

CNY17-1X, CNY17-2X, CNY17-3X,  
CNY17-4X, CNY17-5X CNY17-1,  
CNY17-2, CNY17-3, CNY17-4,



# ISOCOM

COMPONENTS

## OPTICALLY COUPLED ISOLATOR PHOTOTRANSISTOR OUTPUT



### APPROVALS

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

### DESCRIPTION

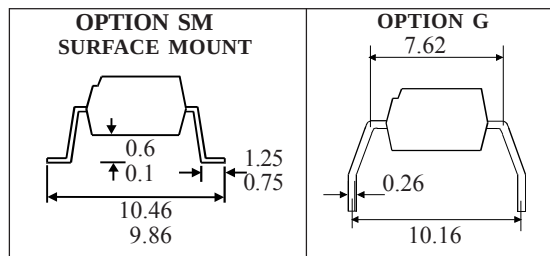
The CNY17-1, CNY17-2, CNY17-3, CNY17-4, CNY17-5 series of optically coupled isolators consist of an infrared light emitting diode and a NPN silicon photo transistor in a standard 6 pin dual in line plastic package.

### FEATURES

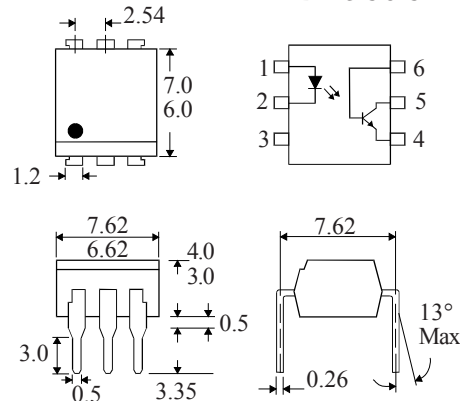
- Options :-  
10mm lead spread - add G after part no.  
Surface mount - add SM after part no.  
Tape&reel - add SMT&R after part no.
- High  $BV_{CEO}$  (70V min)
- High Isolation Voltage ( $5.3kV_{RMS}$ ,  $7.5kV_{PK}$ )
- All electrical parameters 100% tested
- Custom electrical selections available

### APPLICATIONS

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



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 \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 105mW

### OUTPUT TRANSISTOR

Collector-emitter Voltage  $BV_{CEO}$  \_\_\_\_\_ 70V  
Collector-base Voltage  $BV_{CBO}$  \_\_\_\_\_ 70V  
Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 7V  
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, TS25 1UD England  
Tel: (01429)863609 Fax: (01429)863581 e-mail  
sales@isocom.co.uk <http://www.isocom.com>

# **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 | 1.65 | V             | $I_F = 60\text{mA}$                   |
|           | Reverse Current ( $I_R$ )                          |                    |     | 10   | $\mu\text{A}$ | $V_R = 6\text{V}$                     |
| Output    | Collector-emitter Breakdown ( $BV_{CEO}$ )         | 70                 |     |      | V             | $I_C = 1\text{mA}$ ( Note 2 )         |
|           | Collector-base Breakdown ( $BV_{CBO}$ )            | 70                 |     |      | V             | $I_C = 100\mu\text{A}$                |
|           | Emitter-collector Breakdown ( $BV_{ECO}$ )         | 7                  |     |      | V             | $I_E = 100\mu\text{A}$                |
|           | Collector-emitter Dark Current ( $I_{CEO}$ )       |                    |     | 50   | nA            | $V_{CE} = 10\text{V}$                 |
| Coupled   | Current Transfer Ratio (CTR) (Note 2)              |                    |     |      |               |                                       |
|           | CNY17-1                                            | 40                 |     | 80   | %             | $10\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | CNY17-2                                            | 63                 |     | 125  | %             | $10\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | CNY17-3                                            | 100                |     | 200  | %             | $10\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | CNY17-4                                            | 160                |     | 320  | %             | $10\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | CNY17-5                                            | 200                |     | 400  | %             | $10\text{mA } I_F, 5\text{V } V_{CE}$ |
|           | Collector-emitter Saturation Voltage $V_{CE(SAT)}$ |                    |     | 0.4  | V             | $10\text{mA } I_F, 2.5\text{mA}$      |
|           | Input to Output Isolation Voltage $V_{ISO}$        | 5300               |     |      | $V_{RMS}$     | 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.

