CT1010-W, CT1011-W, CT1012-W, CT1013-W, CT1014-W
CT1015-W, CT1016-W, CT1017-W, CT1018-W, CT1019-W
DC Input 4-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
- Temperature range - 55 °C to 125 °C
- External creepage distance > 8 mm
- Internal creepage distance >5mm
- Through distance >0.4mm
- Green Package

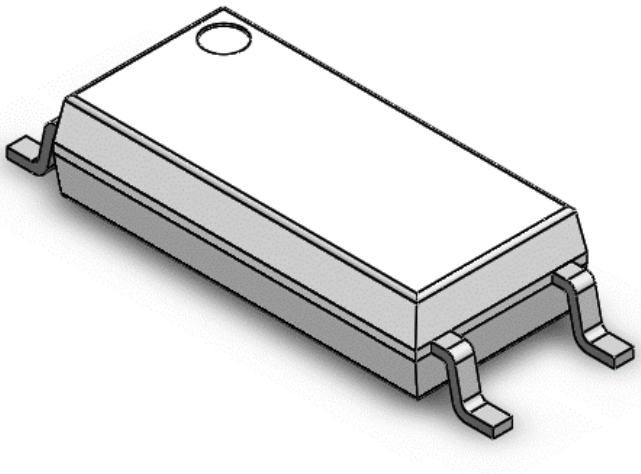
Applications

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

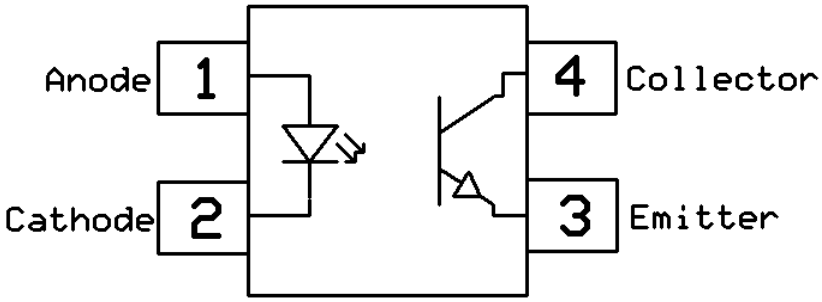
Description

The CT1010-W, CT1011-W, CT1012-W, CT1013-W, CT1014-W, CT1015-W, CT1016-W, CT1017-W, CT1018-W, CT1019-W consists of a photo transistor optically coupled to a gallium arsenide Infrared-emitting diode in a 4-lead SOP Package.

Package Outline



Schematic



Absolute Maximum Rating at 25°C

Symbol	*Parameters*	*Ratings*	*Units*	*Notes*
V_{ISO}	Isolation voltage	5000	V_{RMS}	
T_{OPR}	Operating temperature	-55 ~ +125	°C	
T_{STG}	Storage temperature	-55 ~ +150	°C	
T_{SOL}	Soldering temperature	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_C	Power dissipation	150	mW	
B_{VCEO}	Collector-Emitter Breakdown Voltage	80	V	
B_{VECO}	Emitter-Collector Breakdown Voltage	7	V	
I_C	Collector Current	50	mA	

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		1.26	1.4	V	
		I_F=50mA	-	1.42	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	
I_{CEO}	Collector-Emitter Dark Current	V_{CE}= 20V, I_F= 0mA	-	-	100	nA	

Transfer Characteristics

Symbol	Parameters		Test Conditions	Min	Typ	Max	Units	Notes
CTR	Current Transfer Ratio	CT1012-W	I_F= 1mA, V_{CE}= 5V	22	-	-	%	
		CT1013-W		34	-	-		
		CT1014-W		56	-	-		
		CT1011-W	I_F= 10mA, V_{CE}= 5V	60	-	300		
		CT1012-W		63	-	125		
		CT1013-W		100	-	200		
		CT1014-W		160	-	320		
		CT1010-W	I_F= 5mA, V_{CE}= 5V	50	-	600		
		CT1015-W		50	-	150		
		CT1016-W		100	-	300		
		CT1017-W		80	-	160		
		CT1018-W		130	-	260		
		CT1019-W		200	-	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	

