



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

Features

- High isolation 3750 VRMS
- CTR : Min 1000%
- High $BV_{CEO} = 350V$
- 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

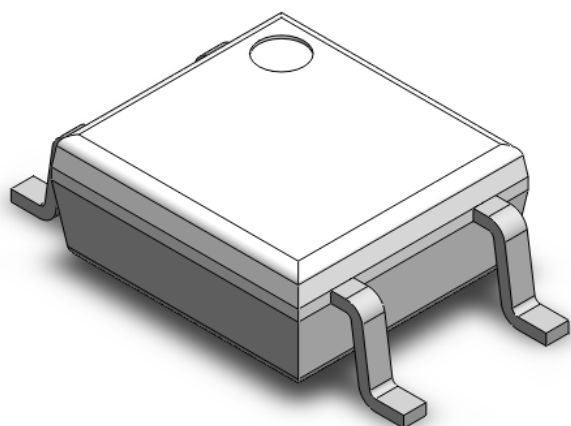
Description

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.

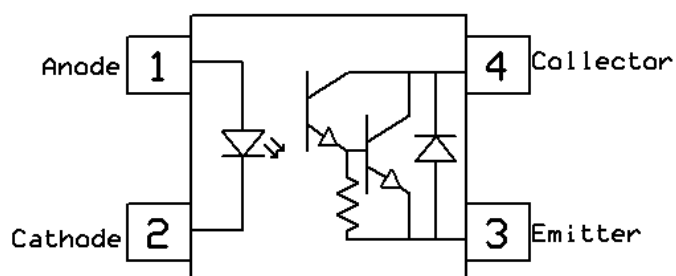
Applications

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

Package Outline



Schematic



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



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Absolute Maximum Rating at 25°C

<i>Symbol</i>	<i>Parameters</i>	<i>Ratings</i>	<i>Units</i>	<i>Notes</i>
V _{ISO}	Isolation voltage	3750	V _{RMS}	
T _{OPR}	Operating temperature	-55 ~ +100	°C	
T _{STG}	Storage temperature	-55 ~ +125	°C	
T _{SOL}	Soldering temperature	260	°C	
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	



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Electrical Characteristics

$T_A = 25^\circ\text{C}$ (unless otherwise specified)

Emitter Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V_F	Forward voltage	$I_F=10\text{mA}$		1.24	1.4	V	
I_R	Reverse Current	$V_R = 5\text{V}$	-	-	5	μA	
C_{IN}	Input Capacitance	$f=1\text{MHz}$	-	15	-	pF	

Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
BV_{CEO}	Collector-Emitter Breakdown	$I_C=100\mu\text{A}$	350	-	-	V	
BV_{ECO}	Emitter-Collector Breakdown	$I_E=100\mu\text{A}$	0.1	-	-	V	
I_{CEO}	Collector-Emitter Dark Current	$V_{CE}=200\text{V}, I_F=0\text{mA}$	-	-	100	nA	

Transfer Characteristics

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

Switching Characteristics

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



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Typical Characteristic Curves

