



CT Micro

## CNY17-X, CNY17F-X 6Pin Photo Transistor Coupler

### Features

- High isolation 5000 VRMS
- CTR flexibility available see order information
- DC input with transistor output
- Temperature range - 55 °C to 110 °C

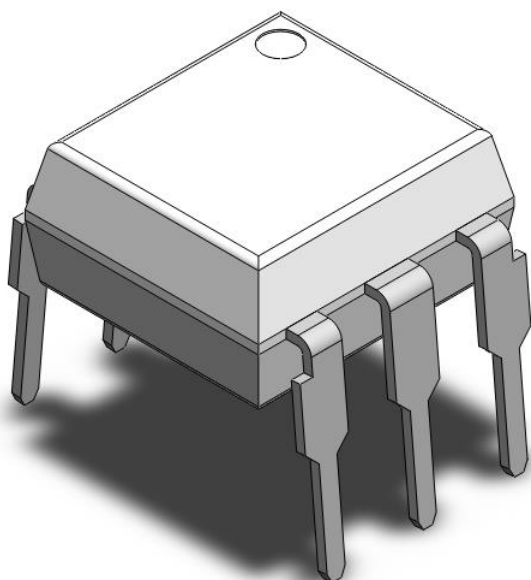
### Applications

- Switch mode power supplies
- Computer peripheral interface
- Microprocessor system interface

### Description

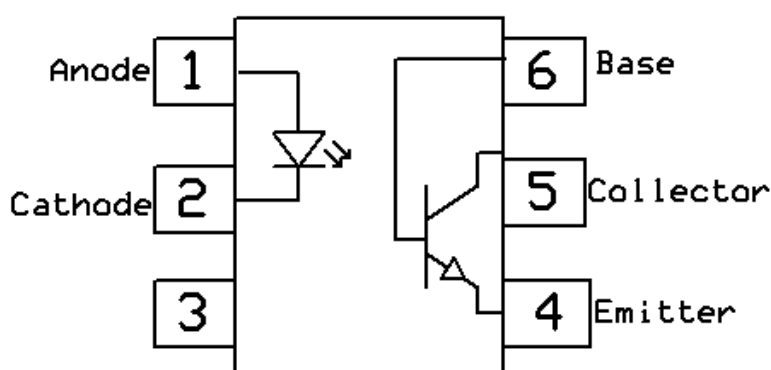
The CNY17-X and CNY17F-X series consists of a photo transistor optically coupled to a gallium arsenide Infrared-emitting diode in a 6-lead DIP package with bending options.

### Package Outline



*Note: Different bending options available. See package dimension.*

### Schematic



*Note: CNY17-F without Base Connection*



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## CNY17-X, CNY17F-X 6Pin Photo Transistor Coupler

### Absolute Maximum Rating at 25°C

Symbol	Parameters	Ratings	Units	Notes
V <sub>ISO</sub>	Isolation voltage	5000	V <sub>RMS</sub>	
T <sub>OPR</sub>	Operating temperature	-55 ~ +110	°C	
T <sub>STG</sub>	Storage temperature	-55 ~ +125	°C	
T <sub>SOL</sub>	Soldering temperature	260	°C	
<b>Emitter</b>				
I <sub>F</sub>	Forward current	60	mA	
I <sub>F(TRANS)</sub>	Peak transient current (≤1μs P.W,300pps)	1	A	
V <sub>R</sub>	Reverse voltage	6	V	
P <sub>D</sub>	Power dissipation	100	mW	
<b>Detector</b>				
P <sub>D</sub>	Power dissipation	150	mW	
B <sub>VCEO</sub>	Collector-Emitter Breakdown Voltage	80	V	
B <sub>VCBO</sub>	Collector-Base Breakdown Voltage	80	V	
B <sub>VECO</sub>	Emitter-Collector Breakdown Voltage	7	V	
B <sub>VEBO</sub>	Emitter-Base Breakdown Voltage	7	V	



