



## OPTICALLY COUPLED ISOLATOR PHOTOTRANSISTOR OUTPUT

### APPROVALS

- UL recognised, File No. E91231

### 'X' SPECIFICATION APPROVALS

- VDE 0884 approval pending
- EN60950 approval pending

### DESCRIPTION

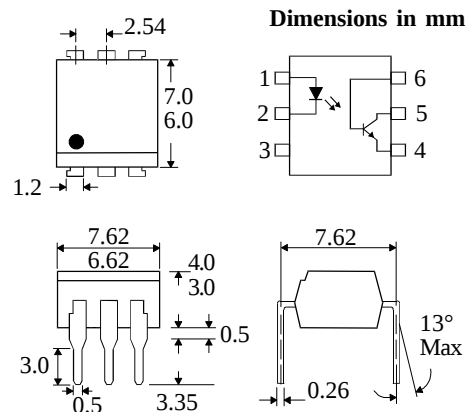
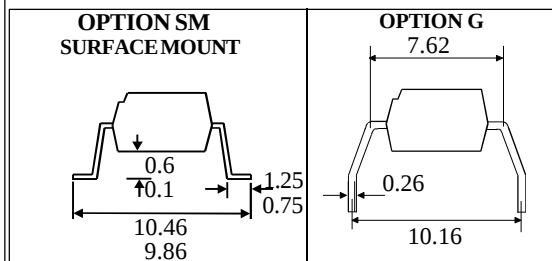
The MOC8100 optically coupled isolator consists of infrared light emitting diode and NPN silicon photo transistor in a standard 6 pin dual in line plastic package.

### 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<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- Low Input Current 1mA I<sub>F</sub>
- High Current Transfer Ratio (50% min)
- All electrical parameters 100% tested
- Custom electrical selections available

### APPLICATIONS

- DC motor controllers
- Industrial systems controllers
- Measuring instruments
- 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<sub>CEO</sub> \_\_\_\_\_ 30V  
Collector-base Voltage BV<sub>CBO</sub> \_\_\_\_\_ 70V  
Emitter-base Voltage BV<sub>EBO</sub> \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 160mW

### POWER DISSIPATION

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

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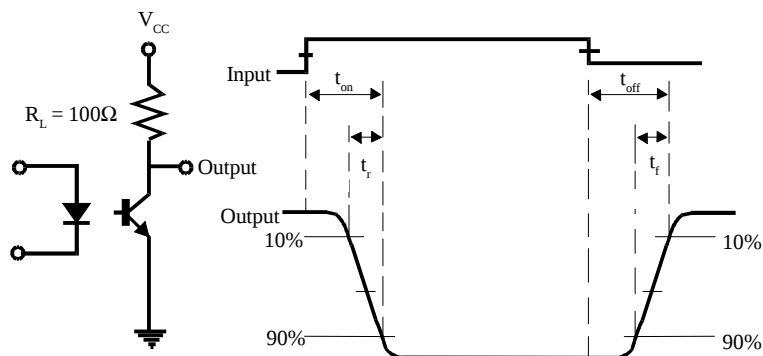
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**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

| PARAMETER |                                                    | MIN                | TYP | MAX | UNITS                 | TEST CONDITION                                                                                                              |
|-----------|----------------------------------------------------|--------------------|-----|-----|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Input     | Forward Voltage ( $V_F$ )                          |                    | 1.2 | 1.4 | 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 ( $BV_{CEO}$ )         | 30                 |     |     | V                     | $I_C = 1\text{mA}$ ( note 2 )                                                                                               |
|           | Collector-base Breakdown ( $BV_{CBO}$ )            | 70                 |     |     | V                     | $I_C = 100\mu\text{A}$                                                                                                      |
|           | Emitter-base Breakdown ( $BV_{EBO}$ )              | 6                  |     |     | V                     | $I_E = 100\mu\text{A}$                                                                                                      |
|           | Collector-emitter Dark Current ( $I_{CEO}$ )       |                    |     | 25  | nA                    | $V_{CE} = 5\text{V}$                                                                                                        |
|           | Collector-base Dark Current ( $I_{CBO}$ )          |                    |     | 10  | nA                    | $V_{CE} = 5\text{V}$                                                                                                        |
| Coupled   | Output Collector Current ( $I_C$ )                 | 0.5<br>0.3         |     |     | mA<br>mA              | $1\text{mA } I_F, 5\text{V } V_{CE}$<br>$1\text{mA } I_F, 5\text{V } V_{CE}$<br>( $T_A = 0 \text{ to } +70^\circ\text{C}$ ) |
|           | Collector-emitter Saturation Voltage $V_{CE(SAT)}$ |                    |     | 0.5 | V                     | $1\text{mA } I_F, 100\mu\text{A } I_C$                                                                                      |
|           | 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 $t_{on}$                              |                    |     | 20  | $\mu\text{s}$         | $V_{CC} = 10\text{V}, I_C = 2\text{mA}$                                                                                     |
|           | Turn-off Time $t_{off}$                            |                    |     | 20  | $\mu\text{s}$         | $R_L = 100\Omega$ , fig 1                                                                                                   |
|           | Output Rise Time $t_r$                             |                    | 4   |     | $\mu\text{s}$         | $V_{CC} = 10\text{V}, I_C = 2\text{mA}$                                                                                     |
|           | Output Fall Time $t_f$                             |                    | 6   |     | $\mu\text{s}$         | $R_L = 100\Omega$ , fig 1                                                                                                   |

