



CTT0213, CTT1213, CTT2213, CTT3213

600V Zero Cross High Power Photo TRIAC

Features

- High isolation 5000 VRMS
- Supports 0.3 A, 0.6 A, 0.9 A and 1.2 A
- RoHS compliant
- REACH compliance
- External creepage > 7.5mm
- Internal creepage > 6.0mm
- Insulation distance > 0.4mm
- Regulatory Approvals
 - UL - UL1577 (pending approval)
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC – GB4943.1, GB8898
 - IEC60065, IEC60950

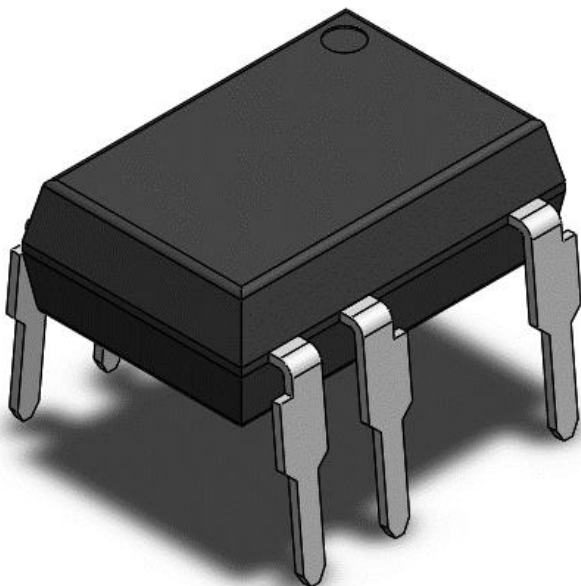
Description

The zero crossing power Triac consists of a Triac and a photo-Triac, which is optically coupled to a gallium arsenide Infrared emitting diode, and housed in a 7-lead DIP package. It also comes with different lead forming options.

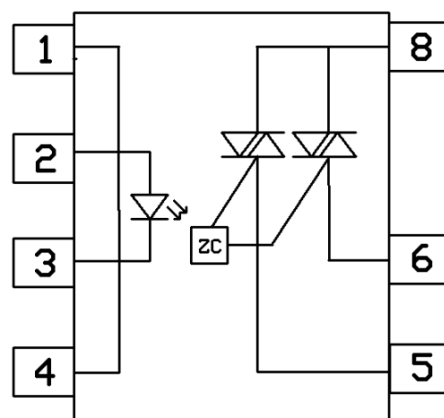
Applications

- Home appliances
- Industrial equipment

Package Outline



Schematic



Note: Different bending options available. See package dimension.



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Absolute Maximum Rating at 25°C

Symbol	Parameters	Ratings	Units	Notes
V _{iso}	Isolation voltage	5000	Vrms	
T _{OPR}	Operating temperature	-40 ~+85	°C	
T _{STG}	Storage temperature	-40 ~+125	°C	
T _{SOL}	Soldering temperature	260	°C	
	Wave soldering temperature	260	°C	
Emitter				
I _F	LED forward current	50	mA	
V _R	LED reverse voltage	6	V	
I _{FP}	Peak forward current	1	A	
P _{in}	Power dissipation	75	mW	
Detector				
V _{DRM}	Repetitive peak OFF-state voltage	600	V	
I _{T(RMS)}	Continuous Current Load	CTT02XX	0.3	A
		CTT12XX	0.6	
		CTT22XX	0.9	
		CTT32XX	1.2	
I _{TSM}	Peak Current Load	CTT02XX	3	A
		CTT12XX	6	
		CTT22XX	9	
		CTT32XX	12	
P _{out}	Power dissipation	800	mW	
P _T	Total power dissipation	850	mW	



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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	$I_F = 10\text{mA}$	-	-	1.3	V	
I_R	Reverse Current	$V_R = 6\text{V}$	-	-	5	μA	
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	$I_F = 0\text{mA}$, $V_{DRM} = 600\text{V}$	-	-	100	μA	
I_{DRM2}	Inhibit Leakage Current	$I_F = \text{Rated } I_{FT}$, $V_{DRM} = 600\text{V}$			500	μA	
V_{INH}	Inhibit Voltage	$I_F = \text{Rated } I_{FT}$	-	-	50	V	
V_{TM}	Peak On-State Voltage	$I_F = \text{Rated } I_{FT}$, $I_{TM} = 100\text{mA}$	-	-	2.5	V	
dv/dt	Critical Rate of Rise off-State Voltage	$V_{PEAK} = \text{Rated } V_{DRM}$	200	-	-	$\text{V}/\mu\text{s}$	

