

QT-Brightek Optocoupler Series
6-PIN DIP Phototransistor Optocoupler
Part No.: CNY17 & CNY17F

Product: CNY17 & CNY17F	Date: March 16, 2018	Page 1 of 18
	Version# 2.0	

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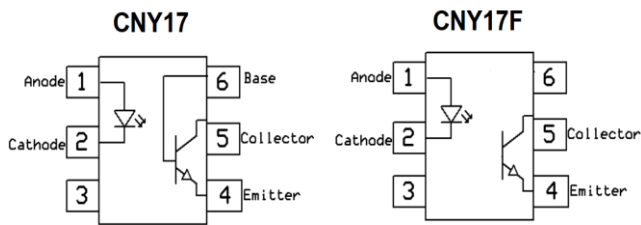
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Introduction

Feature:

- High isolation voltage between input and output (Viso=5000Vrms)
- Operating Temperature up to 110 °C
- Available in Tube or Tape and reel
- Available with standard DIP-6, Gullwing lead bend, SMD lead bend and SMD low profile

Schematic:



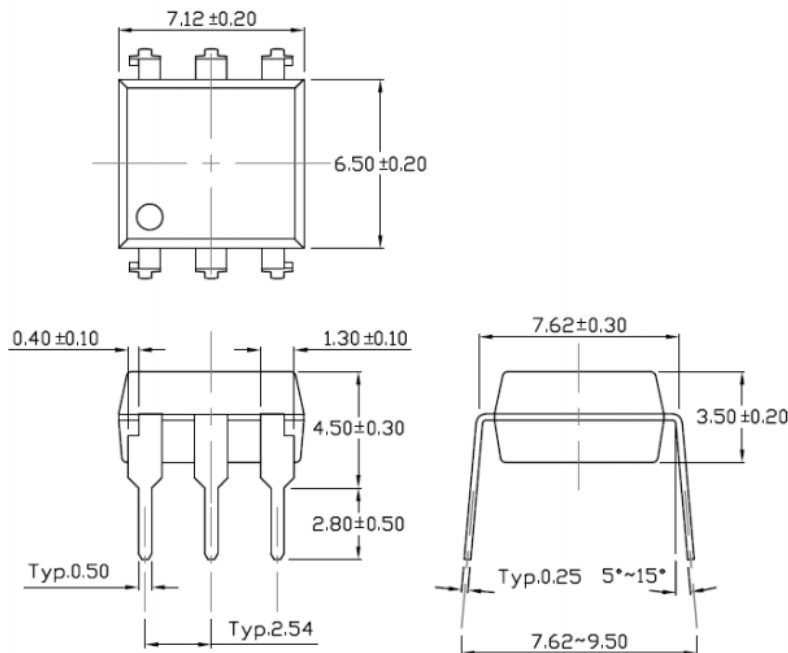
Certification & Compliance:

- Pb free and RoHS Compliant
- UL recognized (File # E338132)
- VDE recognized (File # 40030457)

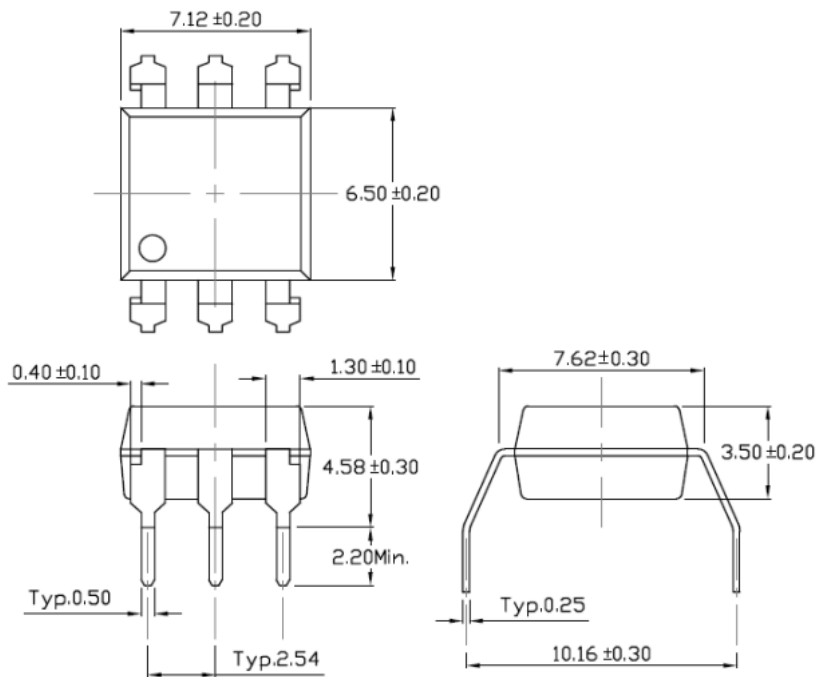


Dimension: (Dot location indicates pin 1)

