



**CT3061, CT3062, CT3063**

**CT3081, CT3082, CT3083**

## **600V/800V Zero Cross 6-Pin Phototriac Optocoupler**

### **Features**

- High isolation 5000 VRMS
- Peak Breakdown Voltage
  - 600V – CT3061,3062,3063
  - 800V – CT3081,3082,3083
- Temperature range - 55 °C to 100 °C
- Regulatory Approvals
  - UL - UL1577 (E364000)
  - VDE - EN60747-5-5(VDE0884-5)
  - CQC – GB4943.1, GB8898
  - IEC60065, IEC60950

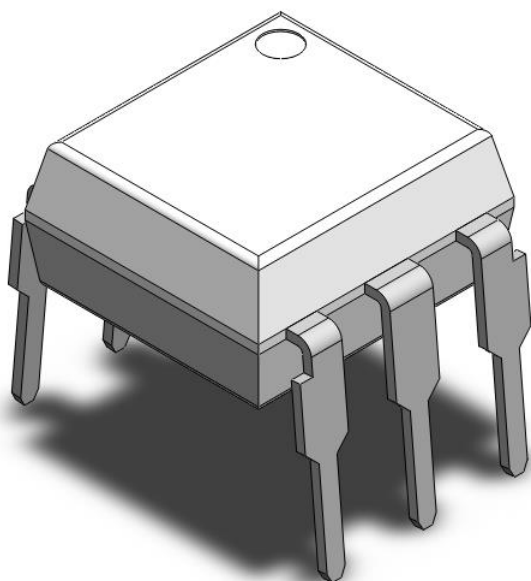
### **Description**

The CT3061, CT3062, CT3063, CT3081, CT3082 and CT3083 series consists of a Zero Cross Photo Triac optically coupled to a gallium arsenide Infrared-emitting diode in a 6-lead DIP package with different lead forming options.

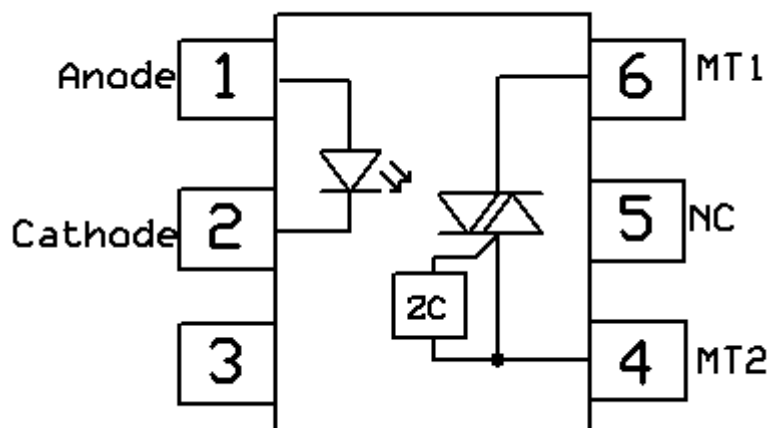
### **Applications**

- Motor Controls
- Lamp ballasts
- Static AC Power Switch
- Solenoid/ Valve Control

### **Package Outline**



### **Schematic**



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



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### **Absolute Maximum Rating at 25°C**

<i><b>Symbol</b></i>	<i><b>Parameters</b></i>		<i><b>Ratings</b></i>	<i><b>Units</b></i>	<i><b>Notes</b></i>
V <sub>ISO</sub>	Isolation voltage		5000	V <sub>RMS</sub>	
T <sub>OPR</sub>	Operating temperature		-55 ~ +100	°C	
T <sub>STG</sub>	Storage temperature		-55 ~ +150	°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		300	mW	
V <sub>DRM</sub>	Off-State Output Terminal Voltage	CT3061,3062,3063	600	V	
		CT3081,3082,3083	800	V	
I <sub>TM</sub>	RMS on-state current		100	mA	
I <sub>TSM</sub>	Peak Repetitive Surge Current		1	A	



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## **600V/800V Zero Cross 6-Pin Phototriac Optocoupler**

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

#### **Emitter Characteristics**

<b>Symbol</b>	<b>Parameters</b>	<b>Test Conditions</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Units</b>	<b>Notes</b>
$V_F$	Forward voltage	$I_F = 10\text{mA}$	-	-	1.5	V	
$I_R$	Reverse Current	$V_R = 6\text{V}$	-	-	5	$\mu\text{A}$	
$C_{IN}$	Input Capacitance	$f = 1\text{MHz}$	-	45	-	pF	