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# CNY17-X, CNY17F-X

## 6Pin Photo Transistor Coupler

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

#### Emitter Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$V_F$	Forward voltage	$I_F = 10\text{mA}$		1.2	1.4	V	
$I_R$	Reverse Current	$V_R = 6\text{V}$	-	-	5	$\mu\text{A}$	
$C_{IN}$	Input Capacitance	$f = 1\text{MHz}$	-	20	-	pF	

#### Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$B_{V_{CEO}}$	Collector-Emitter Breakdown	$I_C = 100\mu\text{A}$	80	-	-	V	
$B_{V_{ECO}}$	Emitter-Collector Breakdown	$I_E = 1\text{mA}$	7	-	-	V	
$B_{V_{CBO}}$	Collector-Base Breakdown	CNY17-X $I_C = 100\mu\text{A}$	80	-	-	V	
$B_{V_{EBO}}$	Emitter-Base Breakdown		7	-	-	V	
$I_{CEO}$	Collector-Emitter Dark Current	$V_{CE} = 10\text{V}, I_F = 0\text{mA}$	-	-	45	nA	
$I_{CBO}$	Collector-Base Dark Current	CNY17-X $V_{CB} = 10\text{V}, I_F = 0\text{mA}$	-	-	20	nA	

#### Transfer Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
CTR	Current Transfer Ratio	CNY17-1,CNY17F-1	40	-	80	%	
		CNY17-2,CNY17F-2	63	-	125		
		CNY17-3,CNY17F-3	100	-	200		
		CNY17-4,CNY17F-4	160	-	320		
		CNY17-1,CNY17F-1	13	-	-		
		CNY17-2,CNY17F-2	22	-	-		
		CNY17-3,CNY17F-3	34	-	-		
		CNY17-4,CNY17F-4	56	-	-		
$V_{CE(SAT)}$	Collector- Emitter Saturation Voltage	$I_F = 10\text{mA}, I_C = 2.5\text{mA}$	-	-	0.3	V	
$R_{IO}$	Isolation Resistance	$V_{IO} = 500\text{V}_{DC}$	$1 \times 10^{11}$			$\Omega$	
$C_{IO}$	Isolation Capacitance	$f = 1\text{MHz}$		0.25		pF	



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## CNY17-X, CNY17F-X

### 6Pin Photo Transistor Coupler

#### Switching Characteristics

<i>Symbol</i>	<i>Parameters</i>	<i>Test Conditions</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Units</i>	<i>Notes</i>
$T_{ON}$	Turn On Time	$I_C = 2mA, V_{CE} = 10V, R_L = 100\Omega$	-	9.5	11.5	$\mu s$	
$t_r$	Rise Time		-	5.6	9.8		
$T_{OFF}$	Turn Off Time		-	9	11.5	$\mu s$	
$t_f$	Fall Time		-	8	9.8		



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## 6Pin Photo Transistor Coupler

