

### **DeQuMa - Tutorial**

How to use the

**ZVEI - DeltaQualificationMatrix** 

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# Instructions how to use the DeltaQualificationMatrix (DeQuMa)



### What is the DeQuMa?

It's a tool to describe the requested change, the evaluation level and the test which should be considered for qualification based on common international standards
(i.e. AEC Q10x, IEC 60810)

### Motivation - Why to use?

Standardized scope of Qualification for selection of tests.

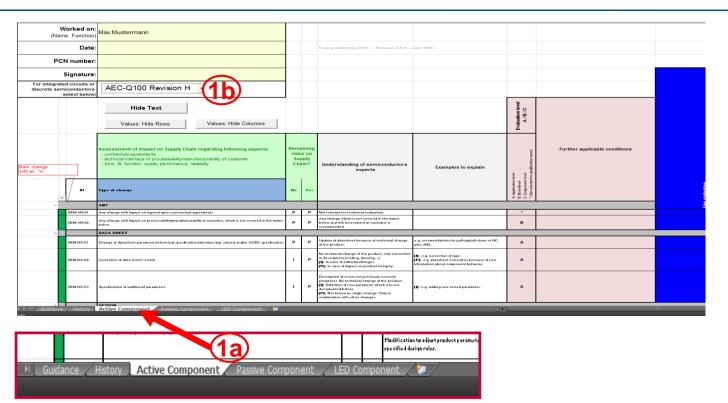
Common understanding for tests and changes will decrease the PCN throughput time.

### **Do not use for Information Notes!**

The DeQuMa should only be submitted in case of changes which are assessed as "P". For changes which are assessed as "I" the DeQuMa is not necessary.

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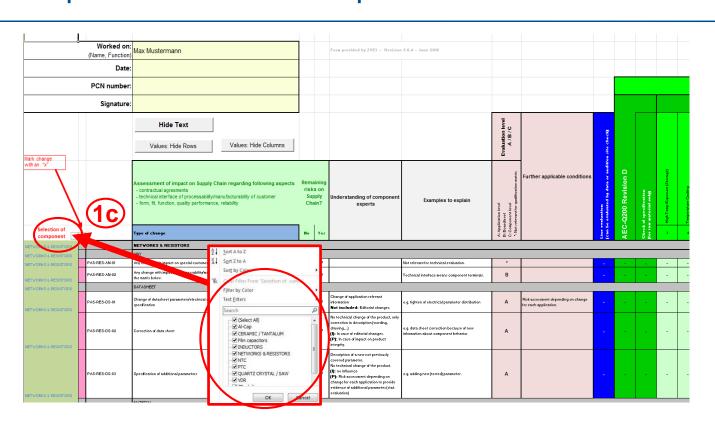


1a) Select Active,Passive or LEDComponent file folder

1b) Select in Active Component folder if AEC Q100 or 101 is applicable and complete Header Data

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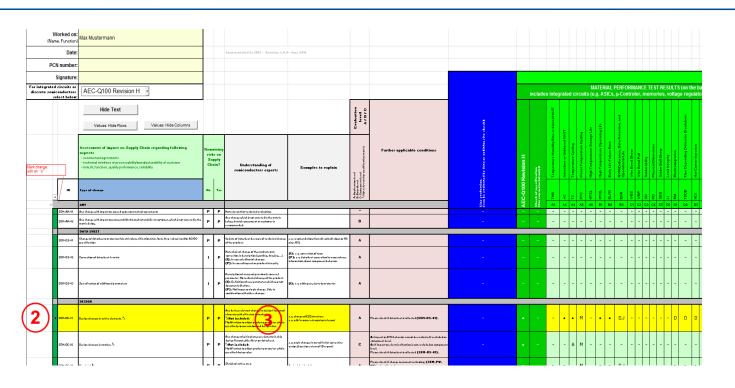


For Passive components:

1c) in Order to reduce the number of lines (> 400) select a product group first

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2) Select all changes for the PCN in column B.

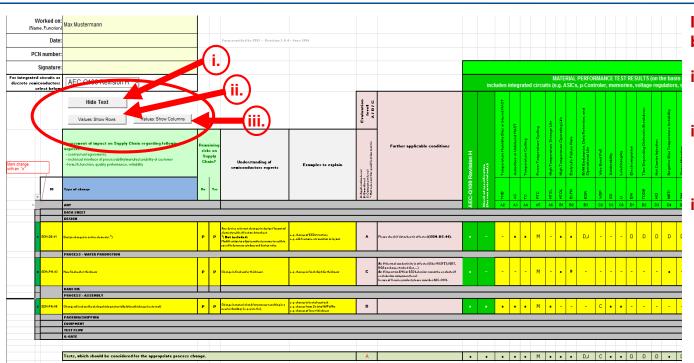
#### **ATTENTION!**

ALL changes per PCN need to be marked in column B by ,X'....

3) If the wording for the change category you selected (column D) is not clear enough, you will find additional explanations for the specific category in column G and H.

