

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

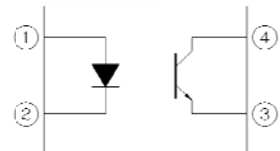


CNY64



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), $V_{ORM} = 1000 VRMS$
- 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 μ 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* ¹	V_{ISO}	8200	V rms
	Operating Temperature	T_{OPR}	-55 to 85	°C
	Storage Temperature	T_{STG}	-55 to 100	°C
	Soldering Temperature* ²	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	μA	$V_R = 5\text{V}$
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}	-	-	Ω	$V_{IO} = 500\text{Vdc}, 40\sim 60\% \text{ R.H.}$
Coupling capacitance	C_{IO}	-	0.3	-	pF	$V_{IO} = 0, f = 1\text{MHz}$
Turn-on time	T_{on}	-	6	18	μs	$V_{CC} = 5\text{V}, I_C = 5\text{mA}, R_L = 100\Omega$
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

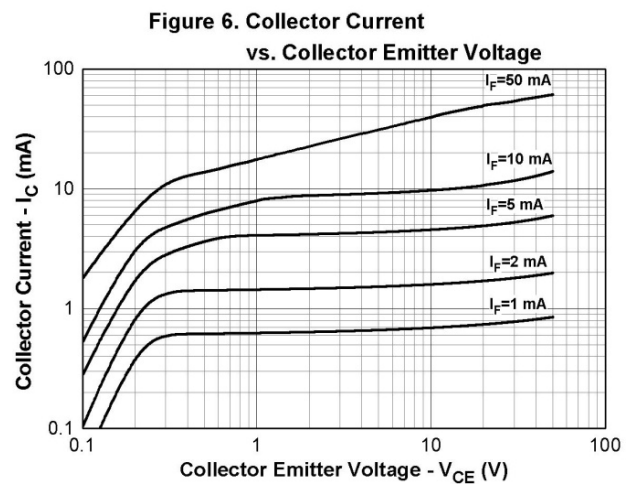
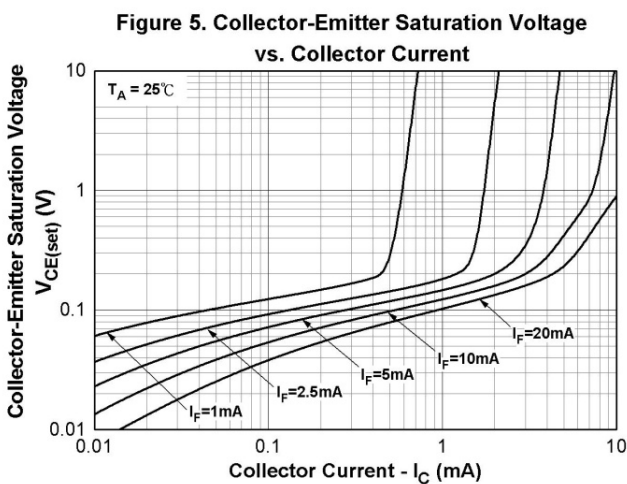
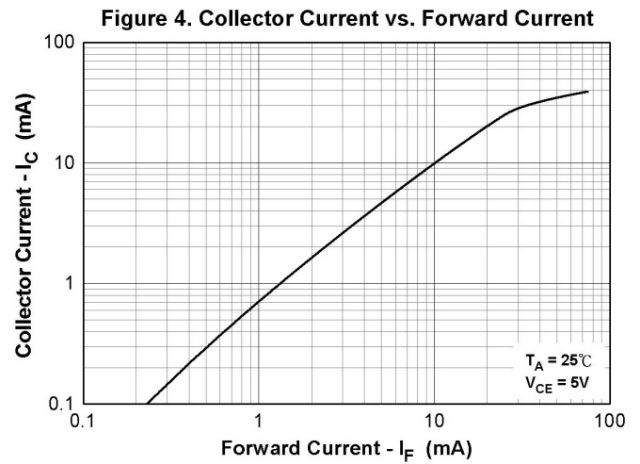
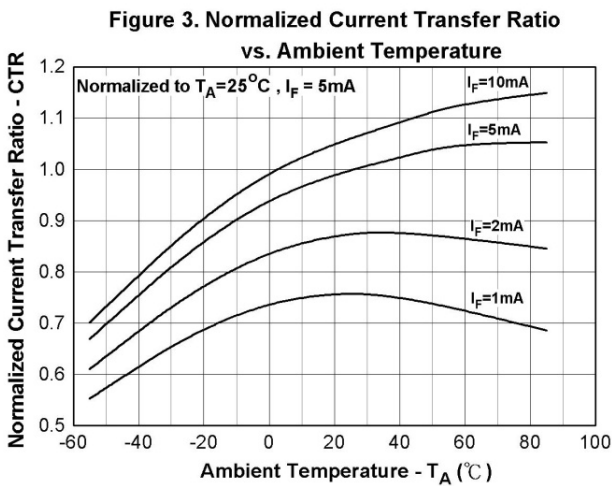
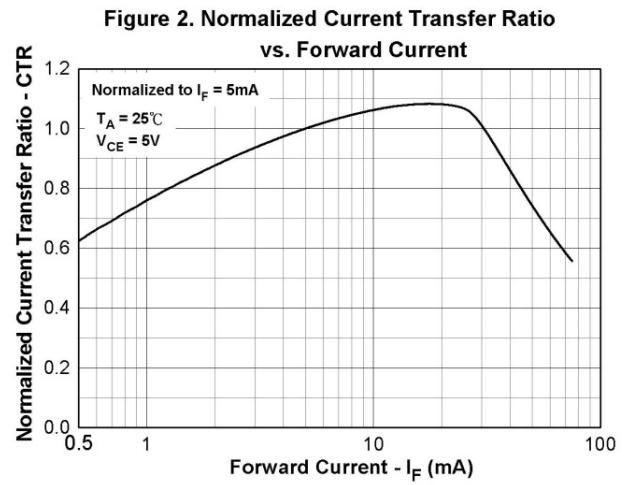
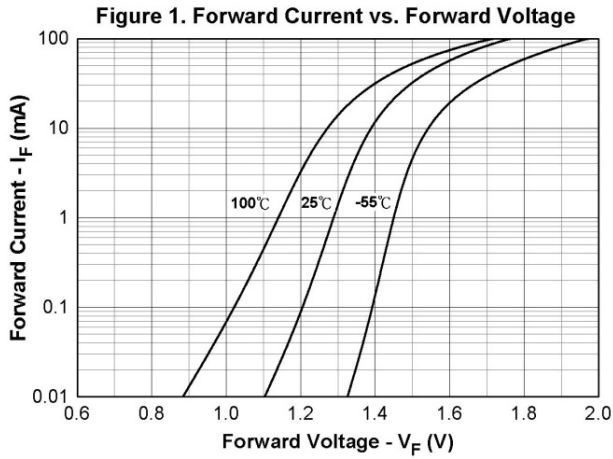


