CT452

DC Input 4-Pin Mini-Flat High BV_{CEO} Photo Darlington Optocoupler

Features

- High isolation 3750 VRMS
- CTR : Min 1000%
- High B_{VCEO} = 350V
- Operating temperature range - 55 °C to 100 °C
- Green Package
- Regulatory Approvals
  - UL - UL1577 (E364000)
  - VDE - EN60747-5-5(VDE0884-5)
  - CQC – GB4943.1, GB8898
  - IEC60065, IEC60950

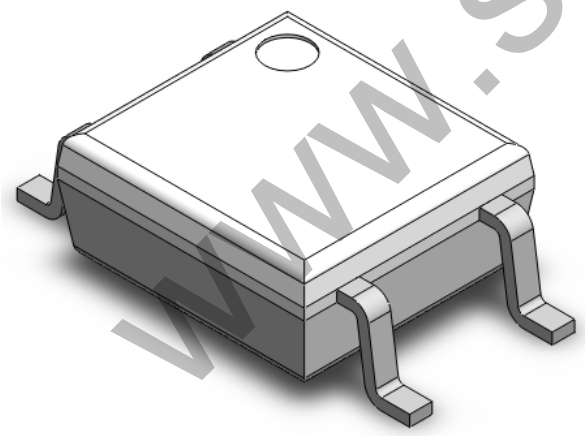
Description

The CT452 consists of a high power photodarlington transistor optically coupled to a gallium arsenide Infrared-emitting diode in a 4-lead Mini-Flat package.

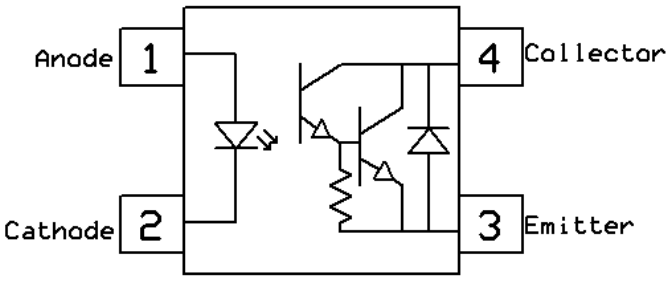
Applications

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

Package Outline



Schematic



Note: Different lead forming options available. See package dimension.

Absolute Maximum Rating at 25ºC

Symbol	*Parameters*	*Ratings*	*Units*	*Notes*
V_{ISO}	Isolation voltage	3750	V_{RMS}	
T_{OPR}	Operating temperature	-55 ~ +100	^0C	
T_{STG}	Storage temperature	-55 ~ +125	^0C	
T_{SOL}	Soldering temperature	260	^0C	
P_{TOT}	Total power dissipation	170	mW	
Emitter				
I_F	Forward current	60	mA	
$I_{F(TRANS)}$	Peak transient current (≤1μs P.W,300pps)	1	A	
V_R	Reverse voltage	6	V	
P_C	Power dissipation	150	mW	
Detector				
P_D	Power dissipation	150	mW	
B_{VCEO}	Collector-Emitter Breakdown Voltage	350	V	
B_{VECO}	Emitter-Collector Breakdown Voltage	0.1	V	
I_C	Collector Current	150	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		1.24	1.4	V	
I_R	Reverse Current	V_R = 5V	-	-	5	µA	
C_{IN}	Input Capacitance	f= 1MHz	-	15	-	pF	

Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
B_{VCEO}	Collector-Emitter Breakdown	I_C= 100µA	350	-	-	V	
B_{VECO}	Emitter-Collector Breakdown	I_E= 100µA	0.1	-	-	V	
I_{CEO}	Collector-Emitter Dark Current	V_{CE}= 200V, I_F=0mA	-	-	100	nA	

Transfer Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
CTR	Current Transfer Ratio	I_F= 1mA, V_{CE}= 2V	1000		15000	%	
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	I_F= 20mA, I_C= 100mA	-	-	1.2	V	
R_{IO}	Isolation Resistance	V_{IO}= 500V_{DC}	$5x10^{10}$			Ω	
C_{IO}	Isolation Capacitance	f= 1MHz		0.6		pF	

