



# CT303X, CT304X, CT306X, CT308X 6Pin Zero Cross TRIAC Driver Coupler

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## Features

- High isolation 5000 VRMS
- Peak Breakdown Voltage
  - 250V – CT303X
  - 400V – CT304X
  - 600V – CT306X
  - 800V – CT308X
- Temperature range - 55 °C to 100 °C

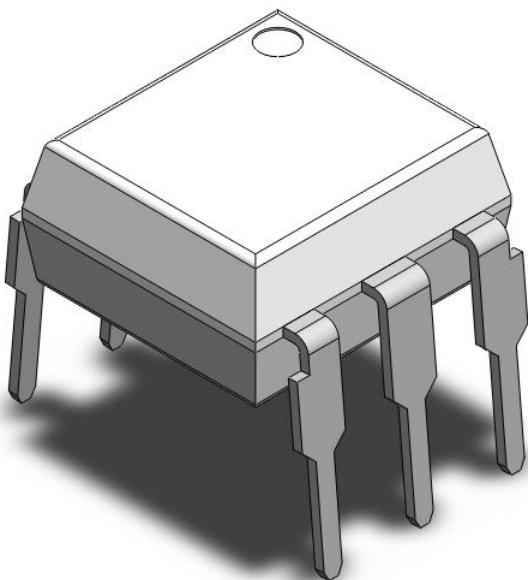
## Applications

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

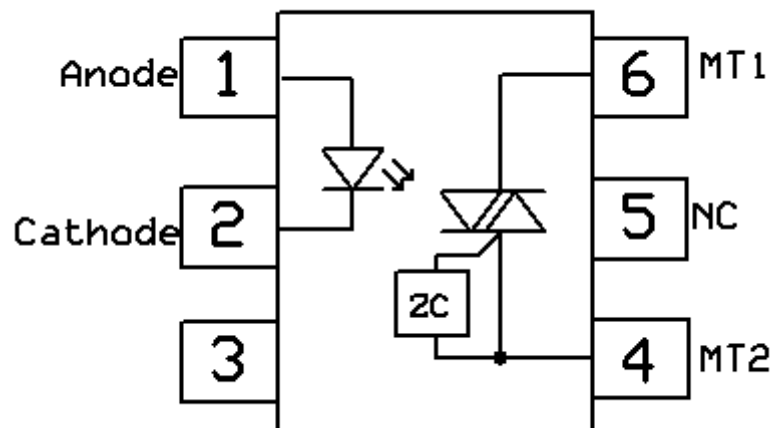
## Description

The CT303X, CT304X, CT306X and CT308X series consists of a Zero Cross Photo Triac optically coupled to a gallium arsenide Infrared-emitting diode in a 6-lead DIP package with bending options.

## Package Outline



## Schematic



Note: Different bending options available. See package dimension.



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## 6Pin Zero Cross TRIAC Driver Coupler

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### 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 ~ +100	°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	300	mW	
V <sub>DRM</sub>	Off-State Output Terminal Voltage	CT303X	250	V
		CT304X	400	V
		CT306X	600	V
		CT308X	800	V
I <sub>TSM</sub>	Peak Repetitive Surge Current	1	A	



# CT303X, CT304X, CT306X, CT308X

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### 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	$f= 1\text{MHz}$	-	45	-	$\text{pF}$	

#### Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$I_{DRM1}$	Peak Blocking Current	CT303X, CT304X	$I_F= 0\text{mA}, V_{DRM}= \text{Rated } V_{DRM}$	-	-	100	nA
		CT306X, CT308X		-	-	500	
$I_{DRM2}$	Inhibit Leakage Current	$I_F= \text{Rated } I_{FT}, V_{DRM}= \text{Rated } V_{DRM}$			500	$\mu\text{A}$	
$V_{TM}$	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	CT303X, CT304X, CT306X	$V_{PEAK}= \text{Rated } V_{DRM}$	1000	-	-	$\text{V}/\mu\text{s}$
		CT308X		$V_{PEAK} = 400\text{V}$	600	-	

