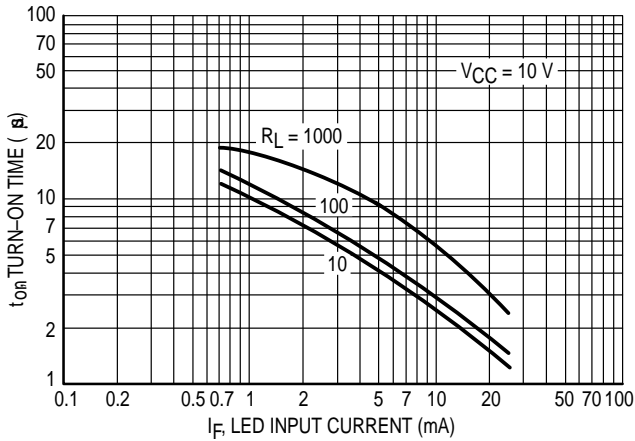


Figure 7. Turn-On Switching Times

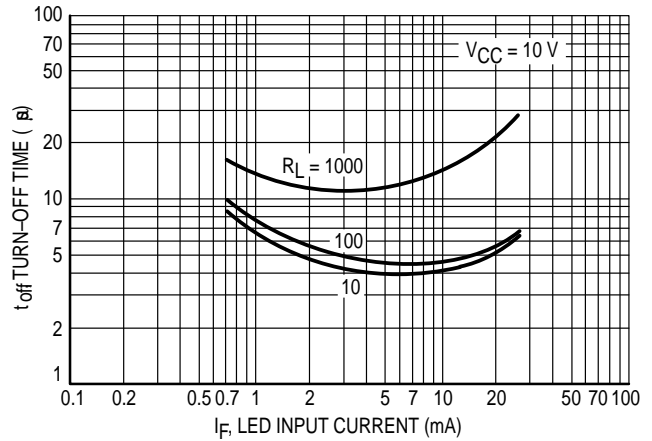


Figure 8. Turn-Off Switching Times

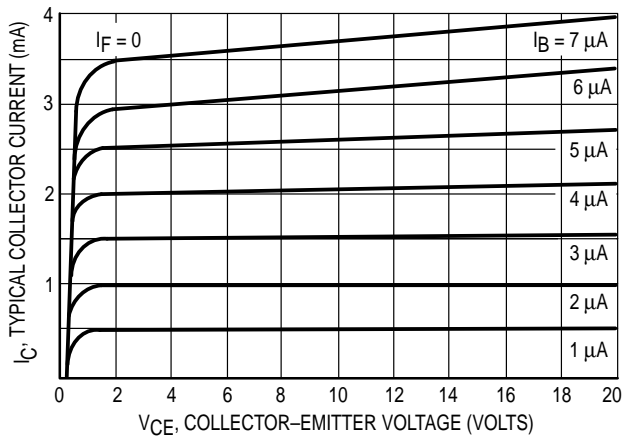


Figure 9. DC Current Gain (Detector Only)

