CT1110-W, CT1111-W, CT1112-W, CT1113-W, CT1114-W
CT1115-W, CT1116-W, CT1117-W, CT1118-W, CT1119-W
CT1110L-W, CT1111L-W, CT1112L-W, CT1113L-W, CT1114L-W
CT1115L-W, CT1116L-W, CT1117L-W, CT1118L-W, CT1119L-W

DC Input 5-Pin Long Mini-Flat Phototransistor Optocoupler

Features

- High isolation 5000 VRMS
- CTR flexibility available see order information
- Extra low coupling capacitance
- DC input with transistor output
- OperatingTemperature range - 55 °C to 125 °C
- Green Package

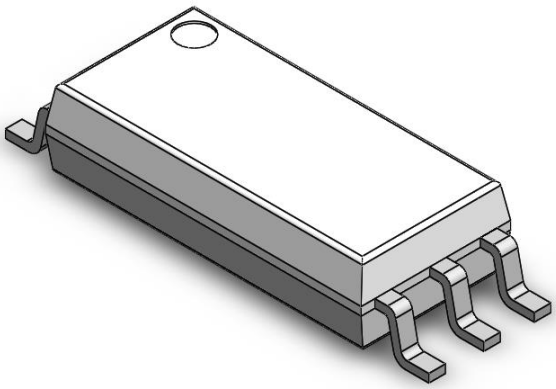
Applications

- Switch mode power supplies
- Computer peripheral interface
- Microprocessor system interface

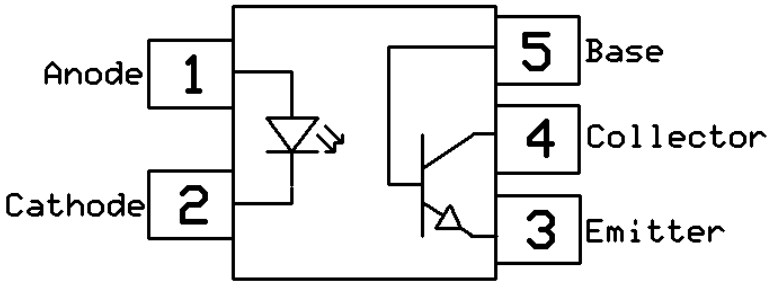
Description

The CT11XX-W, CT11XXL-W series consists of a photo transistor optically coupled to a gallium arsenide Infrared-emitting diode in a 5-lead SOP Package.

Package Outline



Schematic



Absolute Maximum Rating at 25°C

Symbol	*Parameters*	*Ratings*	*Units*	*Notes*
V_{ISO}	Isolation voltage *1	5000	V_{RMS}	
T_{OPR}	Operating temperature	-55 ~ +125	°C	
T_{STG}	Storage temperature	-55 ~ +150	°C	
T_{SOL}	Soldering temperature *2	260	°C	
Emitter				
I_F	Forward current	50	mA	
$I_{F(TRANS)}$	Peak transient current (≤1μs P.W,300pps)	1	A	
V_R	Reverse voltage	6	V	
P_D	Power dissipation	85	mW	
Detector				
P_D	Power dissipation	150	mW	
B_{VCEO}	Collector-Emitter Breakdown Voltage	80	V	
B_{VECO}	Emitter-Collector Breakdown Voltage	7	V	
B_{VCBO}	Collector-Base Breakdown Voltage	80	V	
B_{VEBO}	Emitter-Base Breakdown Voltage	7	V	
I_C	Collector Current	50	mA	

Thermal Characteristics

Symbol	*Parameters*	*Ratings*	*Units*	*Notes*
$R_{\Theta JA}$	Thermal Resistance Junction-Ambient	445	℃/W	
T_J	Junction temperature	125	℃	

Note:

1. Soldering Time: 10 seconds (max)

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		1.24	1.4	V	
		I_F = 50mA	-	1.45	1.5	V	
I_R	Reverse Current	V_R = 6V	-	-	5	μA	
C_{IN}	Input Capacitance	f= 1kHz	-	45	-	pF	

Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
B_{VCEO}	Collector-Emitter Breakdown	I_C= 100μA	80	-	-	V	
B_{VECO}	Emitter-Collector Breakdown	I_E= 100μA	7	-	-	V	
B_{VCBO}	Collector-Base Breakdown	I_C= 100μA	80	-	-	V	
B_{VEBO}	Emitter-Base Breakdown	I_E= 100μA	7	-	-	V	
I_{CEO}	Collector-Emitter Dark Current	V_{CE}= 20V	-	-	100	nA	
I_{CBO}	Collector-Base Dark Current	V_{CB}= 20V			20	nA	

Transfer Characteristics

Symbol	Parameters		Test Conditions	Min	Typ	Max	Units	Notes
CTR	Current Transfer Ratio	CT1110-W	I_F= 5mA, V_{CE}= 5V	50	-	600	%	
		CT1115-W		50	-	150		
		CT1116-W		100	-	300		
		CT1117-W		80	-	160		
		CT1118-W		130	-	260		
		CT1119-W		200	-	400		
		CT1111-W	I_F= 10mA, V_{CE}= 5V	60	-	300		
		CT1112-W		63	-	125		
		CT1113-W		100	-	200		
		CT1114-W		160	-	320		
		CT1100L-W	I_F= 1mA, V_{CE}= 5V	22	-	600		
		CT1101L-W		100	-	200		
		CT1102L-W		60		300		
		CT1103L-W		80		200		
		CT1104L-W		400		650		
		CT1105L-W		110		160		
		CT1106L-W		120		470		
		CT1107L-W		150		300		
		CT1108L-W		180	-	350		
		CT1109L-W		300		400		
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		I_F= 10mA, I_C= 1mA	-	-	0.4	V	
R_{IO}	Isolation Resistance		V_{IO}= 500V_{DC}	5x10^{10}			Ω	
C_{IO}	Isolation Capacitance		f= 1MHz			1	pF	

Switching Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
T_{ON}	Turn On Time	I_C= 5mA, V_{CE}= 5V, R_L= 100Ω	-	5	-	μs	
T_{OFF}	Turn Off Time		-	4.2	-		
t_r	Rise Time		-	2.8	-		
t_f	Fall Time		-	4.1	-		