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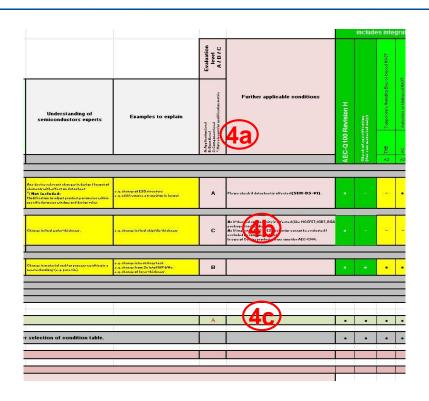


Improved readability by buttons:

- . Hide Text compresses columns G, H and J
- ii. Values: Hide Rows filters the change lines only
- ii. Values: Hide Columns compresses all columns between N and AT for ,-' listed stress tests

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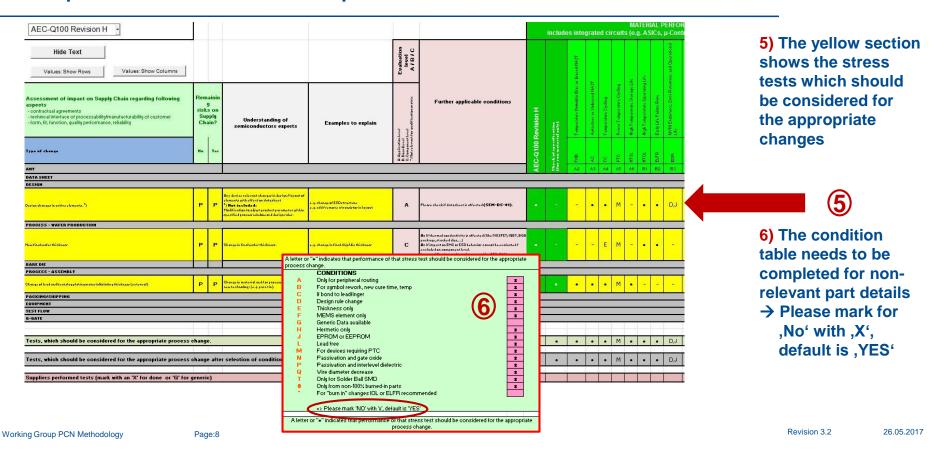




- 4a) Evaluation level should be used as recommendation for scope of qualification at Tier1 (given by ZVEI community)
- 4b) Appropriate level might varying for special cases. Please enter character accordingly.
- 4c) In case of different evaluation levels are affected (see 4b), the highest evaluation level will be automatically shown (in the line "Tests, which should be considered for the appropriate process change").

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	Hide Text  Values: Show Rows  Values: Show Columns					Evaluation level A / B / C				x bissed HAST	F		949	gtife	
10 10 10 10 10 10 10 10 10 10 10 10 10 1	Assessment of impact on Supply Chain regarding following aspects - contractual agreements - technical interface of processability/manufacturability of oustomer - form, lift, function, quality performance, reliability	Rem 9 risks Sup Cha	s on	Understanding of semiconductors experts	Examples to explain	lovol lovol Farquelification matrix	Further applicable conditions	AEC-Q100 Revision H	Column of section in	Temperature Humidity Bias	Autoclave or Unbinsed HAST	Temperature Cycling	Power Temperature Cycling High Temperature Storage L	High Temperature Operating	Early Life Failure Bate
ID	Type of change		Ter			A: Application level B: Boardlevel C: Compenent level ": Not relevant for qu		C-Q100 F	Obsek of resciffication (for rea material anly)	THB	AC	24	PTC HTSL	HTOL	ELFR
	АНТ		- 3					AE	000	A2	A3	A4	A5 A6	81	B2
	DATA SHEET											- 110			
	DESIGN				1		T.							$\overline{}$	
SEM-DE-01	Durign chanqua'in activo alamants. <sup>1</sup> )	Р	Р	Any device relevant changer in derign flayaut of elementr with effect on datasheet  1) Het included: Madification to edjurt product peremeter within specified process window and derign reles.	e.q.chanqo af ESDztructure e.q.addfromavo a transistarin layaut	A	Please check if detasheet is affected (SEM-DS-01).	•		70	•		м -		•
R 3	PROCESS - WAFER PRODUCTION			SI SI		107		10 0					-		
SEM-PW-03	New final water thickness	Р	Р	Change in final wafer thickness:	o.g. change in final chipf die thickness	С	As if thermal canductivity is affected (like MOSFET; IGBT, BG package, stacked dise) As if impact an EMO or ESD behavior cannot be evaluated if excluded an companent level. In care of Outling product placer consider AEC 2006.	A ·	4	ů.	- 1	E	м -		
	BARE DIE					N.				_		_		_	-
1	PROCESS - ASSEMBLT	100	ST 1												
SEM-PA-05	e.s. chance in heat riverteek											•	м •	7	-
	PACKINGISHIPPING														
	COUPMENT														
	TEST FLOW														
	Q-GATE									_			_		
	Tests, which should be considered for the appropriate proc	acc ahanas				A	(/a)		- 9			11/45	м .		
	rests, which should be considered for the appropriate proc	ess change	-						-				PI .		
	Tests, which should be considered for the appropriate proc	ess change	e afte	er selection of condition table.			(7b)		•	•	•	•	- •	•	•
	Suppliers performed tests (mark with an 'X' for done or 'G'	for gone-1-	.1												

7a) This line provides a summary of all stress tests of selected changes excluding selection from condition table.