#### **Detector Characteristics**

<b>Symbol</b>	<b>Parameters</b>		<b>Test Conditions</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Units</b>	<b>Notes</b>
$I_{DRM1}$	Peak Blocking Current	CT3061,62,63 CT3081,82,83	$I_F = 0\text{mA}$ , $V_{DRM} = \text{Rated } V_{DRM}$	-	-	500	nA	
$I_{DRM2}$	Inhibit Leakage Current		$I_F = \text{Rated } I_{FT}$ , $V_{DRM} = \text{Rated } V_{DRM}$	-	-	500	$\mu\text{A}$	
$V_{INH}$	Inhibit Voltage		$I_F = \text{Rated } I_{FT}$	-	-	20	V	
$V_{TM}$	Peak On-State Voltage		$I_F = \text{Rated } I_{FT}$ , $I_{TM} = 100\text{mA}$	-	-	3	V	
$dv/dt$	Critical Rate of Rise off-State Voltage	CT3061,62,63	$V_{PEAK} = \text{Rated } V_{DRM}$	1000	-	-	V/ $\mu\text{s}$	
		CT3081,82,83		600	-	-		

#### **Transfer Characteristics**

<b>Symbol</b>	<b>Parameters</b>		<b>Test Conditions</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Units</b>	<b>Notes</b>
$I_{FT}$	Input	CT3061, CT3081	Terminal Voltage = 3V $I_{TM} = 100\text{mA}$	-	-	15	mA	
	Trigger	CT3062, CT3082		-	-	10		
	Current	CT3063, CT3083		-	-	5		
$I_H$	Holding Current		Terminal Voltage from "ON" to "OFF" "ON" state $I_F = 0\text{mA}$	-	380	-	$\mu\text{A}$	
$R_{IO}$	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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### Typical Characteristic Curve

