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 compliance
- REACH compliance
- External creepage > 7.5mm
- Internal creepage > 6.0mm
- Insulation distance > 0.4mm
- Regulatory Approvals
  - UL - UL1577 (E364000)
  - VDE - EN60747-5-5(VDE0884-5)
  - CQC – GB4943.1, GB8898
  - IEC60065, IEC60950

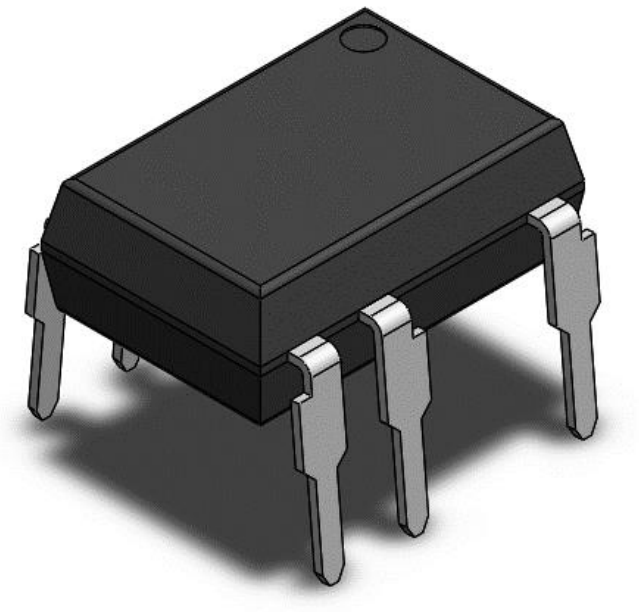
Description

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 house in a 7-lead DIP package. It also comes with different lead forming options.

Applications

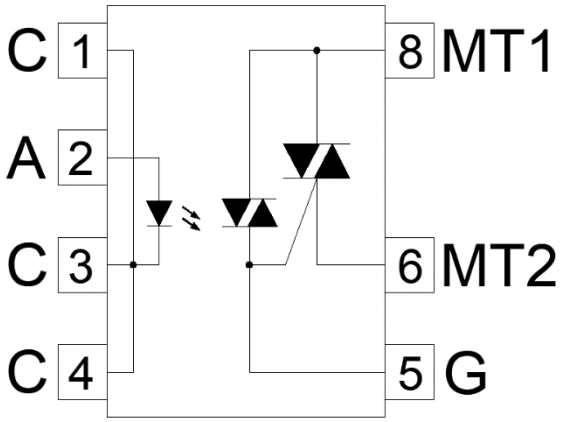
- Home appliances
- Industrial equipment

Package Outline



Note: Different bending options available. See package dimension.

Schematic



Absolute Maximum Rating at 25ºC

Symbol	*Parameters*		*Ratings*	*Units*	*Notes*
V_{iso}	Isolation voltage		5000	Vrms	
T_{OPR}	Operating temperature		-40 ~+85	ºC	
T_{STG}	Storage temperature		-40 ~+125	ºC	
T_{SOL}	Soldering temperature		260	ºC	
	Wave soldering temperature		260	ºC	
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	

Electrical Characteristics T_A = 25°C (unless otherwise specified)

Emitter Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V_F	Forward voltage	I_F=10mA	-	-	1.3	V	
I_R	Reverse Current	V_R = 6V	-	-	5	μA	
C_{IN}	Input Capacitance	f= 1MHz	-	45	-	pF	

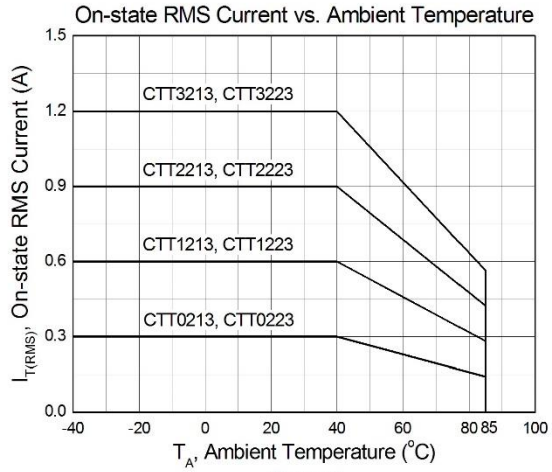
Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
I_{DRM}	Peak Blocking Current	I_F= 0mA, V_{DRM}= Rated V_{DRM}	-	-	100	uA	
V_{TM}	Peak On-State Voltage	I_F= Rated I_{FT}, I_{TM}= 100mA	-	-	2.5	V	
dv/dt	Critical Rate of Rise off-State Voltage	V_{PEAK}= Rated V_{DRM}	200	-	-	V/μs	

