



## Features

- High isolation 3750 VRMS
- Patented coplanar structure DMC-Isolator®
- Peak Breakdown Voltage
  - 600V – CTM3061,CT3062,CT3063
  - 800V – CTM3081,CT3082,CT3083
- Operating temperature range - 55 °C to 100 °C
- External Creepage ≥ 5.0mm
- Distance Through Isolation ≥ 0.4mm
- Clearance Distance ≥ 5.0mm
- RoHS and REACH Compliance
- Halogen Free Compliance
- MSL class 1
- Regulatory Approvals
  - ✓ UL - UL1577 (E364000)
  - ✓ VDE - EN60747-5-5(VDE0884-5)
  - ✓ CQC – GB4943.1, GB8898
  - ✓ IEC60065, IEC60950

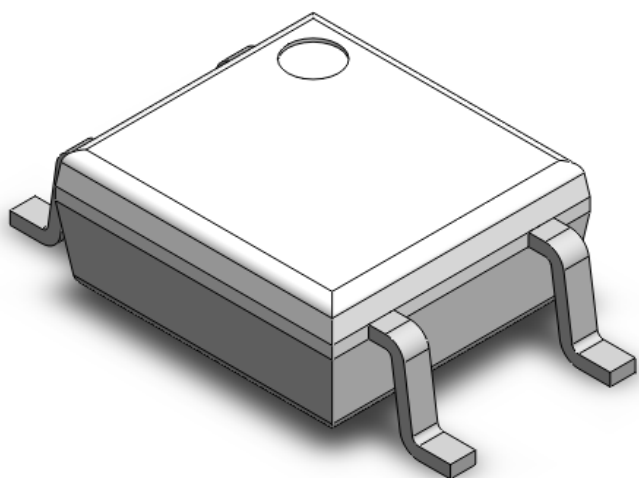
## Description

The CTM3061, CTM3062, CTM3063, CTM3081, CTM3082 and CTM3083 series consists of a Zero Cross Photo Triac optically coupled to an Infrared-emitting diode in a 4-lead Mini-Flat DMC-Isolator® package.

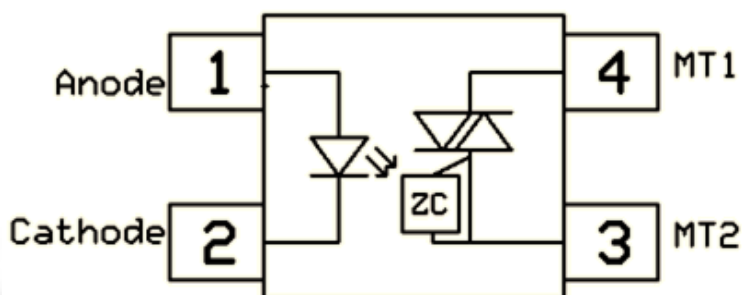
## Applications

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

## Package Outline



## Schematic





**Absolute Maximum Ratings**  $T_A = 25^\circ\text{C}$ , unless otherwise specified

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Symbol	Parameters	Ratings	Units	Notes
V <sub>ISO</sub>	Isolation voltage (AC, 1 minute, 40 ~ 60% R.H.)	3750	V <sub>RMS</sub>	
T <sub>OPR</sub>	Operating temperature	-55 ~ +100	°C	
T <sub>STG</sub>	Storage temperature	-55 ~ +150	°C	
V <sub>ISO</sub>	Isolation voltage (AC, 1 minute, 40 ~ 60% R.H.)	3750	V <sub>RMS</sub>	
P <sub>TOT</sub>	Total power dissipation	200	mW	
<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	CTM3061,CT3062, CT3063	600	V
		CTM3081,CT3082, CT3083	800	V
I <sub>TSM</sub>	Peak Repetitive Surge Current	1	A	



**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	$I_F = 10\text{mA}$	-	-	1.5	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**

