



CTT0223, CTT1223, CTT2223, CTT3223

600V Random Phase 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

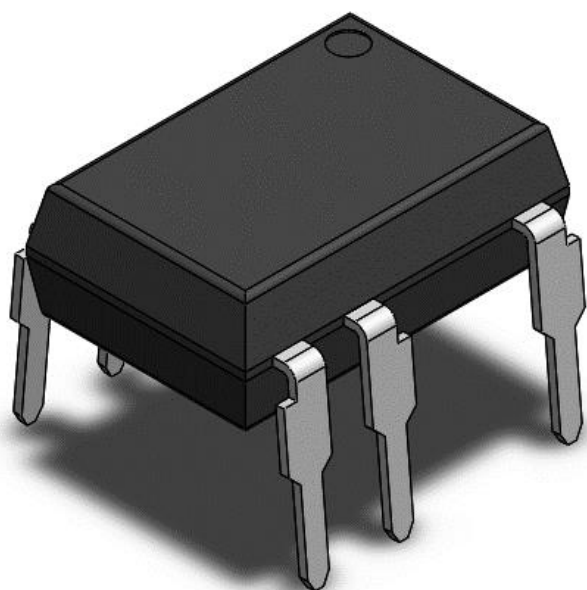
Description

The random phase 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.

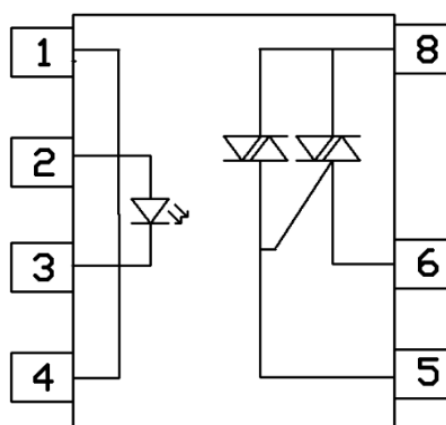
Applications

- 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	CTT0223	0.3	A
		CTT1223	0.6	
		CTT2223	0.9	
		CTT3223	1.2	
I _{TSM}	Peak Current Load	CTT0223	3	A
		CTT1223	6	
		CTT2223	9	
		CTT3223	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_{DRM}	Peak Blocking Current	$I_F = 0\text{mA}$, $V_{DRM} = \text{Rated } V_{DRM}$	-	-	100	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