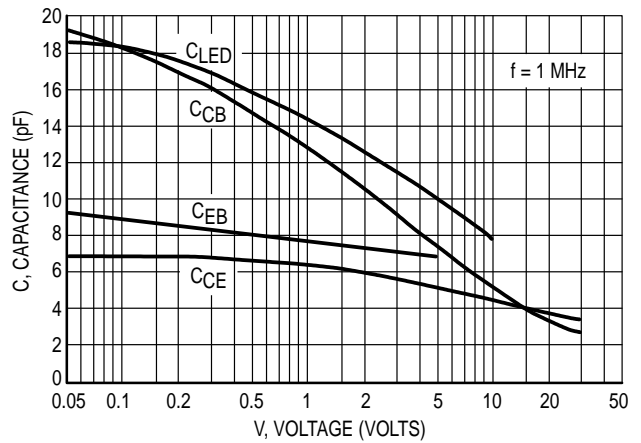


Figure 10. Capacitances versus Voltage

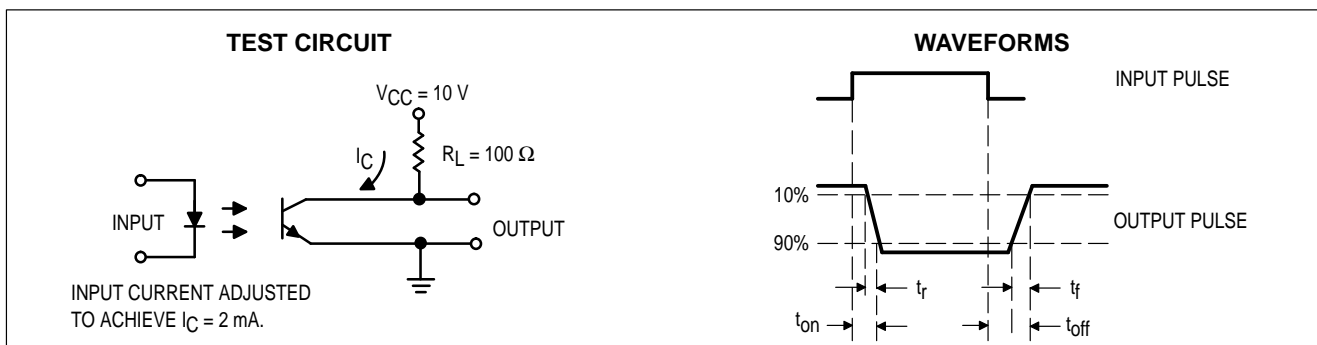