Figure.7 Collector Dark Current vs. Ambient Temperature

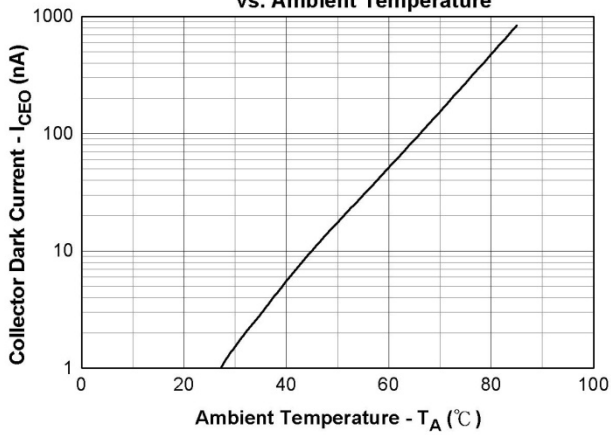


Figure 8. Turn on/off Time vs. Forward Current

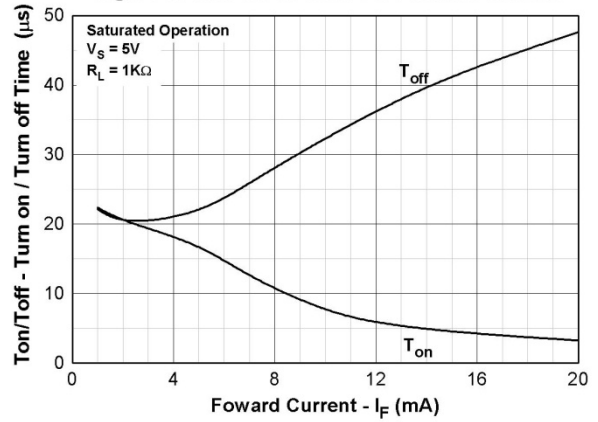


Figure 9. Turn on/off Time vs. Collector Current

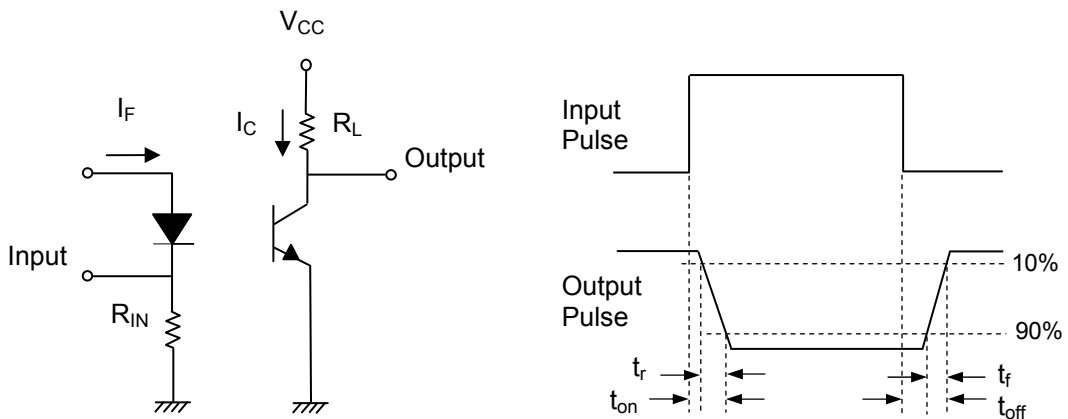
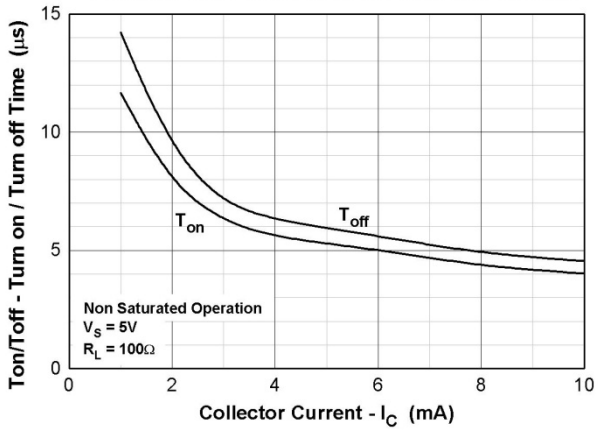


Figure 10. Switching Time Test Circuit & Waveforms

Order Information

Part Number

CNY64Y-V
or
CNY65Y-V

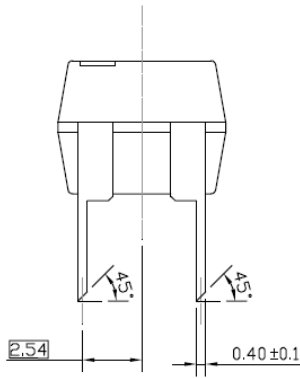
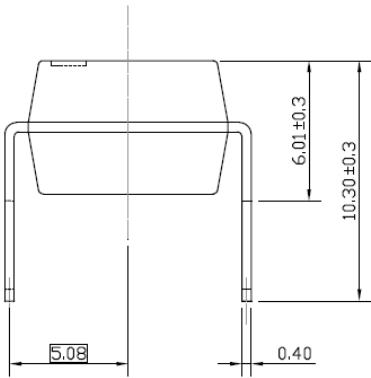
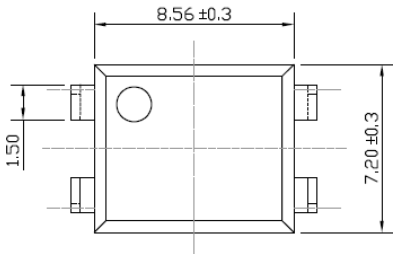
Note

