



**NON BASE LEAD  
OPTICALLY COUPLED ISOLATOR  
PHOTODARLINGTON OUTPUT**

**APPROVALS**

- UL recognised, File No. E91231

**DESCRIPTION**

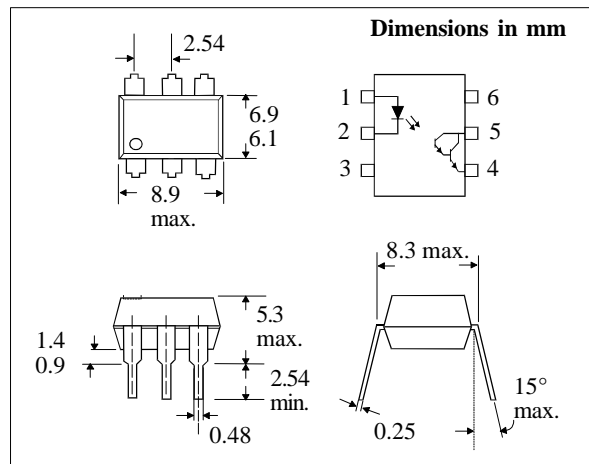
The MOC8020, MOC8021 series of optically coupled isolators consist of an infrared light emitting diode and NPN silicon photodarlington in a standard 6pin dual in line plastic package with the base pin unconnected.

**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 Current Transfer Ratio (500% min)
- High BV<sub>CEO</sub> ( 50V )
- High Isolation Voltage (5.3kV<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- Basepin unconnected for improved noise immunity in high EMI environment
- High sensitivity to low input drive current
- Custom electrical selections available

**APPLICATIONS**

- Computer terminals
- 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**

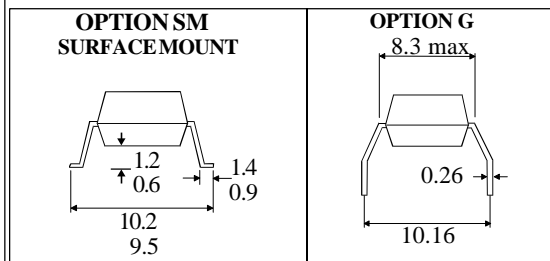
Forward Current \_\_\_\_\_ 60mA  
 Reverse Voltage \_\_\_\_\_ 5V  
 Power Dissipation \_\_\_\_\_ 120mW

**OUTPUT TRANSISTOR**

Collector-emitter Voltage BV<sub>CEO</sub> \_\_\_\_\_ 50V  
 Emitter-collector Voltage BV<sub>ECO</sub> \_\_\_\_\_ 5V  
 Power Dissipation \_\_\_\_\_ 150mW

**POWER DISSIPATION**

Total Power Dissipation \_\_\_\_\_ 250mW  
 (derate linearly 3.3mW/°C above 25°C)



**ISOCOM COMPONENTS LTD**  
 Unit 25B, Park View Road West,  
 Park View Industrial Estate, Brenda Road  
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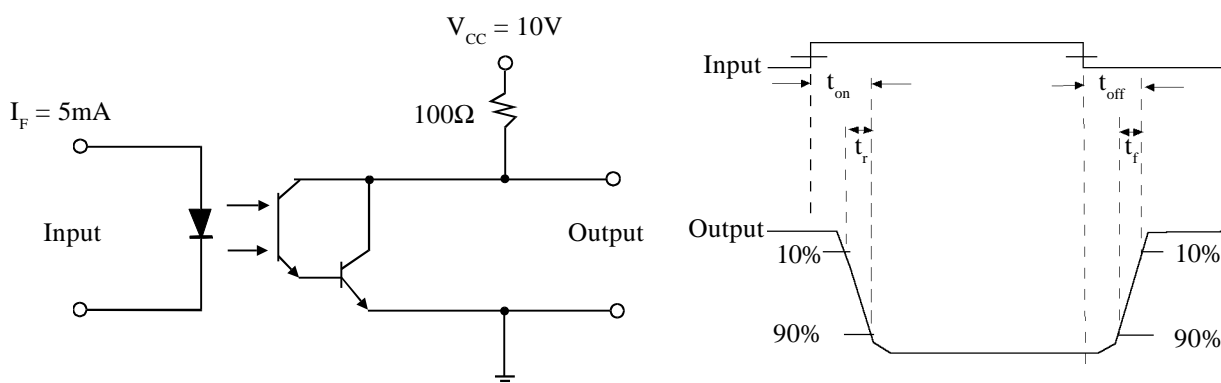
**ISOCOM INC**  
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**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