Electrical Characteristics *T_A = 25°C, V_{CC}= 5V (unless otherwise specified)*

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	-	4.8	22	µs	
T_{OFF}	Turn Off Time		-	4.2	22		
t_r	Rise Time		-	2.7	18		
t_f	Fall Time		-	4	18		

Typical Characteristic Curves

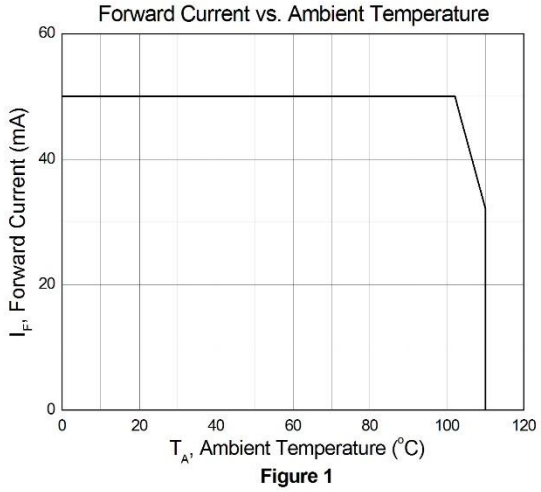


Figure 1

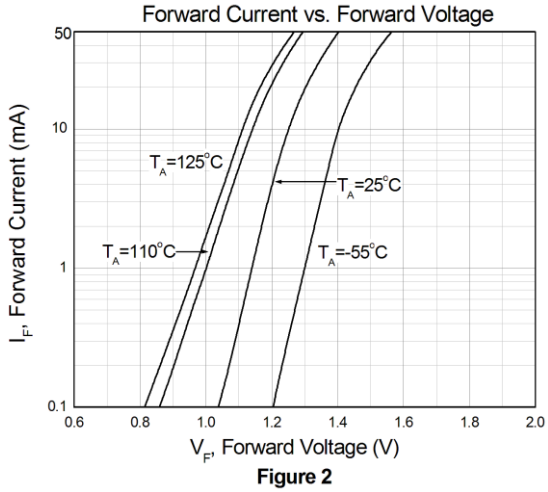


Figure 2

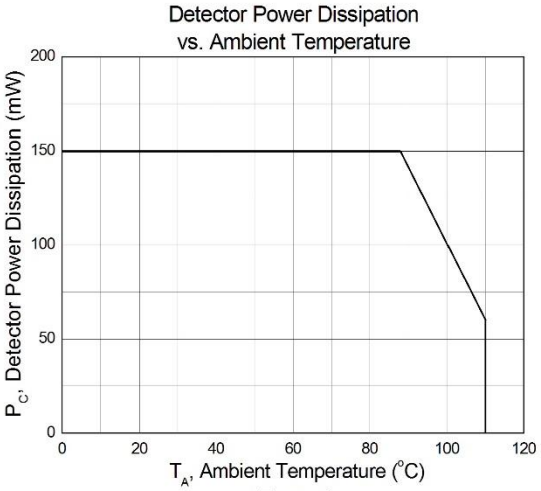


Figure 3

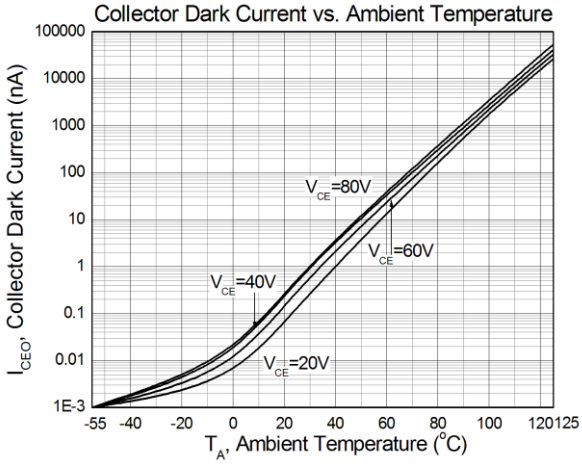


Figure 4