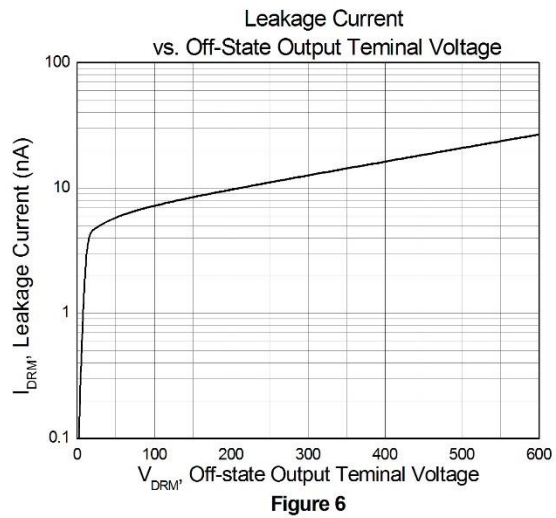
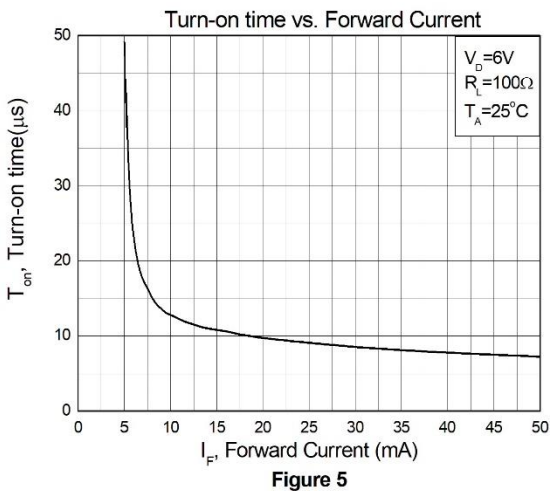
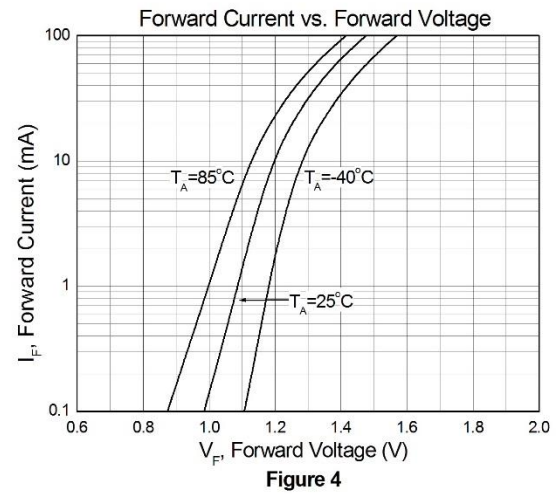
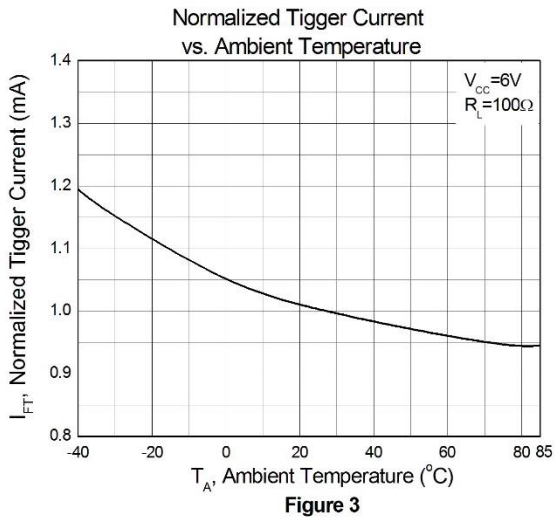
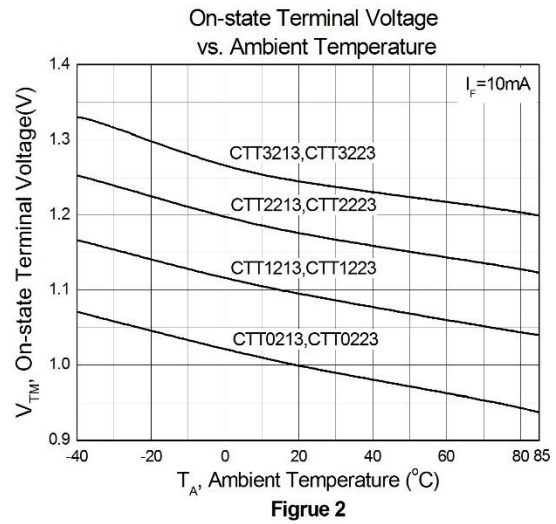
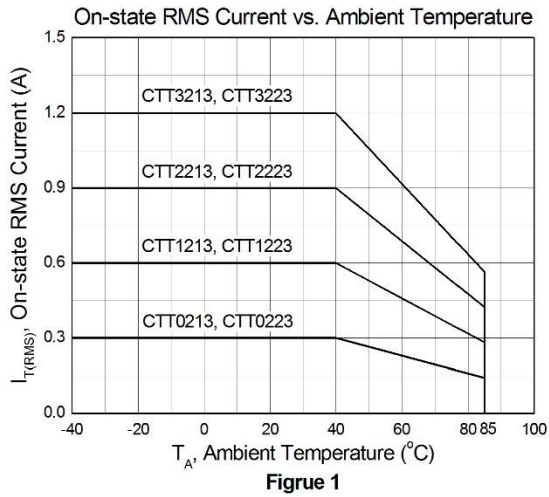
Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
I_{FT}	Input Trigger Current	Terminal Voltage = 3V	-	-	10	mA	
I_H	Holding Current		-	-	25	mA	
R_{IO}	Isolation Resistance	$V_{IO} = 500\text{V}_{DC}$	1×10^{11}	-	-	Ω	
C_{IO}	Isolation Capacitance	$f = 1\text{MHz}$	-	0.25	-	pF	