### Typical Characteristic Curves

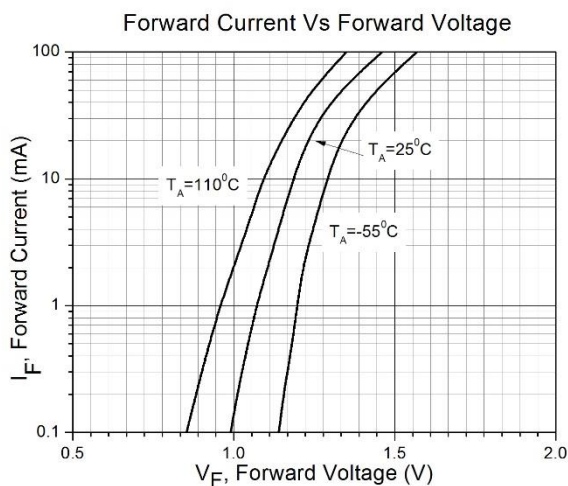


Figure 1

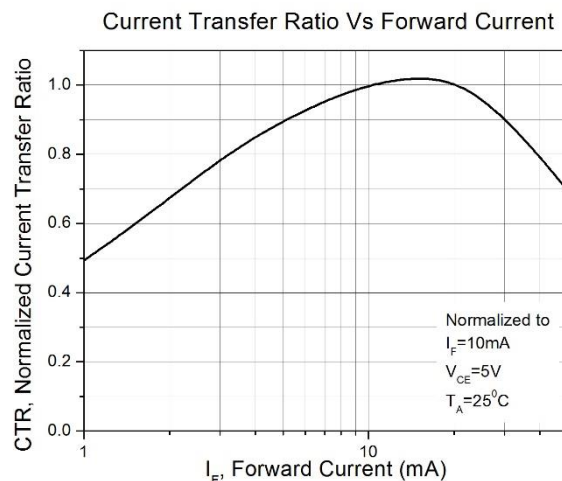


Figure 2

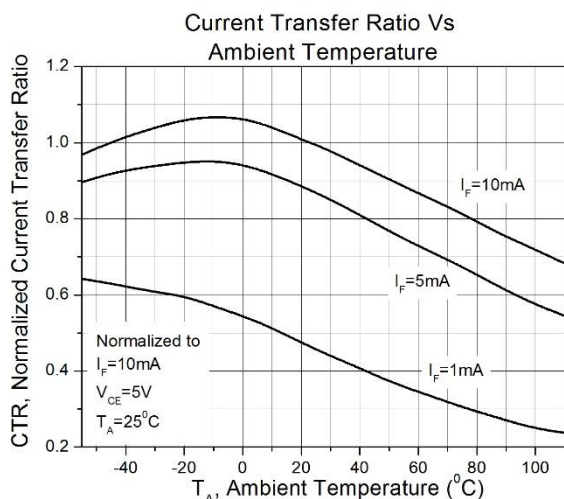


Figure 3

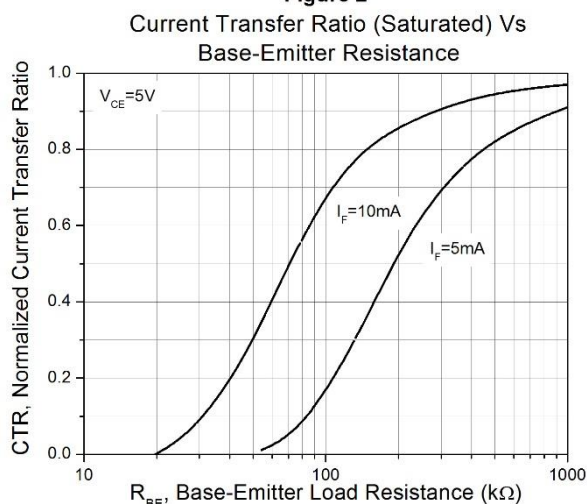


Figure 4

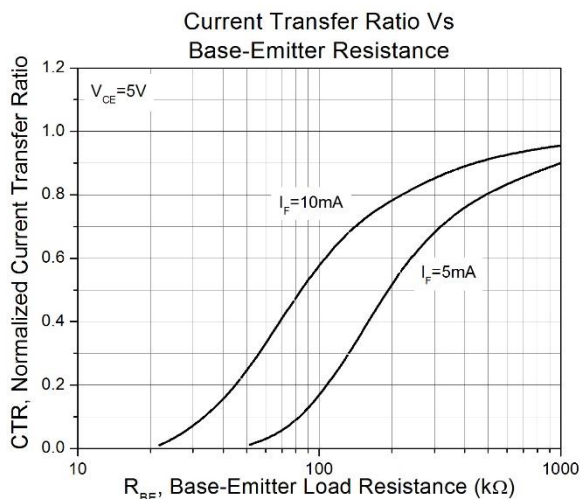


Figure 5

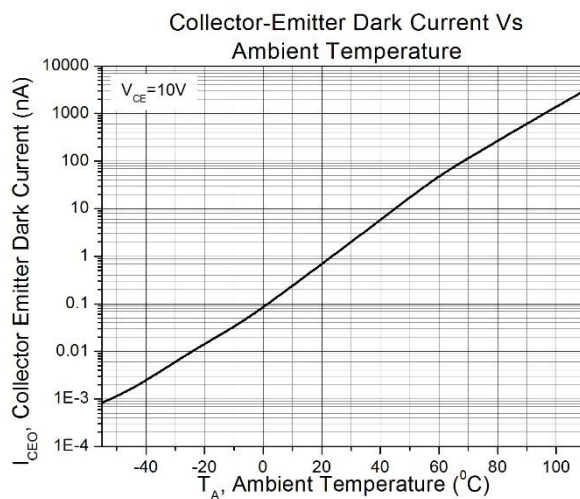


Figure 6



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## 6Pin Photo Transistor Coupler

