



10M Bit/s High Speed Logic Gate Optocoupler

Features

- High speed 10M Bit/s
- High isolation voltage between input and output (Viso=3750 Vrms)
- Guaranteed performance from -40°C to 85°C
- Wide operating temperature range of -55°C to 100°C
- RoHS compliance
- REACH compliance
- Halogen free compliance
- Regulatory Approvals
 - UL - UL1577 (E364000)
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC – GB4943.1, GB8898
 - IEC60065, IEC60950

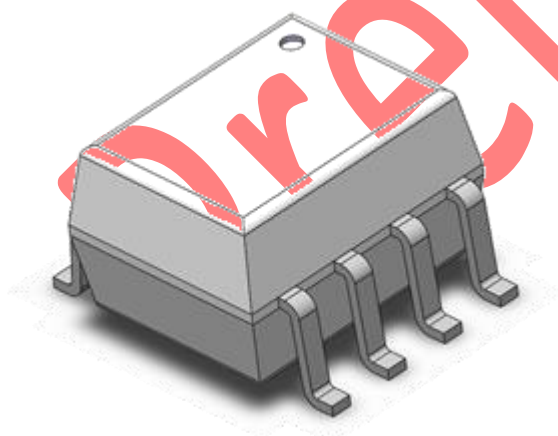
Description

The CT0630, CT0631, optocouplers consist of an AlGaAs LED, optically coupled to a very high speed integrated photo-detector logic gate with a strobe able output. The output of the detect IC is a high speed logic gate integrated with a photo detector. The switching parameters are guaranteed over the temperature range of -40°C to +85°C. A maximum input signal of 5mA will provide a minimum output sink current of 13mA (fan out of 8).

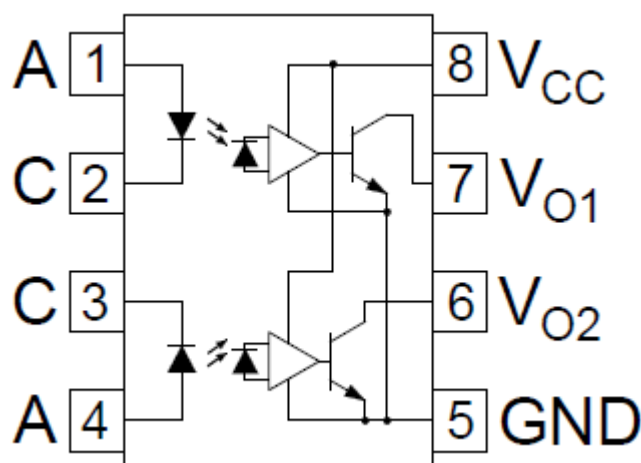
Applications

- Line receivers
- Telecommunication equipment
- High speed logic ground isolation
- Feedback loop in switch-mode power supplies
- Home appliances

Package Outline



Schematic



Note: Different bending options available. See package dimension.

**Absolute Maximum Rating at 25°C**

Symbol	Parameters	Ratings	Units	Notes
V _{ISO}	Isolation voltage	3750	V _{RMS}	1
T _{OPR}	Operating temperature	-40 ~ +100	°C	
T _{STG}	Storage temperature	-55 ~ +150	°C	
T _{SOL}	Soldering temperature	260	°C	2
Emitter				
I _F	Forward current	25	mA	
V _R	Reverse voltage	5	V	
P _D	Power dissipation	40	mW	
Detector				
P _D	Power dissipation	85	mW	
I _O	Average Output current	50	mA	
V _{CC}	Supply voltage	7	V	
V _O	Output voltage	7	V	

Notes

1. AC for 1 minute, RH = 40 ~ 60%.
2. For reflow process



Electrical Characteristics

$T_A = -40 - 85^\circ\text{C}$ (unless otherwise specified). Typical values are measured at $T_A = 25^\circ\text{C}$ and $V_{CC} = 5\text{V}$

