



## DESCRIPTION

The CNY65 optocoupler consists of an infrared emitting diode optically coupled to an NPN silicon photo transistor. These devices are in DIP-4 package with the distance between input and output for highest safety requirement of  $\geq 3\text{mm}$ .

## FEATURES

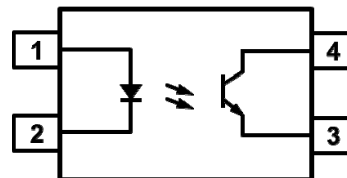
- High  $V_{CEO}$  80V min
- High Isolation Voltage between Input and Output  $V_{ISO}$  8200V<sub>RMS</sub>
- Thickness through Insulation  $\geq 3\text{mm}$
- Wide Operating Temperature Range - 55°C to +85°C
- Lead Free and RoHS Compliant
- Safety Approvals Pending

## APPLICATIONS

- Computer Peripheral Interface
- Microprocessor System Interface
- Line Receivers
- Switching Mode Power Supplies
- Circuits for safe protective separation against electrical shock according to safety class II (reinforced isolation) :
  - for appl. class I - IV at mains voltage  $\leq 300\text{ V}$
  - for appl. class I - IV at mains voltage  $\leq 600\text{ V}$
  - for appl. class I - III at mains voltage  $\leq 1000\text{ V}$  according to DIN EN 60747-5-5

## ORDER INFORMATION

- Devices are supplied in Tube Packaging, 45 pcs/tube.



- 1 Anode
- 2 Cathode
- 3 Emitter
- 4 Collector

## ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

Stresses exceeding the absolute maximum ratings can cause permanent damage to the device. Exposure to absolute maximum ratings for long periods of time can adversely affect reliability.

### Input

Forward Current	75mA
Peak Forward Current (<10 $\mu\text{s}$ )	1.5A
Reverse Voltage	5V
Power Dissipation	120mW

### Output

Collector to Emitter Voltage $V_{CEO}$	80V
Emitter to Collector Voltage $V_{ECO}$	7V
Collector Current	50mA
Power Dissipation	150mW

### Total Package

Isolation Voltage	8200V <sub>RMS</sub>
Total Power Dissipation	250mW
Operating Temperature	-55 to 85 °C
Storage Temperature	-55 to 100 °C
Lead Soldering Temperature (10s)	260°C

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**CNY65**

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$ , unless otherwise specified. Typical Values at  $T_A = 25^\circ\text{C}$ )

**INPUT**

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	$V_F$	$I_F = 50\text{mA}$		1.6	2.0	V
Reverse Current	$I_R$	$V_R = 5\text{V}$			10	$\mu\text{A}$
Terminal Capacitance	$C_{IN}$	$V = 0\text{V}, f = 1\text{MHz}$			100	pF

**OUTPUT**

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector-Emitter Breakdown Voltage	$V_{CEO}$	$I_C = 1\text{mA}, I_F = 0\text{mA}$	80			V
Emitter-Collector Breakdown Voltage	$V_{ECO}$	$I_E = 0.1\text{mA}, I_F = 0\text{mA}$	7			V
Collector Dark Current	$I_{CEO}$	$V_{CE} = 20\text{V}, I_F = 0\text{mA}$			200	nA
Collector-Emitter Capacitance	$C_{CE}$	$V_{CE} = 0\text{V}, f = 1\text{MHz}$			50	pF

**COUPLED**

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$				%
		CNY65	50		300	
		CNY65A	63		125	
		CNY65B	100		200	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = 10\text{mA}, I_C = 1\text{mA}$			0.3	V
Coupling Capacitance	$C_{IO}$	$V_{IO} = 0\text{V}, f = 1\text{MHz}$		0.3		pF
Rise Time	$t_r$	$V_{CC} = 5\text{V}, I_C = 5\text{mA}, R_L = 100\Omega$		3	18	$\mu\text{s}$
Fall Time	$t_f$			5	18	
Turn On Time	$t_{ON}$			6	18	
Turn Off Time	$t_{OFF}$			7	18	

**ISOLATION**

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Isolation Voltage	$V_{ISO}$	R.H. = 40 - 60%, $t = 1\text{ min}$	8200			$V_{RMS}$
Input-Output Resistance	$R_{I-O}$	$V_{I-O} = 500\text{VDC}, \text{R.H.} = 40 - 60\%$	$1 \times 10^{11}$			$\Omega$

Device is considered a two terminal device : pins 1 and 2 are shorted together and pins 3 and 4 are shorted together.

