

MOC8101X,MOC8102X,MOC8103X,MOC8104X,MOC8105X  
MOC8101, MOC8102, MOC8103,MOC8104,MOC8105



**NON-BASE LEAD  
OPTICALLY COUPLED ISOLATOR  
PHOTOTRANSISTOR OUTPUT**

**APPROVALS**

- UL recognised, File No. E91231
- 'X' SPECIFICATION APPROVALS
- VDE 0884 in 3 available lead forms : -
  - STD
  - G form
  - SMD approved to CECC 00802
- Certified to EN60950 by the following Test Bodies :-
  - Nemko - Certificate No. P96101299
  - Fimko - Registration No. 190469-01..22
  - Semko - Reference No. 9620076 01
  - Demko - Reference No. 305567

**DESCRIPTION**

The MOC8101, MOC8102, MOC8103, MOC8104, MOC8105 series of optically coupled isolators consist of infrared light emitting diode and NPN silicon photo transistor in a standard 6 pin dual in line plastic package with the base pin unconnected.

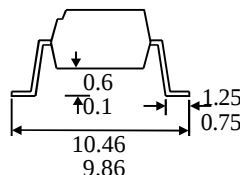
**FEATURES**

- Options :-
  - 10mm lead spread - add G after part no.
  - Surface mount - add SM after part no.
  - Tape&reel - add SMT&R after part no.
- High Isolation Voltage ( $5.3kV_{RMS}$ ,  $7.5kV_{PK}$ )
- Base pin unconnected for improved noise immunity in high EMI environment

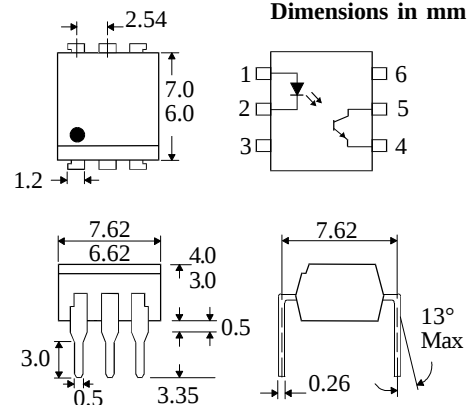
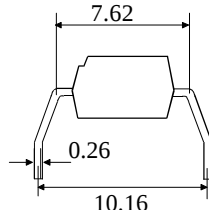
**APPLICATIONS**

- DC motor controllers
- Industrial systems controllers
- Signal transmission between systems of different potentials and impedances

**OPTION SM  
SURFACE MOUNT**



**OPTION G**



**ABSOLUTE MAXIMUM RATINGS  
(25°C unless otherwise specified)**

Storage Temperature \_\_\_\_\_ -55°C to + 150°C  
Operating Temperature \_\_\_\_\_ -55°C to + 100°C  
Lead Soldering Temperature  
(1/16 inch (1.6mm) from case for 10 secs) 260°C

**INPUT DIODE**

Forward Current \_\_\_\_\_ 60mA  
Reverse Voltage \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 105mW

**OUTPUT TRANSISTOR**

Collector-emitter Voltage  $BV_{CEO}$  \_\_\_\_\_ 30V  
Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 160mW

**POWER DISSIPATION**

Total Power Dissipation \_\_\_\_\_ 200mW  
(derate linearly 2.67mW/°C above 25°C)

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

| PARAMETER |                                                          | MIN                | TYP  | MAX  | UNITS         | TEST CONDITION                         |
|-----------|----------------------------------------------------------|--------------------|------|------|---------------|----------------------------------------|
| Input     | Forward Voltage ( $V_F$ )                                | 1.0                | 1.15 | 1.5  | V             | $I_F = 10\text{mA}$                    |
|           | Reverse Voltage ( $V_R$ )                                | 6                  |      |      | V             | $I_R = 10\mu\text{A}$                  |
|           | Reverse Current ( $I_R$ )                                |                    |      | 10   | $\mu\text{A}$ | $V_R = 6\text{V}$                      |
| Output    | Collector-emitter Breakdown ( $BV_{CEO}$ )<br>( Note 2 ) | 30                 |      |      | V             | $I_C = 1\text{mA}$                     |
|           | Emitter-collector Breakdown ( $BV_{ECO}$ )               | 6                  |      |      | V             | $I_E = 100\mu\text{A}$                 |
|           | Collector-emitter Dark Current ( $I_{CEO}$ )             |                    |      | 50   | nA            | $V_{CE} = 10\text{V}$                  |
| Coupled   | Output Collector Current ( $I_C$ ) ( Note 3 )            |                    |      |      |               |                                        |
|           | MOC8101                                                  | 5.0                |      | 8.0  | mA            | $10\text{mA } I_F, 10\text{V } V_{CE}$ |
|           | MOC8102                                                  | 7.3                |      | 11.7 | mA            | $10\text{mA } I_F, 10\text{V } V_{CE}$ |
|           | MOC8103                                                  | 10.8               |      | 17.3 | mA            | $10\text{mA } I_F, 10\text{V } V_{CE}$ |
|           | MOC8104                                                  | 16                 |      | 25.6 | mA            | $10\text{mA } I_F, 10\text{V } V_{CE}$ |
|           | MOC8105                                                  | 6.5                |      | 13.3 | mA            | $10\text{mA } I_F, 10\text{V } V_{CE}$ |
|           | Collector-emitter Saturation Voltage $V_{CE(SAT)}$       |                    | 0.15 | 0.4  | V             | $5\text{mA } I_F, 0.5\text{mA } I_C$   |
|           | Input to Output Isolation Voltage $V_{ISO}$              | 5300               |      |      | $V_{RMS}$     | See note 1                             |
|           |                                                          | 7500               |      |      | $V_{PK}$      | See note 1                             |
|           | Input-output Isolation Resistance $R_{ISO}$              | $5 \times 10^{10}$ |      |      | $\Omega$      | $V_{IO} = 500\text{V}$ (note 1)        |
|           | Turn-on Time $t_{on}$                                    |                    | 7.5  | 20   | $\mu\text{s}$ | $V_{CC} = 10\text{V},$                 |
|           | Turn-off Time $t_{off}$                                  |                    | 5.7  | 20   | $\mu\text{s}$ | $I_C = 2\text{mA}, R_L = 100\Omega$    |
|           | Output Rise Time $t_r$                                   |                    | 3.2  |      | $\mu\text{s}$ |                                        |
|           | Output Fall Time $t_f$                                   |                    | 4.7  |      | $\mu\text{s}$ |                                        |