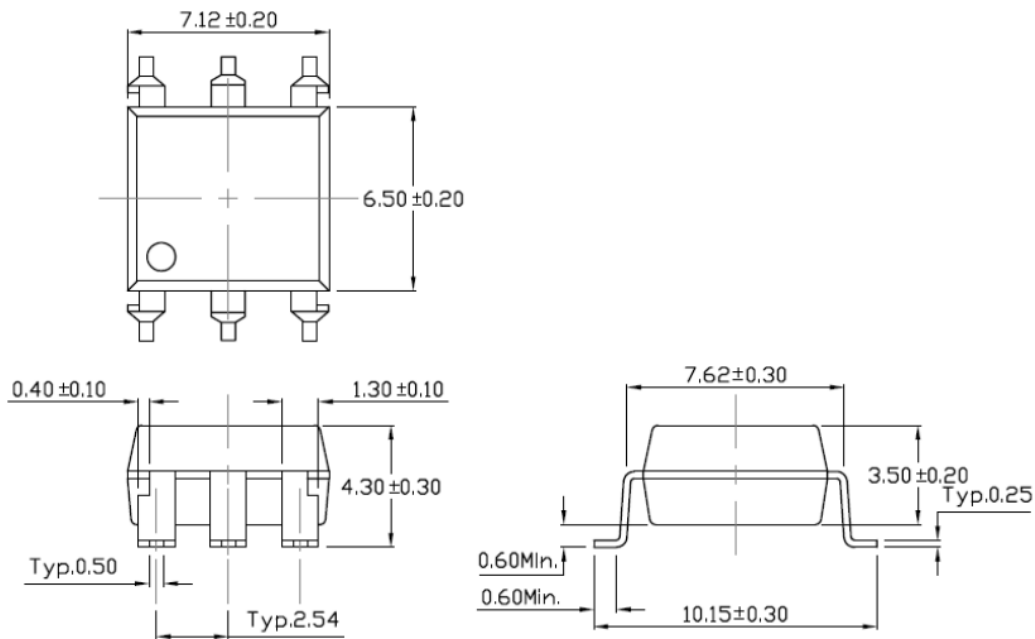
6-Pin Dip (standard):



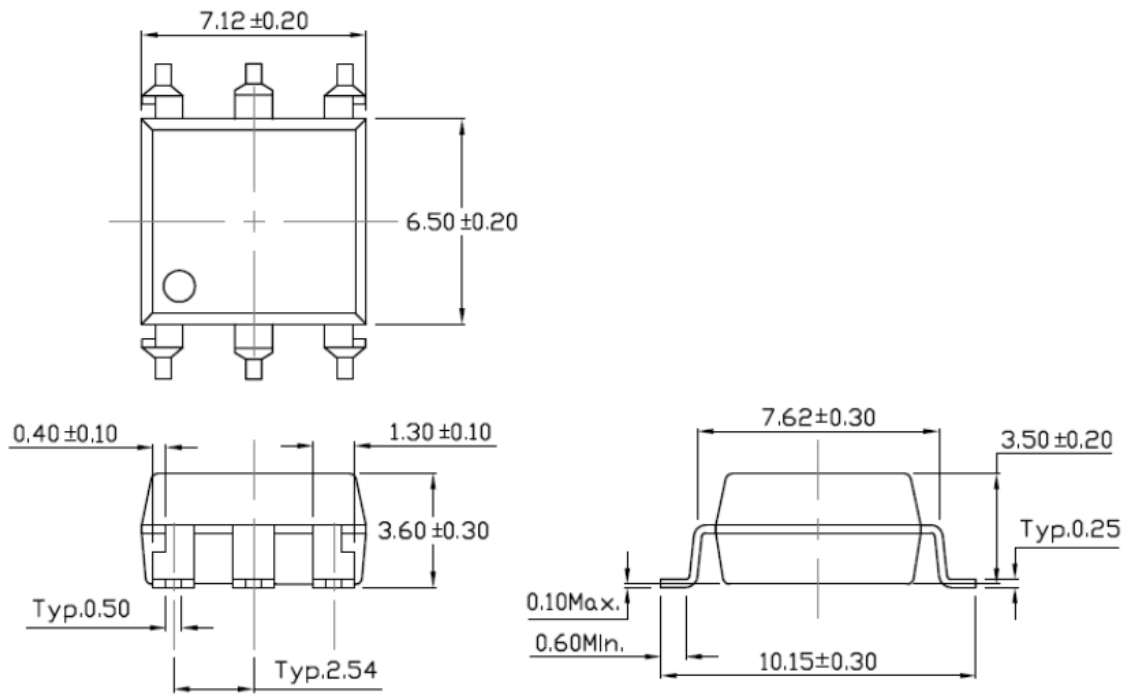
Wide lead bend (Option M):



SMD lead bend (Option S):



SMD (Low Profile) Bend (Option SL):



All Dimensions are in mm

Absolute Maximum Rating

Symbol	Parameter	Rating	Units
V _{ISO}	Isolation Voltage	5000	V _{RMS}
T _{OPR}	Operating Temperature	-55 ~ +100	°C
T _{STG}	Storage Temperature	-55 ~ +150	°C
T _{SOL}	Lead Solder Temperature	260 for 10 sec	°C
EMITTER			
I _F	Continuous Forward Current	60	mA
I _{FP}	Peak Forward Current (≤1us, 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

Electrical Characteristic (T_A=25 °C)

Emitter

Symbol	Characteristic	Test Condition	Range			Unit
			Min.	Typ.	Max.	
V _F	Forward Voltage	I _F =10mA	-	1.24	1.4	V
I _R	Reverse Current	V _R =6V	-	-	5	μA
C _{IN}	Input Capacitance	f=1MHz	-	20	-	pF