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Typical Characteristic Curves





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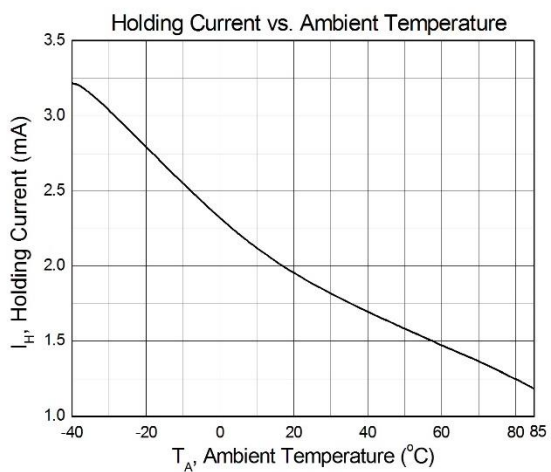


Figure 7

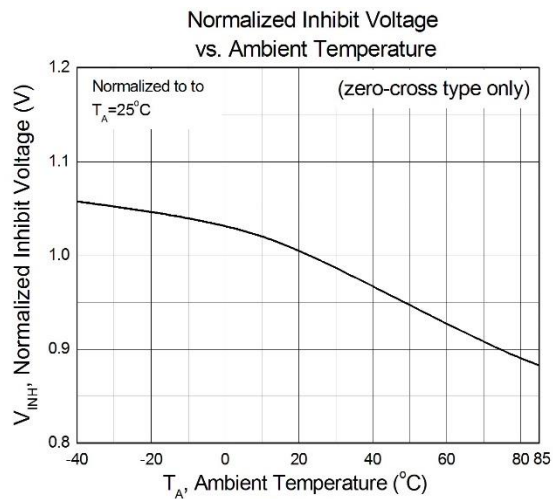


Figure 8

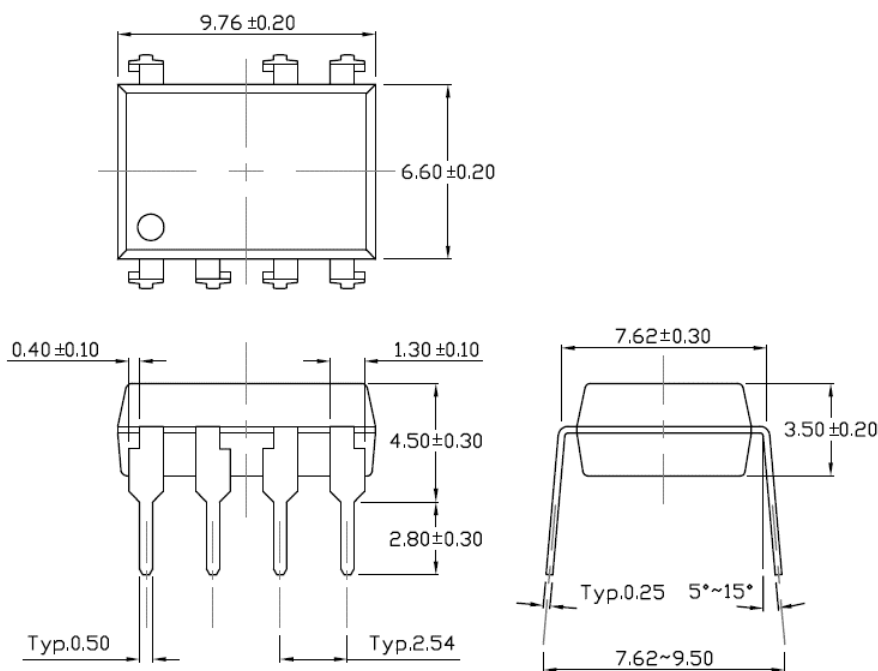


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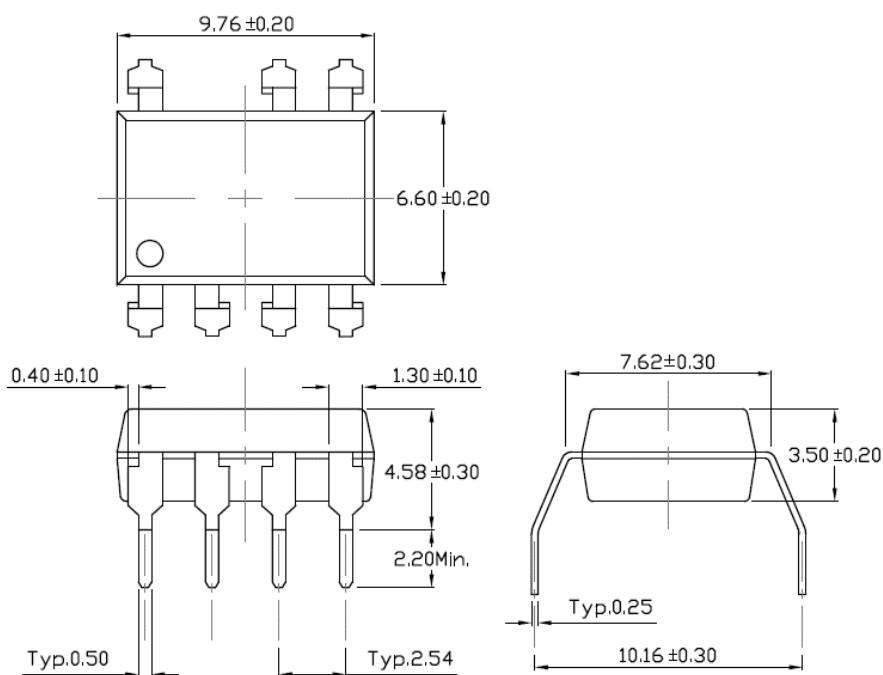
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Package Dimension *Dimensions in mm unless otherwise stated*