Typical Characteristic Curves

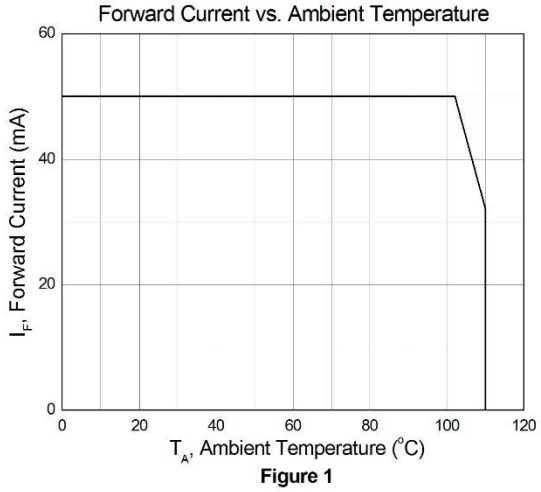


Figure 1

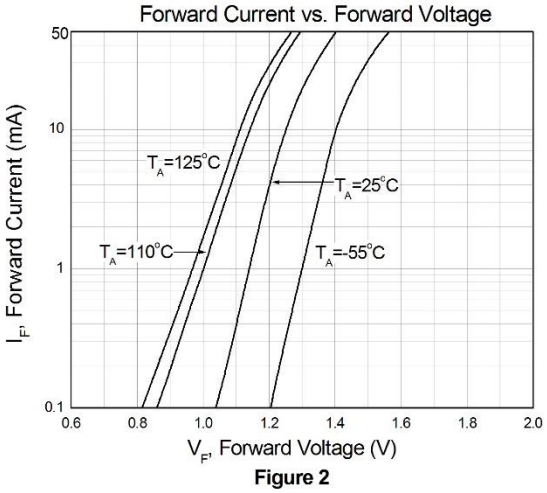


Figure 2

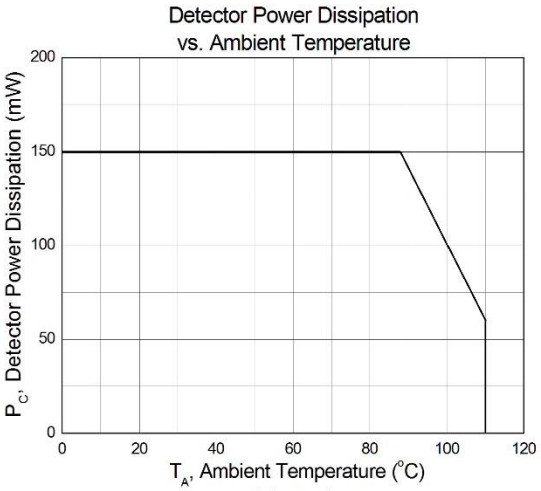


Figure 3