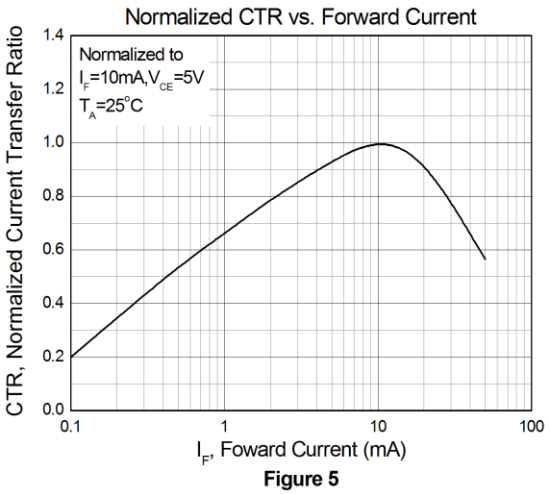


Figure 5

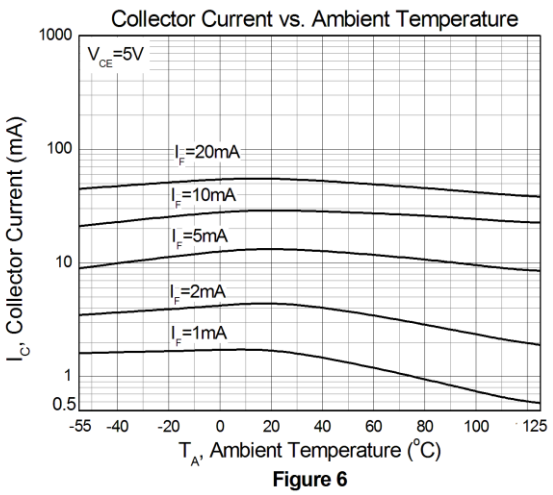


Figure 6

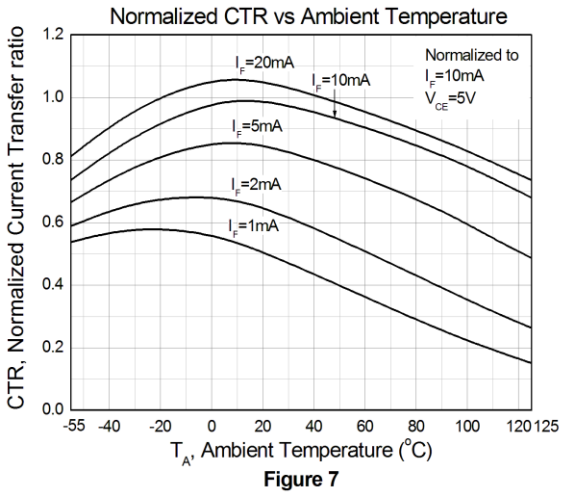


Figure 7

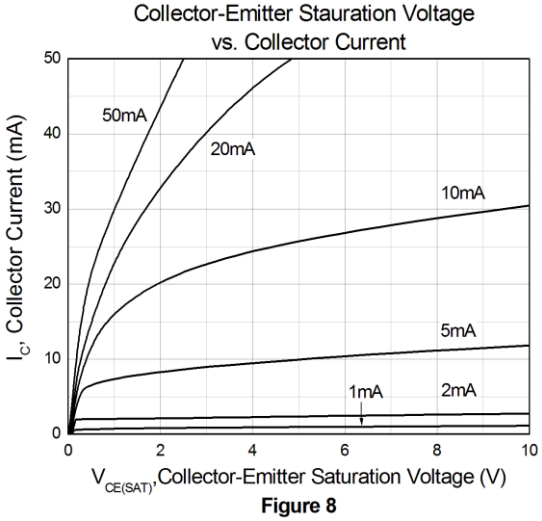


Figure 8

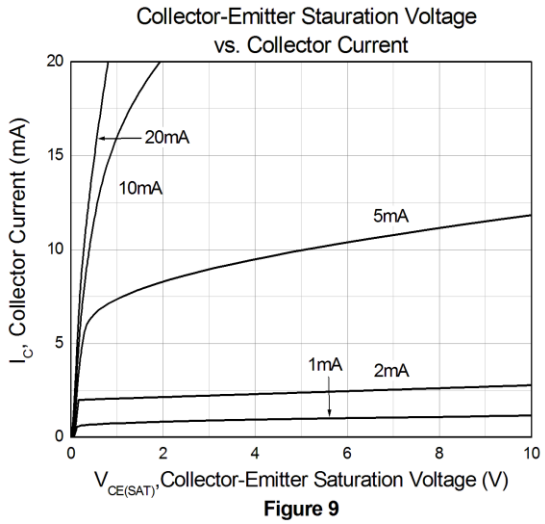


