NINETEENTH ANNUAL Burn-in & Test Strategies Workshop

March 4 - 7, 2018

Hilton Phoenix / Mesa Hotel Mesa, Arizona



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A Better Workhorse - Burn-in Printed Circuit Boards & Solutions



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UHPBI, <u>U</u>Itra <u>High Power Burn-in</u>

Background

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- Challenges
- Socket Design
 - Thermal Simulation
 - Testing Data I
 - Testing Data II
- UHPBI Oven Solution
- Burn-in board Solution
- Roadmap



UHPBI (Ultra High Power Burn-in)

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Challenges Material, Life time, Mass Production, & Cost are all in high threshold How to improve heat sink thermal limitation better? High volume loading require fast load / un-load operation Difficult hardware maintenance during mass-production Good heat-dissipation for Printed Circuit Board (PCB) and Socket Thermal Interface Material (TIM) selection, innovation, etc. 5 UHPBI (Ultra High Power Burn-in)

Socket Design Normal Bad Good 0 0 Δ Type-A Type-B Type-C Rotate design \bigcirc 0 Δ Stopper design Δ Δ 0 Temperature (Tj & Tc) \bigcirc \bigcirc 0 Thermal control \bigcirc \bigcirc 0 **DOE-A** DOE-B signal testing Witness mark Supply voltages Scratch(10 insertions) Current measurements Warpage Temperature (Tj & Tc) 66 Prevent Die crack UHPBI (Ultra High Power Burn-in) urn-in & Test Strategies Workshop



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Testing Data - II																									
	#IC	IDDQ (A) 0.725v/85C 139.90 155.50 58.16		SPEEDO		TileC		١	/1	otal power	Ratio 3.38 2.79 3.84	Remark Type-A*, work well Mbist pattern fail			B/L condition:										
				C 0.725v/8		125	110.0	(A)	(W)	(W)					v	V2		V3		V4		V5			
*	#80 #57			2097.00		135	118.8	473.3	488.3	541.4 496.8					1.1	1.1V		1.485V		1.98V		2.5V			
#	#30			2014.88		135	115	223.5	251.4	257.5					(A)	(W)	(A)	(W)	(A)	(W)	(A)	(W)	(A)	(W)	
#	‡26	61.70		2057.24		135	115	234.6	263.9	270.4	3.80				473.3	532.5	3.6	4.0	3.0	4.4	0.2	0.4	0.1	0.2	
				Tvn				-Δ			Т	vn	ρ-Δ*	223.5	251.4	1.7	1.9	2.5	3.6	0.2	0.4	0.1	0.3		
		Device #80 #57					JPC-A					Турс А			234.6	263.9	1.9	2.1	2.6	3.8	0.2	0.4	0.1	0.3	
	D			тс		٩G	MBIS	ST	CLK	ТС	JTA	G MBIST		CLK											
										116.1	464	.5	473.5	466.3											
				2.7	433	3.4	440.	3 4	138.3	115.9	439	.7	446.7	440.7											
	#26		11	115.3		2.5	235.	6 2	232.4	112.2	227	.3	230.4	229.5											
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