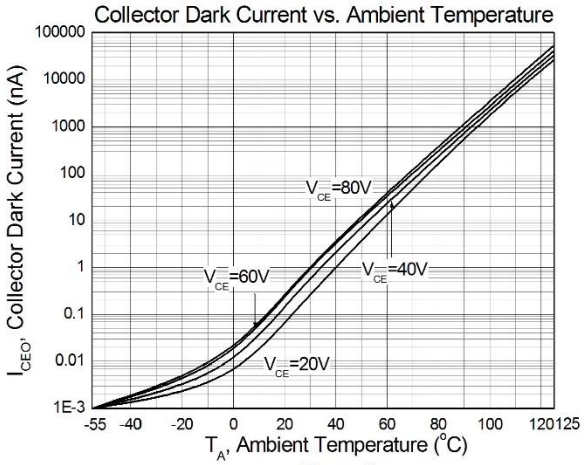


Figure 4

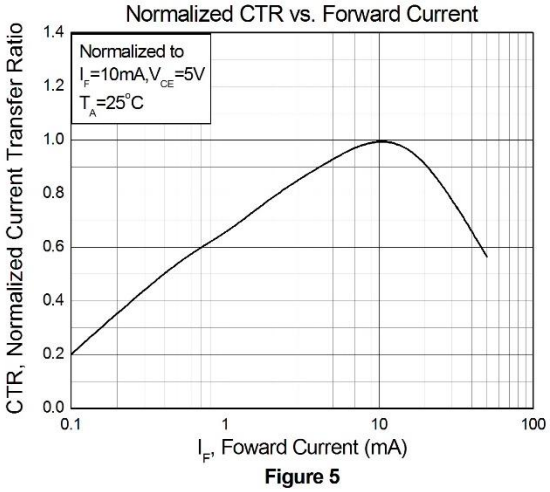


Figure 5

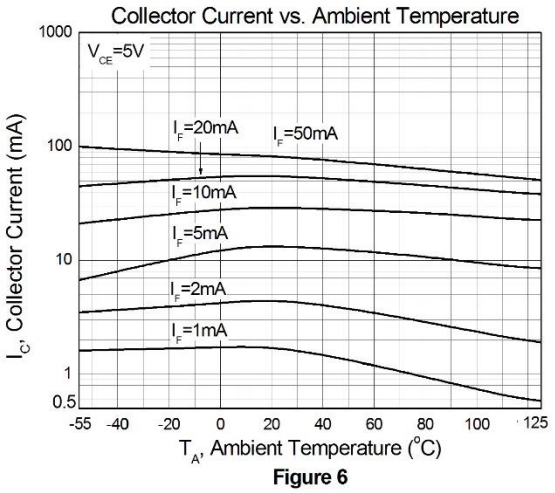


Figure 6

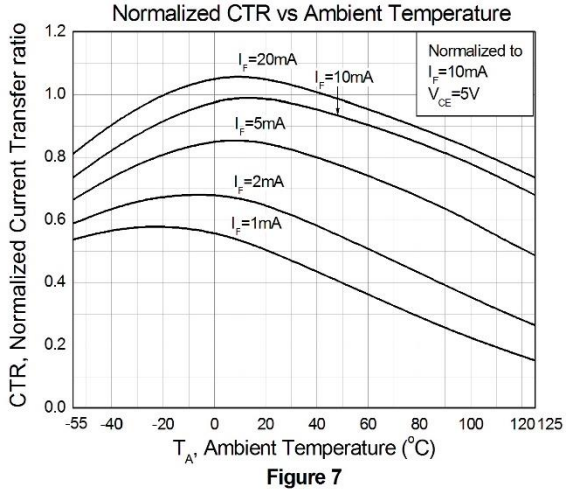


Figure 7