Standard DIP – Through Hole



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

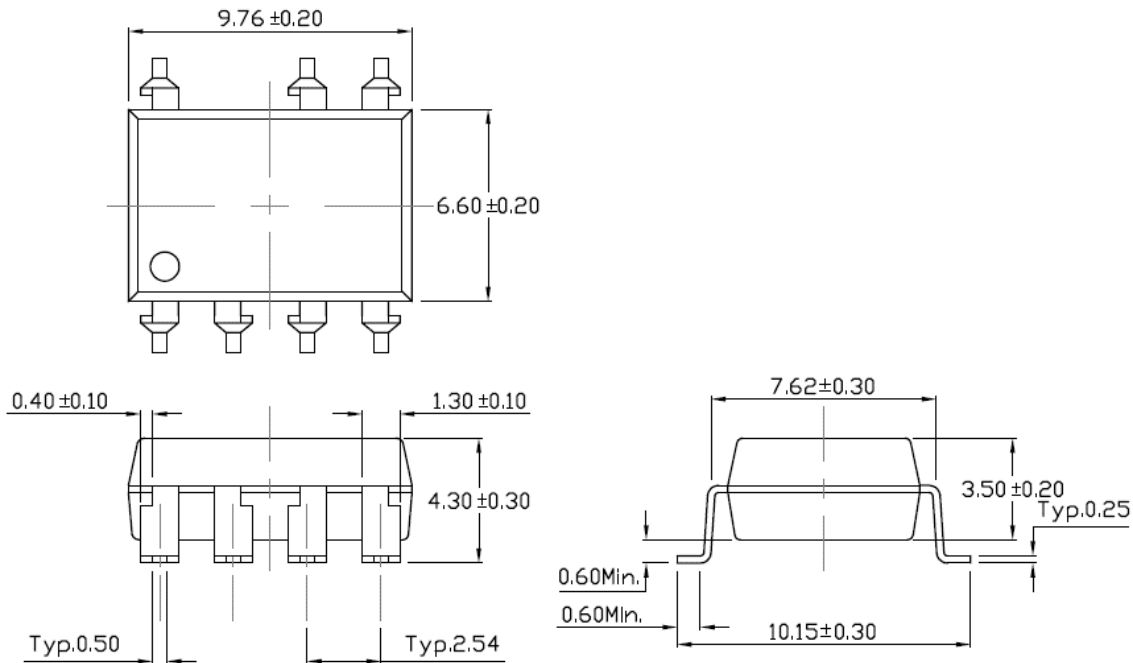




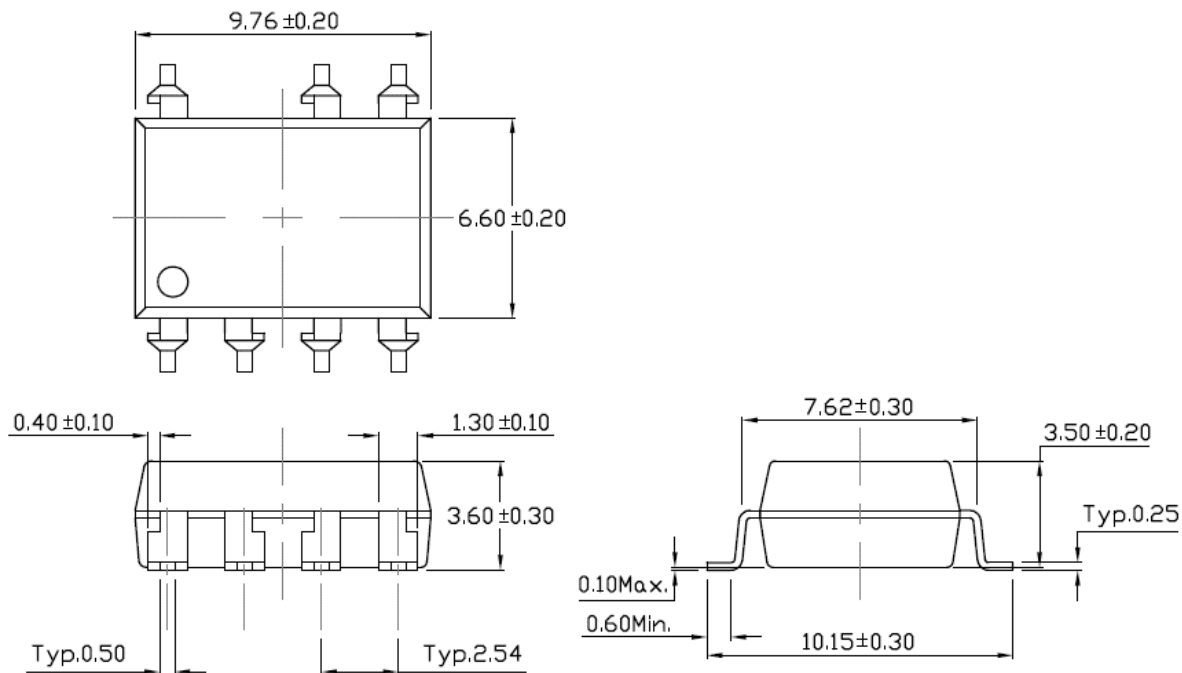
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Surface Mount Lead Forming (S Type)



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

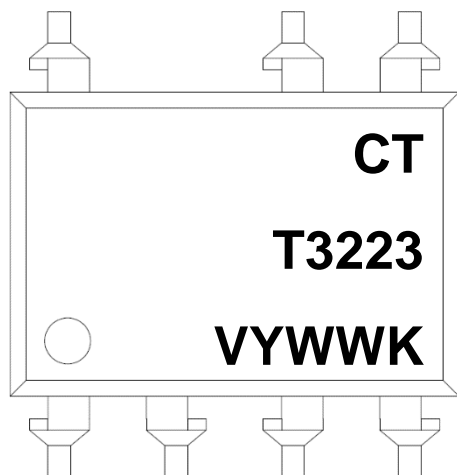




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Device Marking



Note:

- CT : Denotes “CT Micro”
- T3223 : Product Number
- V : VDE Safety Mark (option)
- Y : Fiscal Year
- WW : Work Week
- K : Production Code

Ordering Information

CTTX223(V)(Y)(Z)

- CT = Denotes “CT Micro”
- TX223 = 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



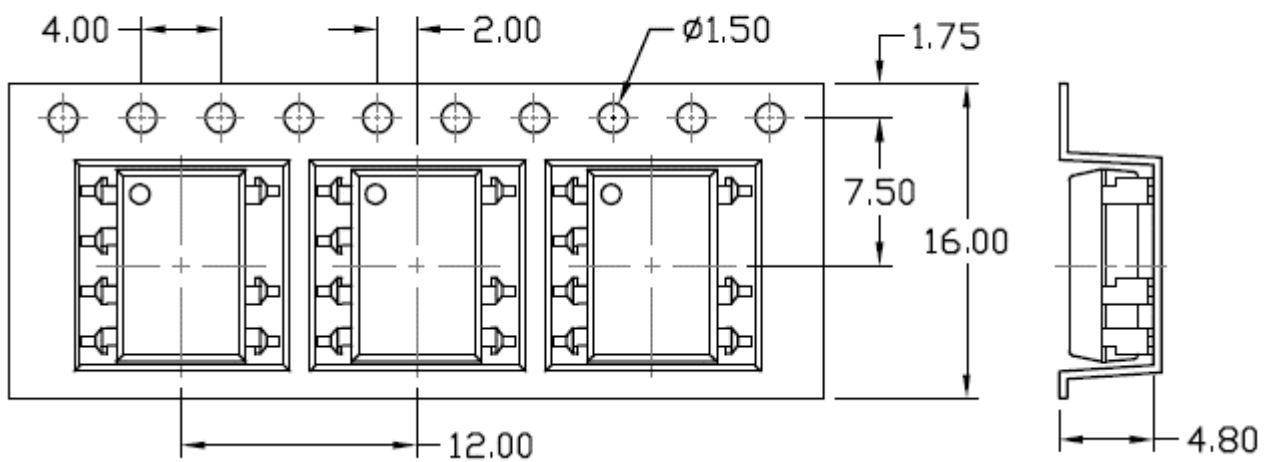
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Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

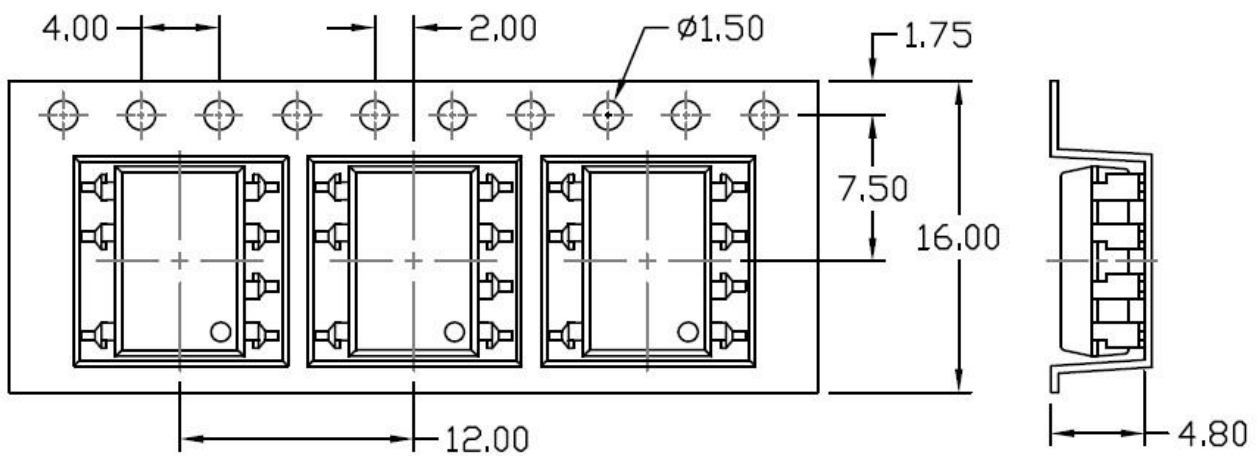
Option S(T1) & SL(T1)

