

AC Input 4-Pin Mini-Flat Phototransistor Optocoupler

Features

- High isolation 3750 VRMS
- CTR flexibility available see order information
- AC input with transistor output
- Temperature range - 55 °C to 110 °C
- Regulatory Approvals
 - UL - UL1577 (E492440)

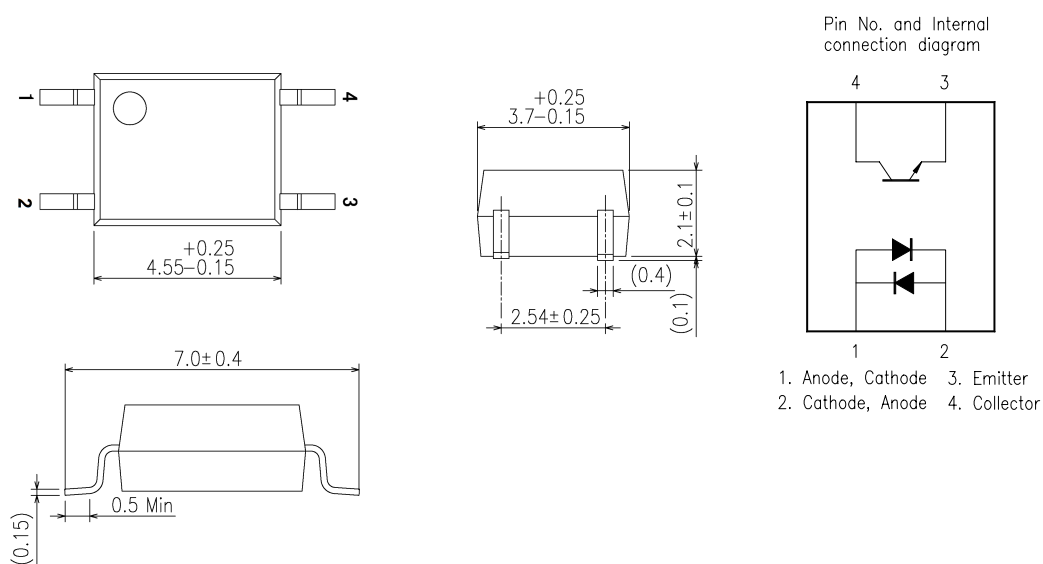
Description

These series of AC input optocoupler consists of a photo transistor optically coupled to two gallium arsenide Infrared-emitting diodes in a 4-lead Mini-Flat package.

Applications

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

Packaging and Pin Assignment



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Absolute Maximum Rating at 25°C

Symbol	Parameters	Ratings	Units	Notes
V _{ISO}	Isolation voltage	3750	V _{RMS}	
T _{OPR}	Operating temperature	-55 ~ +110	°C	
T _{STG}	Storage temperature	-55 ~ +150	°C	
T _{SOL}	Soldering temperature	260	°C	
P _{TOT}	Total power dissipation	200	mW	
Emitter				
I _F	Forward current	±50	mA	
I _{F(TRANS)}	Peak transient current (≤1μs P.W,300pps)	1	A	
P _D	Power dissipation	70	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	

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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	
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	354	I _F = ±1mA, V _{CE} = 5V	20	-	300	%
V _{CE(SAT)}	Collector-Emitter Saturation Voltage		I _F = ±20mA, I _C = 1mA	-	0.1	0.2	V
R _{IO}	Isolation Resistance		V _{IO} = 500V _{DC}	5x10 ¹⁰	-	-	Ω
C _{IO}	Isolation Capacitance		f= 1MHz	-	0.6	1.0	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	-	6	18	μs	
t _f	Fall Time		-	8	18		

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Typical Characteristic Curves