### Typical Characteristic Curves

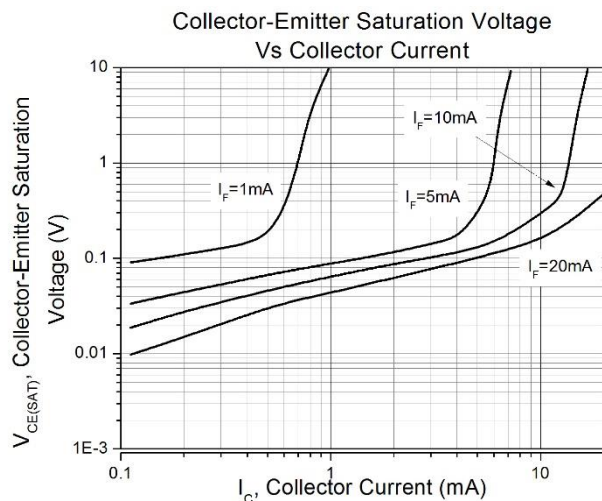


Figure 7

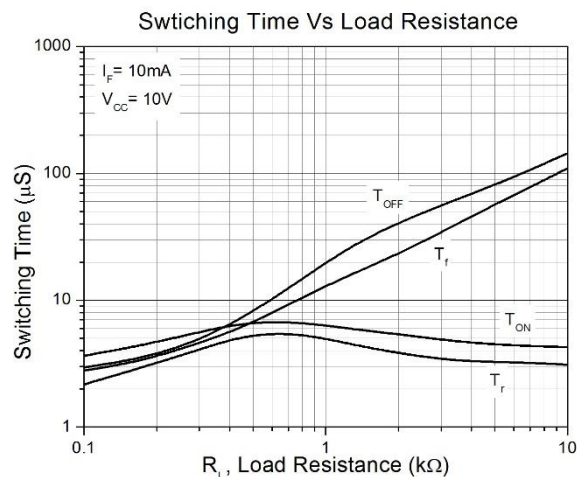


Figure 8

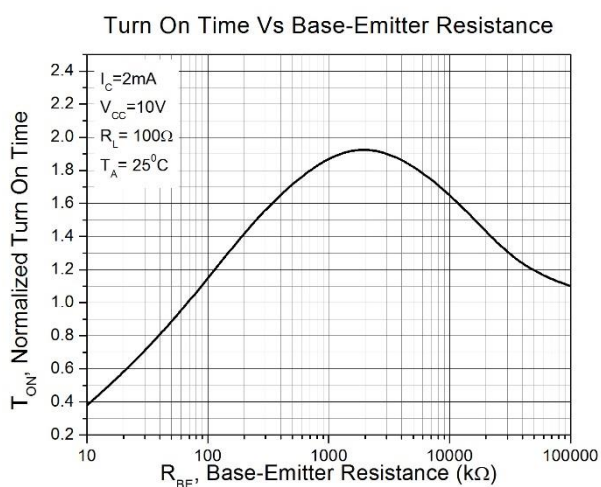