Detector

Symbol	Characteristic	Test Condition	Range			Unit
			Min	Typ	Max	
$B_{V_{CEO}}$	Collector-Emitter Breakdown	$I_C=0.1mA$	80	-	-	V
$B_{V_{ECO}}$	Emitter-Collector Breakdown	$I_E=0.1mA$	7	-	-	V
$B_{V_{CBO}}$	Collector-Base Breakdown	$I_C=0.1mA$	80	-	-	V
$B_{V_{EBO}}$	Emitter-Base Breakdown					
I_{CEO}	Collector-Emitter Dark Current	$V_{CE}=10V,$ $I_F=0mA$	-	-	50	nA
I_{CBO}	Collector-Base Dark Current	$V_{CB}=10V,$ $I_F=0mA$	-	-	20	nA

Transfer Characteristic

Symbol	Characteristic	Device	Test Condition	Range			Unit
				Min	Typ	Max	
CTR	Current Transfer Ratio	CNY17-1, CNY17F-1	$I_F=10mA, V_{CE}=5V$	40	-	80	%
		CNY17-2, CNY17F-2		63	-	125	
		CNY17-3, CNY17F-3		100	-	200	
		CNY17-4, CNY17F-4		160	-	320	
		CNY17-1, CNY17F-1	$I_F=1mA, V_{CE}=5V$	13	-	-	%
		CNY17-2, CNY17F-2		22	-	-	
		CNY17-3, CNY17F-3		34	-	-	
		CNY17-4, CNY17F-4		56	-	-	
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		$I_F=10mA, I_C=2.5mA$	-	-	0.3	V
R_{IO}	Isolation Resistance		$V_{IO}=500V_{DC}$	1×10^{11}	-	-	Ω
C_{IO}	Isolation Capacitance		$f=1MHz$	-	0.25	-	pF

AC Characteristic

Symbol	Characteristic	Test Condition	Range			Unit
			Min	Typ	Max	
T_{ON}	Turn On Time	$V_{CE}=10V, I_C=2mA, R_L=100\Omega$	-	4.3	11.5	μs
t_r	Rise Time		-	9.8	9.8	
T_{OFF}	Turn-Off Time		-	3.9	11.5	
t_f	Fall Time		-	6.9	9.8	

