



Standard Product Flows – Multi-Chip Products

Maxwell Technologies manufactures our multi-chip products using MIL-PRF-38534 as a guideline and we offer four different self-defined product-testing flows: Maxwell class K, Maxwell class H, industrial grade and engineering grade. The table below exhibits the test that will be performed to the RAD-PAK[®] products on a 100% basis. Qualification testing is available by purchase order.

Screening Test	MIL-STD-883 Method	Product Flows Multi-chip Modules							
		Maxwell Self-Defined Class K	Condition	Maxwell Self-Defined Class H	Condition	Industrial	Condition	Engineering	Condition
Die Lot Acceptance	Maxwell Spec.	Yes		No		No		No	
Glassivation Thickness	5007	Yes		No		No		No	
Metallization Thickness	5007	Yes		No		No		No	
SEM Inspection	2018	Yes		No		No		No	
Element Evaluation	MIL-PRF-38534	by P.O.	Class K	by P.O.	Class H	NA		NA	
Wire Bond Monitor	2011	Yes		Yes		No		No	
100% Wire Bond Pull	2023	Yes		No		No		No	
Die Shear Monitor	2019	Yes		Yes		No		No	
Pre-Cap Visual Inspection	2017	Yes	Class K	Yes	Class H	No		No	
QA Inspection	2017	Yes	Class K	Yes	Class H	No		No	
Temperature Cycling	1010	Yes	C	Yes	C	No		No	
Constant Acceleration or Mechanical Shock	2001 or 2002	Yes		Yes		No		No	
PIND Test	2020	Yes	A or B	Yes	A or B	No		No	
Serialization	NA	Yes		No		No		No	
Pre Burn-in Electrical Test	Detail DWG	Yes		Yes		No		No	
Dynamic Burn-in I	1015	Yes	D, 160 hrs	Yes	D, 160 hrs	No		No	
Interim Electrical Test	Detail DWG	Yes		No		No		No	
Deltas ⁴		Yes		No		No		No	
Dynamic Burn-in II	1015	Yes	D, 160hrs	No		No		No	
Final Electrical Test	Detail DWG	Yes		Yes		Yes		Yes	
Deltas ⁴		Yes		No		No		No	
PDA		2% ³		10%		No		No	
Data Retention Testing	Maxwell Spec.	Yes ⁶		Yes ⁶		Yes ⁶		Yes ⁶	
High Temp Electrical Test		Yes ¹		Yes		Yes		No	
Low Temp Electrical Test		Yes ¹		Yes		Yes		No	
Fine Leak Test	1014	Yes ⁵	A1	Yes ⁵	A1	No		No	
Gross Leak Test	1014	Yes ⁵	C1	Yes ⁵	C1	No		No	
Radiographic Inspection	2012	Yes ²	2 views	No		No		No	
External Visual	2009	Yes		Yes		No		No	
Final QA Review	NA	Yes		Yes		Yes		Yes	
Groups A, B, C, D and E QCI	MIL-PRF-38534	by P.O.	Class K	by P.O.	Class H	NA		NA	

1. GO / NO-GO (Read and record by P.O.).
2. Radiograph not performed on RAD-PAK[®] products (shield x-rays).
3. PDA based on quantity into second burn-in and Delta failures from second burn-in only.
4. Delta parameter values measured after burn-in will be compared with the Delta parameter values measured prior to that burn-in.
5. Fine and Gross Leak Testing is performed at the layer level for multi-layered MCM devices.
6. Data retention testing is performed only on non-volatile memory products.