



CNY17-X, CNY17F-X Series

DIP6, DC Input, Photo Transistor Coupler

Description

The CNY17-X, CNY17F-X series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a silicon planar phototransistor detector in a plastic DIP6 package with different lead forming options.

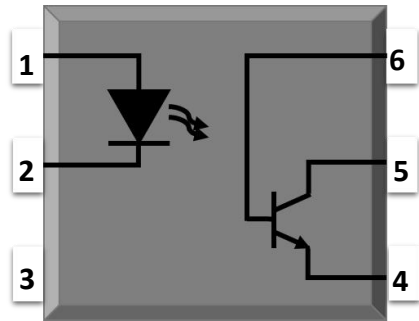
Features

- High isolation 5000 VRMS
- CTR flexibility available see order information
- DC input with transistor output
- Operating temperature range - 55 °C to 110 °C
- REACH compliance
- Halogen free
- MSL class 1
- Regulatory Approvals
 - UL - UL1577
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC – GB4943.1, GB8898
 - cUL – CSA Component Acceptance Service Notice No. 5A

Applications

- Switch mode power supplies
- Programmable controllers
- Household appliances
- Office equipment

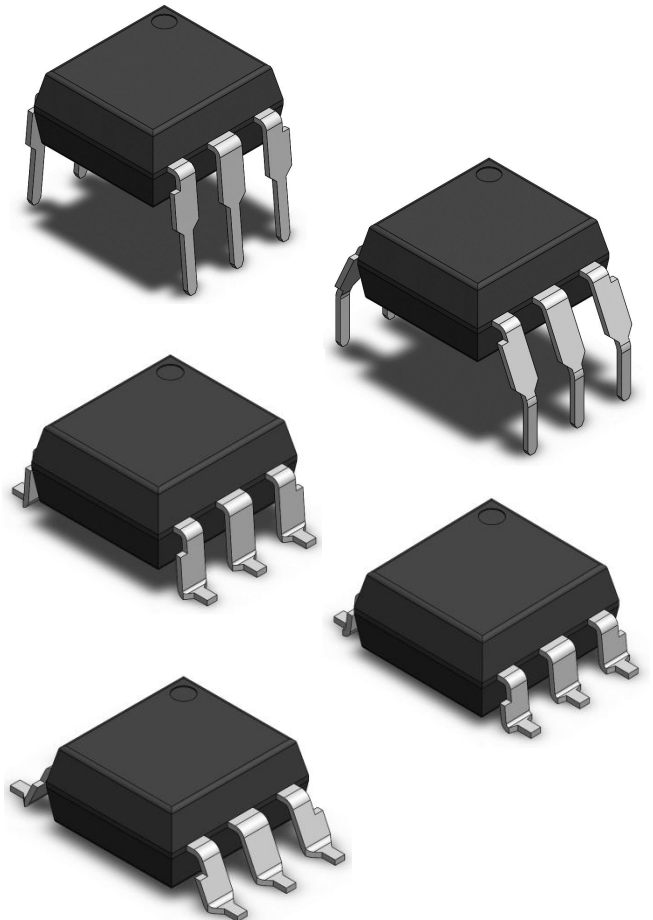
SCHEMATIC



PIN DEFINITION

1.Anode	6.Base(CNY17)
2.Cathode	or NC(CNY17-F)
3.NC	5.Collector
	4.Emitter

PACKAGE OUTLINE





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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT	NOTE
INPUT				
Forward Current	I_F	60	mA	
Peak Forward Current	I_{FP}	1	A	1
Reverse Voltage	V_R	6	V	
Input Power Dissipation	P_I	100	mW	
OUTPUT				
Collector - Emitter Voltage	V_{CEO}	80	V	
Emitter - Collector Voltage	V_{ECO}	7	V	
Collector Current	I_C	50	mA	
Output Power Dissipation	P_O	150	mW	
COMMON				
Total Power Dissipation	P_{tot}	250	mW	
Isolation Voltage	V_{iso}	5000	Vrms	2
Operating Temperature	T_{opr}	-55~110	°C	
Storage Temperature	T_{stg}	-55~150	°C	
Soldering Temperature	T_{sol}	260	°C	