Transfer Characteristics

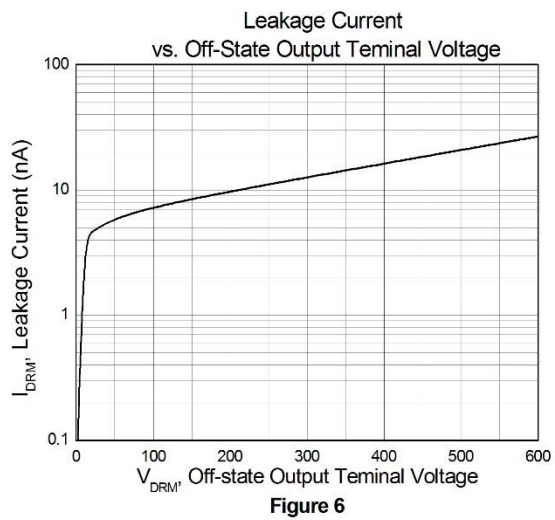
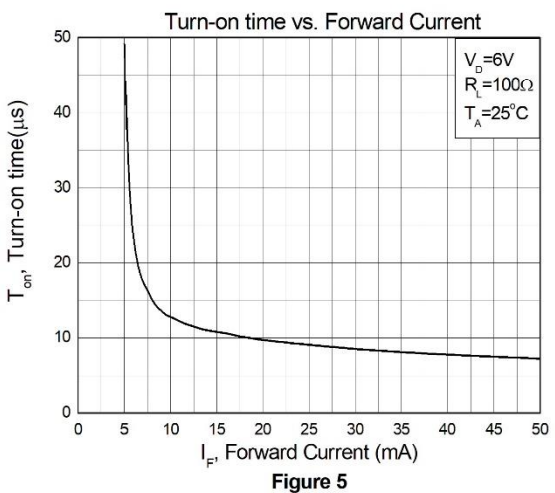
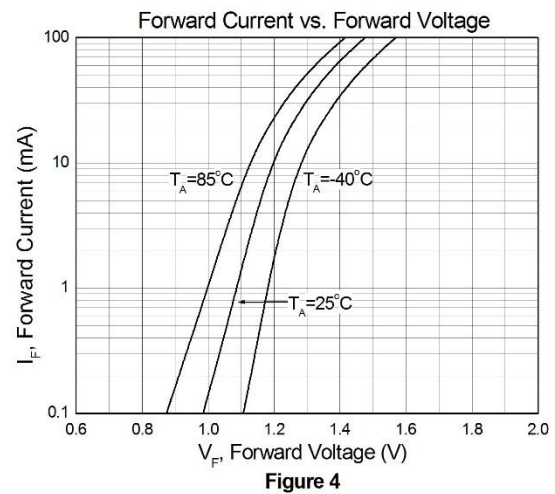
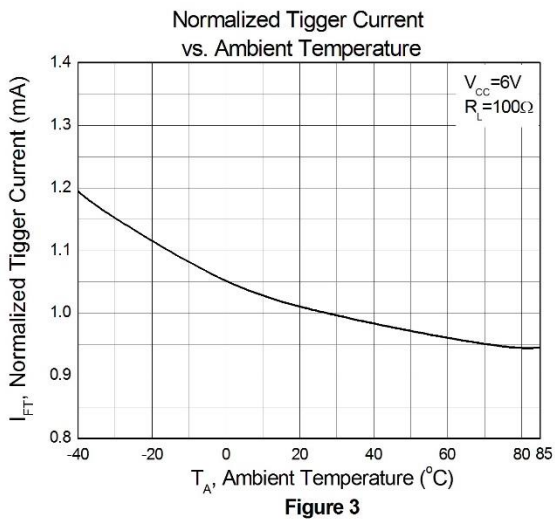
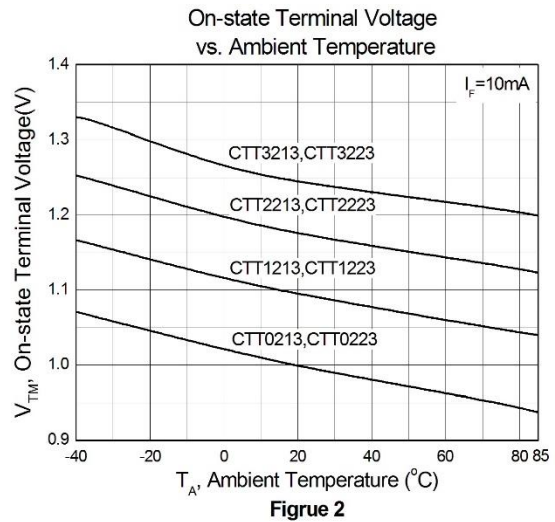
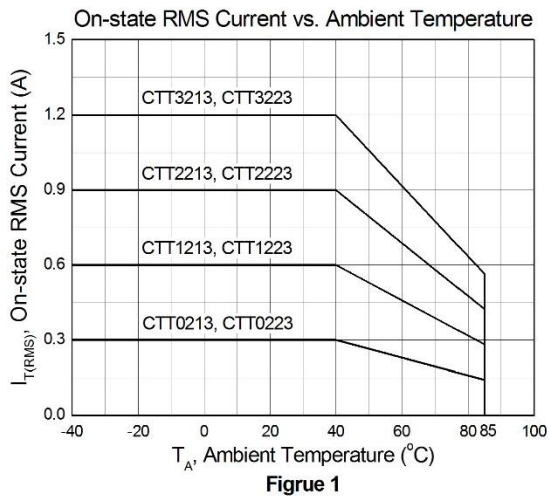
Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
I_{FT}	Input Trigger Current	Terminal Voltage = 3V	-	-	10	mA	
I_H	Holding Current		-	-	25	mA	
R_{IO}	Isolation Resistance	$V_{IO} = 500\text{V}_{DC}$	1×10^{11}	-	-	Ω	
C_{IO}	Isolation Capacitance	$f = 1\text{MHz}$	-	0.25	-	pF	