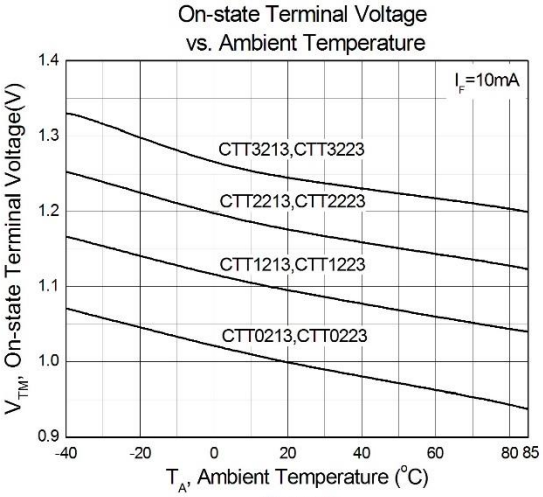
Transfer Characteristics

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}= 500V_{DC}	$1x10^{11}$	-	-	Ω	
C_{IO}	Isolation Capacitance	f= 1MHz	-	0.25	-	pF	

Typical Characteristic Curves



Figrue 1



Figrue 2

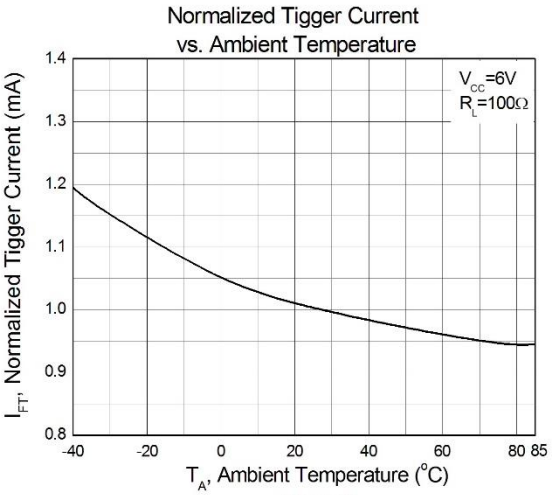


Figure 3

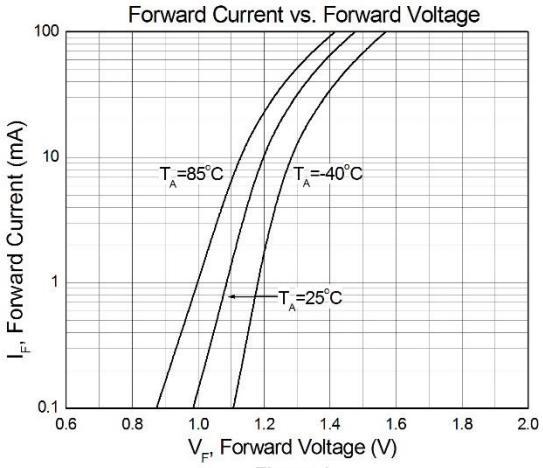


