



CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

Features

- High isolation 5000 VRMS
- CTR flexibility available see order information
- DC input with transistor output
- Operating temperature range - 55 °C to 110 °C
- Regulatory Approvals
 - UL - UL1577 (E364000)
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC – GB4943.1, GB8898
 - IEC60065, IEC60950

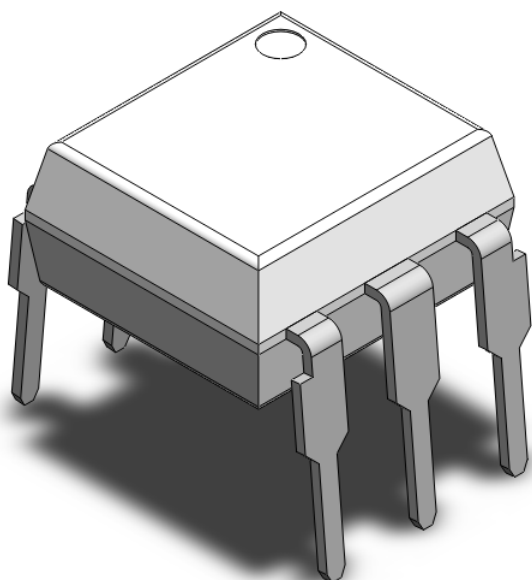
Applications

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

Description

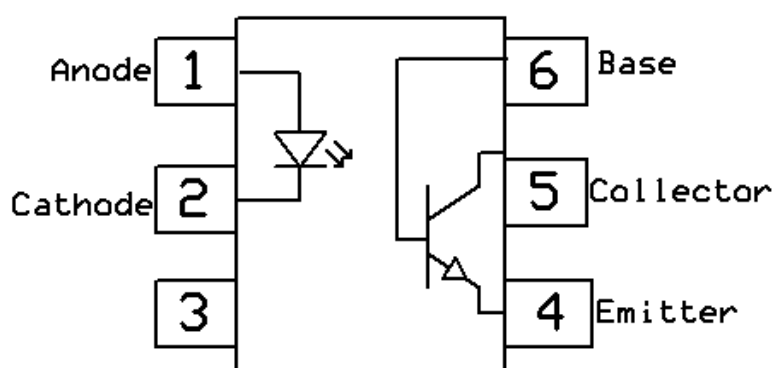
The CNY17 and CNY17F series consists of a photo transistor optically coupled to a gallium arsenide Infrared-emitting diode in a 6-lead DIP package with different lead forming options.

Package Outline



Note: Different lead forming options available. See package dimension.

Schematic



Note: CNY17F without Base Connection



CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

Absolute Maximum Rating at 25°C

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



CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

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	$I_F = 10\text{mA}$		1.24	1.4	V	
I_R	Reverse Current	$V_R = 6\text{V}$	-	-	5	μA	
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	$I_C = 0.1\text{mA}$	80	-	-	V	
$B_{V_{ECO}}$	Emitter-Collector Breakdown	$I_E = 0.1\text{mA}$	7	-	-	V	
$B_{V_{CBO}}$	Collector-Base Breakdown	$I_C = 0.1\text{mA}$	80	-	-	V	
$B_{V_{EBO}}$	Emitter-Base Breakdown						
I_{CEO}	Collector-Emitter Dark Current	$V_{CE} = 10\text{V}, I_F = 0\text{mA}$	-	-	50	nA	
I_{CBO}	Collector-Base Dark Current	$V_{CB} = 10\text{V}, I_F = 0\text{mA}$	-	-	20	nA	

Transfer Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
CTR	Current Transfer Ratio	$I_F = 10\text{mA}, V_{CE} = 5\text{V}$	40	-	80	%	
			63	-	125		
			100	-	200		
			160	-	320		
		$I_F = 1\text{mA}, V_{CE} = 5\text{V}$	13	-	-		
			22	-	-		
			34	-	-		
			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	$V_{IO} = 500\text{V}_{DC}$	1×10^{11}	-	-	Ω	
C_{IO}	Isolation Capacitance	$f = 1\text{MHz}$	-	0.25	-	pF	



CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

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	$I_c = 2mA, V_{CC} = 10V, R_L = 100$	-	4.3	11.5	μs	
t_r	Rise Time		-	9.8	9.8		
T_{OFF}	Turn Off Time		-	3.9	11.5	μs	
t_f	Fall Time		-	6.9	9.8		



CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

Typical Characteristic Curves

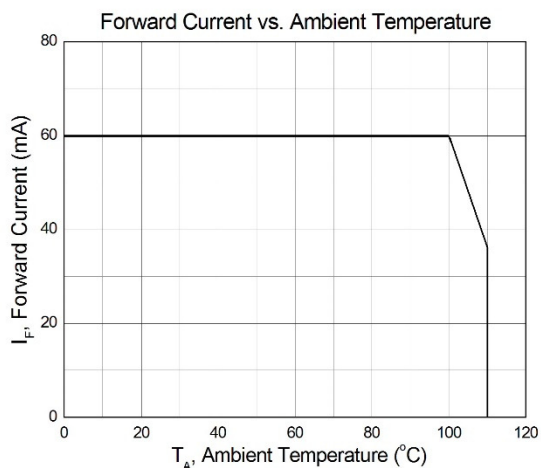


Figure 1

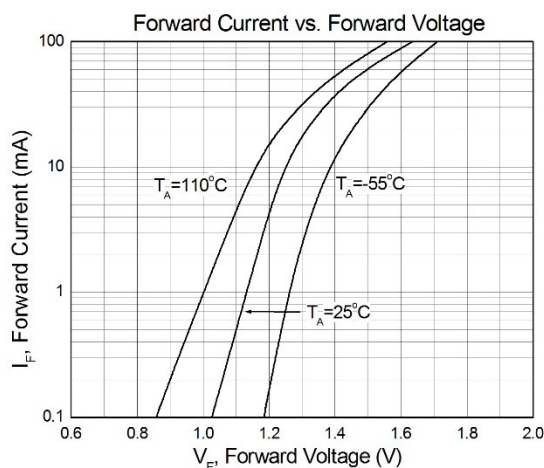


Figure 2

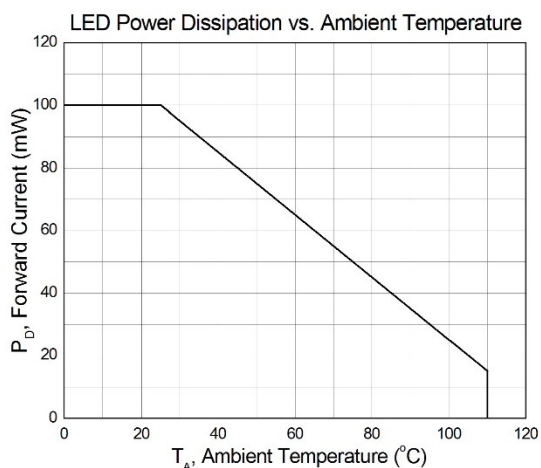


Figure 3

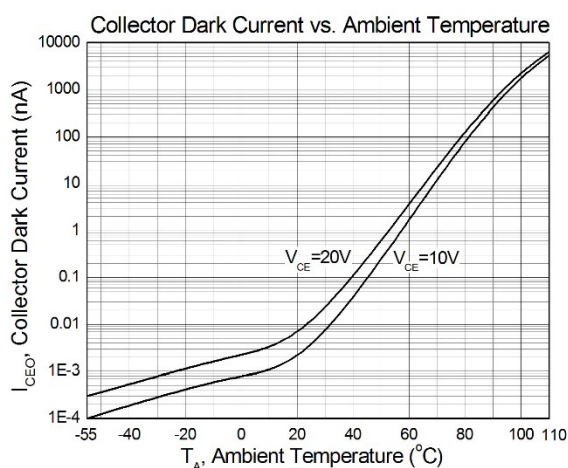


Figure 4

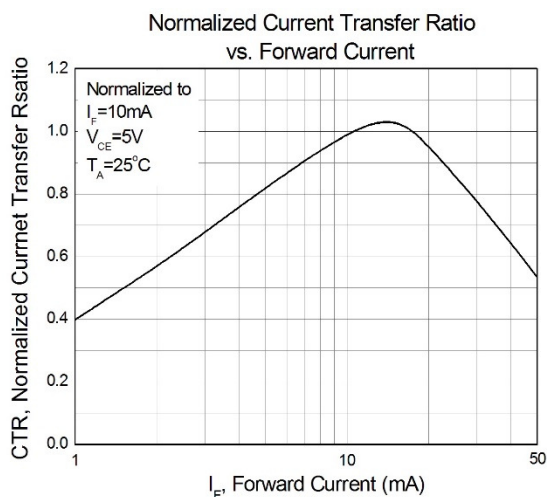


Figure 5

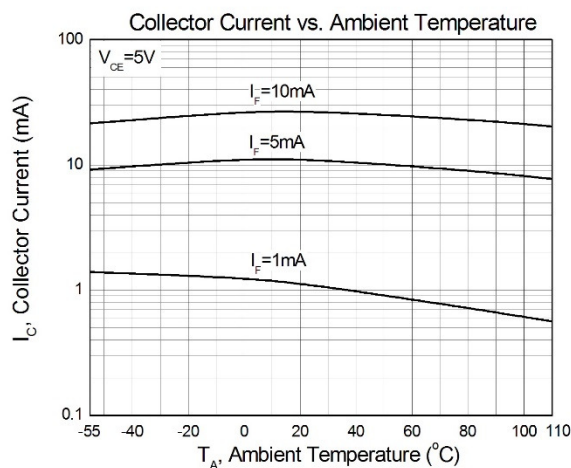