Note 1. 100μs pulse, 100Hz frequency

Note 2. AC For 1 Minute, R.H. = 40 ~ 60%



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ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25°C								
PARAMETER	SYMBOL	MIN	TYP.	MAX.	UNIT	TEST CONDITION	NOTE	
INPUT								
Forward Voltage	V_F	-	1.24	1.4	V	$I_F=10mA$		
Reverse Current	I_R	-	-	10	μA	$V_R=6V$		
Input Capacitance	C_{in}	-	10	-	pF	$V=0, f=1kHz$		
OUTPUT								
Collector Dark Current	I_{CEO}	-	-	100	nA	$V_{CE}=20V, I_F=0$		
Collector-Emitter Breakdown Voltage	BV_{CEO}	80	-	-	V	$I_C=0.1mA, I_F=0$		
Emitter-Collector Breakdown Voltage	BV_{ECO}	7	-	-	V	$I_E=0.1mA, I_F=0$		
TRANSFER CHARACTERISTICS								
Current Transfer Ratio	CNY17-1 CNY17F-1	CTR	40	-	80	%	$I_F=10mA, V_{CE}=5V$	
	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	-	-	%	$I_F=1mA, V_{CE}=5V$	
	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	$I_F=10mA, I_C=2.5mA$		
Isolation Resistance	R_{ISO}	10^{12}	10^{14}	-	Ω	DC500V, 40 ~ 60% R.H.		
Floating Capacitance	C_{IO}	-	0.5	1	pF	$V=0, f=1MHz$		



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ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25°C

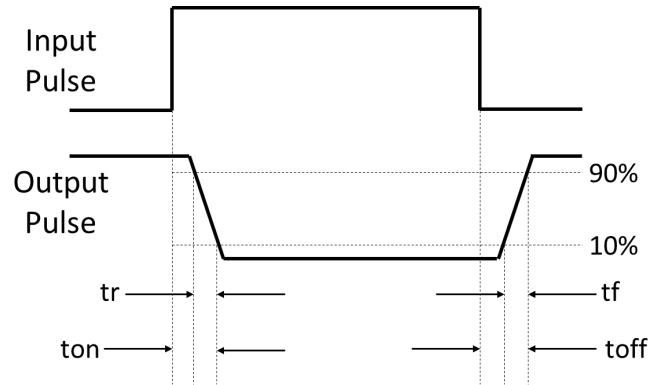
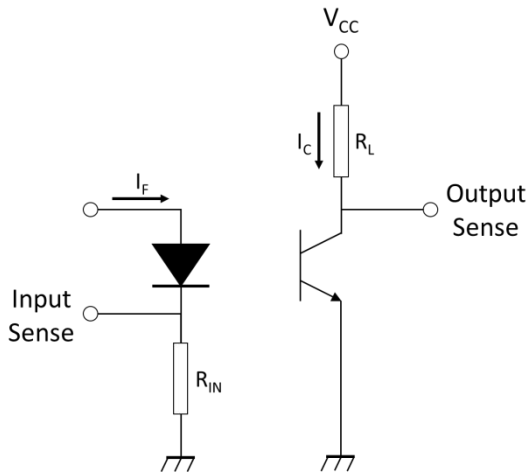
TRANSFER CHARACTERISTICS

Turn-on Time	ton	-	10	12	μs	VCC=10V, IC=2mA RL=100Ω
Turn-off Time	toff	-	9	12		
Response Time (Rise)	tr	-	6	10		
Response Time (Fall)	tf	-	8	10		
Response Time (Rise)	tr	-	2	10		VCC=5V, IF=10mA RL=75Ω
Response Time (Fall)	tf	-	3	10		