Figure 4

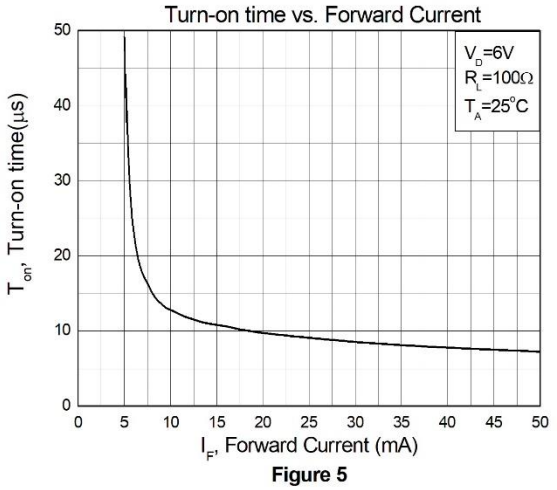


Figure 5

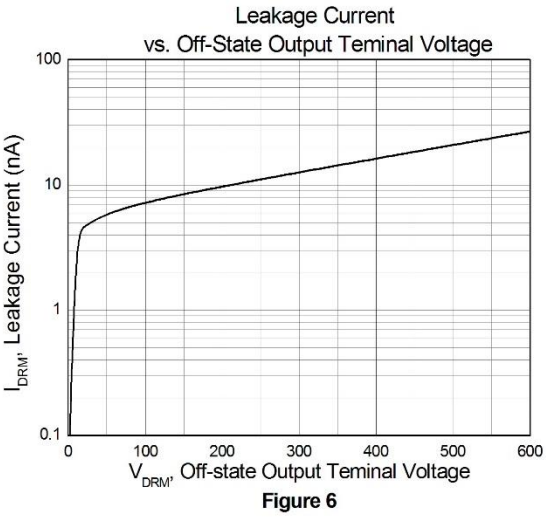


Figure 6

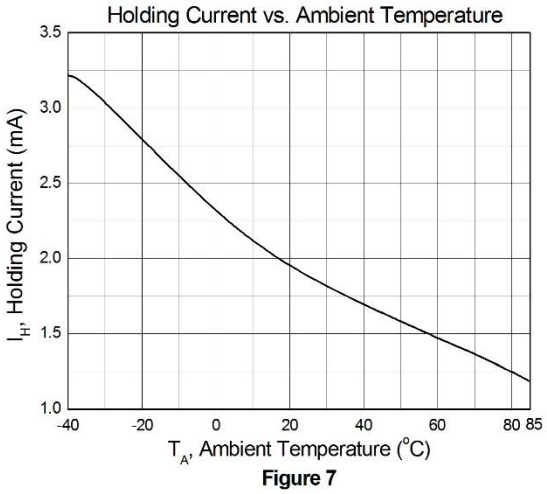
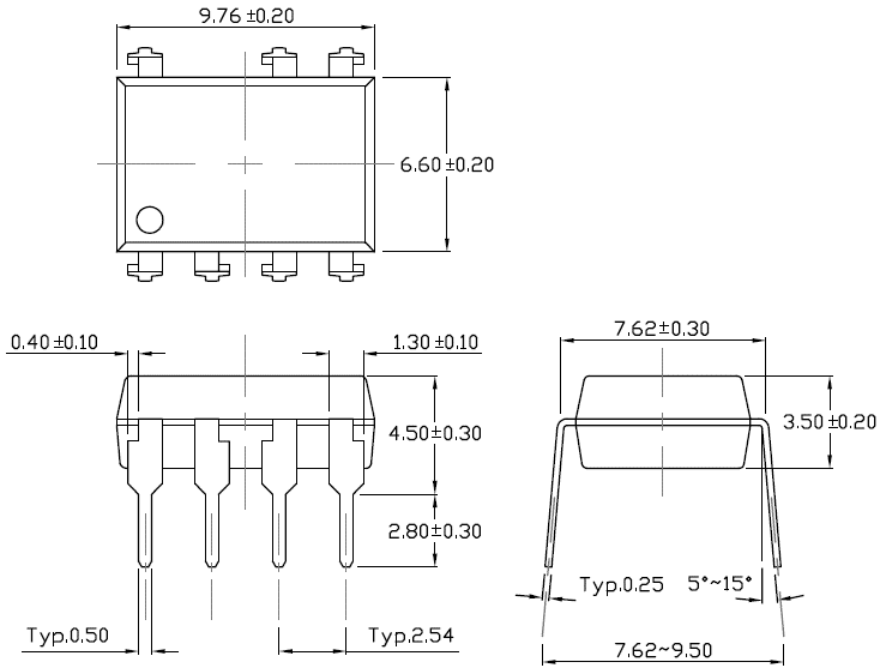

Holding Current vs. Ambient Temperature
3.5
3.0
2.5
2.0
1.5
1.0
I_H, Holding Current (mA)
-40
-20
0
20
40
60
80 85
T_A, Ambient Temperature (°C)