Figure 6



CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

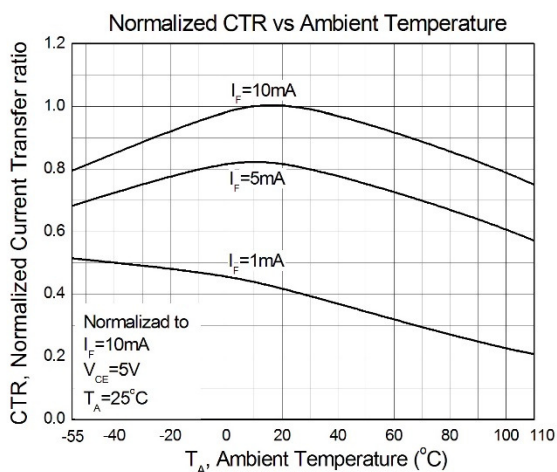


Figure 7

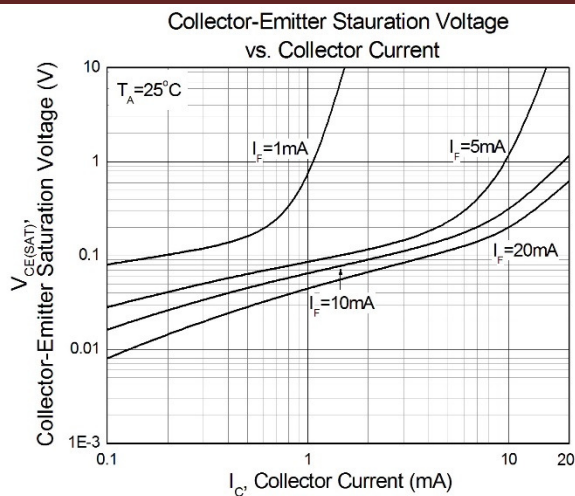


Figure 8

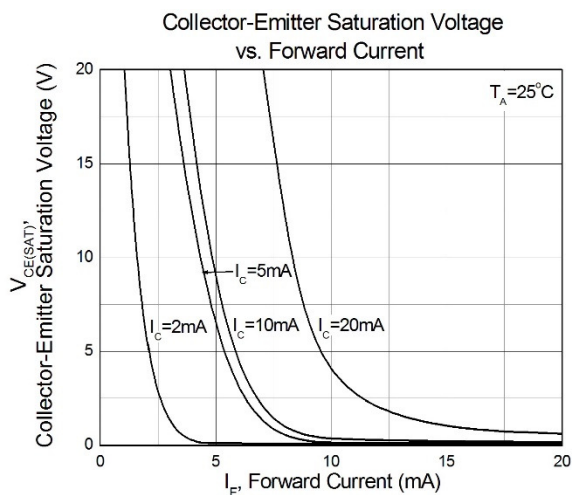


Figure 9

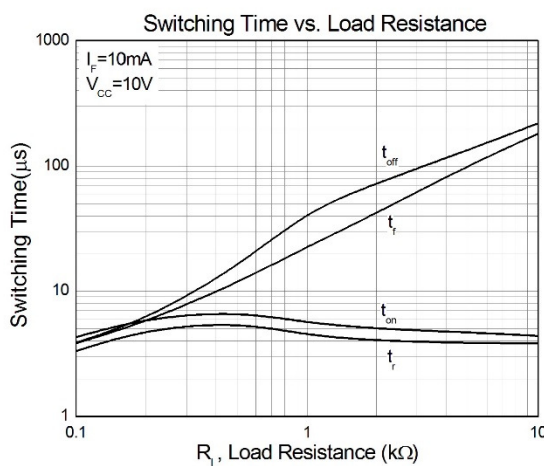


Figure 10

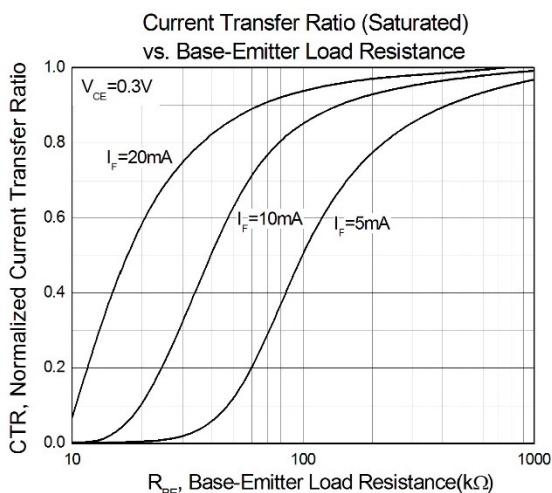


Figure 11 (For CNY17 Series Only)