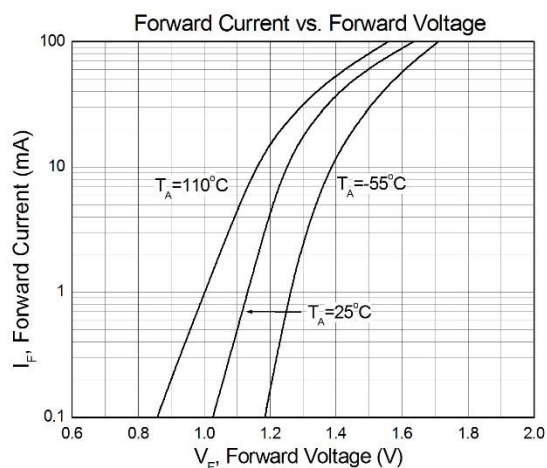


Figure 1

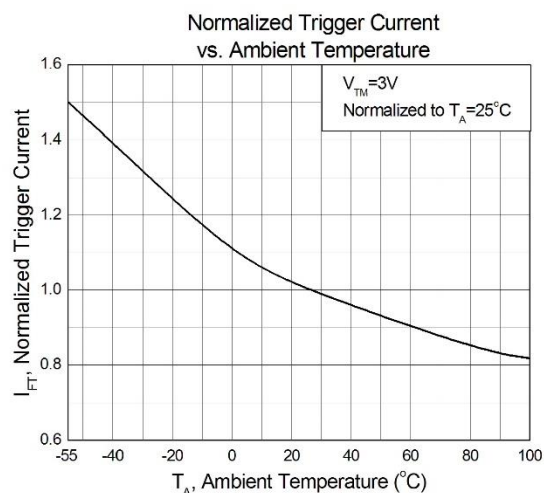


Figure 2

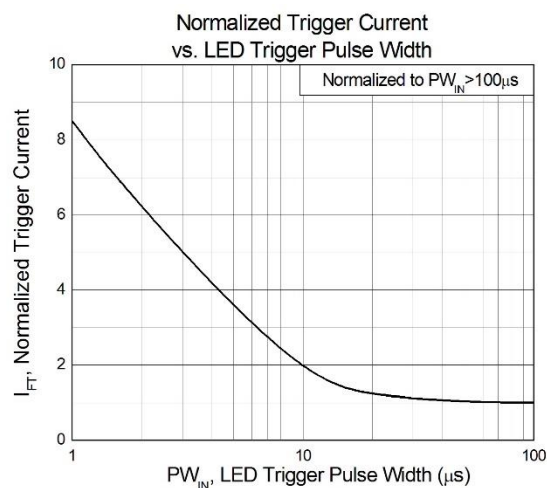


Figure 3

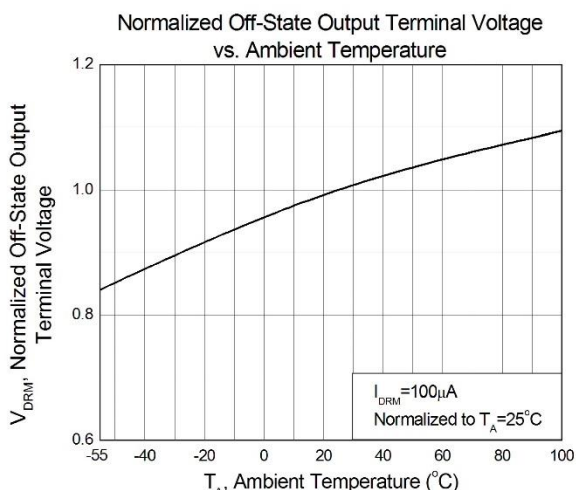


Figure 4

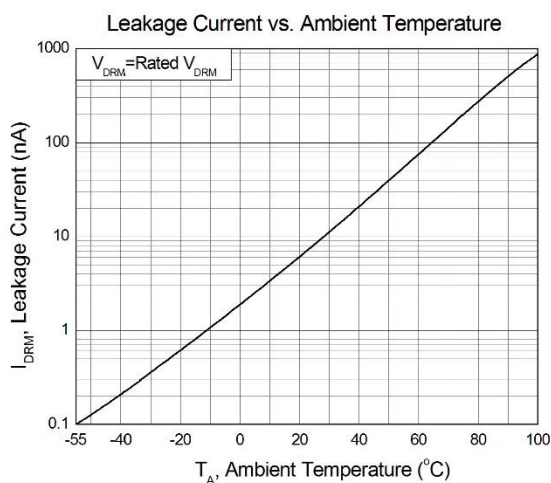


Figure 5

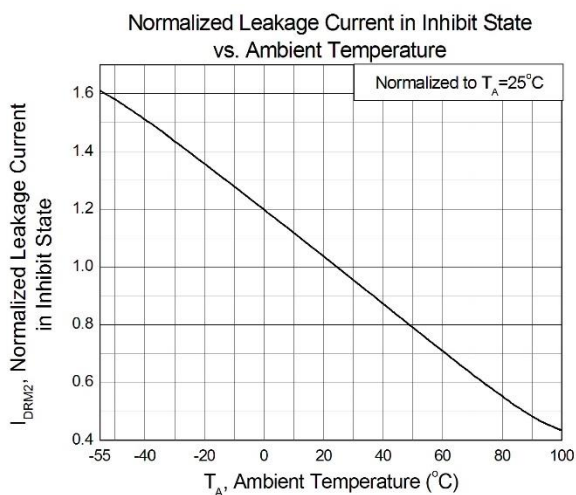


Figure 6



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## 600V/800V Zero Cross 6-Pin Phototriac Optocoupler