Figure 9

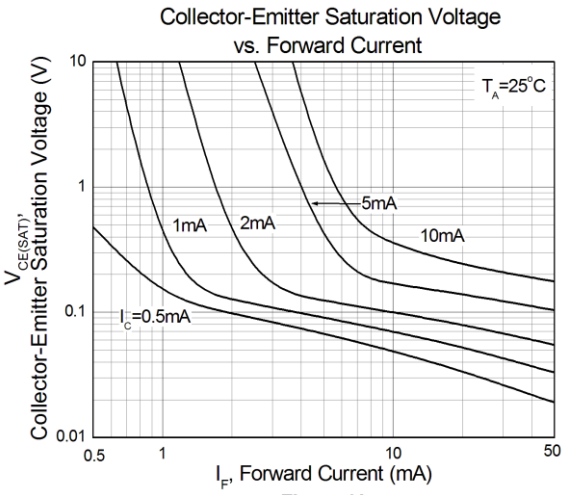


Figure 10

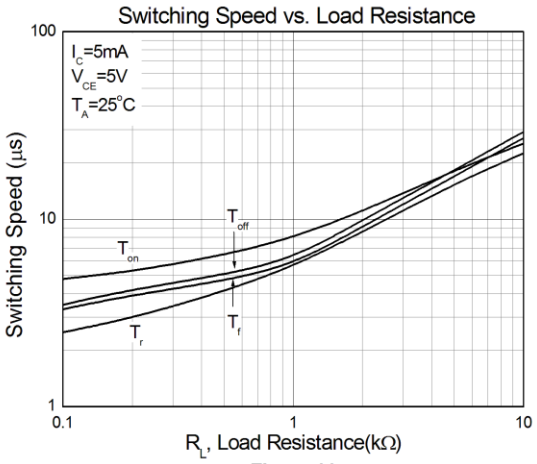


Figure 11

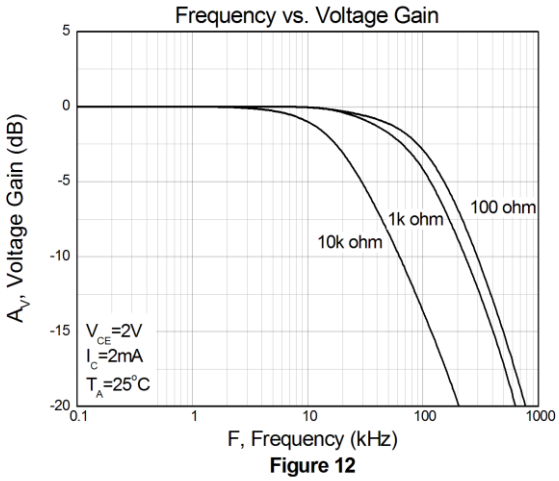
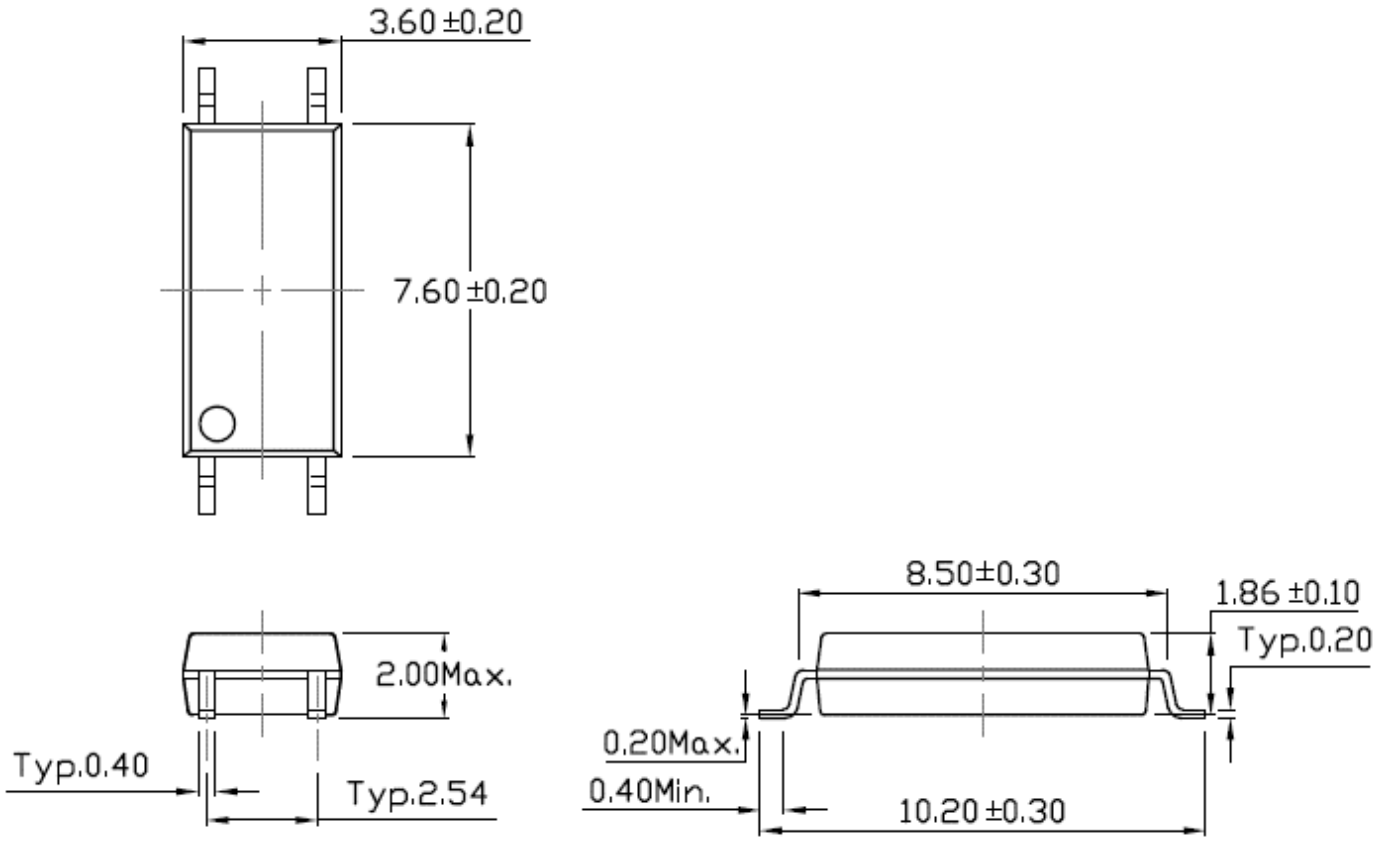
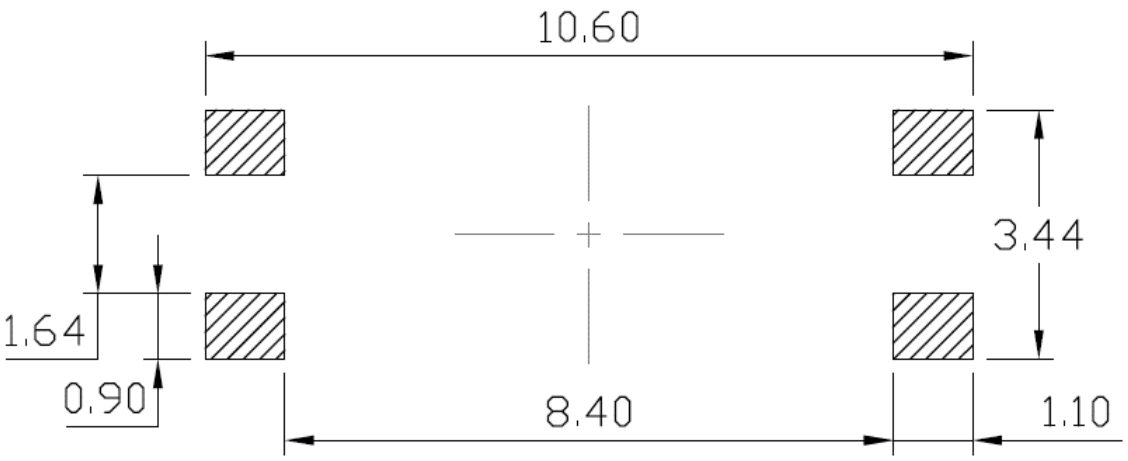