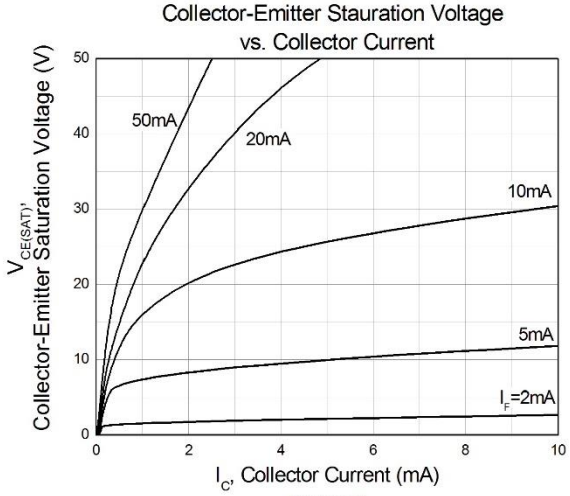


Figure 8

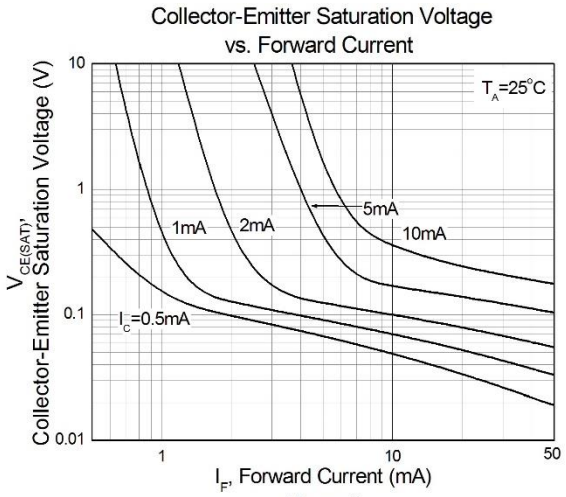


Figure 9

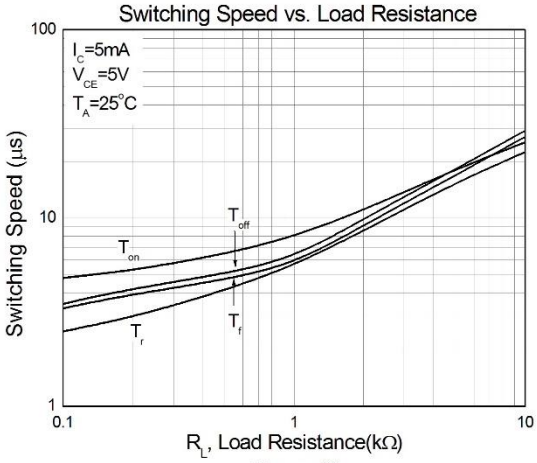
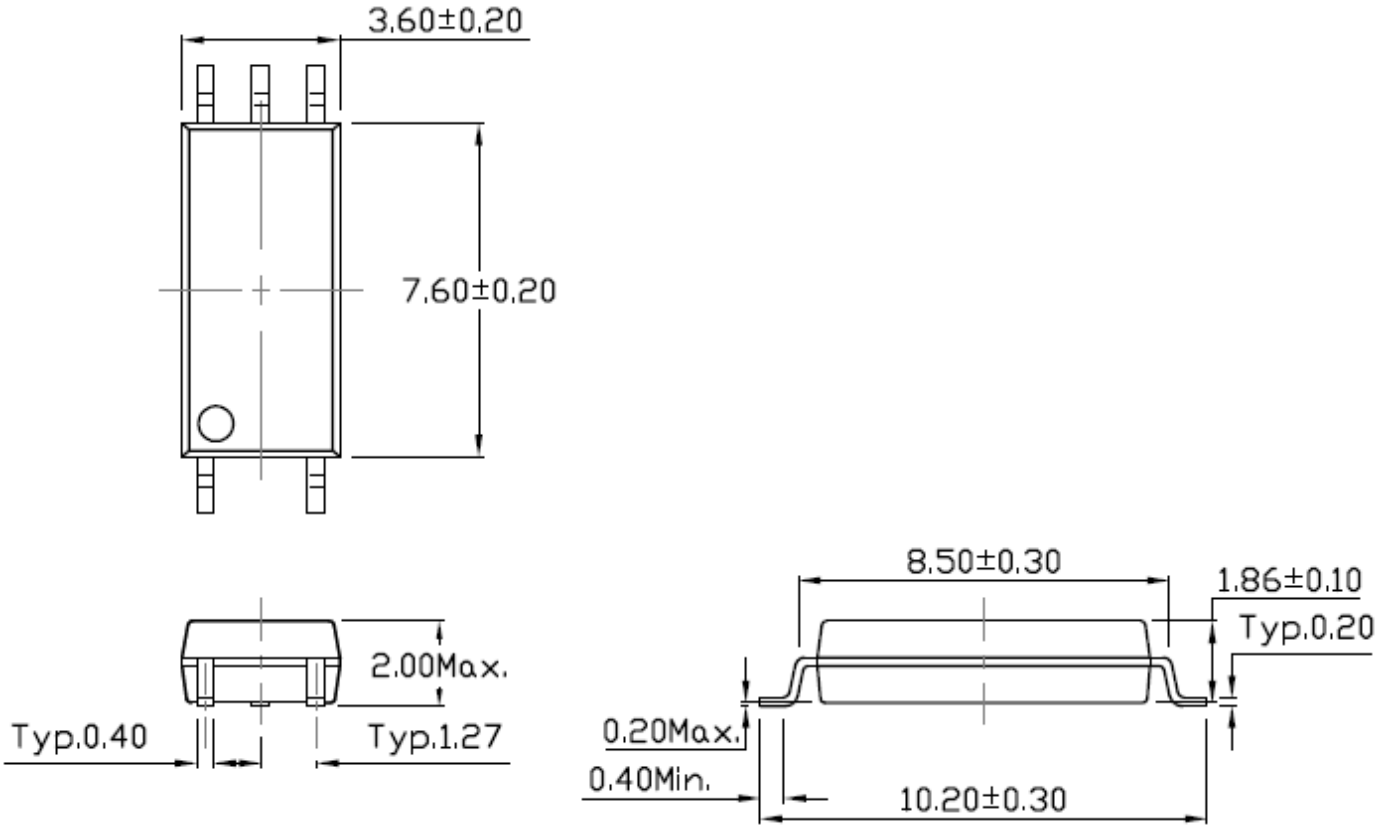
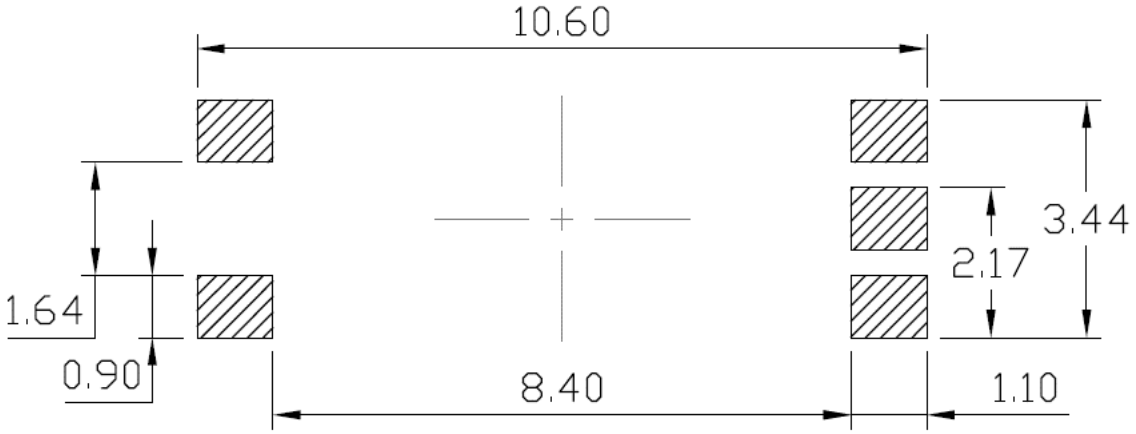