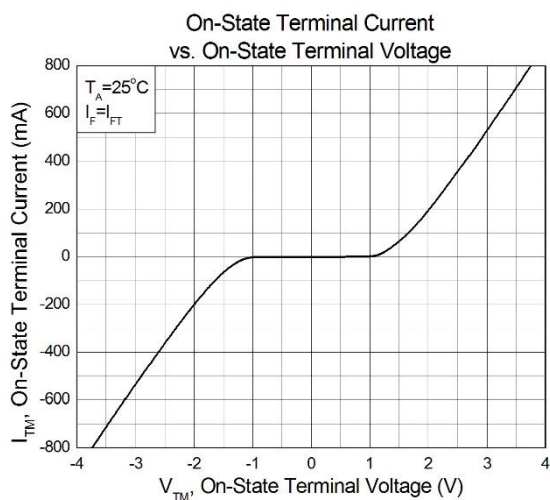


Figure 7

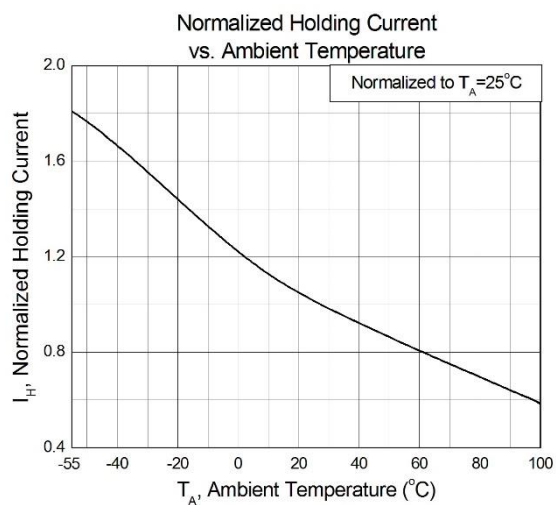


Figure 8

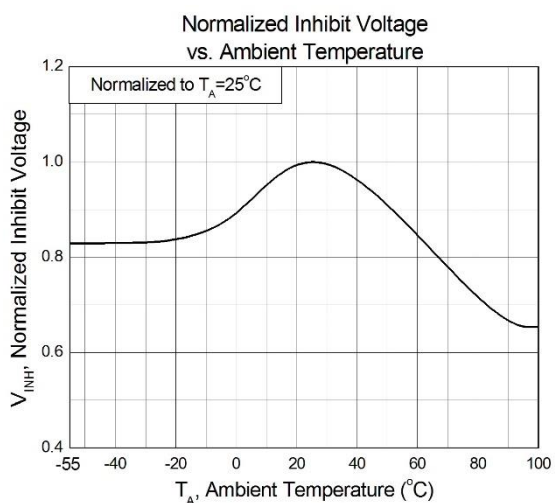


Figure 9



## 600V/800V Zero Cross 6-Pin Phototriac Optocoupler

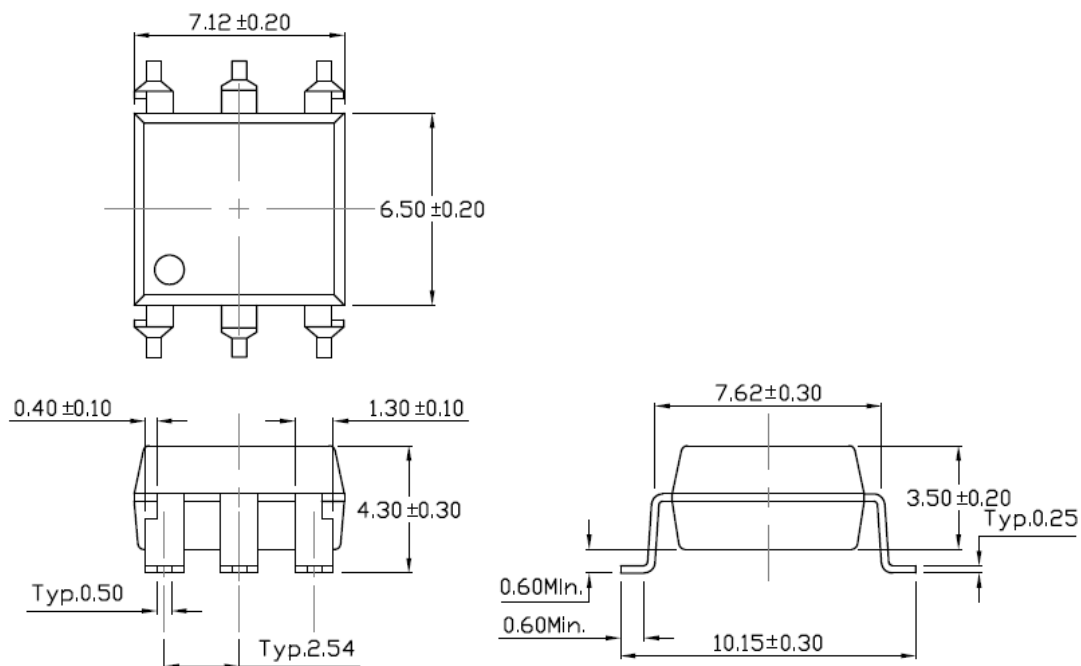


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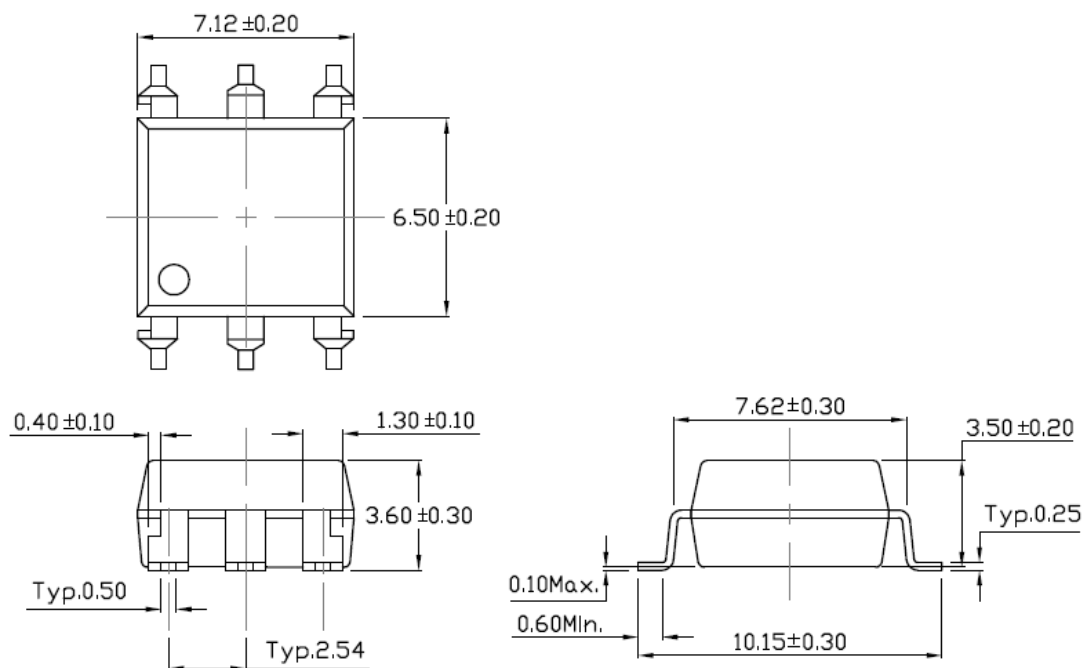
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## 600V/800V Zero Cross 6-Pin Phototriac Optocoupler

### Surface Mount Forming (S Type)



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



