



**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
- EN60950 approval pending

**DESCRIPTION**

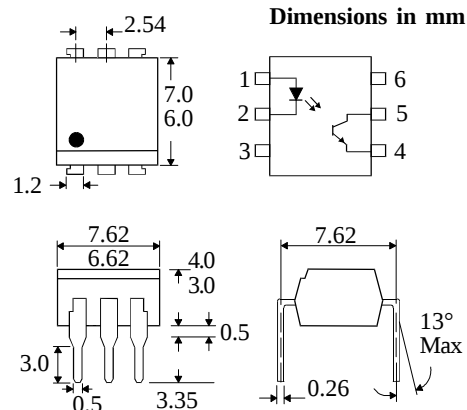
The MOC8111, MOC8112, MOC8113 series of optically coupled isolators consist of infrared light emitting diode and NPN silicon photo transistor in a standard 6 pin dual in line plastic package with the base pin unconnected.

**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



**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

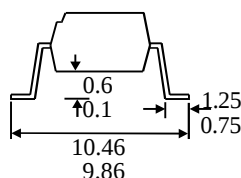
**OUTPUT TRANSISTOR**

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

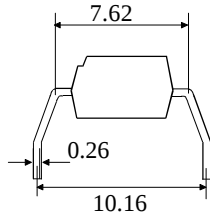
**POWER DISSIPATION**

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

**OPTION SM**  
**SURFACE MOUNT**



**OPTION G**



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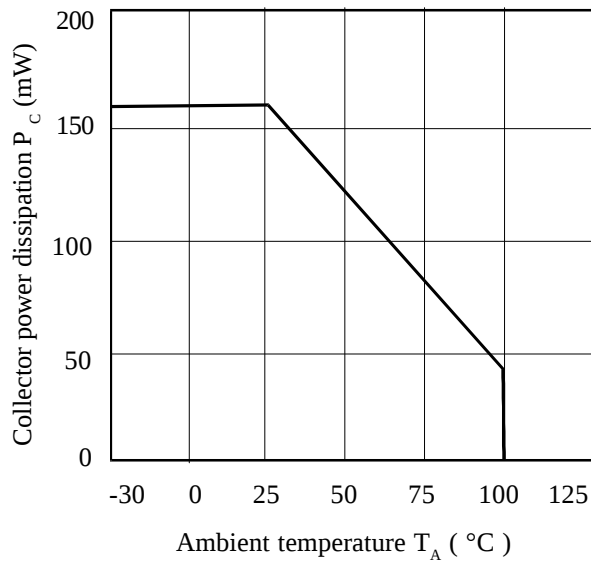
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

| PARAMETER |                                                          | MIN                | TYP  | MAX | UNITS                 | TEST CONDITION                         |
|-----------|----------------------------------------------------------|--------------------|------|-----|-----------------------|----------------------------------------|
| Input     | Forward Voltage ( $V_F$ )                                |                    | 1.15 | 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 ( $I_C$ )                       |                    |      |     |                       |                                        |
|           | MOC8111                                                  | 2                  |      |     | mA                    | $10\text{mA } I_F, 10\text{V } V_{CE}$ |
|           | MOC8112                                                  | 5                  |      |     | mA                    | $10\text{mA } I_F, 10\text{V } V_{CE}$ |
|           | MOC8113                                                  | 10                 |      |     | mA                    | $10\text{mA } I_F, 10\text{V } V_{CE}$ |
|           | Collector-emitter Saturation Voltage $V_{CE(SAT)}$       |                    | 0.15 | 0.4 | V                     | $10\text{mA } I_F, 0.5\text{mA } I_C$  |
|           | Input to Output Isolation Voltage $V_{ISO}$              | 5300<br>7500       |      |     | $V_{RMS}$<br>$V_{PK}$ | See note 1<br>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  |     | $\mu\text{s}$         |                                        |