Characteristic Curves

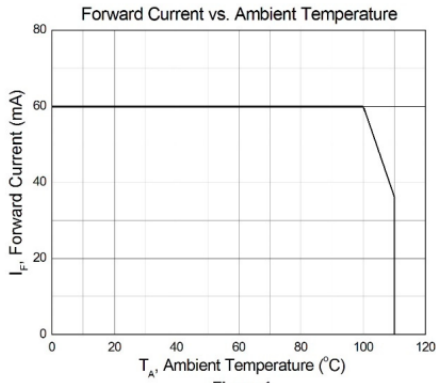


Figure 1

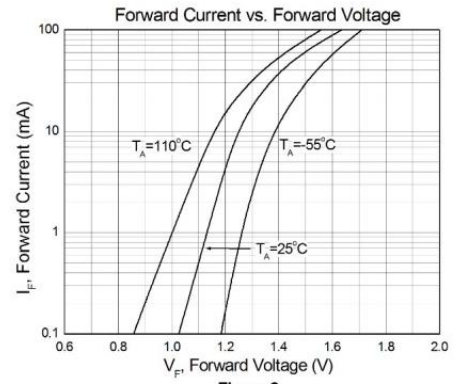


Figure 2

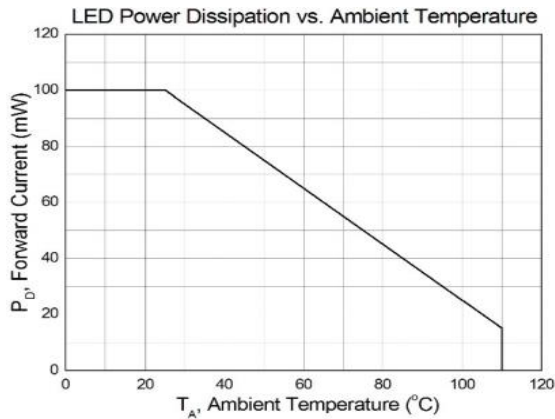


Figure 3

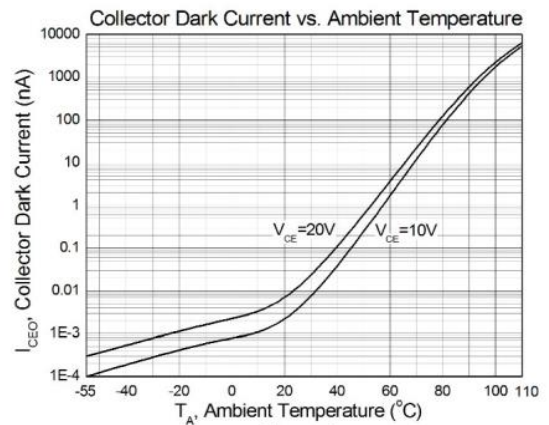


Figure 4

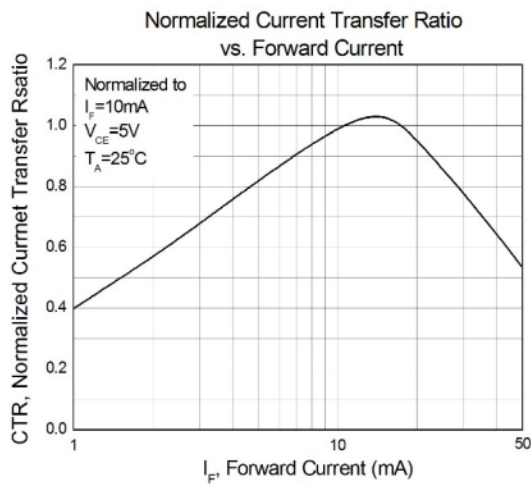


Figure 5

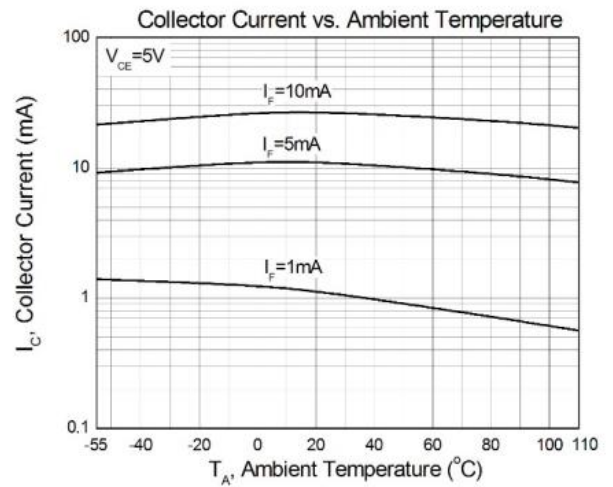