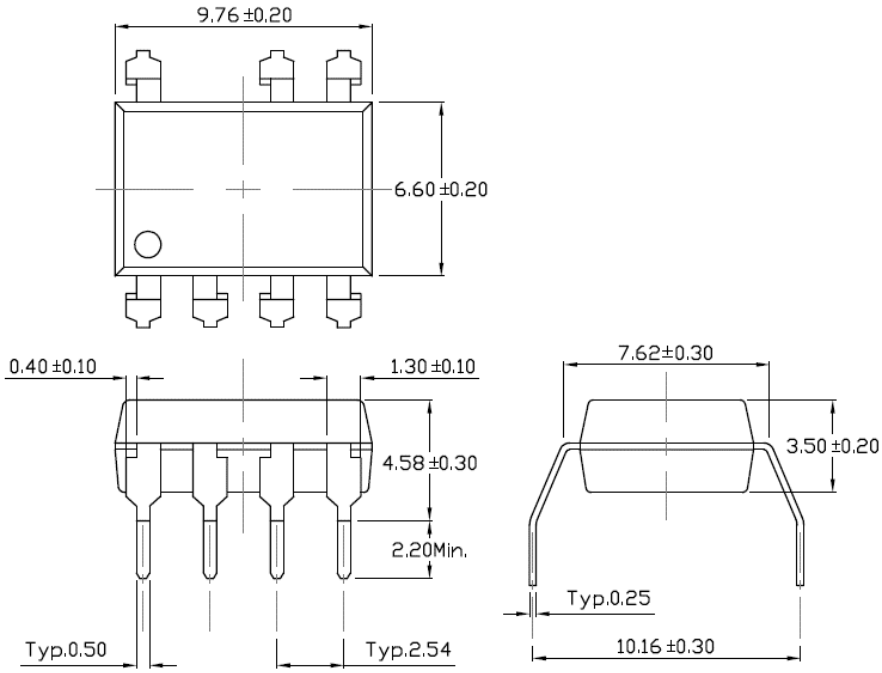
Figure 7

Package Dimension *Dimensions in mm unless otherwise stated*

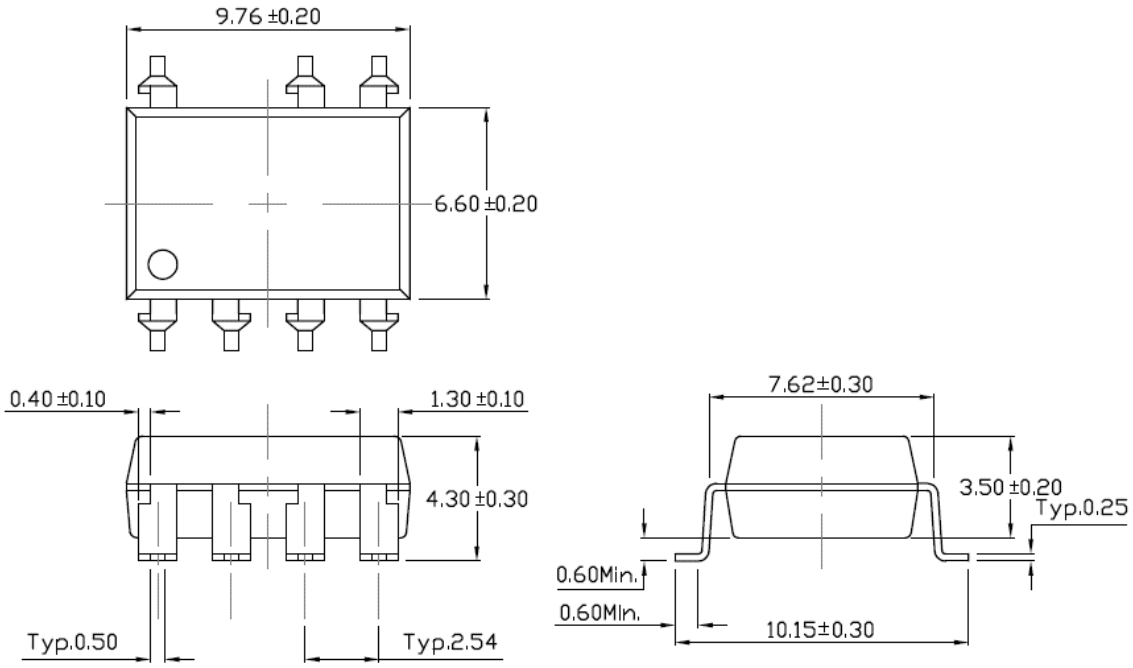
Standard DIP – Through Hole



