

Final Product Change Notification

202301014F01: MC56F83xxx 1N64Y Mask Set Revision Qualification and Errata Reference Manual Update

Note: This notice is NXP Company Proprietary.

Issue Date: Mar 11, 2023 Effective date: Jun 09, 2023

Management summary:

New version of silicon for MC56F83XXX.

Change Category:

0 0,							
Wafer Fab Process		Assembly Process	~	Product Marking	Test Process	~	Design
Wafer Fab Materials		Assembly Materials		Mechanical Specification	Test Equipment	~	Errata
Wafer Fab Location		Assembly Location		Packing/Shipping/Labeling	Test Location		Electrical spec/Test coverage
Firmware	V	Other: Reference man	nual, E	rrata			

PCN Overview

Description

NXP Semiconductors is announcing a new version of silicon for MC56F83XXX. The new silicon mask revision is 1N64Y. 1N64Y mask set fixed ERR050194, ERR050246, ERR050274, ERR050307, ERR050308.

Update Mask Set Errata for Mask 0N64Y (MC56F83XXX_0N64Y, Rev. 3, 2/2023)

Release Mask Set Errata for Mask 1N64Y (MC56F83XXX_1N64Y, Rev. 0, 12/2022)

Update Reference manual (MC56F83XXXRM, Rev. 3, 02/2023), refer to Appendix B change summary for this revision.

The updated MC56F83XXX Reference manual and Errata are attached in the notification and can be found at below link:

https://www.nxp.com/products/processors-and-microcontrollers/additional-mpu-mcus-architectures/digital-signal-controllers/32-bit-56800ex-ef-core/performance-level-digital-signal-controllers-usb-fs-otg-can-fd:MC56F83xxx?fpsp=1#documentation

Corresponding ZVEI Delta Qualification Matrix ID: SEM-DE-01, SEM-DS-02

Reason

Mask set 1N64Y fixed ERR050194, ERR050246, ERR050274, ERR050307, ERR050308.

Errata and Reference Manual has been released / updated to provide additional technical clarification on some device features

Identification of Affected Products

Top Side Marking

The mask set marking on the package will change from 0N64Y to 1N64Y.

Product Availability

Sample Information

Samples are available upon request

Samples for PC56F83789AMLLA are available from Feb 28, 2023.

For samples with other part numbers, NXP will deliver within 8 weeks after we receive the request.

Production

Planned first shipment: May 31, 2023

Anticipated Impact on Form, Fit, Function, Reliability or Quality

No Impact on form, fit, function, reliability or quality

Data Sheet Revision

No impact to existing datasheet

Disposition of Old Products

Existing inventory will be shipped until depleted

Additional Information

Self-Qualification: view online
Additional documents: view online

Timing and Logistics

In compliance with JEDEC J-STD-046, your acknowledgement of this change is expected by Apr 10, 2023

Contact and Support

For all inquiries regarding the ePCN tool application or access issues, please contact NXP "Global Quality Support Team".

For all Quality Notification content inquiries, please contact your local NXP Sales Support team.

At NXP Semiconductors we are constantly striving to improve our product and processes to ensure they reach the highest possible Quality Standards, Customer Focus and Passion to Win.

NXP Quality Management Team.

About NXP Semiconductors

NXP Semiconductors N.V. (NASDAQ: NXPI) provides High Performance Mixed Signal and Standard Product solutions that leverage its leading RF, Analog, Power Management, Interface, Security and Digital Processing expertise. These innovations are used in a wide range of automotive, identification, wireless infrastructure, lighting, industrial, mobile, consumer and computing applications.

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Industrial/Commercial Qual Results