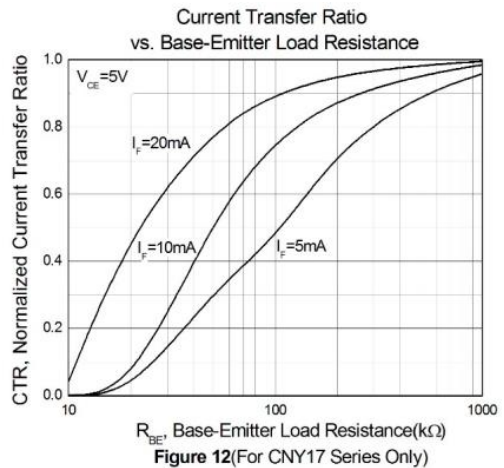
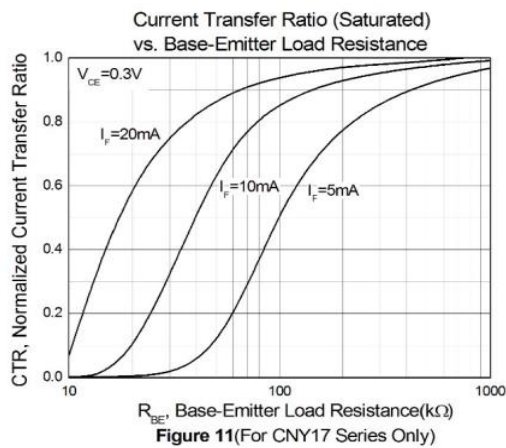
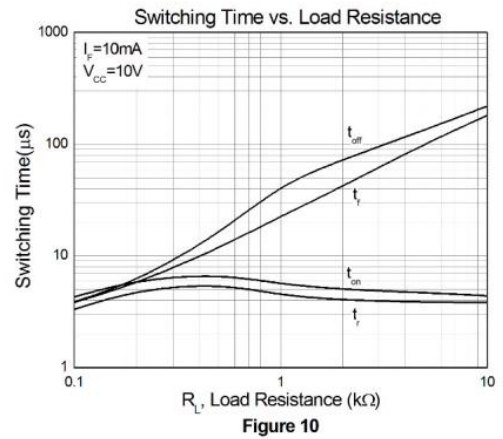
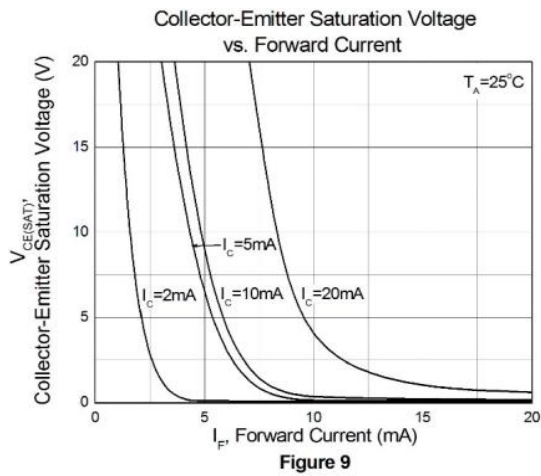
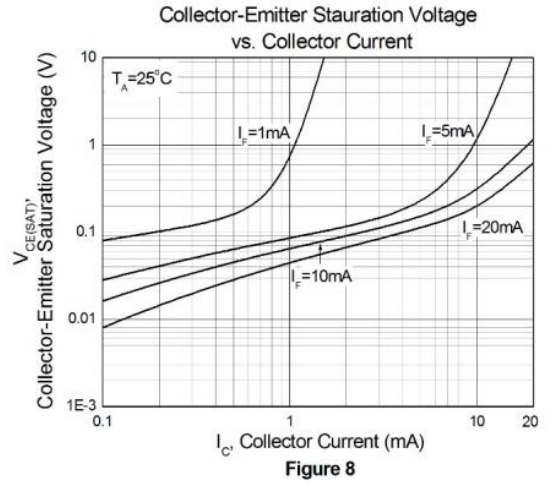
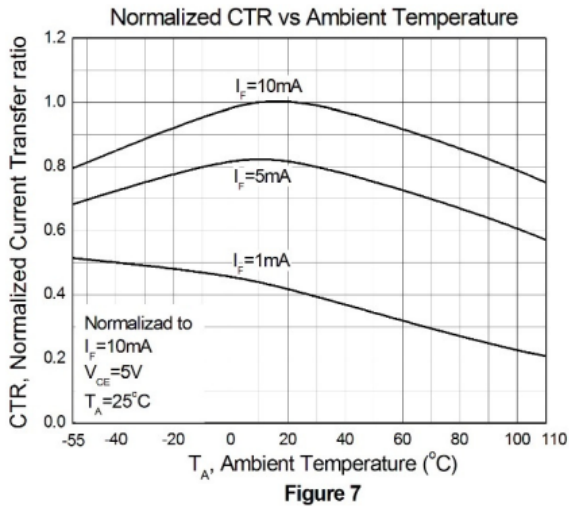
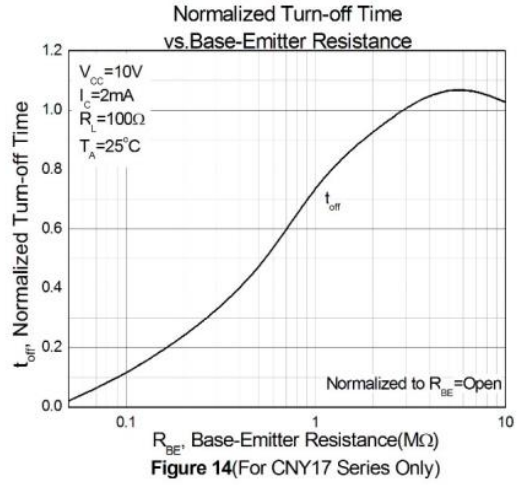
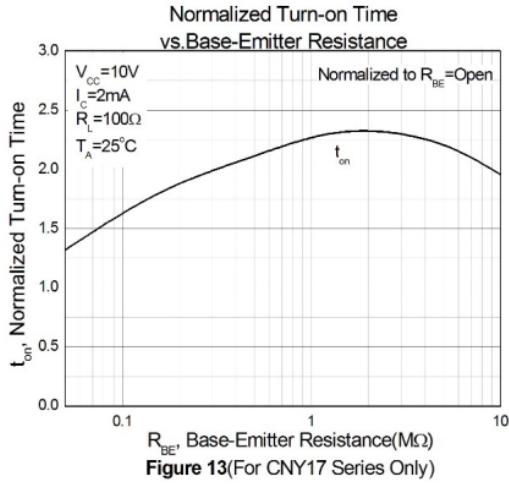


