



# Photocoupler

## Product Data Sheet

### CNY17F-1 THRU CNY17F-4 SERIES

Spec No.: DS-70-99-0032

Effective Date: 09/15/2001

Revision: B

**LITE-ON DCC**

**RELEASE**

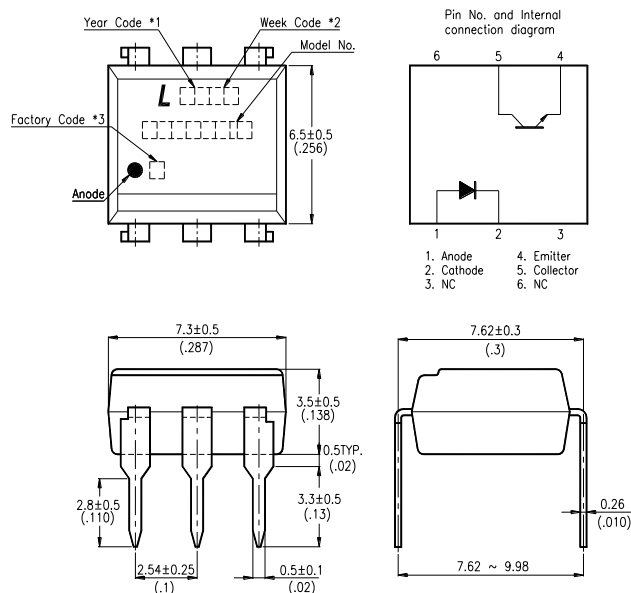
BNS-OD-FC001/A4

## FEATURES

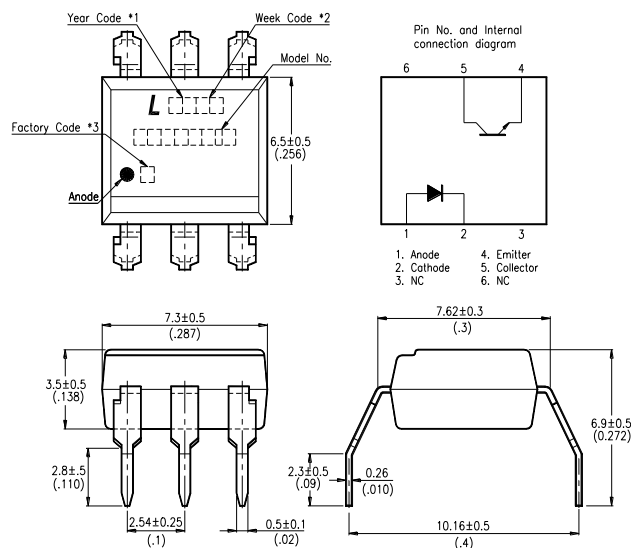
- \* High collector-emitter voltage  
(  $V_{CEO} = 70V$  )
- \* High input-output isolation voltage  
(  $V_{iso} = 5,000V_{rms}$  )
- \* Response time  
(  $t_r$  : TYP.  $5\mu s$  at  $V_{CC} = 10V$ ,  $I_C = 2mA$ ,  $R_L = 100\Omega$  )
- \* Current transfer ratio  
( CTR : MIN. 40% at  $I_F = 10mA$ ,  $V_{CE} = 5V$  )
- \* Dual-in-line package :  
CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4
- \* Wide lead spacing package :  
CNY17F-1M, CNY17F-2M, CNY17F-3M, CNY17F-4M
- \* Surface mounting package :  
CNY17F-1S, CNY17F-2S, CNY17F-3S, CNY17F-4S
- \* Tape and reel packaging :  
(TYPE I) CNY17F-1S-TA1, CNY17F-2S-TA1, CNY17F-3S-TA1, CNY17F-4S-TA1
- \* UL approved ( No. E113898 )
- \* FIMKO approved ( No. 209049 )
- \* NEMKO approved ( No. P99102464 )
- \* DEMKO approved ( No. 99-04182 )
- \* SEMKO approved ( No. 9943380 / 01-20 )
- \* VDE approved ( No. 094722 )
- \* CSA approve in progress

