

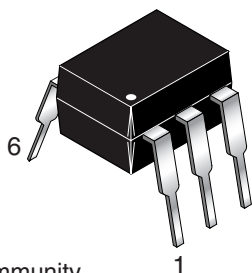
**MOC8030
MOC8050**

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.

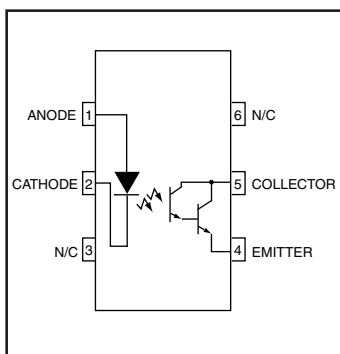
FEATURES

- 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

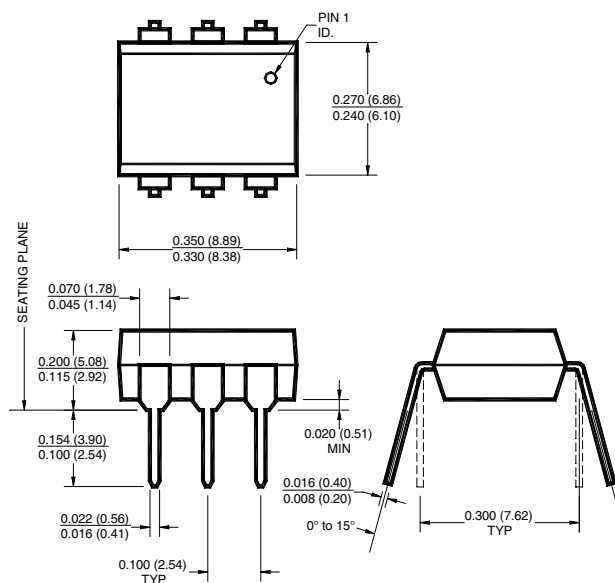


APPLICATIONS

- 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)

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless otherwise specified.)

Parameter	Symbol	Value	Units
TOTAL DEVICE			
Storage Temperature	T _{STG}	-55 to +150	°C
Operating Temperature	T _{OPR}	-55 to +100	°C
Lead Solder Temperature	T _{SOL}	260 for 10 sec	°C
Total Device Power Dissipation @ T _A = 25°C	P _D	250	mW
Derate above 25°C		2.94	mW/°C
Input-Output Isolation Voltage	V _{ISO}	5300	Vac(rms)
EMITTER			
DC/Average Forward Input Current	I _F	60	mA
Reverse Input Voltage	V _R	3	V
LED Power Dissipation @ T _A = 25°C	P _D	120	mW
Derate above 25°C		1.41	mW/°C
DETECTOR			
Collector-Emitter Voltage	V _{CEO}	80	V
Detector Power Dissipation @ T _A = 25°C	P _D	150	mW
Derate above 25°C		1.76	mW/°C
Continuous Collector Current	I _C	150	mA

MOC8030
MOC8050
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise specified.)

INDIVIDUAL COMPONENT CHARACTERISTICS

Parameter	Test Conditions	Symbol	Min	Typ**	Max	Unit
EMITTER						
Input Forward Voltage	($I_F = 10\text{ mA}$)	V_F		1.15	2	V
Input Capacitance	($V_F = 0$, $f = 1\text{ MHz}$)	C_{IN}		18		pF
Reverse Leakage Current	($V_R = 3.0\text{ V}$)	I_R		0.05	10	μA
DETECTOR						
Collector-Emitter Breakdown Voltage	($I_C = 1.0\text{ mA}$)	BV_{CEO}	80			V
Emitter-Collector Breakdown Voltage	($I_E = 100\text{ }\mu\text{A}$)	BV_{ECO}	5			V
Collector-Emitter Dark Current	($V_{CE} = 60\text{ V}$)	I_{CEO}			1	μA

TRANSFER CHARACTERISTICS

DC Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units
Current Transfer Ratio, Collector-Emitter	MOC8030 ($I_F = 10\text{ mA}$, $V_{CE} = 1.5\text{ V}$) MOC8050 ($I_F = 10\text{ mA}$, $V_{CE} = 1.5\text{ V}$)	CTR	300			%
			500			

TRANSFER CHARACTERISTICS

Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units
SWITCHING TIMES						
Turn-on Time	(V _{CC} = 10 V, R _L = 100 Ω , I _F = 5 mA)	t _{on}		3.5		μs
Turn-off Time		t _{off}		95		μs