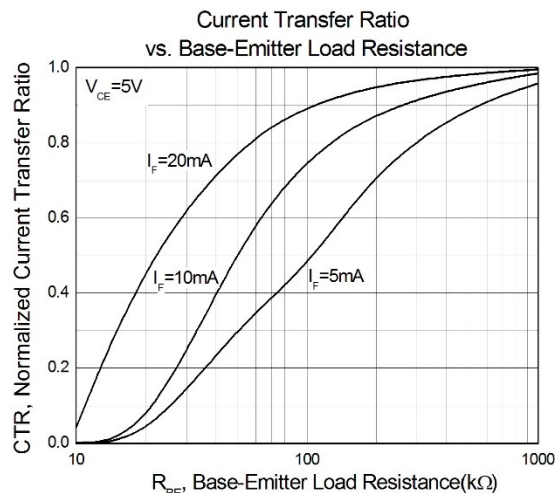


Figure 12 (For CNY17 Series Only)



CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

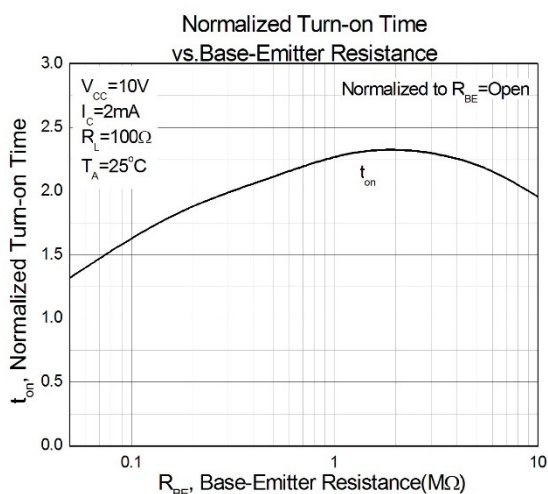


Figure 13(For CNY17 Series Only)

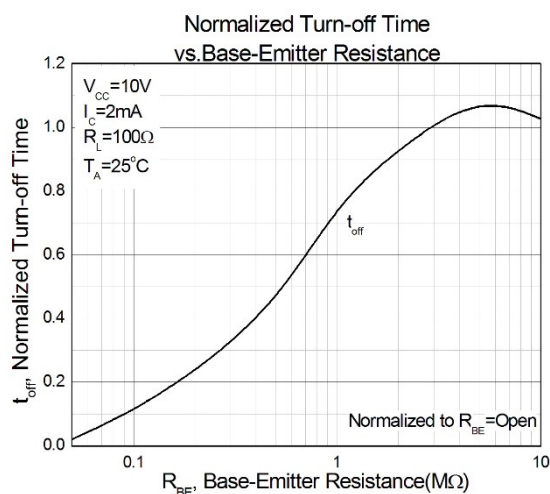


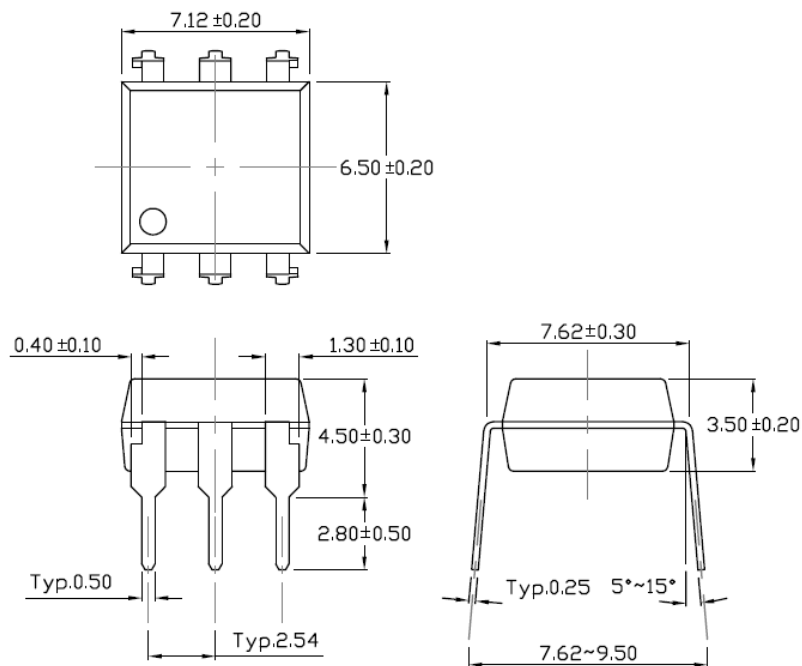
Figure 14(For CNY17 Series Only)