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$I_{DRM1}$	Peak Blocking Current	$I_F = 0\text{mA}$ , $V_{DRM} = \text{Rated } V_{DRM}$	-	-	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	CTM3061,62,63	$V_{PEAK} = \text{Rated } V_{DRM}$	1000	-	-	$V/\mu\text{s}$
		CTM3081,82,83		600	-	-	

**Transfer Characteristics**

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
$I_{FT}$	Input Trigger Current	CTM3061, CTM3081	Terminal Voltage = 3V $I_{TM} = 100\text{mA}$	-	-	15	mA
		CTM3062, CTM3082		-	-	10	
		CTM3063, CTM3083		-	-	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	$V_{IO} = 500\text{V}_{DC}$ , 40 ~ 60% R.H.	$1 \times 10^{11}$	-	-	$\Omega$	
$C_{IO}$	Isolation Capacitance	$f = 1\text{MHz}$	-	0.25	-	pF	



Typical Characteristic Curves  $T_A = 25^\circ\text{C}$ , unless otherwise specified

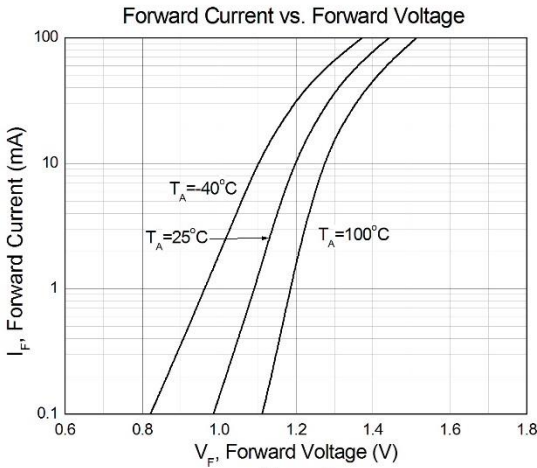


Figure 1

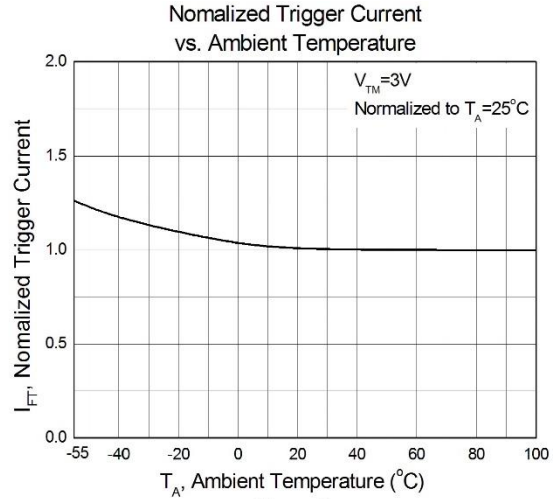


Figure 2

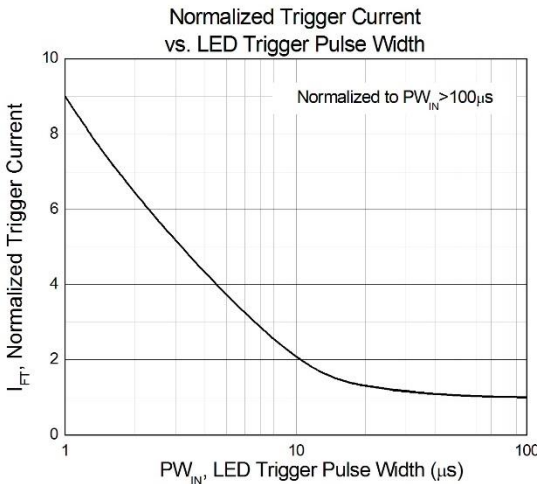


Figure 3

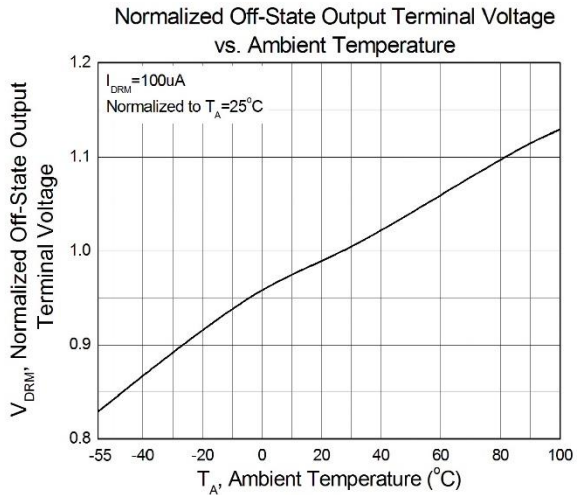


Figure 4

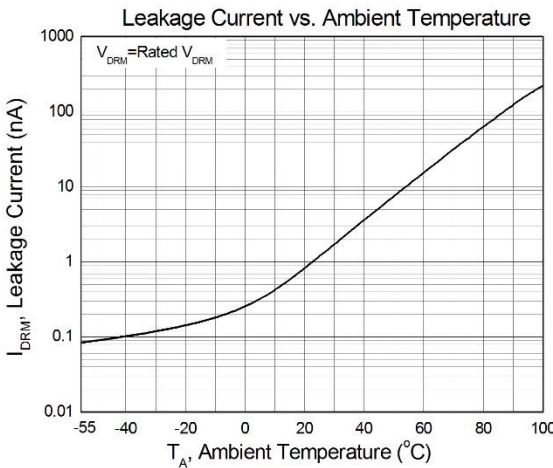


Figure 5

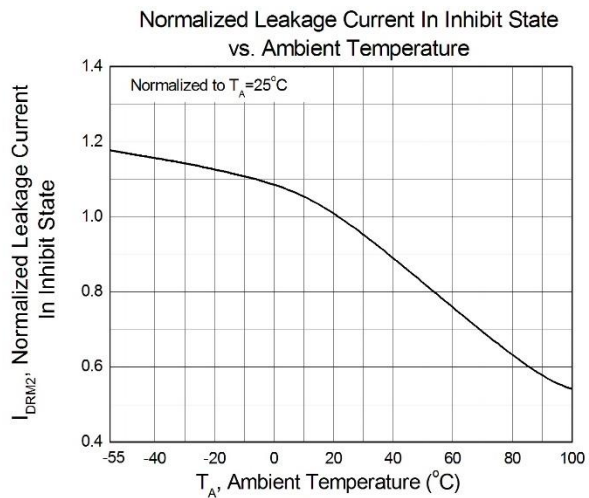


Figure 6



Typical Characteristic Curves  $T_A = 25^\circ\text{C}$ , unless otherwise specified