## **TYPICAL SWITCHING CHARACTERISTICS**

1. Linear Operation (without saturation) Fig 1.

$I_F = 10\text{mA}$ ,  $V_{CC} = 5\text{V}$ ,  $R_L = 75\Omega$

|                            |     | UNITS         |
|----------------------------|-----|---------------|
| Turn-on Time $t_{on}$      | 3.0 | $\mu\text{s}$ |
| Rise Time $t_r$            | 2.0 | $\mu\text{s}$ |
| Turn-off Time $t_{off}$    | 2.3 | $\mu\text{s}$ |
| Fall Time $t_f$            | 2.0 | $\mu\text{s}$ |
| Cut-off Frequency $F_{CO}$ | 250 | kHz           |

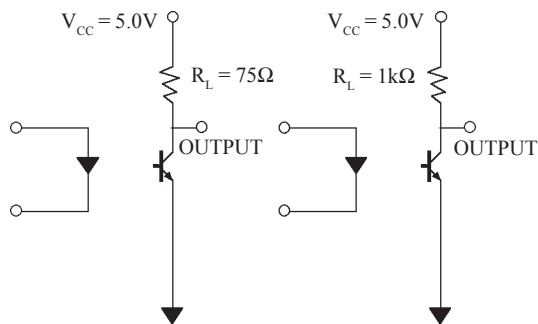


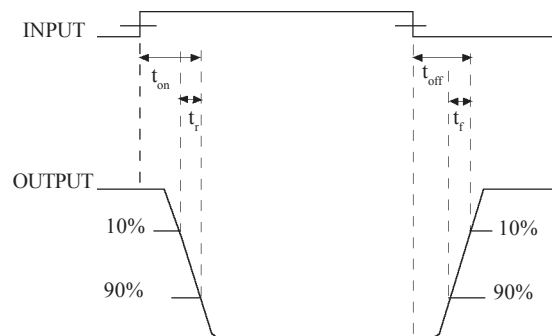
FIG 1

FIG 2

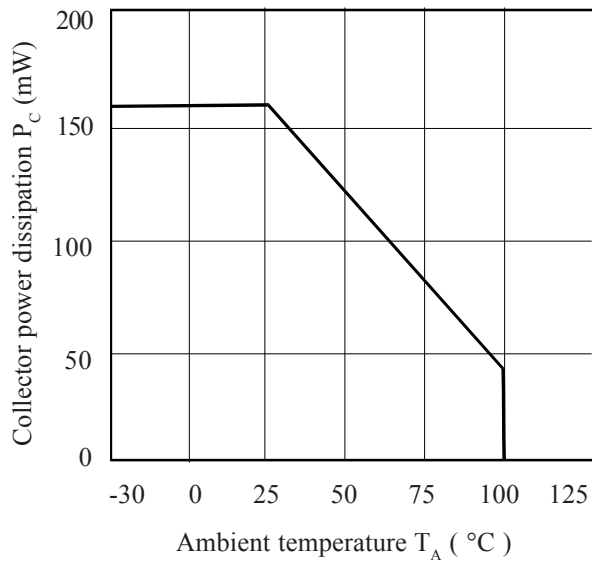
2. Switching Operation (with saturation) Fig 2

$V_{CC} = 5\text{V}$ ,  $R_L = 1\text{k}\Omega$

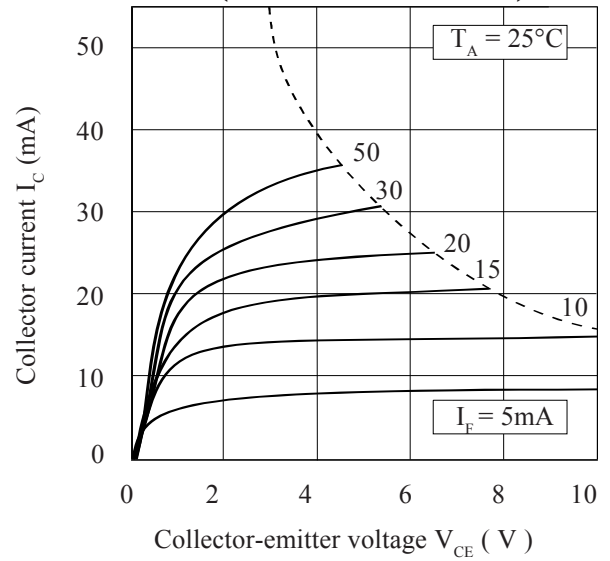
| GROUP                   | -1<br>( $I_F = 20\text{mA}$ ) | -2 and -3<br>( $I_F = 10\text{mA}$ ) | -4<br>( $I_F = 5\text{mA}$ ) | UNITS         |
|-------------------------|-------------------------------|--------------------------------------|------------------------------|---------------|
| Turn-on Time $t_{on}$   | 3.0                           | 4.2                                  | 6.0                          | $\mu\text{s}$ |
| Rise Time $t_r$         | 2.0                           | 3.0                                  | 4.6                          | $\mu\text{s}$ |
| Turn-off Time $t_{off}$ | 18                            | 23                                   | 25                           | $\mu\text{s}$ |
| Fall Time $t_f$         | 11                            | 14                                   | 15                           | $\mu\text{s}$ |
| $V_{CESAT}$             | $\leq 0.4$                    |                                      |                              | V             |



