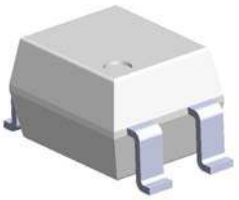
4 PIN DIP VERY HIGH ISOLATION VOLTAGE PHOTOCOUPLER

CNY64S series

Features

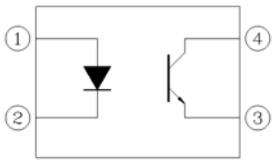


- High Voltage
  BV_{CEO}=80V (min.)
- Operating temperature up to +85°C
- High isolation voltage between input and output
  V_{IOTM} = 8200 V perk for CNY64
  V_{IOTM} = 10000 V perk for CNY64-V
- Rated recurring peak voltage (repetitive)
  V_{IORM} = 2200 V
- Creepage current resistance according to VDE 0303/IEC 60112
  comparative tracking index: CTI ≥ 200
- Thickness through insulation ≧3mm
- Pb free and RoHS compliant.
- CUL approved (No. E214129)
- VDE approved (No. 40027351)
- FIMKO approved (No. 25464)

Description

The CNY64S series contains an infrared emitting diode optically coupled to a phototransistor.

These device is packaged in an 4-pin SMD package and providing a distance between input and output for highest safety requirement of >3mm.



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

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 ≤ 300 V
  - for appl. class I - IV at mains voltage ≤ 600 V
  - for appl. class I - III at mains voltage ≤ 1000 V

  according to DIN EN 60747-5-5

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Absolute Maximum Ratings (T_a=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	75	mA
	Peak forward current (<10μs)	I_{FM}	1.5	A
	Reverse voltage	V_R	5	V
	Power dissipation	P_D	120	mW
Output	Collector current	I_C	50	mA
	Collector power dissipation	P_C	150	mW
	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	Vrms
Operating temperature		T_{opr}	-55~+85	°C
Storage temperature		T_{stg}	-55~+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.

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Electrical Characteristics (T_a=25°C unless specified otherwise)

Input

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

Output

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

Transfer Characteristics

Parameter		Symbol	Min.	Typ.*	Max.	Unit	Condition
Current Transfer Ratio	CNY64	CTR	50	-	300	%	I_F = 5mA ,V_{CE} = 5V
	CNY64A		63	-	125		
	CNY64B		100	-	200		
Collector-emitter saturation voltage		$V_{CE(sat)}$	-	-	0.3	V	I_F = 10mA , I_C = 1mA
Coupling capacitance		C_{IO}	-	0.3	-	pF	f=1MHz
Isolation resistance		R_{IO}	10^{11}	-	-	Ω	V_{IO} = 500Vdc
Turn-on time		T_{on}	-	6	18	μs	V_{CC} = 5V, I_C = 5mA, R_L = 100Ω
Turn-off time		T_{off}	-	7	18		
Rise time		tr	-	3	18		V_{CC} = 5V, I_C = 5mA, R_L = 100Ω
Fall time		tf	-	5	18		

