

Skyworks General Manufacturing Requirements for SMT Placed Components

Skyworks Solutions, Inc.

Table of Contents

1	Purpose and Scope	4
1.1	<i>Purpose</i>	4
1.2	<i>Scope</i>	4
2	Acronyms / Terminology and Description / Definition	4
3	Associated Documents	5
4	General	5
5	Packaging Requirements	5
5.1	<i>Moisture Barrier Bag</i>	5
5.2	<i>Dry Packaging Requirements</i>	5
5.3	<i>Dry Pack</i>	5
5.3.1	<i>Desiccant material</i>	5
5.3.2	<i>Humidity Indicator Card</i>	6
5.4	<i>Carrier Tape</i>	6
5.4.1	<i>Fit Analysis</i>	6
5.4.2	<i>Quantity of devices accepted per reel</i>	6
5.4.3	<i>Performance in SMT Machines</i>	6
5.4.3.1	<i>Peel off Strength</i>	6
5.4.3.2	<i>Carrier Tape Allowed</i>	6
5.4.3.3	<i>Splicing</i>	6
5.4.3.4	<i>Visual Criteria</i>	6
6	Traceability	6
6.1	<i>Labeling Requirements</i>	6
6.2	<i>Marking Laser Code</i>	7
6.3	<i>FTP: File Transfer Protocol</i>	7
6.4	<i>1:1 Wafer production lot number: One Reel</i>	7
7	Statistical Yield	7
7.1	<i>Yield Control Limit</i>	7

Revision History

Rev	Name	Change	Date
1	Magda Isabel Parra	Initial Release	20.March.14
2	Magda Isabel Parra	Add Item 7 Statistical Yield	14.Sept.15
3	Vincent Shi	Change on 3 at page 5, add associated documents list documents MXVA-1295 & MXVA-1296 Change on 5.4.3.3 at page 6, add only Non-metallic splicing is allowed. Change on 6.4 at page 7, add 1 lot 1 reel requirement for all other components, and add partial reel minimum q'ty requirement.	30.Oct.18

1 Purpose and Scope

Purpose

The purpose of this document is to establish all the requirements that are needed for the correct and efficient usage of any SMT Placed Components on Skyworks manufacturing lines.

Suppliers providing these materials must always align to the specifications established in this document.

Scope

This document is applicable to all suppliers providing any SMT Placed Products to Skyworks for mass production.

2 Acronyms / Terminology and Description / Definition

SMT

Surface Mount Technology.

Passive Components

Electronic components such as capacitors, resistors, inductors, transformers, etc.

Bump Wafers (received in Tape & Reel)

Wafer which contact points are heightened above the wafer surface by adding conductor material.

SAW Components

SAW devices are used as filters, oscillators, duplexers and transformers, devices that are based on the transduction of acoustic waves. The transduction from electric energy to mechanical energy (in the form of SAWs) is accomplished by the use of piezoelectric materials.

SAW

Surface **A**coustic **W**ave.

Sensitive Devices

Any component which can be damaged by common static charges.

Moisture Barrier Bag

MBB; A bag designed to restrict the transmission of water vapor and used to pack moisture sensitive devices.

Desiccant

An absorbent material used to maintain a low relative humidity.

FTP

File Transfer Protocol; used to transfer files between computers on a network.

Traceability

Ability to verify the manufacturing history or application of an item.

3 Associated Documents

Using SkyDocs System by External Partners SQ03-0268

Joint Industry Standard IPC/JEDEC J-STD-033A

EIA-481-D Standard

Skyworks Quality Manual SQ02-0020 Available at Skydocs.

Component Supplier Labeling Requirements SQ03-0394 Available at Skydocs.

Defectos Visuales de Componentes MXVA-1295.

Inspeccion Visual de Recibimiento de Componentes MXVA-1296.

4 General

The Manufacturing Requirement for SMT Placed Components was created as a material development tool in order to enhance the traceability, information, preservation and handling of the material currently provided by the SMT Placed Component Suppliers. As well as ensuring the correct and efficient manufacturing of the supplier provided material. It is responsibility of the Supplier to comply with the specifications established in this document as soon as they start providing mass production to Skyworks for any given part number.

5 Packaging Requirements (Applies only for sensitive devices)

5.1 Moisture Barrier Bag

MBB shall meet all requirements for flexibility, ESD Protection, mechanical strength and puncture resistance and heat sealable, following the applicable Jedec Standard.

5.2 Dry Packaging Requirements

Various sensitive levels are shown in below table:

Dry Packing Requirements					
Level	Dry Before Bag	MBB	Desiccant	MSID* Label	Caution Label
1	Optional	Optional	Optional	Not Required	Not Required if classified at 220° - 225° C Required ** if classified at other than 220° - 225° C
2	Optional	Required	Required	Required	Required
2a-5a	Required	Required	Required	Required	Required

*MSID = Moisture-Sensitive Identification Label

**A "Caution" Label is not required if level and reflow temperature are given, in human readable form, on the barcode label attached to the lowest level shipping container.

Supplier need to provide data if the above Dry Packing Requirements is not met.

5.3 Dry Pack

Consists of desiccant material and a Humidity Indicator Card sealed with the material.

5.3.1 Desiccant material: shall be dustless, non-corrosive and absorbent and the amount of desiccant shall be based on the bag surface area in order to maintain an interior relative humidity in the MBB of less than 10% at 25° C.