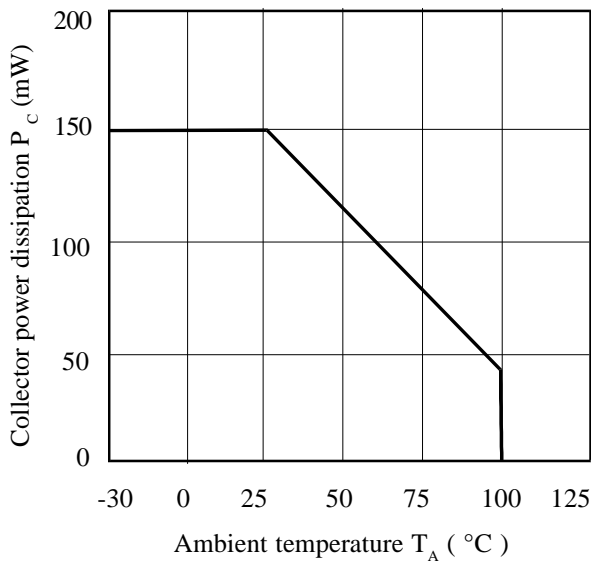
| PARAMETER              |  | MIN          | TYP       | MAX           | UNITS                 | TEST CONDITION   |
|------------------------|--|--------------|-----------|---------------|-----------------------|--|
| Input                  | Forward Voltage ( $V_F$ )  |              | 1.2       | 1.5           | V                     | $I_F = 10\text{mA}$<br>$I_R = 10\mu\text{A}$<br>$V_R = 3\text{V}$  |
|                        | Reverse Voltage ( $V_R$ )  | 3            |           |               | V                     |  |
|                        | Reverse Current ( $I_R$ )  |              |           | 10            | $\mu\text{A}$         |  |
| Output                 | Collector-emitter Breakdown ( $BV_{CEO}$ )                       | 50           |           |               | V                     | $I_C = 1\text{mA}$ (note 2)<br>$I_E = 100\mu\text{A}$<br>$V_{CE} = 10\text{V}$   |
|                        | Emitter-collector Breakdown ( $BV_{ECO}$ )                       | 5            |           |               | V                     |  |
|                        | Collector-emitter Dark Current ( $I_{CEO}$ )                     |              |           | 100           | nA                    |  |
| Coupled                | Output Collector Current ( $I_C$ )(Note 2)<br>MOC8020<br>MOC8021 | 50<br>100    |           |               | mA<br>mA              | $10\text{mA } I_F, 5\text{V } V_{CE}$<br>$10\text{mA } I_F, 5\text{V } V_{CE}$<br><br>(note 1)<br>(note 1)<br><br>$V_{IO} = 500\text{V}$ (note 1)<br><br>$V_{CC} = 10\text{V}, I_F = 5\text{mA},$<br>$R_L = 100\Omega$ , fig.1 |
|                        | Input to Output Isolation Voltage $V_{ISO}$                      | 5300<br>7500 |           |               | $V_{RMS}$<br>$V_{PK}$ |  |
|                        | Input-output Isolation Resistance $R_{ISO}$                      |              | $10^{11}$ |               | $\Omega$              |  |
|                        | Output Turn on Time $t_{on}$                                     |              | 3.5       |               | $\mu\text{s}$         |  |
|                        | Output Turn off Time $t_{off}$                                   |              | 95        |               | $\mu\text{s}$         |  |
|                        | Output Rise Time $t_r$   |              | 1         |               | $\mu\text{s}$         |  |
| Output Fall Time $t_f$ |  | 2            |           | $\mu\text{s}$ |                       |  |

- 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.