* Typical values at T_a = 25°C

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Typical Performance Curves

Figure 1. Forward Current vs. Forward Voltage

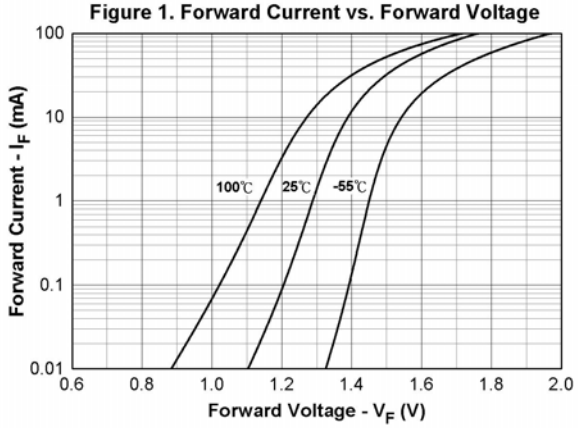

Figure 2. Normalized Current Transfer Ratio vs. Forward Current

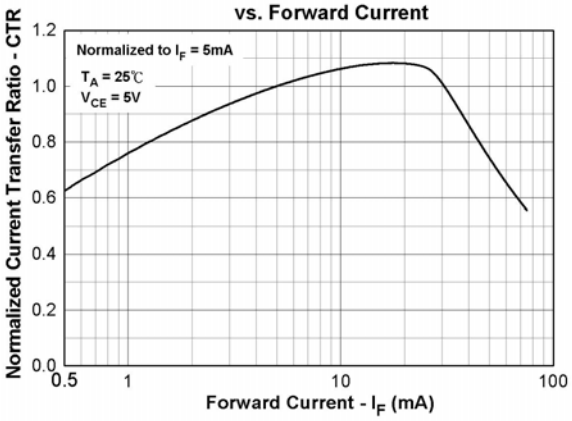

Figure 3. Normalized Current Transfer Ratio vs. Ambient Temperature

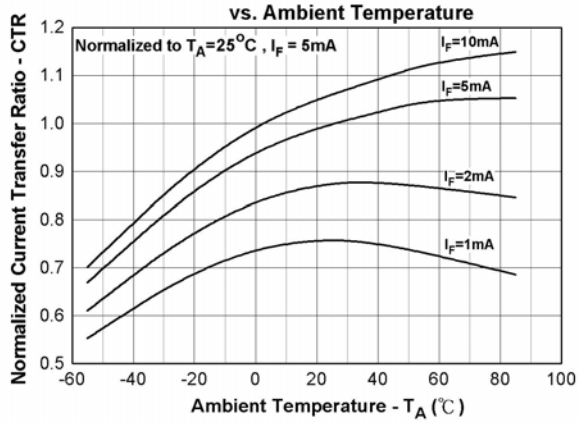

Figure 4. Collector Current vs. Forward Current

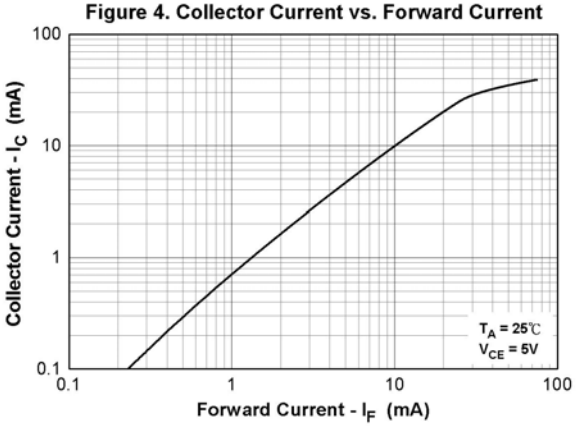

Figure 5. Collector-Emitter Saturation Voltage vs. Collector Current

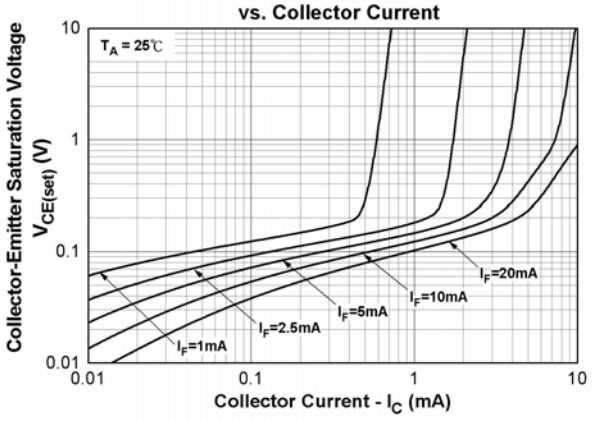

Figure 6. Collector Current vs. Collector Emitter Voltage

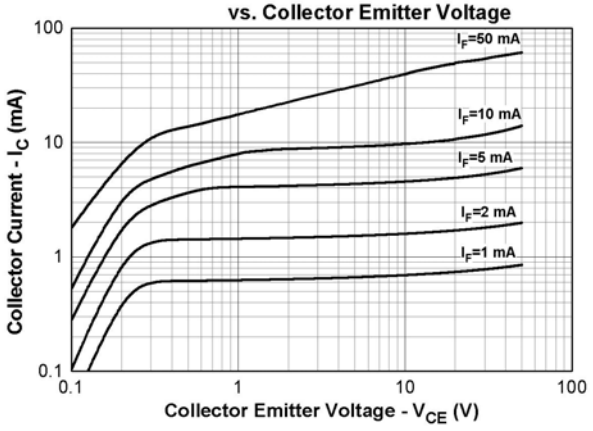

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Figure.7 Collector Dark Current vs. Ambient Temperature