Emitter Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V_F	Forward voltage	$I_F = 10\text{mA}$	-	1.6	1.8	V	
V_R	Reverse Voltage	$I_R = 5\mu\text{A}$	5.0	-	-	V	
$\Delta V_F / \Delta T_A$	Temperature coefficient of forward voltage	$I_F = 10\text{mA}$	-	-1.6	-	mV/ $^\circ\text{C}$	

Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
I_{CCL}	Logic Low Supply Current	$I_F = 10\text{mA}$, $V_O = \text{Open}$, $V_{CC} = 5.5\text{V}$	-	15	20	mA	1
		$I_{F1} = I_{F2} = 10\text{mA}$, $V_O = \text{Open}$, $V_{CC} = 5.5\text{V}$			25		2
I_{CCH}	Logic High Supply Current	$I_F = 0\text{mA}$, $V_O = \text{Open}$, $V_{CC} = 5.5\text{V}$	-	10	15	mA	

Transfer Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
I_{OH}	Logic High Output Current	$I_F = 250\mu\text{A}$, $V_O = 5.5\text{V}$,		2	100	μA	
I_{FT}	Input Threshold Current	$V_{CC} = 5.5\text{V}$, $V_O = 0.6\text{V}$, $I_O = 13\text{mA}$	-	3.3	5	mA	
V_{OL}	Logic Low Output Voltage	$I_F = 5\text{mA}$, $I_O = 13\text{mA}$, $V_{CC} = 5.5\text{V}$,	-	0.35	0.6	V	

Notes

1. Single Channel
2. Dual Channel



Electrical Characteristics

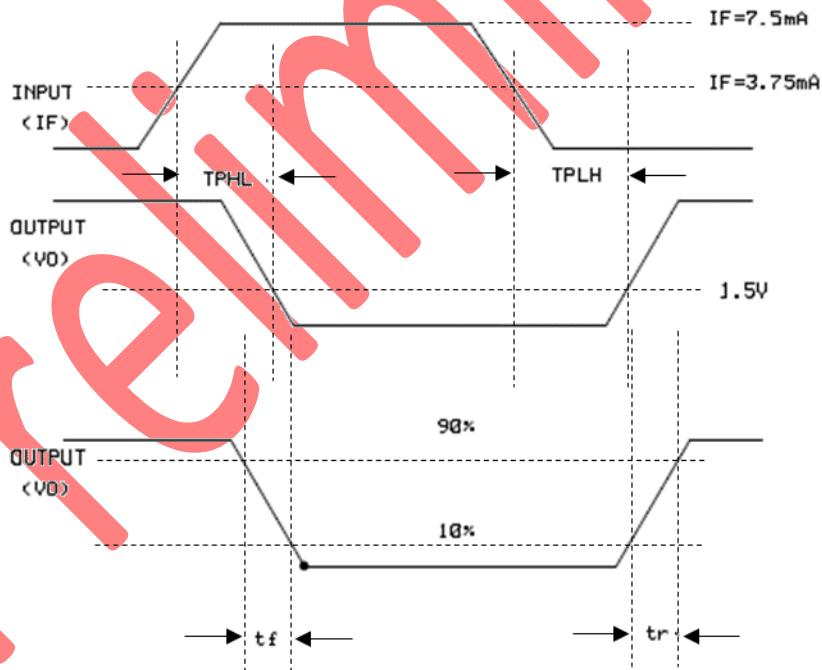
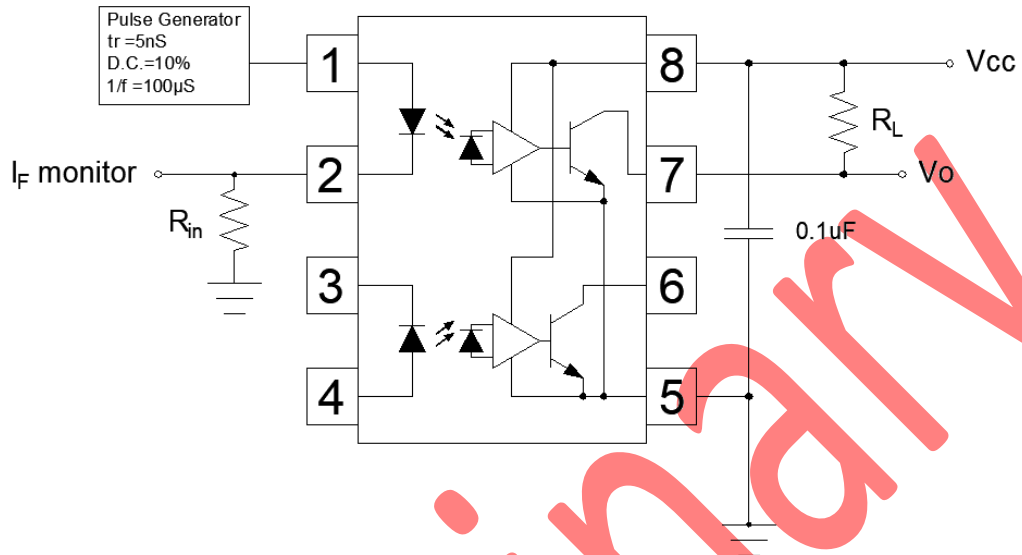
$T_A = -40 - 85^\circ\text{C}$ (unless otherwise specified). Typical values are measured at $T_A = 25^\circ\text{C}$ and $V_{CC} = 5\text{V}$