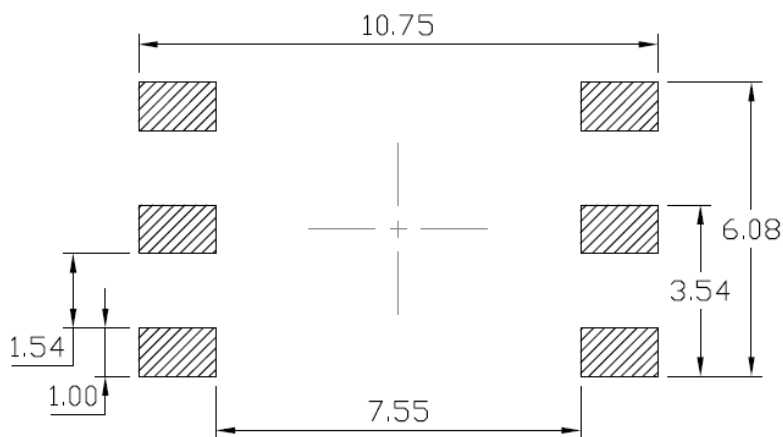


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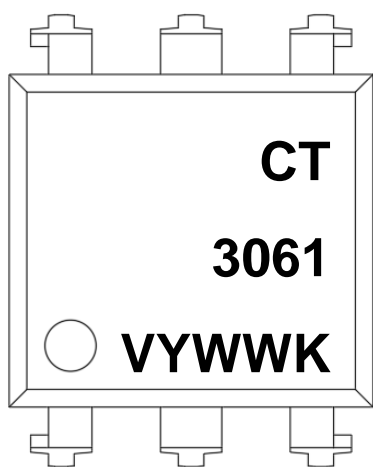
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## 600V/800V Zero Cross 6-Pin Phototriac Optocoupler

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



### Marking Information



#### Note:

CT : Denotes "CT Micro"  
3061 : Part Number  
V : VDE Option  
Y : Fiscal Year  
WW : Work Week  
K : Manufacturing Code





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## **600V/800V Zero Cross 6-Pin Phototriac Optocoupler**