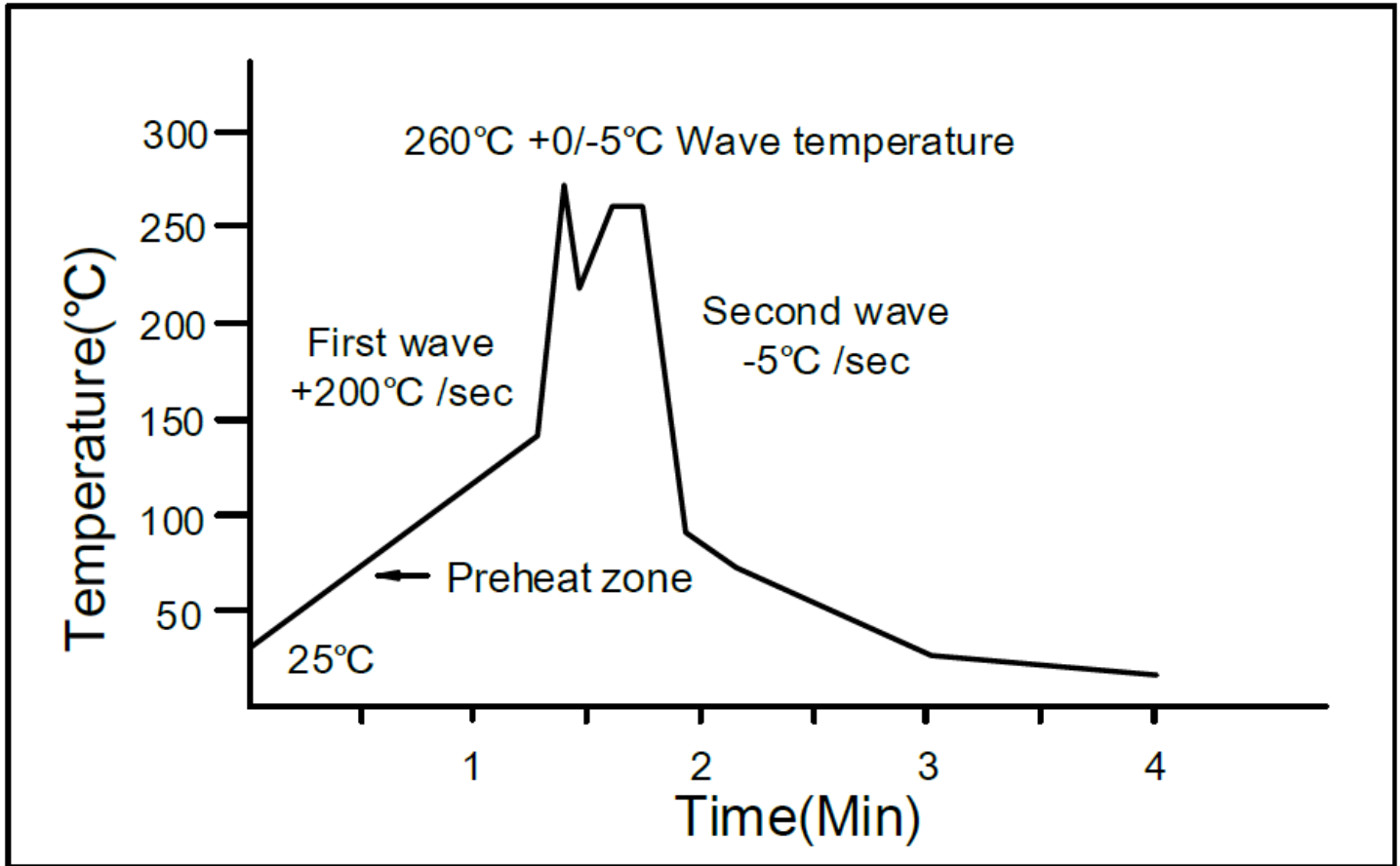
Figure 6





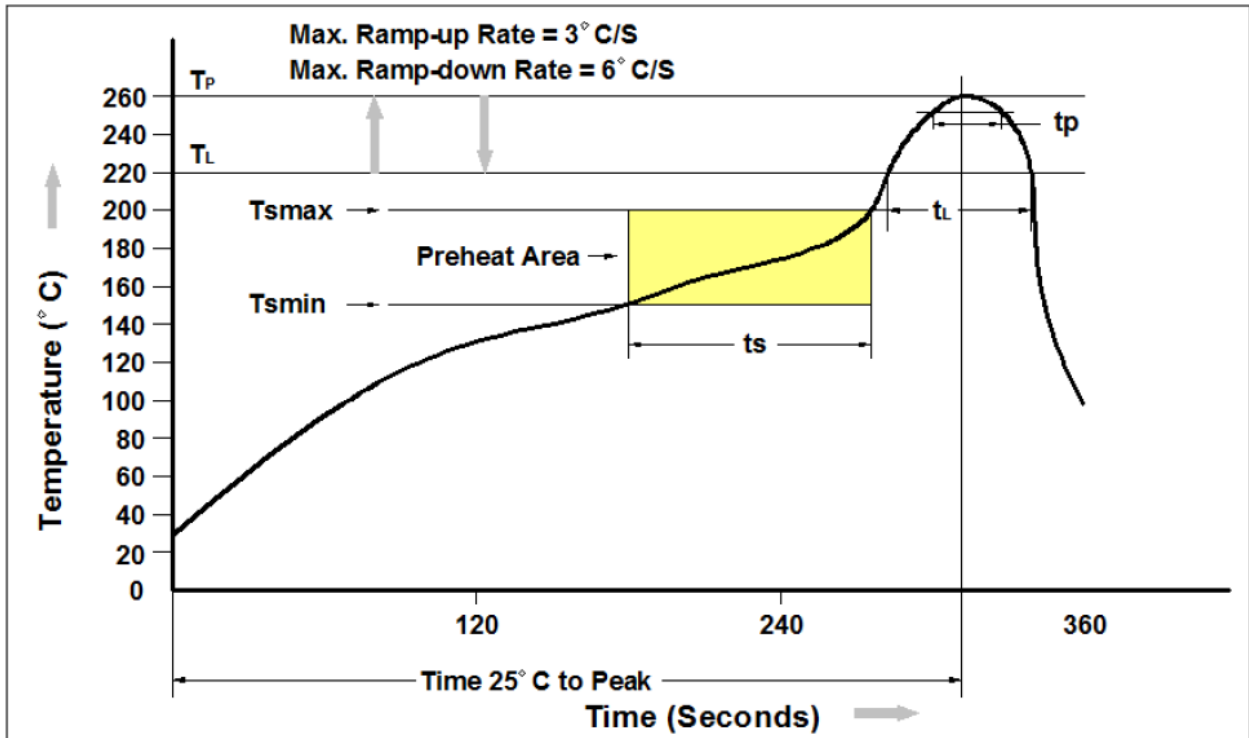
Solder Profile & Footprint

Recommended Wave Soldering Profile

