



## 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.

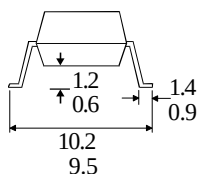
### FEATURES

- 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  $BV_{ce0}$  ( 50V )
- High Isolation Voltage ( $5.3kV_{RMS}$ ,  $7.5kV_{PK}$ )
- Basepin unconnected for improved noise immunity in high EMI environment
- High sensitivity to low input drive current
- Custom electrical selections available

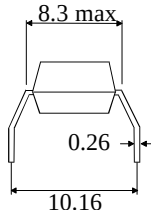
### APPLICATIONS

- Computer terminals
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances

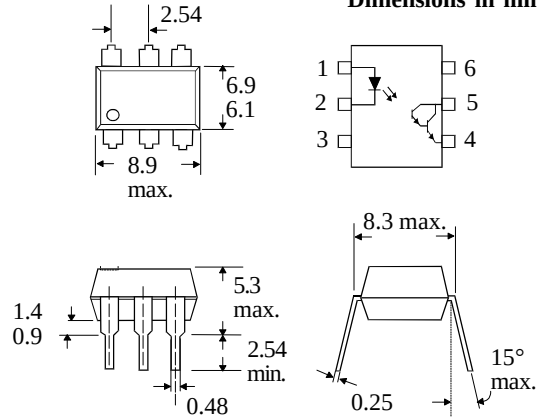
#### OPTION SM SURFACE MOUNT



#### OPTION G



#### Dimensions in mm



### 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  $BV_{CE0}$  \_\_\_\_\_ 50V  
Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 5V  
Power Dissipation \_\_\_\_\_ 150mW

### POWER DISSIPATION

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

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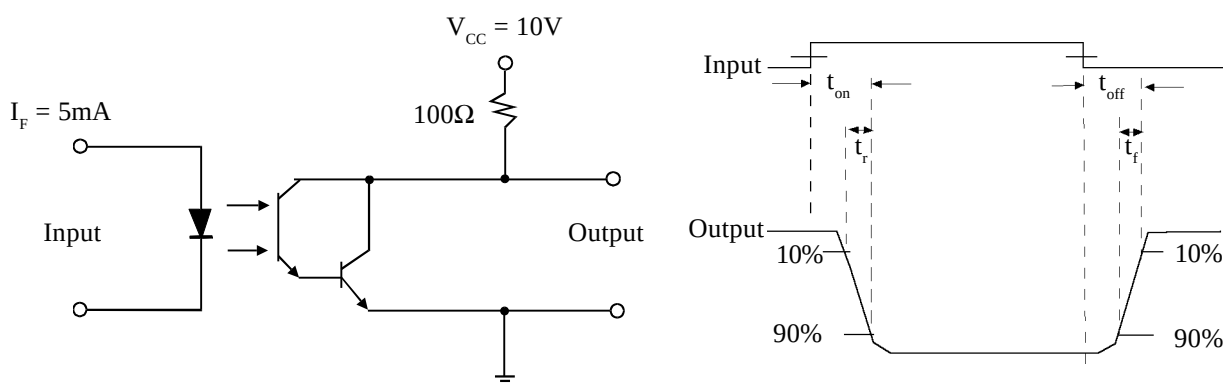
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

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

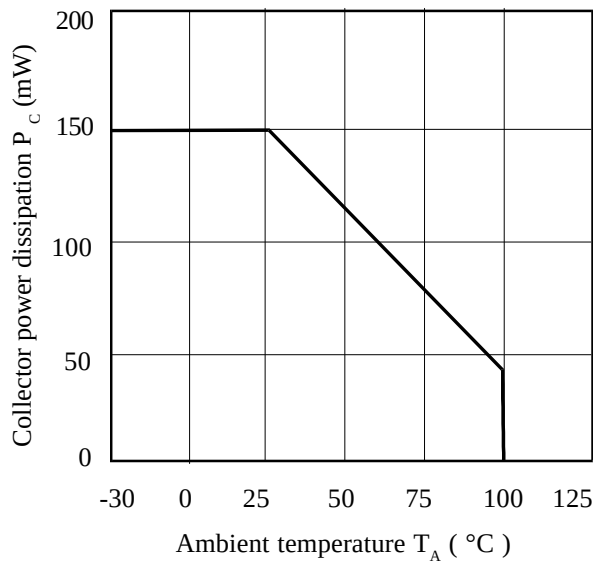
Note 1 Measured with input leads shorted together and output leads shorted together.