Switching Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
t_r	Rise Time	I_C=2mA, V_{CE}= 2V, R_L= 100Ω	-	-	250	µs	
t_f	Fall Time		-	-	95		

Typical Characteristic Curves

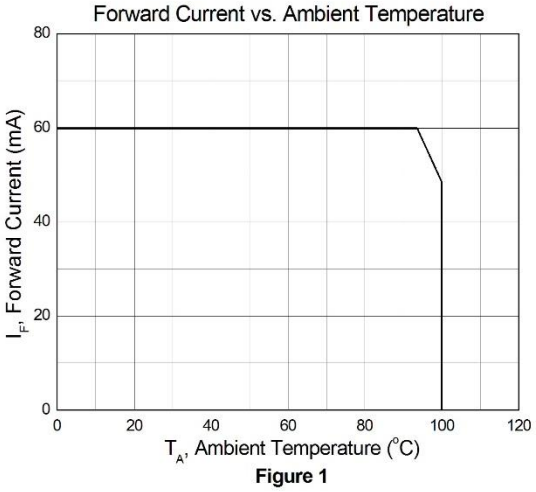


Figure 1

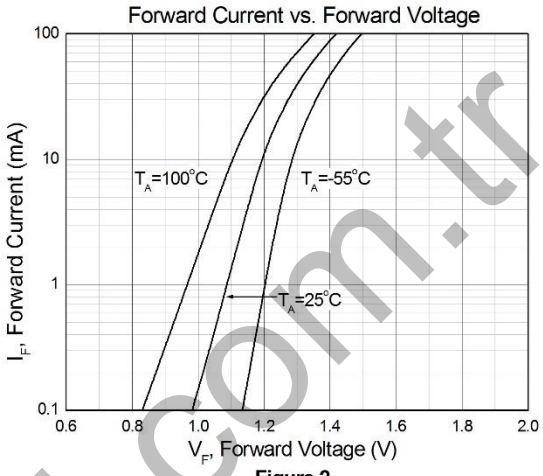


Figure 2