### **Ordering Information**

**CT306X(V)(Y)(Z)-G, CT308X(V)(Y)(Z)-G**

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

V = VDE Option (V or None)

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)

<b>Option</b>	<b>Description</b>	<b>Quantity</b>
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



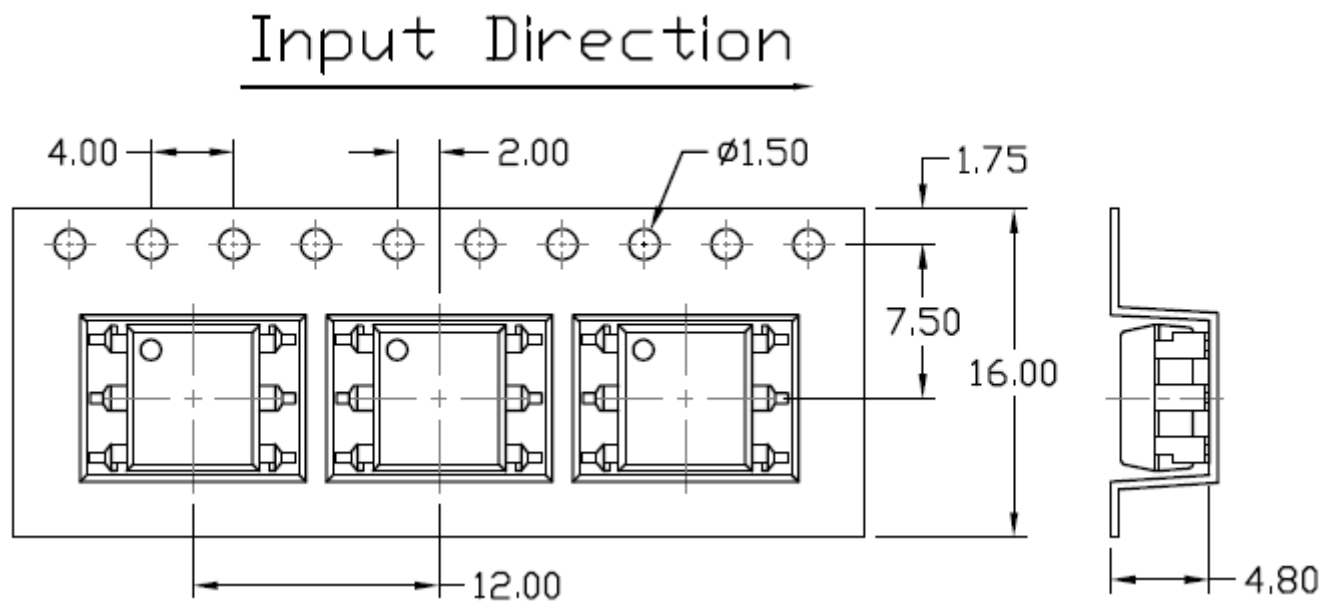
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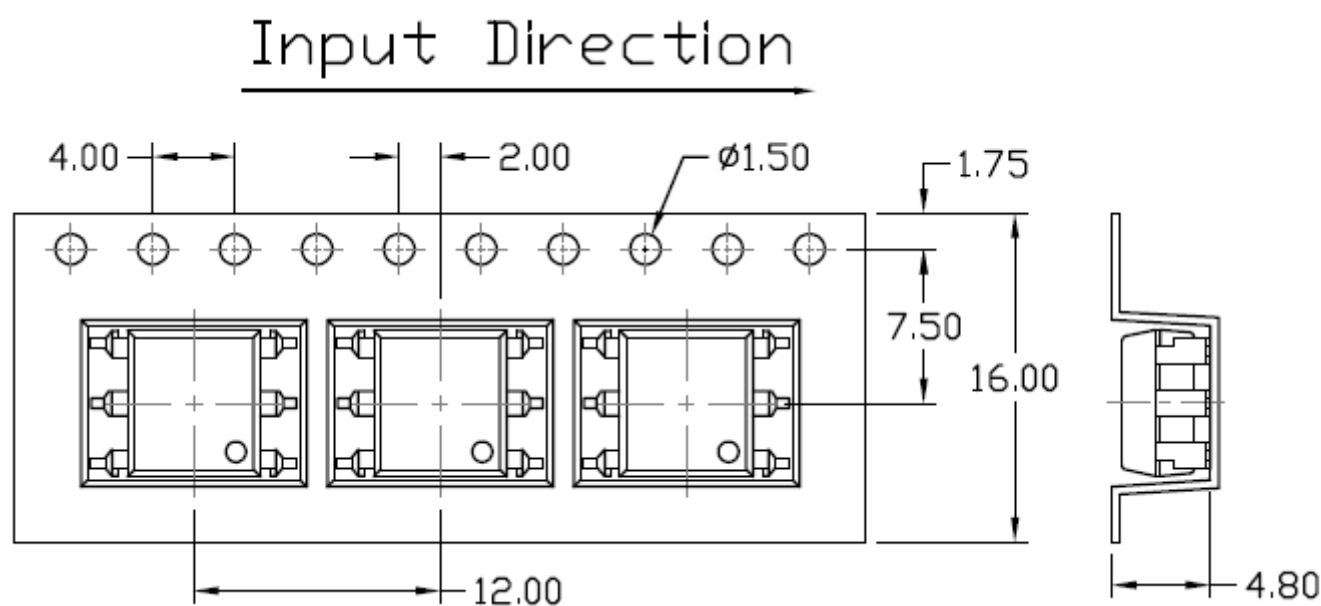
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### Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