TEST CIRCUITS

Test Circuits of Response Time

Curves of Response Time





CHARACTERISTIC CURVES

Fig.1 Forward Current vs. Ambient Temperature

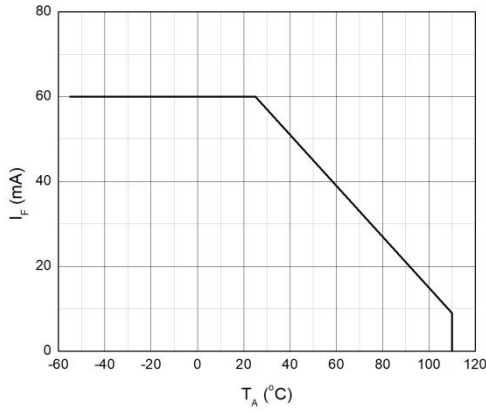


Fig.2 Collector Power Dissipation vs. Ambient Temperature

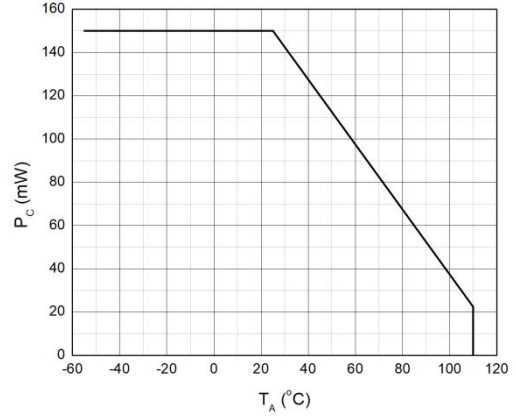


Fig.3 Forward Current vs. Forward Voltage

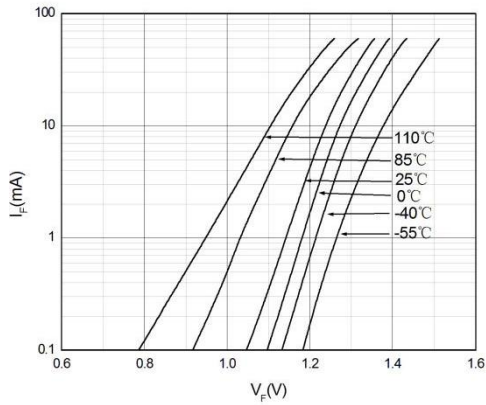


Fig.4 Collector Dark Current vs. Ambient Temperature

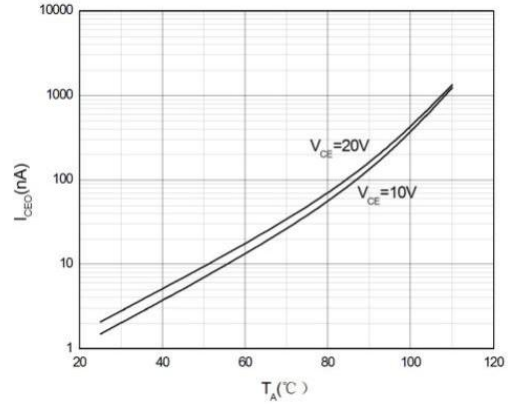


Fig.5 Collector Current vs. Collector-emitter Voltage

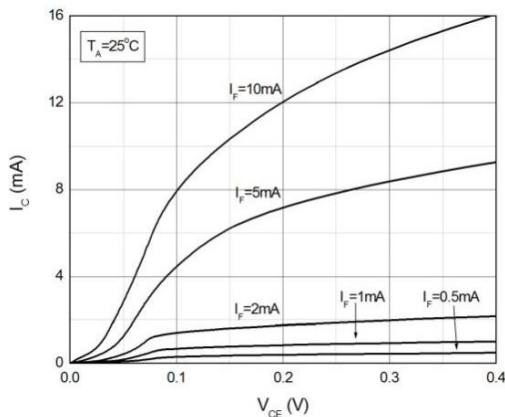
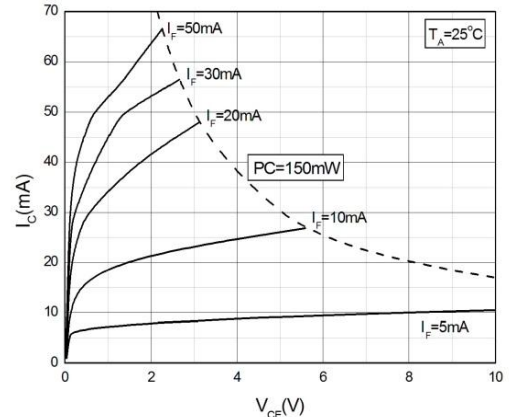