INGUSTRIAI/COMMERCIAI QUAI RESUITS Objective: MC56F83xxxx 1N64Y Mask set revision Qualification										
NXP PN Part Name	N: MC56F83xxx e: MC56F83xxx		Customer Name(s): PN(s):	Various Various			Revision: see below			
Package	8285 / LQFP 100 14SQ1.4P0.5		Design Engineer: Alan Lin				Revision Date: see below			
Final Test Sites Masksett Revi	g/ g: Global Foundries Fab 7/TFME/NXP-ATTJ g: N64Y g: 1		Product Engineer				QUARTZ Tracking #: 270852 CMT Approval 2205950008 Number & Date Feb-2495-2023			
			Package Engineer: Kaelin Wang R&GA Engineer: Nancy Long				Number & Date: Feb-24th-2023 Customer Approval Signature & Date: NA			
Datasheet Operatin Temp (provide junction defined in the Datasheet	79 if Temp Range = -40 °C to + 125 °C Ambient. Max 13 ij: Temp Range = -40 °C to + 105 °C Ambient. Max 12	Trace/Date Code:								
			This testing is performed by NXP Reliability Lab (NXP-ATTJ-LAB) unless otherwise not GROUP A - ACCELERATED ENVIRONMENTAL STRESS TEST				its .			
Stress Test	Reference JESD22- A113	Test Conditions Preconditioning (PC): PC required for SMDs only.	End Point Requirements TEST @ RH	Minimum Sample Size All surface mount devices pronditions.	# of Lots for to HAST, UHST, TC, a	Total Units nd as required per test	NA=Not Applicable pass	Comments or Generic Data Generic data: Q247774, MG9508PT60VLF (TSMC 10, 0N21 P), 48L GFP 7x7: 0/135		
PC	J-STD-020 JESD22-	PC required for SMDs only. MSL 3 @ 260°C, +51-0°C Highly Accelerated Stress Test (HAST): PC before HAST (for SMDs only): Required	TEST @ RH	conditions.	0	0	pass	Q247756,MK60FN1M0VLQ15 (Global Foundries Fab 7, 4N96B), 144LQFP 20x20: 0/462 Generic data:		
HAST	A110 (HAST)	HAST = 110°C/85%RH for 264hrs						Q247774, MC9S08PT60VLF (TSMC10, 0N21P), 48LQFP 7x7: 0/135		
	JESD22-	Bias = 3.6V (Max Vdd)	TEST @ R	45	0	0	pass	Generic data: Q247756, MK60FN1M0VLQ15 (Global Foundries Fab 7, 4N96B), 144LQFP 20x20: 0/231		
UHST	A118 (uHAST)	PC before UHST (for SMDs only): Required UHST = 110°C/85%RH for 264hrs						Q247756, MK60FN1M0VLQ15 (Global Foundries Fab 7, 4N96B), 144LQFP 20x20: 0/231		
	JESD22- A104 AEC Q100-		TEST @ H FIO: WBP =/> 3 grams	45	0	0	pass	Generic data: Q247756, MK60FN1M0VLQ15 (Global Foundries Fab 7, 4N96B), 144LQFP 20x20: 0/231, WBP: 0/5, min>3 gram		
тс	Appendix 3	TC = -65°C to 150°C for 500 Cycles								
		FIO: WBP after TC on 5 devices from 1 lot; 2 bonds per corner and one mid-bond per side on each device. Record which pins were used.								
HTSL	JESD22- A103	High Temperature Storage Life (HTSL): 150°C for 1008hrs	TEST @ RH	45 TEST GROUP B - AI	0 CCELERATED LIFET	0 IME SIMILI ATION TE	pass	Generic data: Q247756, MK60FN1M0VLQ15 (Global Foundries Fab 7, 4N96B), 144LQFP 20x20: 0/231		
Stress Test	Reference	Test Conditions	End Point Requirements	Minimum Sample Size	# of Lots	Total Units	Results(#Rej/SS) NA=Not Applicable	Comments or Generic Data		
	JESD22- A108	High Temperature Operating Life (HTOL): Ta=125°C for 1008 hours Bias = core: 1.53V, IO: 4.0V	TEST @ RCH	45	0	0	pass	Generic Data: Q254979, MC56F83xxx (Global Foundries Fab 7, 0N64Y), 100LQFP 14x14: 0/231		
HTOL		Devices incorporating NVM shall receive 1X 'NVM endurance preconditioning'(W/E cycling) at Ta = 105°C. Test R, H, C after W/E cycling.								
	JESD22-		TEST @ RCH	45			Dass	Generic Data:		