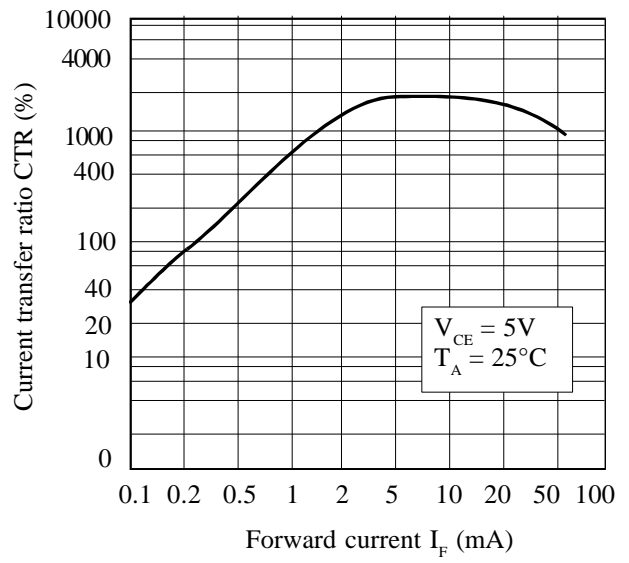
**FIGURE 1**



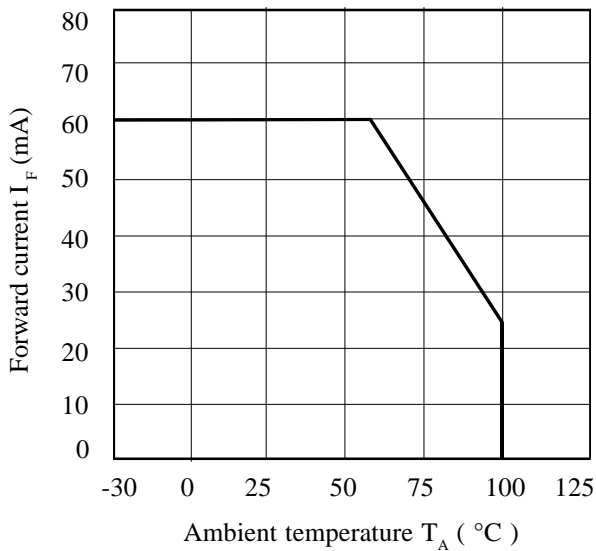
**Collector Power Dissipation vs. Ambient Temperature**



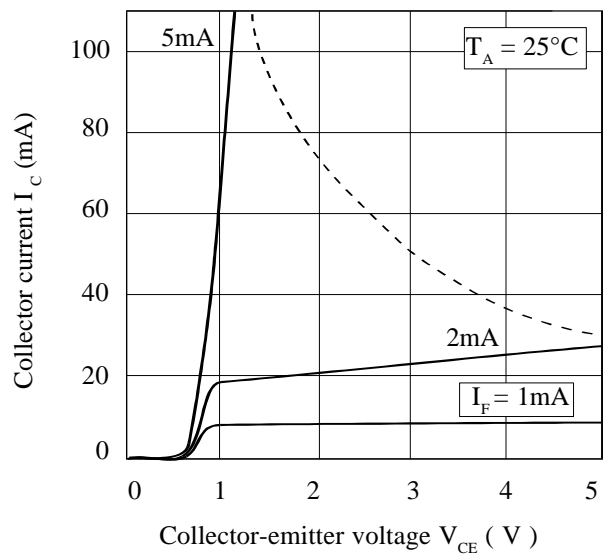
**Current Transfer Ratio vs. Forward Current**



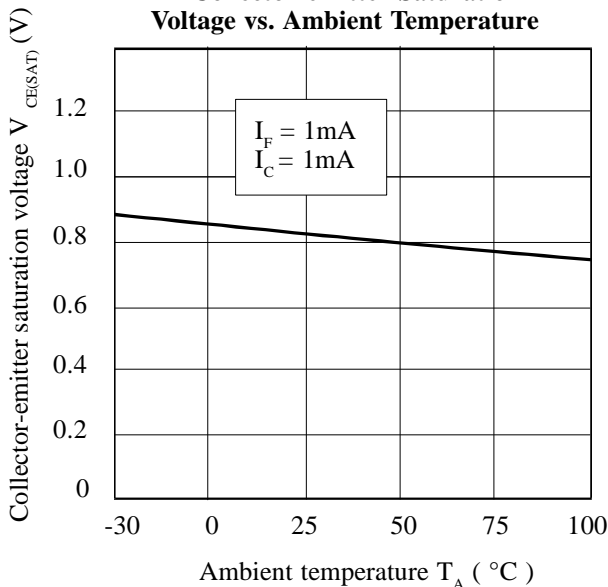
**Forward Current vs. Ambient Temperature**



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



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



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

