



# THE DATASHEET OF MOC8030-M



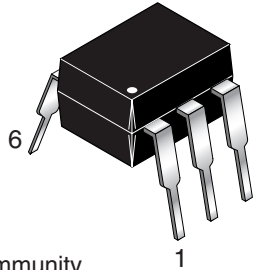
**MOC8030  
MOC8050**

**DESCRIPTION**

The MOC8030 and MOC8050 are photodarlington-type optically coupled optocouplers. The devices have a gallium arsenide infrared emitting diode coupled with a silicon darlington phototransistor.

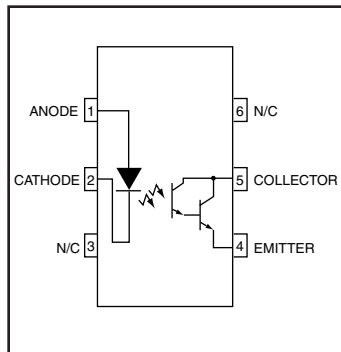
**FEATURES**

- High  $BV_{CEO}$   
-Minimum 80 V
- High current transfer ratio  
-300% (MOC8030)  
-500% (MOC8050)
- No base connection for improved noise immunity
- Underwriters Laboratory (UL) recognized File# E90700



**APPLICATIONS**

- Appliances, measuring instruments
- I/O interface for computers
- Programmable controllers
- Portable electronics
- Interfacing and coupling systems of different potentials and impedance
- Solid state relays



**PACKAGE DIMENSIONS**

**NOTE**  
All dimensions are in inches (millimeters)

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A = 25^\circ\text{C}$ Unless otherwise specified.)			
Parameter	Symbol	Value	Units
<b>TOTAL DEVICE</b>			
Storage Temperature	$T_{STG}$	-55 to +150	$^\circ\text{C}$
Operating Temperature	$T_{OPR}$	-55 to +100	$^\circ\text{C}$
Lead Solder Temperature	$T_{SOL}$	260 for 10 sec	$^\circ\text{C}$
Total Device Power Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	250	mW
Derate above $25^\circ\text{C}$		2.94	mW/ $^\circ\text{C}$
Input-Output Isolation Voltage	$V_{ISO}$	5300	Vac(rms)
<b>EMITTER</b>			
DC/Average Forward Input Current	$I_F$	60	mA
Reverse Input Voltage	$V_R$	3	V
LED Power Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	120	mW
Derate above $25^\circ\text{C}$		1.41	mW/ $^\circ\text{C}$
<b>DETECTOR</b>			
Collector-Emitter Voltage	$V_{CEO}$	80	V
Detector Power Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	150	mW
Derate above $25^\circ\text{C}$		1.76	mW/ $^\circ\text{C}$
Continuous Collector Current	$I_C$	150	mA

**MOC8030  
MOC8050**

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C Unless otherwise specified.)

### INDIVIDUAL COMPONENT CHARACTERISTICS

Parameter	Test Conditions	Symbol	Min	Typ**	Max	Unit
<b>EMITTER</b>						
Input Forward Voltage	(I <sub>F</sub> = 10 mA)	V <sub>F</sub>		1.15	2	V
Input Capacitance	(V <sub>F</sub> = 0, f = 1 MHz)	C <sub>IN</sub>		18		pF
Reverse Leakage Current	(V <sub>R</sub> = 3.0 V)	I <sub>R</sub>		0.05	10	μA
<b>DETECTOR</b>						
Collector-Emitter Breakdown Voltage	(I <sub>C</sub> = 1.0 mA)	BV <sub>CEO</sub>	80			V
Emitter-Collector Breakdown Voltage	(I <sub>E</sub> = 100 μA)	BV <sub>ECO</sub>	5			V
Collector-Emitter Dark Current	(V <sub>CE</sub> = 60 V)	I <sub>CEO</sub>			1	μA

### TRANSFER CHARACTERISTICS

DC Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units
Current Transfer Ratio, Collector-Emitter	MOC8030 (I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 1.5 V)	CTR	300			%
	MOC8050 (I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 1.5 V)		500			

### TRANSFER CHARACTERISTICS

Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units
<b>SWITCHING TIMES</b>						
Turn-on Time	(V <sub>CC</sub> = 10 V, R <sub>L</sub> = 100Ω, I <sub>F</sub> = 5 mA)	t <sub>on</sub>		3.5		μs
Turn-off Time		t <sub>off</sub>		95		μs