#### Transfer Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$I_{FT}$	Input Trigger Current	CT3031, CT3041, CT3061, CT3081	Terminal Voltage = 3V	-	-	15	V
		CT3032, CT3042, CT3062, CT3082		-	-	10	
		CT3033, CT3043, CT3063, CT3083		-	-	5	
$I_H$	Holding Current		-	270	-	$\mu\text{A}$	
$R_{IO}$	Isolation Resistance	$V_{IO}= 500\text{V}_{DC}$	$1 \times 10^{11}$			$\Omega$	
$C_{IO}$	Isolation Capacitance	$f= 1\text{Mhz}$		0.25		$\text{pF}$	



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## Typical Characteristic Curves

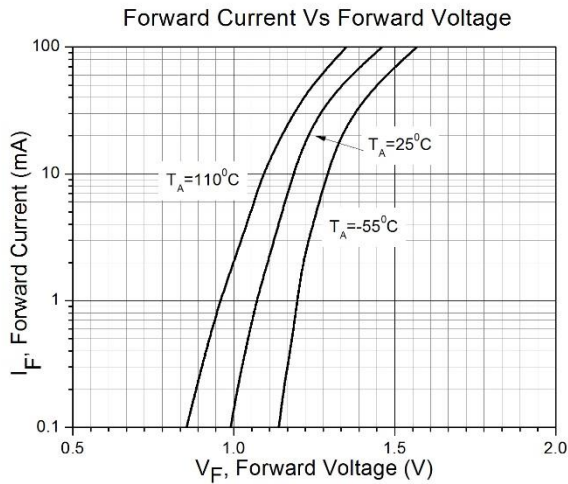


Figure 1

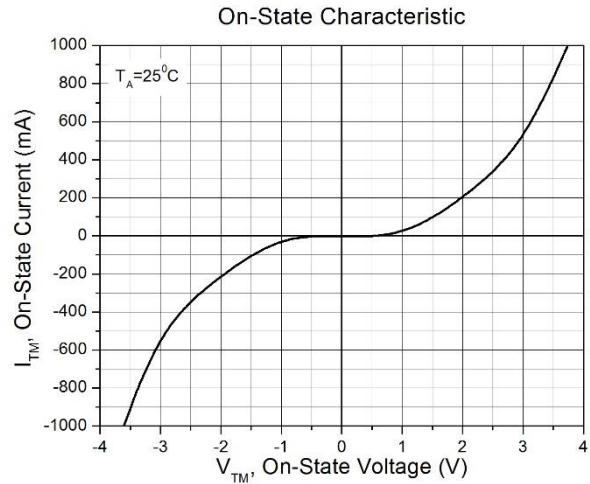


Figure 2

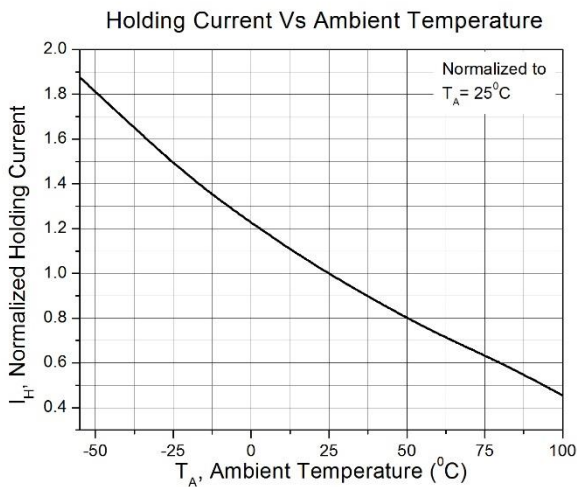


Figure 3

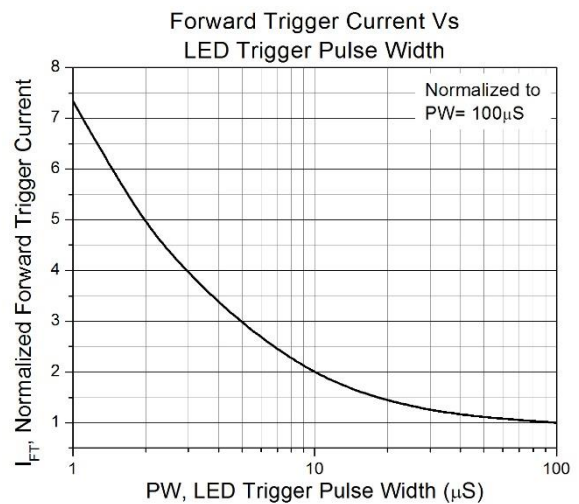


Figure 4

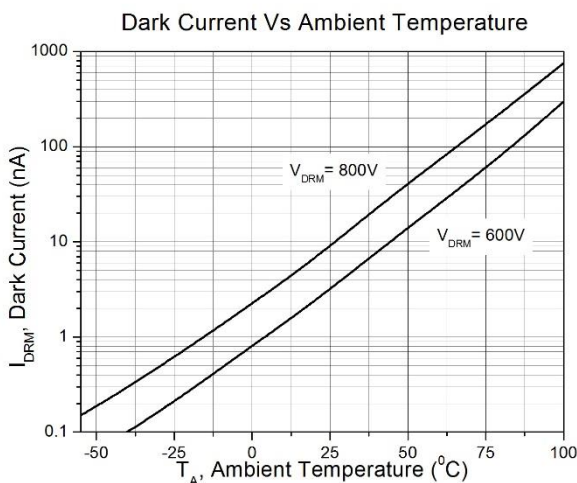


Figure 5

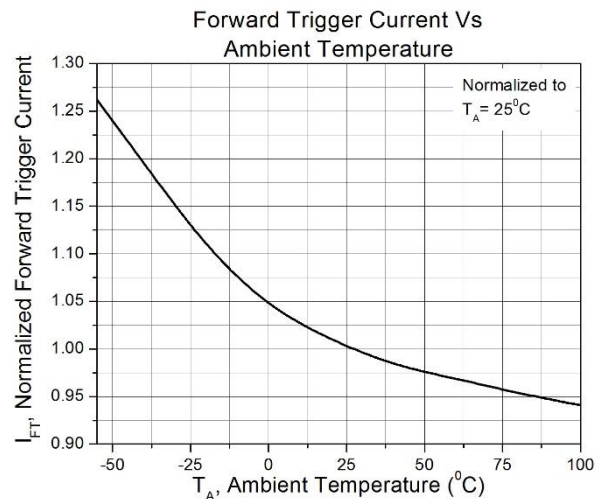


Figure 6



# CT303X, CT304X, CT306X, CT308X 6Pin Zero Cross TRIAC Driver Coupler

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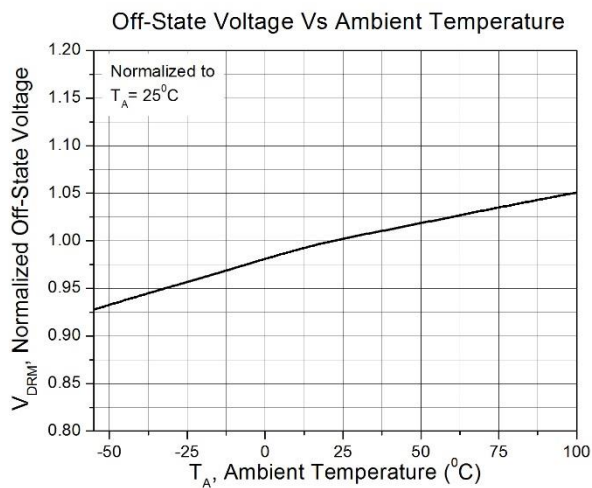