ISOLATION CHARACTERISTICS

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

Note

** Typical values at $T_A = 25^\circ\text{C}$

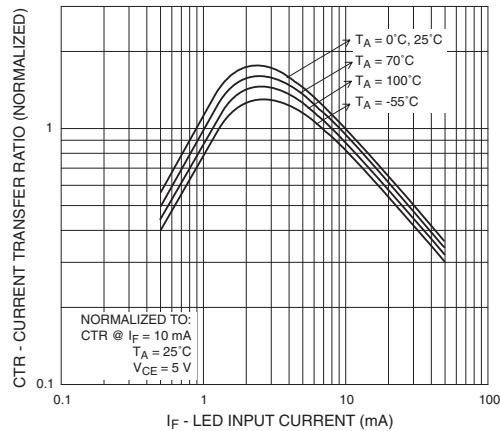


Fig. 1 Output Current vs. Input Current

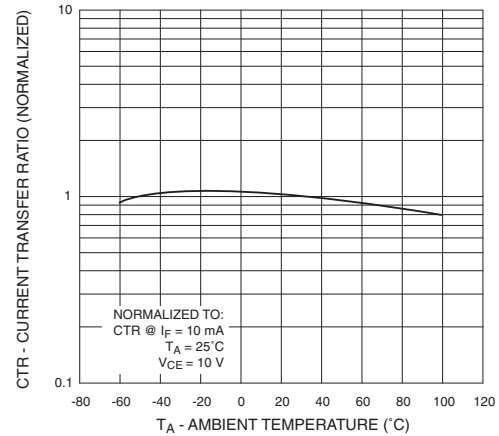


Fig. 2 Current Transfer Ratio vs. Ambient Temperature

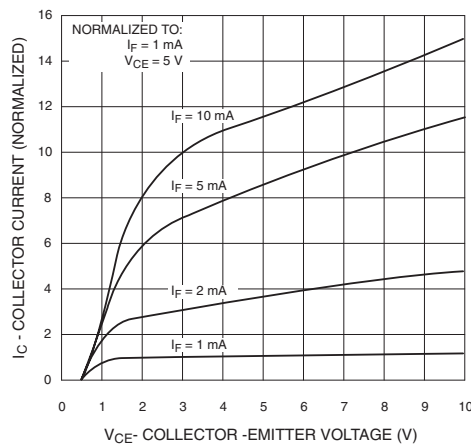


Fig. 3 Collector Current vs. Collector-Emitter Voltage

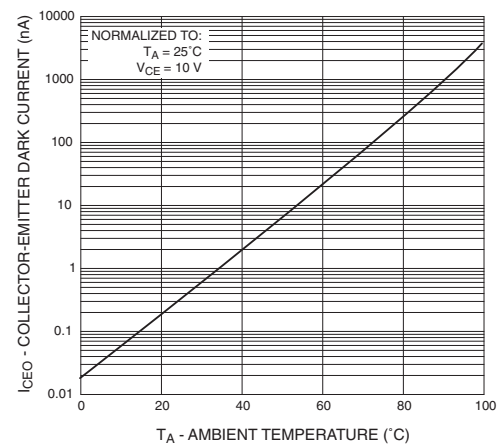


Fig. 4 Dark Current vs. Ambient Temperature

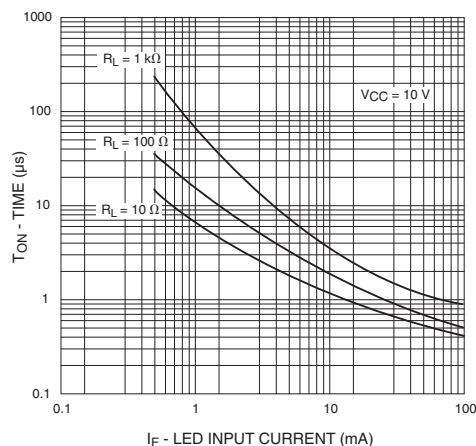


Fig. 5 Turn-On Time vs. Input Current

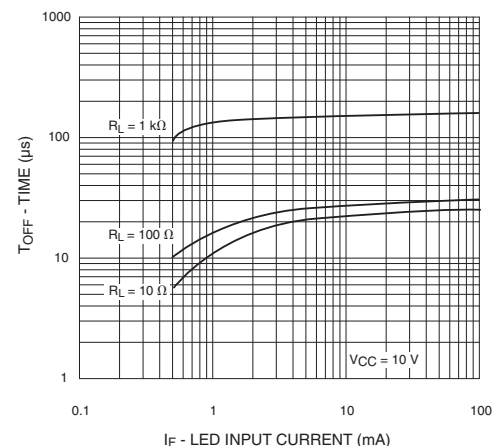


Fig. 6 Turn-Off Time vs. Input Current

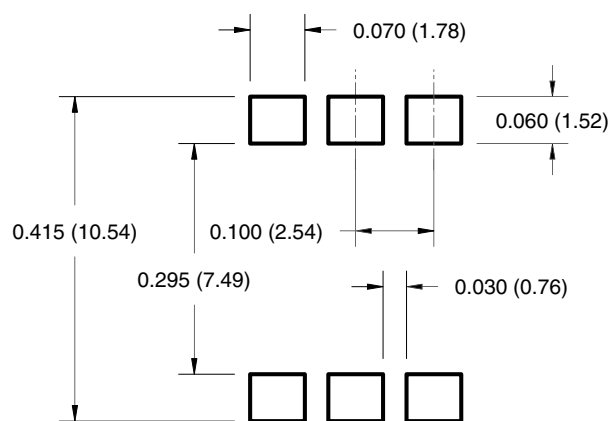
Option	Order Entry Identifier	Description
S	.S	Surface Mount Lead Bend
SD	.SD	Surface Mount; Tape and reel
W	.W	0.4" Lead Spacing
300	.300	VDE 0884
300W	.300W	VDE 0884, 0.4" Lead Spacing
3S	.3S	VDE 0884, Surface Mount
3SD	.3SD	VDE 0884, Surface Mount, Tape & Reel

Technical drawing of a 5-hole punch die. The drawing shows a side view of the die with various dimensions and features. The dimensions are as follows:

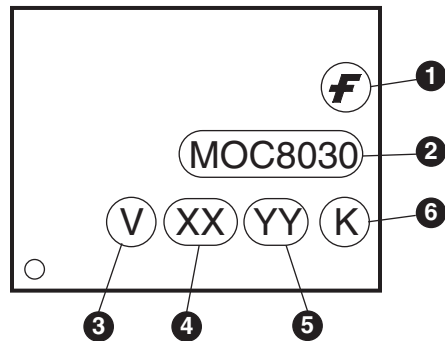
- Overall width: 4.85 ± 0.20
- Distance from left edge to first hole center: 12.0 ± 0.1
- Distance between hole centers: 4.0 ± 0.1
- Distance from last hole center to right edge: 1.75 ± 0.10
- Distance from left edge to first hole center (alternative dimension): 0.30 ± 0.05
- Distance from left edge to first hole center (alternative dimension): 13.2 ± 0.2
- Distance from left edge to first hole center (alternative dimension): 0.1 MAX
- Distance from left edge to first hole center (alternative dimension): 10.30 ± 0.20
