

### 4 PIN DIP VERY HIGH ISOLATION VOLTAGE PHOTOCOUPLER CNY64 series, CNY65 series

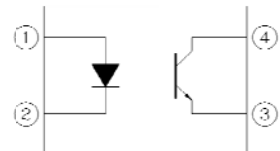


CNY64



CNY65

#### Schematic



#### Pin Configuration

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

#### Features:

- High Voltage ,  $BV_{CEO}=80V$  (min.)
- Operating temperature up to  $+85^{\circ}C$
- High isolation voltage between input and output,  $V_{iso} = 8200 V_{rms}$
- Rated recurring peak voltage (repetitive),  $V_{IORM} = 1000 VRMS$
- Creepage current resistance according to VDE 0303/IEC 60112 comparative tracking index:  $CTI \geq 200$
- Thickness through insulation  $\geq 3mm$
- Pb free and RoHS compliant.
- CUL approved (No. E214129)
- VDE approved (No. 40027351)
- FIMKO approved (No. 25464)

#### Description

The CNY64 and CNY65 series contains an infrared emitting diode optically coupled to a phototransistor. These devices are packaged in an 4-pin DIP package and providing a distance between input and output for highest safety requirement of  $>3mm$ .

#### Applications

- Switch mode power supply
  - Line receiver
  - Computer peripheral interface
  - Microprocessor system interface
  - Circuits for safe protective separation against electrical shock according to safety class II (reinforced isolation):
    - for appl. class I - IV at mains voltage  $\leq 300 V$
    - for appl. class I - IV at mains voltage  $\leq 600 V$
    - for appl. class I - III at mains voltage  $\leq 1000 V$
- according to DIN EN 60747-5-5.

**Absolute Maximum Ratings (Ta=25°C)**

	Parameter	Symbol	Rating	Unit
Input	Forward current	$I_F$	75	mA
	Peak forward current (<10 $\mu$ s)	$I_{FM}$	1.5	A
	Reverse voltage	$V_R$	5	V
	Power dissipation	$P_D$	120	mW
Output	Collector power dissipation	$P_C$	150	mW
	Collector current	$I_C$	50	mA
	Collector-Emitter voltage	$V_{CEO}$	80	V
	Emitter-Collector voltage	$V_{ECO}$	7	V
	Total Power Dissipation	$P_{TOT}$	250	mW
	Isolation Voltage* <sup>1</sup>	$V_{ISO}$	8200	V rms
	Operating Temperature	$T_{OPR}$	-55 to 85	°C
	Storage Temperature	$T_{STG}$	-55 to 100	°C
	Soldering Temperature* <sup>2</sup>	$T_{SOL}$	260	°C

Notes:

\*1 AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2 are shorted together, and pins 3, 4 are shorted together.

\*2 2mm from case, <10 seconds

**Electro-Optical Characteristics (Ta=25°C unless specified otherwise)**

**Input**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward voltage	$V_F$	-	1.6	2.0	V	$I_F = 50\text{mA}$
Reverse current	$I_R$	-	-	10	$\mu\text{A}$	$V_R = 5\text{V}$
Input capacitance	$C_{in}$	-	-	100	pF	$V = 0, f = 1\text{MHz}$

**Output**

Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
Collector-Emitter dark current	$I_{CEO}$	-	-	200	nA	$V_{CE} = 20\text{V}, I_F = 0\text{mA}$
Collector-Emitter breakdown voltage	$BV_{CEO}$	80	-	-	V	$I_C = 1\text{mA}$
Emitter-Collector breakdown voltage	$BV_{ECO}$	7	-	-	V	$I_E = 0.1\text{mA}$
Collector-Emitter capacitance	$C_{CE}$	-	-	50	pF	$V_{CE} = 0\text{V}, f = 1\text{MHz}$

**Transfer Characteristics**

Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
Current Transfer ratio	CNY64	50	-	300	%	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$
	CNY65		-			
	CNY64A	63	-	125		
	CNY65A		-			
	CNY64B		100	-		
CNY65B	-					
Collector-Emitter saturation voltage	$V_{CE(sat)}$	-	-	0.3	V	$I_F = 10\text{mA}, I_C = 1\text{mA}$
Isolation resistance	$R_{IO}$	$10^{11}$	-	-	$\Omega$	$V_{IO} = 500\text{Vdc}, 40\sim 60\% \text{ R.H.}$
Coupling capacitance	$C_{IO}$	-	0.3	-	pF	$V_{IO} = 0, f = 1\text{MHz}$
Turn-on time	$T_{on}$	-	6	18	$\mu\text{s}$	$V_{CC} = 5\text{V}, I_C = 5\text{mA}, R_L = 100\Omega$
Turn-off time	$T_{off}$	-	7	18		
Rise time	$t_r$	-	3	18		
Fall time	$t_f$	-	5	18		