	A108	High Temperature Operating Life (HTOL): Ta=125°C for 1008 hours Bias = core: 1.53V, IO: 4.0V			•	,		Generic Data: QZ70852, MG56F83xxxA 1N64Y Mask set revision Qualification((Global Foundries Fab 7, 1N64Y), 100LQFP 14*14: 0177 QZ60351, MC56F83xxx Qualification (Global Foundries Fab 7, 0N64Y), 100LQFP 14*14: 077		
HTOL		Devices incorporating NVM shall receive 1X*NVM endurance preconditioning(W/E cycling) at Ta = 125°C. Test C, R, H after W/E cycling.								
	AEC Q100-008	Early Life Failure Rate (ELFR):	TEST @ RH	611	0	0	pass	Generic Data: Q260351, MC96F83xxx 100LQFP Industrial 125C grade Qualification (Global Foundries Fab 7, 0N64Y), 100LQFF		
ELFR		Bias = core: 1.53V, IO: 4.0V						14*14: 0.900.		
			**************************************					225446, MRZEPASION (VICTOR) (Cibidal Foundities Fair 7, MRZES) (HARPICA (1855) 225446, MRZEPASION (212 (Cibidal Foundities Fair 7, MRZE) (1921 MAPRICA (1861) 222577, MRZEPASION (VICTOR) (Cibidal Foundities Fair 7, MRZEPASION (1921) 222888, MRGEPASION (VICTOR) (Cibidal Foundities Fair 7, MRZEPASION (1931) (FBMAPRICA (1861)		
	AEC Q100-005	NVM Endurance, Data Retention, and Operational Life (EDR):	IEST @ RCH	77		0	pass	Generic Data: Q260351, MCS6F83xxx (Global Foundries Fab 7, 0N64Y) 100LQFP- 1k W/E @ 125C + DRB @179C for 1400Hrs: 077		
		150°C for 1008 hrs Devices incorporating NVM shall receive 1X 'NVM						14 WE @ 125C-DRB @ 150C for 1773hrs : 0231 WE @ 125C-DRB @ 150C for 1773hrs : 0231		
EDR		endurance preconditioning (W/E cycling) at Ta = 125°C. Test R, H, C after W/E cycling.						Q244178, S32K148(Global Foundries Fab 7, 0N20V), 144LQFP 20°20, WIE § 125C-DRB § 176C for 521frs: 077 WIE § 125C-DRB § 160C for 1778rs: 01754		
								Q247491, \$32K116(Global Foundries Fab 7, 0N95V), 48LQFP 7*7: 10k WIE @ 125C+DRB @ 175C for 52 fhs; 0/77		
								10k Wile git 120-U-NB git 170-10f 52/185: U/7 Q249539: S32K118(Global Foundries Fab 7, 0N97V), 64LQFP 10*10, 10k Wile git 120-U-NB git 175C for 52/18s: U/77		
	AEC Q100-005	NVM Endurance at Cold, Data Retention, and Operational Life (EDR):	TEST @ RCH	77	0	0	pass	10k WIL & 12CH-URB & 175C to 52 thrs: 077 Generic Data: Q233354, \$33X144(Global Foundries Fab 7, 0N77P), 100LQFP 14*14: 125C WIF + DRB & 25C for 1008thrs: 0231		
EDR		25°C for 1008 hrs								
LUK		Devices incorporating NVM shall receive 1X 'NVM endurance preconditioning'(W/E cycling) at Ta = 25°C. Test R, H, C after W/E cycling.						WE + DRB for 1008hrs: 0/77 Q249539: S2X118 (Global Foundries Fab 7, 0N97V), 64LQFP 10*10, WE + DRB for 1008hrs: 0/77		
					PACKAGE ASSEMB		S Results/#Rei/SS)			
Stress Test	Reference AEC Q100-001	Test Conditions Wire Bond shear (WBS)	End Point Requirements Cpk = or > 1.67	Minimum Sample Size 30 bonds	# of Lots	Total Units	NA=Not Applicable not required	Comments or Generic Data		
WBS				from minimum 5 units						
WBP	MilStd883- 2011	Cond. C or D	Cpk = or > 1.67	30 bonds from minimum 5 units	0	0	not required			
SD	J-STD-002D	Solderability (SD): If production burn-in is done, samples must also undergo	>95% lead coverage of critical areas	15	0	0	not required			
	JESD22- B100	burn-in prior to SD. Physical Dimensions (PD): PD per NXP drawing	Cpk = or > 1.67	10	0	0	not required			
PD										