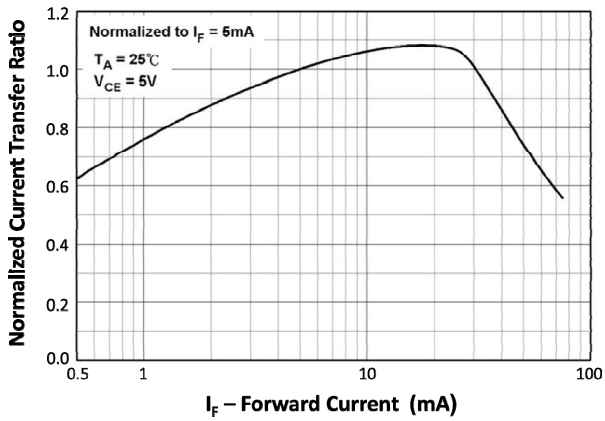


Fig 1 Normalized Current Transfer Ratio vs Forward Current

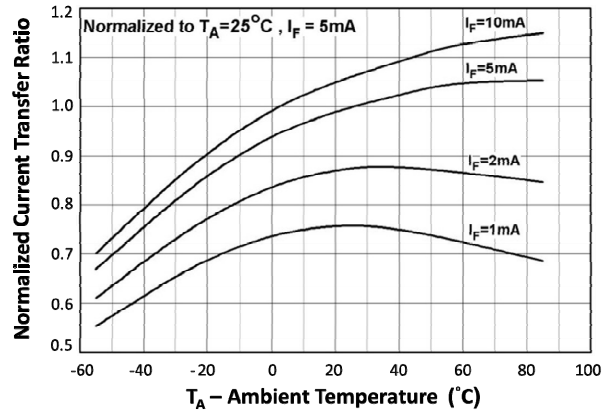


Fig 2 Normalized Current Transfer Ratio vs Ambient Temperature

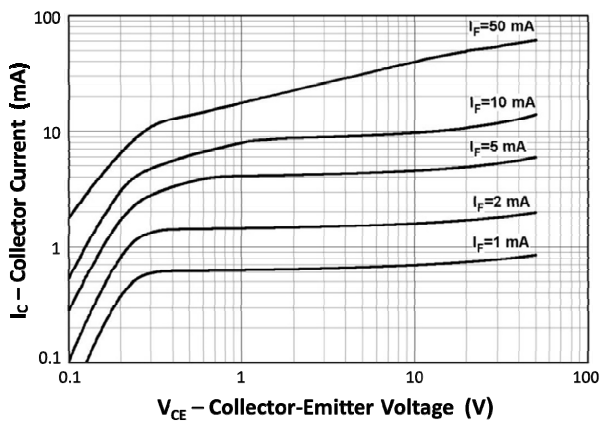


Fig 3 Collector Current vs Collector-Emitter Voltage

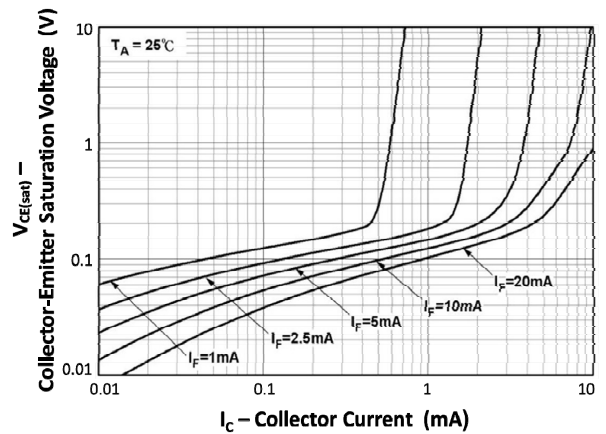


Fig 4 Collector-Emitter Saturation Voltage vs Collector Current

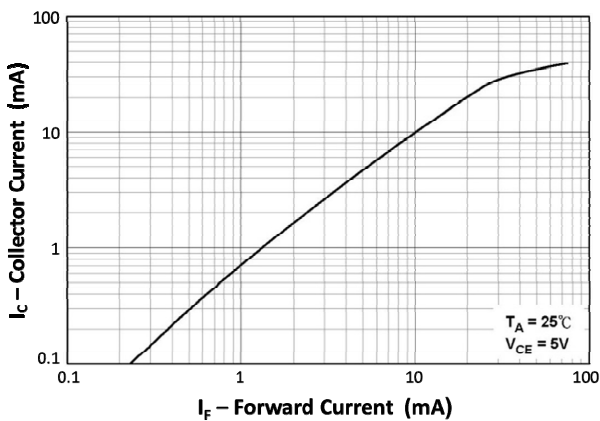