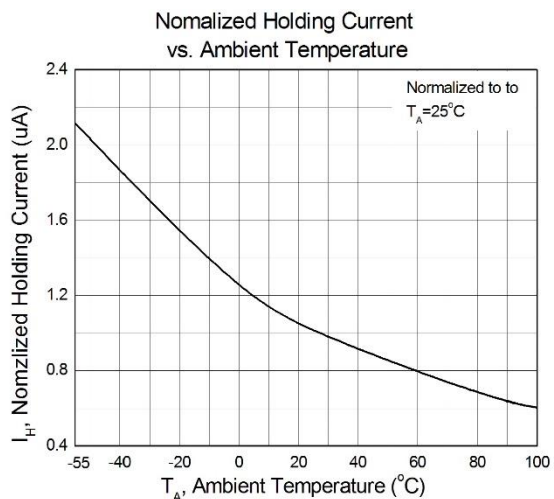


Figure 8

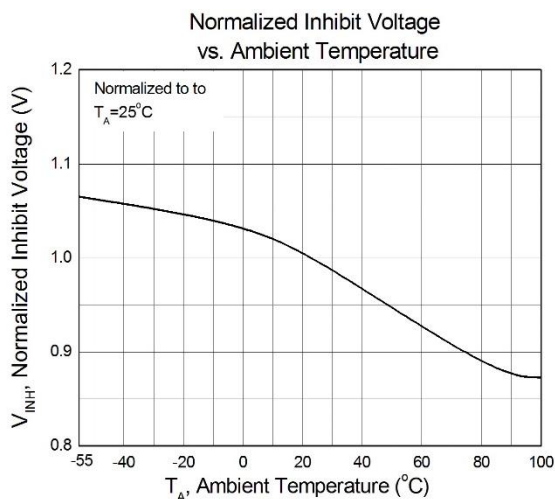


Figure 9

