



LIGHTING FOREVER

# 6 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

# CNY17-X Series CNY17F-X Series

## Features

- Current transfer ratios in selected narrow range groups  
 CNY17-1, CNY17F-1: 40-80%  
 CNY17-2, CNY17F-2: 63-125%  
 CNY17-3, CNY17F-3: 100-200%  
 CNY17-4, CNY17F-4:160-320%
- High isolation voltage between input and output  
 (Viso = 5000 Vrms)
- Creepage distance > 7.6 mm
- Operating temperature up to +110°C
- The CNY17F-X series offers no external base connection  
 for minimum noise susceptibility
- Compact dual-in-line package
- Pb free and RoHS compliant.
- UL approved (No. E214129)
- VDE approved (No. 132249)
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved
- CSA approved



## Description

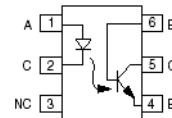
The CNY17-X and CNY17F-X series of devices each consist of an infrared emitting diode optically coupled to a phototransistor.

packaged in a 6-pin DIP package and available in wide-lead spacing and SMD option.

## Applications

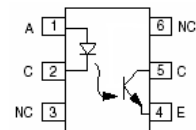
- Power supply regulators
- Digital logic inputs
- Microprocessor inputs

### Schematic



### CNY17-X

1. Anode
2. Cathode
3. No Connection
4. Emitter
5. Collector
6. Base



### CNY17F-X

1. Anode
2. Cathode
3. No Connection
4. Emitter
5. Collector
6. No Connection



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## Absolute Maximum Ratings (T<sub>a</sub>=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	60	mA
	Peak forward current (t = 10μs)	I <sub>FM</sub>	1	A
	Reverse voltage	V <sub>R</sub>	6	V
	Power dissipation (T <sub>A</sub> = 25°C)	P <sub>D</sub>	100	mW
	Derating factor (above 100°C)		3.8	mW/°C
Output	Collector-Emitter voltage	V <sub>CEO</sub>	80	V
	Collector-Base voltage* <sup>1</sup>	V <sub>CBO</sub>	80	V
	Collector current	I <sub>C</sub>	50	mA
	Emitter-Collector voltage	V <sub>ECO</sub>	7	V
	Power dissipation (T <sub>A</sub> = 25°C)	P <sub>C</sub>	150	mW
	Derating factor (above 100°C)		9.0	mW/°C
Total power dissipation		P <sub>tot</sub>	200	mW
Isolation voltage * <sup>2</sup>		V <sub>iso</sub>	5000	V <sub>rms</sub>
Operating temperature		T <sub>opr</sub>	-55~+110	°C
Storage temperature		T <sub>stg</sub>	-55~+125	°C
Soldering temperature * <sup>3</sup>		T <sub>sol</sub>	260	°C

### Notes

\*1 Only for CNY17-X series.

\*2 AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2 & 3 are shorted together, and pins 4, 5 & 6 are shorted together.

\*3 For 10 seconds.



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# CNY17-X Series CNY17F-X Series

## Electrical Characteristics ( $T_a=25^{\circ}\text{C}$ unless specified otherwise)

### Input

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Forward voltage	$V_F$	-	-	1.65	V	$I_F = 60\text{mA}$
Reverse current	$I_R$	-	-	10	$\mu\text{A}$	$V_R = 6\text{V}$
Input capacitance	$C_{in}$	-	18	-	pF	$V = 0, f = 1\text{MHz}$