Input Direction



Option S(T2) & SL(T2)

Input Direction





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Wave soldering (JEDEC22A111 compliant)

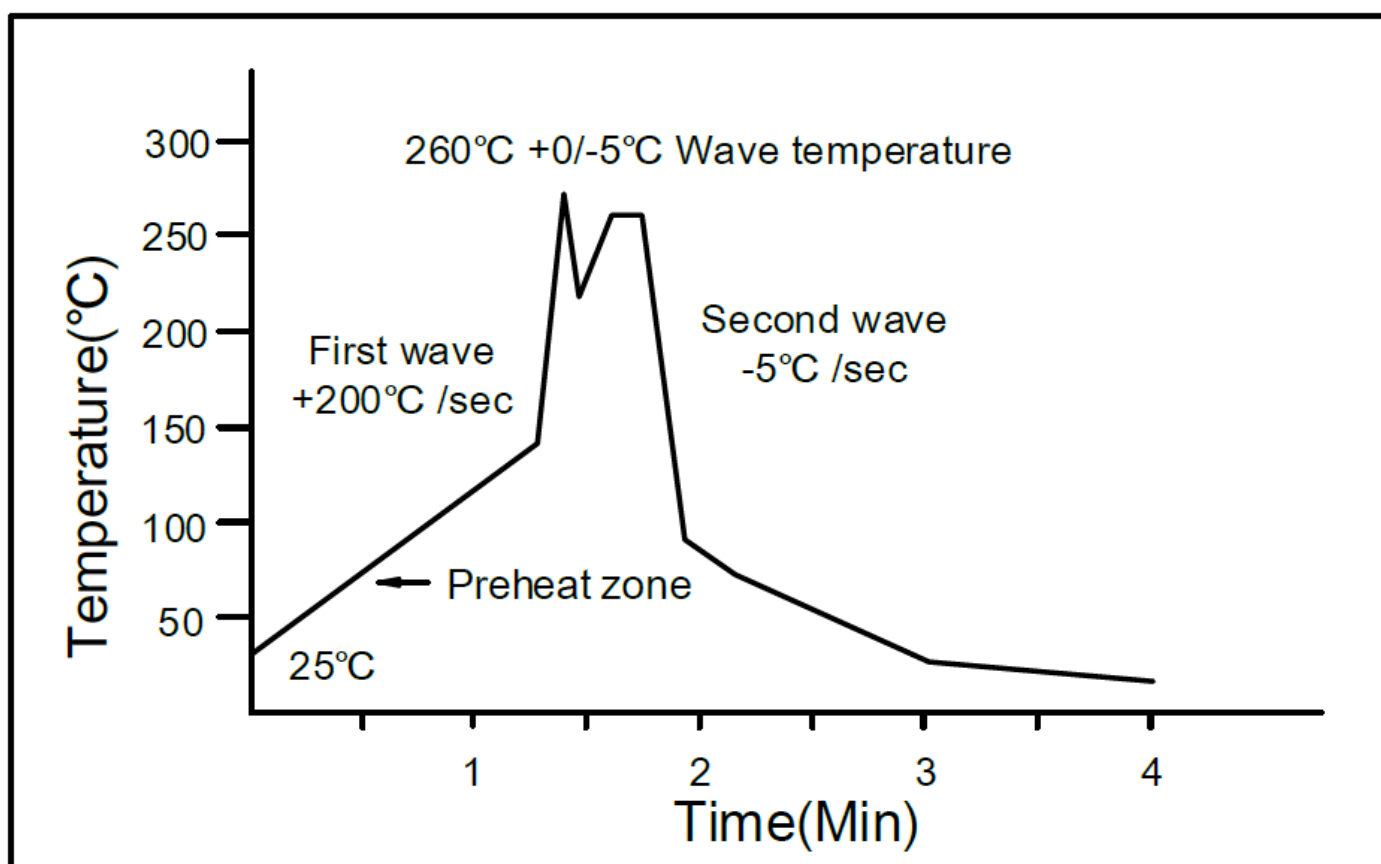
One time soldering is recommended within the condition of temperature.

