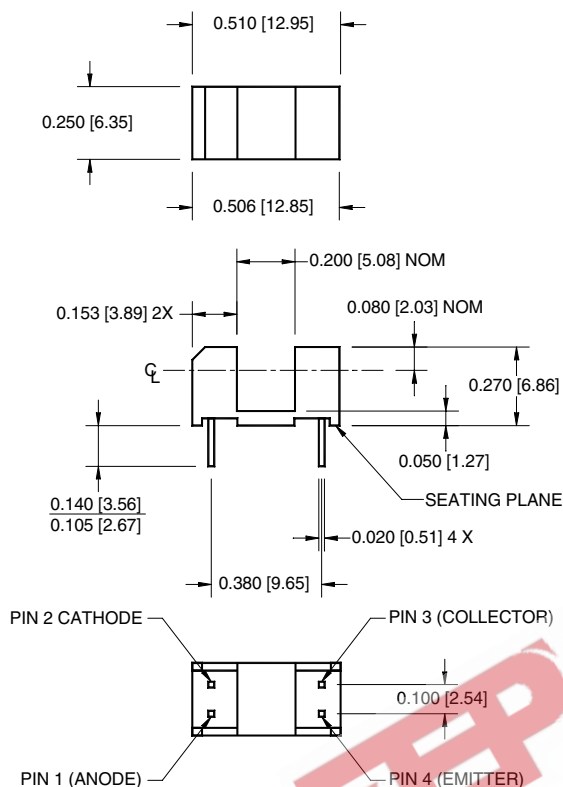


# MOC70P1 / MOC70P2 / MOC70P3

## PHOTOTRANSISTOR OPTICAL INTERRUPTER SWITCH

### PACKAGE DIMENSIONS

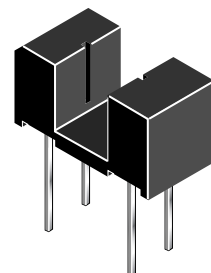


**NOTES:**

- Dimensions for all drawings are in inches (millimeters).
- Tolerance of  $\pm .010$  (.25) on all non-nominal dimensions unless otherwise specified.

### DESCRIPTION

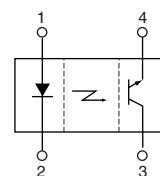
The MOC70PX consists of an infrared light emitting diode coupled to an NPN silicon phototransistor packaged into an injection molded housing. The housing is designed for wide gap, non contact sensing.



### FEATURES

- No contact sensing
- 5 mm gap
- .040" aperture
- Low profile
- PCB mount
- Transistor output

### SCHEMATIC



### NOTES

- Derate power dissipation linearly, on each component, 1.67 mW/°C above 25°C.
- RMA flux is recommended.
- Methanol or isopropyl alcohols are recommended as cleaning agents.
- Soldering iron tip 1/16" (1.6mm) from housing.
- As long as leads are not under any stress or spring tension.

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise specified)

Parameter	Symbol	Rating	Units
Operating Temperature	T <sub>OPR</sub>	-55 to +100	°C
Storage Temperature	T <sub>STG</sub>	-55 to +100	°C
Soldering Temperature (Iron) <sup>(2,3,4,5)</sup>	T <sub>SOL-I</sub>	240 for 5 sec	°C
Soldering Temperature (Flow) <sup>(2,3,5)</sup>	T <sub>SOL-F</sub>	260 for 10 sec	°C
<b>EMITTER</b>			
Continuous Forward Current	I <sub>F</sub>	50	mA
Reverse Voltage	V <sub>R</sub>	6	V
Power Dissipation <sup>(1)</sup>	P <sub>D</sub>	100	mW
<b>SENSOR</b>			
Collector-Emitter Voltage	V <sub>CEO</sub>	30	V
Emitter-Collector Voltage	V <sub>ECO</sub>	4.5	V
Collector Current	I <sub>C</sub>	20	mA
Power Dissipation <sup>(1)</sup>	P <sub>D</sub>	150	mW