Switching Characteristics

Symbol	Parameters		Test Conditions	Min	Typ	Max	Units	Notes
T_{PHL}	Propagation Delay Time Logic High to Logic Low		$C_L = 15\text{pF}, R_L = 350\Omega$	-	40	75	ns	
T_{PLH}	Propagation Delay Time Logic Low to Logic High			-	35	75	ns	
P_{WD}	Pulse Width Distortion			-	5	34	ns	
T_r	Output Rise Time			-	40	-	ns	
T_f	Output Fall Time			-	10	-	ns	
CM_H	Common Mode Transient Immunity at Logic High	CT0630	$I_F = 7.5\text{mA}, V_{OH} = 2.0\text{V}, R_L = 350\Omega, T_A = 25^\circ\text{C}, V_{CM} = 10\text{Vp-p}$	-	-	-	V/ μs	
		CT0631	$I_F = 7.5\text{mA}, V_{OH} = 2.0\text{V}, R_L = 350\Omega, T_A = 25^\circ\text{C}, V_{CM} = 50\text{Vp-p}$	5000	-	-		
CM_L	Common Mode Transient Immunity at Logic Low	CT0630	$I_F = 0\text{mA}, V_{OL} = 0.8\text{V}, R_L = 350\Omega, T_A = 25^\circ\text{C}, V_{CM} = 10\text{Vp-p}$	-	-	-	V/ μs	
		CT0631	$I_F = 0\text{mA}, V_{OL} = 0.8\text{V}, R_L = 350\Omega, T_A = 25^\circ\text{C}, V_{CM} = 50\text{Vp-p}$	5000	-	-		