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Typical Characteristic Curves





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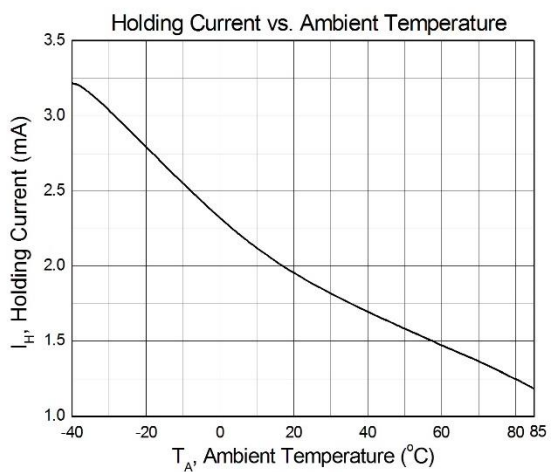


Figure 7

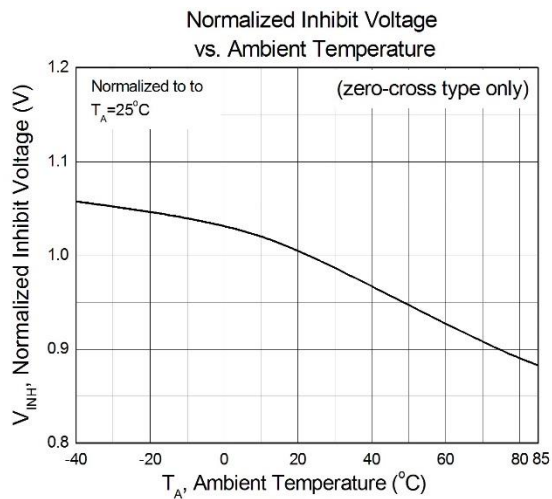


Figure 8

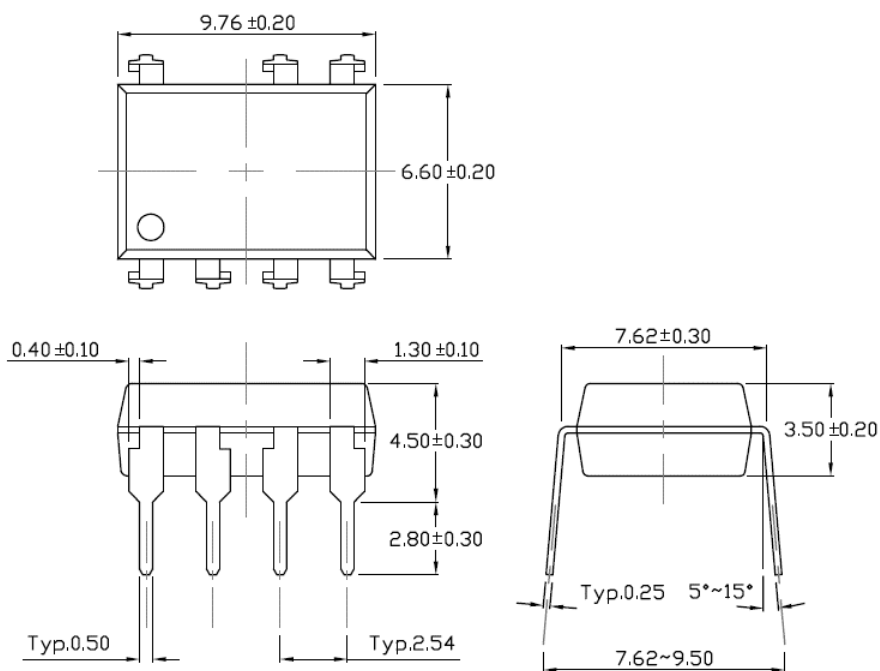


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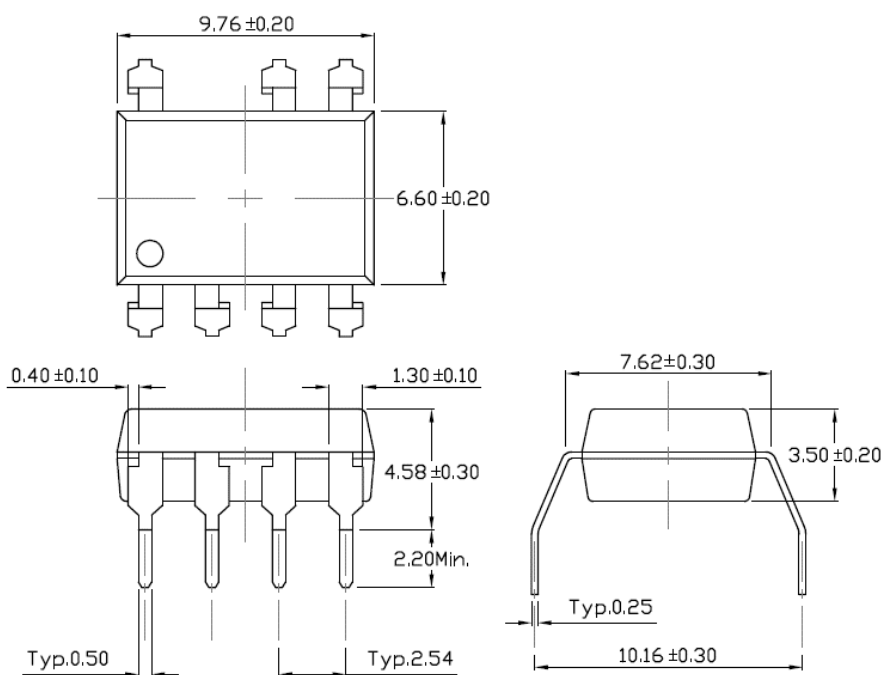
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Package Dimension *Dimensions in mm unless otherwise stated*