\* Typical values at  $T_a = 25^\circ\text{C}$

Typical Electro-Optical Characteristics Curves

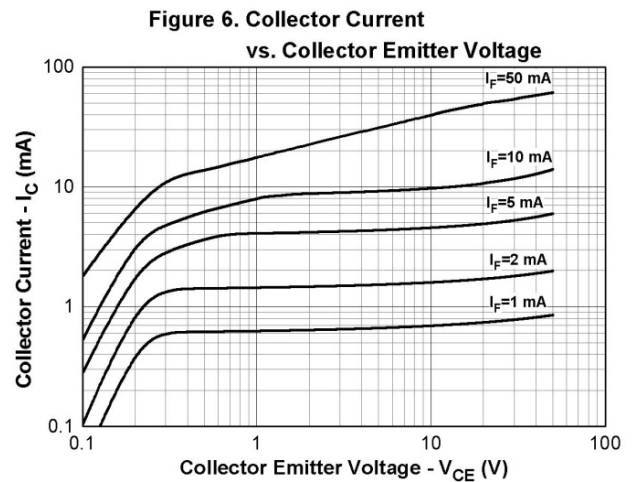
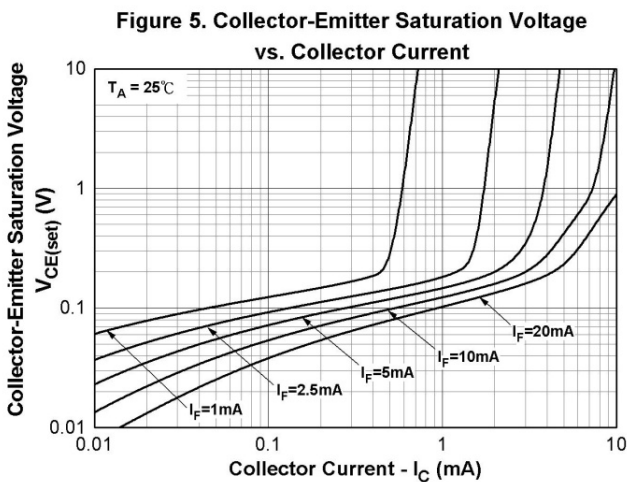
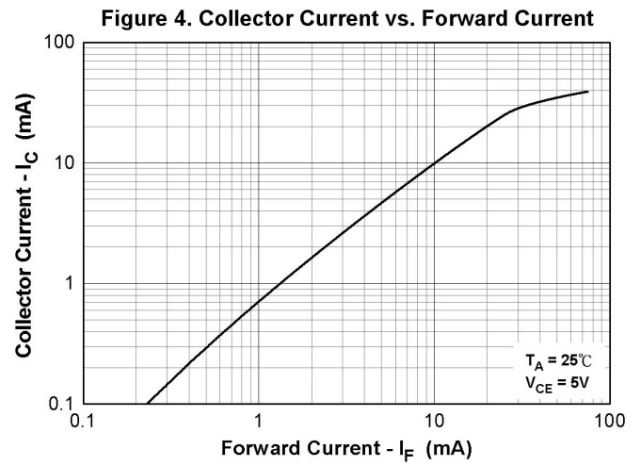
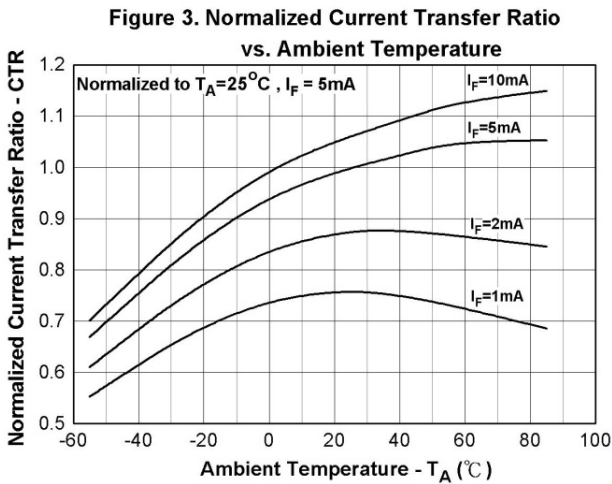
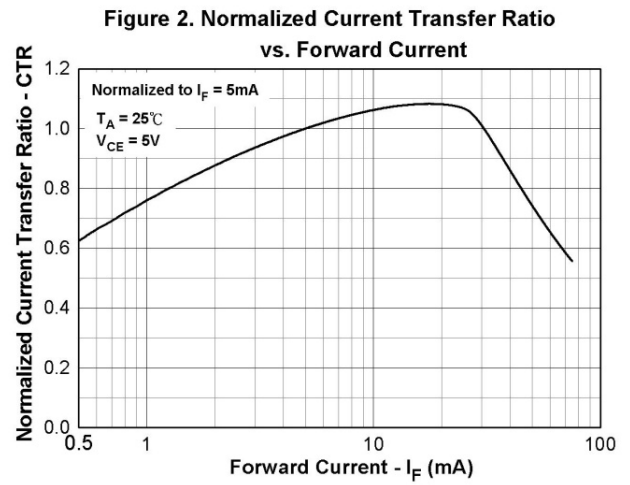
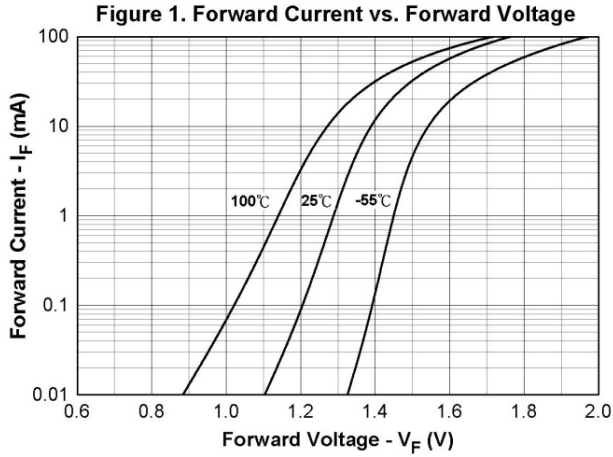