Figure 10

Package Dimension *Dimensions in mm unless otherwise stated*



Recommended Solder Mask *Dimensions in mm unless otherwise stated*



Marking Information

Note:

CT : Logo
1110 : Part Number(11XX, 11XXL)
V : VDE Option
Y : Fiscal Year
WW : Work Week
D : Manufacturing Code

Ordering Information

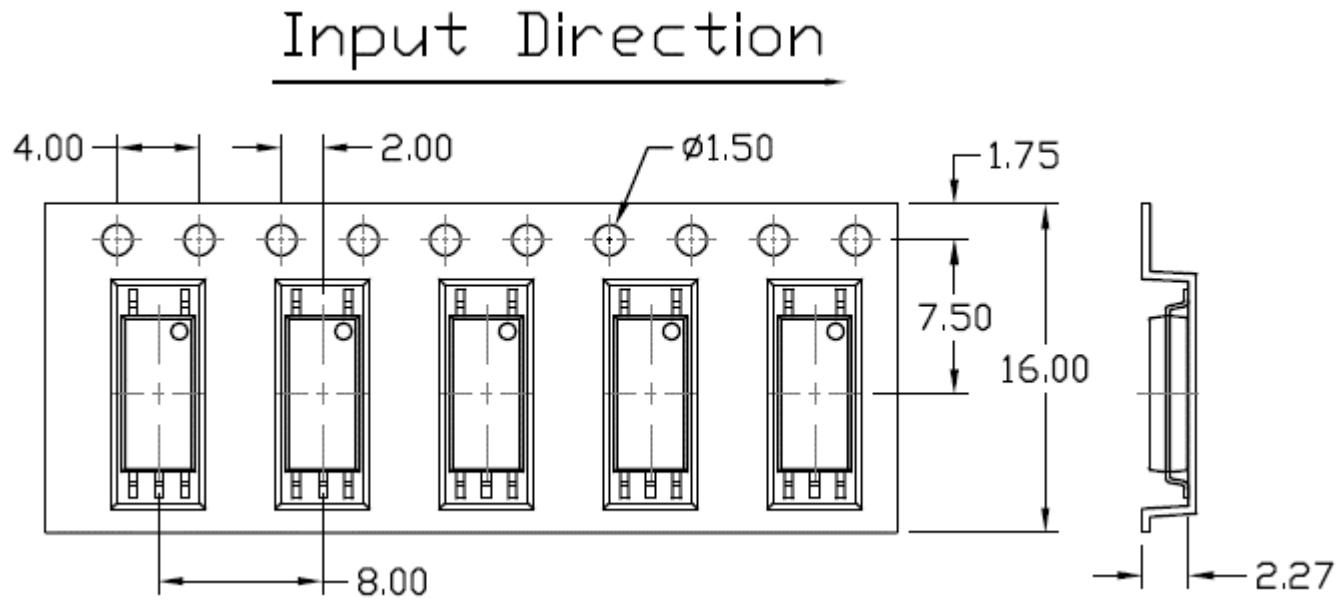
CT11ZX(L)(V)(Y)-W

Z = Part No. (0,1, 2, 3, 4, 5, 6, 7, 8, 9)
X = CTR Rank (0,1, 2, 3, 4, 5, 6, 7, 8, 9)
L = CTR condition (L for low driver current, or None)
V = VDE Option (V or None)
Y = Tape and reel option (T1 or T2)
W= Outline Color (W for white color, White only)