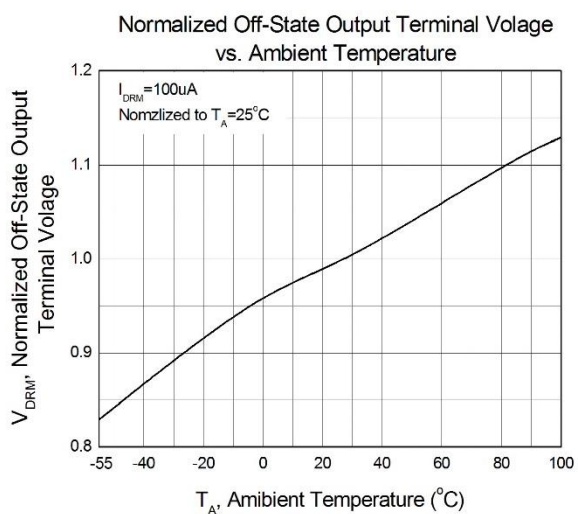


Figure 4

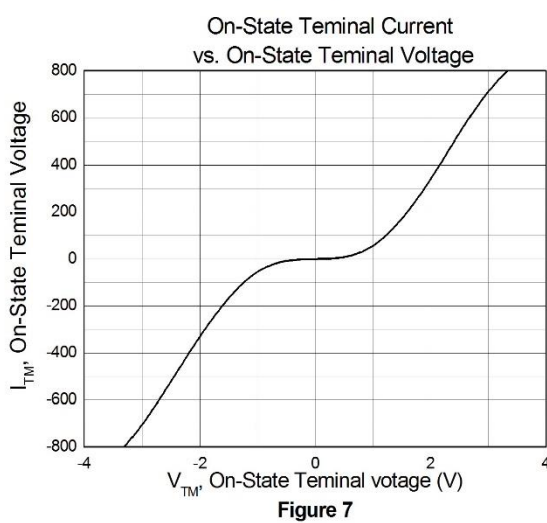
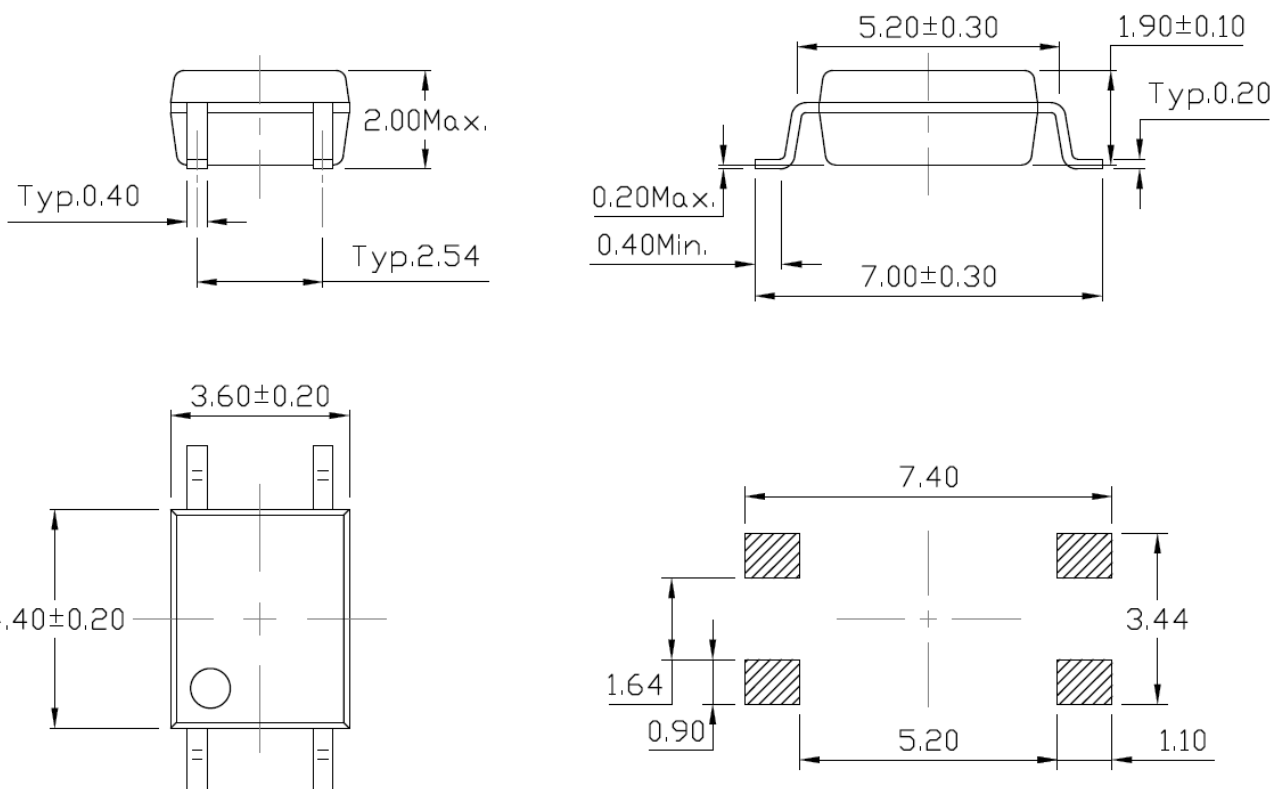