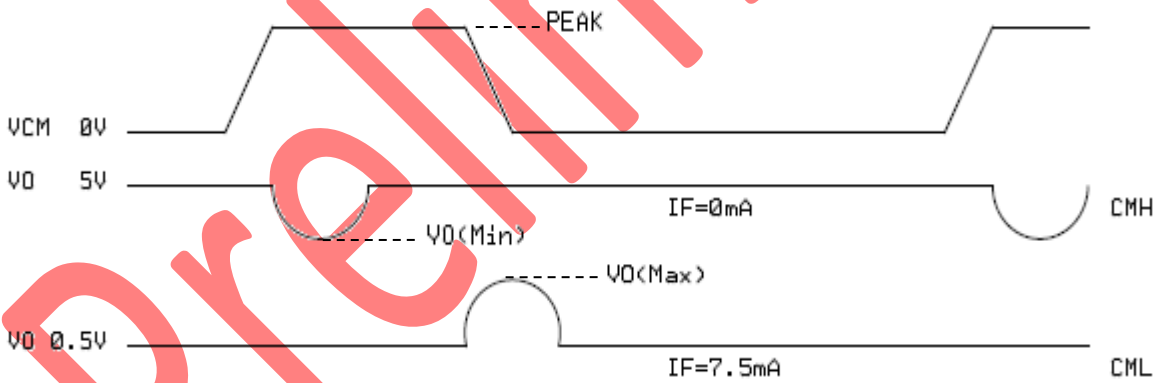
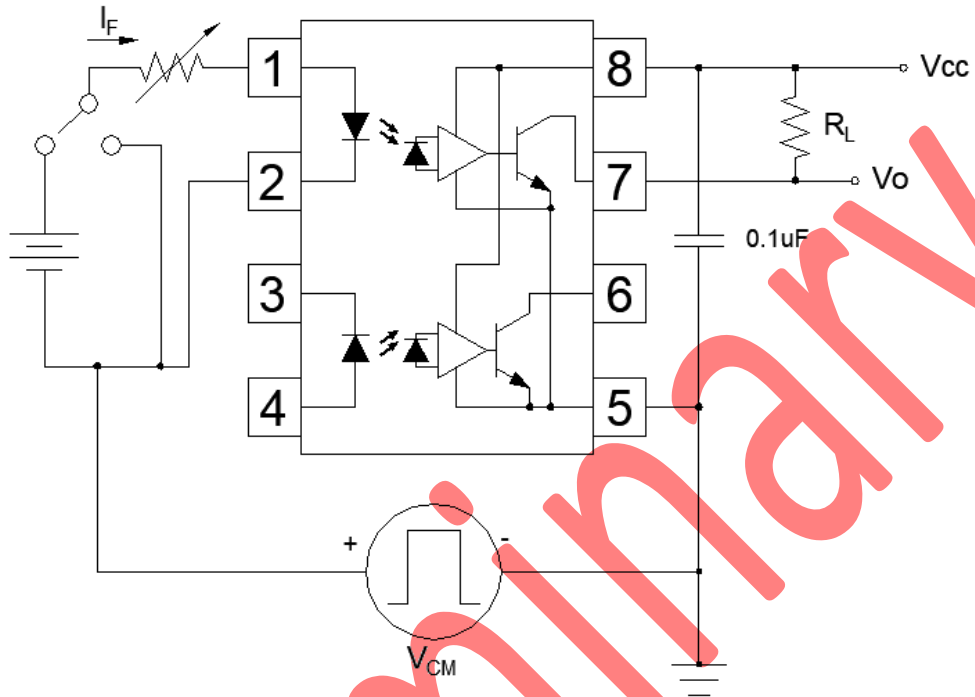
Test Circuit