Figure 9

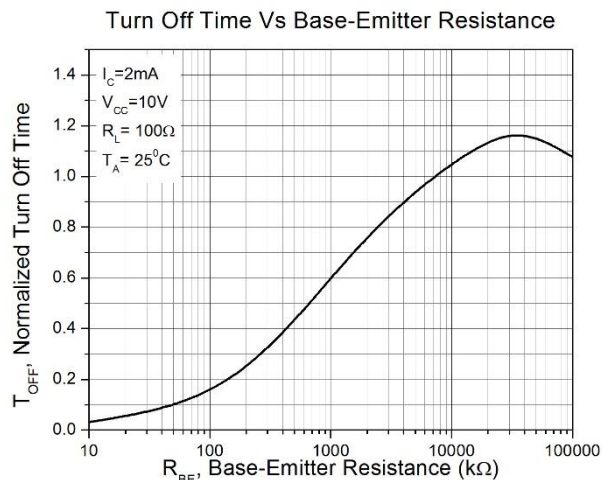


Figure 10



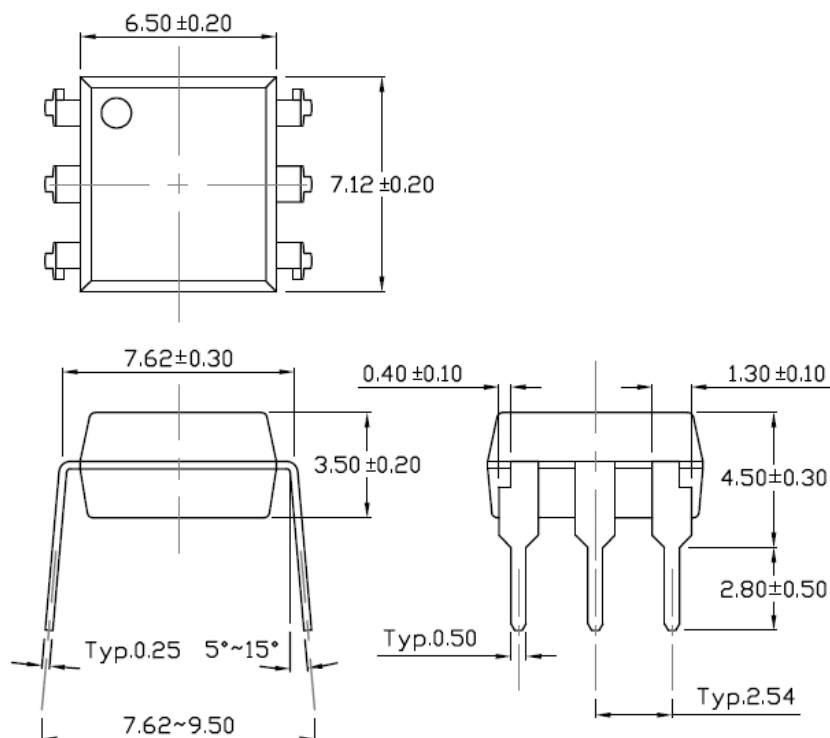
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# CNY17-X, CNY17F-X