7b) This line provides a summary of all stress tests incl. selection from condition table according to the recommendations of the international standards.

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	BARE DIE																										
	PROCESS - ASSEMBLY																										
SEM-PA-03	Change in less@sone dissensions	Р	Р	В					-	-		м	-	-		-			•			-	L	н		-	-
SEM-PA-07	Die ottsch naterial	Р	Р	С						•	•	м	-	•	-	-	-		-			-	L	н	н	-	
SEM-PA-11	Change of midd compound I encapsidation material	Р	Р	В								м		•						-   -	-	-	L	-	-   -	-	-
SEM-PA-18	More of all or part of assembly to a different location/siste/subcontractor.	Р	Р	С					-	•	•	м	-	•				• т			-	-	L	н	н	G	
	PACKING/SHIPPING																										
SEM-PS-02	Dry pack requirements change	Р	Р					-	-	-		-	-	-		-	-		-		-	-	-	-	-   -	-	-
	EQUIPMENT		_		_														_	_		_			_		
SEM-EG-03	Change in test equipment type that uses a different technology	Р	Р	С		-		-	-	-			-	-	-	-	-	-   -	-		-	-	-	-	-   -	-	•
	TEST FLOY																										
	Q-GATE																										
	Tests, which should be considered for the appropriate process change.			Α		•		•	•	•		M	•	•		•	•	• Т	•		•	•	L	н	н	G	•
	Tests, which should be considered for the appropriate process change aft of condition table.	er sel	ection			•		•	•	•			•	•					•				L	-		G	•
																											_
	Suppliers performed tests (mark with an 'X' for done or 'G' for generic)						(2)			G	G (	. ·	G	G	G G	G	G	K -	1	2 X	3	4	G	-		G	G
	Reason for exception of tests:						8																				
	Generic data used from one product of product family (XXXX) which has highest I- not applicable, because 3MD pachage; 2 - not applicable, because eno changes in applicable, because no	Valer	Fab pre	ocess; 3 - n																							

8) The tests performed by the supplier should be marked with an 'X' for tests at the specific device or 'G' for generic.

For tests that were not performed, please enter a numeric value (1,2,3,...) for referencing in the explanation line (see 9)).

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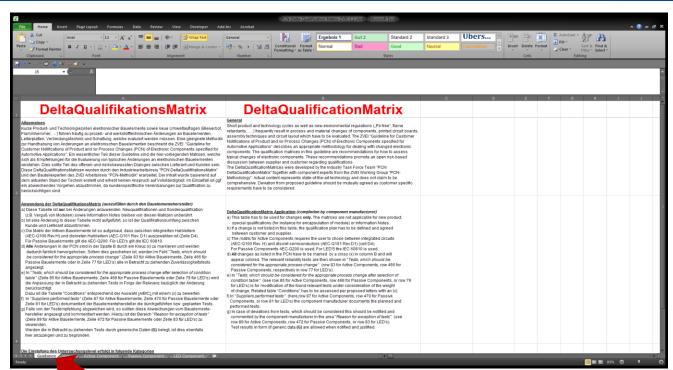


X SEM-PS-02	Dry pack requirements change	Р	P Change of dry pack requirements (e.g. change of MSL)		*						-	-
	EQUIPMENT											
X SEM-EQ-03	Change in test equipment type that uses a different technology	Р	P Change in electrical water test equipment type and/or final test equipment type that uses a different technology (e.g., new test program, new tester interface,).	e.g. change tester equipment from LTX to Teradyne	С							-
	TEST FLOW											
	Q-GATE											
	Tests, which should be considered for the appropriate process change.	ould be considered for the appropriate process change.						•	•	•	•	•
	Tests, which should be considered for the appropriate process change a	iter sel	ction of condition table.					•	•	•	•	•
	Suppliers performed tests (mark with an 'X' for done or 'G' for generic)										G	G
	Reason for exception of tests:											
	Generic dtat used from one product of the product family (1111) which has highest p 1- not applicable, because SMD package; 2- not applicable, because no change in Valer Fab process; 3- not applicable, for smart power derices only; 4- not applicable, because no memore included	erforman	ce out of that.	9								

9) Please provide a comment / explanation for each value (1,2,3,..) why certain listed tests are not performed or performed under different conditions.

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10) For further instructions and descriptions see sheet GUIDANCE within the DeQuMa Excel File.

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