Figure 7

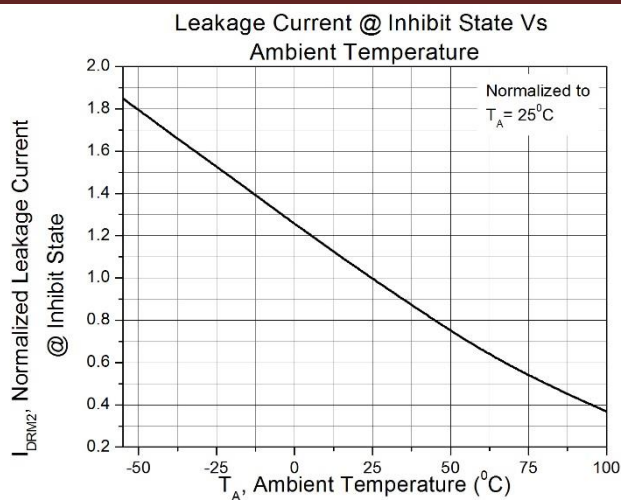


Figure 8

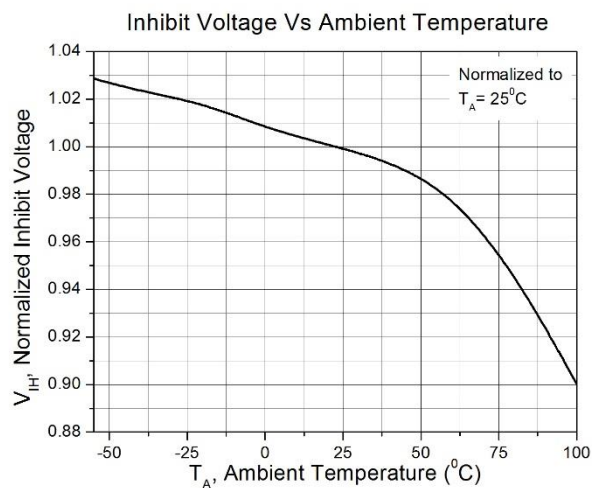


Figure 9

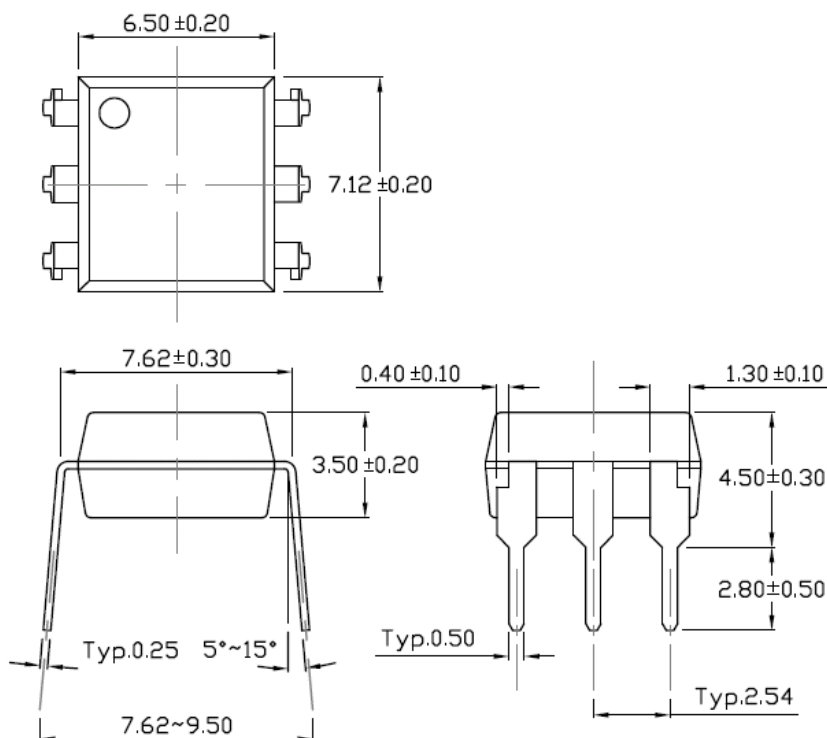


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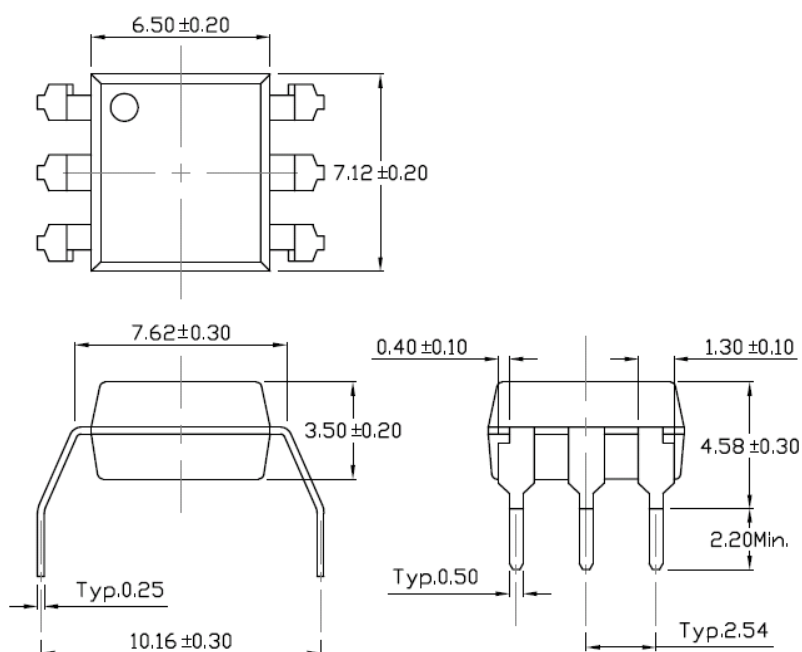
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## Package Dimension *Dimensions in mm unless otherwise stated*