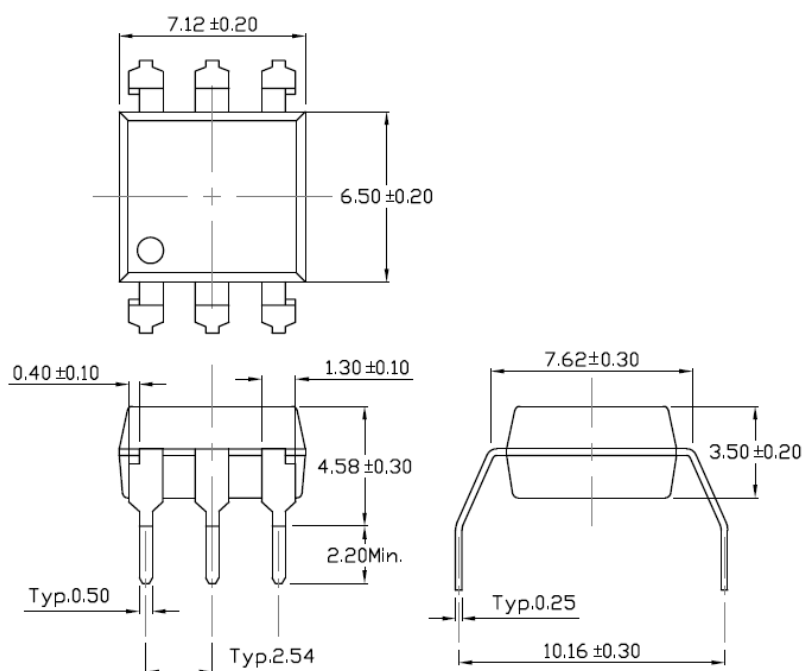
CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

Package Dimension *Dimensions in mm unless otherwise stated*

Standard DIP – Through Hole



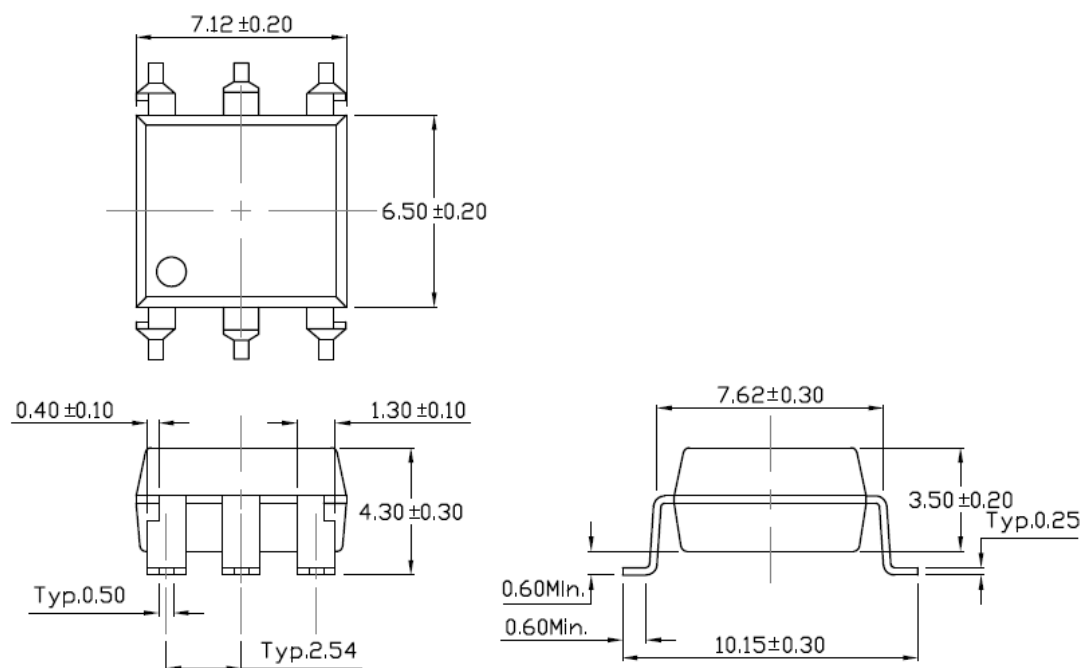
Wide Lead Forming – Through Hole (M Type)