### ISOLATION CHARACTERISTICS

Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units
Input-Output Isolation Voltage	(I <sub>I-O</sub> ≤ 1 μA, 1 min.)	V <sub>ISO</sub>	7500			Vac(pk)
	(I <sub>I-O</sub> ≤ 1 μA, 1 min.)		5300			Vac(rms)
Isolation Resistance	(V <sub>I-O</sub> = 500 VDC)	R <sub>ISO</sub>	10 <sup>11</sup>			Ω
Isolation Capacitance	(f = 1 MHz)	C <sub>ISO</sub>		0.5		pf

Note

\*\* Typical values at T<sub>A</sub> = 25°C

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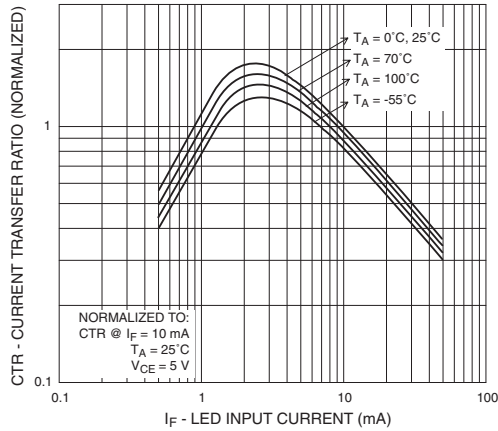