### Standard DIP – Through Hole



### Wide Lead Forming – Through Hole

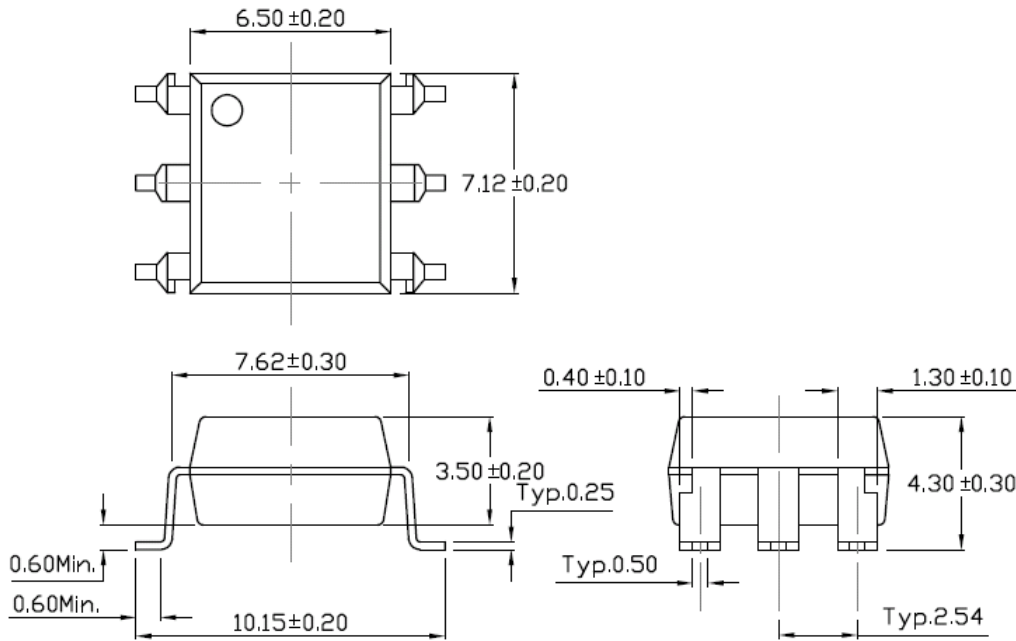




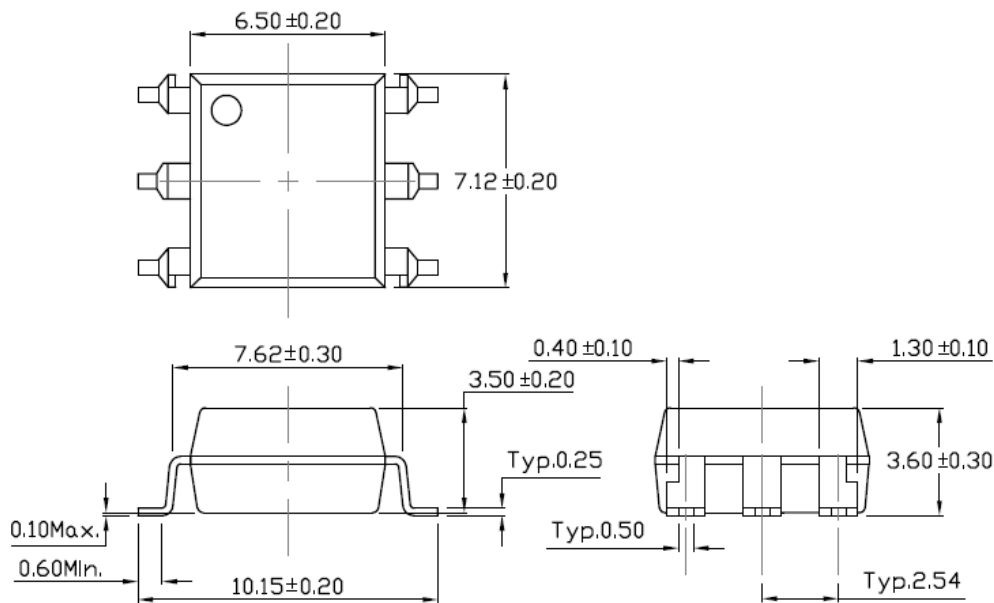
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## Surface Mount Forming



## Surface Mount Forming (Low Profile)

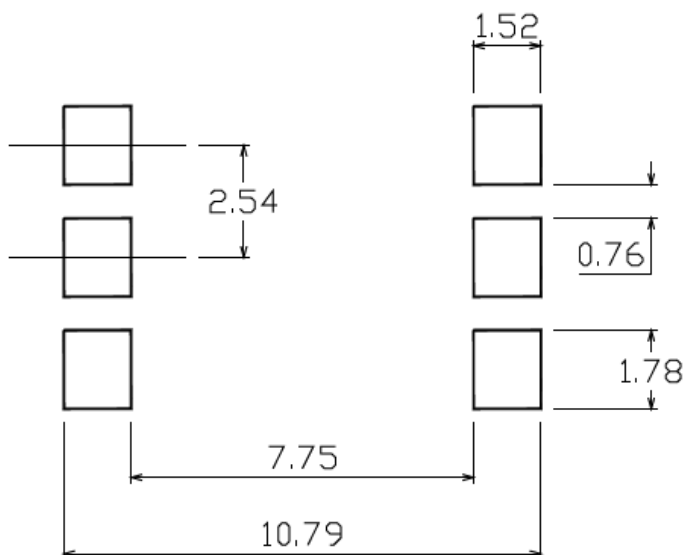




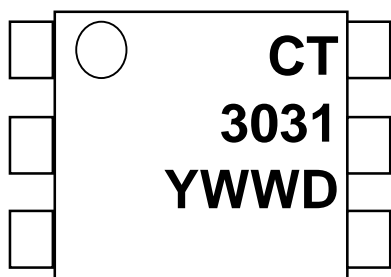
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## Recommended Solder Mask *Dimensions in mm unless otherwise stated*



## Marking Information



### Note:

- CT : Logo
- 3031 : Part Number
- Y : Fiscal Year
- WW : Work Week
- D : Manufacturing Code





# CT303X, CT304X, CT306X, CT308X 6Pin Zero Cross TRIAC Driver Coupler

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## Ordering Information

CT303X(Y)(Z)-G, CT304X(Y)(Z)-G, CT306X(Y)(Z)-G, CT308X(Y)(Z)-G

X = (1,2,3)

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)