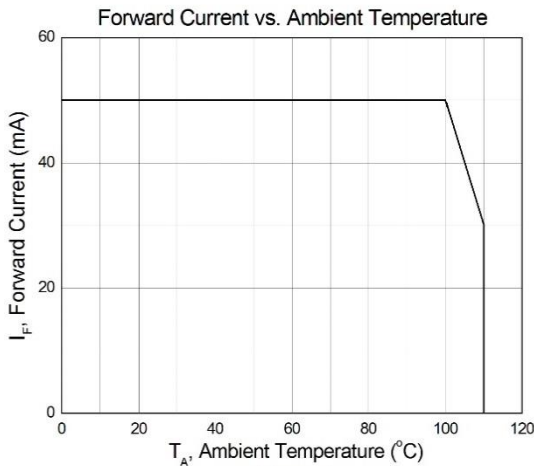


Figure 1

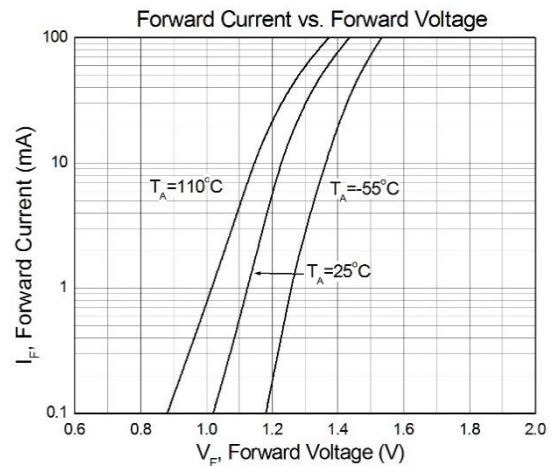


Figure 2

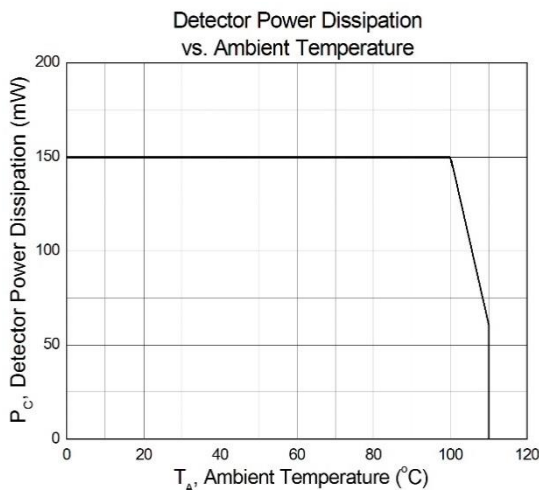


Figure 3

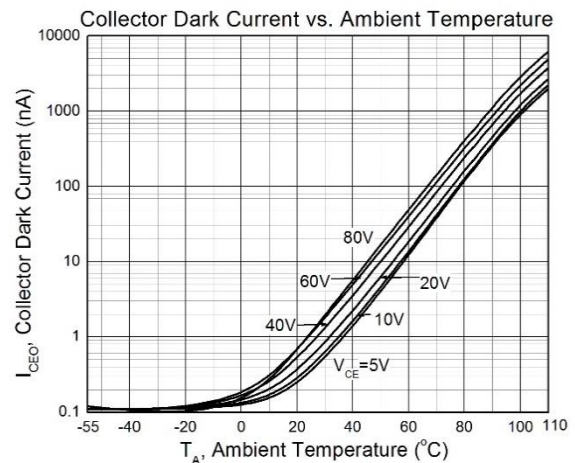


Figure 4

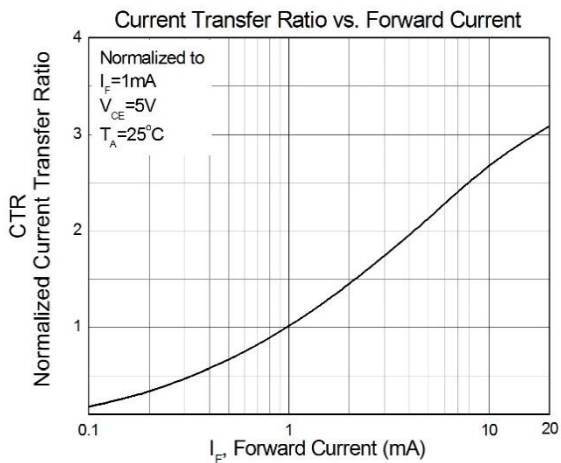