Standard DIP – Through Hole



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

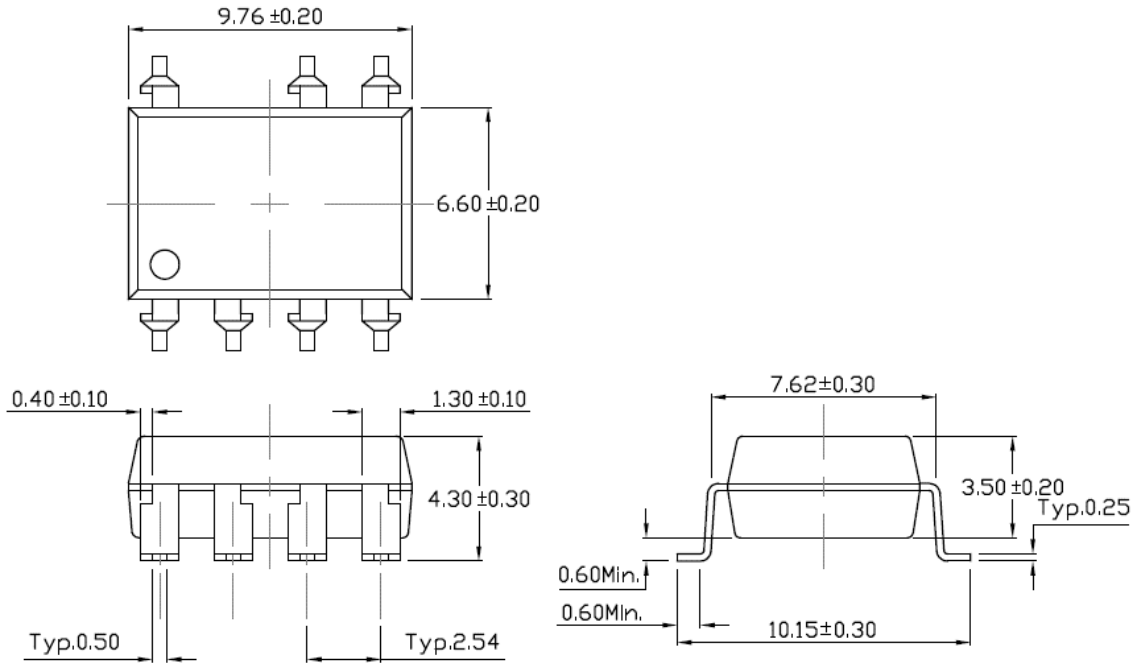




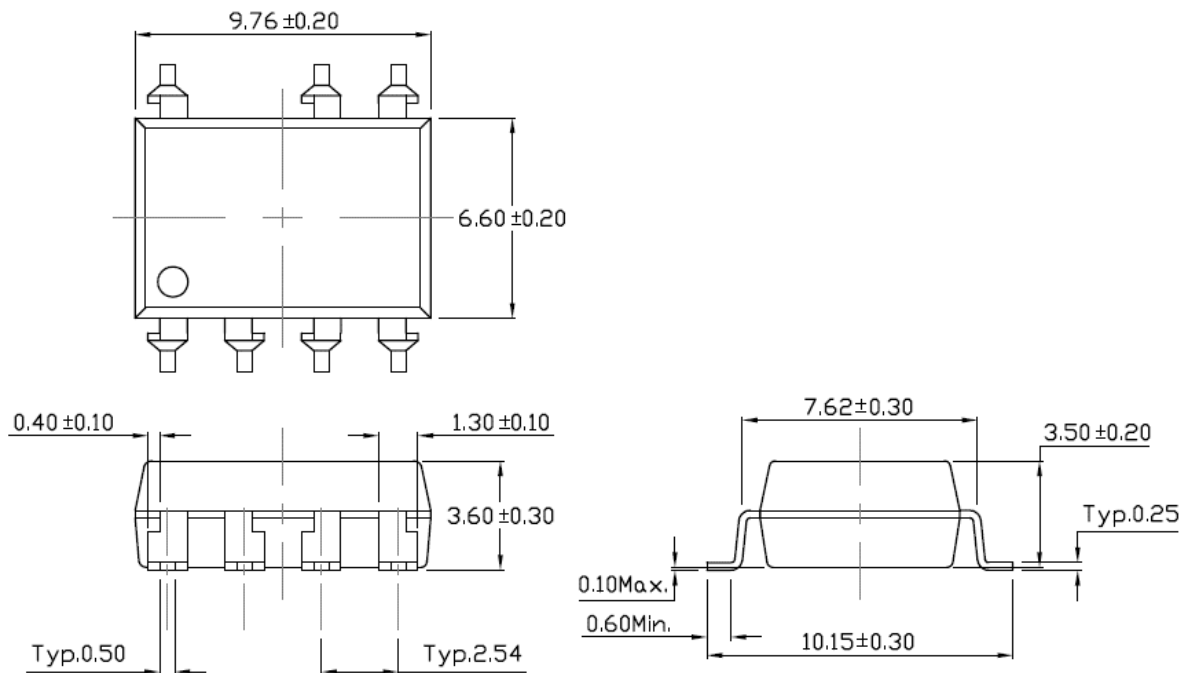
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Surface Mount Lead Forming (S Type)