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

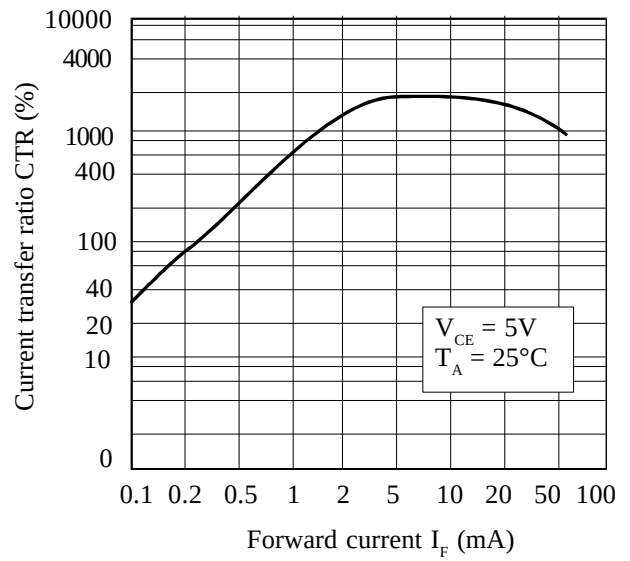
**FIGURE 1**



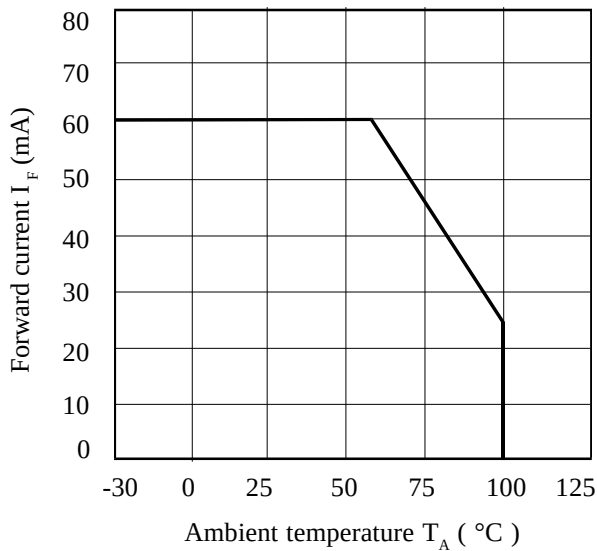
**Collector Power Dissipation vs. Ambient Temperature**



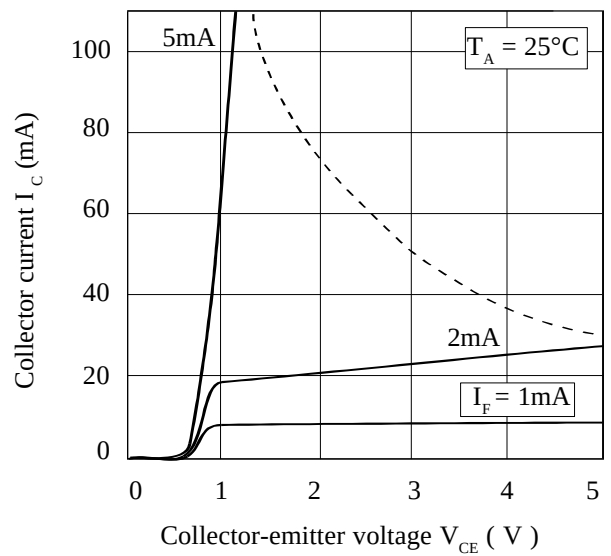
**Current Transfer Ratio vs. Forward Current**



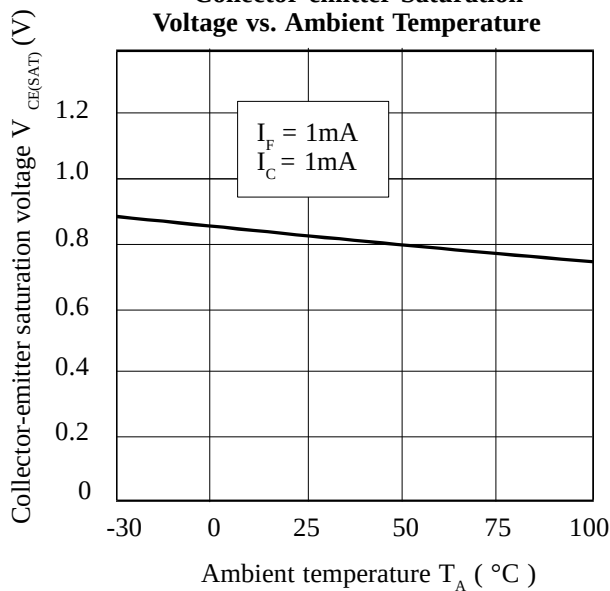
**Forward Current vs. Ambient Temperature**



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



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



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