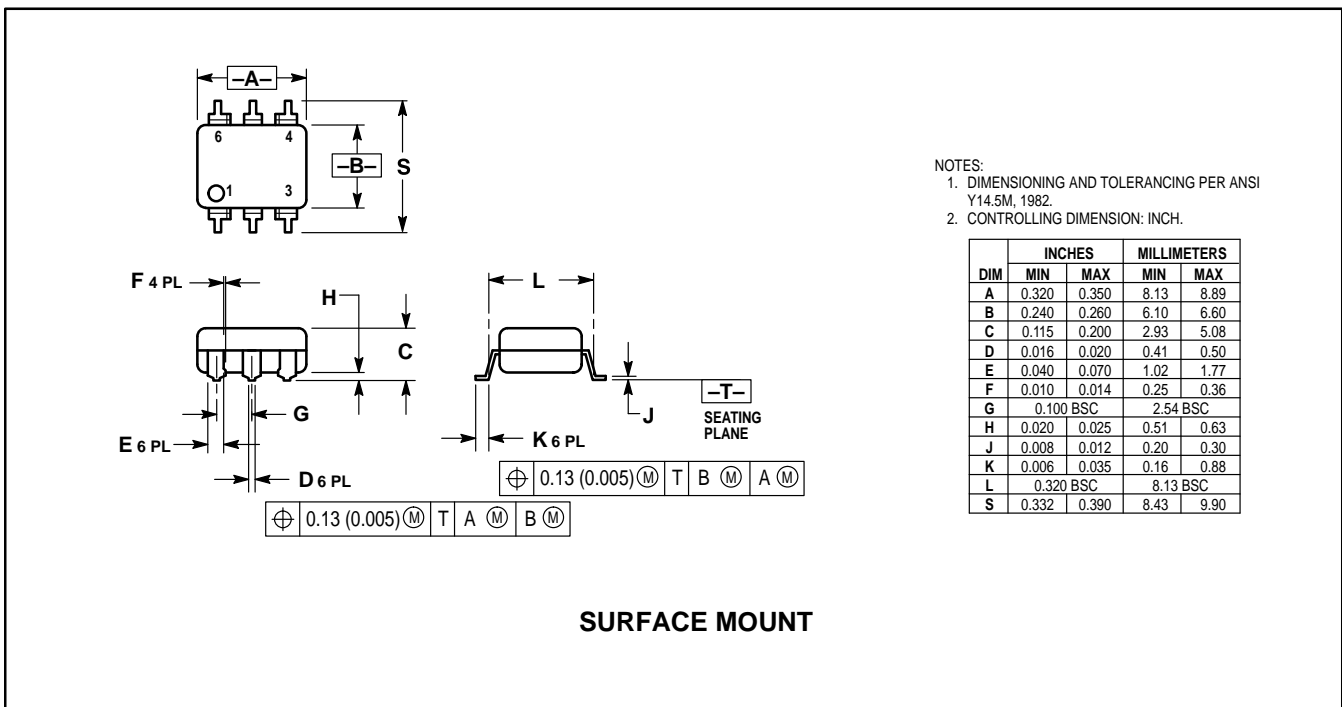
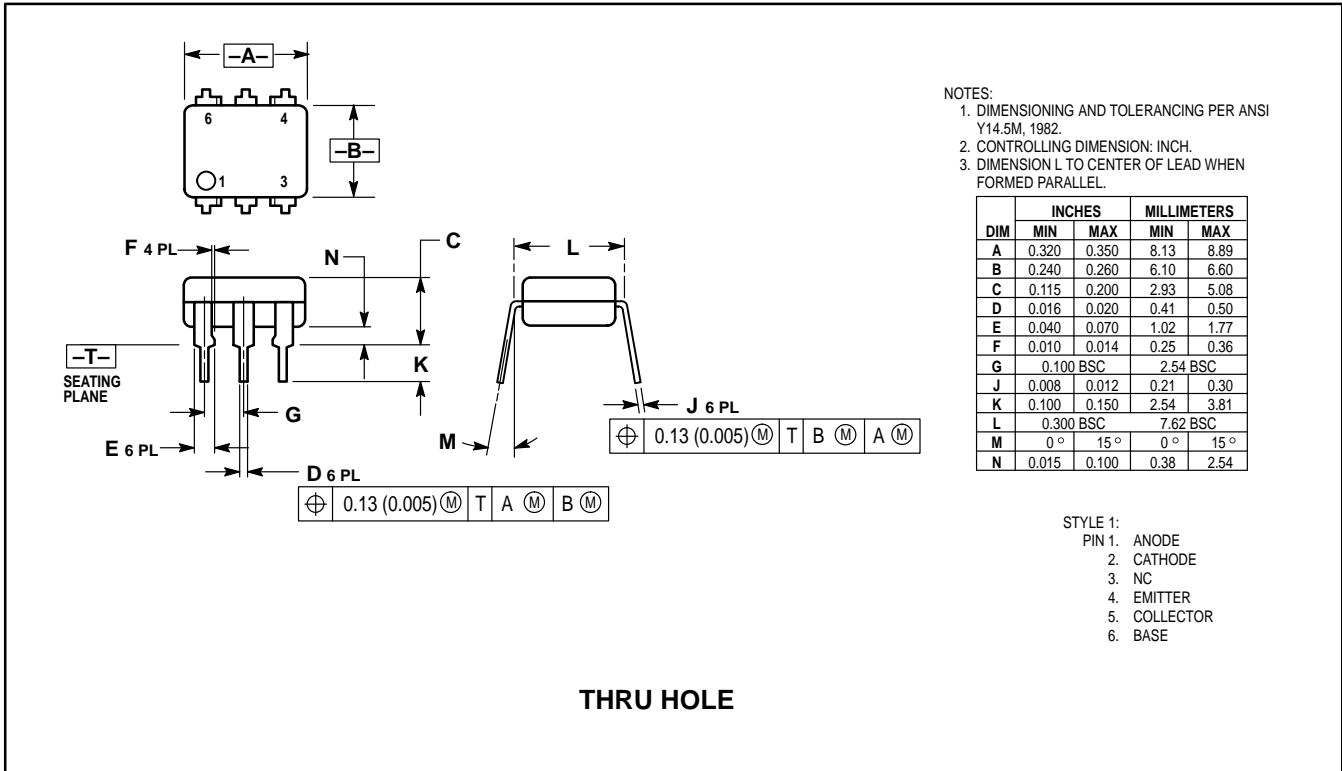
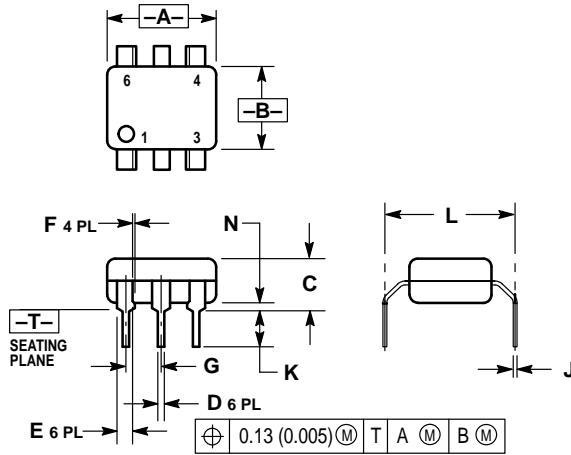