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

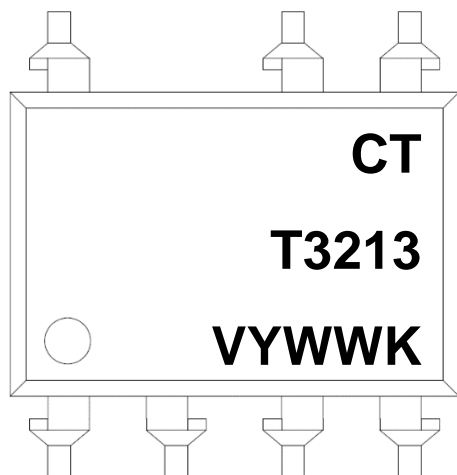




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Device Marking



Note:

- CT : Denotes “CT Micro”
- T3213 : Product Number
- V : VDE Safety Mark (option)
- Y : Fiscal Year
- WW : Work Week
- K : Production Code

Ordering Information

CTTX213(V)(Y)(Z)

- CT = Denotes “CT Micro”
- TX213 = Product Number (Current Rating Option X=0, 1, 2, or 3)
- V = VDE safety mark option (V, or none)
- Y = Lead form option (S, SL, M or none)
- Z = Tape and reel option (T1, T2 or none)

Option	Description	Quantity
None	Standard 8 Pin Dip	40 Units/Tube
M	Gullwing (400mil) Lead Forming	40 Units/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

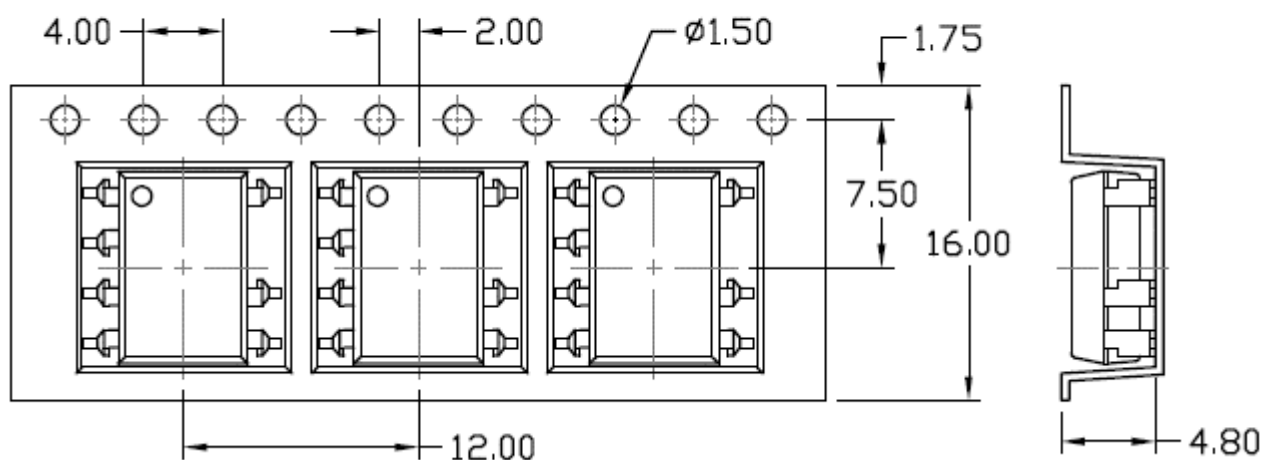


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Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

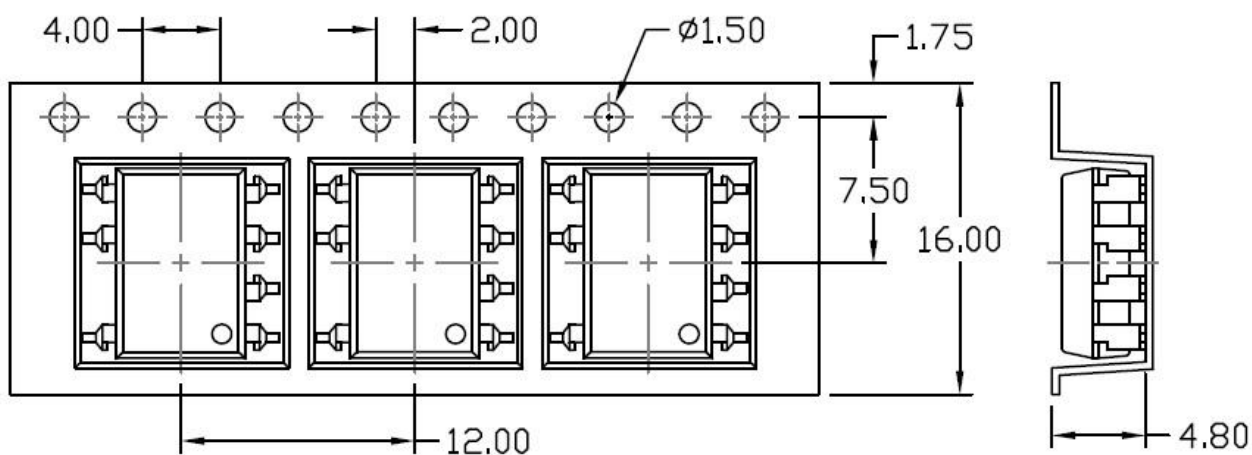
Option S(T1) & SL(T1)