Fig.6 Collector Current vs. Collector-emitter Voltage





CHARACTERISTIC CURVES

Fig.7 Normalized Current Transfer Ratio vs. Forward Current

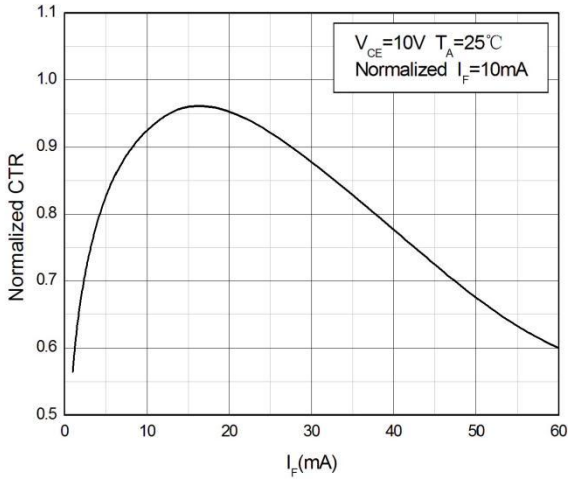


Fig.8 Normalized Current Transfer Ratio vs. Ambient Temperature

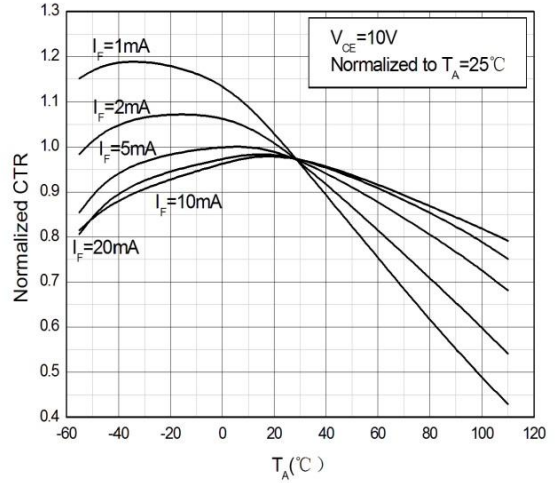


Fig.9 Current Transfer Ratio(Unsaturated) vs Base-Emitter Resistance

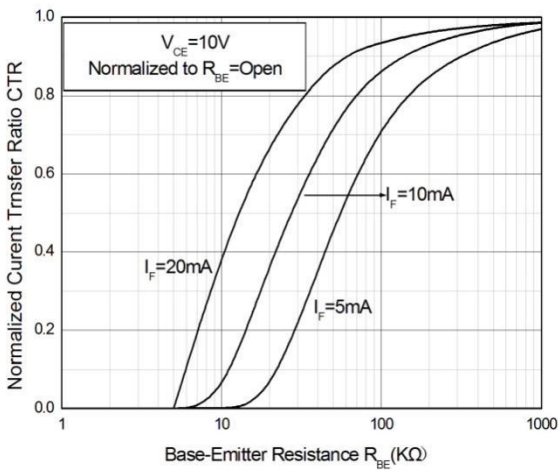
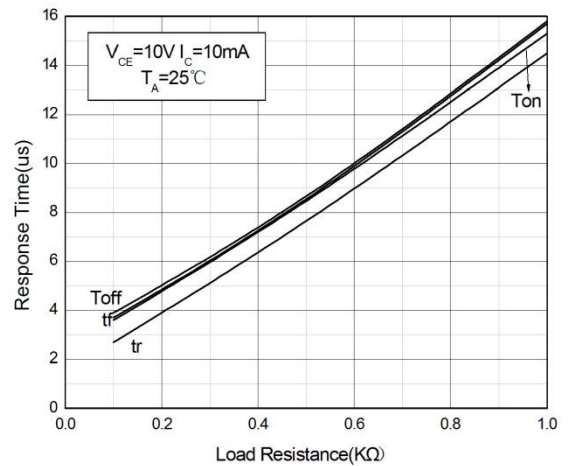


