AN11046

Recommendations for PCB assembly of DSN0603-2

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Document information

Info	Content
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Abstract	This application note provides guidelines for board assembly of the ultra-small DSN0603-2 (0.6×0.3 mm^2) chip-scale package. The main focus is on recommendations for reflow soldering. For general information about footprint design and reflow soldering, see application note AN10365 (Surface mount reflow soldering description). If not otherwise stated, all measurement units given in this document are metric units. This means that also the package nomenclature (for example the term "0603") refers to metric units.

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1. Introduction

Due to the trend of reduced dimensions and increased density of functionality in smartphones and other mobile devices, there is an increasing request from the industry for extremely small components. Nexperia supports this trend with the new DSN0603-2 (SOD962) package. It is an ultra small surface-mount chip-scale diode package with a size of only 0.6 mm ×0.3 mm ×0.3 mm (0603 as metric; 0201 in inches).

Due to the very small size of the component, Nexperia investigated the board assembly process intensively in order to offer board mounting recommendations.

This includes PCB mounting pads, stencil apertures, solder paste and board assembly process parameters.

Using the recommended dimensions for pads and stencil as described in this document helps to achieve:

- optimum stand-up height
- minimum tilt
- minimum rotation
- good board assembly process performance

While this application note helps minimizing any unexpected failures, following the advice in this document is not a guarantee for a perfect Surface-Mount Technology (SMT) assembly result. The results may differ depending on the machine capability, ambient conditions, material, etc.

Deviations from this recommendation might result in non-optimal solder results, e.g. increased tilting. Especially, the application of a larger amount of solder paste might lead to increased tilting and a larger occupied area on the PCB than described in the SOD962 package document (http://www.nexperia.com/documents/outline_drawing/SOD962-2.pdf).

2. DSN0603-2 (SOD962): package details

DSN0603-2 (SOD962) is a Discrete Silicon No-leads (DSN) package. It features either electro-plated copper-tin (CuSn) contacts (CuSn pillars) or electroless plated nickel-palladium-gold (NiPdAu) contacts (pads) under the package (bottom terminations) similar to Discrete Flat No-leads (DFN) style packages. The DSN-style package allows 100 % utilization of the package area for active silicon, offering a significant performance advantage per board area compared to products in plastic-molded packages.

Key Features:

- Ultra small and flat package ($0.6 \times 0.3 \times 0.3$ mm^3)
- 400 μm pad pitch
- Pad size 240×240 μm^2

The visual appearance of DSN0603-2 (SOD962) is shown in Figure 1 whereas Figure 2 shows the package dimensions.