Input Direction



Option S(T2) & SL(T2)

Input Direction





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Wave soldering (JEDEC22A111 compliant)

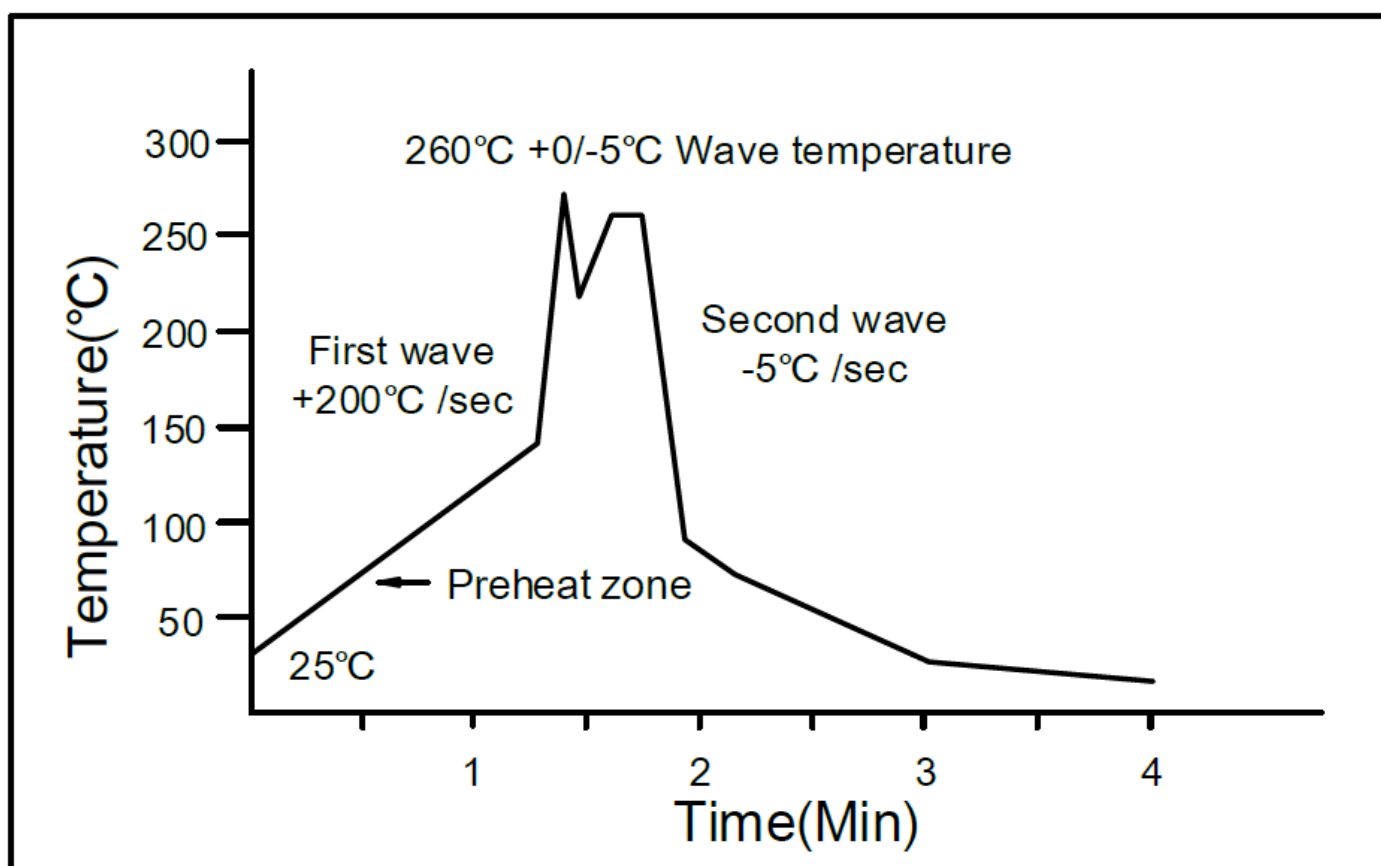
One time soldering is recommended within the condition of temperature.