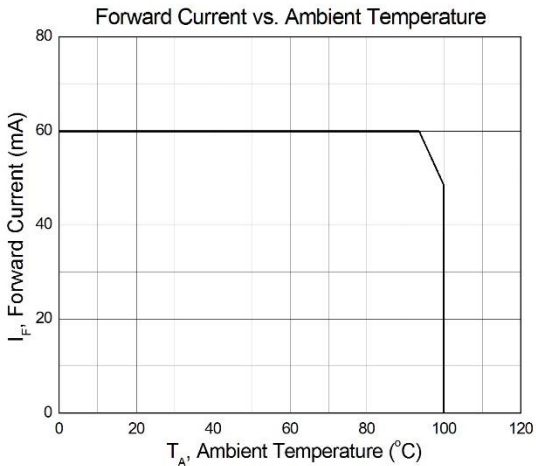


Figure 1

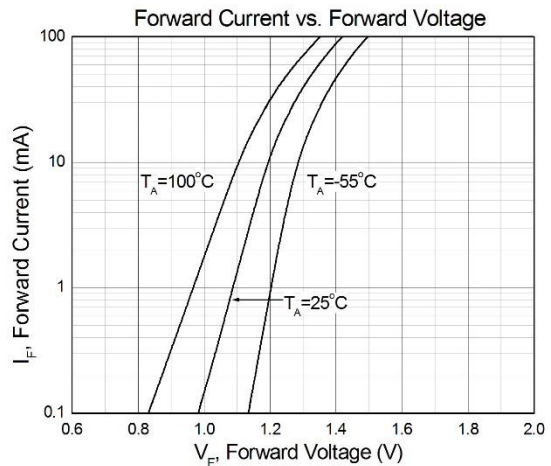


Figure 2

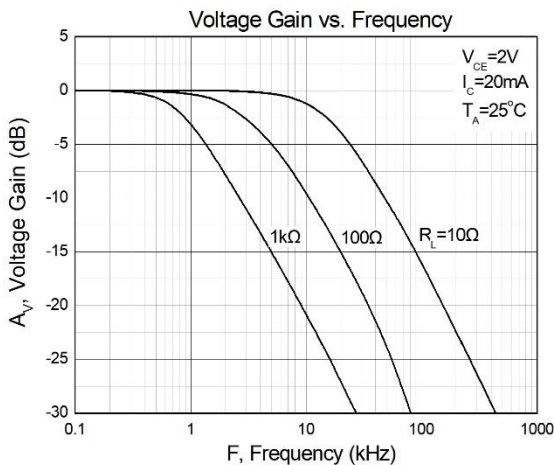


Figure 3

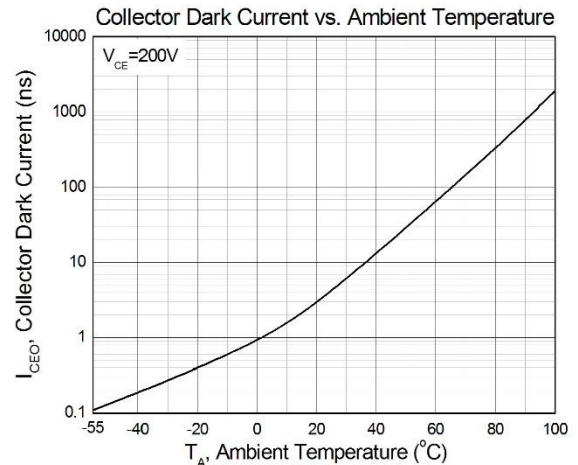


Figure 4

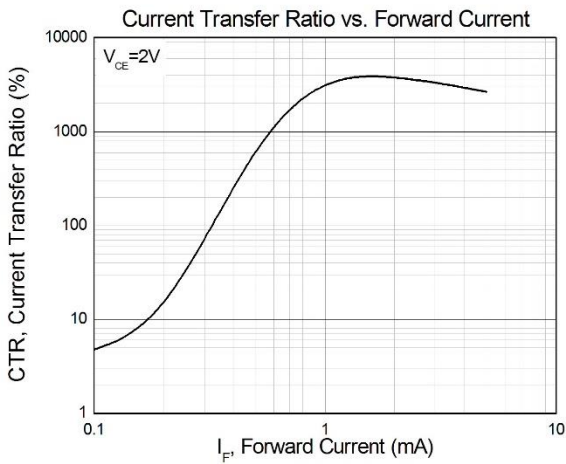


Figure 5

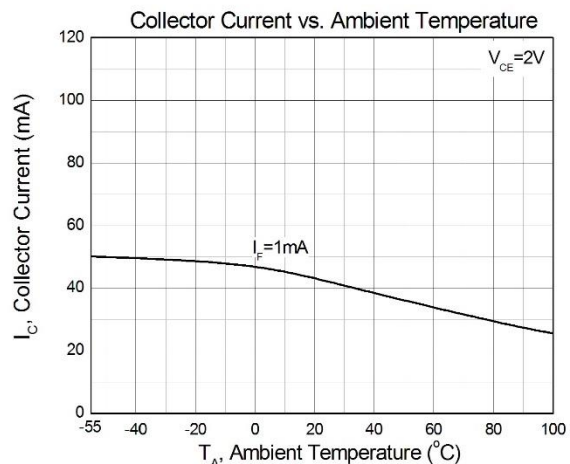


Figure 6



DC Input 4-Pin Mini-Flat High BV_{CE0} Photo Darlington Optocoupler