Fig.10 Switching Time vs. Load Resistance



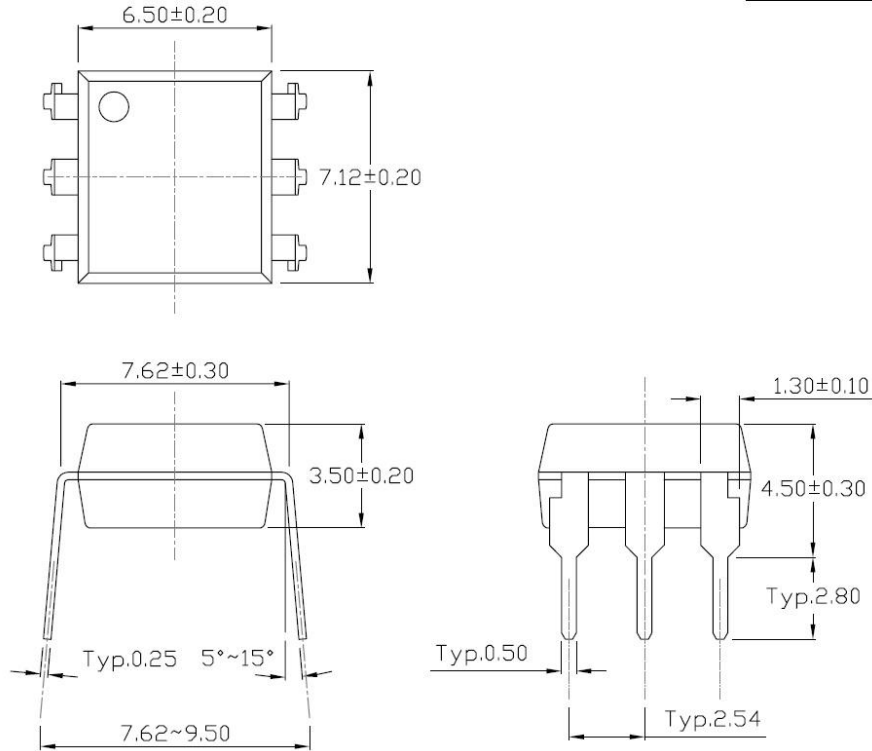


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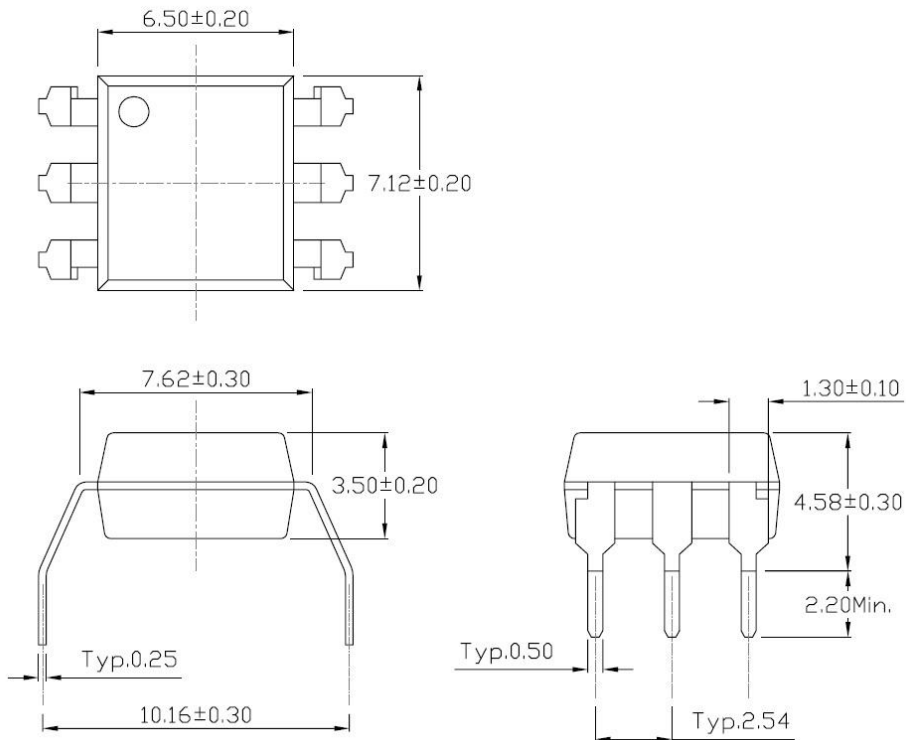
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PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

Standard DIP – Through Hole (DIP Type)

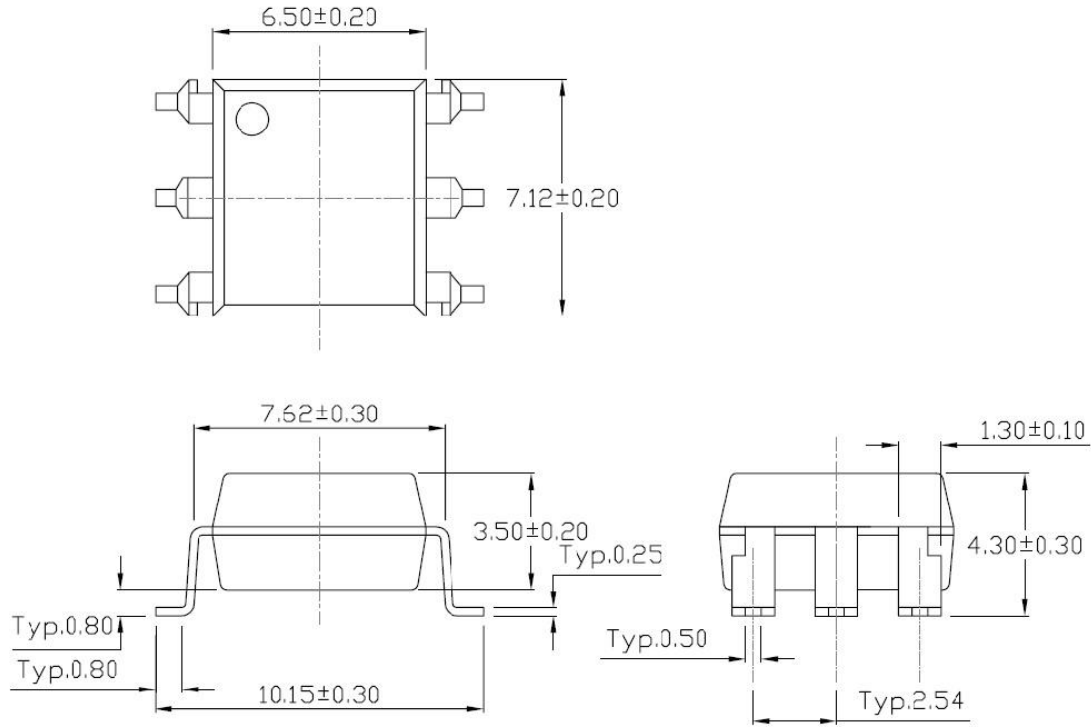


Gullwing (400mil) Lead Forming – Through Hole (M Type)