### Output

Parameter	Symbol	Min.	Typ.*	Max.	Unit	Condition
Collector-Base dark current	CNY17-X only $I_{CBO}$	-	-	20	nA	$V_{CB} = 10\text{V}, I_F = 0\text{mA}$
Collector-Emitter dark current	$I_{CEO}$	-	-	50	nA	$V_{CE} = 10\text{V}, I_F = 0\text{mA}$
Collector-Emitter breakdown voltage	$BV_{CEO}$	80	-	-	V	$I_C = 1\text{mA}, I_F = 0\text{mA}$
Collector-Base breakdown voltage	CNY17-X only $BV_{CBO}$	80	-	-	V	$I_C = 0.1\text{mA}, I_F = 0\text{mA}$
Emitter-Collector breakdown voltage	$BV_{ECO}$	7	-	-	V	$I_E = 0.1\text{mA}, I_F = 0\text{mA}$
Collector-Emitter capacitance	$C_{CE}$	-	8	-	pF	$V_{CE} = 0\text{V}, f = 1\text{MHz}$

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



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# 6 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

# CNY17-X Series CNY17F-X Series

Transfer Characteristics ( $T_a=25^\circ\text{C}$  unless specified otherwise)

Parameter		Symbol	Min.	Typ.*	Max.	Unit	Condition
Current Transfer Ratio	CNY17-1 CNY17F-1	CTR	40	-	80	%	$I_F = 10\text{mA}, V_{CE} = 5\text{V}$
	CNY17-2 CNY17F-2		63	-	125		
	CNY17-3 CNY17F-3		100	-	200		
	CNY17-4 CNY17F-4		160	-	320		
Current Transfer Ratio	CNY17-1 CNY17F-1	CTR	13	-	-	%	$I_F = 1\text{mA}, V_{CE} = 5\text{V}$
	CNY17-2 CNY17F-2		22	-	-		
	CNY17-3 CNY17F-3		34	-	-		
	CNY17-4 CNY17F-4		56	-	-		
Collector-Emitter saturation voltage		$V_{CE(sat)}$	-	-	0.3	V	$I_F = 10\text{mA}, I_C = 2.5\text{mA}$
Isolation resistance		$R_{IO}$	$10^{11}$	-	-	$\Omega$	$V_{IO} = 500\text{Vdc}$
Input-output capacitance		$C_{IO}$	-	0.5	-	pF	$V_{IO} = 0, f = 1\text{MHz}$
Turn-on time		$T_{on}$	-	10	12	$\mu\text{s}$	$V_{CC} = 10\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$ See Fig. 11
Turn-off time		$T_{off}$	-	9	12		
Rise time		$T_r$	-	6	10		
Fall time		$T_f$	-	8	10		
Rise time		$T_r$	-	2	10		$V_{CC} = 5\text{V}, I_F = 10\text{mA}, R_L = 75\Omega$ , See Fig. 11
Fall time		$T_f$	-	3	10		