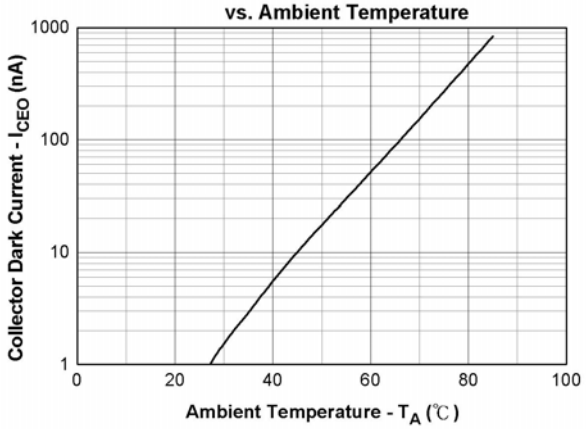


Figure 8. Turn on/off Time vs. Forward Current

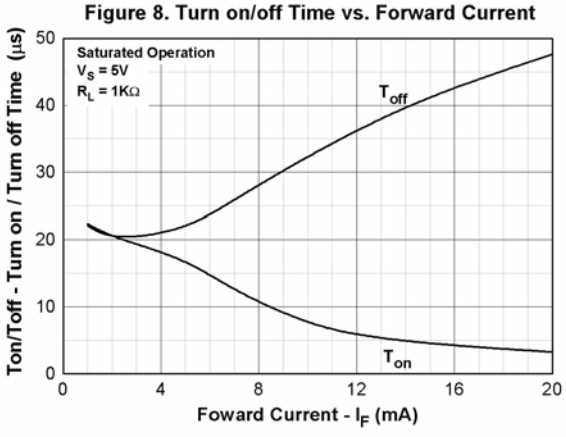
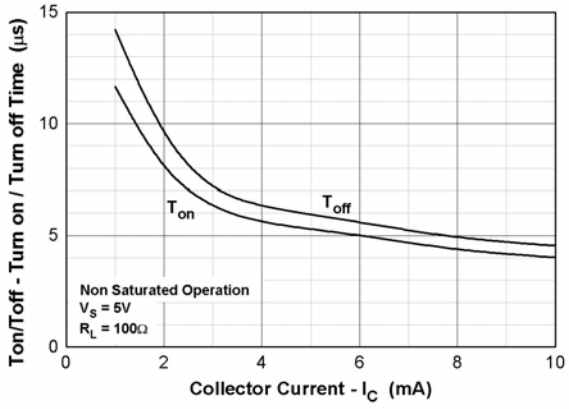


Figure 9. Turn on/off Time vs. Collector Current



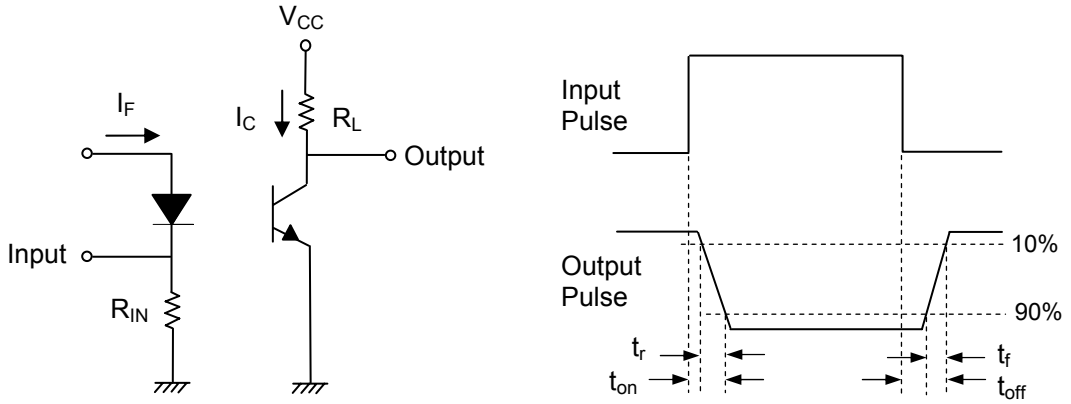


Figure 10. Switching Time Test Circuit & Waveforms

Order Information

Part Number

CNY64SX-V

Note
X = CTR rank option (A, B or none)
V = VDE safety (optional)

Option	Description	Packing quantity
CNY64S	Standard	60 units per tube
CNY64S-V	Standard + VDE	60 units per tube
CNY64S(TA)	Standard	500 units per tube