Note 1 Measured with input leads shorted together and output leads shorted together.

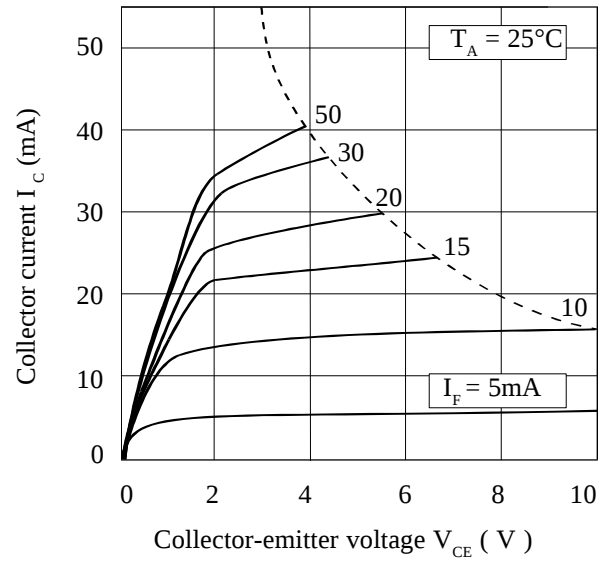
Note 2 Special Selections are available on request. Please consult the factory.

Note 3 Production testing - limits verified with pulse test

**Collector Power Dissipation vs. Ambient Temperature**



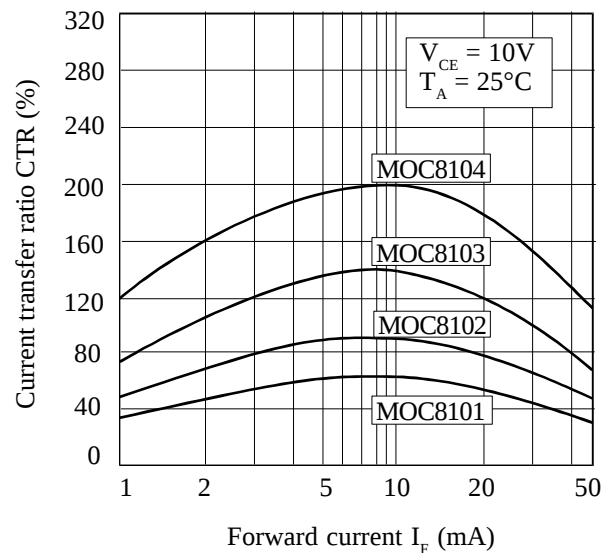
**Collector Current vs. Collector-emitter Voltage**



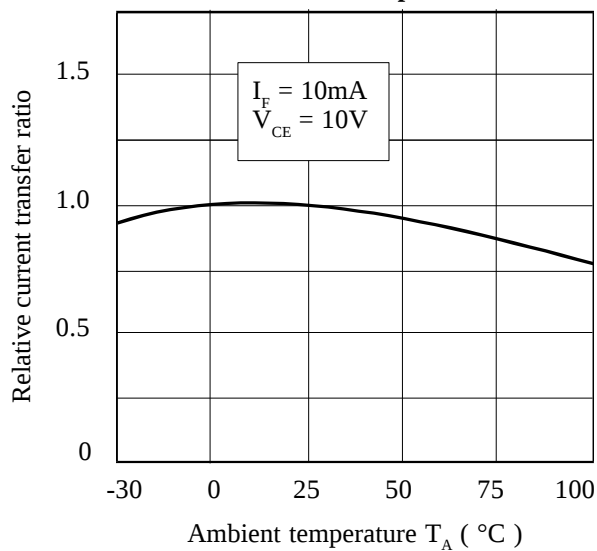
**Forward Current vs. Ambient Temperature**



**Current Transfer Ratio vs. Forward Current**



**Relative Current Transfer Ratio vs. Ambient Temperature**



**Collector-emitter Saturation Voltage vs. Ambient Temperature**