DIM &		Dimensional (DIM): GAO to verify PD results against NXP drawing. BOM Verification (BOM): GAO to verify gual tot ERF BOM is accurate. Solder Ball Shear (SBS):					DIM: no change BOM: no change			
ВОМ	AEC-Q100-010	GAO to verify qual lot ERF BOM is accurate. Solder Ball Shear (SBS):	Cpk = or >1.67	10 (5 balls from a min. of 10	0	0	not required	For solder ball mounted packages only; NOT for Flip Chips.		
SBS		Performed on all solder ball mounted packages e.g. PBGA, Chip Scale, Micro Lead Frame (but <u>NOT</u> Flip Chip). Two reflow cycles at MSL reflow temperature before		(5 balls from a min. of 10 devices)						
	JESD22-	Two reflow cycles at MSL reflow temperature before shear. Lead Integrity (Li): Not required for surface mount devices;	No lead breakage or cracks	5	0	0	not required			
ш	B105	Not required for surface mount devices; Only required for through-hole devices.		(10 leads from each of 5 parts)	- DIE FABRICATION	DELIARII ITV TESTS				
Stress Test	Reference	Test Conditions	End Point Requirements	Minimum Sample Size	# of Lots	Total Units	Results(#Rej/SS) NA=Not Applicable	Comments or Generic Data		
TDDB HCI		Electro Migration (EM) Time Dependent Dielectric Breakdown (TDDB) Hot Carrier Injection (HCI)					Report available upon request			
SM NBTI		Stress Migration (SM) Negative Blas Temperature Instability (NBTI)		TEST GROUP	E - ELECTRICAL VER	RIFICATION TESTS	Report available upon request Report available upon request			
Stress Test	Reference Datasheet	Test Conditions Pre- and Post Functional / Parametrics (TEST):	End Point Requirements 0 Fails	Minimum Sample Size	# of Lots	Total Units	Results(#Rej/SS) NA=Not Applicable See Results Summary	Comments or Generic Data This action refers to Final Testing of all qualification units.		
TEST	Datasneet	For AEC, test software shall meet requirements of AEC-	UFalls	All	AII .	A	See Results Summary	ins accon reters to ⊢mai resting of all qualification units.		
	AEC-Q100-002	Testing performed to the limits of device specification in temperature and limit value. ElectroStatic Discharge/	TEST @ RH	3 units per Voltage leve	0	0	pass	Q270852, MC56F83xxxA 1N64Y Mask set revision Qualification/ (Global Foundries Fab 7, 1N64Y) 1001 OFP		
НВМ		ElectroStatic Discharge/ Human Body Model Classification (HBM): Test @ 500/1000/1500/2000 Volts For AEC, see AEC-Q100-002 for classification levels.	TEST @ RH 2KV min.					0270832 MC56F83xxx4 1N64Y Mask set revision Qualification (Global Foundries Fab 7, 1N64Y), 100LQFP 14*14: 0/485xx00 vsgtr000V		
	AEC-Q100-011		TEST @ B ^u	3 units per Voltage leve	0	0	pass	0/3git 1000V 0/3git 1000V 0/3git 2000V 0/3git 2000V 0/200852, MC56F83xxxx4 1N64Y Mask set revision Qualification/ (Global Foundries Fab 7, 1N64Y), 100LQFP		
CDM	AEC-Q100-011	ElectroStatic Discharge/ Charged Device Model Classification (CDM): Test @ 250/500/750(corner pins) Volts For AEC, see AEC-Q100-011 for classification levels.	TEST @ RH All pins =/> 500V Corner pins =/> 750V;	o unus per Voltage leve		"	pass	14*14: Lot A:		
								0/3@250V 0/3@500V 0/3@750V(corner pins)		
LU	AEC-Q100- 004	Latch-up (LU): Ta during stress = 125 °C Vsupply = 3.6V Maximum operating voltage	TEST @ RH	6	0	0	pass	Q270852, MC56F83xxxA 1N64Y Mask set revision Qualification((Global Foundries Fab 7, 1N64Y), 100LQFP 14*14: Lot A: Ol6		