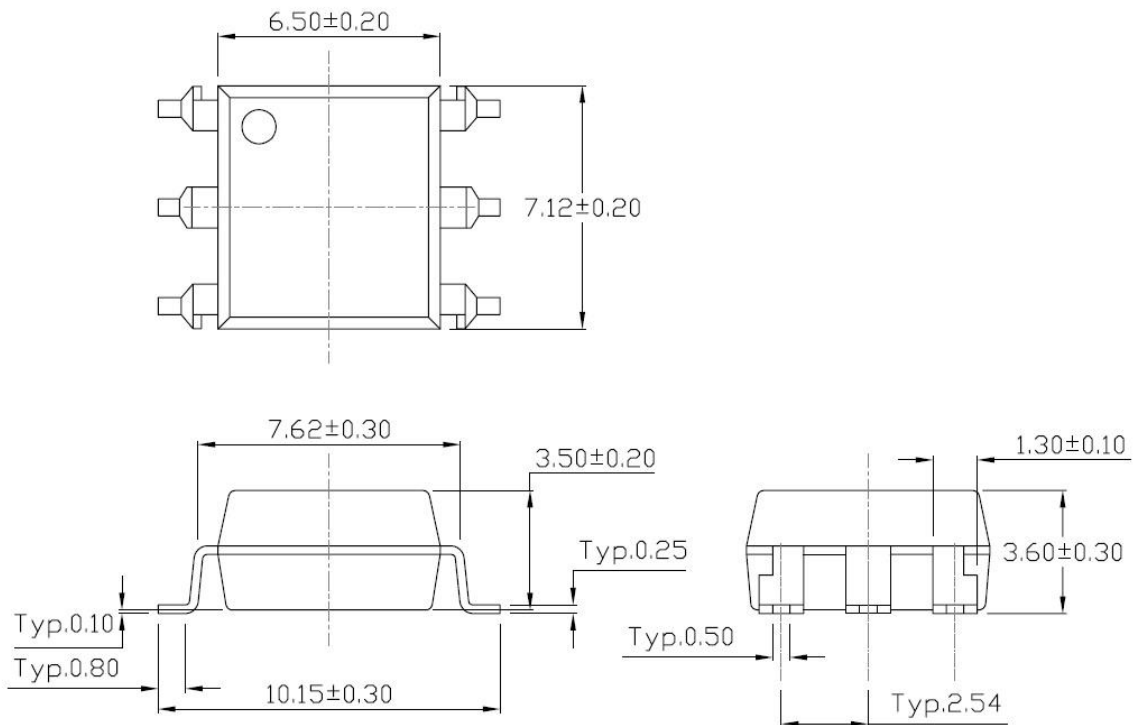


PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

Surface Mount Lead Forming (S Type)



Surface Mount (Low Profile) Lead Forming (SL Type)



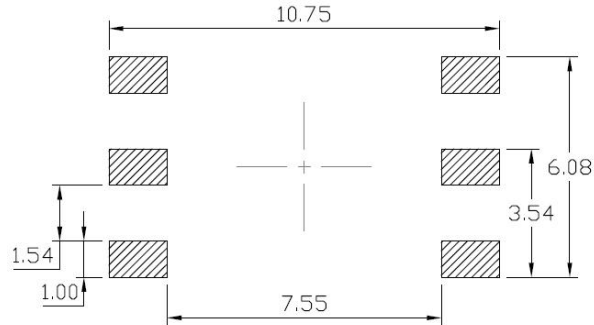


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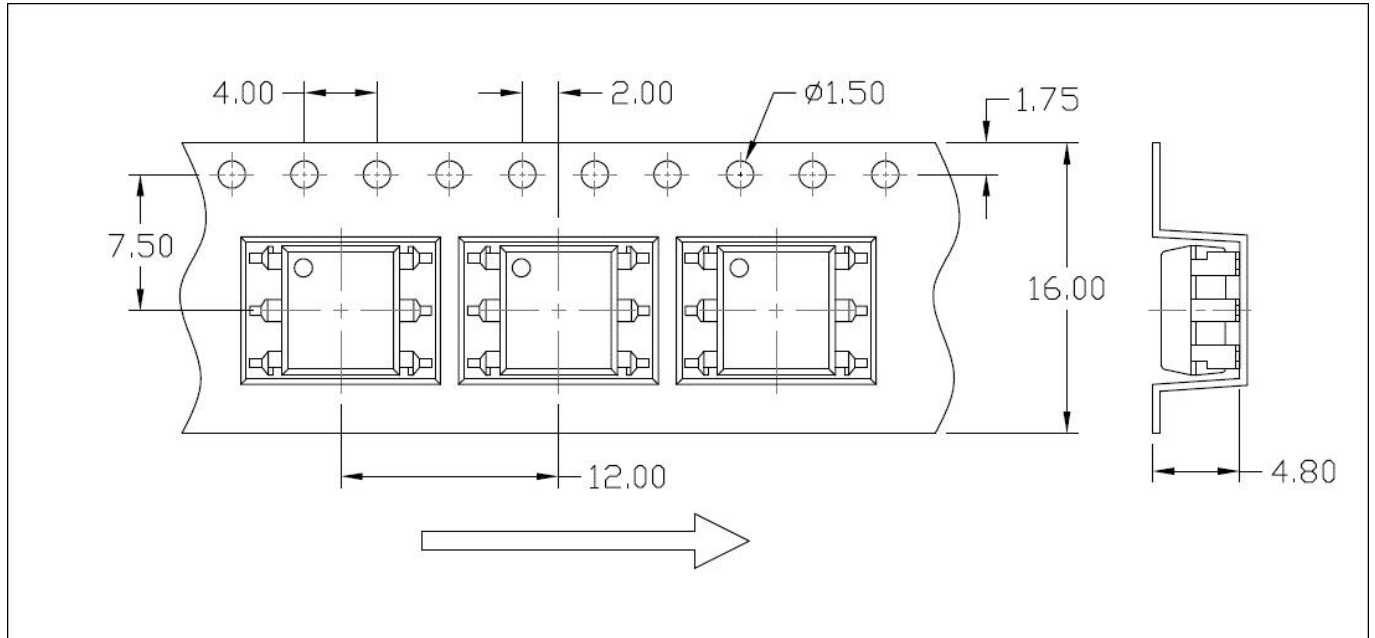
Recommended Solder Mask (Dimensions in mm unless otherwise stated)