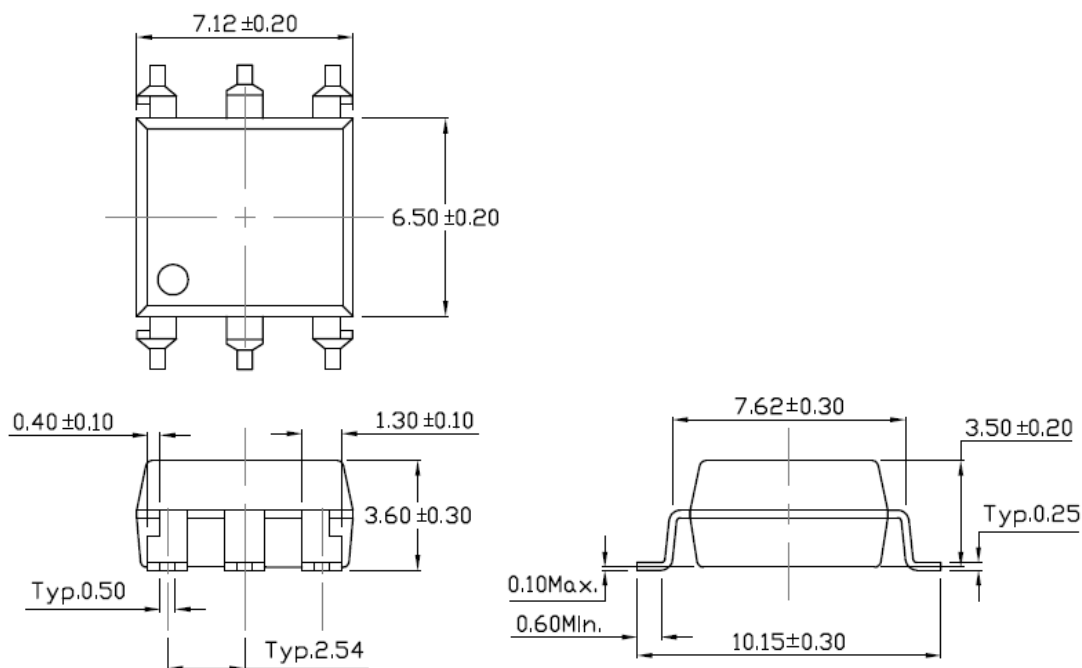


CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

Surface Mount Forming (S Type)



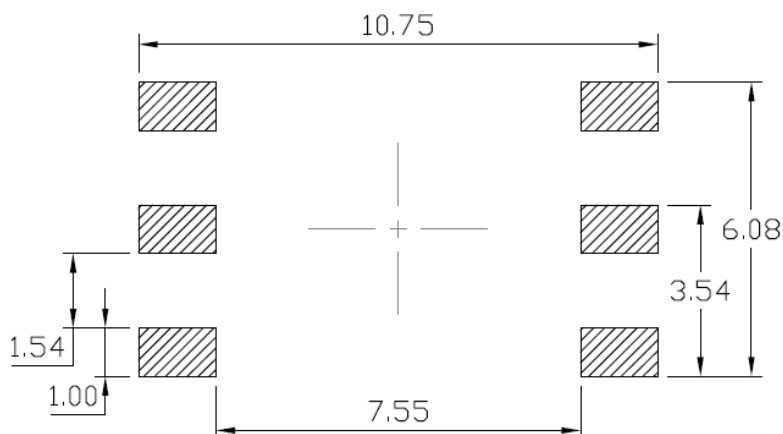
Surface Mount Forming (Low Profile) (SL Type)



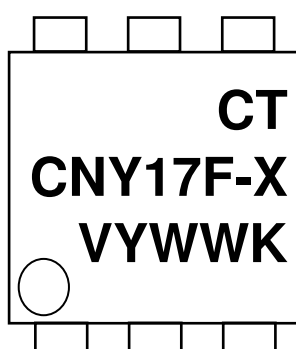
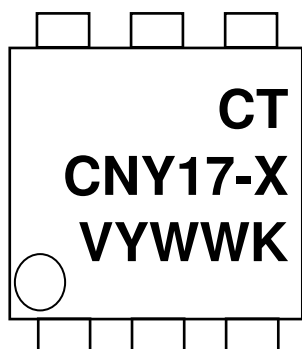


CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

Recommended Solder Mask Dimensions in mm unless otherwise stated



Marking Information



Note:

CT : Denotes "CT Micro"
CNY17-X : Part Number
X : CTR Rank
V : VDE Option
Y : Fiscal Year
WW : Work Week
K : Manufacturing Code



CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

Ordering Information

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

X = Part No. (1,2,3,4)

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

Z = Tape and reel option (T1, T2 or none)