#### Option S(T1) & SL(T1)



#### Option S(T2) & SL(T2)





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## 600V/800V Zero Cross 6-Pin Phototriac Optocoupler

### Wave soldering (follow the JEDEC standard JESD22-A111)

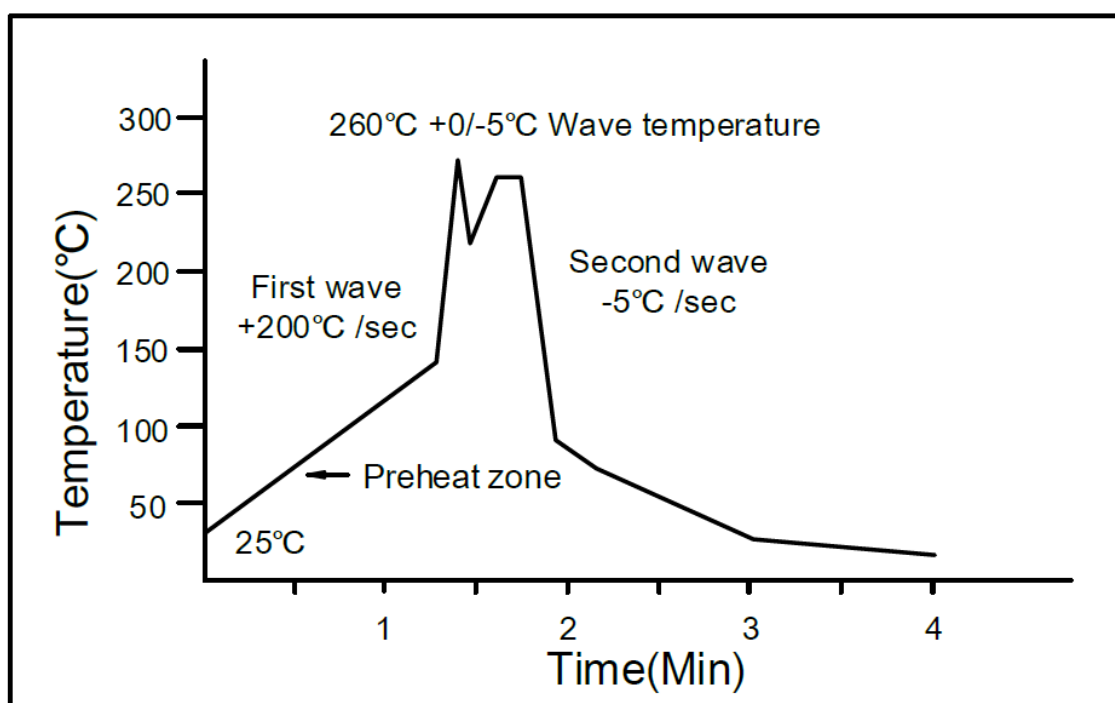
One time soldering is recommended within the condition of temperature.

Temperature:  $260 \pm 0/-5^{\circ}\text{C}$ .

Time: 10 sec.

Preheat temperature: 25 to  $140^{\circ}\text{C}$ .

Preheat time: 30 to 80 sec.