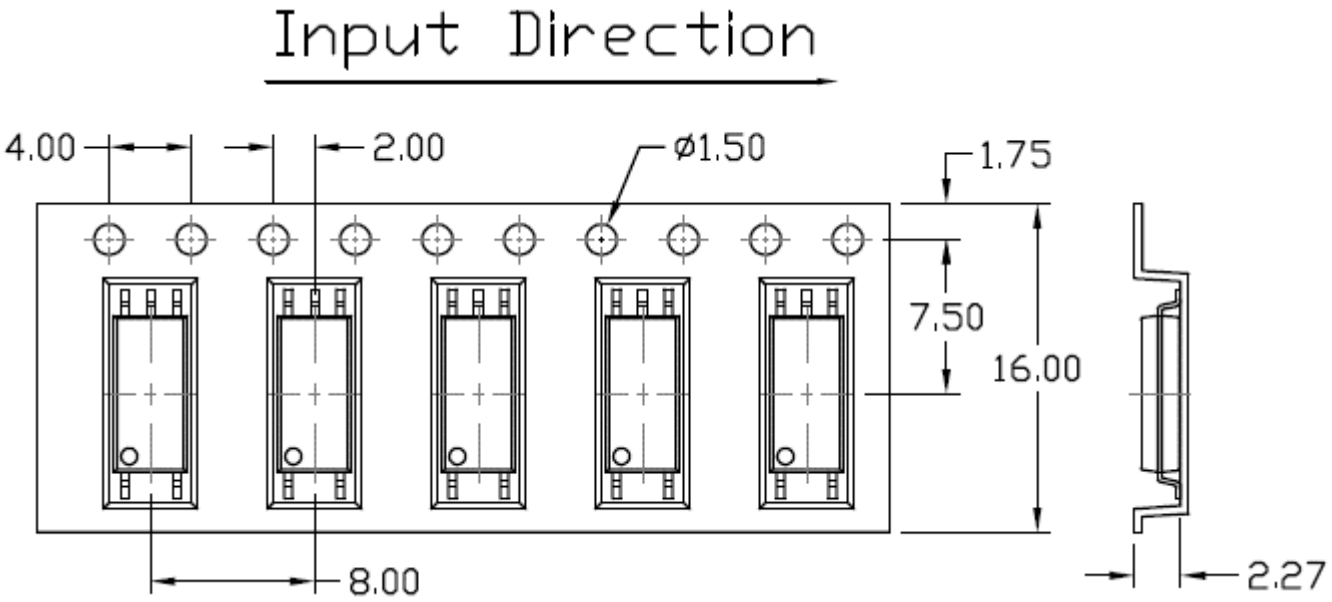
Option	*Description*	*Quantity*
T1	Surface Mount Lead Forming – With Option 1 Taping	3000Units/Reel
T2	Surface Mount Lead Forming – With Option 2 Taping	3000Units/Reel

Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

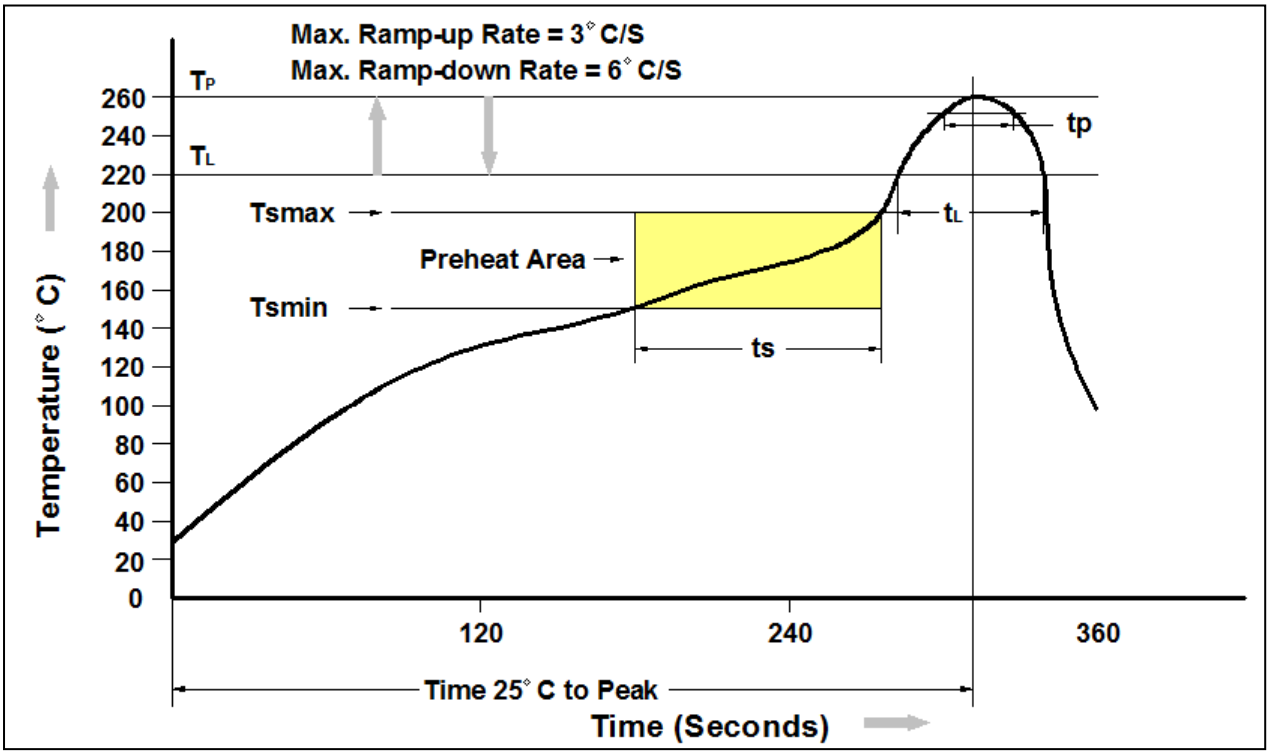
Option T1



Option T2



Reflow Profile (follow the JEDEC standard J-STD-020)



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.

Wave soldering (follow the JEDEC standard JESD22-A111)

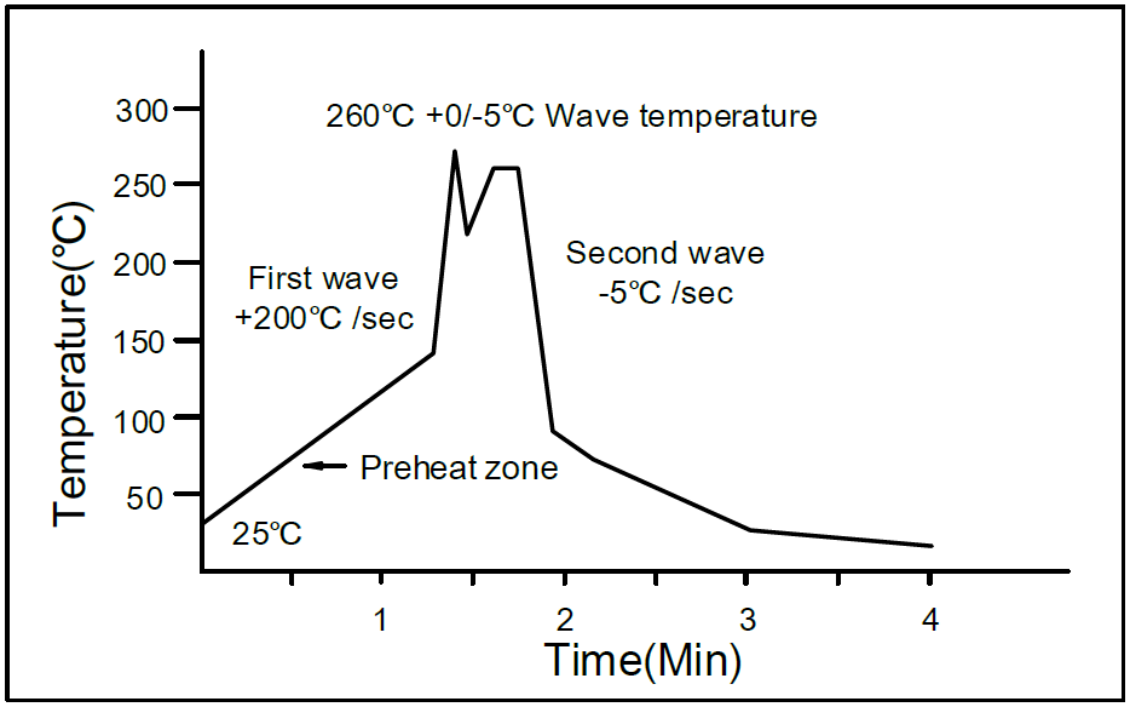
One time soldering is recommended within the condition of temperature.

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: 380+0/-5℃

Time: 3 sec max.

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