

## 1. PURPOSE 目的

- 1.1. The purpose of this specification is to define the Moisture Sensitivity Level (MSL) List for the lead free surface mount products.

本文件旨在为表面贴装无铅产品定义潮湿敏感度等级 (MSL)

## 2. SCOPE 范围

- 2.1. This specification applies to both MPS HQ and CD sites.

本文件适用于 MPS 总部和成都公司

## 3. RESPONSIBILITIES 职责

- 3.1. It is Package Engineering's responsibility to update the MSL List.

封装工程部负责更新 MSL 等级表

## 4. DEFINITIONS 定义

- 4.1. Moisture Sensitivity Level (MSL)

潮湿敏感等级

A rating indicating a component's susceptibility to damage due to absorbed moisture when subjected to reflow soldering. The MSL is expressed in numbers, with the MSL number increasing with the vulnerability of the package to popcorn cracking.

用来标示器件在回流焊时因吸收潮气而造成损伤的敏感度等级。MSL 用数字标示，随着数字增加，产品出现爆米花式破裂的可能性越高

- 4.2. Plastic Surface Mount Devices (PSMD)

塑封表面贴装原件

The families of components which are attached to the surface of printed circuit board by solder reflow, rather than inserting through holes in the board, such as MSOP, QFN, SOIC, TSOT, TSSOP, etc.

该系列器件是通过回流焊的方式焊接在印刷电路板表面的，而不是插入电路板的通孔，例如 MSOP, QFN, SOIC, TSOT, TSSOP 等

ATTACHMENT 1

**MPS - MSL Level for Lead Free Products (260°C max)**

Package Type	Lead Finish	MSL Level
BARE DIE	NA	3
ECP 3x3	NA	3
FCMQFN2.5x3.0	100% Matte Sn	3
FCMQFN2.5x3.5	100% Matte Sn	3
FCMQFN2x2	100% Matte Sn	3
FCMQFN3x5	100% Matte Sn	3
FCMQFN4x4	100% Matte Sn	3
FCMQFN5x5	100% Matte Sn	3
FCQFN/FCTQFN/FCUTQFN1.5x2.0	100% Matte Sn	1
FCQFN/FCTQFN/FCUTQFN1.5x2.5	100% Matte Sn	1
FCQFN/FCTQFN/FCUTQFN2.5x3.0	100% Matte Sn	1
FCQFN/FCTQFN/FCUTQFN2x2	100% Matte Sn	1
FCQFN/FCTQFN/FCUTQFN3x3	100% Matte Sn	1
FCQFN/FCTQFN1.0x1.5	100% Matte Sn	1
FCQFN/FCTQFN1.4x1.8	100% Matte Sn	1
FCQFN/FCTQFN2.2x2.6	100% Matte Sn	1
FCQFN/FCTQFN2.5x3.2	100% Matte Sn	1
FCQFN/FCTQFN2.5x3.5	100% Matte Sn	1
FCQFN/FCTQFN2x3	100% Matte Sn	1
FCQFN/FCTQFN3x4	100% Matte Sn	1
FCQFN/FCTQFN3x5	100% Matte Sn	1
FCQFN/FCTQFN3x6	100% Matte Sn	1
FCQFN/FCTQFN4x4	100% Matte Sn	1

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**TITLE: MOISTURE SENSITIVITY LEVEL LIST**  
潮湿敏感度等级表

