

Würth Electronics Midcom Inc.  
 121 Airport Drive · P.O. Box 1330 · Watertown SD 57201-6330, USA  
 T: +1 (605) 886 4385 · Toll Free: +1 (800) 643 2661  
 www.we-online.com



## Solder Profiles for Lead Free Processes

### Surface Mount Transformer (SMT)

Würth Electronics Midcom recommends solder profiles based on IPC/JEDEC J-STD-020E. Figure 1 shows a typical profile. Tables 1 and 2 list the reflow parameters and temperatures.

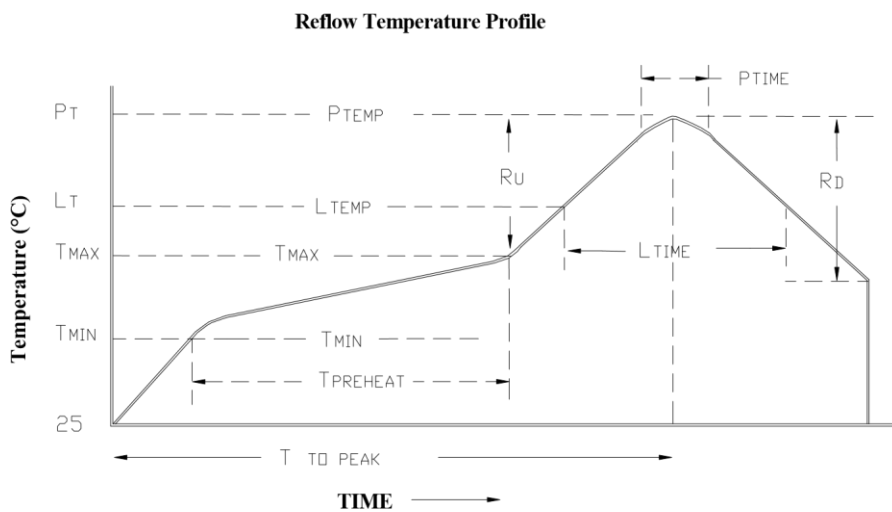


Figure 1

REFLOW PARAMETER	VALUES
Preheat Temperature ( $T_{MIN}$ - $T_{MAX}$ )	150°C - 200°C
Preheat Time ( $T_{PREHEAT}$ )	60 - 120 seconds
Ramp-up Rate ( $R_u$ $T_{MAX}$ - $P_{TEMP}$ )	3°C/second maximum
Time Above 217°C ( $L_{TEMP}$ )	60 - 150 seconds
Peak Temperature ( $P_{TEMP}$ )	See Table 2
Time Within 5°C of Peak ( $P_{TIME}$ )	20 to 30 seconds
Ramp-down Rate ( $R_D$ )	6°C/second maximum
25°C to Peak Temperature ( $T_{TO PEAK}$ )	8 minutes maximum

Table 1

Wurth Electronics Midcom Inc.  
 121 Airport Drive · P.O. Box 1330 · Watertown SD 57201-6330, USA  
 T: +1 (605) 886 4385 · Toll Free: +1 (800) 643 2661  
[www.we-online.com](http://www.we-online.com)



## Peak Temperatures – Lead-Free

PACKAGE THICKNESS	VOLUME mm <sup>3</sup>	VOLUME mm <sup>3</sup>	VOLUME mm <sup>3</sup>
	<350	350 - 2000	>2000
<1.6mm	260°C	260°C	260°C
1.6mm - 2.5mm	260°C	250°C	245°C
≥2.5mm	250°C	245°C	245°C

Temperature measured on top surface of component body.

Table 2

## Through-Hole Transformer (THT)

These products are able to withstand a maximum wave solder temperature of 270°C for 10 seconds. Table 3 shows a typical temperature/time profile, based on IPC-7530A

WAVE SOLDER PARAMETER	VALUES
Alloy melting temperature	217 °C (SAC) to 227 °C (SnCu)
Solder pot temperature	255 °C to 270 °C
Topside peak preheat temperature	110 °C to 130 °C
Flux activation time	60 to 120 seconds
Dwell time (board thickness 1.5 mm to 2.25 mm [0.060 in to 0.090 in])	3 to 5 seconds
Dwell time (board thickness >2.25 mm [0.090 in])	5 to 10 seconds

Table 3

### Notes:

- 1 Information presented in this document should serve as recommendation only. Solder profile should be determined by Customer.
- 2 Exceeding temperatures and/or times from above presented information may endanger reliability of the product.
- 3 Wurth Electronics Midcom reserves the right to make changes on this document without further notice.