Tape & Reel Minimum Packaging Quantity (MPQ) Change Qualification Plan & Result

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External Use

1. Goal and Consideration

1.1 Goal

- Freescale plans to increase Minimum Packaging Quantity (MPQ) size for tape & reel packing method, the MPQ change can optimize tape & reel material utilization and manufacturing flexibility.

1.2 Consideration

- Freescale has completed the evaluation according to the FSL rules (details on the next slides) to guarantee new MPQ quality don’t have issue.

2. Correlation Plan & Criteria

Qualification follow Freescale spec 12MWS00128B.

- **Function Line Test**

  Method: Change the machine setting with the proposed new MPQ quantity and trial run on packing machine for all impacted packages.

  Pass/Fail Criteria:

  1. No placement, no missing, no jamming, have sufficient clearance and no lead/ball damage.
  2. No over rejecting caused by mirror surface of pocket - confusing the vertical walls of the pocket and the lead during pattern recognition.

  Sample size: One reel for each package

- **Drop Test**

  Method: Pack one reel for each package and drop 10 times from the height of 1 meter (1 corner, 3 edges and 6 sides). Implement visual inspection for the packing material appearance and units' lead/ball/chip. and units' lead/ball/chip.

  Pass/Fail Criteria:

  1.No packing material damage after drop test.
  2.No loose or torn cover tape, no chip or broken reel , no punctured bag.
  3.No crushed or damaged pockets or tape, no dislodged packages or out of position packages.

  Sample size: One reel for each package

- **Change Action Board (CAB) review and approval**

3. Correlation Results

- **Evaluation Result Summary**

Package	Old MPQ	New MPQ	New MPQ qualification result	
			Function Line Test	Drop Test
BGA12x12	1000	1450	Pass	Pass
SOIC8	2500	3500	Pass	Pass
SOIC16W	1000	1650	Pass	Pass
SOIC28W	1000	1650	Pass	Pass
SOIC54W	1000	1650	Pass	Pass
SOIC32W	1000	1700	Pass	Pass
TSSOP16	2500	5000	Pass	Pass
QFN05x05	1000/2000/2500	5000	Pass	Pass
QFN04x04	2500	5000	Pass	Pass
QFN03x04	3000	4500	Pass	Pass
LGA07x07	2000	3000	Pass	Pass
QFN03x03	1000/2000/2500/3000	5000	Pass	Pass
LGA08x08	2000	4000	Pass	Pass
LGA9.5x9.5	2000	2450	Pass	Pass
TSSOP20	2500	5000	Pass	Pass
TSSOP28	2500	5000	Pass	Pass
QFN09x09	2000	3500	Pass	Pass
QFN06x06	2000	3000	Pass	Pass
LGA05x05	2500	5000	Pass	Pass
WBMOD	2500	5000	Pass	Pass
8*8 60MAPLGA	2000	4000	Pass	Pass

4. Conclusion & Recommendation

Conclusion

1. From the above data, new MPQ size was achieved after function line test and drop test verification, no issue found.
2. No impact to device form, fit, function or reliability.

Recommendation

Implement the new MPQ to production.

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