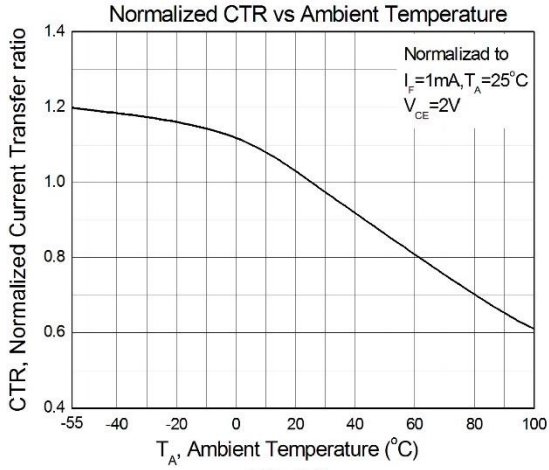


Figure 7

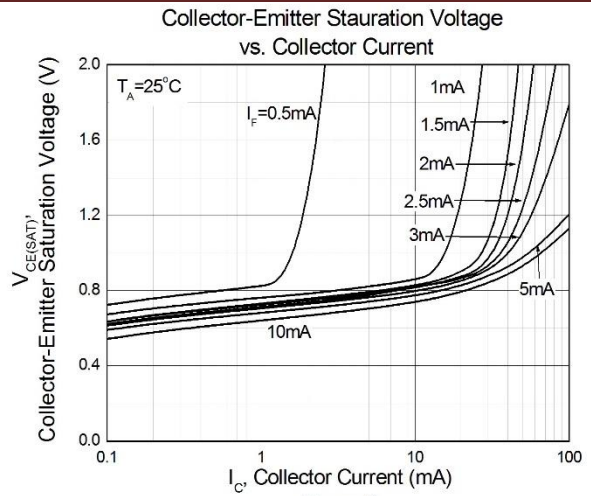


Figure 8

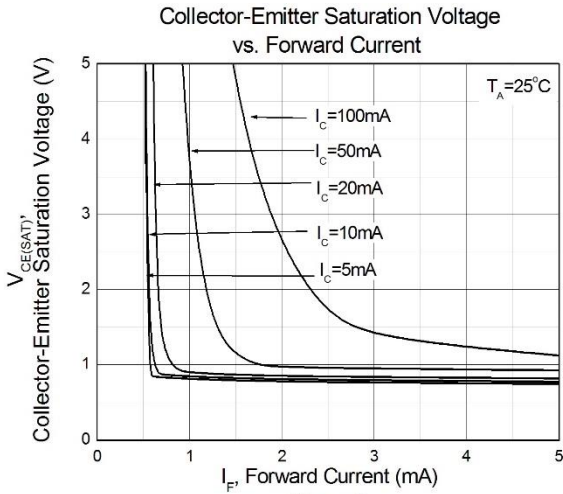


Figure 9

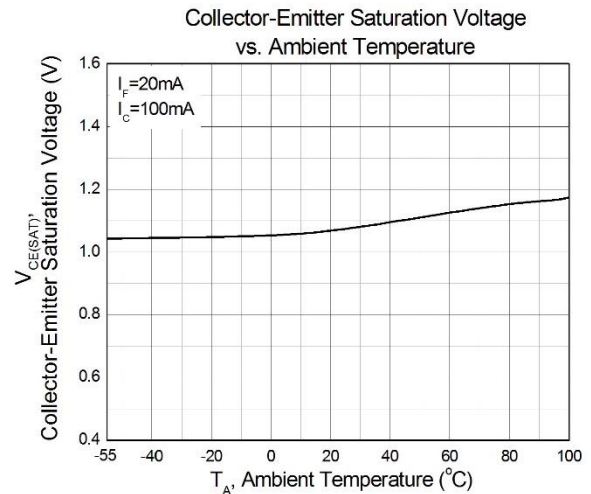


Figure 10

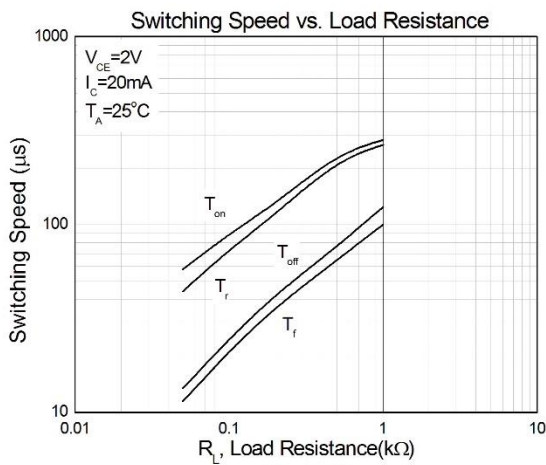
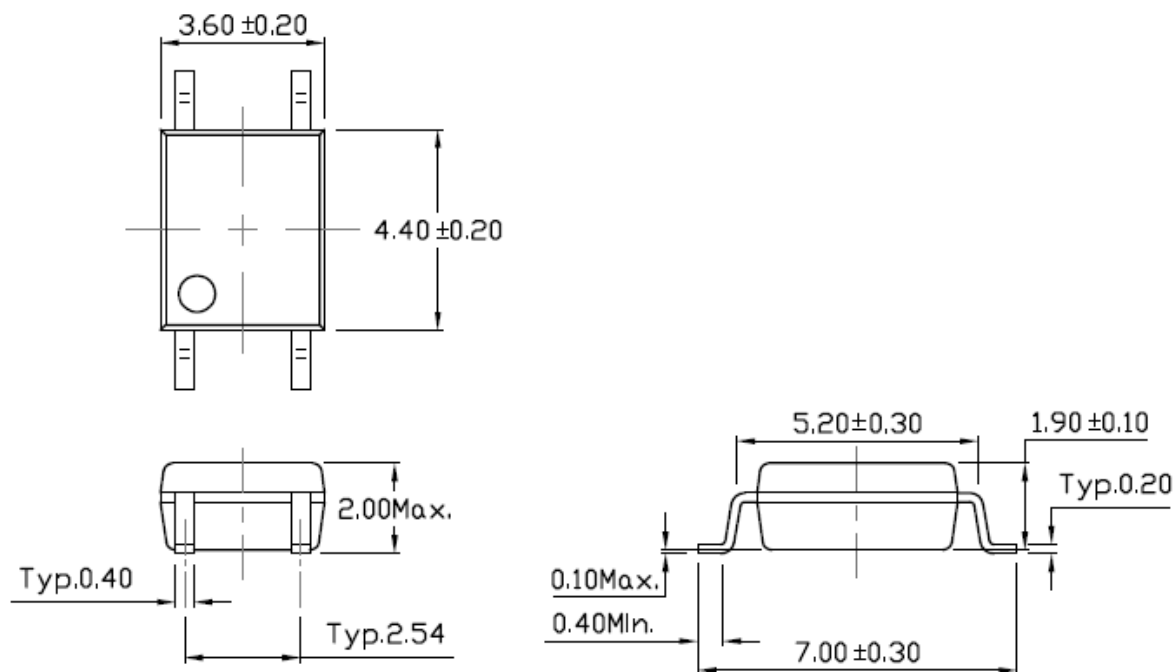


Figure 11

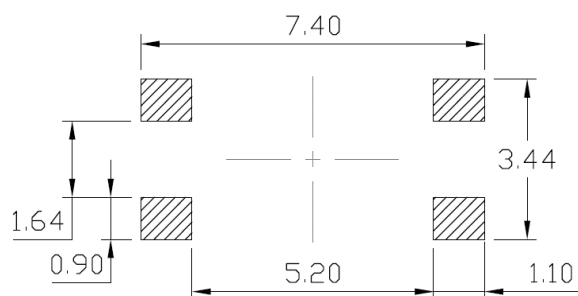


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Package Dimension *Dimensions in mm unless otherwise stated*



Recommended Solder Mask *Dimensions in mm unless otherwise stated*

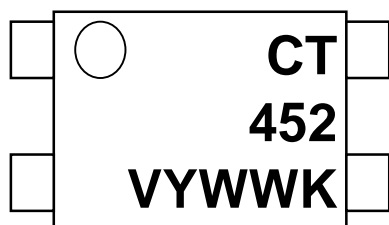




CT452

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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)