	AEC-Q100-009, NXP Data sheet soec	Electrical Distribution (ED) T0 and post HTOL 1008Hrs	TEST @ RCH	30	0	0	pass	Q270852, MC56F83xxxx4 1N64Y Mask set revision Qualification((Global Foundries Fab 7, 1N64Y), 100LQFP 14*14:		
ED			FO				50.000	14*14: Lot A: 0/30, comparable with 0N64Y Drift within +/-1 sigma or less than +/-15% to spec		
FG	For AEC, AEC-Q100-007 For AEC, AEC-Q003	Characterization (CMAP):	FG shall be = or > 90% for qual units				FG>98% not required			
CHAR	SAE J1752/3 -	Only performed on new technologies and part families per AEC Q003. Electromagnetic Compatibility (EMC)		1	0	0	Report is available upon request			
S.E. 17720 — Birctromagnetic Companibility (EMC) 1 0 0 Report is available upon request EMC Related (see AEC 0100 Appends 6 for test applicability done on Emissions class-by-used basing procubin-month/PD agreement)										
Packang Generic Data List: Operator # FabMeask SetTech Product-Qual Description Part Number(s) Assembly Site Pkg Description Mod Compound Die Attach Wire										
7756	Global Foundries Fab 7/4N96B/ H009FTN6	MK60FN1M0VLQ15	TFME	LQFP 144 20SQ1.4P0.5	CEL8240HF10-CW	CRM-1076WA/CRM- 1076WA-R	23um Cu			
7774	TSMC10/ 0N21P/ E018AFX5	MC9S08PT60VLF	TFME	LQFP 48 7*7*1.4P0.5	CEL8240HF10-CW	CRM-1076WA/CRM- 1076WA-B	23um Cu			
e Generic Data List: iartz # 0852	Fab/Mask Set/Tech Global Foundries Fab 7/1N64Y/H009FTN4	Product-Qual Description / Part Number(s) MC56F83xxxx 1N64Y revision Qualification	Operating tempature -40°C to +125°C	}						
0852 0351	Global Foundries Fab 7/1N64Y/H009FTN4 Global Foundries Fab 7/0N64Y/H009FTN4 Global Foundries Fab 7/0N64Y/H009FTN4	MCS6F83xxxx 1N64Y revision Qualification MCS6F83xxx100LQFP industrial M grade NPI Qualification MCS6F83xxx100LQFP NPI Qualification	-40°C to +125°C -40°C to +125°C							
4979 11591 15446	Global Foundries Fab 7/0N64Y/H009FTN4 Global Foundries Fab 7/0N03G/H009FTN4 Global Foundries Fab 7/0N41J/H009FTN4	MK21FN1M0VMD10 NPI Qualification MK22FN512VDC12 NPI Qualification	-40°C to +105°C -40°C to +105°C -40°C to +105°C							
5737 8983 3354	Global Foundries Fab 7/0N41J-2/H009FTN4 Global Foundries Fab 7/2N73J/H009FTN6 Global Foundries Fab 7/0N77P/H009FTN4	MK22FN256VDC12 NPI Qualification MK66FN2M0VMD18 NPI Qualification S32K144 100LQFP Evaluation	-40°C to +105°C -40°C to +105°C -40°C to +125°C							
4178 7491 9539	Global Foundries Fab 7/0N20V/H009FTN4 Global Foundries Fab 7/0N20V/H009FTN4 Global Foundries Fab 7/0N96V/H009FTN4 Global Foundries Fab 7/0N97V/H009FTN4	KFA2M / S32K148 NPI Qualification S32K116 NPI Qualification	-40°C to +125°C -40°C to +125°C -40°C to +125°C							
oducts being Qualified		A	Die Description		1					
rt number 256F83xxx 256F83xxx	Fab/Mask Set/Tech Global Foundries Fab 7/ 1N64Y/ H009FTN4 Global Foundries Fab 7/ 1N64Y/ H009FTN4	TFME TFME	LQFP 100 14SQ1.4P0.5 LQFP 80 12*12*1.4P0.5	-40C~125C -40C~125C						
D56F83xxx D56F83xxx	Global Foundries Fab 7/1N64Y/H009FTN4 Global Foundries Fab 7/1N64Y/H009FTN4 Global Foundries Fab 7/1N64Y/H009FTN4	TFME	LQFP 64 10*10*1.4 P0.5 LQFP 100 14SQ1.4P0.5	-40C-125C -40C-105C						
C56F83xxx C56F83xxx evision	Global Foundries Fab 7/1N64Y/H009FTN4	NXP-ATTJ	LOFP 64 10*10*1.4 P0.5 Comments	-40C-105C -40C-105C	1			Author		
lev 1 lev 1.1		Feb-20-2023	Input the qual results Products being Qualified table:	correct mask set from 0N64	Y to 1N64Y			Nancy Long Nancy Long		