Switching Time Test Circuit



Test Circuits

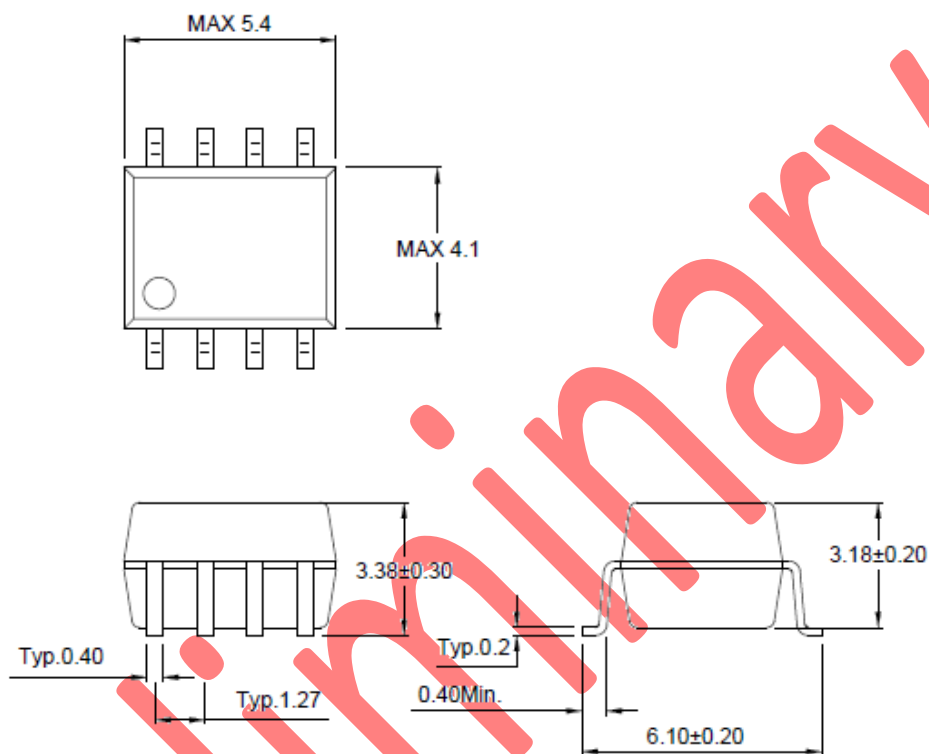


CMR Test Circuit

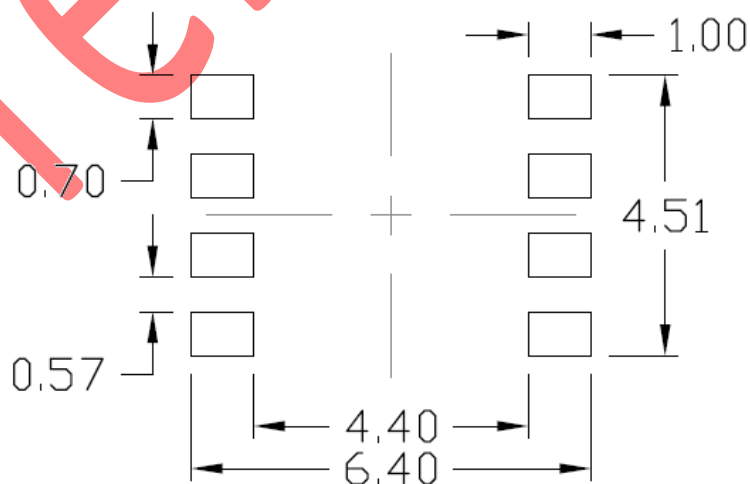


Package Dimension *Dimensions in mm unless otherwise stated*

Surface Mount Lead Forming

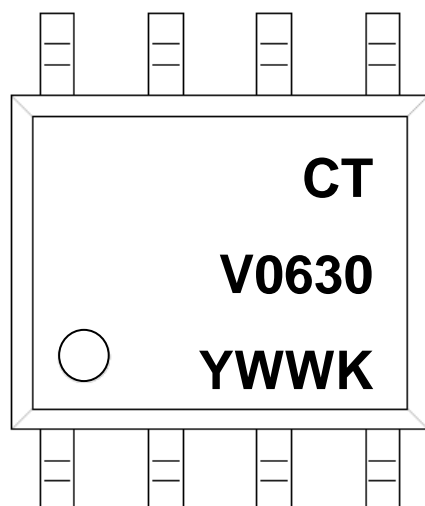


Recommended Solder Mask *Dimensions in mm unless otherwise stated*





Device Marking



CT : Denotes "CT Micro"
0630 : Product Number
V : VDE Option
Y : Fiscal Year
WW : Work Week
K : Production Code

Ordering Information

CT063X(V)(Z)