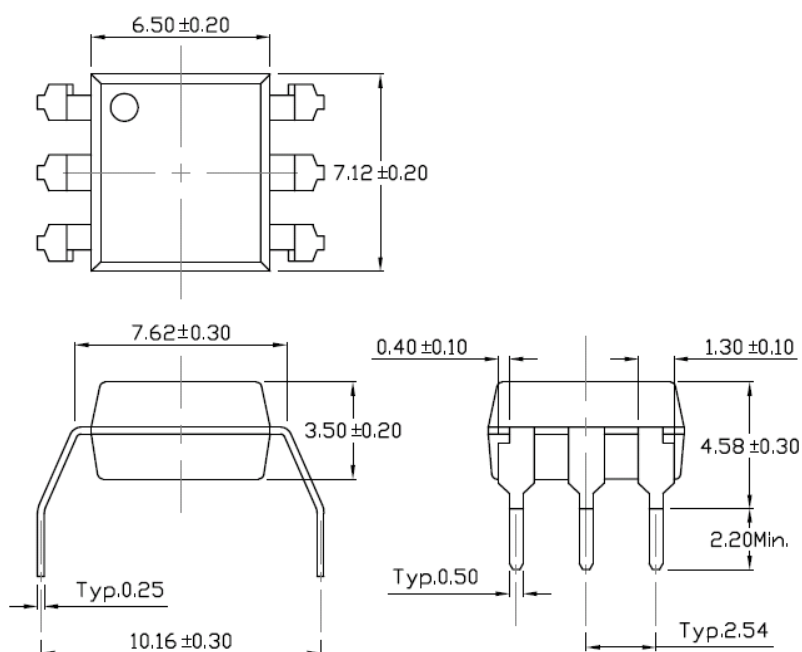
## 6Pin Photo Transistor Coupler

### Package Dimension *Dimensions in mm unless otherwise stated*

#### Standard DIP – Through Hole



#### Wide Lead Forming – Through Hole



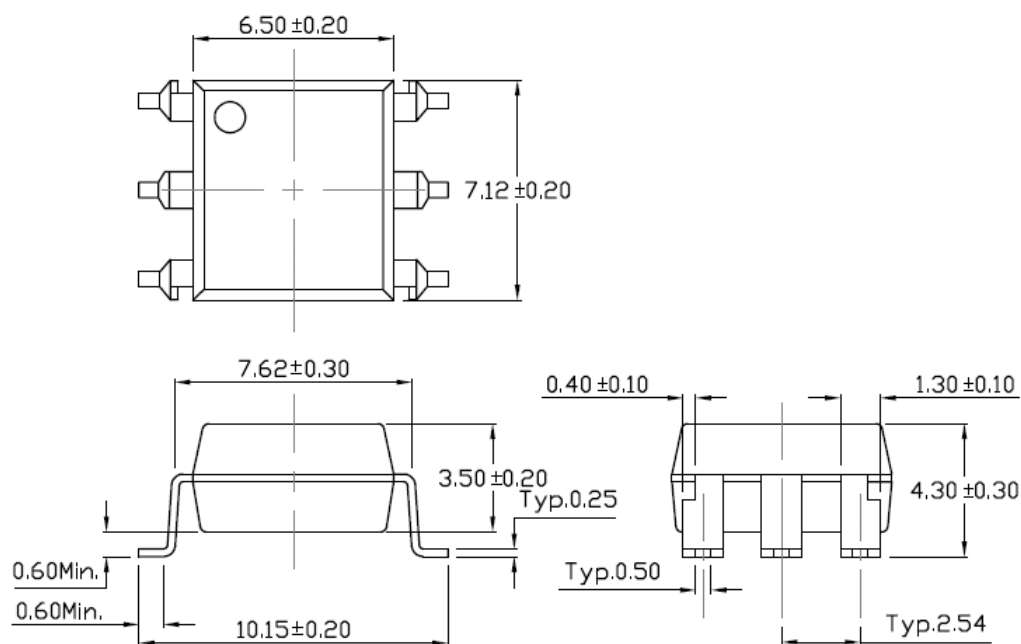


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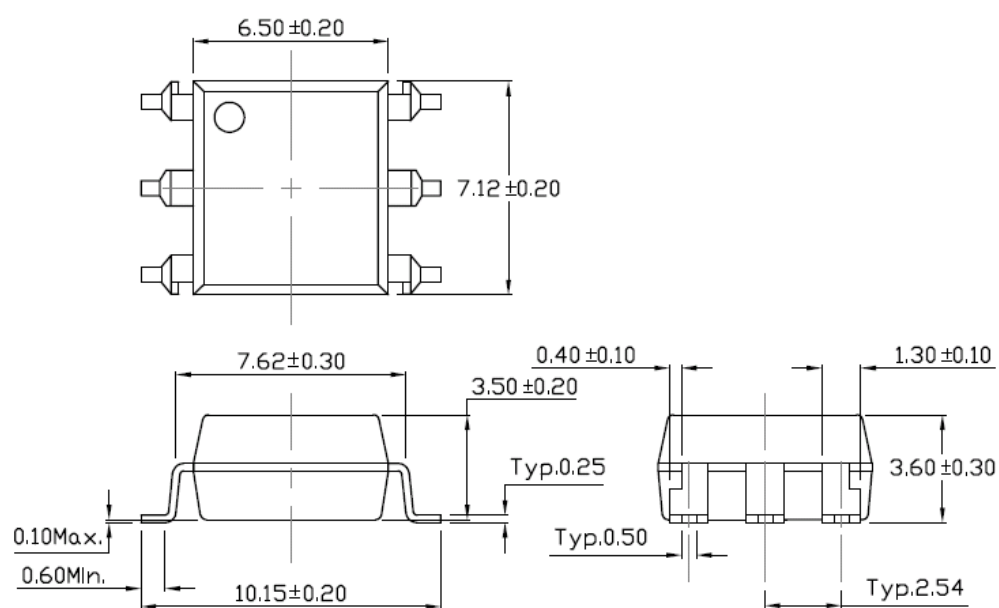
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### Surface Mount Forming



### Surface Mount Forming (Low Profile)



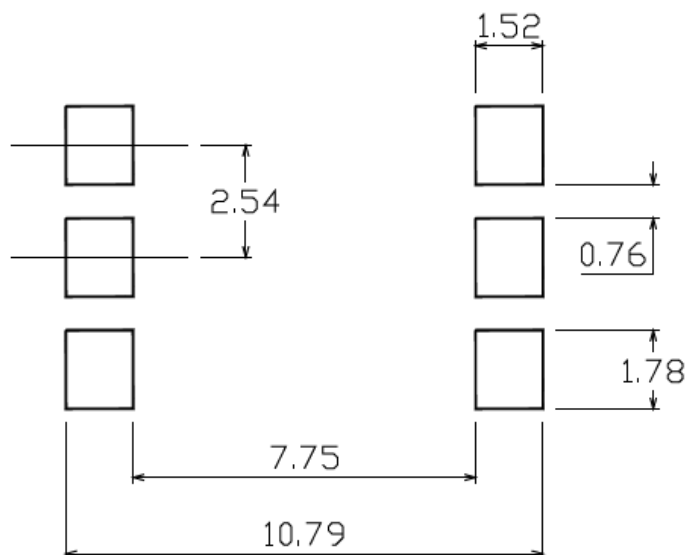




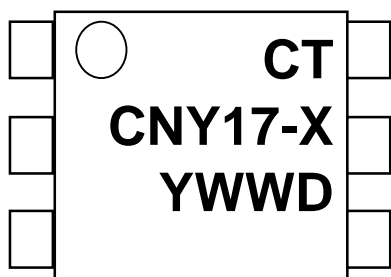
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## CNY17-X, CNY17F-X 6Pin Photo Transistor Coupler

### Recommended Solder Mask *Dimensions in mm unless otherwise stated*



### Marking Information



#### Note:

CT : Logo  
CNY17-X : Part Number  
Y : Fiscal Year  
WW : Work Week  
D : Manufacturing Code



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## CNY17-X, CNY17F-X 6Pin Photo Transistor Coupler

### Ordering Information

CNY17-X(Y)(Z)-G, CNY17F-X(Y)(Z)-G

X = (1,2,3,4)

Y = Lead form option (S, SL, M or none)

Z = Tape and reel option (TA, TB or none)

G= Material option (G: Green, None: Non-green)

<b>Option</b>	<b>Description</b>	<b>Quantity</b>
None	Standard 6 Pin Dip	50Units/Tube
M	Wide Lead Forming	50Units/Tube
S(TA)	Surface Mount Lead Forming – With Option A Taping	1000 Units/Reel
S(TB)	Surface Mount Lead Forming – With Option B Taping	1000 Units/Reel
SL(TA)	Surface Mount Lead Forming(Low Profile) – With Option A Taping	1000 Units/Reel
SL(TB)	Surface Mount Lead Forming(Low Profile) – With Option B Taping	1000 Units/Reel