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

Time: 10 sec.

Preheat temperature: 25 to 140°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: $350 \pm 5^\circ\text{C}$

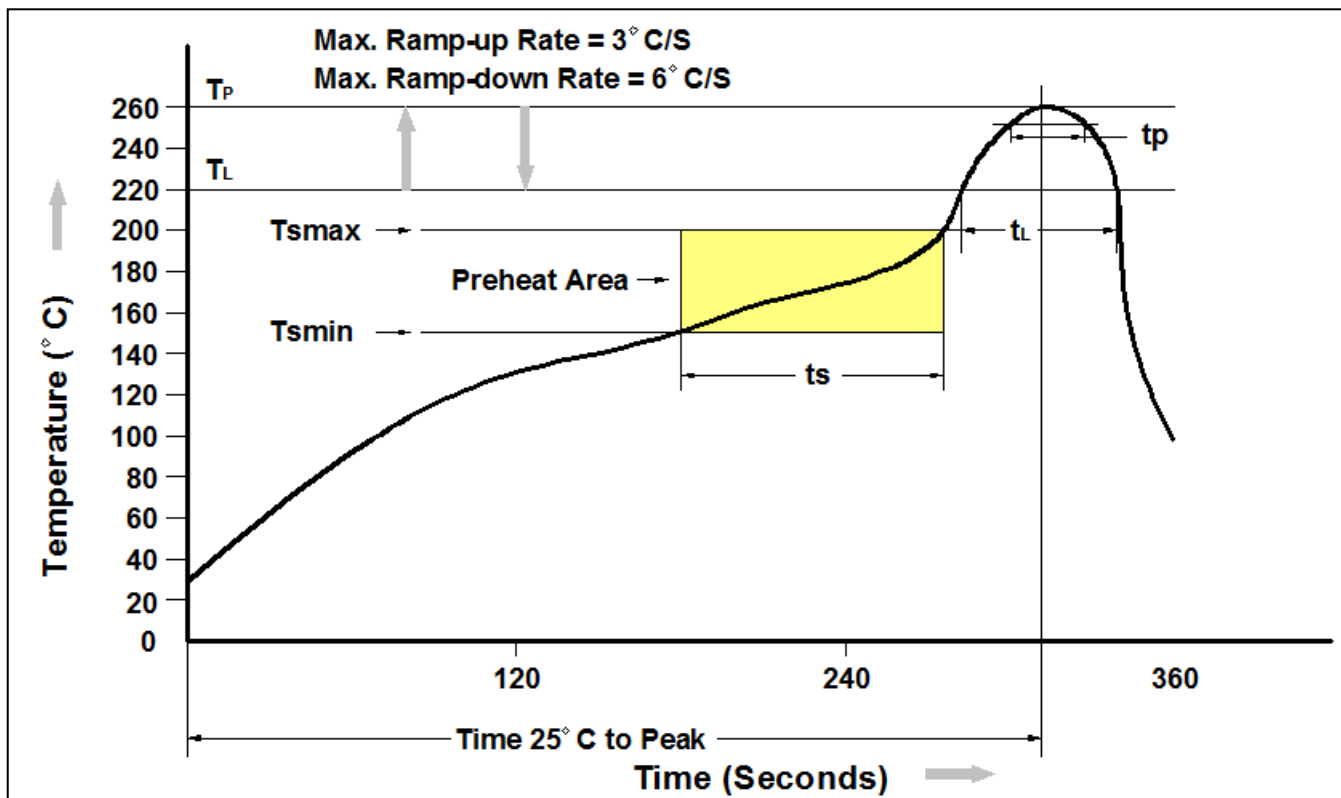
Time: 3 sec max.



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Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	150°C
Temperature Max. (Tsmax)	200°C
Time (ts) from (Tsmin 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.



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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.*

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