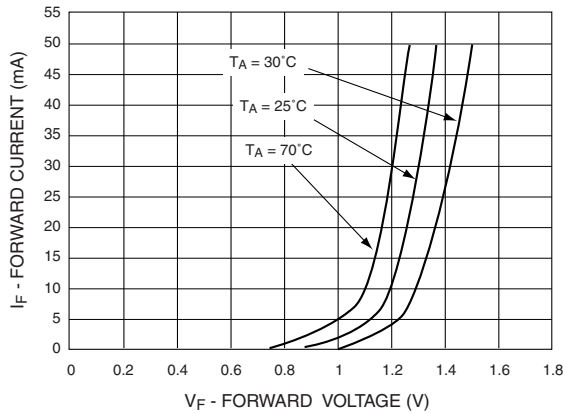
# MOC70P1 / MOC70P2 / MOC70P3

## PHOTOTRANSISTOR OPTICAL INTERRUPTER SWITCH

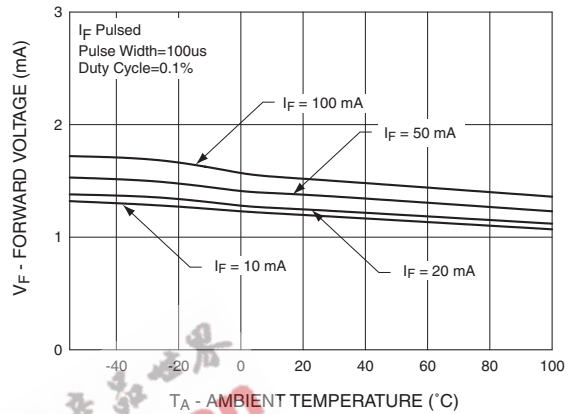
ELECTRICAL / OPTICAL CHARACTERISTICS (T <sub>A</sub> = 25°C)						
PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
<b>EMITTER</b>						
Forward Voltage	I <sub>F</sub> = 50 mA	V <sub>F</sub>	—	—	1.8	V
Reverse Leakage Current	V <sub>R</sub> = 6 V	I <sub>R</sub>	—	—	100	μA
<b>SENSOR</b>						
Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 10 mA	BV <sub>CEO</sub>	30	—	—	V
Emitter-Collector Breakdown Voltage	I <sub>E</sub> = 100 μA	BV <sub>ECO</sub>	4	—	—	V
Collector-Emitter Leakage	V <sub>CE</sub> = 10 V, I <sub>F</sub> = 0	I <sub>CEO</sub>	—	—	100	nA
<b>COUPLED</b>						
Collector Current (See selection guide below)		I <sub>C(ON)</sub>				
Collector Emitter Saturation Voltage ( See selection guide below)		V <sub>CE (SAT)</sub>				
Turn-on Time	I <sub>F</sub> = 30 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 2.5 kΩ	t <sub>(ON)</sub>	—	20	—	μs
Turn-off Time	I <sub>F</sub> = 30 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 2.5 kΩ	t <sub>(OFF)</sub>	—	80	—	μs

MOC70PX OPTICAL SWITCH SELECTION GUIDE						
PARAMETER	TEST CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
<b>ON-STATE COLLECTOR CURRENT</b>						
MOC70P1	I <sub>F</sub> = 5 mA, V <sub>CE</sub> = 10 V	I <sub>C(ON)</sub>	0.15	—	—	mA
MOC70P2	I <sub>F</sub> = 5 mA, V <sub>CE</sub> = 10 V	I <sub>C(ON)</sub>	0.30	—	—	mA
MOC70P3	I <sub>F</sub> = 5 mA, V <sub>CE</sub> = 10 V	I <sub>C(ON)</sub>	0.60	—	—	mA
MOC70P1	I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 10 V	I <sub>C(ON)</sub>	1.0	—	—	mA
MOC70P2	I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 10 V	I <sub>C(ON)</sub>	2.0	—	—	mA
MOC70P3	I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 10 V	I <sub>C(ON)</sub>	4.0	—	—	mA
MOC70P1	I <sub>F</sub> = 30 mA, V <sub>CE</sub> = 10 V	I <sub>C(ON)</sub>	1.9	—	—	mA
MOC70P2	I <sub>F</sub> = 30 mA, V <sub>CE</sub> = 10 V	I <sub>C(ON)</sub>	3.0	—	—	mA
MOC70P3	I <sub>F</sub> = 30 mA, V <sub>CE</sub> = 10 V	I <sub>C(ON)</sub>	5.5	—	—	mA
<b>COLLECTOR-EMITTER SATURATION VOLTAGE</b>						
MOC70P1	I <sub>F</sub> = 1.8 mA, I <sub>F</sub> = 30 mA	V <sub>CE (SAT)</sub>	—	—	0.40	V
MOC70P2	I <sub>F</sub> = 1.8 mA, I <sub>F</sub> = 20 mA	V <sub>CE (SAT)</sub>	—	—	0.40	V
MOC70P3	I <sub>F</sub> = 1.8 mA, I <sub>F</sub> = 20 mA	V <sub>CE (SAT)</sub>	—	—	0.40	V

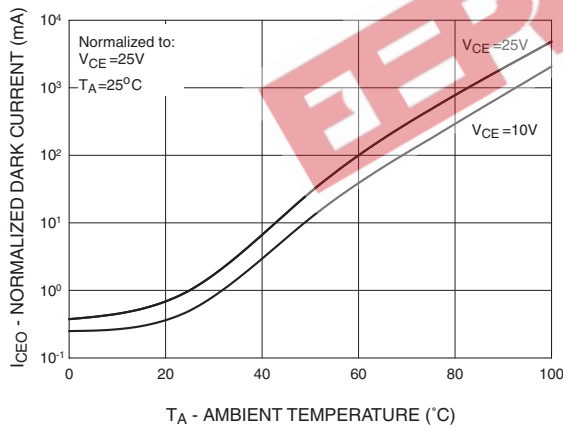
**Fig. 1 Forward Current vs. Forward Voltage**