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

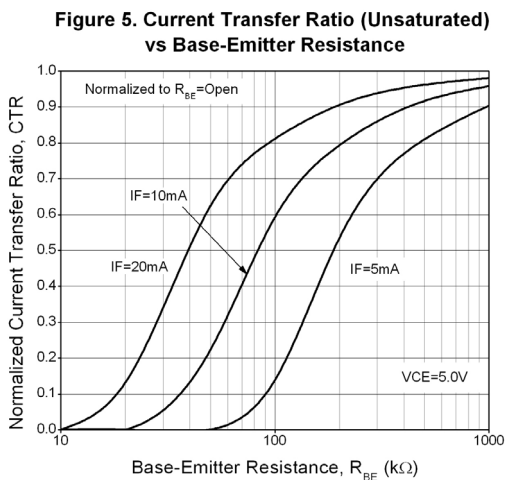
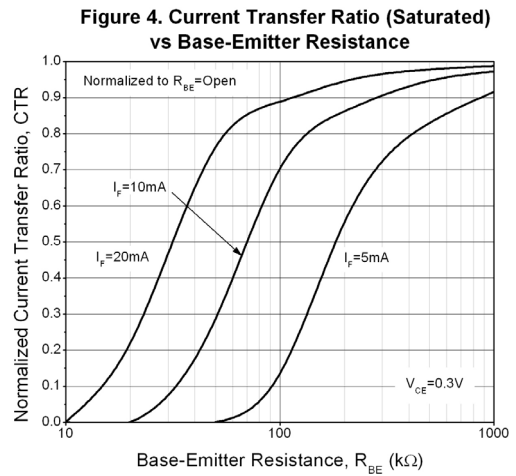
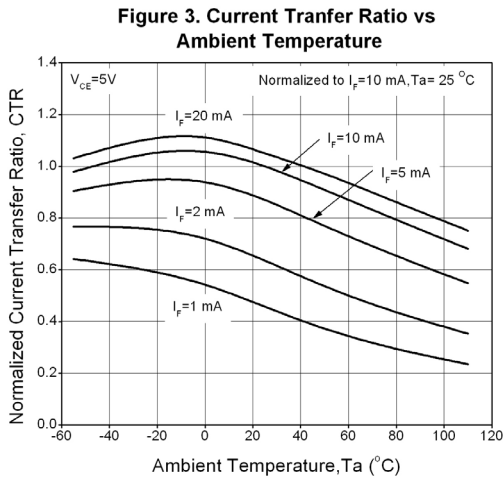
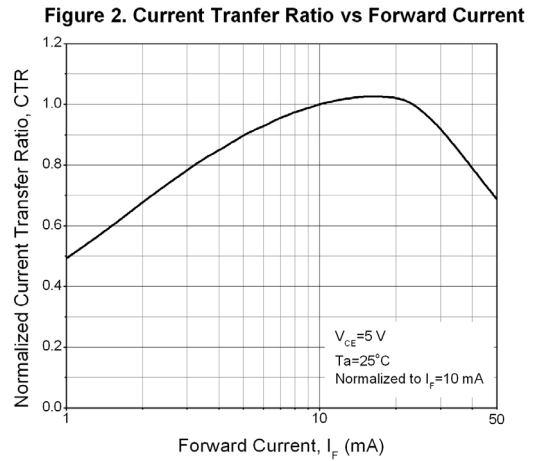


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# CNY17-X Series CNY17F-X Series

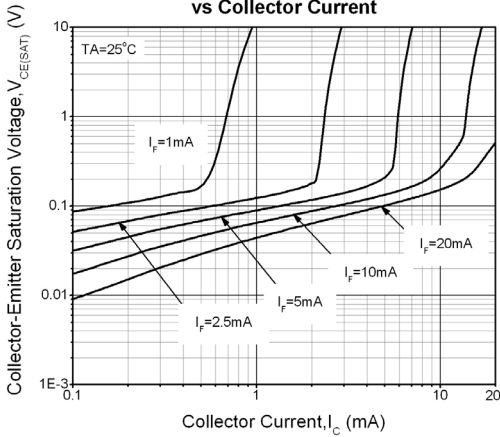
## Typical Performance Curves



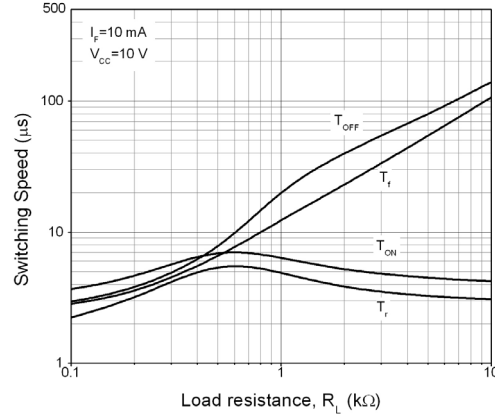
# 6 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

# CNY17-X Series CNY17F-X Series

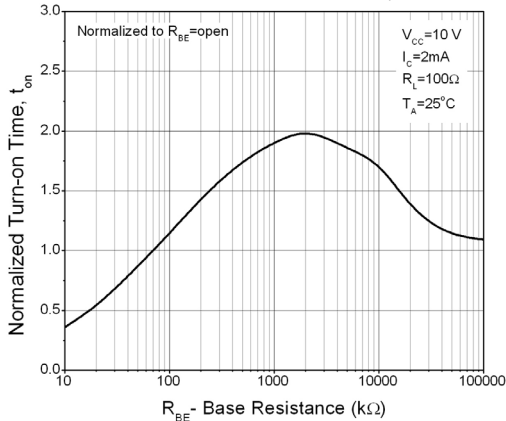
**Figure 7. Collector-Emitter Saturation Voltage vs Collector Current**