Surface Mount Lead Forming & Surface Mount (Low Profile) Lead Forming

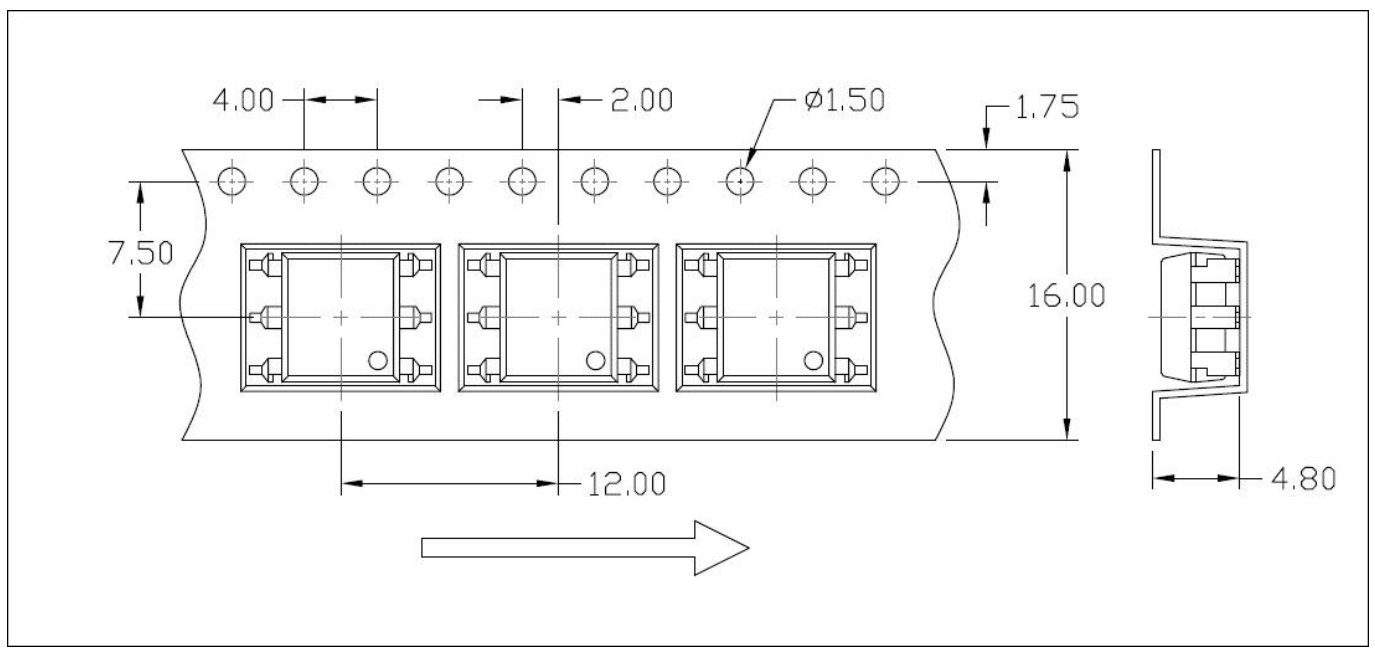


Carrier Tape Specifications (Dimensions in mm unless otherwise stated)

Option S(T1) & SL(T1)



Option S(T2) & SL(T2)





ORDERING AND MARKING INFORMATION

MARKING INFORMATION



TD : Company Abbr.
CNY17F-X : Part Number & Rank
V : VDE Option
Y : Fiscal Year
A : Manufacturing Code
WW : Work Week

ORDERING INFORMATION

CNY17F-X(Y)(Z)-GV

TD – Company Abbr.
CNY17 – Part Number
F – Configuration (F: Without Base, None: With Base)
-X – Rank (X=1 to 4)
Y – Lead Form Option (M/S/SL/None)
Z – Tape and Reel Option (T1/T2)
G – Material Option (G: Green, None: Non-Green)
V – VDE Option (V or None)