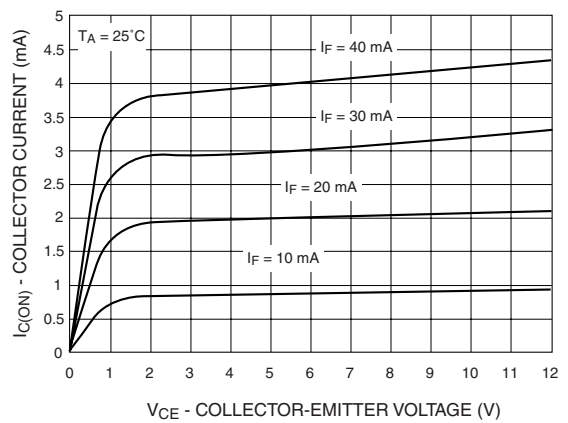
**Fig. 2 Forward Voltage vs. Ambient Temperature**



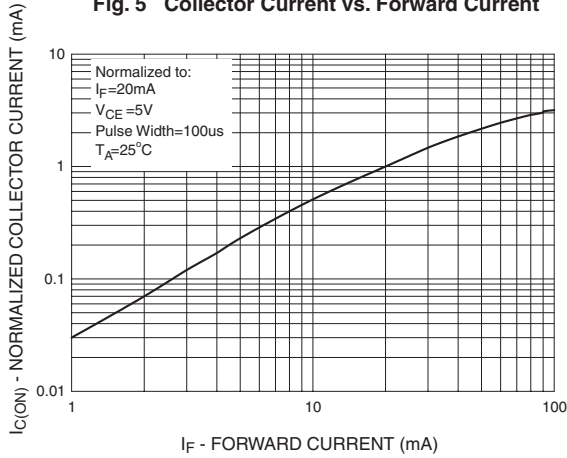
**Fig. 3 Collector-Emitter Dark Current (Normalized) vs. Ambient Temperature**



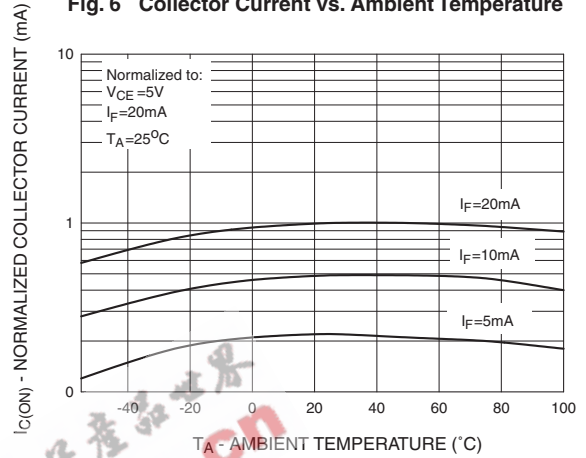
**Fig. 4 Collector Current vs. Collector-Emitter Voltage**



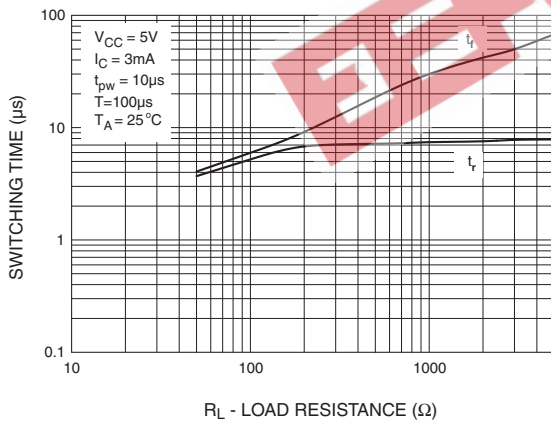
**Fig. 5 Collector Current vs. Forward Current**



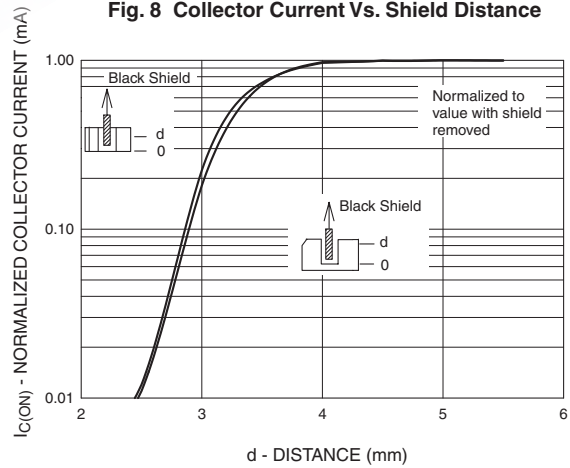
**Fig. 6 Collector Current vs. Ambient Temperature**



**Fig. 7 Switching Time Vs. Load Resistance**



**Fig. 8 Collector Current vs. Shield Distance**



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