


MOC8111 PHOTOTRANSISTOR NO BASE CONNECTION OPTOCOUPLER

FEATURES

- **Current Transfer Ratio 20% Min.**
- **No Base Terminal Connection for Improved Common Mode Interface Immunity**
- **Field-Effect Stable by TRIOS (TRansparent IOn Shield)**
- **Long Term Stability**
- **Industry Standard Dual-in-Line Package**
- **Underwriters Lab File #E52744**
-  **VDE 0884 Available with Option 1**

DESCRIPTION

The MOC8111 is an optocoupler consisting of a Gallium Arsenide infrared emitting diode optically coupled to a silicon planar phototransistor detector in a plastic plug-in DIP 6 pin package.

The coupling device is suitable for signal transmission between two electrically separated circuits. The potential difference between the circuits to be coupled is not allowed to exceed the maximum permissible reference voltages.

In contrast to the IL1 the base terminal is not connected, resulting in a substantially improved common-mode interference immunity.

Maximum Ratings ($T_A=25^\circ\text{C}$)

Emitter

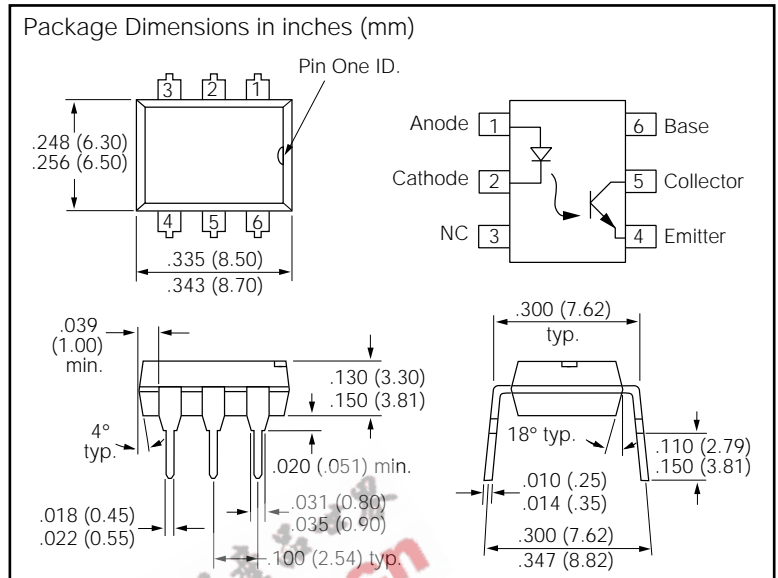
Reverse Voltage 6 V
DC Forward Current 60 mA
Surge Forward Current ($t \leq 10 \mu\text{s}$) 2.5 A
Total Power Dissipation..... 100 mW

Detector

Collector-Emitter Breakdown Voltage 30 V
Collector Current 50 mA
Collector Current ($t \leq 1 \text{ ms}$) 150 mA
Total Power Dissipation..... 150 mW

Package

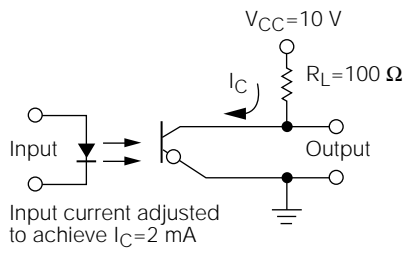
Isolation Test Voltage between Emitter and Detector, Refer to Standard Climate 23/50
DIN 50014 5300 VAC_{RMS}
Creepage $\geq 7 \text{ mm}$
Clearance $\geq 7 \text{ mm}$
Isolation Thickness between Emitter and Detector $\geq 0.4 \text{ mm}$
Comparative Tracking Index per DIN IEC 112/VDE 0303, part 1 175
Isolation Resistance
 $V_{IO}=500 \text{ V}, T_A=25^\circ\text{C}$ $10^{12} \Omega$
 $V_{IO}=500 \text{ V}, T_A=100^\circ\text{C}$ $10^{11} \Omega$
Storage Temperature Range -55°C to $+150^\circ\text{C}$
Ambient Temperature Range -55°C to $+100^\circ\text{C}$
Soldering Temperature (max. 10 s, dip soldering distance to seating plane $\geq 1.5 \text{ mm}$) 260°C



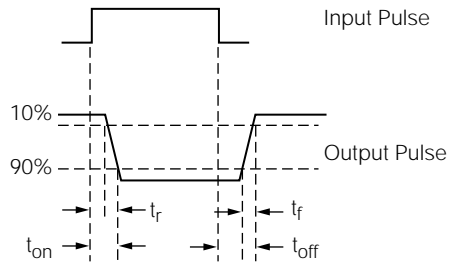
Electrical Characteristics ($T_A=25^\circ\text{C}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Emitter						
Forward Voltage	V_F		1.15	1.5	V	$I_F=10 \text{ mA}$
Reverse Leakage Current	I_R		0.05	10	μA	$V_R=6 \text{ V}$
Capacitance	C_J		25		pF	$V=0, f=1 \text{ MHz}$
Detector						
Collector-Emitter Breakdown Voltage	BV_{CEO}	30			V	$I_C=1 \mu\text{A}$
Collector-Emitter Leakage Current	I_{CEO}		1	50	nA	$V_{CE}=10 \text{ V}$
Emitter-Collector Breakdown Voltage	V_{ECO}	7			V	$I_E=10 \mu\text{A}$
Collector-Emitter Capacitance	C_{CE}		7		pF	$V_{CE}=0 \text{ V}, f=1 \text{ MHz}$
Package						
Collector Saturation Voltage	V_{CESAT}		0.15	0.4	V	$I_C=500 \mu\text{A}$ $I_F=10 \text{ mA}$
Output Collector Current	I_C	2	5		mA	$I_F=10 \text{ mA}$ $V_{CE}=10 \text{ V}$
Turn On Time	T_{ON}		7.5	20	μs	$V_{CC}=10 \text{ V}$ $R_L=100 \Omega$
Turn Off Time	T_{OFF}		5.7	20	μs	$I_C=2 \text{ mA}$, see Figure 1

Figure 1. Switching times



Test Circuit



Waveforms

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