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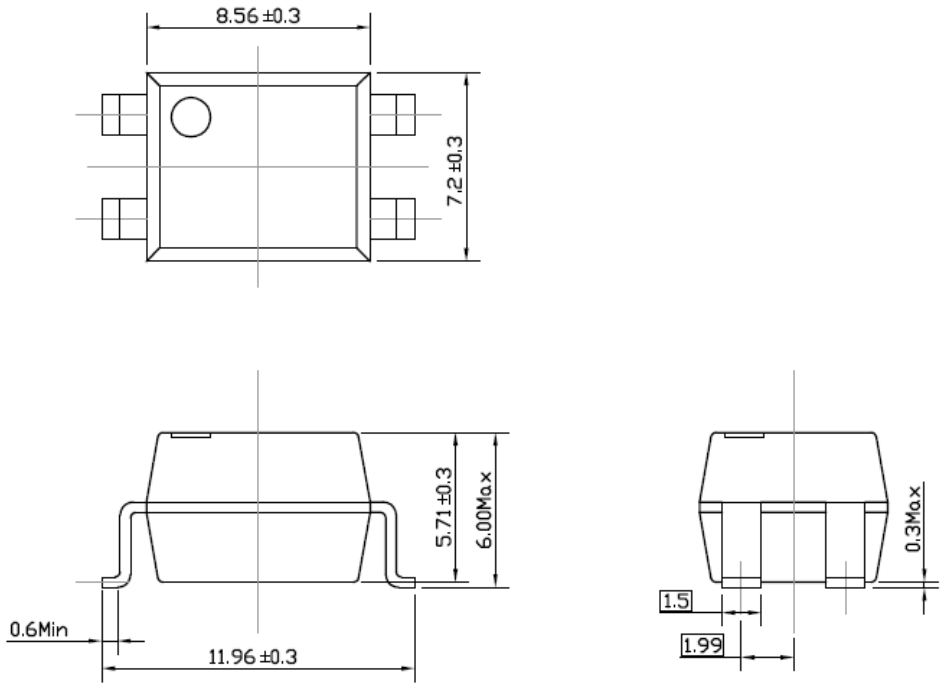
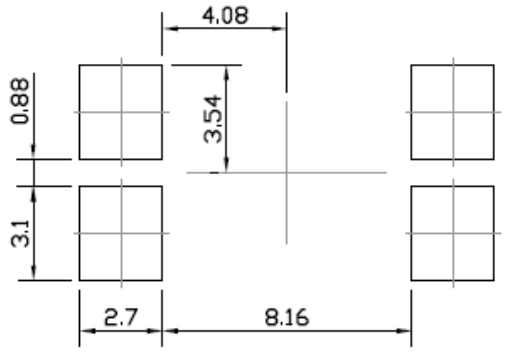
Package Drawings

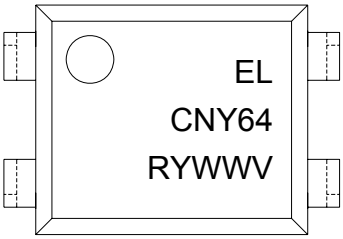
(Dimensions in mm)



Recommended pad layout for surface mount leadform



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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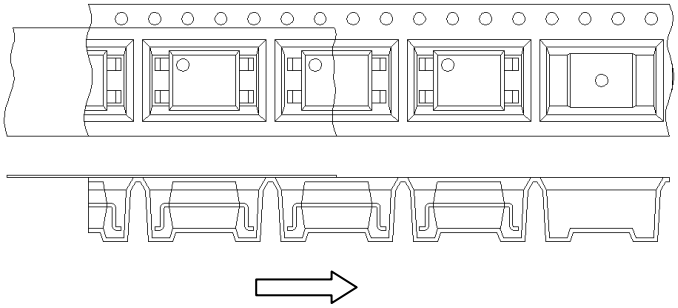
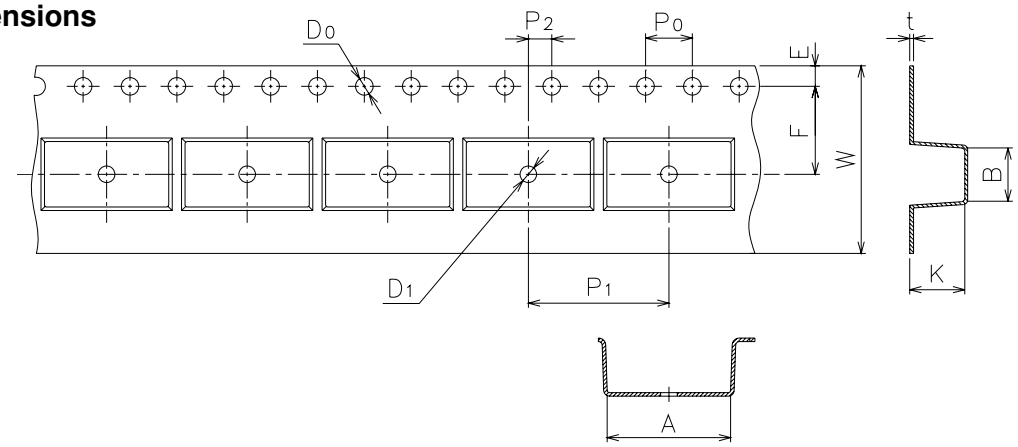
Tape & Reel Packing Specifications