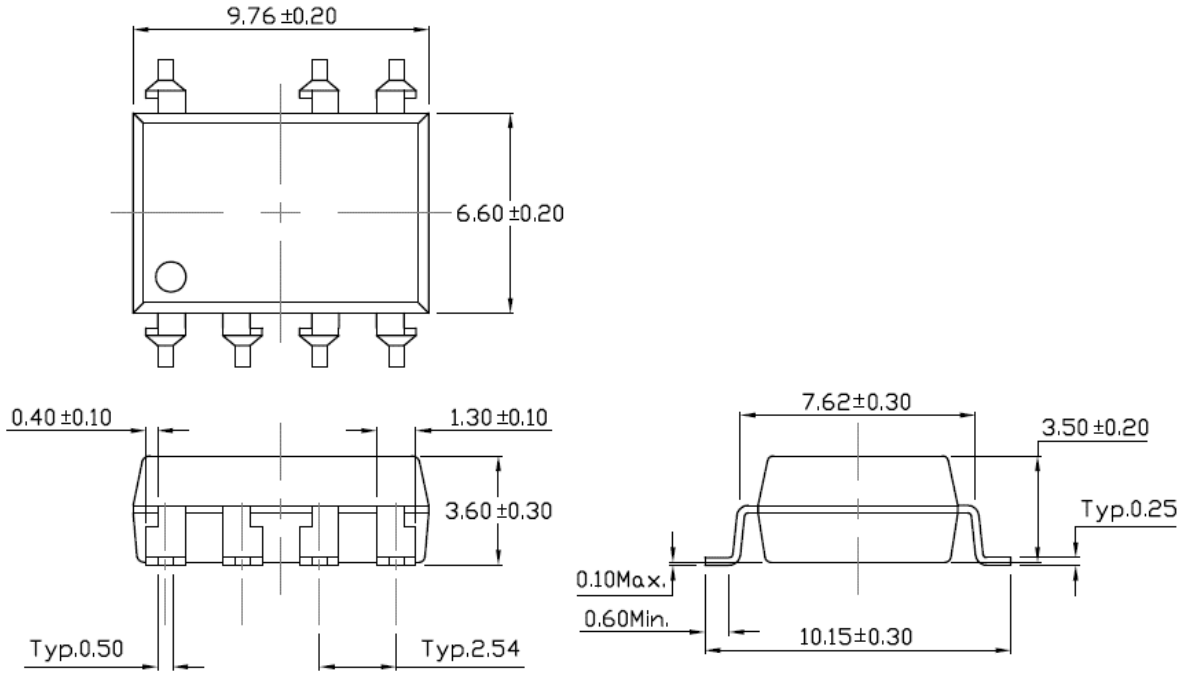
Gullwing (400mil) Lead Forming – Through Hole (M Type)



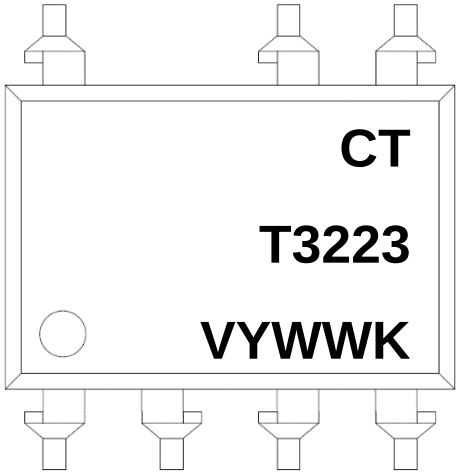
Surface Mount Lead Forming (S Type)