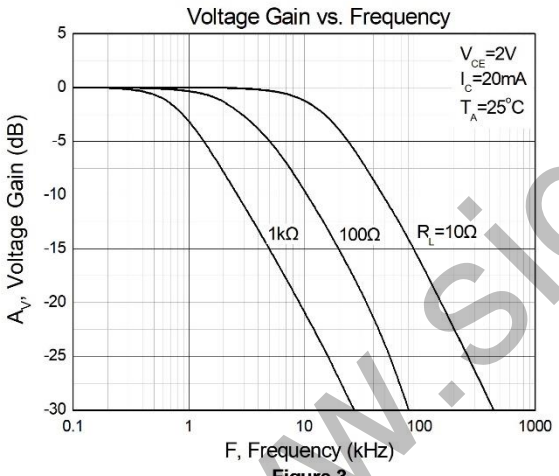


Figure 3

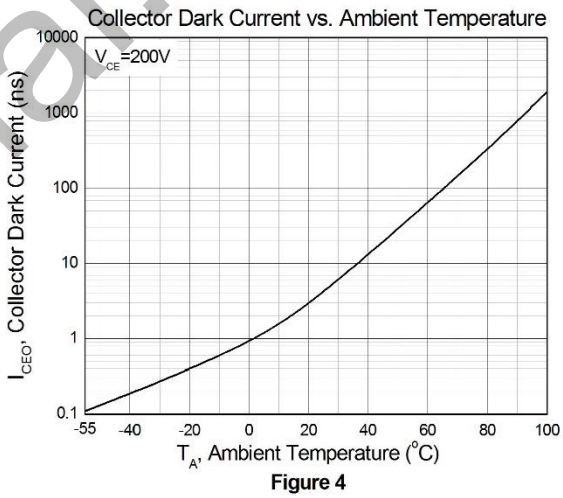


Figure 4

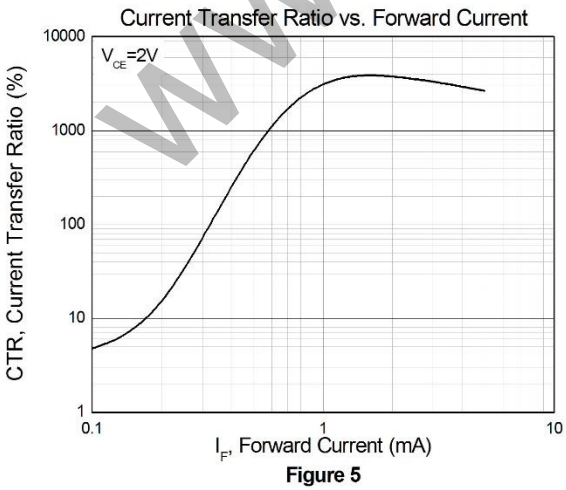


Figure 5

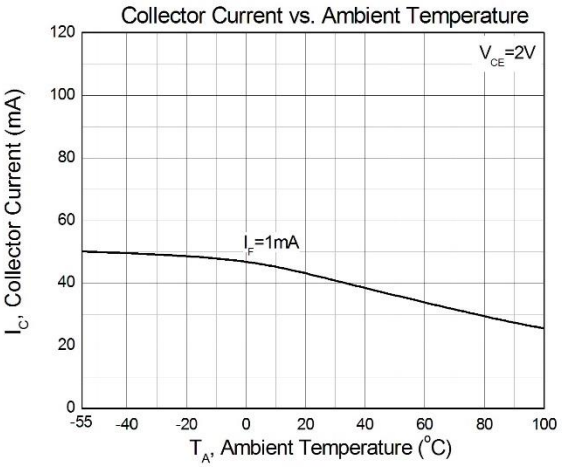


Figure 6

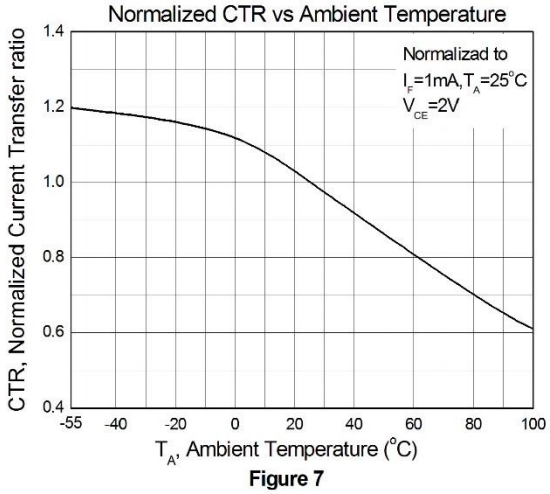


Figure 7