Fig 5 Collector Current vs Forward Current

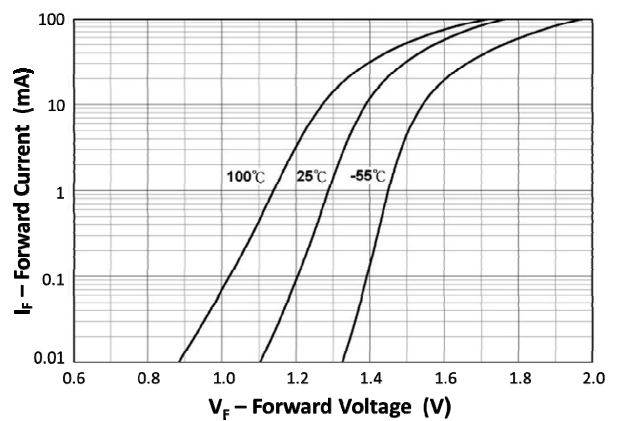


Fig 6 Forward Current vs Forward Voltage

# CNY65

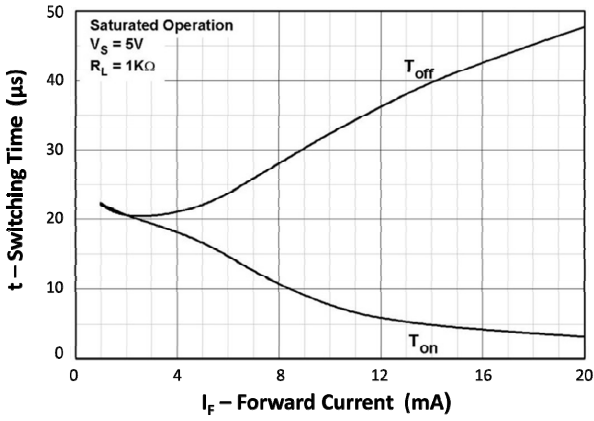


Fig 7 Switching Time vs Forward Current

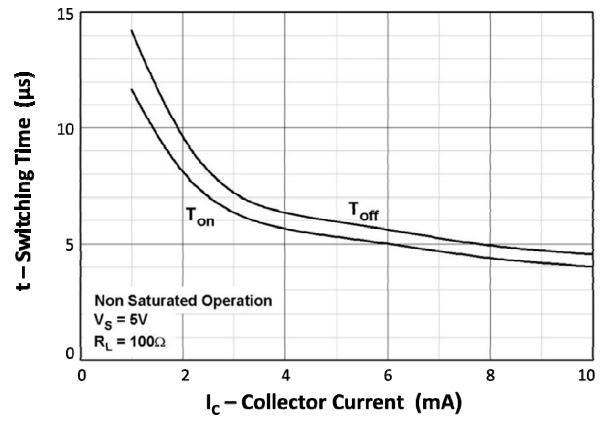


Fig 8 Switching Time vs Collector Current

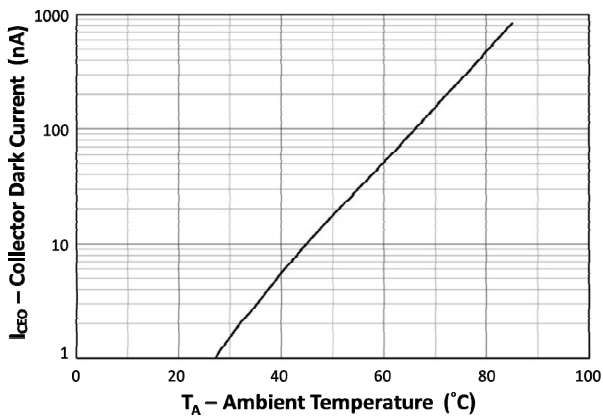
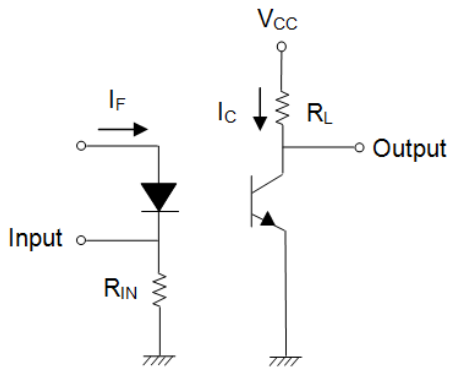
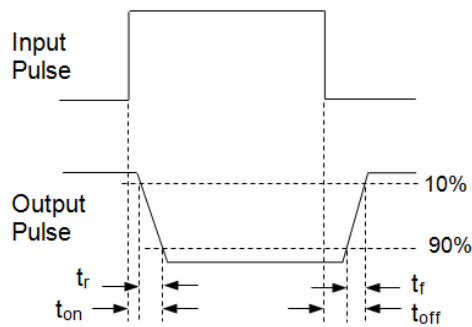