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

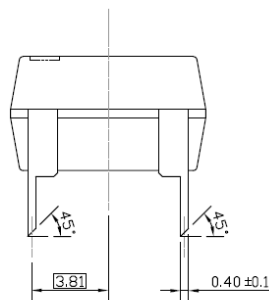
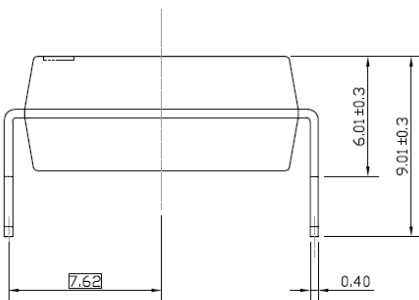
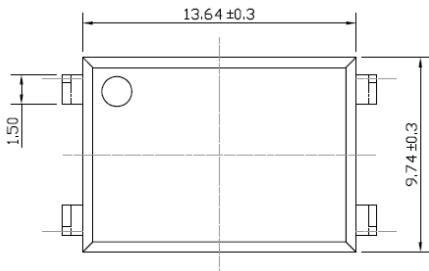
Option	Description	Packing quantity
CNY64	Standard	60 units per tube
CNY64-V	Standard + VDE	60 units per tube
CNY65	Standard	45 units per tube
CNY65-V	Standard + VDE	45 units per tube

Package Dimension (Dimensions in mm)

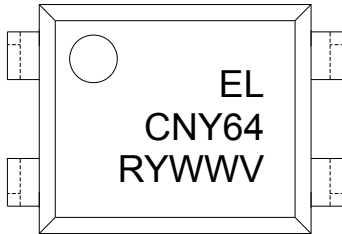
CNY64



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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