LABEL INFORMATION



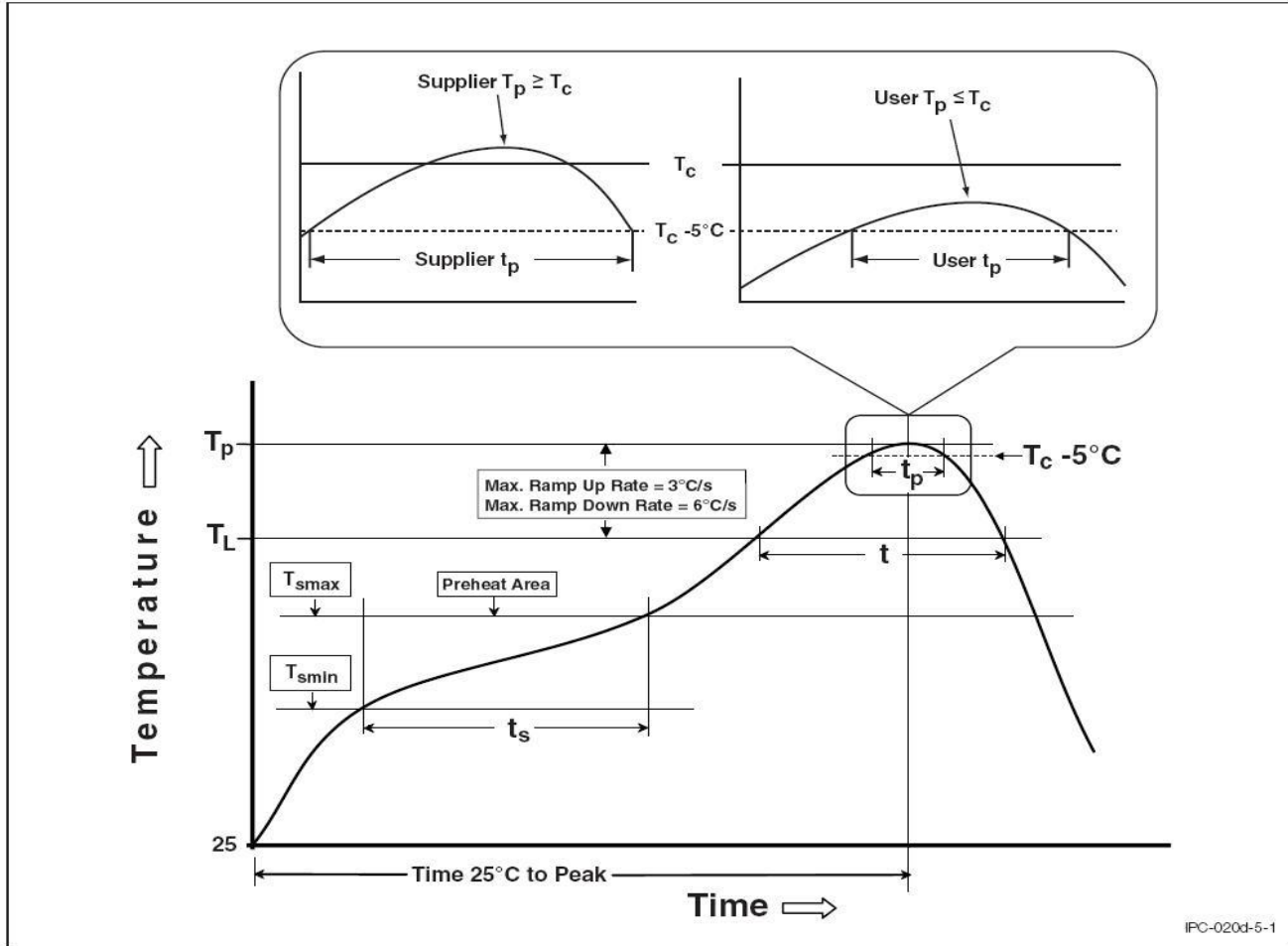
PACKING QUANTITY

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 Lead Forming(Low Profile) – With Option 1 Taping	1000 Units/Reel
SL(T2)	Surface Mount Lead Forming(Low Profile) – With Option 2 Taping	1000 Units/Reel



REFLOW INFORMATION

REFLOW PROFILE



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (TsmIn)	100	150°C
Temperature Max. (Tsmax)	150	200°C
Time (ts) from (TsmIn to Tsmax)	60-120 seconds	60-120 seconds
Ramp-up Rate (tL to tP)	3°C/second max.	3°C/second max.
Liquidous Temperature (TL)	183°C	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds	60 – 150 seconds
Peak Body Package Temperature	235°C +0°C / -5°C	260°C +0°C / -5°C
Time (tP) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max	6°C/second max
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.



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- Please contact LIGHTNING sales agent for special application request.
- Immerge unit's body in solder paste is not recommended.
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