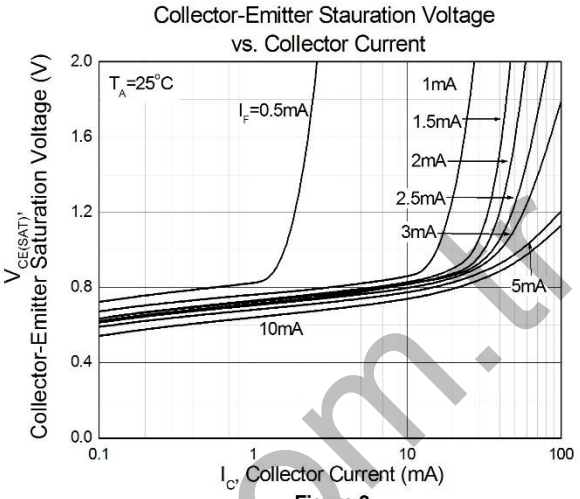


Figure 8

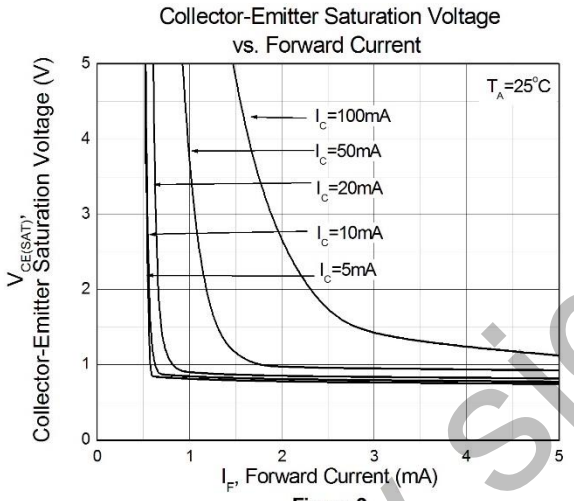


Figure 9

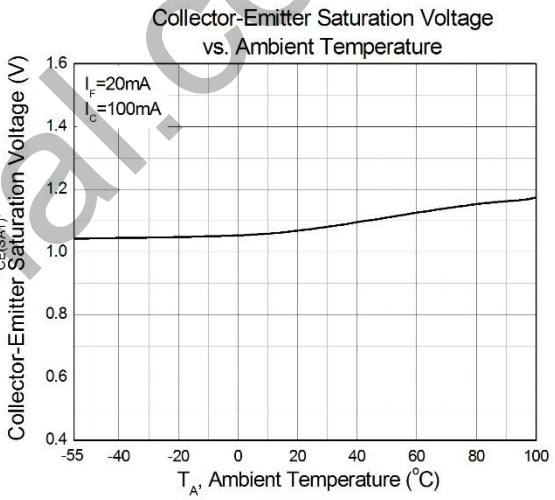


Figure 10

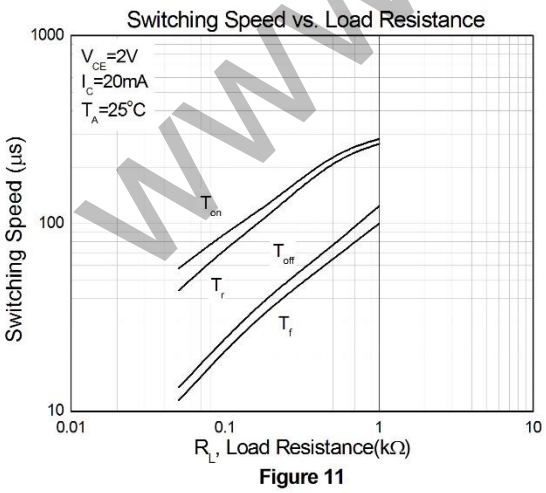
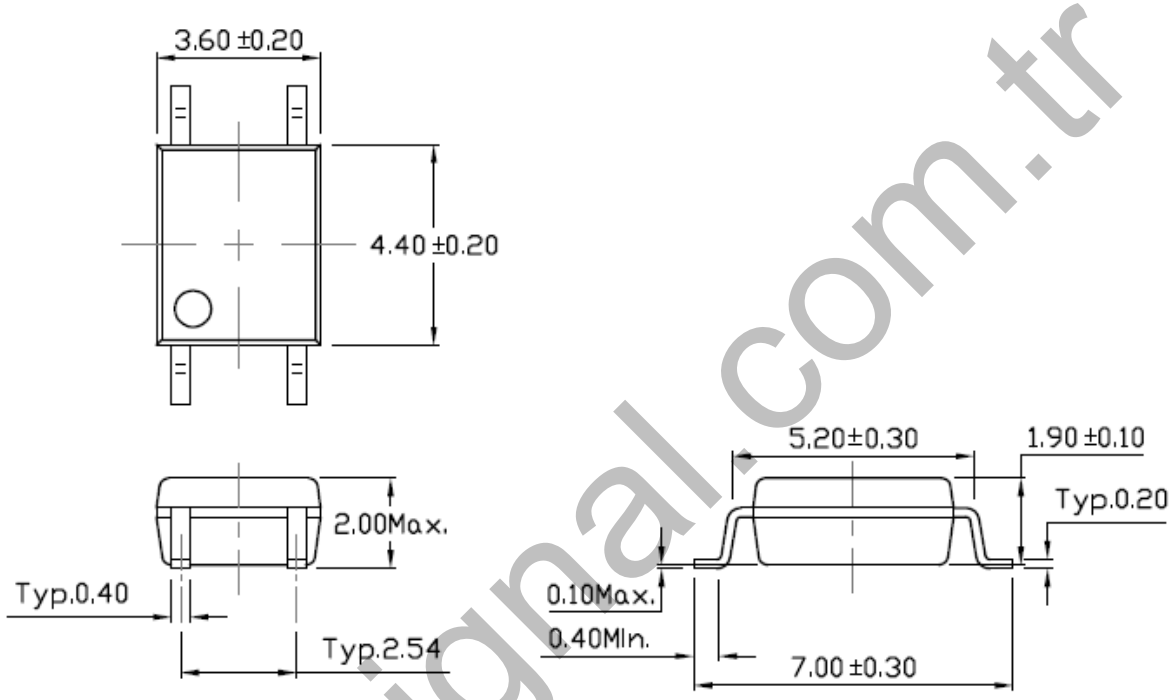
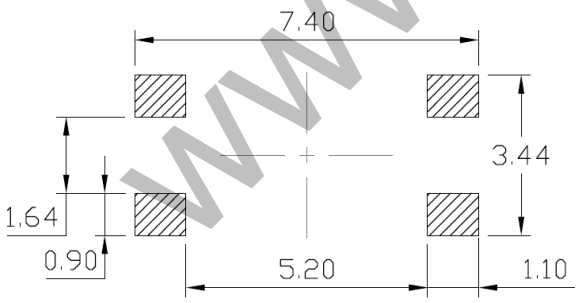