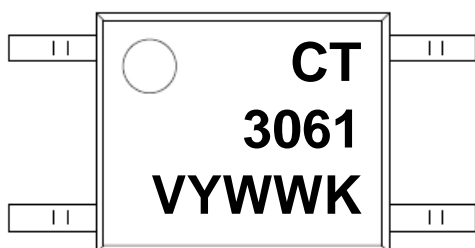
Figure 7



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



**Marking Information**



**Note:**

- CT : Denotes "CT Micro"
- 3061 : Part Number
- V : VDE Safety Mark Option (Blank or V)
- Y : One Digit Year Code
- WW : Two Digit Work Week
- K : Manufacturing Code



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CTM3061, CTM3062, CTM3063

CTM3081, CTM3082, CTM3083

600V/800V Zero Cross MFP-4L DMC-Isolator®

Phototriac Optocoupler

## Ordering Information

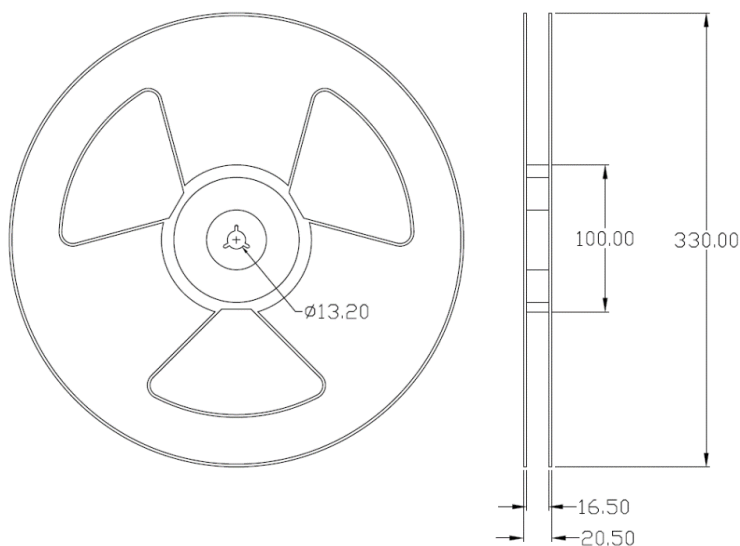
### CTM306X(V)(Z)