AEC-Q100H Automotive Qual Results

Objectiv NXP P	ve: MC56F83xxxA 1N64Y Mask set revisi	on Qualification	Customer Name(s):	Various			I		
NOP PN: MISSERSTROMALI.A PEN Name: MISSERSONA Technolog; H000FFNW Package: L0FF 100 USQ01.4P0.5				Various			Revision: see revision history		
Packa; Fab / Assemb Final Test Site	gg: LUFF 100 143G1.4F0.5 bly/ ss: Global Foundries Fab 7/NXP-ATKL/NXP-ATTJ ttl: N84Y vs: 1		Design Engineer: Product Engineer:				Revision Date: see revision history QUARTZ Tracking #: 270852		
Maskse Rev	rts: NE4Y vs: 1		Package Engineer.				CAB Appro Number & Da	val CMT220505008 to: Feb-24th-2023	
Die Size (in m W x	ye: ' m) x		R&QA Engineer:	Nancy Long			Customer Appro Signature & Da	rall te: NA	
AEC Grade =1 - 40 °C to +125 °C Ambient. Max 135 °C Junction. Datasheet Operating "Bern Plange = 40 °C to +125 °C Ambient. Max 135 °C Junction. Temp (provide junction if adrined in the AEC Grade 2 Datasheet; "Bern Plange = 40 °C to +105 °C Ambient. Max 125 °C Junction.				LOT A-					
Columbia	EU. Temprinings - 1-10 O'D 1 TOO O'NELDER'S MIX 12	Th	Trace/Date Code: is testing is performed by I GROUP	NXP Reliability Lab	(NXP-ATTJ-LAB) unle D ENVIRONMENTAL	ss otherwise noted in	the Comments.		
Stress Test	Reference	Test Conditions	End Point Requirements	Minimum Sample Size	# of Lots	Total Units	Results(#Rej/SS) NA=Not Applicable	Comments or Generic Data	
	JESD22- A113	Preconditioning (PC) : PC required for SMDs only.	TEST @ RH	All surface mount devi-	ces prior to HAST, UHST,		pass NA-Not Applicable		
PC	J-STD-020	MSL 3 @ 260°C, +5/-0°C		test conditions.				Generic Data: Q233354, S32K144(Global Foundries Fab 7, 0N77P), 100LQFP 14*14: Lot A: 0/231 Lot B: 0/231 Lot C: 0/231	
HAST	JESD22- A110 (HAST)	Highly Accelerated Stress Test (HAST): PC before HAST (for SMDs only): Required HAST = 110°C/85%RH for 284hrs Bias = 3.6V (Max Vdd)	TEST @ RH	77	0	0	pass	Generic Data: 0,23354, 43(Bibbal Foundries Fab 7, 0M7PP), 100LQFP 14*14; HAST = 110*C185%RPH for 2549rs, Blas = 5.5V. Lot 8: 077 Lot 8: 077	
UHST	JESD22- A118 (uHAST)	Unblased HAST (UHST): PC before UHST (for SMDs only): Required UHST = 110°C/85%RH for 264hrs	TEST @ R	77	0	0	pass	Generic Data: Q233354, 532X144(Global Foundries Fab 7, 0N77P), 100LQFP 14*14: Lot 8: 077 Lot 8: 077	
	JESD22- A104 AEC Q100- Appendix 3	Temperature Cycle (TC): PC before TC (for SMDs only): Required Grade 1: -55°C to +150°C for 1000 cycles	TEST @ H AEC: WBP ⇒> 3 grams	77	0	0	pass	Lot. C. 0777 Generic Data: (023354, 532K144(Global Foundries Fab 7, 0N77P), 100LQFP 14*14: Grade: '-55°C to +150°C for 1000 cycles: Lot A: 0777	
тс	JESD22-	For AEC: WBP after TC on 5 devices from 1 lot; 2 bonds per corner and one mid-bond per side on each device. Record which pirs were used.	TEST @ RH	45	0	0	P055	Lot B. 077 Lot C. 077 WBP: 015, min-3 grams Generic Data:	
HTSL	A103	High Temperature Storage Life (HTSL): Grade 1: 150°C for 1000thrs or 175°C for 500thrs						Outside Care Care Care Care Care Care Care Car	
					RATED LIFETIME SIN		Results/2Rei/201		
Stress Test	Reference	Test Conditions	End Point Requirements TEST @ RCH	Minimum Sample Size	# of Lots	Total Units	Results(#Rej/SS) NA=Not Applicable	Comments or Generic Data Generic Data:	
HTOL	JESD22- A108	High Temperature Operating Life (HTOL): Ta=125°C for 1008 hours Blas = core: 1.53V, IO: 4.0V Devices incorporating NVM shall receive 1X 'NVM	TEST @ RCH	77	0	0	pass	Generic Data: Q259360, MC56F83xxxA AEC Gade 2 Qualification (Global Foundries Fab 7, 0N64Y), 100LQFP 14*1 0/231	
	JESD22- A108	endurance preconditioning (W/E cycling) at Ta = 105°C. Test R: H. C after W/E cycling. High Temperature Operating Life (HTOL): Ta = 125°C for 1008 hrs. Blas = core: 1.53V, IO: 4.0V	TEST @ RCH	77	1	77	Lot A: 0/77	Generic Data: Q261173, MC56F83789AMLLA AEC Grade1 Qualification (Global Foundries Fab 7, ONS4Y), 100LOF 41*14-0231	