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



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

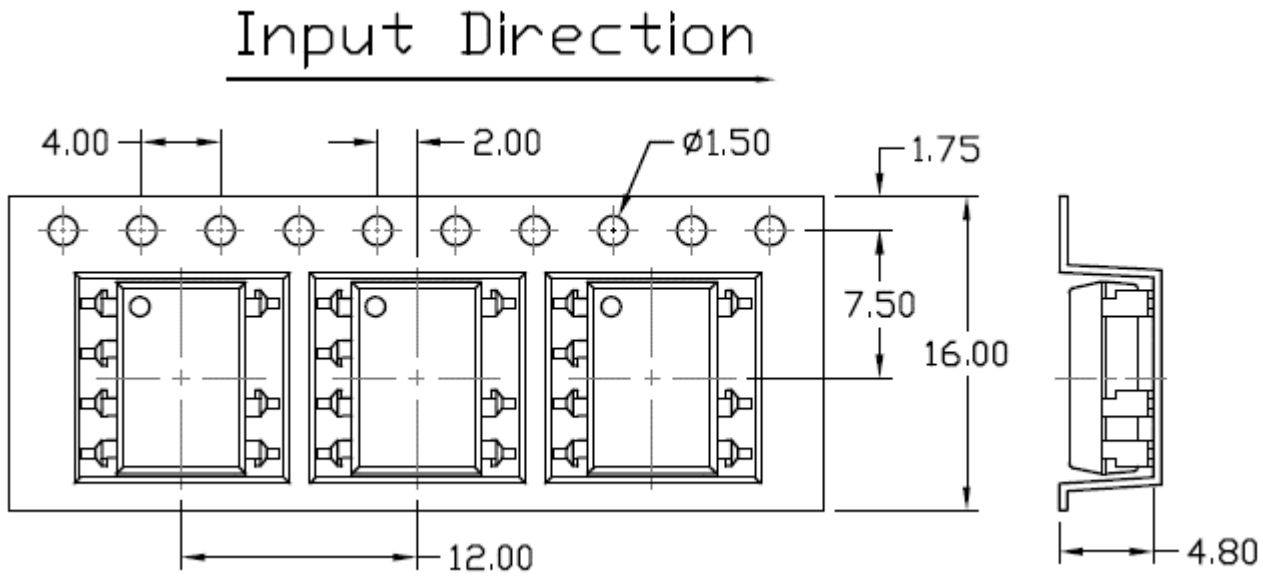
CTTX223(V)(Y)(Z)

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)

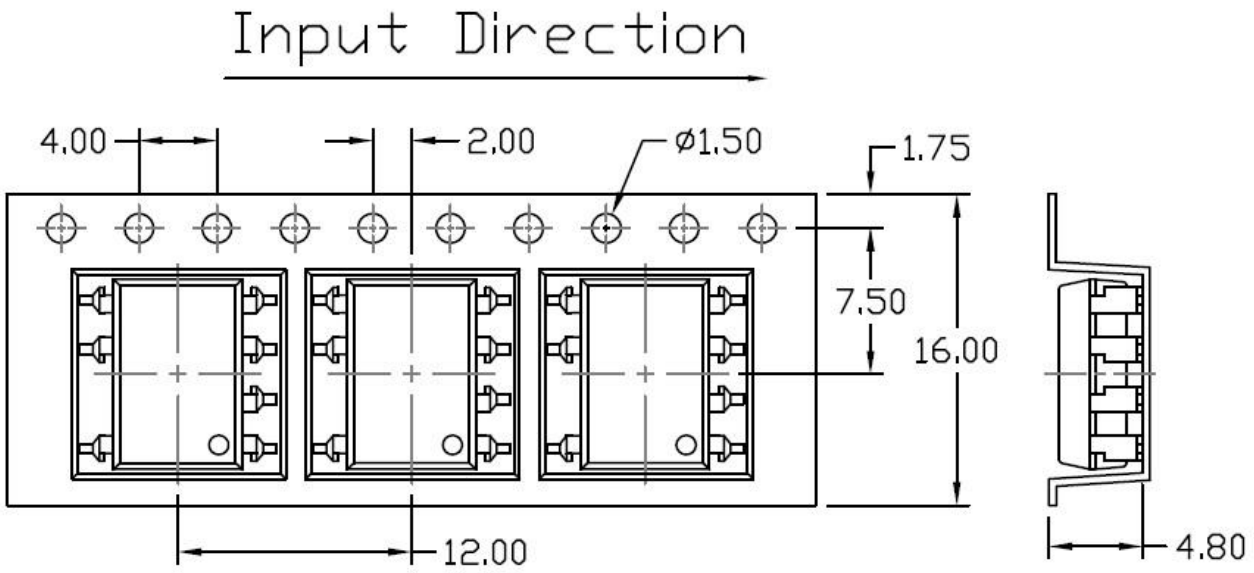
Option	***Description***	***Quantity***
None	Standard 8 Pin Dip	40 Units/Tube
M	Gullwing (400mil) Lead Forming	40 Units/Tube
S(T1)	Surface Mount Lead Forming – With Option 1 Taping	1000 Units/Reel
S(T2)	Surface Mount Lead Forming – With Option 2 Taping	1000 Units/Reel
SL(T1)	Surface Mount (Low Profile) Lead Forming– With Option 1 Taping	1000 Units/Reel
SL(T2)	Surface Mount (Low Profile) Lead Forming– With Option 2 Taping	1000 Units/Reel

Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

Option S(T1) & SL(T1)

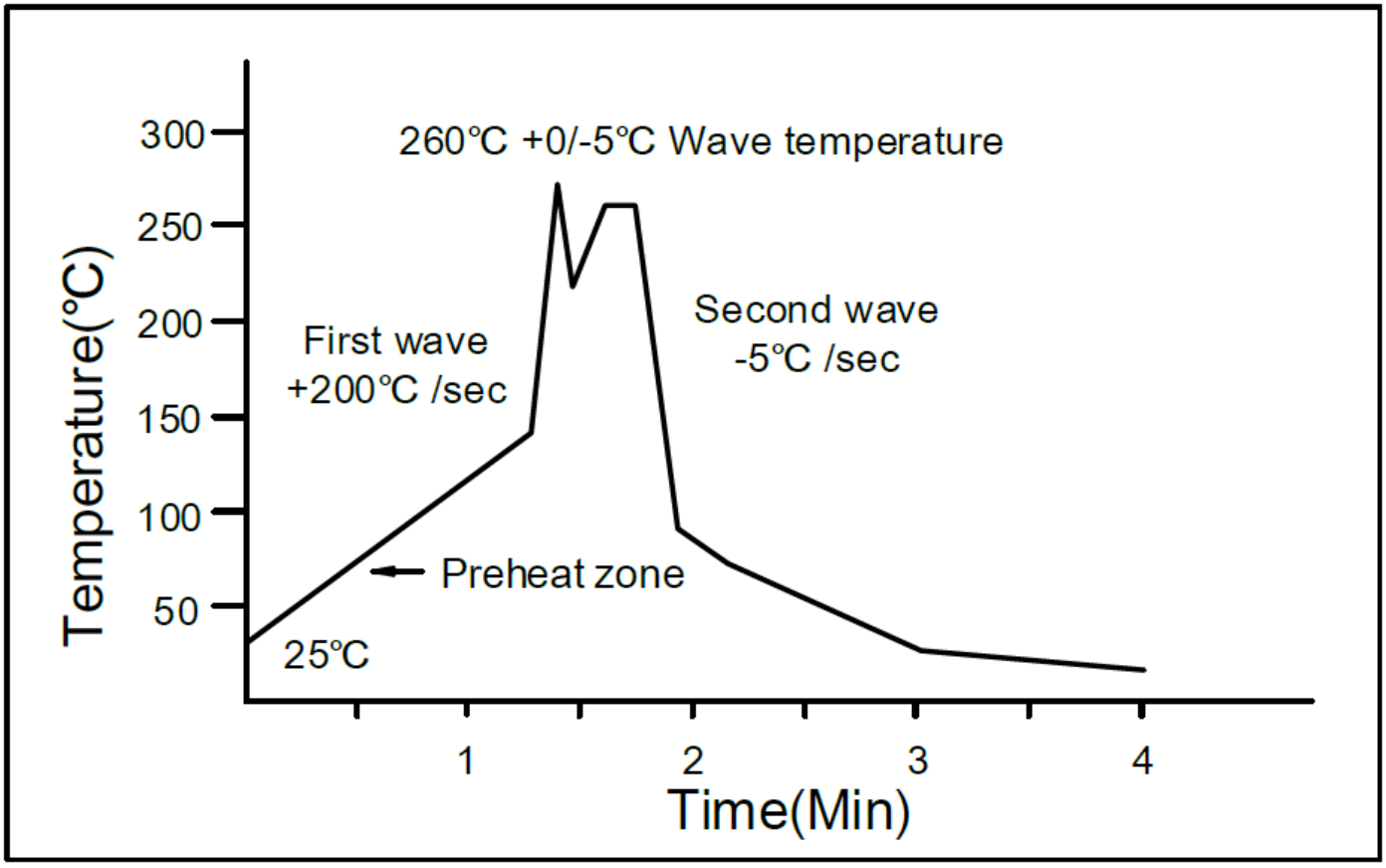


Option S(T2) & SL(T2)