- CT = Denotes "CT Micro"
- 306X = Part No. (CT306X:0,1,2), (CT308X : 0,1,2,3)
- V = VDE Safety Mark Option (Blank or V)
- Y = Lead Form Option (Blank, S, SL, M or SLM)
- Z = Tape and Reel Option (Blank, T1, T2, T3 or T4)
- G = Material Option (G: Halogen Free, Blank: Non-Halogen Free)

Option	Description	Quantity
T1	Surface Mount Lead Forming – With Option 1 Taping	3000 Units/Reel
T2	Surface Mount Lead Forming – With Option 2 Taping	3000 Units/Reel

### Reel Dimension *All dimensions are in mm, unless otherwise stated*

#### Option T1/T2

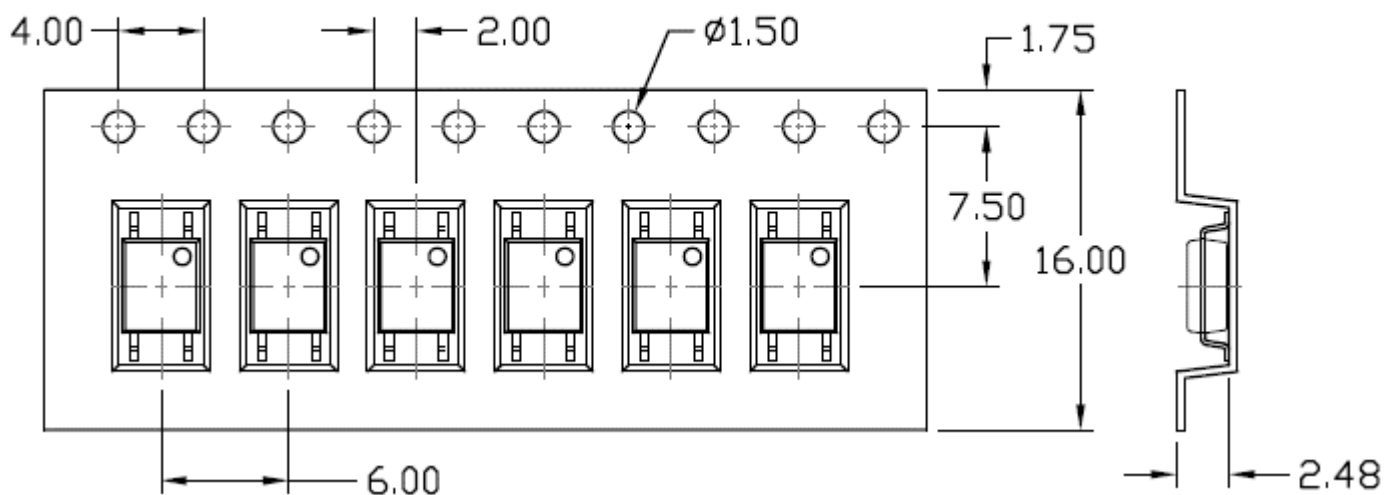