Fig 9 Collector Dark Current vs Ambient temperature



Switching Time Test Circuit



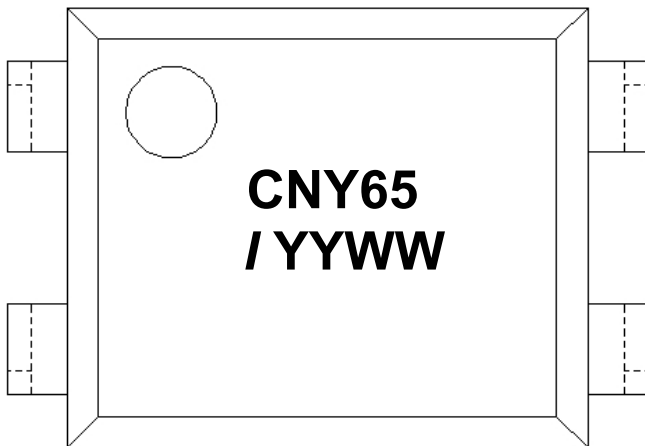
## CNY65

### ORDER INFORMATION

CNY65			
After PN	PN	Description	Packing quantity
None	CNY65	DIP 4	45 pcs per tube
Other CTR Grades	CNY65A, CNY65B	DIP 4	45 pcs per tube

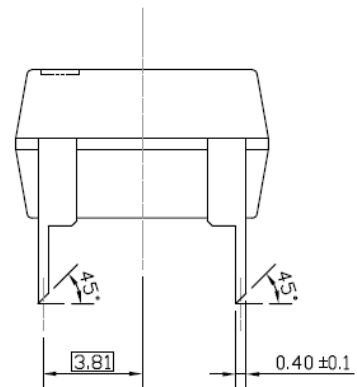
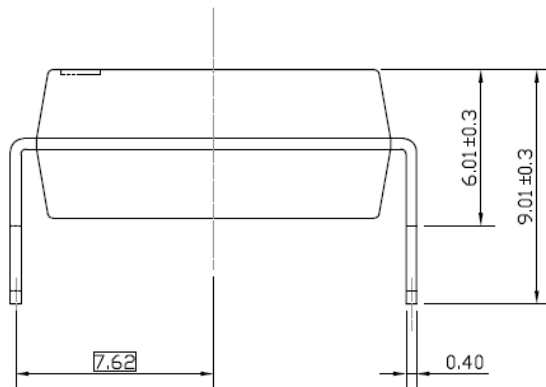
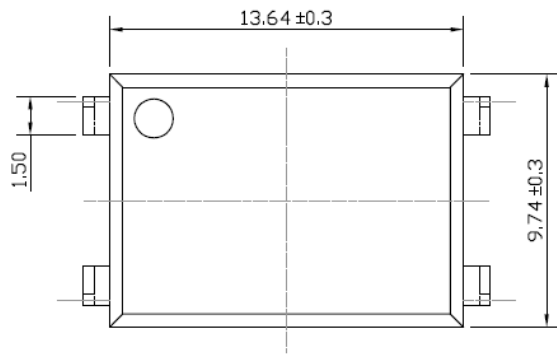
### DEVICE MARKING

Example : CNY65



CNY65      denotes Device Part Number  
 /            denotes Isocom  
 Y            denotes 2 digit Year code  
 WW         denotes 2 digit Week code

**PACKAGE DIMENSIONS in mm**





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