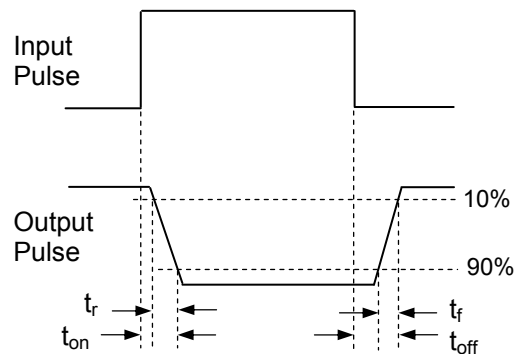
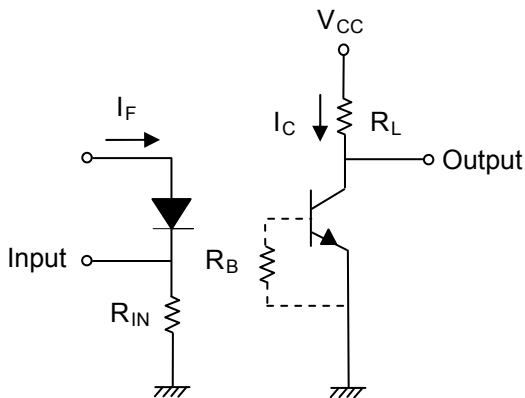
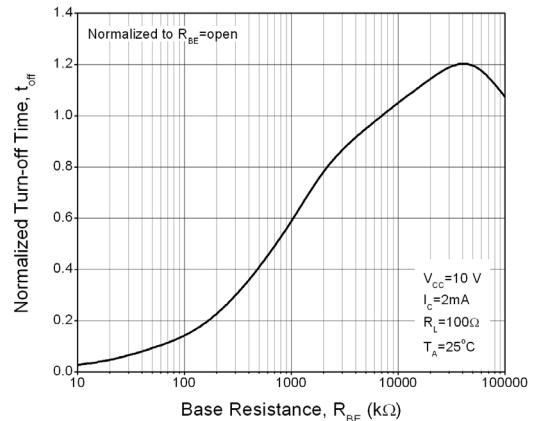
**Figure 8. Switching Time vs Load Resistance**



**Figure 9. Turn-on Time vs Base-Emitter Resistance**



**Figure 10. Turn-off Time vs Base-Emitter Resistance**



**Figure 11. Switching Time Test Circuit & Waveforms**



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# 6 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

**CNY17-X Series**  
**CNY17F-X Series**

## Order Information

### Part Number

**CNY17-XY(Z)-V**

or

**CNY17F-XY(Z)-V**

### Note

- X = Part no. (1, 2, 3 or 4)
- Y = Lead form option (S, S1, M or none)
- Z = Tape and reel option (TA, TB or none).
- V = VDE (optional)

Option	Description	Packing quantity
None	Standard DIP-6	65 units per tube
M	Wide lead bend (0.4 inch spacing)	65 units per tube
S (TA)	Surface mount lead form + TA tape & reel option	1000 units per reel
S (TB)	Surface mount lead form + TB tape & reel option	1000 units per reel
S1 (TA)	Surface mount lead form (low profile) + TA tape & reel option	1000 units per reel
S1 (TB)	Surface mount lead form (low profile) + TB tape & reel option	1000 units per reel