## OUTLINE DIMENSIONS

### Dual-in-line package :



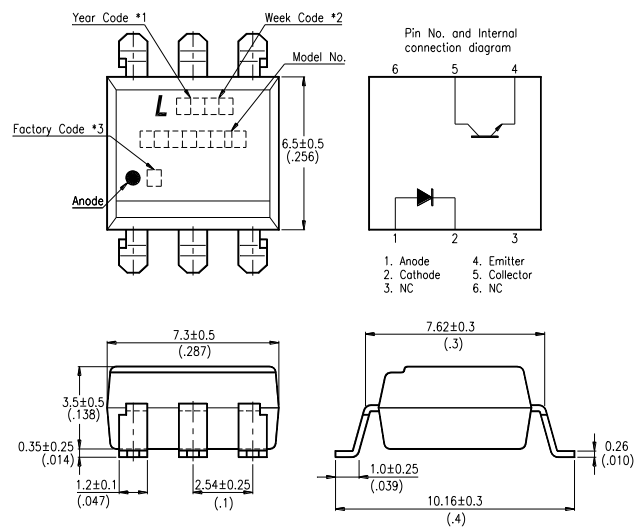
### Wide lead spacing package:



- \*1. Year date code.
- \*2. 2-digit work week.
- \*3. Factory identification mark shall be marked (Z : Taiwan, Y : Thailand, X : China).
- \*4. Model No.: CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4

## OUTLINE DIMENSIONS

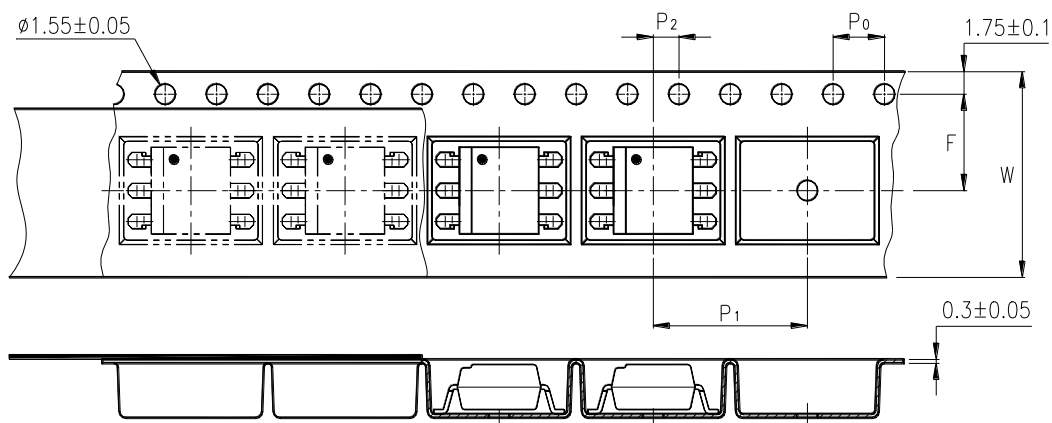
Surface mounting package :



- \*1. Year date code.
- \*2. 2-digit work week.
- \*3. Factory identification mark shall be marked (Z : Taiwan, Y : Thailand, X : China).
- \*4. Model No.: CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4

## TAPING DIMENSIONS

Tape and reel package ( TYPE I ) :



Description	Symbol	Dimensions in mm ( inches )
Tape wide	W	$16 \pm 0.3$ ( .63 )
Pitch of sprocket holes	$P_0$	$4 \pm 0.1$ ( .15 )
Distance of compartment	F	$7.5 \pm 0.1$ ( .295 )
Distance of compartment to compartment	$P_1$	$12 \pm 0.1$ ( .472 )

**ABSOLUTE MAXIMUM RATING**

( Ta = 25°C )

PARAMETER		SYMBOL	RATING	UNIT
INPUT	Forward Current	I <sub>F</sub>	60	mA
	Reverse Voltage	V <sub>R</sub>	6	V
	Power Dissipation	P	100	mW
OUTPUT	Collector - Emitter Voltage	V <sub>CEO</sub>	70	V
	Emitter - Collector Voltage	V <sub>ECO</sub>	7	V
	Collector Current	I <sub>C</sub>	150	mA
	Collector Power Dissipation	P <sub>C</sub>	150	mW
Total Power Dissipation		P <sub>tot</sub>	250	mW
*1	Isolation Voltage	V <sub>iso</sub>	5,000	V <sub>rms</sub>
Operating Temperature		T <sub>opr</sub>	-55 ~ +100	°C
Storage Temperature		T <sub>stg</sub>	-55 ~ +150	°C
*2	Soldering Temperature	T <sub>sol</sub>	260	°C

\*1. AC For 1 Minute, R.H. = 40 ~ 60%

Isolation voltage shall be measured using the following method.

- (1) Short between anode and cathode on the primary side and between collector, emitter and base on the secondary side.
- (2) The isolation voltage tester with zero-cross circuit shall be used.
- (3) The waveform of applied voltage shall be a sine wave.

