



July 2020

Re: Moisture Sensitivity Levels (MSL)

Moisture sensitivity is an important characteristic of surface mount devices. Understanding the moisture sensitivity performance of surface mount devices requirements provided by IPC/JEDEC J-STD-020 and IPC/JEDEC J-STD-033 is paramount for establishing the appropriate handling and manufacturing procedures for applications using these devices.

Moisture Classification Level (MSL) and Floor Life per J-STD-020

LEVEL	FLOOR LIFE	
	TIME	CONDITION
1	Unlimited	≤30 °C/85% RH
2	1 year	≤30 °C/60% RH
2a	4 weeks	≤30 °C/60% RH
3	168 hours	≤30 °C/60% RH
4	72 hours	≤30 °C/60% RH
5	48 hours	≤30 °C/60% RH
5a	24 hours	≤30 °C/60% RH
6	Time on Label (TOL)	≤30 °C/60% RH

To determine the MSL Level for Microchip device shipments received from Microchip, review the label that is affixed to each bag, reel and inner box. Enclosed picture of label below is for informational purposes only, actual label may vary.

Label for reel, bag, inner box

(1P) CATALOG P/N: ABCDEFGHIJKL-BB-CC-DDDD-EEEE-FF

(1T) LOT NO.: 114601899000MTAI RoHS

(P) CUST. P/N: ABCDEFGH IJKLMNO PQRSTUW REV A MSL: 3/260 C (Q) QTY 2500

MPC: ABCDEFGHJKLMNO LEAD: 48

SEAL DATE: MM/DDYY D/C QTY

WAFER QTY: - 1407 250

WAFER REV: - 1408 1000

RECEIPT D/C: - 1509 1250

WAFER LOT: -

ID#: (001) TRACE CODE: 1407B1R 1408B1Q 1509B1R MADE IN THAILAND

MSL level

Reflow Temperature

If neither the bag or reel or inner box is available, MSL information can be determined by reviewing Table 3.3 in the “Package Qualification Summary Report” posted at Microchip.com/Quality. The report is organized by package type and assembly site.



FAQs:

I received the same package with two different MSLs. How is that possible?

MSL depends on the package bill of materials at different assembly sites. If a package type is qualified at multiple assembly sites that use different package bill of materials, that package type may get offered in multiple MSLs.

Once I remove a reel from the sealed bag, how do I know what handling protocols to follow?

Level 1 effectively has an unlimited floor life outside of the moisture barrier bag when the environmental conditions are kept at or below 30°C and 85%RH. As a result, material with a Level 1 classification does not require dry packing. All surface mount devices not achieving Level 1 shall be dry packed and must be limited to a maximum total exposure per JEDEC J-STD-033 (<https://www.jedec.org/>). Customers should apply proper storage and handling procedures per the level classification specified on the label.

Can I contact Microchip for MSL information?

MSL information can be determined by reviewing Table 3.3 in the “Package Qualification Summary Report” posted at Microchip.com/Quality which is organized by package type and assembly site. Please contact your regional field sales office for additional support (<https://www.microchip.com/salesdirectory>).

Where do I get shelf life details?

Shelf life is located on MSL caution label affixed to the bag and is calculated with reference to bag seal date. Packages should be inspected for bag seal date located on the caution label to determine remaining shelf life. Enclosed picture of MSL caution label below is for informational purposes only, actual label may vary.

The image shows a rectangular MSL caution label with a white background and black text. At the top left is a circular icon with a lightning bolt and a drop, indicating moisture sensitivity. To its right, the word "Caution" is printed in bold, followed by "This bag contains MOISTURE-SENSITIVE DEVICES". In the top right corner, there is a box labeled "LEVEL 3" with the number "3" inside. Below this, it says "if blank, see adjacent bar code label". The main body of the label contains five numbered instructions: 1. Calculated shelf life in sealed bag: 24 months at <math><40^{\circ}\text{C}</math> and <math><90\%</math> relative humidity (RH). 2. Peak package body temperature: _____ °C (if blank, see adjacent bar code label). 3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must be: a) Mounted within: **168** hours of factory conditions (if blank, see adjacent bar code label) <math><30^{\circ}\text{C}/60\%</math> RH, or b) Stored per J-STD-033. 4. Devices require bake, before mounting, if: a) Humidity Indicator Card reads >10% for level 2a - 5a devices or >60% for level 2 devices when read at $23 \pm 5^{\circ}\text{C}$ b) 3a or 3b are not met. 5. If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure. At the bottom, there is a line for "Bag Seal Date: _____" with a note "if blank, see adjacent bar code label". A final note at the very bottom states "Note: Level and body temperature defined by IPC/JEDEC J-STD-020".

Can I bake the shipping media if it has shipped as MSL 1?

The customer takes all responsibility in baking MSL 1 shipped product. Please note that Microchip ships MSL 1 product in non-bakeable trays.