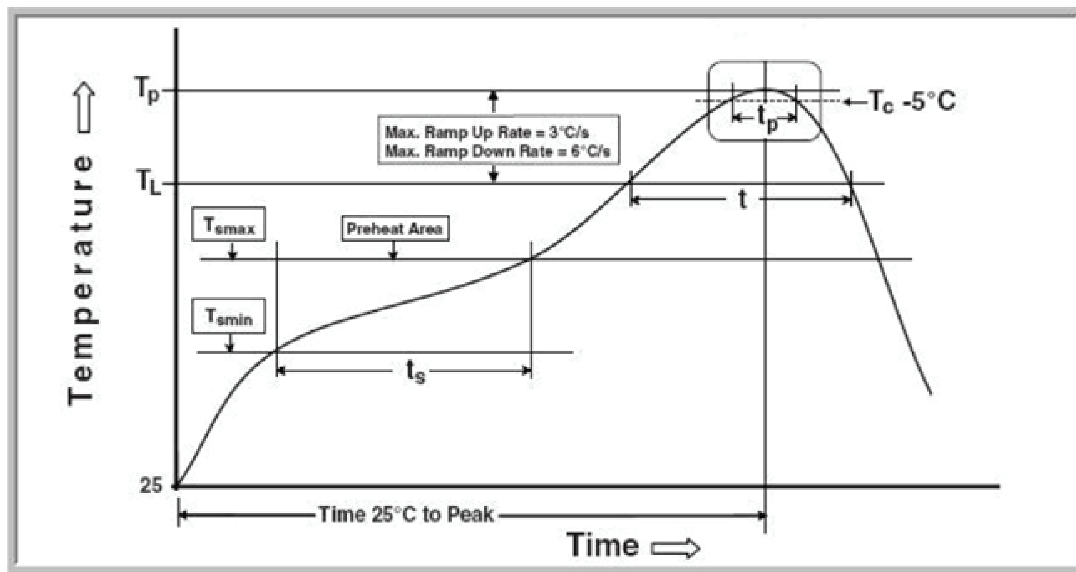
Date Rev: 12/28/2022

ims

Tech Note

Typical Soldering Profile
For IMS Solderable Components



Variable	Symbol	Sn62	Sn96 /SAC305	100% Sn
Max Profile Temp (C)	T_P	220°C	250°C	235-260°C
Maintenance Temp (C)	T_L	183°C	217°C	217°C
Pre Heat Min Temp (C)	T_{smin}	100°C	150°C	150°C
Pre Heat Max Temp (C)	T_{smax}	150°C	200°C	200°C
Time above T_c (s)	t_P	20 s	30 s	30 s
Time Above Maintenance Temp (s)	t	60-150 s	60-150 s	60-150 s
Preheat Time (s)	t_s	60-120 s	60-120 s	60-120 s
Ramp-Up Rate Max	-	3° C/s	3° C/s	3° C/s
Ramp down rate Max	-	6° C/s	6° C/s	6° C/s
Time 25°C to Peak	-	6 minutes	8 minutes	8 minutes

Specific applications will vary and many other variables will need to be considered for optimum results. Considerations to board type, adjacent components, and delivery methods for the solder are important.

For IMS components that are solder free, flux chemistry is a key factor to promote good wetting and consistent solder joints. No-clean flux is not recommended for IMS components that are solder free. MIL grade solder (i.e. Sn-62) along with MIL grade RA or RMA flux lead to the best results.

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Additional care must to given to solder profiles and techniques for Aluminum Nitride (AlN) components. AlN is highly thermally conductive. Contact style soldering methods that do not consider the heat-sync properties of these high thermally conductive components (i.e. Soldering irons, improper preheat reflow times, and hot air column heating methods) pose complications. Best results occur with hot plate reflow, belt chamber or chamber reflow methods. AlN has a temperature coefficient of conduction of 170 W/m°K. This high heat conductivity can cool soldering iron tips upon contact with the component. This can lead to overcharge on the soldering iron heat to compensate where pre-heat time is otherwise required. Failure to introduce solder to the component after a steady state component temp has been reached can lead to damage and/or poor solder wetting.