Figure 5

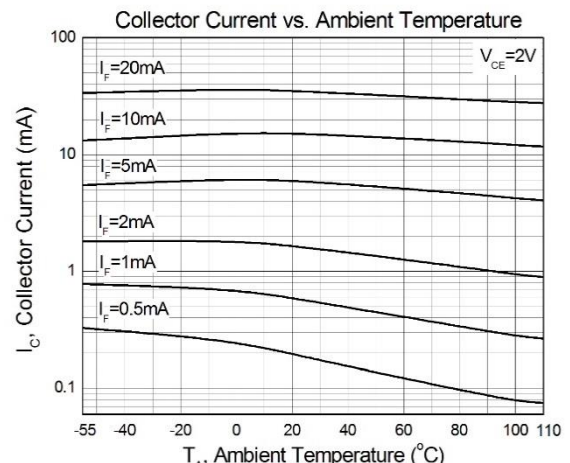


Figure 6

AC Input 4-Pin Mini-Flat Phototransistor Optocoupler

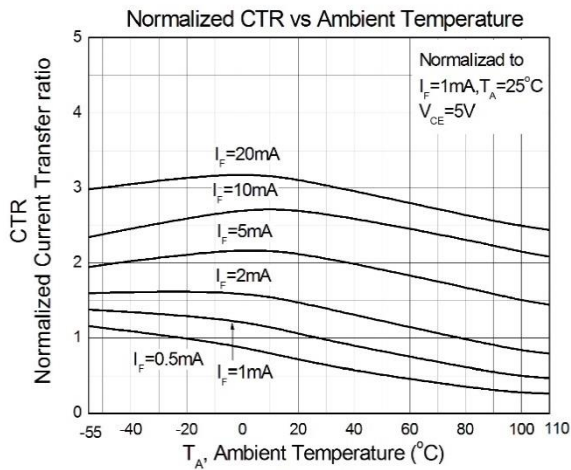


Figure 7

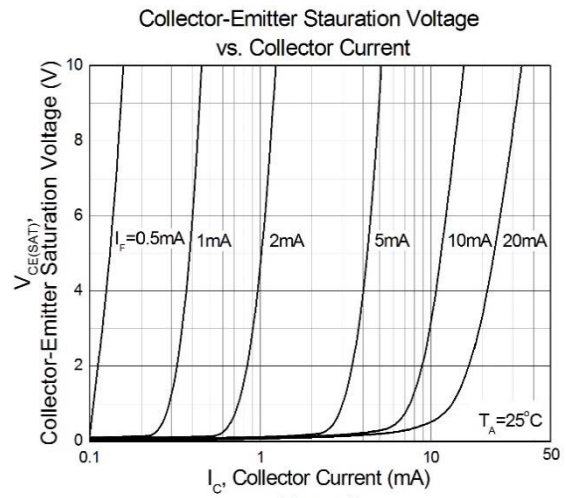


Figure 8