Figure.7 Collector Dark Current vs. Ambient Temperature

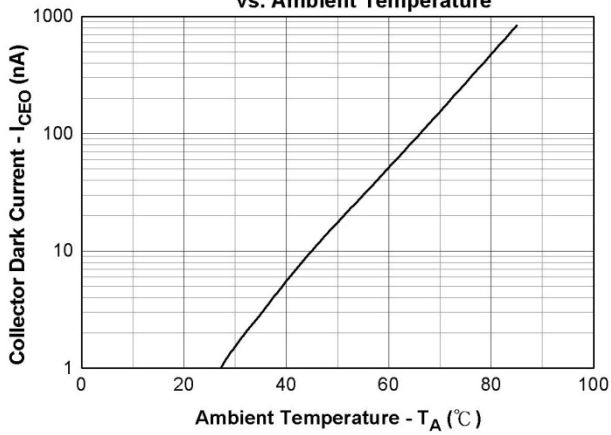


Figure 8. Turn on/off Time vs. Forward Current

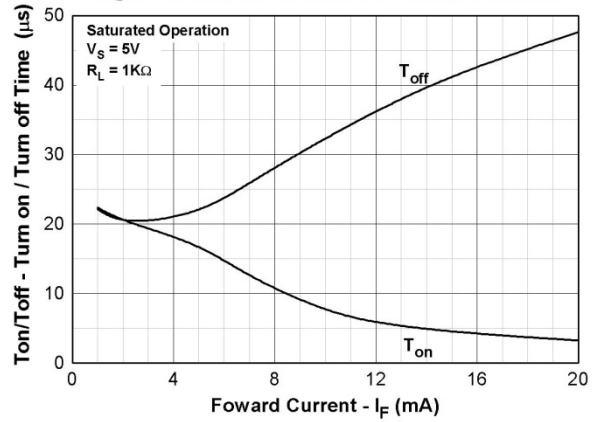


Figure 9. Turn on/off Time vs. Collector Current

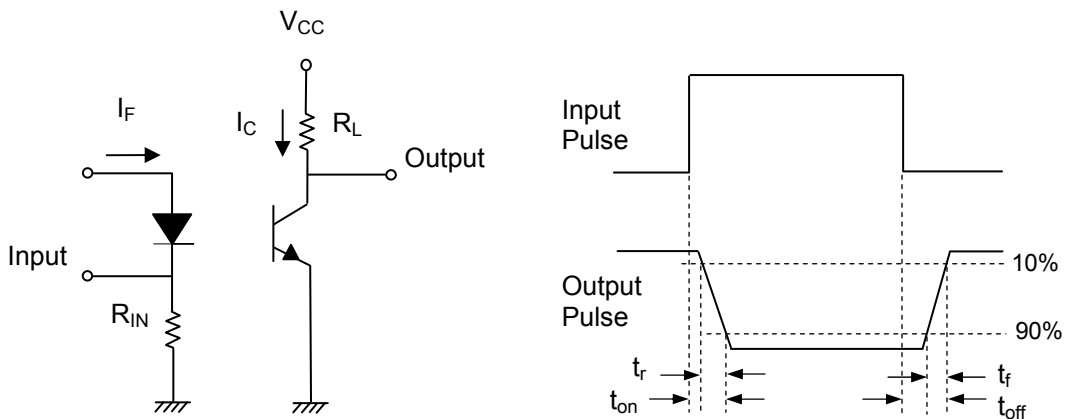
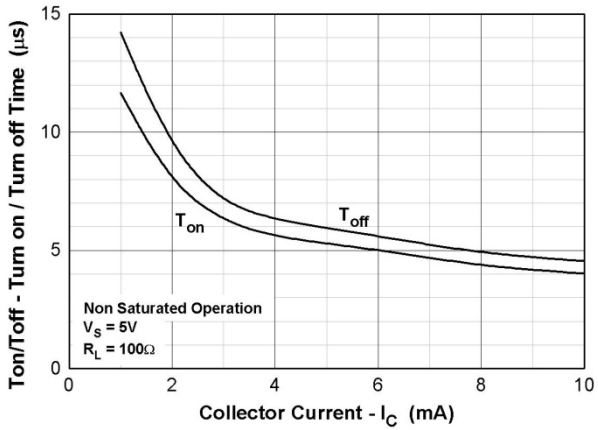


Figure 10. Switching Time Test Circuit & Waveforms

## Order Information

### Part Number

**CNY64Y-V**  
or  
**CNY65Y-V**

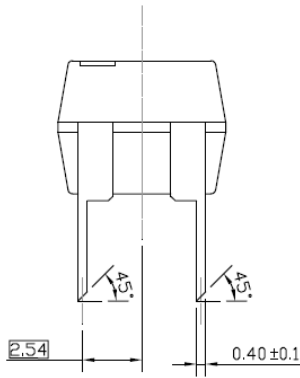
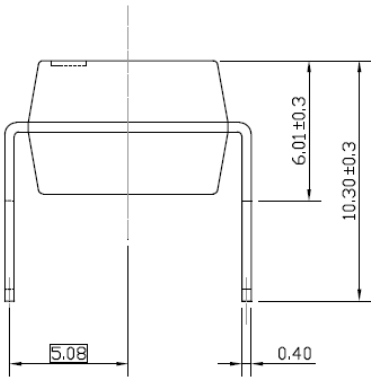
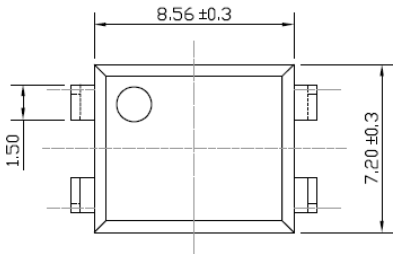
### Note

Y = CTR Rank (A, B, or none)  
V = VDE safety (optional).