Figure 11

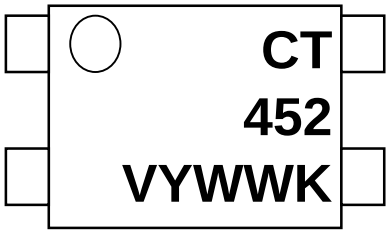
Package Dimension *Dimensions in mm unless otherwise stated*



Recommended Solder Mask *Dimensions in mm unless otherwise stated*



Marking Information



Note:

CT : Denotes “CT Micro”
452 : Product Number
V : VDE Option
Y : Fiscal Year
WW : Work Week
K : Manufacturing Code

Ordering Information

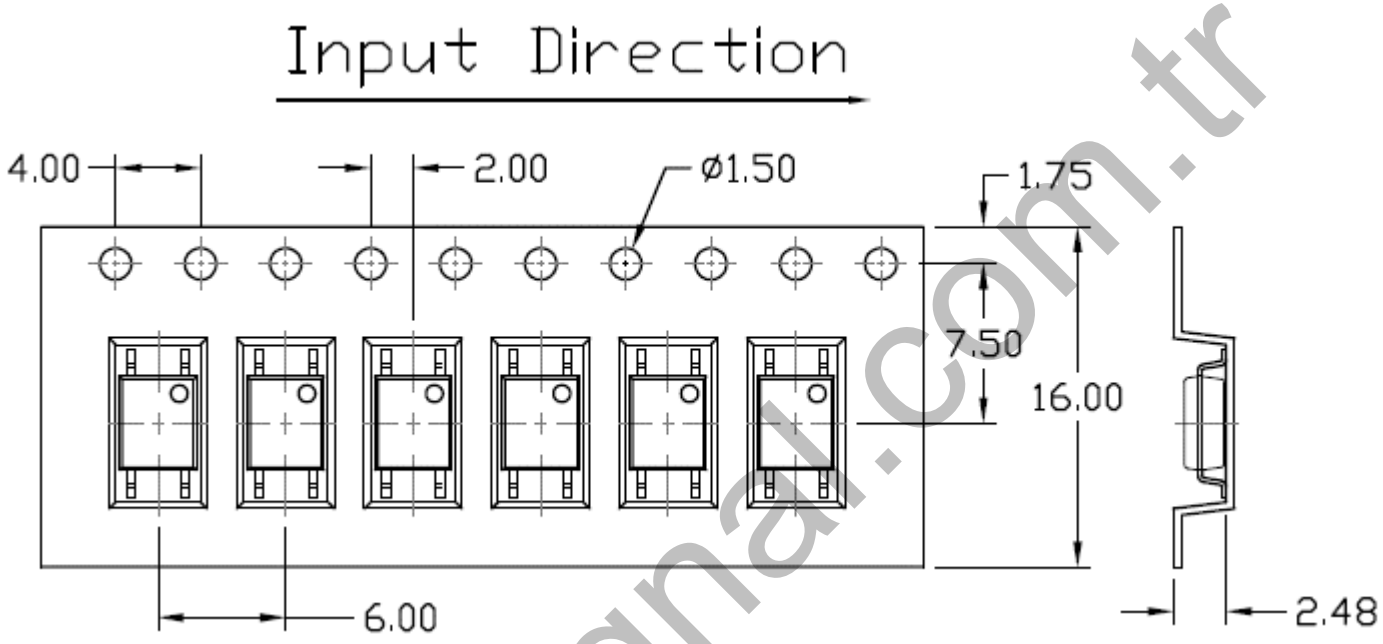
CT452(V)(Z)