Option TA



Direction of feed from reel

Tape dimensions



Dimension No.	A	B	Do	D1	E	F
Dimension(mm)	12.6±0.1	6.6±0.1	1.5+0.1/-0	1.5±0.1	1.75±0.1	7.5±0.1
Dimension No.	Po	P1	P2	t	W	K
Dimension(mm)	4.0±0.1	16.0±0.1	2.0±0.1	0.5±0.05	16.0±0.3	7.31±0.1

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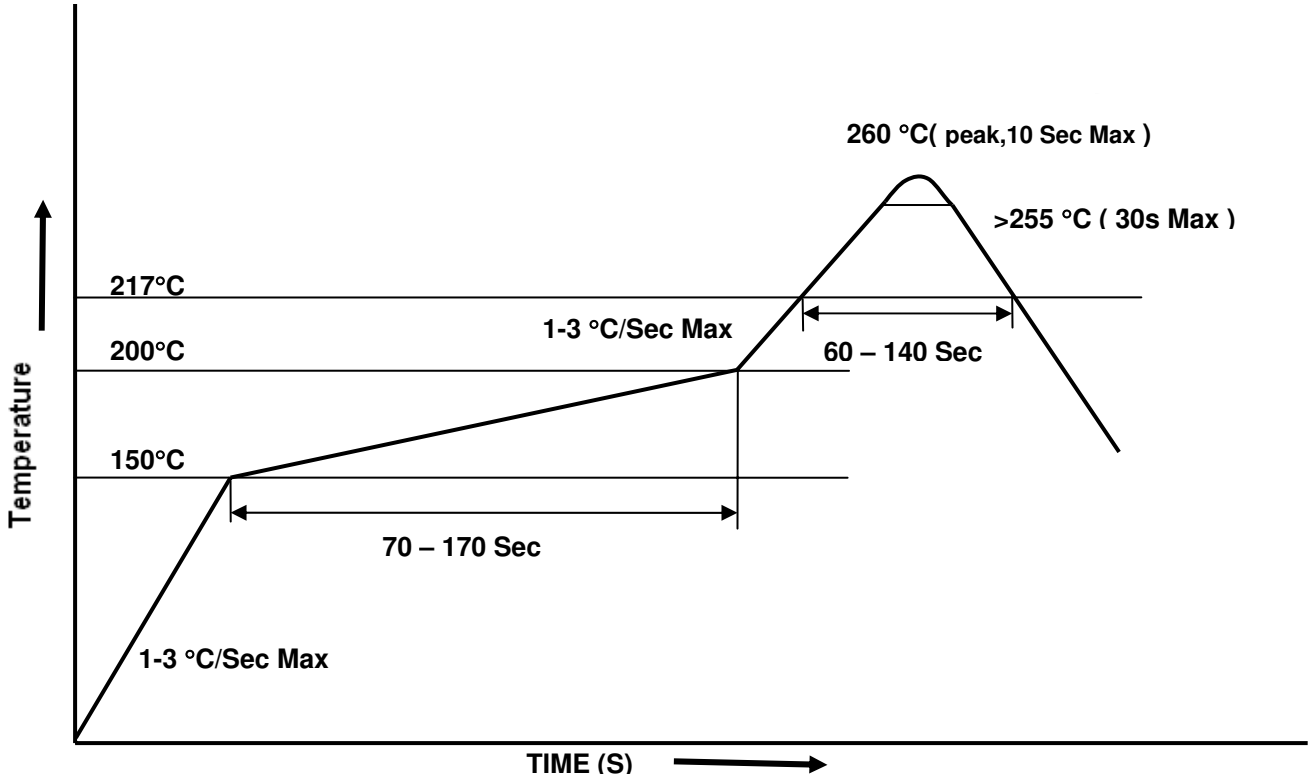
Solder Reflow Temperature Profile



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