5.3.2 Humidity Indicator Card: at minimum shall have three color dots with sensitive values of 5, 10, 15% RH.

5.4 Carrier Tape

5.4.1 Fit Analysis. Supplier should ensure that Fit Analysis is conducted before carrier tape selection. Supplier should also provide this data upon request from Skyworks. Industry Standard EIA-481-D for package fit within the cavity must be followed.

5.4.2 Quantity of devices accepted per reel: Suppliers should check Skyworks preference for reel size before 1st shipment. Suppliers should contact the relevant Supplier Quality engineer if the below cannot be met.

	Passives	SAW Components *	Bump Wafers *
Quantity per Reel	30,000pcs Min	10,000 pcs Min	10,000 pcs Min

* Please refer to section 6.4 for Additional Traceability Requirement

5.4.3 Performance in SMT Machines. Supplier should ensure that the component supplied should meet Mexicali SMT components performance should be as shown below. Failures to meet these MXL SMT metrics require an improvement plan from the Supplier.

Size	01005	0201	0302	0402
Pickup Rate	99.97%	99.97%	99.95%	99.94%
Success Rate	99.95%	99.98%	99.96%	99.99%
Empty Pockets (Machines stops at 2 consecutive empty pockets)	0	0	0	0

5.4.3.1 Peel off Strength: Supplier should ensure that the peel force strength should be between 20-80 grams to remove the carrier tape.

5.4.3.2 Carrier Tape Allowed: Carton Tape W8P1 & W8P2 and Embossed Tape W4P1. Changes in materials require a PCN.

5.4.3.3 Splicing: Is only allowed a maximum of 2 splicing per reel, *only Non-metallic splicing is allowed.*

5.4.3.4 Visual Criteria: Chipping, Damages, Carton tape residues on the cover tape and defects as per MXVA-1296 and MXVA-1295 are not allowed. Suppliers should also provide to Skyworks Supplier Quality Engineer their copy of Outgoing Visual Criteria for any new Part number.

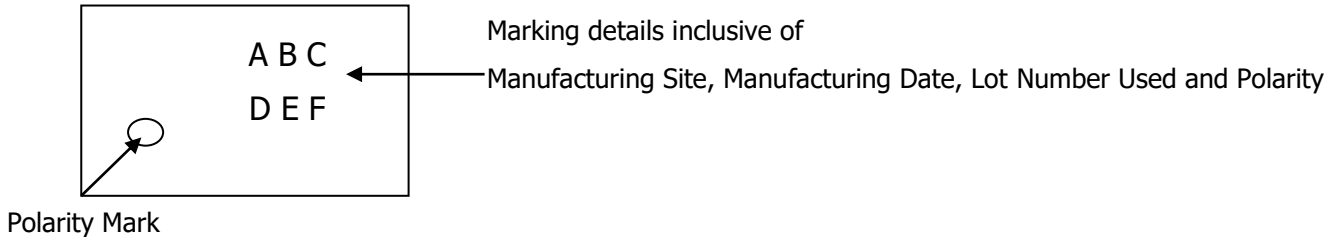
6 Traceability

6.1 Labeling Requirements

All suppliers should comply with Component Supplier Labeling Requirement SQ03-0394 Available in Skydocs.

6.2 Marking Laser Code (Applies only for SAW Components & Bump Wafer Suppliers)

Each piece should be marked with a code that identifies at least: Manufacturing Site, Manufacturing Date, Lot Number Used and Polarity. Example:



If supplier cannot follow above requirements, Please contact Skyworks Supplier Quality Engineer with a marking code proposal demonstrating traceability down to wafer level details.

6.3 FTP: File Transfer Protocol (Applies only for SAW Components & Bump Wafer Suppliers)

Skyworks maintains a FTP site for Supplier to upload relevant documents as agreed with Skyworks Supplier Quality Engineer. A user and password will be provided.

	SAW Components	Bump Wafers
Certificate of Conformance	Every Shipment / Lot	Every Shipment / Lot
Critical to Quality CPK reports	Monthly or as needed	Monthly or as needed
Other reports as requested (Special care, EFR etc.)	As requested	As requested

6.4 Additional Traceability Requirement for Bumped wafers and all components

Skyworks request that each reel shipped to Skyworks should only contained parts from one production lot number. No mixed production lot is allowed in 1 reel *for bumped wafers and all other components (including SAW/BAW, passives components, IPD, LDO)*. Partial quantity per reel is allowed. Please contact Skyworks Supplier Quality Engineer if this requirement cannot be met.

	<i>Passives</i>	<i>SAW Components</i>	<i>Bump Wafers</i>
Quantity per Partial Reel	<i>5,000pcs Min</i>	<i>1,000 pcs Min</i>	<i>1,000 pcs Min</i>

7 Statistical Yield

7.1 Yield Control Limit

Skyworks requests a Yield Control Limit to each Filter and Duplexer supplier in order to establish a min yield control for shipped lots and to prevent maverick lots from being shipped. Limits will be defined according to each supplier data, capability and may be established at different processes. Limits are to be defined statistically wherever possible. Limits are to be agreed upon and reviewed on a fixed frequency with the relevant SQE.

Suppliers are required to provide analysis and informed Skyworks SQE if lots that failed agreed limits are to be shipped as normal production lots. (See below Flow Chart)