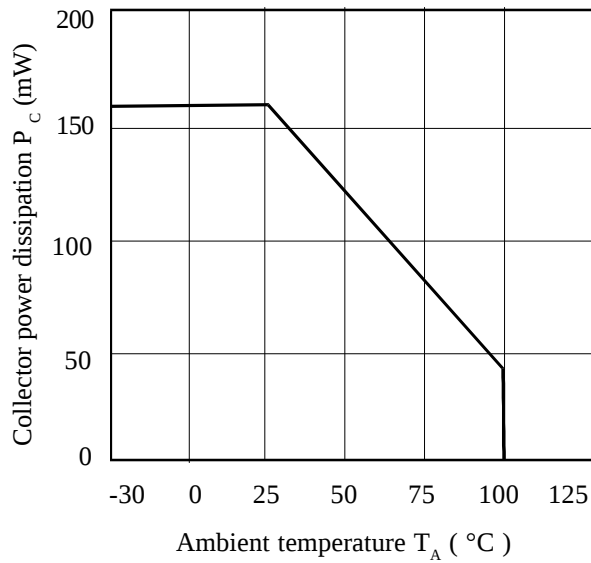
Note 1 Measured with input leads shorted together and output leads shorted together.

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

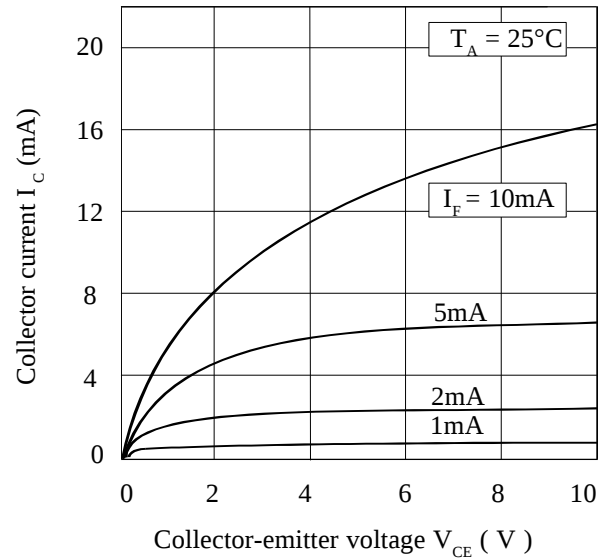


**FIG 1**

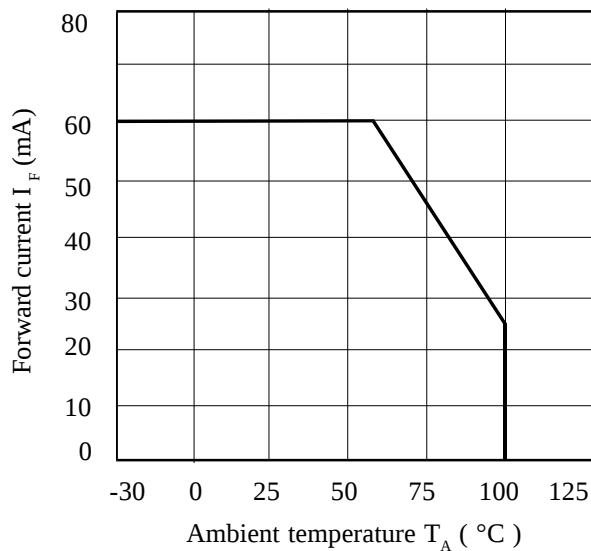
**Collector Power Dissipation vs. Ambient Temperature**



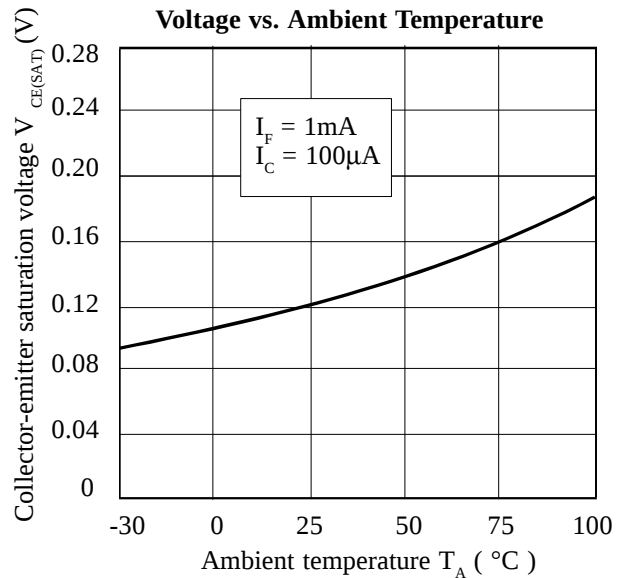
**Collector Current vs. Collector-emitter Voltage**



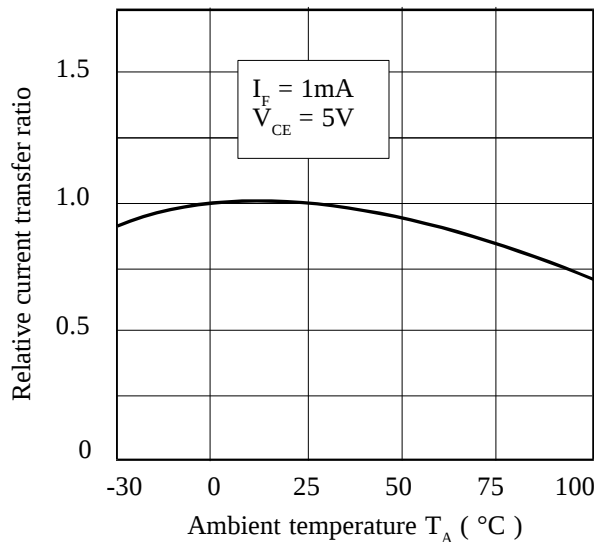
**Forward Current vs. Ambient Temperature**



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



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



**Relative Current Transfer Ratio vs. Forward Current**