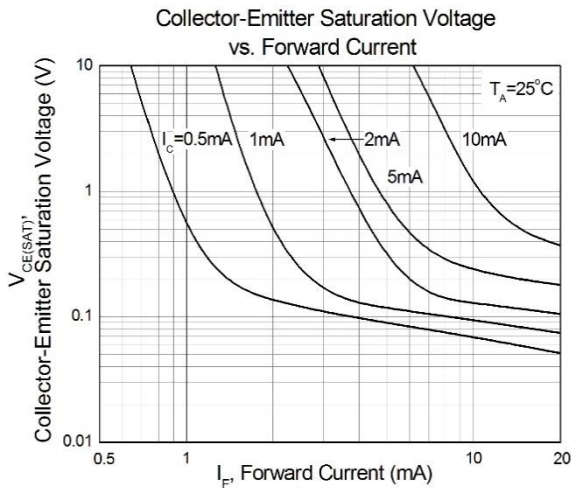


Figure 9

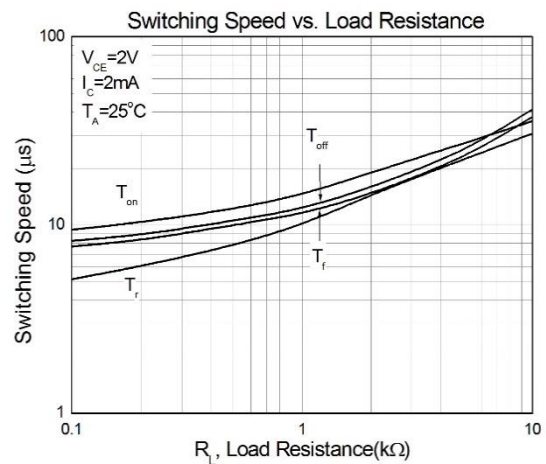


Figure 10

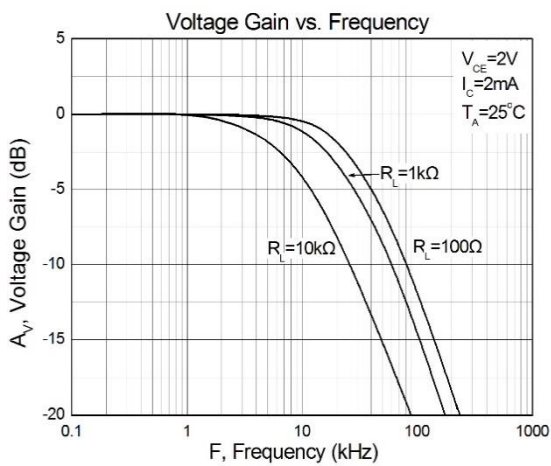


Figure 11

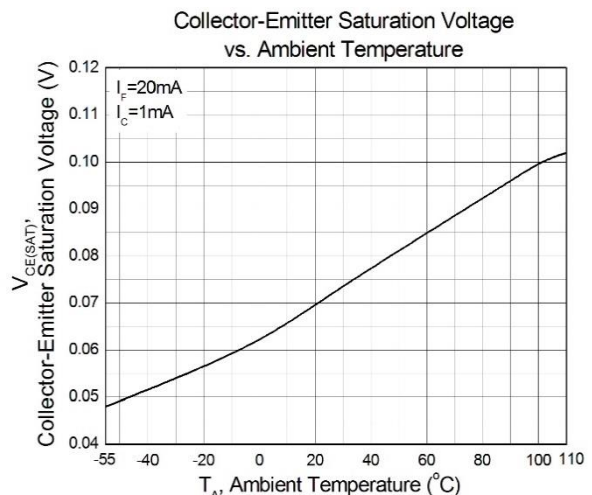
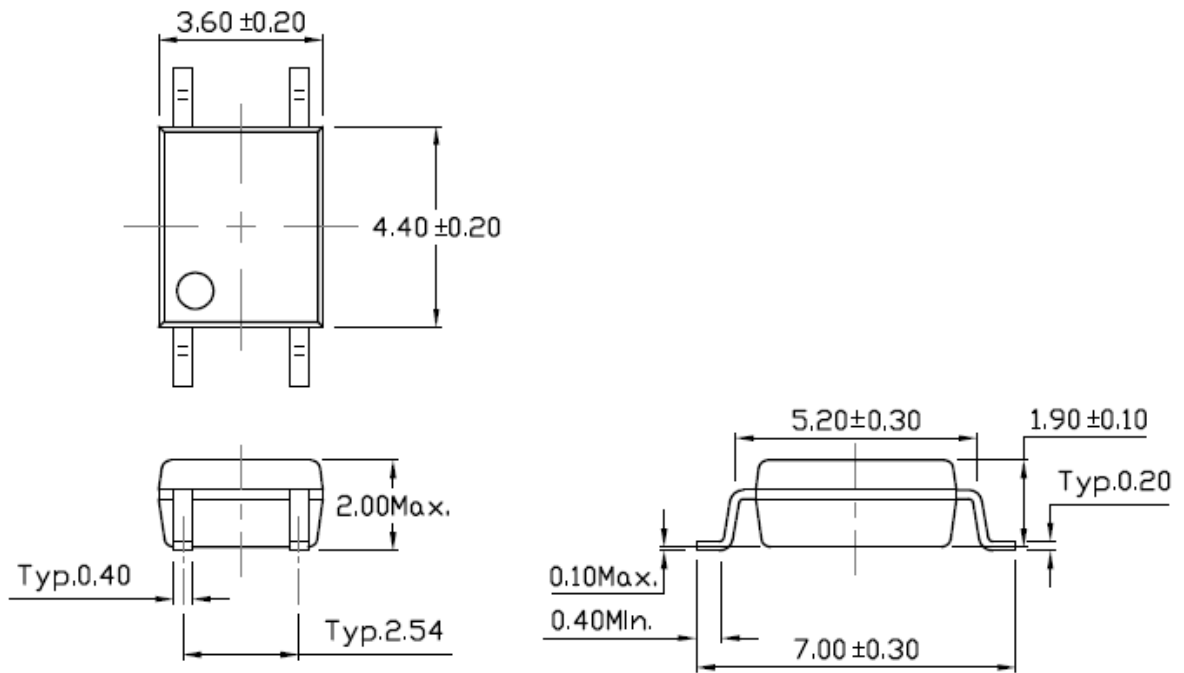