Figure 11. Switching Time Test Circuit and Waveforms

PACKAGE DIMENSIONS





- NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.320	0.350	8.13	8.89
B	0.240	0.260	6.10	6.60
C	0.115	0.200	2.93	5.08
D	0.016	0.020	0.41	0.50
E	0.040	0.070	1.02	1.77
F	0.010	0.014	0.25	0.36
G	0.100 BSC		2.54 BSC	
J	0.008	0.012	0.21	0.30
K	0.100	0.150	2.54	3.81
L	0.400	0.425	10.16	10.80
N	0.015	0.040	0.38	1.02

0.4" LEAD SPACING

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

Fairchild Semiconductor

SEARCH | [Parametric](#) | [Cross Reference](#)[space](#)[Product Folders and](#)[Applies](#)[find products](#)[Home](#) >> [Find products](#) >>[Products groups](#)[Analog and Mixed](#)[Signal](#)[Discrete](#)[Interface](#)[Logic](#)[Microcontrollers](#)[Non-Volatile](#)[Memory](#)[Optoelectronics](#)[Markets and](#)[applications](#)[New products](#)[Product selection and](#)[parametric search](#)[Cross-reference](#)[search](#)[technical information](#)[buy products](#)[technical support](#)[my Fairchild](#)[company](#)

MOC8100-M 6-Pin White Package Phototransistor Coupler

[Contents](#)[General description](#) | [Product status/pricing/packaging](#) | [Safety agency certificates](#)

General description

The MOC8100 device consists of a gallium arsenide infrared emitting diode optically coupled to a monolithic silicon phototransistor detector. It is designed for applications requiring higher output collector current (I_C) with lower input drive current (I_F).

- Current transfer ratio guaranteed to be > 50% at 1 mA LED drive level.
- **To order devices that are tested and marked per VDE 0884 requirements, the suffix "V" must be included at end of part number. VDE 0884 is a test option.**

[Datasheet](#)[Download this datasheet](#)[PDF](#)[e-mail this datasheet](#)[\[E-\]](#)[This page](#)[Print version](#)

Related Links

[Request samples](#)[Dotted line](#)[How to order products](#)[Dotted line](#)[Product Change Notices](#)[\(PCNs\)](#)[Dotted line](#)[Support](#)[Dotted line](#)[Distributor and field sales](#)[representatives](#)[Dotted line](#)[Quality and reliability](#)[Dotted line](#)[Design tools](#)[back to top](#)

Product status/pricing/packaging

Product	Product status	Pricing*	Package type	Leads	Packing method
MOC8100F-M	Full Production	\$0.189	N/A	N/A	RAIL
MOC8100FR2-M	Full Production	\$0.185	DIP	6	TAPE REEL
MOC8100FR2V-M	Full Production	\$0.185	DIP	6	TAPE REEL
MOC8100FV-M	Full Production	\$0.176	N/A	N/A	RAIL
MOC8100-M	Full Production	\$0.159	N/A	N/A	RAIL
MOC8100S-M	Full Production	\$0.167	N/A	N/A	RAIL
MOC8100SR2-M	Full Production	\$0.167	DIP	6	TAPE REEL
MOC8100SR2V-M	Full Production	\$0.167	DIP	6	TAPE REEL
MOC8100SV-M	Full Production	\$0.159	DIP	6	RAIL

MOC8100T-M	Full Production	\$0.167	N/A	N/A	RAIL
MOC8100TV-M	Full Production	\$0.159	N/A	N/A	RAIL
MOC8100V-M	Full Production	\$0.159	N/A	N/A	RAIL

* 1,000 piece Budgetary Pricing

[back to top](#)

Safety agency certificates

Certificate	Agency	
310983-01 (95 K)	DEMKO	DEMKO Testing & Certification
P01101866 (383 K)	NEMKO	NEMKO
CR/0117 (424 K)	BABT	British Approvals Board of Telecommunications
102497 (1629 K)	VDE	VDE Pruf-und Zertifizierungsinstitut
1113639 (111 K)	CSA	Canadian Standards Association
0134082 (136 K)	SEMKO	SEMKO
FI 17434 (47 K)	FIMKO	FIMKO
E90700, Vol. 2 (254 K)	UL	Underwriters Laboratories Inc.

