TN0983
Technical note

Safety application guide for SPC56xL70xx/RPC56xL70xx family reference manual addendum

Introduction

This document is an addendum of SPC56xL70xx/RPC56xL70xx Safety Application Guide.

Contents

1 Purpose and scope

The purpose of this document is to communicate to ST customers who intend to integrate SPC56xL70xx/RPC56xL70xx in an ASIL-D Item some additional assumptions which shall be met at item level to preserve the SPC56xL70xx/RPC56xL70xx integrity. The assumptions described in this document shall be intended as additional assumptions with respect to those communicated in the SPC56xL70xx/RPC56xL70xx Safety Application Guide.

2 Considerations on SPC56xL70xx/RPC56xL70xx package and soldering procedures

2.1 Introduction

SPC56xL70xx/RPC56xL70xx package is composed by Ultra Low Alpha mold compound. Measurements report an alpha particle emissivity of 0.00383 ± 0.00056 cp/h/cm^2.

This value has been used in the SPC56xL70xx/RPC56xL70xx quantitative safety analyses (see SPC56xL70xx/RPC56xL70xx FMEDA).

In order to ensure that this value does not increase when soldering the device on a board, a risk analysis is made in the following chapter. The conclusions of this analysis report that caution must be taken during soldering process in order to avoid package delamination, hence avoiding any contamination from the soldering material to the silicon contained in the plastic package.

2.2 Risk analysis

2.2.1 Risk item

Single Event Upset randomly induced by alpha particle emission from Package material.

2.2.2 Cause

A possible cause of silicon contamination is the presence of potentially alpha-emissive soldering material, specifically induced by Pb impurities.

2.2.3 Risk evaluation

Assuming that no delamination is present on the package and given the low migration capability of Pb particles, the risk of having emissive material on the silicon surface is very low.

2.2.4 Item Assumption

We recommend our customers to avoid active soldering flux and to verify the integrity of packages after board mounting in order to eliminate the possibility of package delamination after device mounting on board, therefore eliminating the possibility of silicon contamination by soldering material.

3 Revision history

Table 1. Document revision history

Date	Revision	Changes
14-Feb-2013	1	Initial release.
17-Sep-2013	2	Updated disclaimer.
15-Mar-2016	3	Added RPC56xL70xx device family.