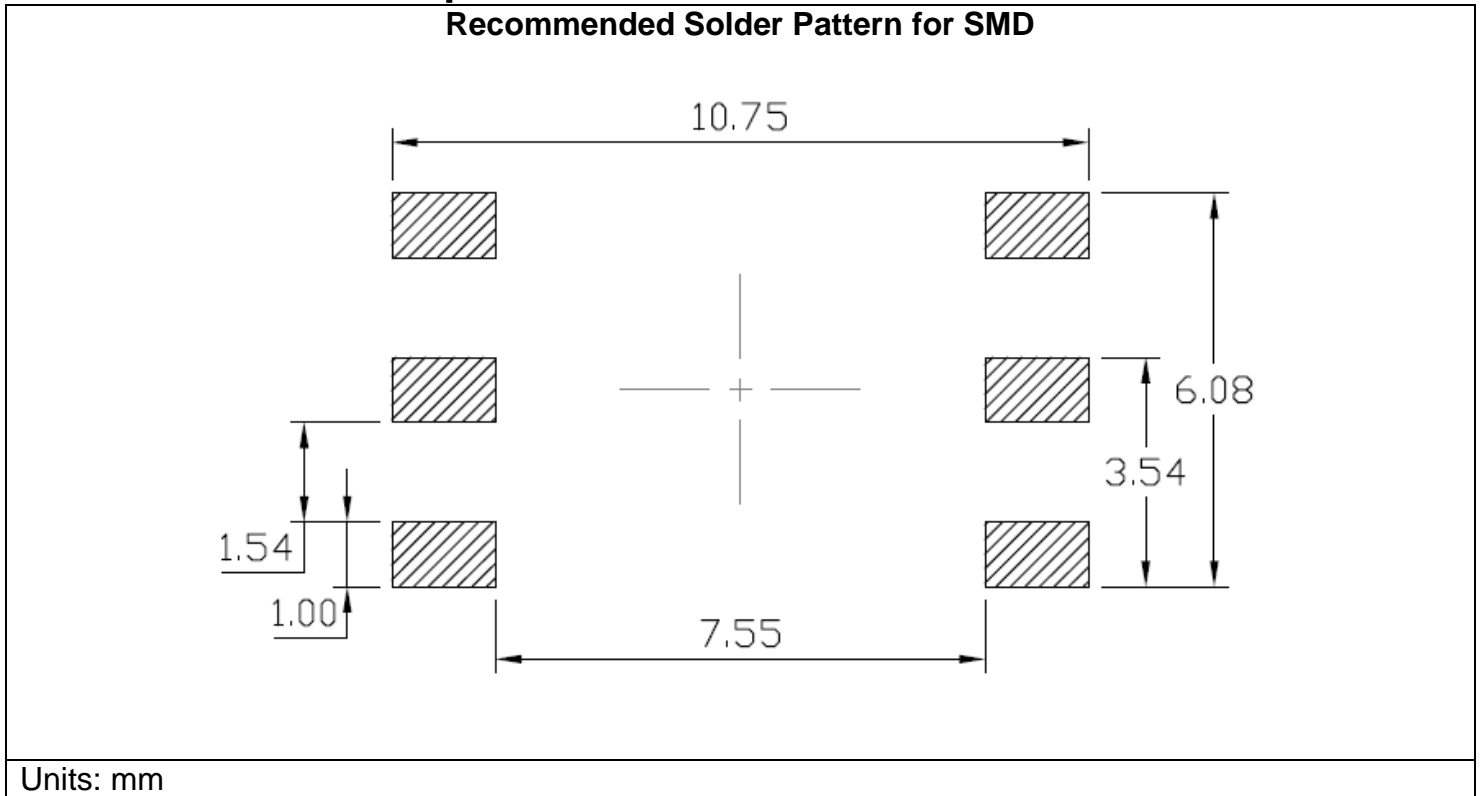


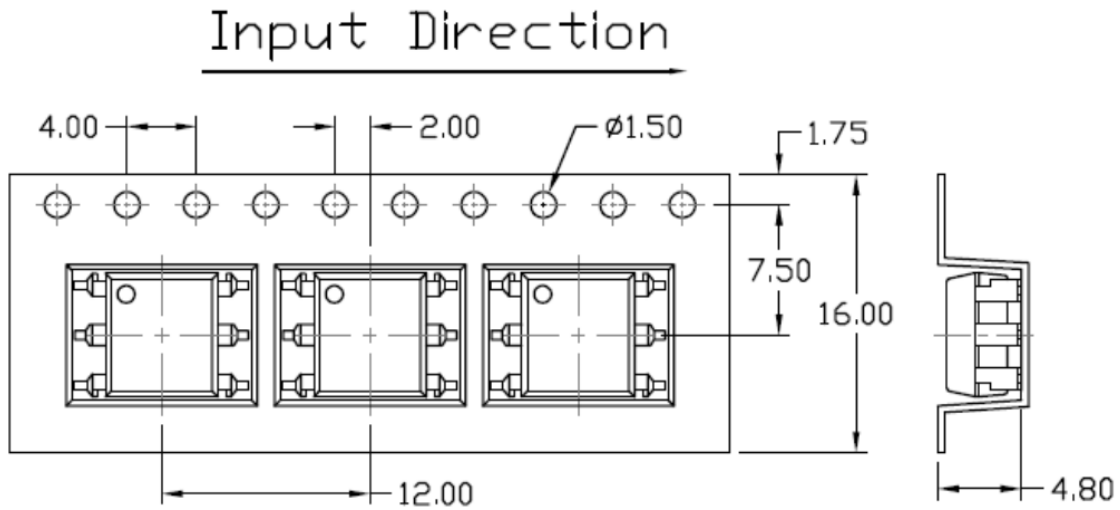
Temperature: 260 +0/-5 °C
 Time: 10 Sec
 Preheat temperature: 25 to 140 °C
 Preheat time: 30 to 80 sec.