Wave soldering (JEDEC22A111 compliant)

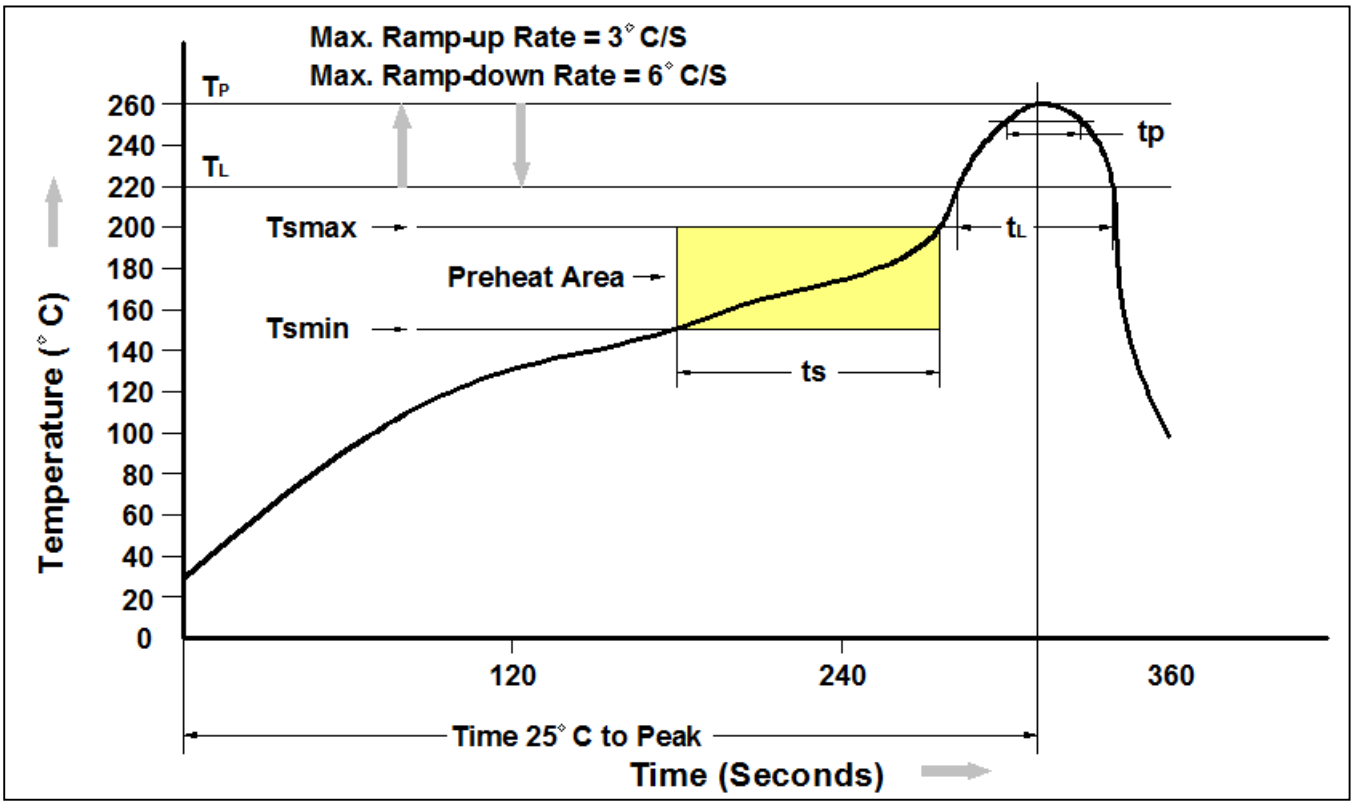
One time soldering is recommended within the condition of temperature.
Temperature: 260+0/-5˚C.
Time: 10 sec.
Preheat temperature:25 to 140˚C.
Preheat time: 30 to 80 sec.



Hand soldering by soldering iron

Allow single lead soldering in every single process.
One time soldering is recommended. Temperature: 350+0/-5˚C
Time: 3 sec max.

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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