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

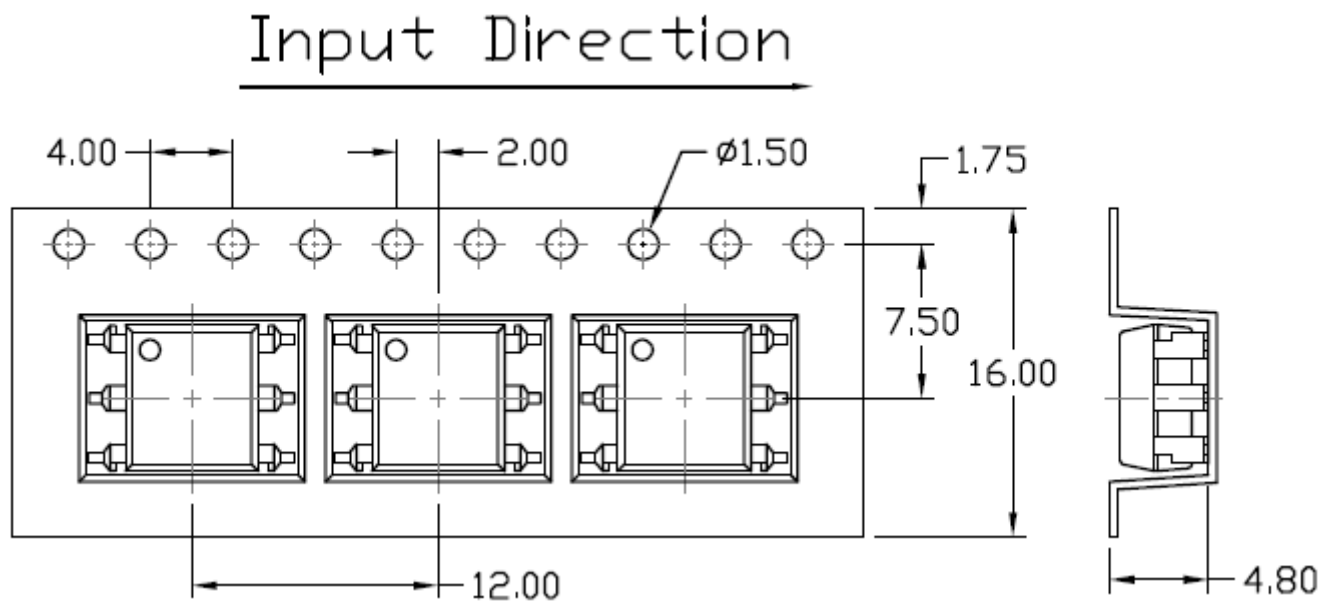
Option	Description	Quantity
None	Standard 6 Pin Dip	50Units/Tube
M	Gullwing (400mil) Lead Forming	50Units/Tube
S(T1)	Surface Mount Lead Forming – With Option 1 Taping	1000 Units/Reel
S(T2)	Surface Mount Lead Forming – With Option 2 Taping	1000 Units/Reel
SL(T1)	Surface Mount (Low Profile) Lead Forming– With Option 1 Taping	1000 Units/Reel
SL(T2)	Surface Mount (Low Profile) Lead Forming – With Option 2 Taping	1000 Units/Reel



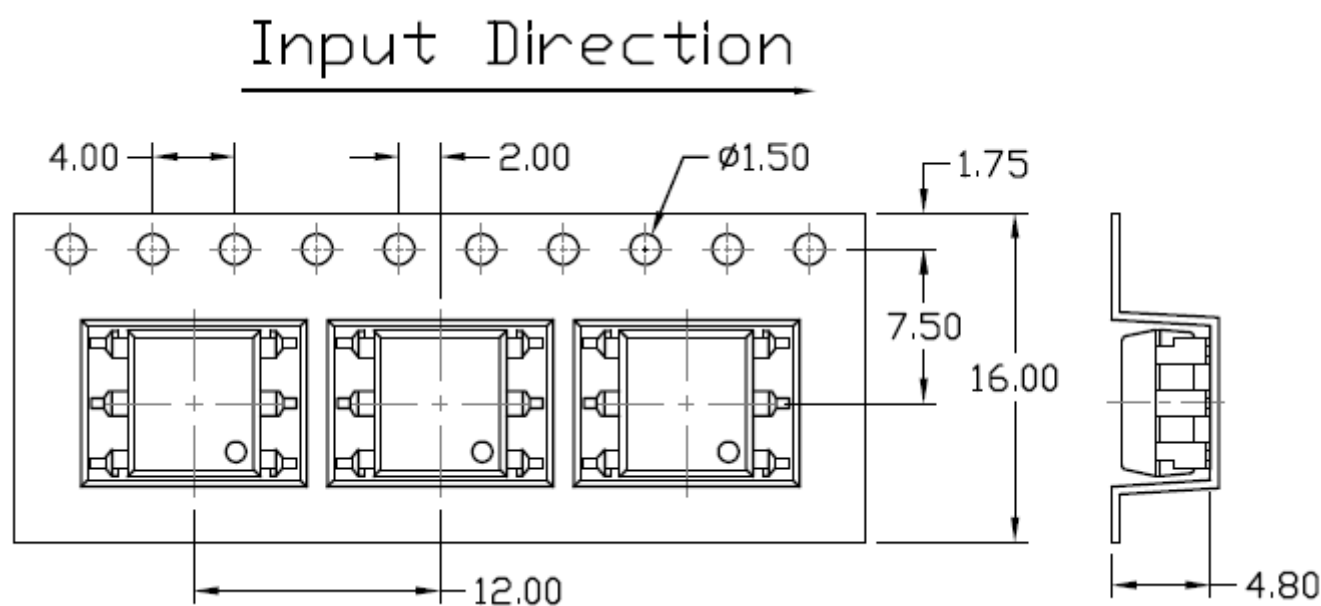
CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