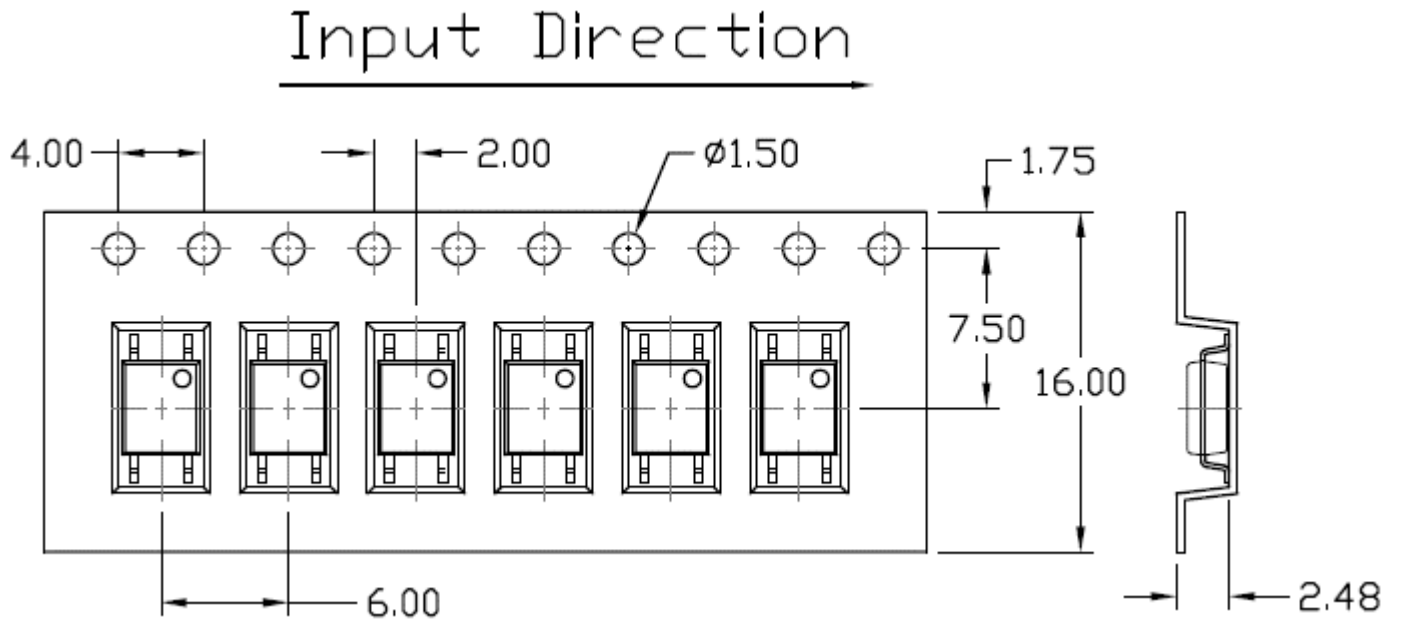
Option	Description	Quantity
T1	Surface Mount Lead Forming – With Option 1 Taping	3000 Units/Reel
T2	Surface Mount Lead Forming – With Option 2 Taping	3000 Units/Reel



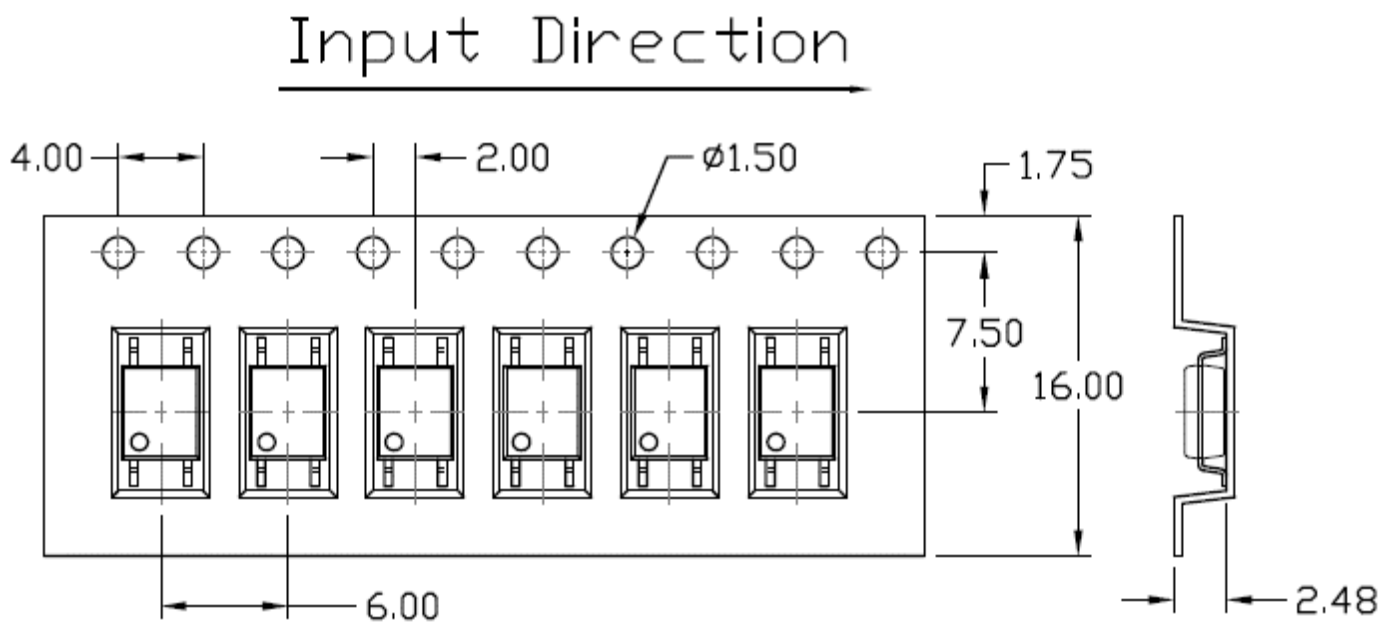
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Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