Package Type	Lead Finish	MSL Level
FCQFN/FCTQFN4x5	100% Matte Sn	1
FCQFN/FCTQFN4x6	100% Matte Sn	1
FCQFN/FCTQFN5x4	100% Matte Sn	1
FCQFN/FCTQFN5x5	100% Matte Sn	1
FCQFN/FCTQFN5x6	100% Matte Sn	1
FCQFN/FCTQFN5x8	100% Matte Sn	1
FCQFN/FCTQFN6x6	100% Matte Sn	1
FCQFN2.0x2.5/FCTQFN2.0x2.5	100% Matte Sn	1
FCSOIC-8/16	100% Matte Sn	1
FCSOT563-6	100% Matte Sn	1
FCSOT583-8	100% Matte Sn	1
FCTQFN3X6(EXPOSED DIE BACKSIDE)	100% Matte Sn	2
FCTQFN4X4(EXPOSED DIE BACKSIDE)	100% Matte Sn	2
FCTQFN4X5(EXPOSED DIE BACKSIDE)	100% Matte Sn	2
FCTSOT23-5/6/8	100% Matte Sn	1
FWQFN3x5	100% Matte Sn	1
ISOLATED MODULE	NA	NA
LGA MODULE 10x10	NA	3
LGA MODULE 12x12	NA	3
LGA MODULE 5x6	NA	3
MPMQFN10x12	100% Matte Sn	3
MPMQFN12x12	100% Matte Sn	3
MPMQFN12x15	100% Matte Sn	3
MPMQFN15x15	100% Matte Sn	3
MPMQFN7x7	100% Matte Sn	3

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Package Type	Lead Finish	MSL Level
MPMQFN8x8	100% Matte Sn	3
MSOP-8/10	100% Matte Sn	1
MSOP-8/10-EP	100% Matte Sn	2
OPEN FRAME MODULE	NA	3
PDIP-7/8/16	100% Matte Sn	N/A
PDIP-8-EP	100% Matte Sn	N/A
QFN/TQFN/UTQFN2x2	100% Matte Sn	1
QFN/TQFN/UTQFN3x3	100% Matte Sn	1
QFN/TQFN10x10	100% Matte Sn	3
QFN/TQFN2x3	100% Matte Sn	1
QFN/TQFN3.5x3.5	100% Matte Sn	1
QFN/TQFN3x2	100% Matte Sn	1
QFN/TQFN3x4	100% Matte Sn	1
QFN/TQFN3x5	100% Matte Sn	1
QFN/TQFN4x4	100% Matte Sn	1
QFN/TQFN4x5	100% Matte Sn	2
QFN/TQFN4x6	100% Matte Sn	2
QFN/TQFN5x5	100% Matte Sn	2
QFN/TQFN5x6	100% Matte Sn	2
QFN/TQFN6x6	100% Matte Sn	2
QFN/TQFN6x8	100% Matte Sn	3
QFN/TQFN7x7	100% Matte Sn	2
QFN/TQFN8x8	100% Matte Sn	3
QFN1.4x1.8/TQFN1.4x1.8/UTQFN1.4x1.8	NiPdAu	1
QFP/LQFP10x10	100% Matte Sn	3

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Package Type	Lead Finish	MSL Level
QFP/TQFP7x7	100% Matte Sn	3
SC70	100% Matte Sn	1
SOD123	100% Matte Sn	1
SOICN-7/8/11/14/16	100% Matte Sn	2
SOICN-8/16-EP	100% Matte Sn	2a
SOICW-18/20/24/28	100% Matte Sn	3
SOT23-3/5/6	100% Matte Sn	1
TO220	100% Matte Sn	N/A
TO252	100% Matte Sn	3
TO263	100% Matte Sn	3
TSOT23-4/5/6/8	100% Matte Sn	1
TSOT23-6-SL	100% Matte Sn	1
TSSOP-16/20/28-EP	100% Matte Sn	2a
TSSOP-8/14/16/20/24/28	100% Matte Sn	2
UTQFN1.6x1.2	NiPdAu	1
WBMQFN10x12	100% Matte Sn	3
WBMQFN6x7	100% Matte Sn	3
WLCSP	NA	1