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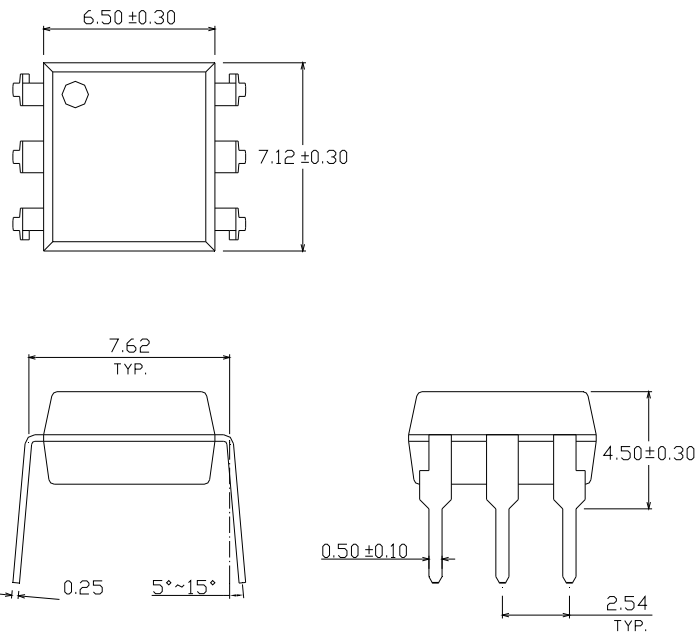
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## CNY17-X Series CNY17F-X Series

### Package Drawings

(Dimensions in mm)

#### Standard DIP Type



#### Option M Type







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# 6 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

## CNY17-X Series CNY17F-X Series

### Option S Type



### Option S1 Type





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# 6 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

## CNY17-X Series CNY17F-X Series

### Recommended pad layout for surface mount leadform



### Device Marking



### Notes

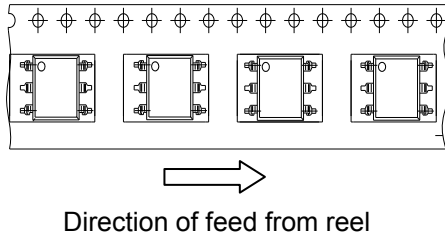
- EL denotes Everlight
- CNY17-X denotes Device Number (X: 1, 2, 3 or 4)
- Y denotes 1 digit Year code
- WW denotes 2 digit Week code
- V denotes VDE (optional)

# 6 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

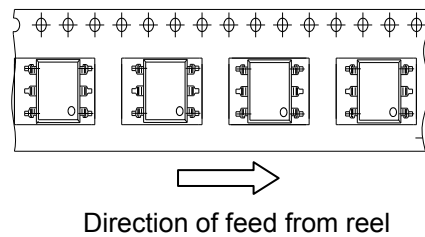
# CNY17-X Series CNY17F-X Series

## Tape & Reel Packing Specifications

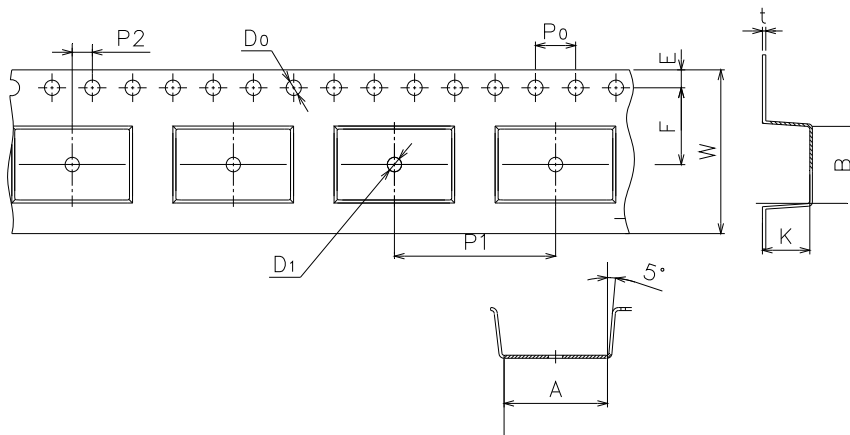
**Option TA**



**Option TB**



## Tape dimensions



Dimension No.	A	B	D <sub>0</sub>	D <sub>1</sub>	E	F
Dimension (mm)	10.4±0.1	7.52±0.1	1.5±0.1	1.5+0.1/-0	1.75±0.1	7.5±0.1