**Carrier Tape Specifications** *Dimensions in mm unless otherwise stated*

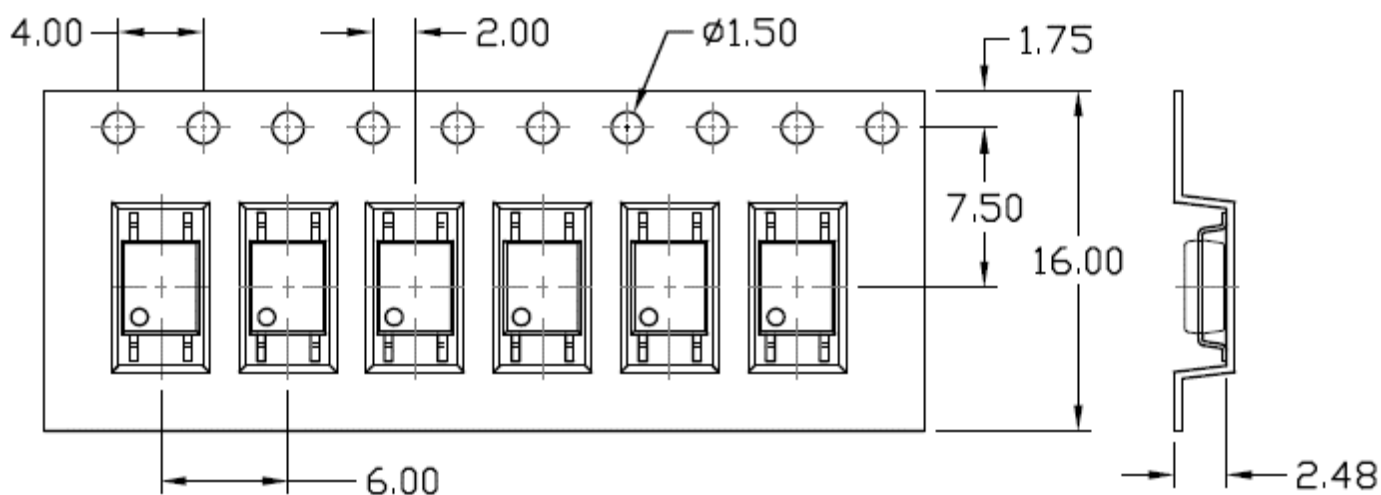
**Option T1**

Input Direction  
→



**Option T2**

Input Direction  
→







### Solderability spec (Follow the JEDEC standard JESD22-B102)

Reflow Soldering: Immersed surface, other than the end of pin as cut-surface, must be covered by solder.

Solder-Bath: More than 95% of the electrode must be covered with solder.

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

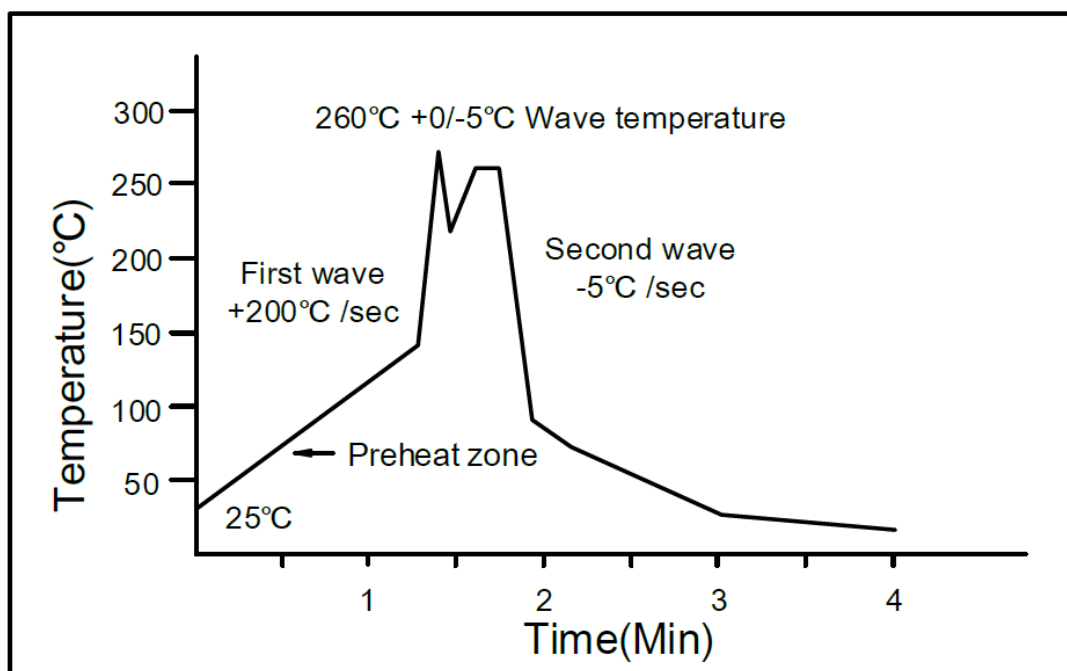
One time soldering is recommended within the condition of temperature.