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ATTACHMENT 2

MSL Level List for Special Part

Part No.	Package Type	Lead Finish	MSL Level
HF500GS-15	SOIC8-7	100% Matte Sn	3
HF500GS-20	SOIC8-7	100% Matte Sn	3
HF500GS-7	SOIC8-7	100% Matte Sn	3
HF81GS	SOIC-8	100% Matte Sn	1
MP024GS-10	SOIC8-7	100% Matte Sn	3
MP1482DS-M001	FCSOIC-8	100% Matte Sn	2
MP18030GQN	QFN7X7-28	100% Matte Sn	3
MP1930GQY	QFN6X8-26	100% Matte Sn	3
MP2853GU	QFN5X5-40	100% Matte Sn	3
MP2884AGU	QFN5X5-40	100% Matte Sn	3
MP2884GU	QFN5X5-40	100% Matte Sn	3
MP2886AGU	QFN5X5-40	100% Matte Sn	3
MP2886GU	QFN5X5-40	100% Matte Sn	3
MP2888AGU	QFN5X5-40	100% Matte Sn	3
MP2888GU	QFN5X5-40	100% Matte Sn	3
MP2910ES	SOIC-14	100% Matte Sn	3
MP2930GQK	QFN6X6-40	100% Matte Sn	3
MP2932GQK	QFN6X6-48	100% Matte Sn	3
MP2933DQN	QFN7X7-56	100% Matte Sn	3

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潮湿敏感度等级表

Part No.	Package Type	Lead Finish	MSL Level
MP2935DQK	QFN6X6-40	100% Matte Sn	3
MP2936DQK	QFN6X6-40	100% Matte Sn	3
MP2938GQK	QFN6X6-48	100% Matte Sn	3
MP2939GQK	QFN6X6-48	100% Matte Sn	3
MP2949AGQKT	TQFN6X6-48	100% Matte Sn	3
MP2949AGUT	TQFN5X5-40	100% Matte Sn	3
MP2949GQK	QFN6X6-48	100% Matte Sn	3
MP2949GQKT	TQFN6X6-48	100% Matte Sn	3
MP2951GU	QFN5X5-32	100% Matte Sn	3
MP2953AGU	QFN5X5-40	100% Matte Sn	3
MP2953BGU	QFN5X5-40	100% Matte Sn	3
MP2953GU	QFN5X5-40	100% Matte Sn	3
MP2955AGQK	QFN6X6-48	100% Matte Sn	3
MP2955GQK	QFN6X6-48	100% Matte Sn	3
MP2955HGQK	QFN6X6-48	100% Matte Sn	3
MP2955VGQK	QFN6X6-48	100% Matte Sn	3
MP2956AGU	QFN5X5-40	100% Matte Sn	3
MP2956GU	QFN5X5-40	100% Matte Sn	3
MP2956HGU	QFN5X5-40	100% Matte Sn	3
MP2956VGU	QFN5X5-40	100% Matte Sn	3
MP2958AGU	QFN5X5-40	100% Matte Sn	3

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潮湿敏感度等级表

Part No.	Package Type	Lead Finish	MSL Level
MP2958GU	QFN5X5-40	100% Matte Sn	3
MP2958HGU	QFN5X5-40	100% Matte Sn	3
MP2958VGU	QFN5X5-40	100% Matte Sn	3
MP2965GQK	QFN6X6-48	100% Matte Sn	3
MP2966GU	QFN5X5-40	100% Matte Sn	3
MP2968GU	QFN5X5-40	100% Matte Sn	3
MP3394EY	SOIC-20	100% Matte Sn	3
MP6911DU	QFN5X5-32	100% Matte Sn	3
MP6914DN-LF	SOIC8-EP	100% Matte Sn	3
MP8049DQK	QFN6X6-40	100% Matte Sn	3
MP8619EQJ	QFN5X6-30	100% Matte Sn	3
MP8619EQJ-S-LF	QFN5X6-30	100% Matte Sn	3
NB648DQJ	QFN5X6-30	100% Matte Sn	3
NB648EQJ-S-LF	QFN5X6-30	100% Matte Sn	3
NB649EQJ	QFN5X6-30	100% Matte Sn	3
NB649EQJ-S-LF	QFN5X6-30	100% Matte Sn	3
NB658EQJ	QFN5X6-30	100% Matte Sn	3

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