

**OPTICALLY COUPLED  
ISOLATOR  
PHOTOTRANSISTOR OUTPUT**

**APPROVALS**

- UL recognised, File No. E91231
- **'X' SPECIFICATION APPROVALS**
- CQY80X is VDE 0884 in 3 available lead forms :-
  - STD
  - G form
  - SMD approved to CECC 00802

CQY80NX - VDE 0884 pending

- CQY80X is certified to EN60950 by the following Test Bodies :-

Nemko - Certificate No. P96101299

Fimko - Registration No. 190469-01..22

Semko - Reference No. 9620076 01

Demko - Reference No. 305567

CQY80NX - EN60950 pending

**DESCRIPTION**

The CQY80 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.

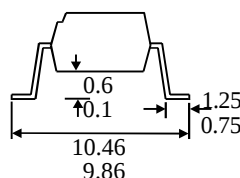
**FEATURES**

- 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>)
- Custom electrical selections available

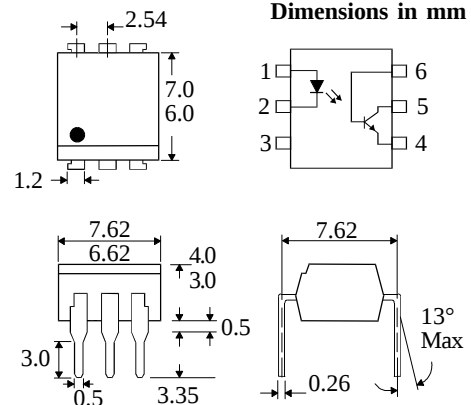
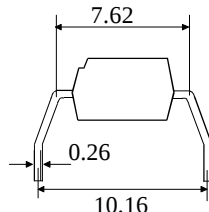
**APPLICATIONS**

- DC motor controllers
- Industrial systems controllers
- Signal transmission between systems of different potentials and impedances

**OPTION SM  
SURFACE MOUNT**



**OPTION G**



**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  $BV_{CEO}$  \_\_\_\_\_ 32V  
Collector-base Voltage  $BV_{CBO}$  \_\_\_\_\_ 70V  
Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 160mW

**POWER DISSIPATION**

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

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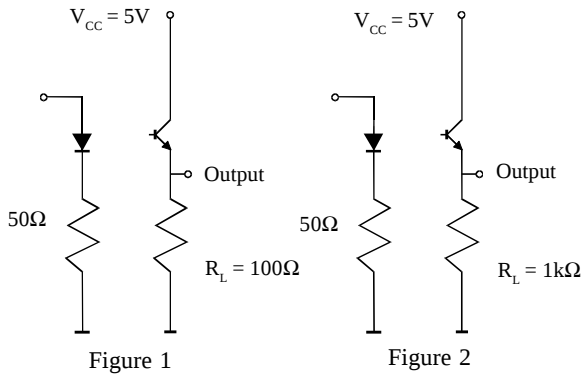
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^{\circ}\text{C}$  Unless otherwise noted )**

| PARAMETER |                                                          | MIN                | TYP | MAX  | UNITS                 | TEST CONDITION                        |
|-----------|----------------------------------------------------------|--------------------|-----|------|-----------------------|---------------------------------------|
| Input     | Forward Voltage ( $V_F$ )                                |                    | 1.2 | 1.60 | V                     | $I_F = 50\text{mA}$                   |
|           | 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 ) | 32                 |     |      | V                     | $I_C = 1\text{mA}$                    |
|           | Emitter-collector Breakdown ( $BV_{ECO}$ )               | 6                  |     |      | V                     | $I_E = 100\mu\text{A}$                |
|           | Collector-emitter Dark Current ( $I_{CEO}$ )             |                    |     | 200  | nA                    | $V_{CE} = 20\text{V}$                 |
| Coupled   | $I_C / I_F$ (CTR) (Note 2)                               | 0.5                |     |      |                       | $10\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | Current Transfer Ratio (CTR) (Note 2)                    | 50                 |     |      | %                     | $10\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | Collector-emitter Saturation Voltage $V_{CE(SAT)}$       |                    |     | 0.3  | V                     | $10\text{mA } I_F, 1\text{mA } I_C$   |
|           | 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)       |

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.