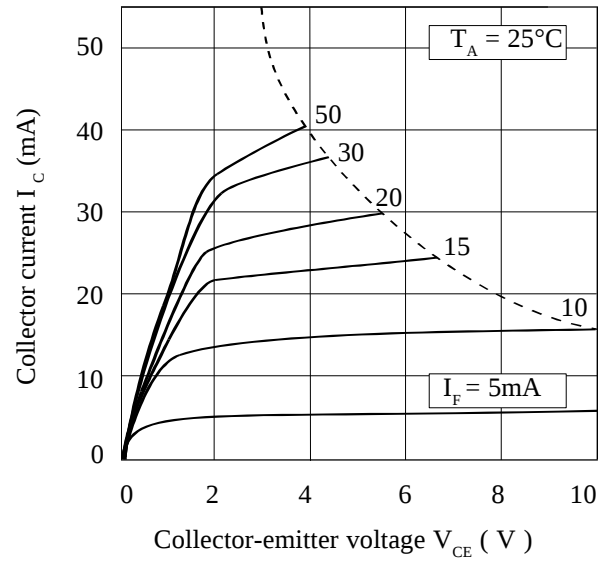
Note 1 Measured with input leads shorted together and output leads shorted together.

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

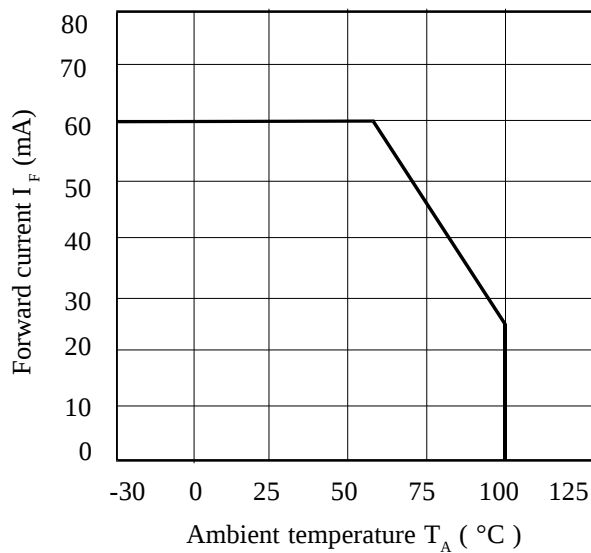
**Collector Power Dissipation vs. Ambient Temperature**



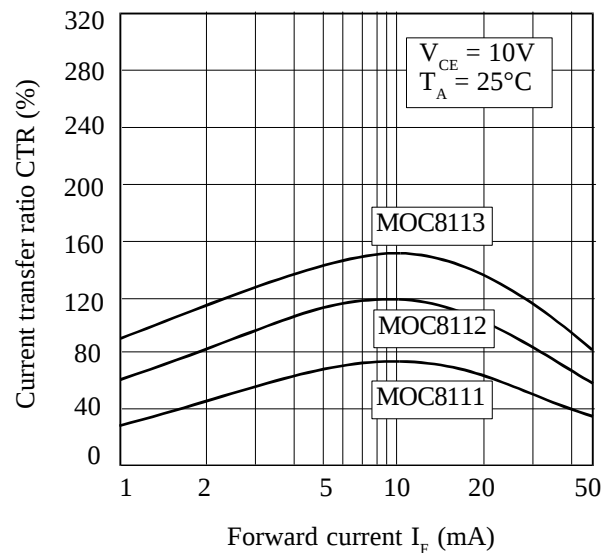
**Collector Current vs. Collector-emitter Voltage**



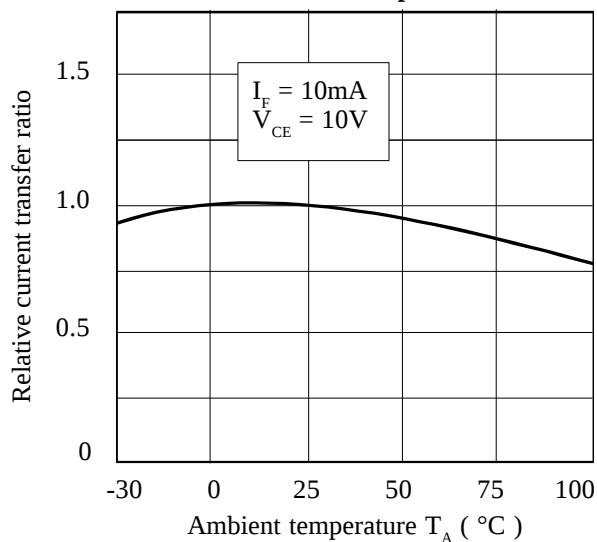
**Forward Current vs. Ambient Temperature**



**Current Transfer Ratio vs. Forward Current**



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



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