Fig. 1 Output Current vs. Input Current

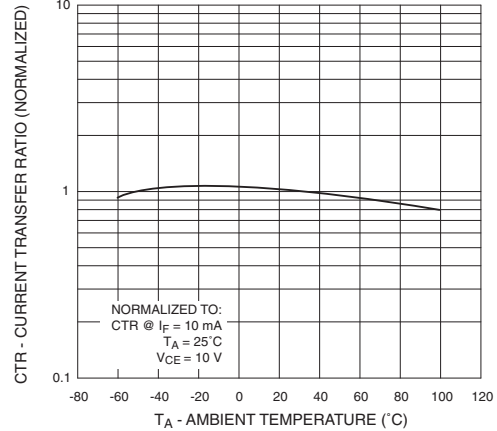


Fig. 2 Current Transfer Ratio vs. Ambient Temperature

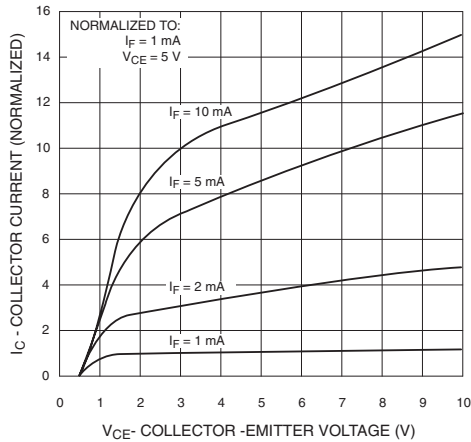


Fig. 3 Collector Current vs. Collector-Emitter Voltage

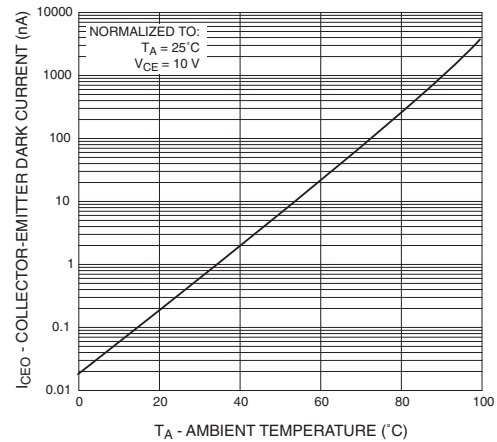


Fig. 4 Dark Current vs. Ambient Temperature

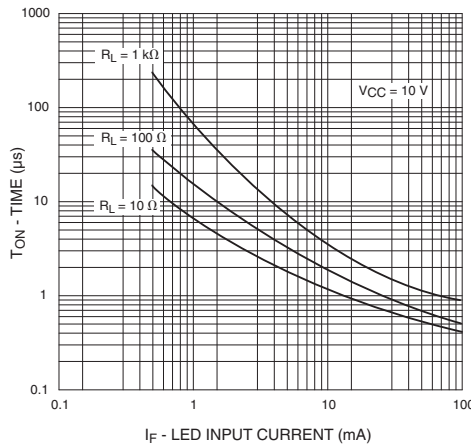


Fig. 5 Turn-On Time vs. Input Current

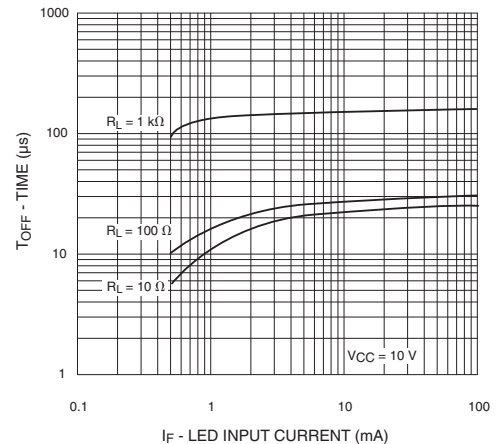
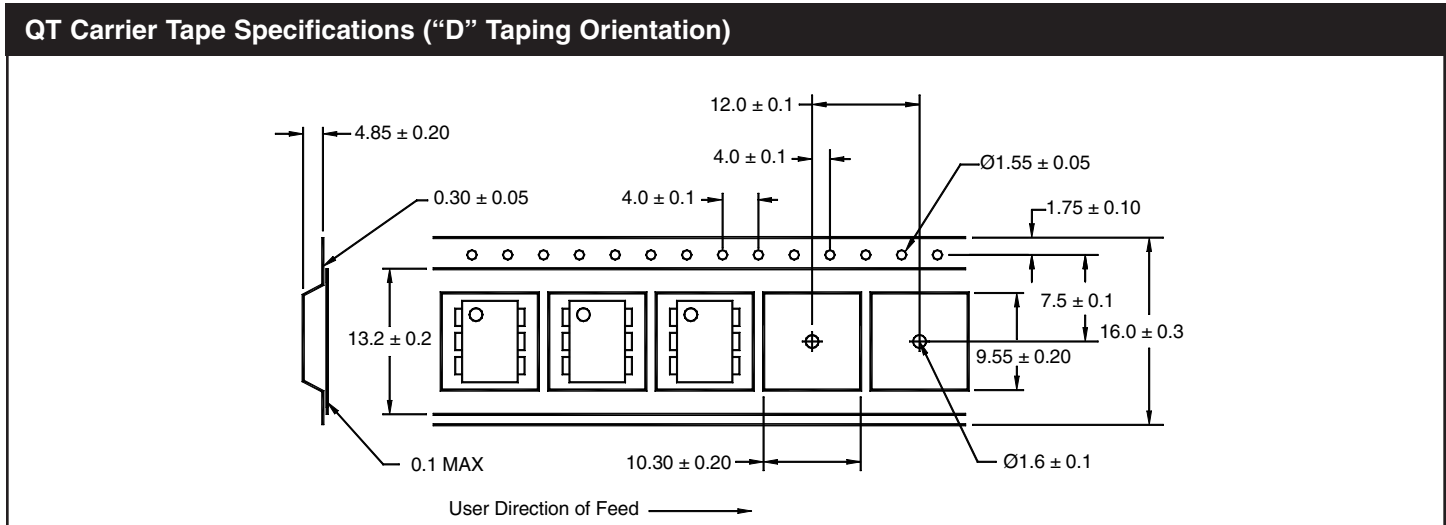


Fig. 6 Turn-Off Time vs. Input Current

**MOC8030  
MOC8050**

**ORDERING INFORMATION**

Option	Order Entry Identifier	Description
S	.S	Surface Mount Lead Bend
SD	.SD	Surface Mount; Tape and reel
W	.W	0.4" Lead Spacing
300	.300	VDE 0884
300W	.300W	VDE 0884, 0.4" Lead Spacing
3S	.3S	VDE 0884, Surface Mount
3SD	.3SD	VDE 0884, Surface Mount, Tape & Reel



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