\*2. For 10 Seconds

### ELECTRICAL - OPTICAL CHARACTERISTICS

( Ta = 25°C )

PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS	
INPUT	Forward Voltage	V <sub>F</sub>	—	1.45	1.65	V	I <sub>F</sub> =60mA	
	Reverse Current	I <sub>R</sub>	—	—	10	μA	V <sub>R</sub> =6V	
	Terminal Capacitance	C <sub>t</sub>	—	—	100	pF	V=0, f=1MHz	
OUTPUT	Collector Dark Current	I <sub>CEO</sub>	—	—	50	nA	V <sub>CE</sub> =10V, I <sub>F</sub> =0	
	Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	70	—	—	V	I <sub>C</sub> =0.1mA I <sub>F</sub> =0	
	Emitter-Collector Breakdown Voltage	BV <sub>ECO</sub>	7	—	—	V	I <sub>E</sub> =10μA I <sub>F</sub> =0	
TRANSFER CHARACTERISTICS	* Current Transfer Ratio	CNY17F-1	CTR	40	—	80	%	I <sub>F</sub> =10mA V <sub>CE</sub> =5V
		CNY17F-2		63	—	125		
		CNY17F-3		100	—	200		
		CNY17F-4		160	—	320		
	Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	—	—	0.3	V	I <sub>F</sub> =10mA I <sub>C</sub> =2.5mA	
	Isolation Resistance	R <sub>iso</sub>	100	—	—	GΩ	DC500V 40 ~ 60% R.H.	
	Floating Capacitance	C <sub>f</sub>	—	—	2	pF	V=0, f=1MHz	
	Response Time (Rise)	t <sub>r</sub>	—	5	10	μs	V <sub>CC</sub> =10V, I <sub>C</sub> =2mA R <sub>L</sub> =100Ω	
	Response Time (Fall)	t <sub>f</sub>	—	5	10	μs		