### Hand soldering by soldering iron

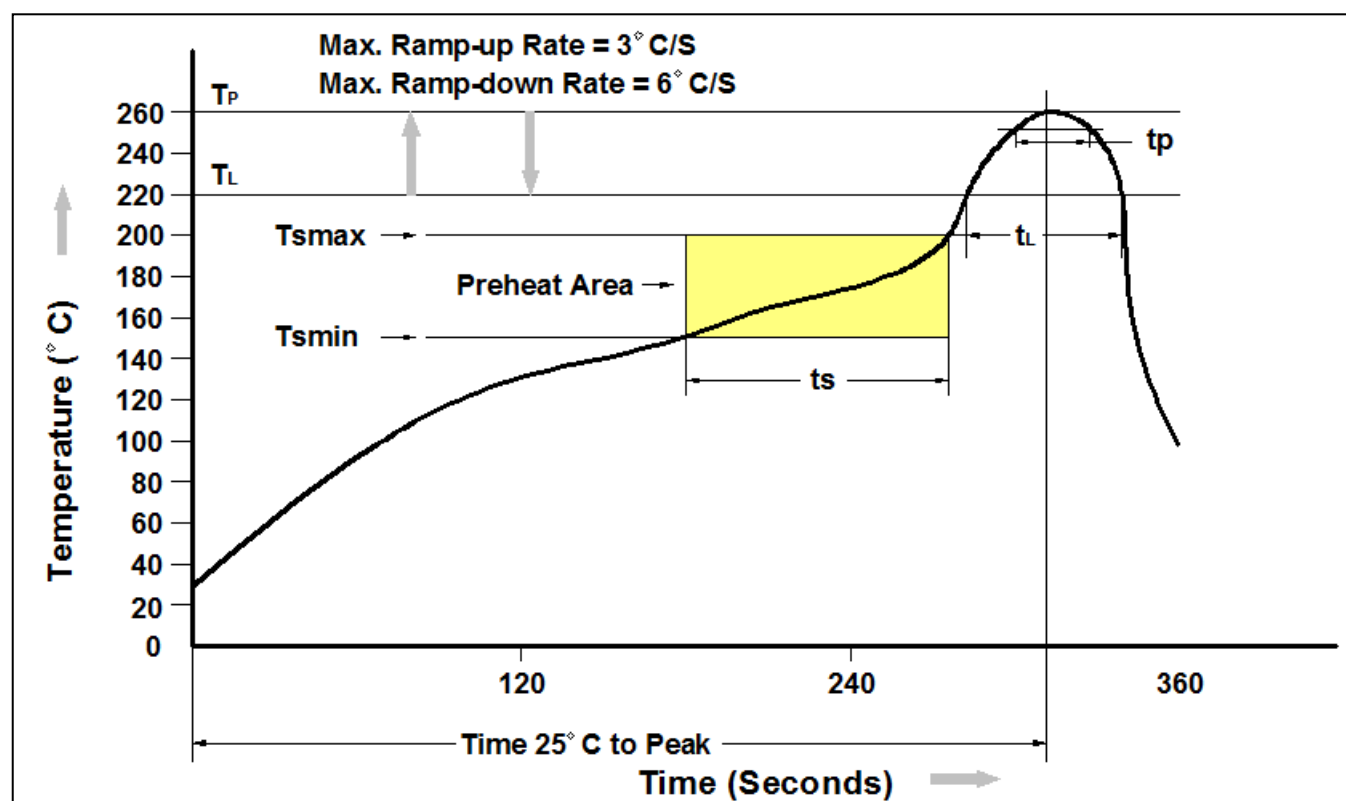
Allow single lead soldering in every single process.

One time soldering is recommended. Temperature:  $380 \pm 0/-5^{\circ}\text{C}$

Time: 3 sec max.

## 600V/800V Zero Cross 6-Pin Phototriac Optocoupler

## Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T <sub>min</sub> )	150°C
Temperature Max. (T <sub>max</sub> )	200°C
Time (ts) from (T <sub>min</sub> to T <sub>max</sub> )	60-120 seconds
Ramp-up Rate (t <sub>L</sub> to t <sub>P</sub> )	3°C/second max.
Liquidous Temperature (T <sub>L</sub> )	217°C
Time (t <sub>L</sub> ) Maintained Above (T <sub>L</sub> )	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (t <sub>P</sub> ) within 5°C of 260°C	30 seconds
Ramp-down Rate (T <sub>P</sub> to T <sub>L</sub> )	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.



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