Figure 12

Package Dimension *Dimensions in mm unless otherwise stated*



Recommended Solder Mask *Dimensions in mm unless otherwise stated*



Marking Information

Note:

CT : Denotes “CT Micro”
1019 : Part Number
Y : Fiscal Year
WW : Work Week
K : Manufacturing Code

Ordering Information

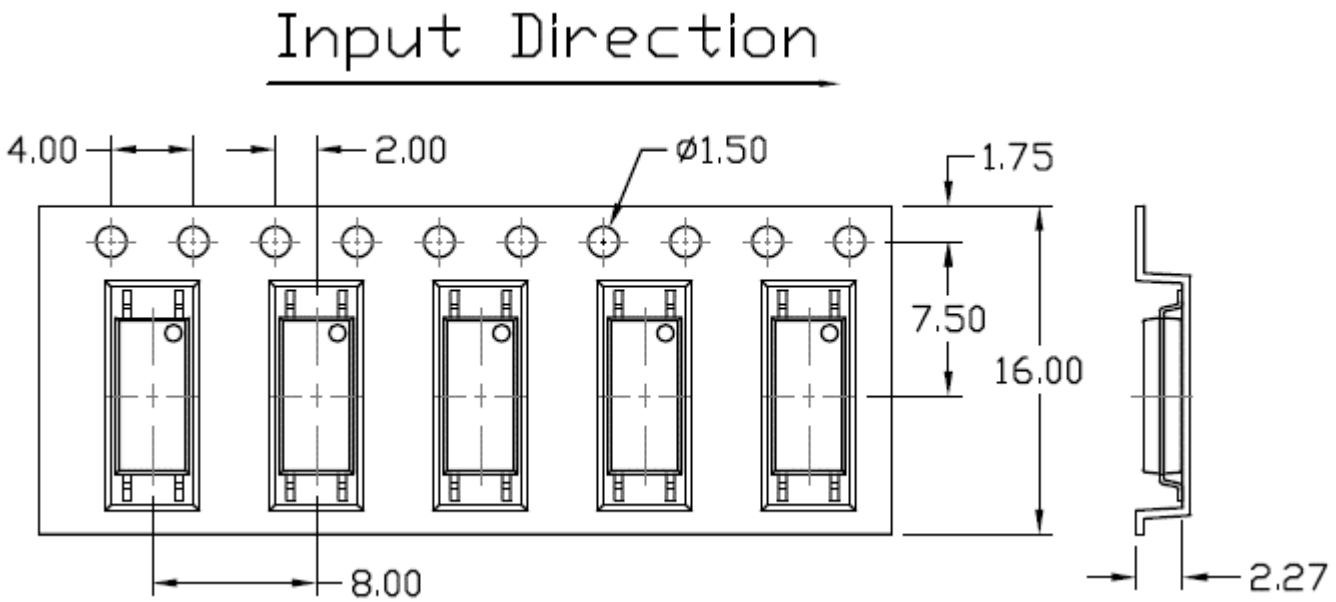