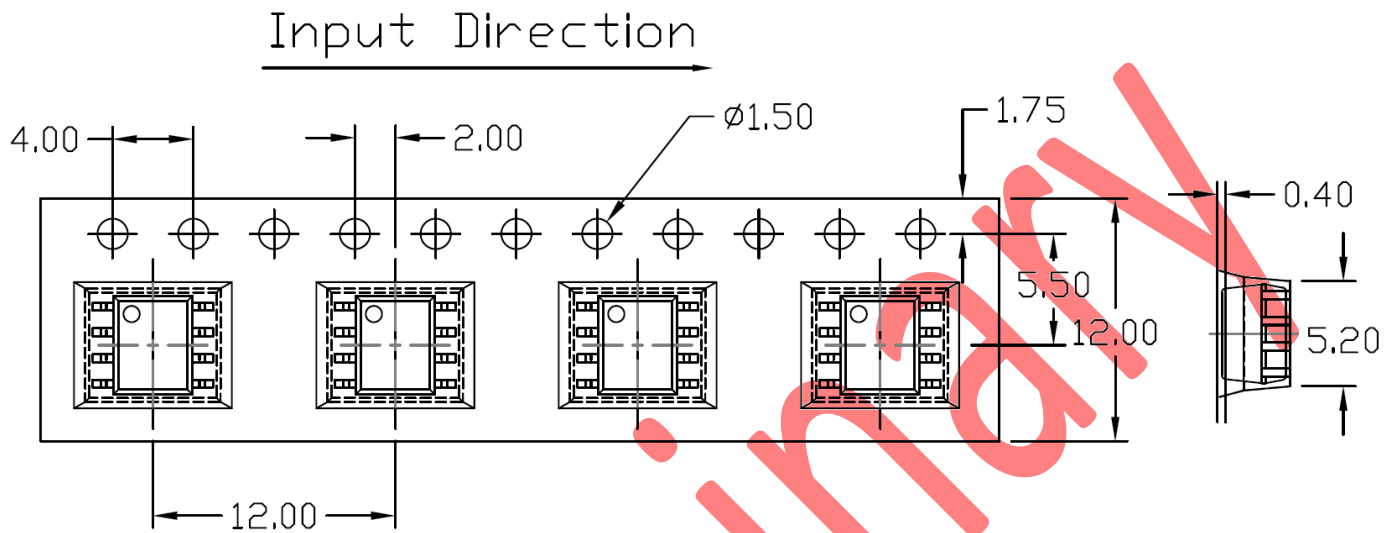
CT = Denotes "CT Micro"
063X = Part No. (0 or 1)
V = VDE option (V or none)
Z = Tape and reel option (T1 or T2)

Option	Description	Quantity
T1	Surface Mount Lead Forming – With Option 1 Taping	1,200 Units/Reel
T2	Surface Mount Lead Forming – With Option 2 Taping	1,200 Units/Reel