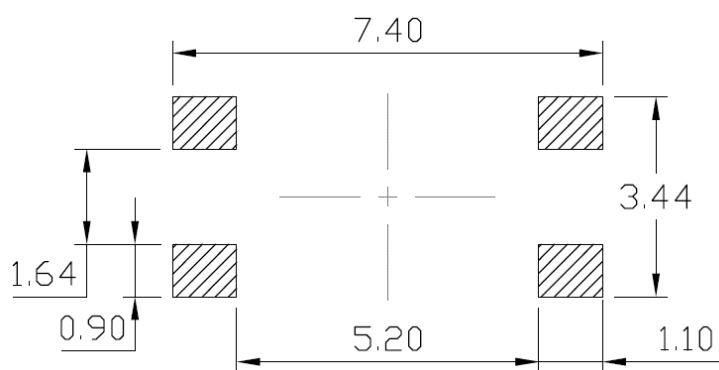
Figure 12

AC Input 4-Pin Mini-Flat Phototransistor Optocoupler

Package Dimension *Dimensions in mm unless otherwise stated*

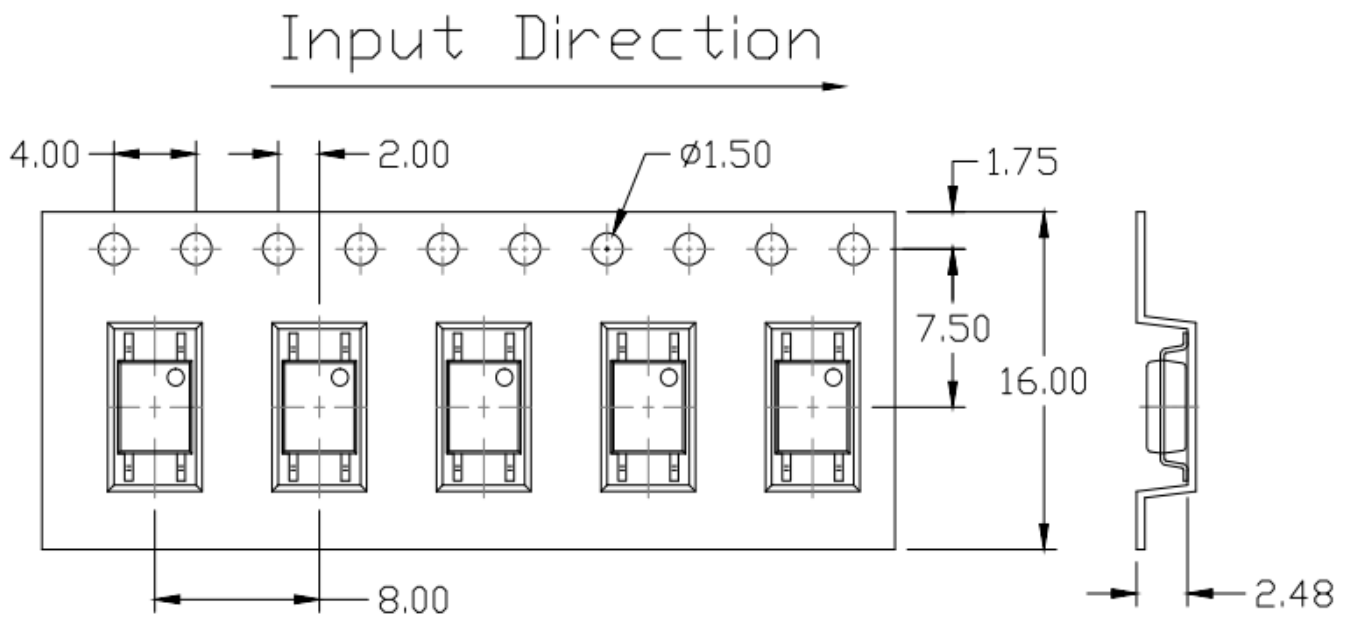


Recommended Solder Mask *Dimensions in mm unless otherwise stated*



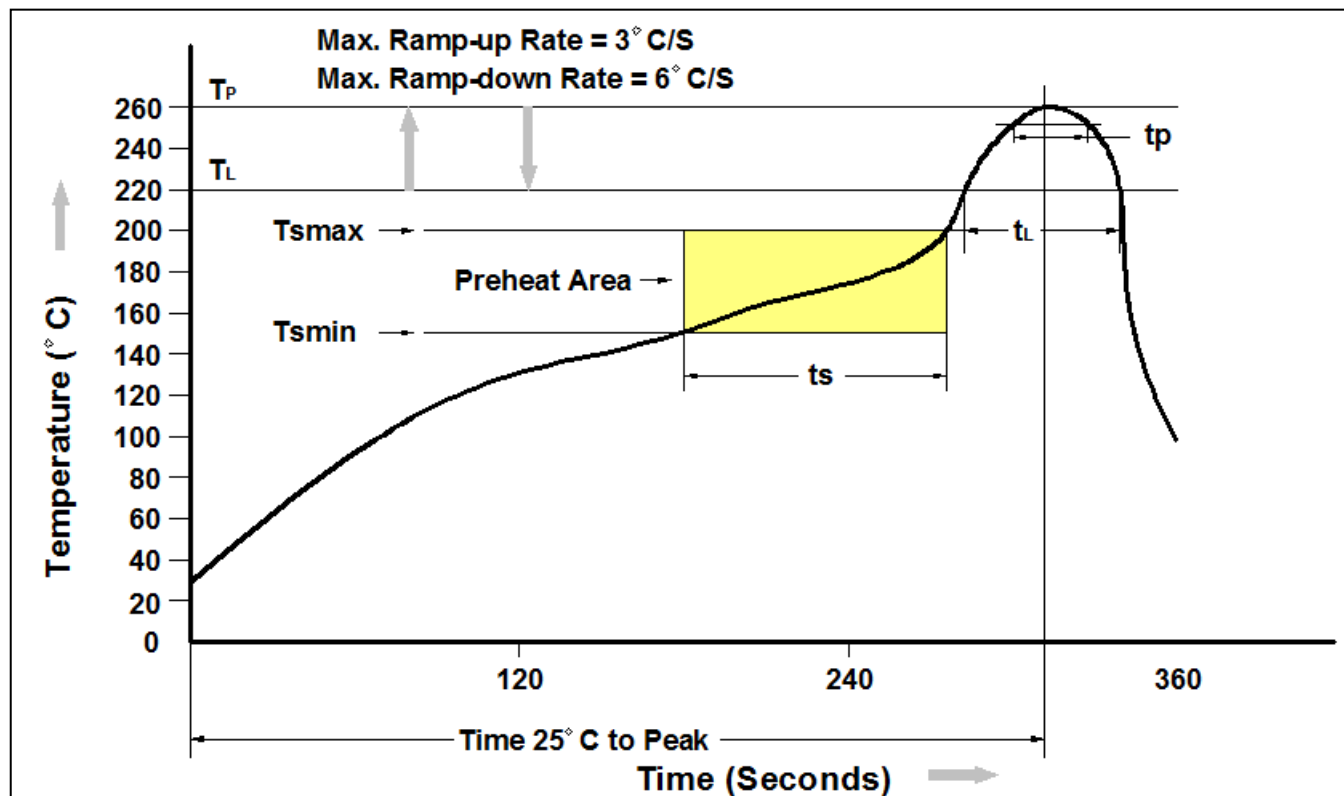
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Carrier Tape Specifications *Dimensions in mm unless otherwise stated*



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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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