CT101X(Y) -W

X = Part No. (0,1,2,3,4,5,6,7,8,9)
Y = Tape and reel option (T1 or T2)
W = Outline Color (W, White)

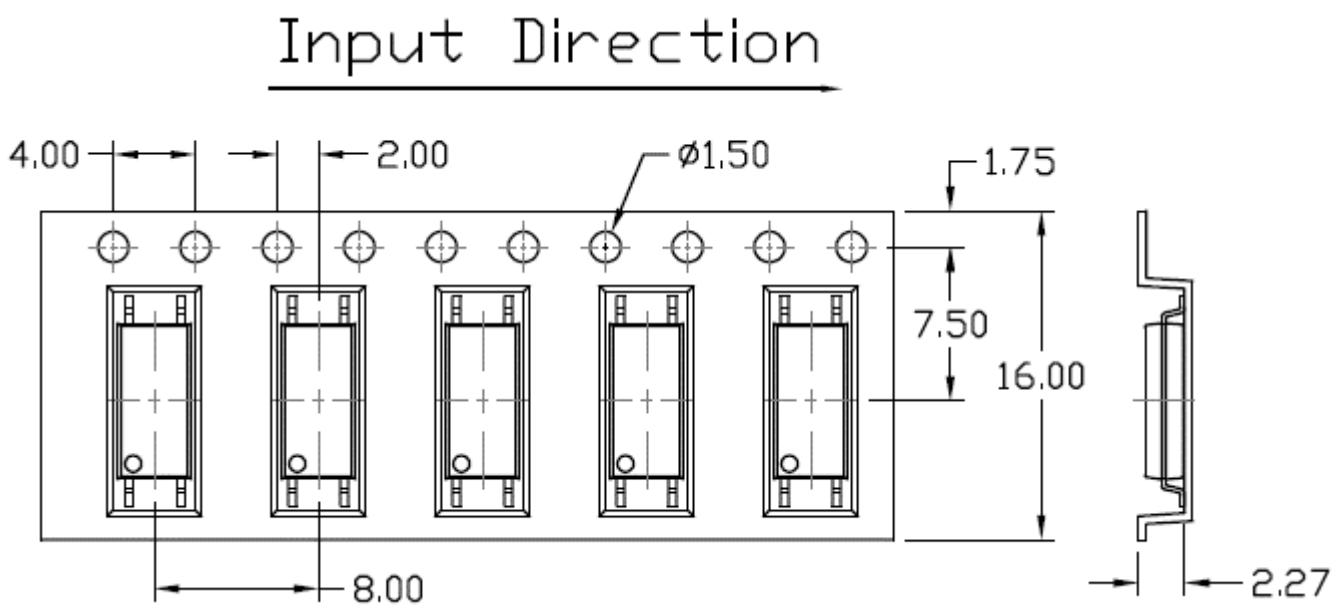
Option	*Description*	*Quantity*
T1	Surface Mount Lead Forming – With Option 1 Taping	3000Units/Reel
T2	Surface Mount Lead Forming – With Option 2 Taping	3000Units/Reel

Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

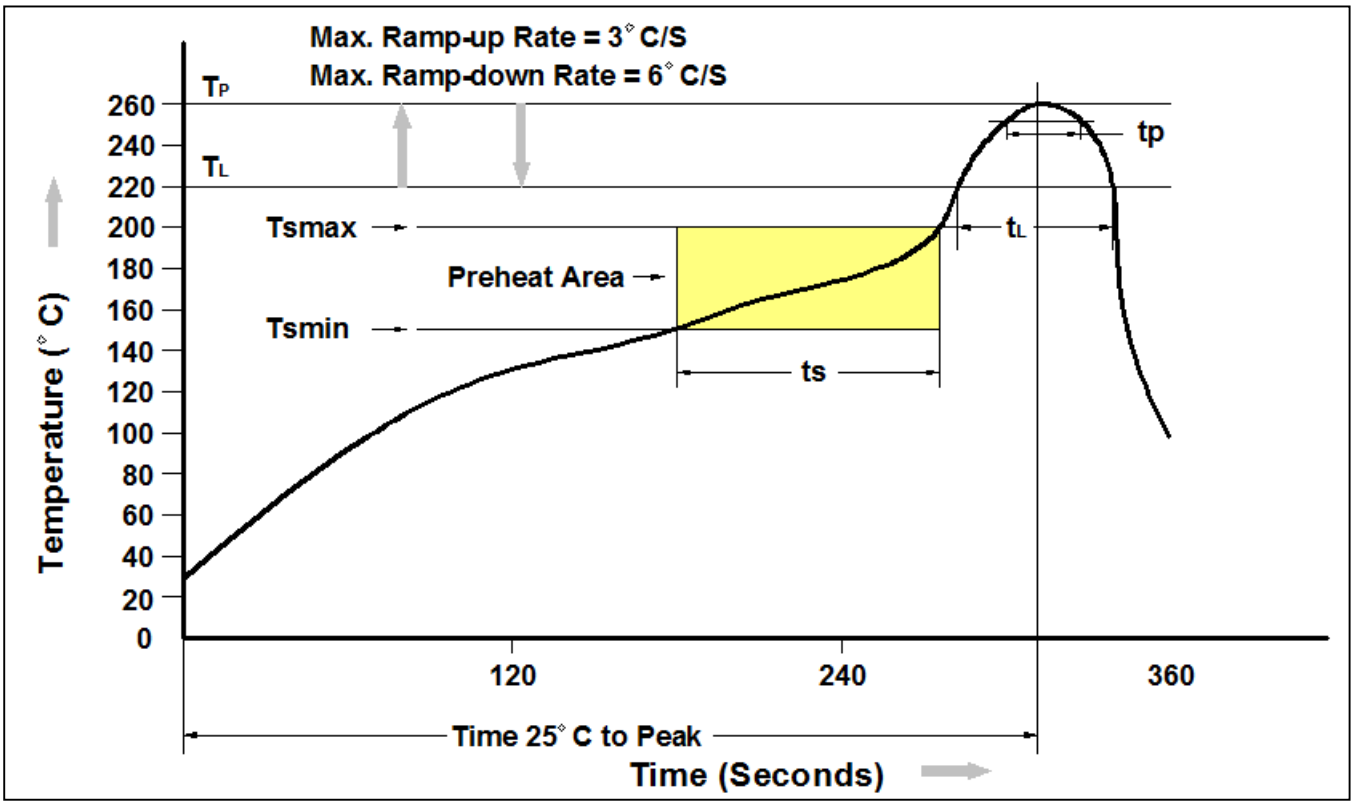
Option T1



Option T2



Reflow Profile



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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