$$* \text{ CTR} = \frac{I_C}{I_F} \times 100\%$$

## CHARACTERISTICS CURVES

Fig.1 Forward Current vs. Ambient Temperature

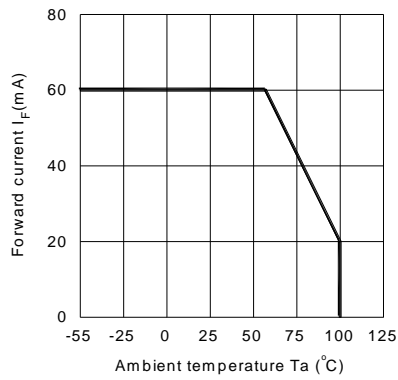


Fig.2 Collector Power Dissipation vs. Ambient Temperature

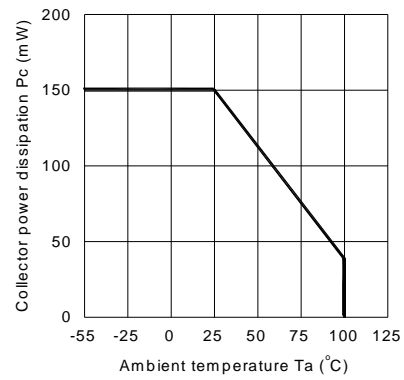


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

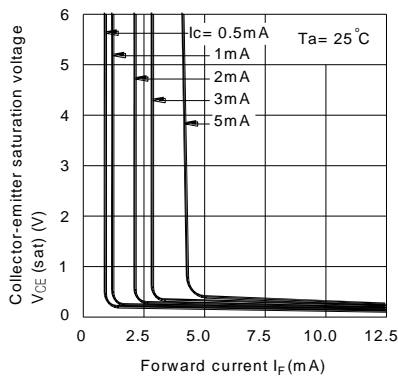


Fig.4 Forward Current vs. Forward Voltage

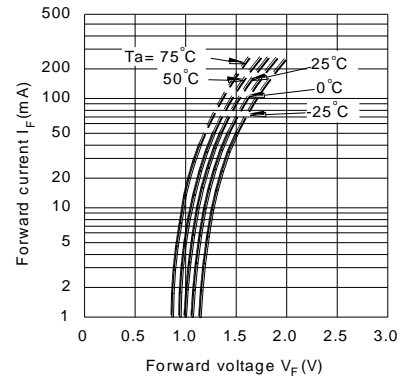


Fig.5 Current Transfer Ratio vs. Forward Current

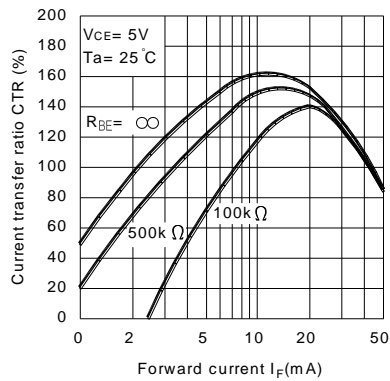
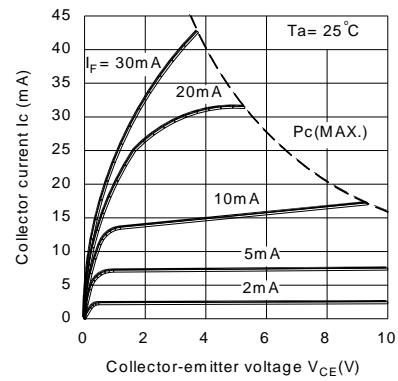


Fig.6 Collector Current vs. Collector-emitter Voltage





## CHARACTERISTICS CURVES

Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

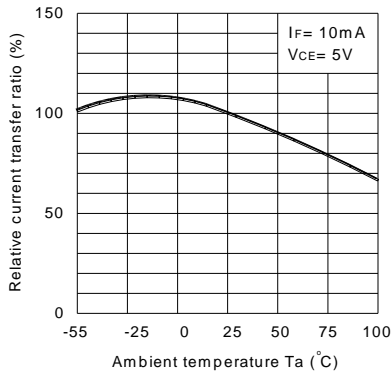


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

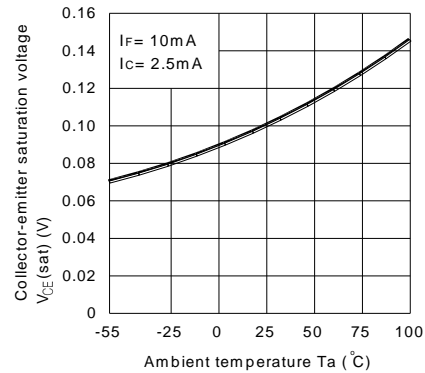


Fig.9 Collector Dark Current vs. Ambient Temperature

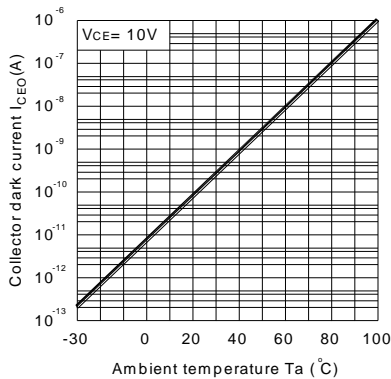


Fig.10 Response Time vs. Load Resistance

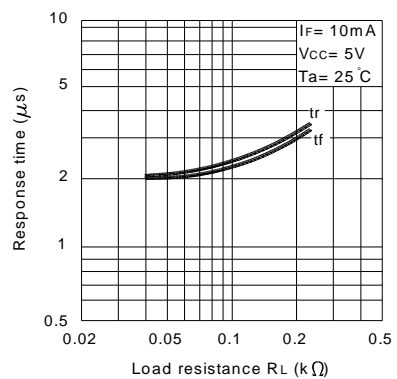
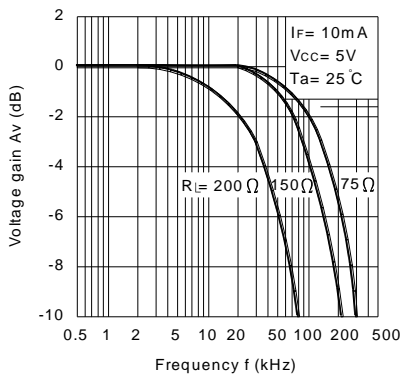
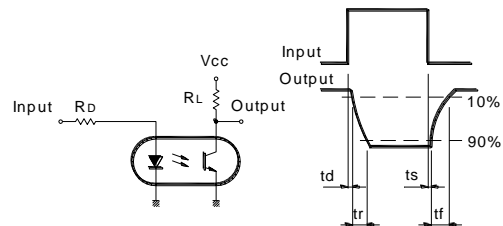


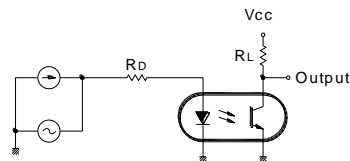
Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response



**RECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)**

Unit : mm