HTOL	AEC Q100-008	Devices incorporating NVM shall receive 1X 'NVM endurance preconditioning'(W/E cycling) at Ta = 125'C. Test C, R, H after W/E cycling. Early Life Failure Rate (ELFR):	TEST @ RH	800	0	0	pass		
ELFR		Early Life Faiture Rate (ELFR): Ta = 125°C for 48 hrs. Bias = core: 1.53V, IO: 4.0V						Country, Charles COSTROM, MOSFEST/HIRANALA ARC Graded Couldination/Global Foundins Fab 7, 0944Y1, 100, CPF 14*14 0000000000000000000000000000000000	
	AEC Q100-005	Life (EDR): 150°C for 1008 hrs Devices incorporating NVM shall receive 1X 'NVM	TEST @ RCH	77	0	0	pass	OCMODIQUESTS. No AMERICA COMDISTS. MODIFICATION (Global Foundains Fair 7, 0904/Y) 100/LGFP- 15 W.E. g. 1250 - DRB (g.1750 for 14009ts: 0/17 COMDISTS. MODIFICATION (GLOBAL FOUNDAINS FOR TOWN) 100/LGFP 14"14: W.E. g. 1250-CRB (g.1500 for 17739ts: 0/231 COMPATION (GLOBAL FOUNDAINS FOR TOWN) 140/LGFP 20"20, COMPATIVE, SIGNATION (GLOBAL FOUNDAINS FOR 7, COMDO), 144/LGFP 20"20,	
EDR		endurance preconditioning(W/E cycling) at Ta = 105°C. Test R. H. C after W/E cycling.						Used 19, 502-04-06 STD 2012-05-19 / (1902-05-05-07) USER (8) 1502-06-06 STD 2012-05-06-19 / (1902-05-05-05-05-05-05-05-05-05-05-05-05-05-	
EDR	AEC Q100-005	NVM Endurance at Cold, Data Retention, and Operational Life (EDR): 25°C for 1008 hrs	TEST @ RCH	77	0	0	pass	Generic Data: (233934, 532K144(Global Foundries Fab 7, 0N77P), 100LQFP 14*14: 125C WIE - DRB @ 25C for 1008rs: 0/231 (204178, 532K148)(Global Foundries Fab 7, 0N20V), 144LQFP 20*20: WIF - DRB for 1008rs: 0/77	
		Devices incorporating NVM shall receive 1X 'NVM endurance preconditioning (W/E cycling) at Ta = 25°C. Test R, H, C after W/E cycling.			AGE ASSEMBLY INTE			Q249539: S22X118/Global Foundries Fab 7, 0N97V), 64LQFP 10*10, W.E. + DRB for 1008hrs: 077	
Stress Test	Reference	Test Conditions	End Point Requirements	Minimum Sample Size	# of Lots	Total Units	Results(#Rej/SS) NA=Not Applicable	Comments or Generic Data	
WBS	AEC Q100-001	Wire Bond shear (WBS)	Cpk = or > 1.67	30 bonds from minimum 5 units	0	0	not required		
	MISt/883-	Wire Bond Pull (WBP):	Cpk = or > 1.67	30 bonds	0	0	not required		
WBP	2011	Cond. C or D		from minimum 5 units					
SD	J-STD-002D	Solderability (SD): If production burn-in is done, samples must also undergo burn-in prior to SD.	>95% lead coverage of critical areas	15	0	0	not required		
PD	JESD22- B100	Physical Dimensions (PD): PD per NXP drawing	Cpk = or > 1.67	10	0	0	not required		
DIM &		Dimensional (DM): GAO to verify PD results against NXP drawing. BOM Verification (BOM):					DIM: no change BOM: no change		
BOM	AEC-Q100-010	BOM Verification (BOM): GMO to verifivous lot EFF BOM is accurate. Solder Ball Shear (BBS): Performed on all solder ball mounted packages e.g. PBGA, Chip Scale, Micro Lead Frame (but NOT Flip Chip). Two reflow cycles at MSL reflow temperature before shear.	Cpk = or >1.67	10 (5 balls from a min. of 10 devices)	0	0	not required	For solder ball mounted packages only, <u>NOT</u> for Flip Chips.	
ш	JESD22- B105	Lead Integrity (LI): Not required for surface mount devices:	No lead breakage or cracks	5 (10 leads from each	0	0	not required		
		Only required for through-hole devices.	TEST	of 5 norts)	ABRICATION RELIAS	ILITY TESTS			
Stress Test	Reference	Test Conditions	End Point Requirements	Minimum Sample Size	# of Lots	Total Units	Results(#Rej/SS) NA=Not Applicable	Comments or Generic Data	
EM TDDB		Electro Migration (EM) Time Dependent Dielectric Breakdown (TDDB)							
HCI SM		Hot Carrier Injection (HCI) Stress Migration (SM)					Report available upon request Report available upon request Report available upon request Report available upon request		
NBTI		Negative Bias Temperature Instability (NBTI)	TES		CTRICAL VERIFICAT	ION TESTS	Report available upon request		