- Distance from left edge to first hole center (alternative dimension): 7.5 ± 0.1
- Distance from left edge to first hole center (alternative dimension): 16.0 ± 0.3
- Distance from left edge to first hole center (alternative dimension): 9.55 ± 0.20
- Hole diameter: $\varnothing 1.55 \pm 0.05$
- Hole diameter: $\varnothing 1.6 \pm 0.1$

The drawing also includes a "User Direction of Feed" arrow pointing to the right.

**Recommended Pad Layout for
Surface Mount Leadform**

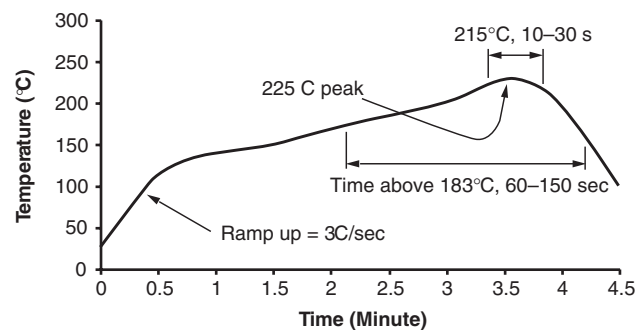


MARKING INFORMATION



Definitions	
1	Fairchild logo
2	Device number
3	VDE mark (Note: Only appears on parts ordered with VDE option – See order entry table)
4	Two digit year code, e.g., '03'
5	Two digit work week ranging from '01' to '53'
6	Assembly package code

Reflow Profile (Black Package, No Suffix)



- Peak reflow temperature: 225°C (package surface temperature)
- Time of temperature higher than 183°C for 60–150 seconds
- One time soldering reflow is recommended

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CoolFET™	FRFET™	MicroFET™	PowerTrench®	SuperSOT™-6
CROSSVOLT™	GlobalOptoisolator™	MicroPak™	QFET®	SuperSOT™-8
DOMETM	GTO™	MICROWIRE™	QST™	SyncFET™
EcoSPARK™	HiSeC™	MSX™	QT Optoelectronics™	TinyLogic®
E ² CMOS™	IC™	MSXPro™	Quiet Series™	TINYOPTO™
EnSigna™	i-Lo™	OCX™	RapidConfigure™	TruTranslation™
FACT™	ImpliedDisconnect™	OCXPro™	RapidConnect™	UHC™
FACT Quiet Series™		OPTOLOGIC®	µSerDes™	UltraFET®
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Programmable Active Droop™		POP™	SPM™	

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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
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