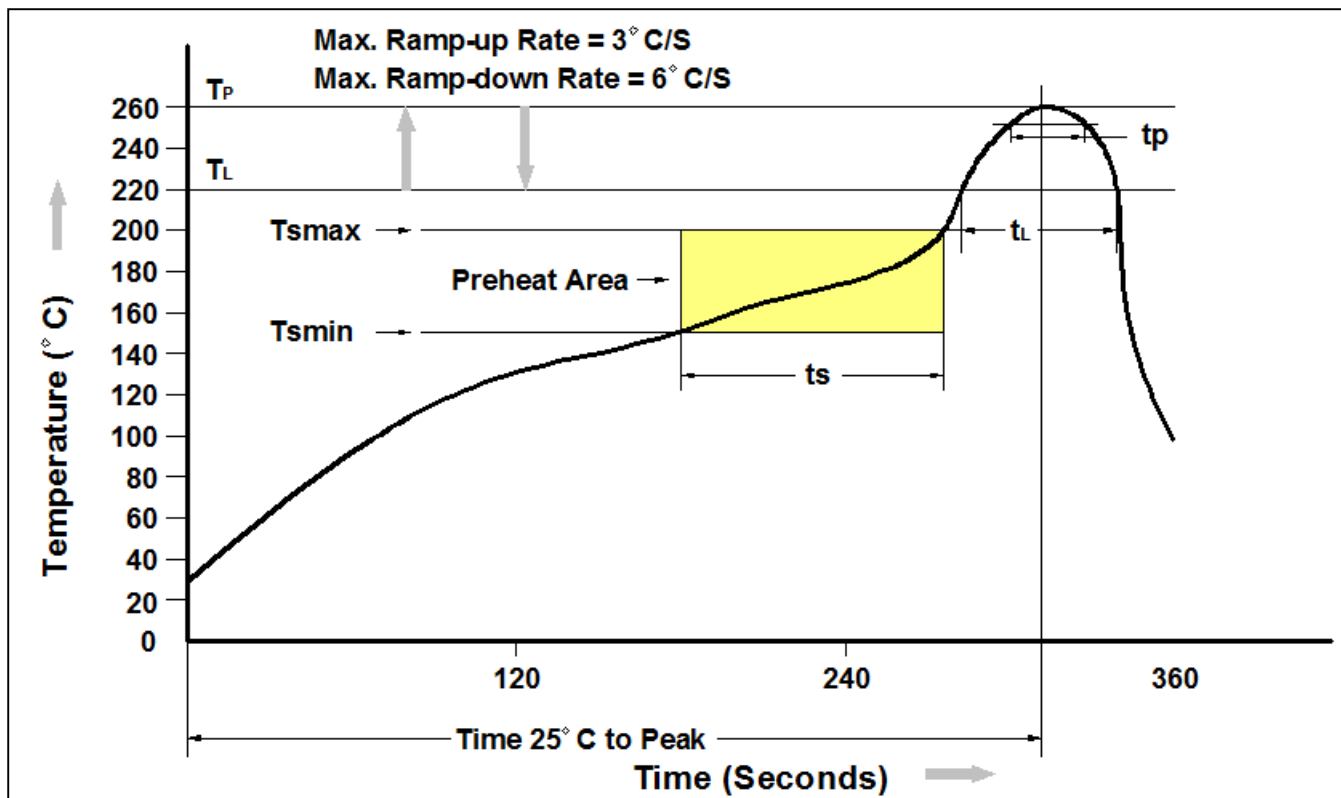


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## 6Pin Photo Transistor Coupler

### Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	150°C
Temperature Max. (Tsmax)	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds
Ramp-up Rate (tL to tP)	3°C/second max.
Liquidous Temperature (TL)	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (tP) within 5°C of 260°C	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.



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