Option T1



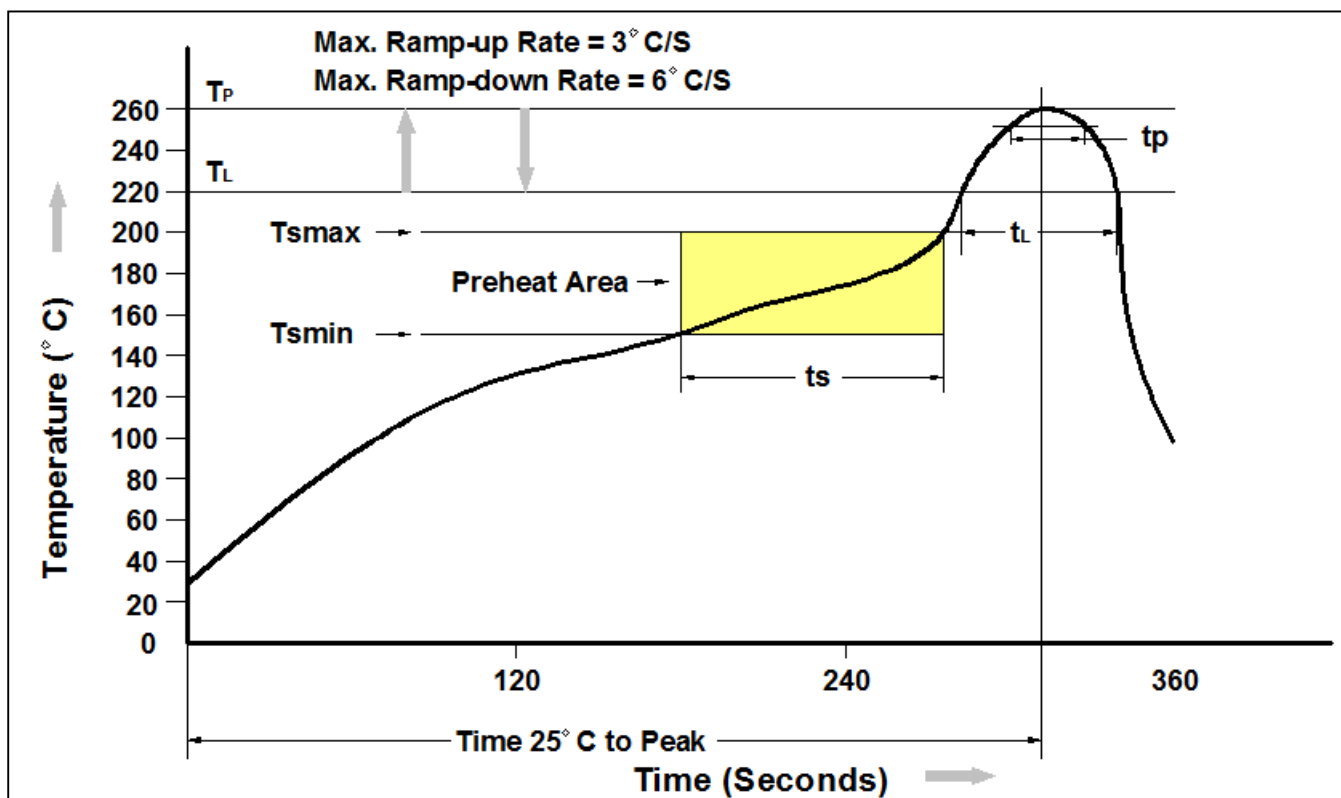
Option T2





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Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	150°C
Temperature Max. (T _{smax})	200°C
Time (t _s) from (T _{smin} to T _{smax})	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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