

DEFINITIONS FOR HYBRID PRODUCT DEVELOPMENT LEVELS

X = Required

R = One of the listed **OR** the other is required

	Breadboard	Engineering Model	Engineering Qualification Model
Minimum Material Qualification Level (BOM)			
COTS with Selected Component Manufacturer Path to Final Quality Requirement (with Traceability if Required; See Note 1)	X	X (Note 3)	
B Level with Selected Component Manufacturer Path to Final Quality Requirement B Level Parts are Optional for Breadboards	X	X (Note 3)	
S Level	X	X	X
Minimum Crystal Requirement			
Non Swept	R	R (Note 3)	
Swept	R	R	X
Use Normal Assembly Processing/Procedures and Flows with the Following Exceptions			
Die Attach Process Control			X
Nondestructive Wire Bond Pull			X
Visual Inspection (Gross Damage only)	X		
Visual Inspection (Q-Tech SOP)		X (MIL-PRF-55310 Level B, MIL-PRF-38534 Class H)	X (MIL-PRF-55310 Level S, MIL-PRF-38534 Class K)
PreCap (Customer Source Inspection)			A/R
Rework Limit	Unlimited	Unlimited	Normal Procedure
Screening			
Fine Leak Testing	X (Note 4)	X (Note 5)	X
Gross Leak Testing	X (Note 4)	X (Note 5)	X
Additional Screening per Additional Document			X
Minimum Electrical Tests			
Salient Electrical Attributes; Data Supplied at Room Temperature Only (See Note 2)	R		
Limited Electrical Test at Room Temperature and Temperature End Points (See Note 2)	R	X	
All Functional and Parametric Electrical Test Requirements (Group A)			X
Final Visual Inspection			
In Accordance with Q-Tech SOP and MIL-STD-883, Method 2009		X (MIL-PRF-55310 Level B, MIL-PRF-38534 Class H)	X (MIL-PRF-55310 Level S, MIL-PRF-38534 Class K)

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Notes

1. The intent for Breadboards (B) and Engineering Models (E) is to obtain lot traceability of parts used. This information is usually available from Commercial-Off-the-Shelf (COTS) distributors. Given the constraints of time and cost, this may not be possible 100% of the time.
2. Testing over temperature for B and E level parts is meant to ensure that the final design is capable of meeting performance requirements. Units may not meet all specifications over the entire temperature range. Consultation with customer will determine critical parameters.
3. Subject to customer requirements.
4. Fine and gross leak required for open blank crystals. Not required for packaged crystals/SAWs.
5. Fine and gross leak required for open blank crystals. Performed at the direction of Engineering for packaged crystals/SAWs.

Order of Precedence

In the event of conflict between this document and the references cited herein or other requirements, the precedence in which requirements shall govern, in descending order, is as follows:

- a) Applicable Customer Purchase Order
- b) Applicable Q-Tech Corporation Detail SCD/Drawing
- c) Applicable Customer Detail SCD and/or Detail Drawing
- d) F1221, Definitions for Hybrid Product Development Levels