

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



**ISOCOM**  
COMPONENTS



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

**APPROVALS**

- UL recognised, File No. E91231  
Package Code " GG "
- **'X' SPECIFICATION APPROVALS**
- VDE 0884 in 3 available lead form : -  
- STD  
G form  
- SMD approved to CECC 00802
- Certified to EN60950 by :-  
Nemko - Certificate No. P01102464

**DESCRIPTION**

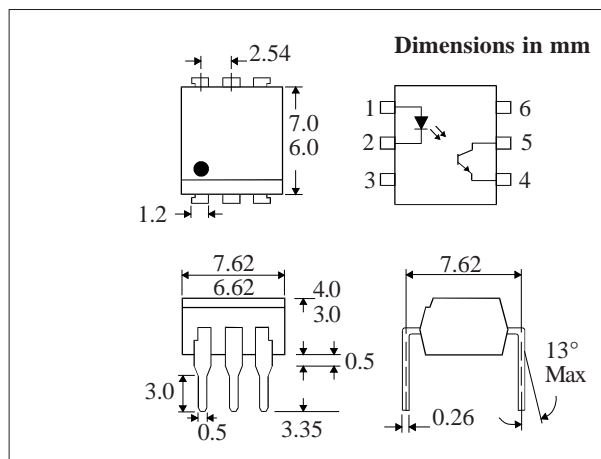
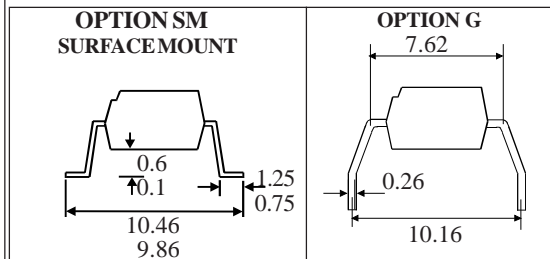
The MOC8101, MOC8102, MOC8103, MOC8104, MOC8105 series of optically coupled isolators consist of infrared light emitting diode and NPN silicon photo transistor in a standard 6 pin dual in line plastic package with the base pin unconnected.

**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



**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<br>(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    |
| Collector Current                    | 50mA  |
| Power Dissipation                    | 160mW |

**POWER DISSIPATION**

|  |       |
|--|-------|
| Total Power Dissipation                | 200mW |
| (derate linearly 2.67mW/°C above 25°C) |       |

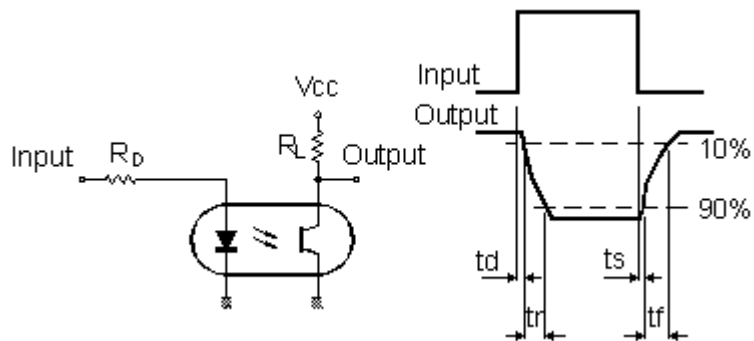
**ISOCOM COMPONENTS 2004 LTD**  
Unit 25B, Park View Road West,  
Park View Industrial Estate, Brenda Road  
Hartlepool, Cleveland, TS25 1UD  
Tel: (01429) 863609 Fax: (01429) 863581

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

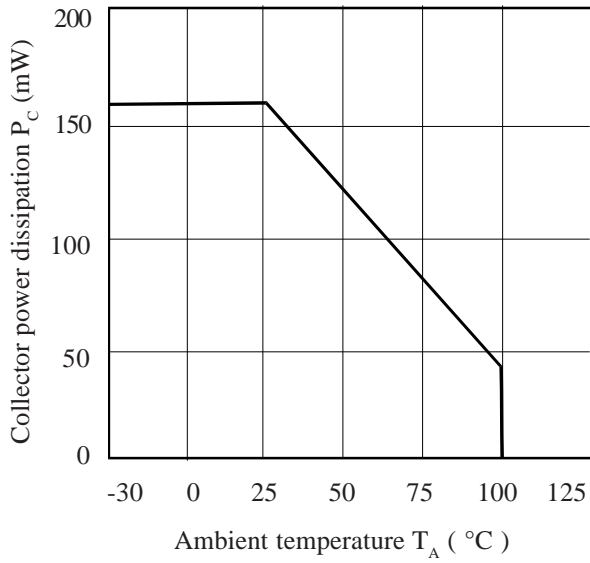
| PARAMETER                |  | MIN                | TYP  | MAX           | UNITS                                   | TEST CONDITION                         |
|--------------------------|--|--------------------|------|---------------|---|--|
| Input                    | Forward Voltage ( $V_F$ )                                | 1.0                | 1.15 | 1.5           | V                                       | $I_F = 10\text{mA}$                    |
|                          | Reverse 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<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)        |
| Response Time (Rise), tr |  | 2                  |      | $\mu\text{s}$ | $V_{CC} = 5\text{V}, I_F = 10\text{mA}$ |  |
| Response Time (Fall), tf |  | 2                  |      | $\mu\text{s}$ | $R_L = 75\Omega$ , (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.
- Note 3 Production testing - limits verified with pulse test