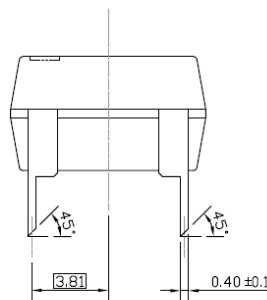
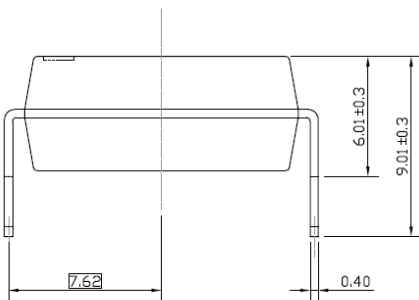
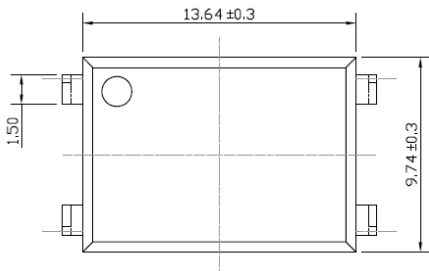
Option	Description	Packing quantity
CNY64	Standard	60 units per tube
CNY64-V	Standard + VDE	60 units per tube
CNY65	Standard	45 units per tube
CNY65-V	Standard + VDE	45 units per tube

Package Dimension (Dimensions in mm)

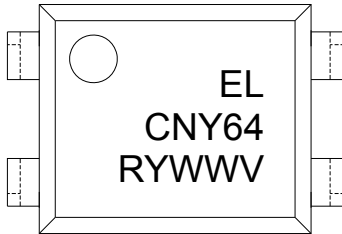
CNY64



CNY65



## Device Marking



## Notes

EL	denotes Everlight
CNY64	denotes Part no.
R	denotes CTR rank (A or B)
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code
V	denotes VDE safety (optional)



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