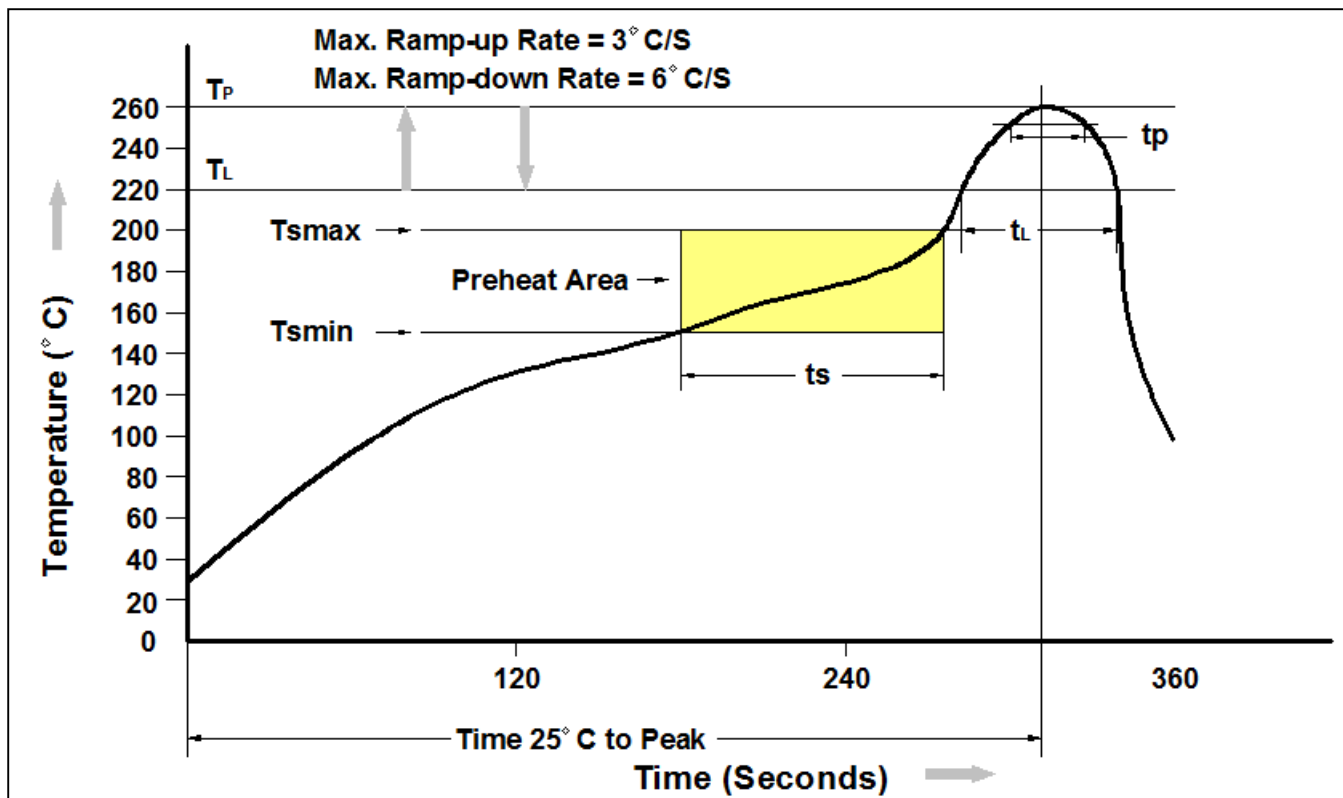
<b>Option</b>	<b>Description</b>	<b>Quantity</b>
None	Standard 6 Pin Dip	50Units/Tube
M	Wide Lead Forming	50Units/Tube
S(TA)	Surface Mount Lead Forming – With Option A Taping	1000 Units/Reel
S(TB)	Surface Mount Lead Forming – With Option B Taping	1000 Units/Reel
SL(TA)	Surface Mount Lead Forming(Low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



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T <sub>smin</sub> )	150°C
Temperature Max. (T <sub>smax</sub> )	200°C
Time (t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</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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