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: $350 \pm 5^\circ\text{C}$

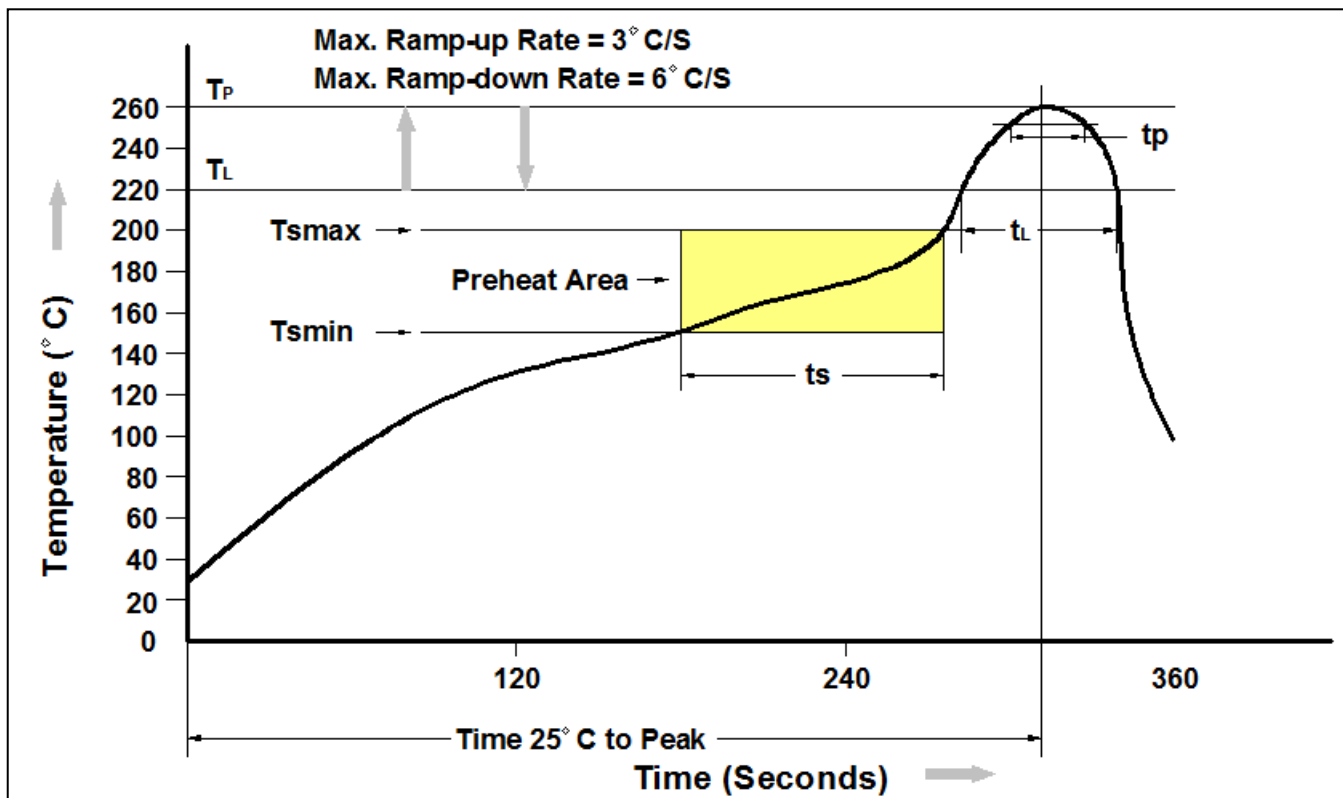
Time: 3 sec max.



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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 (t _L to t _P)	3°C/second max.
Liquidous Temperature (T _L)	217°C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (t _P) within 5°C of 260°C	30 seconds
Ramp-down Rate (T _P to T _L)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.



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