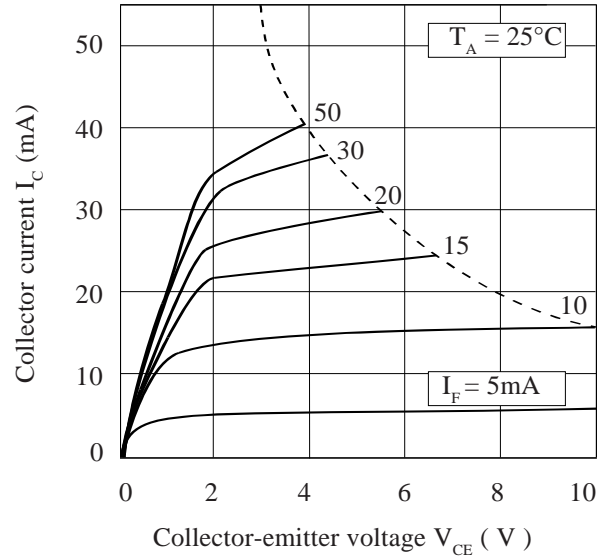
**FIGURE 1**



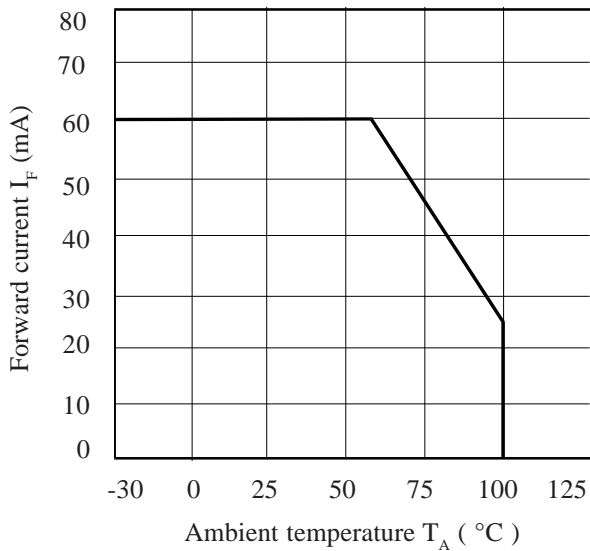
**Collector Power Dissipation vs. Ambient Temperature**



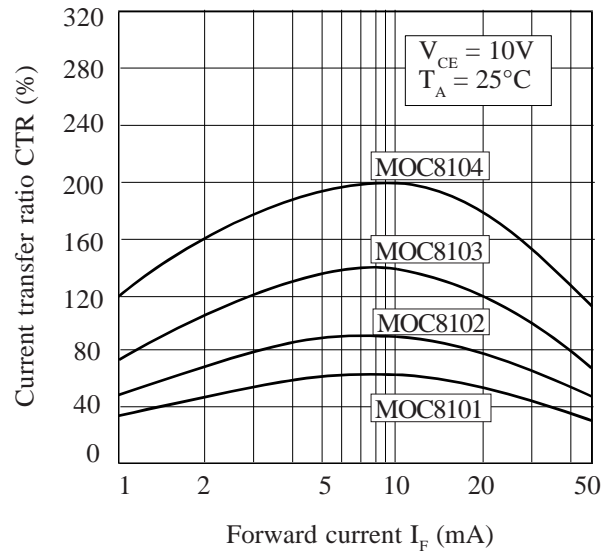
**Collector Current vs. Collector-emitter Voltage**



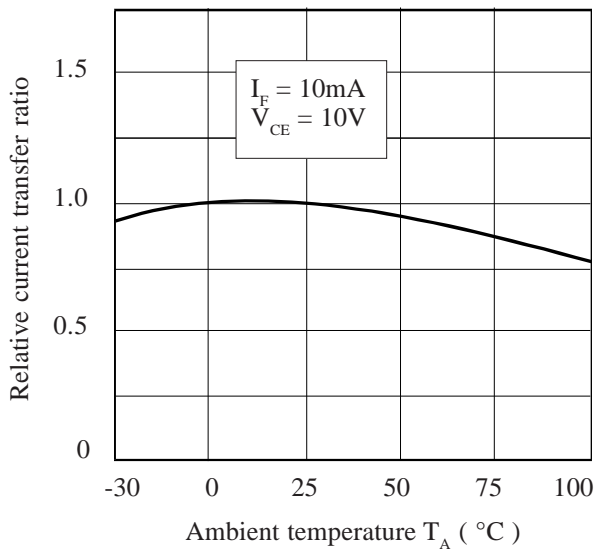
**Forward Current vs. Ambient Temperature**



**Current Transfer Ratio vs. Forward Current**



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



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