Recommended Reflow Soldering Profile

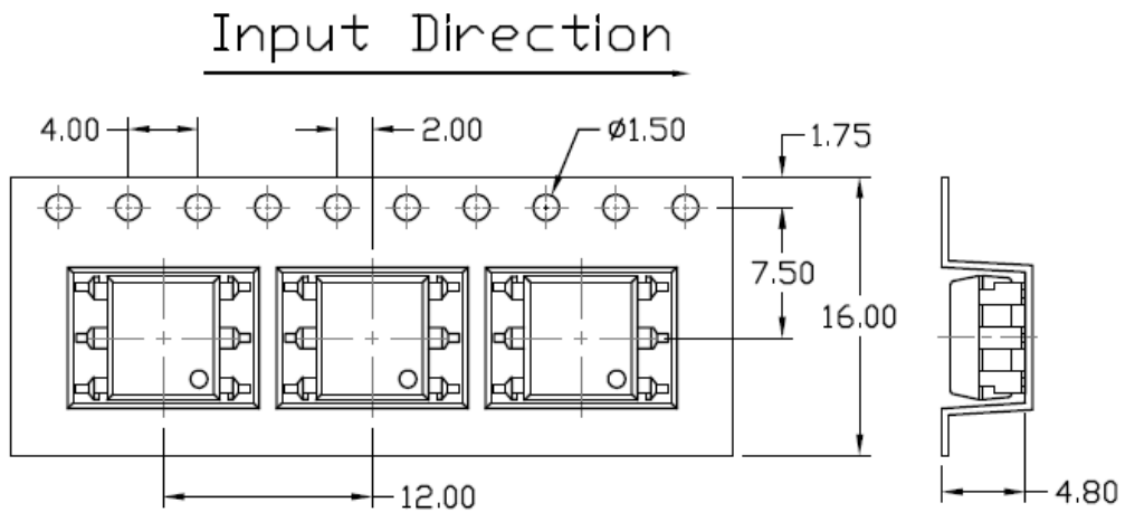


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T Amin)	150 °C
Temperature Max. (Tsmax)	200 °C
Time (ts) from (T Amin to Tsmax)	60-120 seconds
Ramp-up Rate (tL to tp)	3°C/second max.
Liquidous Temperature (Tl)	217 °C
Time (tL) Maintained Above (Tl)	60 – 150 seconds
Peak Body Package Temperature	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.

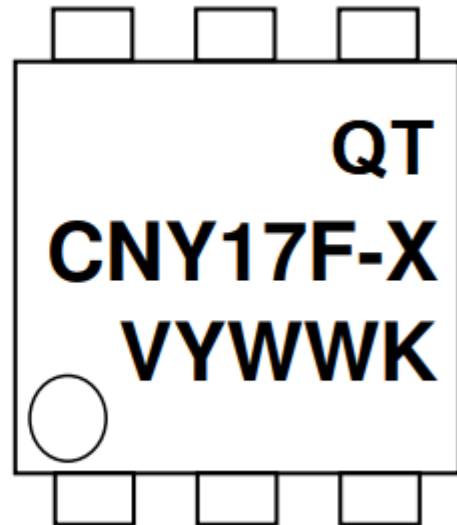
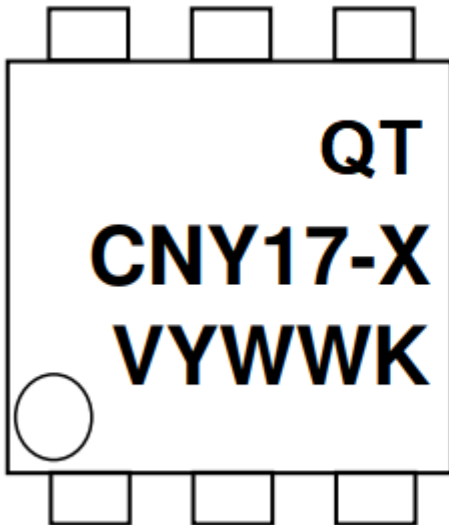
Solder Profile & Footprint

Packing & Labeling**Option 1: ST1 & SLT1**

Unit: mm

Option 2: ST2 & SLT2

Unit: mm

Device Marking**Example**

QT = QT-Brightek Corporation
CNY17-X or CNY17F-X = Part Number
X = CTR Rank (1, 2, 3 or 4)
V = VDE Option
Y = Year
WW = Week
K = Manufacturing code

Ordering Information

CNY17-XVYZ, CNY17F-XVYZ

X = Part number (X=1, 2, 3, 4)

V = VDE option (V or None)

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

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

Option	Description	Quantity
None	Standard 6-Pin DIP	50 units/tube
M	Gullwing Lead Bend	50 units/tube
ST1	Surface Mount Lead Forming – with Option 1 Taping	1000 pcs/ reel
ST2	Surface Mount Lead Forming – with Option 2 Taping	1000 pcs/ reel
SLT1	SMD (Low Profile) Lead Forming – with Option 1 Taping	1000 pcs/ reel
SLT2	SMD (Low Profile) Lead Forming – with Option 2 Taping	1000 pcs/ reel

Revision History

Description:	Revision #	Revision Date
Initial release of CNY17 & CNY17F Series	1.0	4/22/2010
Feature, Certification & Compliance, and ordering information updates	1.1	02/01/2011
Update orderable part number	1.2	02/19/2014
Update specs, format, and packing method, and part number	2.0	04/02/2018

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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, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in 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.