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.



### Iron soldering (Follow the standard MIL-STD 202G, Method 210F)

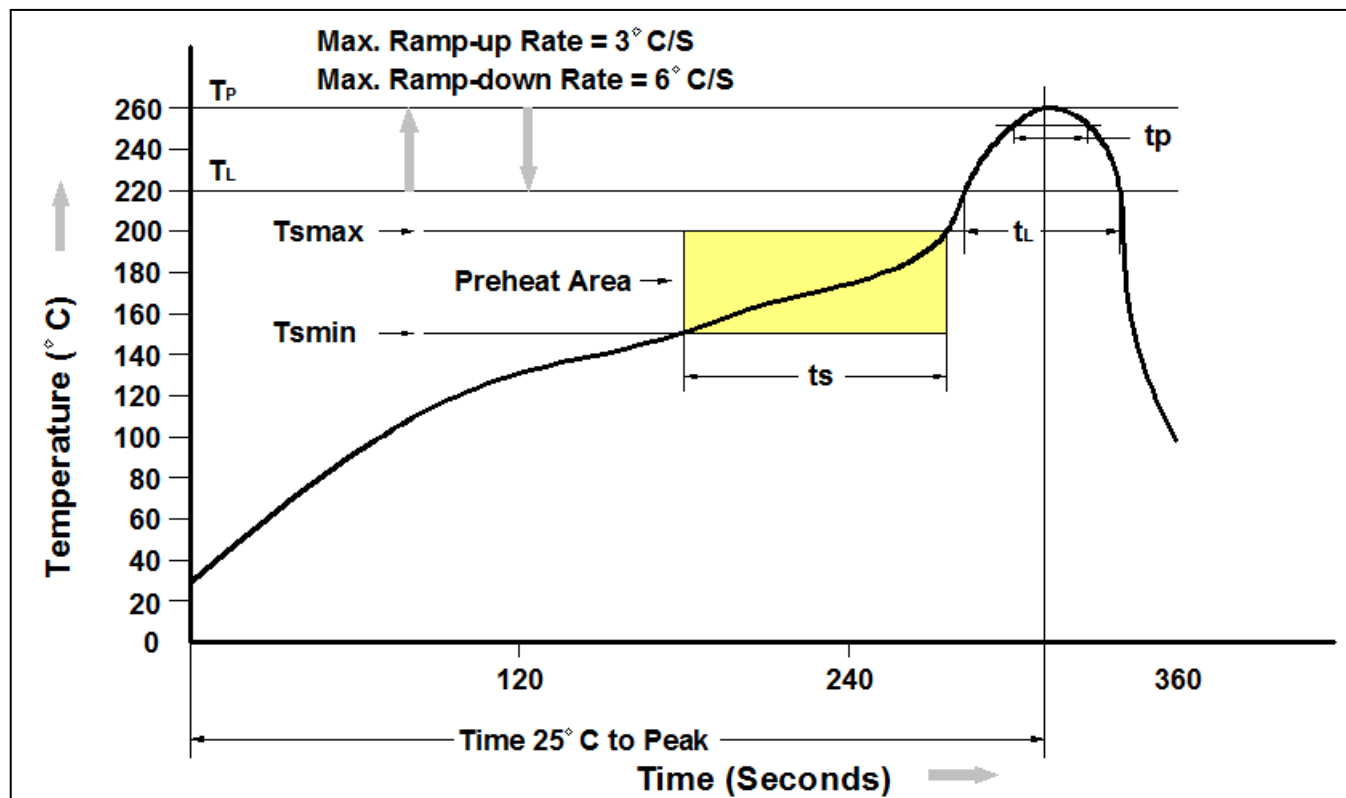
Allow single lead soldering in every single process.

One time soldering is recommended. Temperature:  $350 \pm 10^\circ\text{C}$

Time: 5 sec max.



**Reflow Profile (Follow the JEDEC standard J-STD-020)**



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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**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.**

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- 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.*