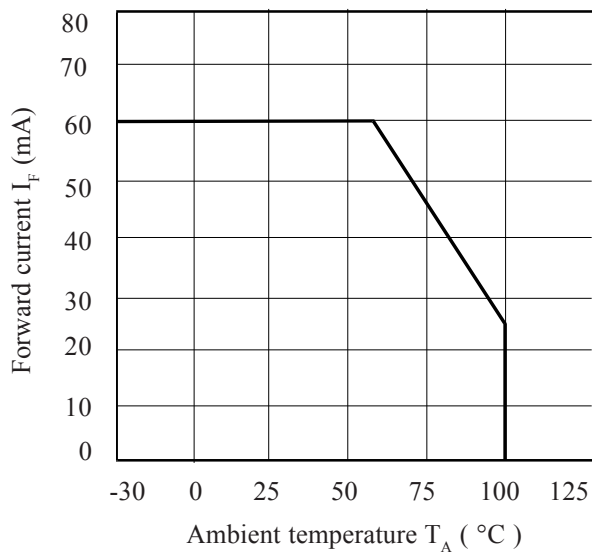
**Collector Power Dissipation vs. Ambient Temperature**



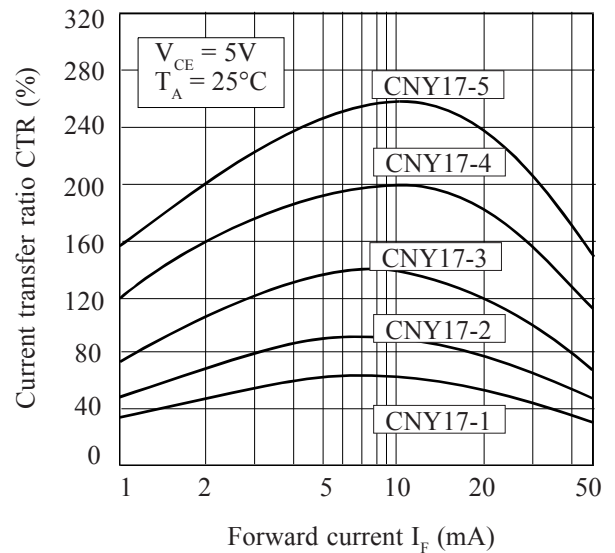
**Collector Current vs. Collector-emitter Voltage (normalised to CNY17-3)**



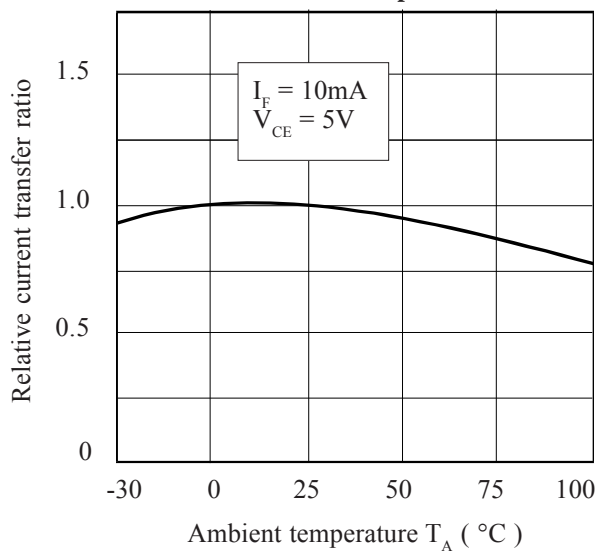
**Forward Current vs. Ambient Temperature**



**Current Transfer Ratio vs. Forward Current**



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



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