Dimension No.	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	t	W	K
Dimension (mm)	4.0±0.15	16.0±0.1	2.0±0.1	0.35±0.03	16.0±0.2	4.5±0.1

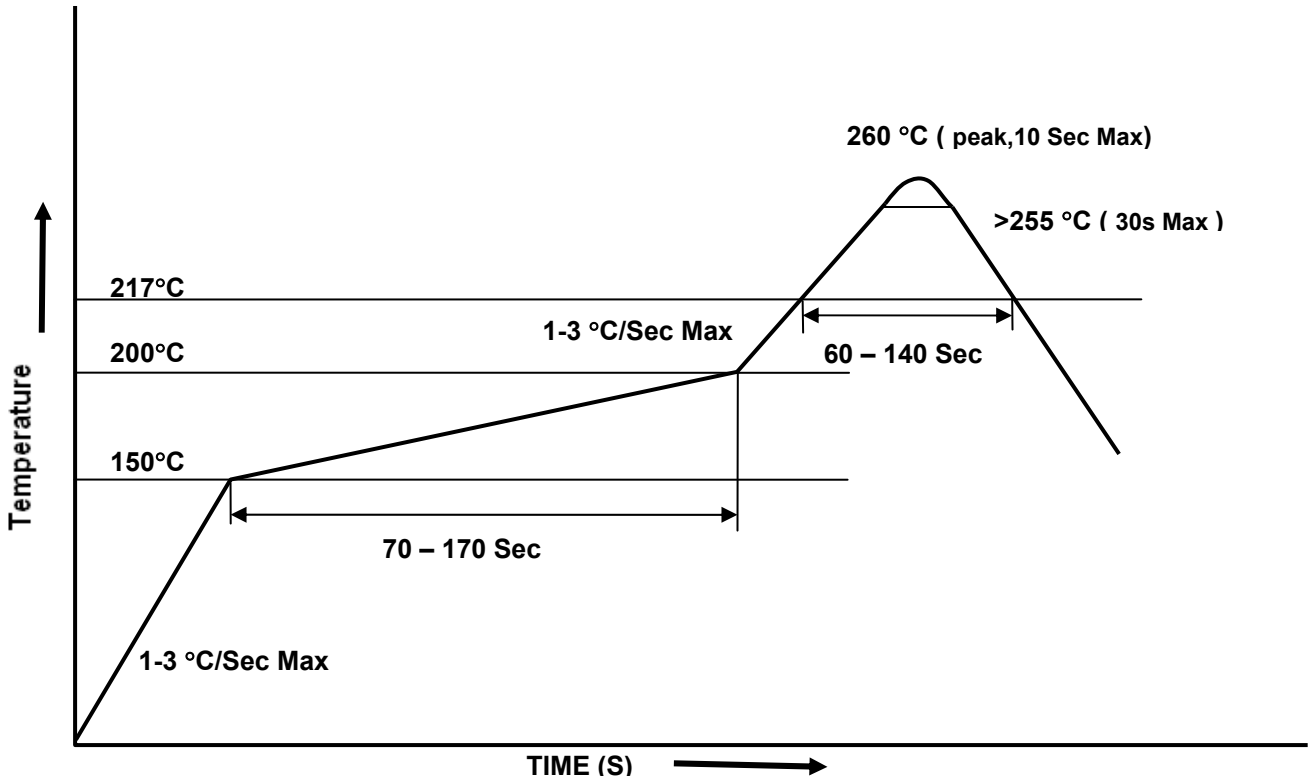


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## CNY17-X Series CNY17F-X Series

### Solder Reflow Temperature Profile





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## 6 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER

**CNY17-X Series**  
**CNY17F-X Series**

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