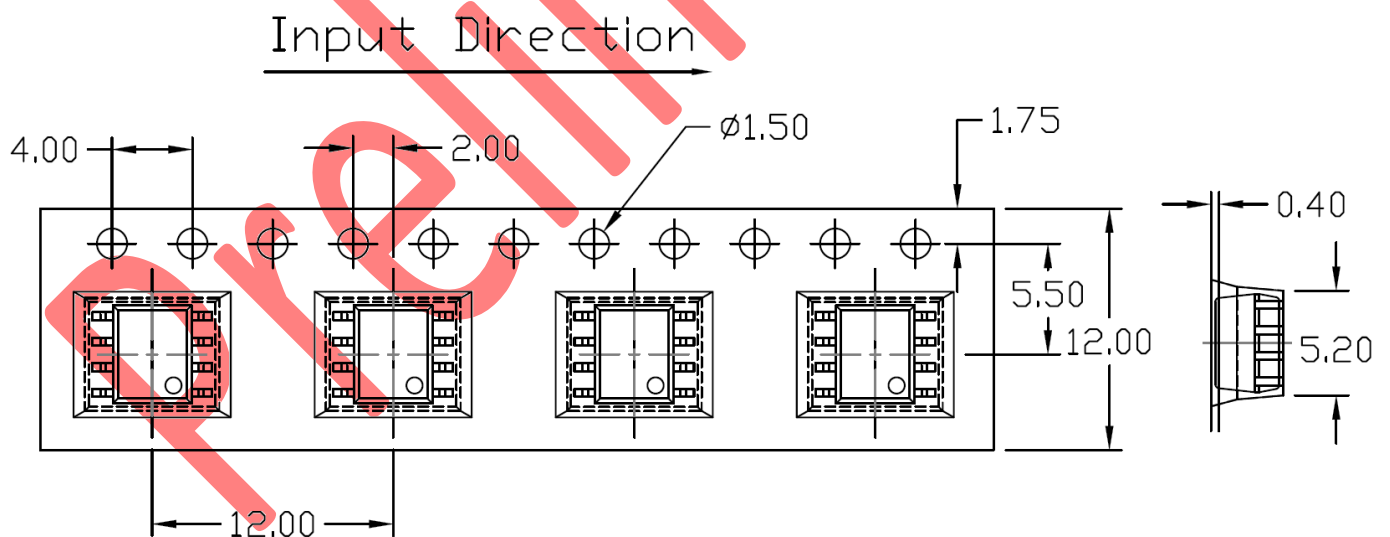


Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

Option T1

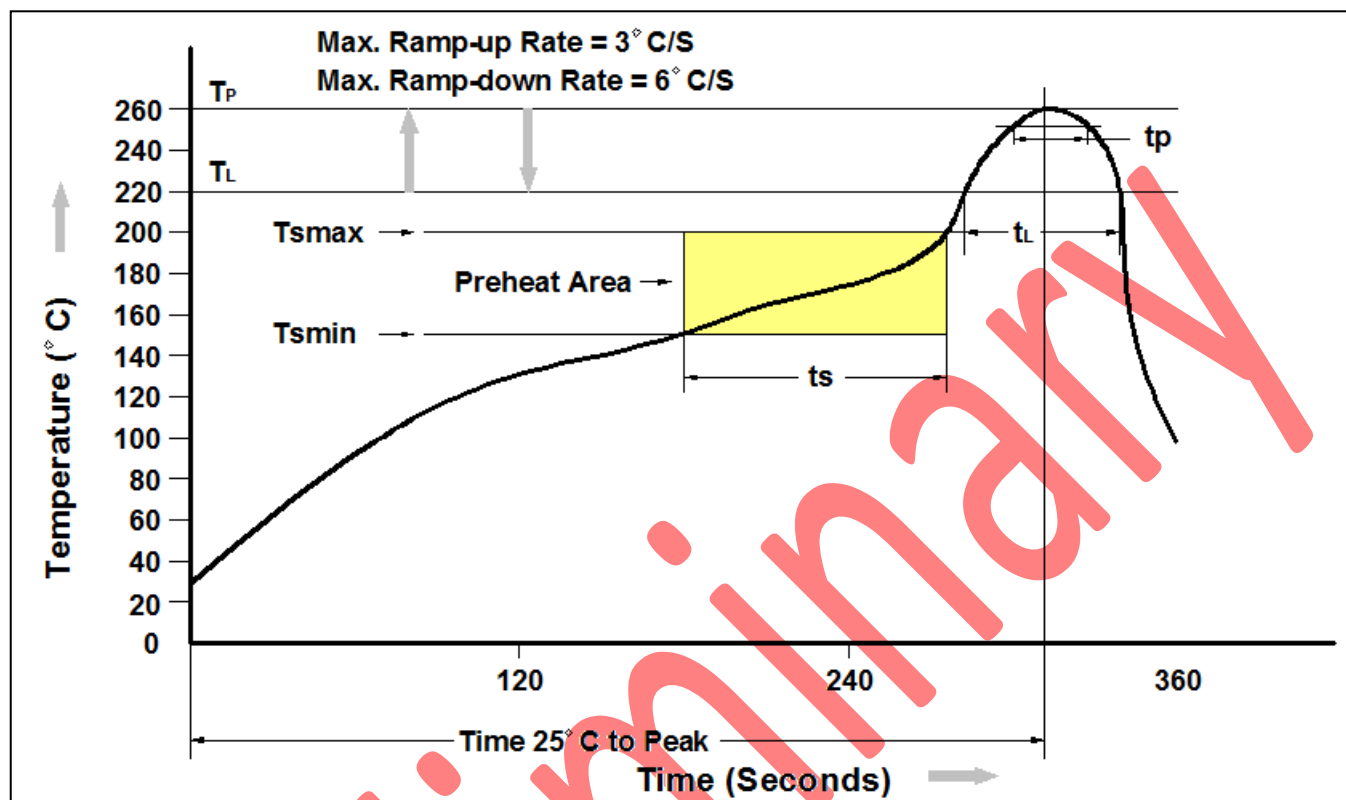


Option T2





Reflow Profile



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