V = VDE option (V or None)
Z = Tape and reel option (T1, or T2)

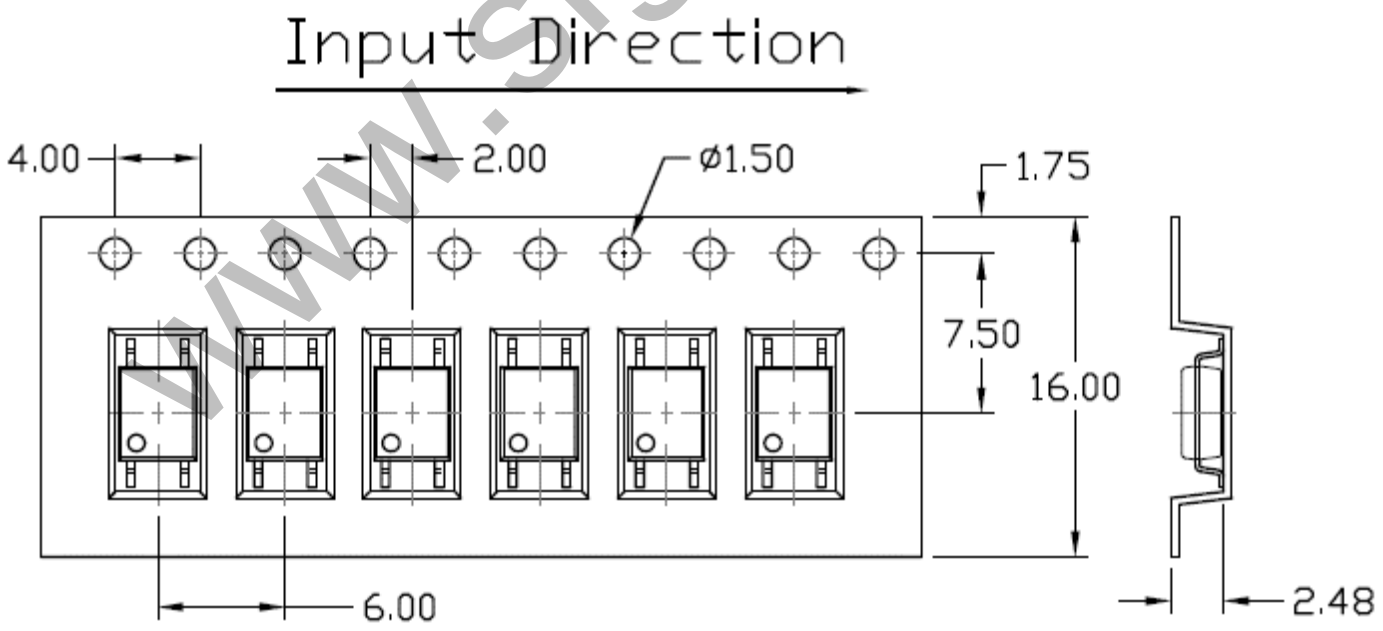
Option	*Description*	*Quantity*
T1	Surface Mount Lead Forming – With Option 1 Taping	3000 Units/Reel
T2	Surface Mount Lead Forming – With Option 2 Taping	3000 Units/Reel

Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

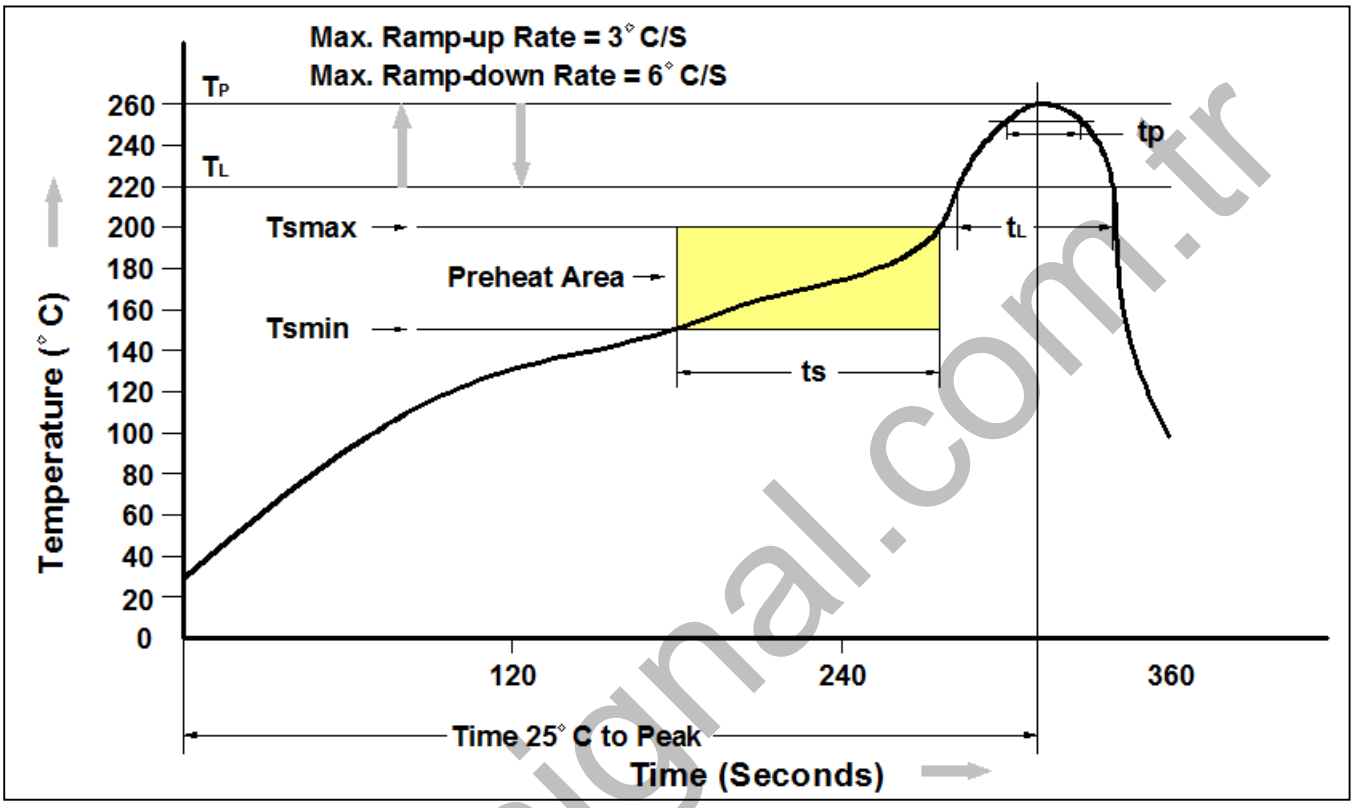
Option T1



Option T2



Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (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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