[back to top](#)

[Home](#) | [Find products](#) | [Technical information](#) | [Buy products](#) | [Support](#) | [Company](#) | [Contact us](#) | [Site index](#) | [Privacy policy](#)

© Copyright 2002 Fairchild Semiconductor

Last updated: April 7, 2002

[Products groups](#)[Analog and Mixed](#)[Signal](#)[Discrete](#)[Interface](#)[Logic](#)[Microcontrollers](#)[Non-Volatile](#)[Memory](#)[Optoelectronics](#)[Markets and](#)[applications](#)[New products](#)[Product selection and](#)[parametric search](#)[Cross-reference](#)[search](#)[technical information](#)[buy products](#)[technical support](#)[my Fairchild](#)[company](#)

Former Motorola Products Now Supplied by Fairchild

Select a product number to download its datasheet in PDF format ([Adobe Acrobat Reader](#) required). A -M suffix indicates a former Motorola product.

Contents

[4N](#) | [CNY](#) | [H11](#) | [MCT](#) | [MOC](#) |

Datasheets for products beginning with 4N

4N25-M	4N25A-M obsoleted, no replacement	4N26-M
4N27-M	4N28-M	4N29-M replaced by 4N29
4N29A-M replaced by 4N29	4N30-M replaced by 4N30	4N31-M replaced by 4N31
4N32-M replaced by 4N32	4N33-M replaced by 4N33	4N35-M
4N36-M	4N37-M	4N38-M replaced by 4N38
4N38A-M replaced by 4N38		

[back to top](#)

Datasheets for products beginning with CNY

CNY17-1-M	CNY17-2-M	CNY17-3-M
---------------------------	---------------------------	---------------------------

[back to top](#)

Datasheets for products beginning with H11

H11A1-M	H11AA1-M replaced by H11AA1	H11AA2-M replaced by H11AA2
-------------------------	---	---

Related links

[6 pin black/white package comparison](#)[Request samples](#)[Buy products](#)[Optocoupler products](#)[Optoelectronics products](#)[Contact us](#)

H11AA3-M replaced by H11AA3	H11AA4-M replaced by H11AA4	H11AV1-M
H11AV1A-M	H11AV2-M	H11AV2A-M
H11B1-M replaced by H11B1	H11B3-M replaced by H11B3	H11D1-M replaced by H11D1
H11D2-M replaced by H11D2	H11G1-M replaced by H11G1	H11G2-M replaced by H11G2
H11G3-M replaced by H11G3	H11L1-M	H11L2-M
H11L3-M		

[back to top](#)

.

Datasheets for products beginning with MCT

MCT2-M	MCT2E-M	
------------------------	-------------------------	--

[back to top](#)

.

Datasheets for products beginning with MOC

MOC205-M	MOC206-M	MOC207-M
MOC208-M	MOC211-M	MOC212-M
MOC213-M	MOC215-M	MOC216-M
MOC217-M	MOC223-M	MOC256-M
MOC3010-M	MOC3011-M	MOC3012-M
MOC3020-M	MOC3021-M	MOC3022-M
MOC3023-M	MOC3031-M	MOC3032-M
MOC3033-M	MOC3041-M	MOC3042-M
MOC3043-M	MOC3051-M	MOC3052-M
MOC3061-M	MOC3062-M	MOC3063-M
MOC3081-M	MOC3081-M	MOC3083-M
MOC3162-M	MOC3163-M	MOC5007-M
MOC5008-M	MOC5009-M	MOC8030-M replaced by MOC8030

MOC8050-M replaced by MOC8050	MOC8080-M replaced by MOC8080	MOC8100-M
MOC8204-M replaced by MOC8204	MOCD207-M	MOCD208-M
MOCD211-M	MOCD213-M	MOCD217-M
MOCD223-M		

[back to top](#)

[Home](#) | [Find products](#) | [Technical information](#) | [Buy products](#) |
[Support](#) | [Company](#) | [Contact us](#) | [Site index](#) | [Privacy policy](#)

© [Copyright 2002 Fairchild Semiconductor](#)

Last updated: March 19, 2002