Option S(T1) & SL(T1)



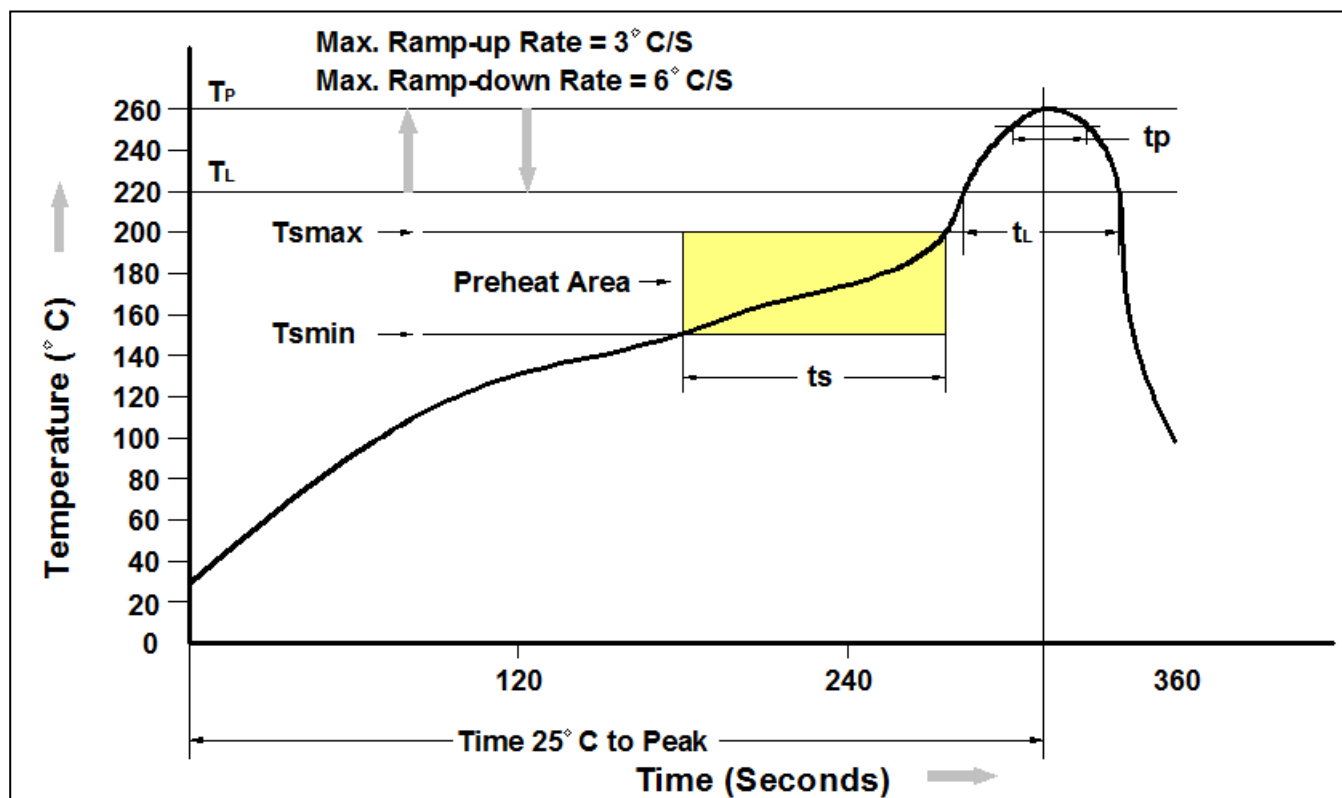
Option S(T2) & SL(T2)





CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	150°C
Temperature Max. (T_{smax})	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds
Ramp-up Rate (t_L to t_P)	3°C/second max.
Liquidous Temperature (T_L)	217°C
Time (t_L) Maintained Above (T_L)	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (t_P) within 5°C of 260°C	30 seconds
Ramp-down Rate (T_P to T_L)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.



CNY17-1, CNY17-2, CNY17-3, CNY17-4 CNY17F-1, CNY17F-2, CNY17F-3, CNY17F-4 DC Input 6-Pin Phototransistor Optocoupler

DISCLAIMER

CT MICRO RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. CT MICRO DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

DISCOLORATION MIGHT OCCUR ON THE PACKAGE SURFACE AFTER SOLDERING, REFLOW OR LONG TERM USE. THIS DOES NOT IMPACT THE PRODUCT PERFORMANCE NOR THE PRODUCT RELIABILITY.

CT MICRO ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT EXPRESS WRITTEN APPROVAL OF CT MICRO INTERNATIONAL CORPORATION.

- 1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instruction for use provided in the labelling, can be reasonably expected to result in significant injury to the user.*
- 2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.*