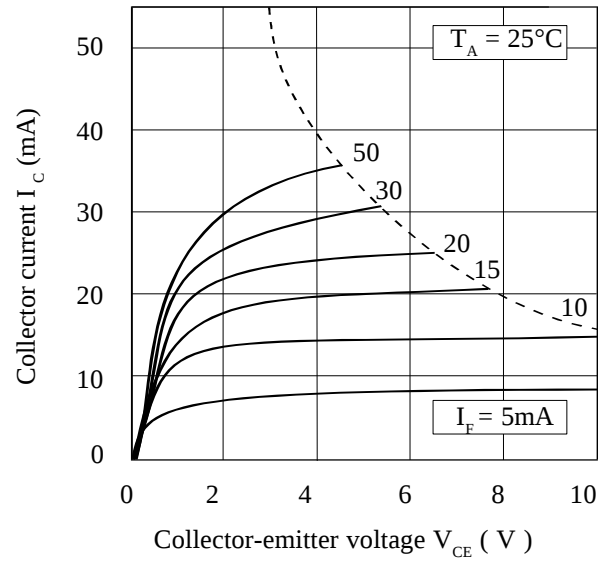
| Type            | $R_L = 100\Omega$ see fig 1 |                     |                      |                     |                     |                       |             | $R_L = 1\text{k}\Omega$ see fig 2 |                       |             |
|-----------------|-----------------------------|---------------------|----------------------|---------------------|---------------------|-----------------------|-------------|-----------------------------------|-----------------------|-------------|
|                 | td<br>$\mu\text{s}$         | tr<br>$\mu\text{s}$ | ton<br>$\mu\text{s}$ | ts<br>$\mu\text{s}$ | tf<br>$\mu\text{s}$ | toff<br>$\mu\text{s}$ | $I_C$<br>mA | ton<br>$\mu\text{s}$              | toff<br>$\mu\text{s}$ | $I_F$<br>mA |
| CQY80<br>CQY80N | 4.0                         | 7.0                 | 11.0                 | 0.3                 | 6.7                 | 7.0                   | 5           | 25.0                              | 42.5                  | 10          |



**Collector Power Dissipation vs. Ambient Temperature**



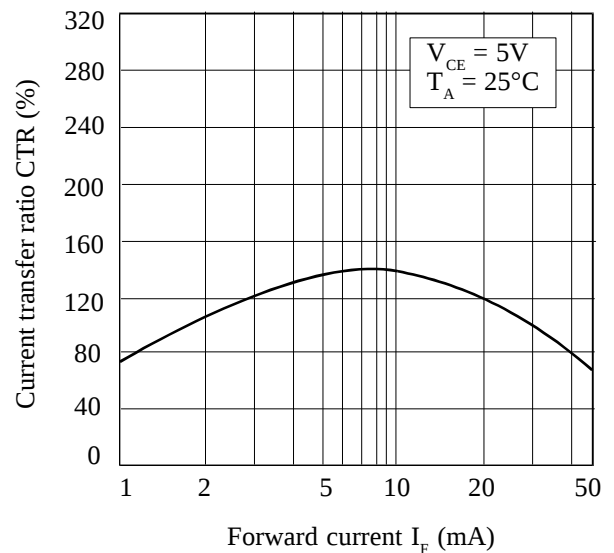
**Collector Current vs. Collector-emitter Voltage**



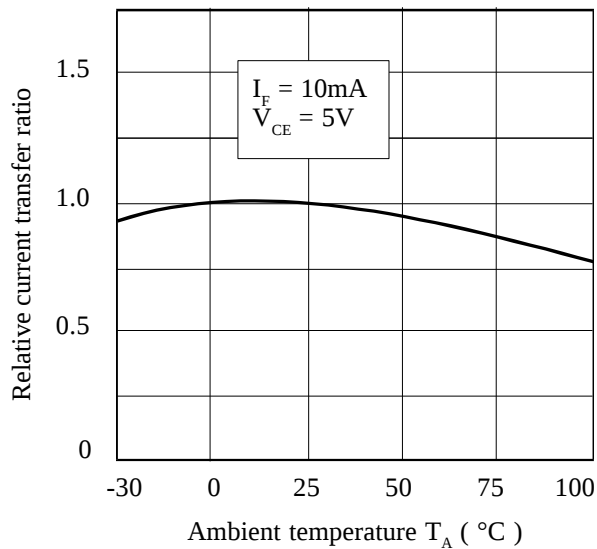
**Forward Current vs. Ambient Temperature**



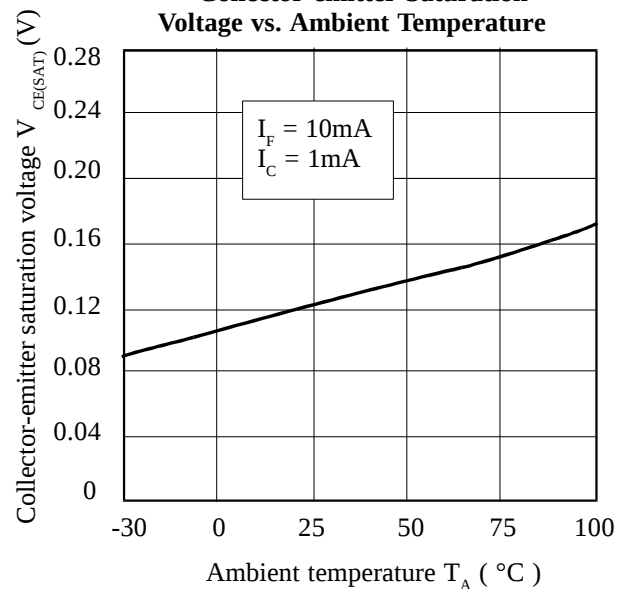
**Current Transfer Ratio vs. Forward Current**



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



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



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Datasheets for electronic components.