Stress Test	Reference	Test Conditions	End Point Requirements	Minimum Sample Size	# of Lots	Total Units	Results(#Rej/SS) NA=Not Applicable	Comments or Generic Data	
TEST	Datasheet	Pre- and Post Functional / Parametrics (TEST): For AEC, test software shall meet requirements of AEC- Q100-007. Testing performed to the limits of device specification in temperature and limit value.	0 Fails	All	Al	Al	completed	This action refers to Final Testing of all qualification units.	
нвм	AEC-Q100-002	ElectroStatic Discharge/ Human Body Model Classification (HBM): Test @ 500/1000/1500/2000 Volts For AEC, see AEC-Q100-002 for classification levels.	TEST @ RH 2KV min.	3 units per Voltage leve	1	12	Lot A: 013g:500V 013g:1000V 013g:1500V 013g:2500V		
CDM	AEC-Q100-011	ElectroStatic Discharge/ Charged Device Model Classification (CDM): Test @ 2505007/50/comer pins) Volts For AEC, see AEC-Q100-011 for classification levels.	TEST @ RH All pins => 500V Corner pins => 750V;	3 units per Voltage leve	1	9	Lot A: 03@250V 03@50V 03@750V(corner pins)		
						6	Lot A: 0/6		
LU	AEC-Q100- 004 AEC-Q100-009,	Latch-up (LU): Ta during stress = 125 °C Vsupply = 3.6V Maximum operating voltage Electrical Distribution (ED)	TEST @ RCH	30	1	30	Lot A: 0/30, Cpil>1.67	comparable with 0N54Y	
ED	AEC-Q100-009, NXP Data sheet spec	Electrical Distribution (ED) T0 and post HTOL 1008Hrs	TEST @ RCH Cok target > 1.67	30	1	30		comparable with DNB-FY Difft within +/-1 sigma or less than +/-15% to spec:	
	AEC-Q100-009, NDP Data sheet spec For AEC, AEC-Q100-007	Electrical Distribution (ED) T0 and post HTOL 1008Hrs Fault Grading (FG)	TEST @ RCH	30	1	30	FG>98%	comparable with DMAY Diff within +1 signa or less than +1.15% to spec:	
ED FG CHAR	AEC-Q100-000, NDP Data sheet spec For AEC, AEC-Q100-007 For AEC, AEC-Q003 SAE J1752/3 -	Electrical Distribution (ED) 10 and post HTDL 1008Hs Fault Grading (FO) Characterization (CHAR): Only performed on new technologies and part families one AEC 0003. Electromagnates Compatibility (EMC)	TEST @ RCH Cok target > 1.67 FG shall be = or > 90% for	30	1	30		comparable with 0/964Y Oth within +14 sagma or less than +1.15% to spec:	
ED FG CHAR EMC	AEC-Q100-009, NXP Data sheet spec For AEC, AEC-Q100-007 For AEC, AEC-Q003	Electrical Distribution (ED) To and post HTOL 1006Hs Fault Grading (FO) Characterization (CHAR): Only performed on new technologies and part families per AEC 0005 and	TEST @ RCH Cok target > 1.67 FG shall be = or > 90% for				FG>86% not required	comparable with OWERY ORTHURBUS +14 sagma or less than +1-15% to spec:	
ED FG CHAR EMC Qual vehicle Bill of Material (BOM) Quartati	AEC-0100-000, NOTO Data sheet spec For AEC, AEC-0100-007 For AEC, AEC-0003 SAE J17503 - Radeled	Electrical Tourhoution (ED) To and post HTCI (100Hz)s Fautt Grading (FG) Characteristation (CHAR): Characteristation (CHAR): Colly performed onne technologies and part families and AEC (2003). Compatibility (EM): (see AEC (2010) Appeared for first adapticability, drive on case-by-case basis per customer/NOT agreement)	TEST @ RCH Cok largest > 1.67 FG shall be = or > 90% for oxal units Assembly Site NOP-ATIC.	1			FG-56% not required Report is available upon request	companies with DMGFY Offit within 1-1 sigms or less than 1-15% to spec: Operating tempaties -60°C to +125°C	
FG CHAR EMC Ountries BMC Ountries Ountries Package Generic Data List: 2233544	AEC 0190-000 100 Data interest space For AEC, AEC-000-007 For AEC, AEC-0003 SAE 117533 BAE 117539 Finalistic Emission Finalistic Fin	Electrical TearPaylon (ED) To and post HTCI (100Hrs Faut Crading (FG) Characteristation (CHAR): Only patimized on two stochologies and part families (Electromagnistic Compatibility (EMC)) Leck REC (101D Appeared 5 for test explainably, done on case Appeared to the stochologies and part families (FRC (101D Appeared 5 for test explainably, done on case Appeared to the stochologies (FRC (101D Appeared 5)) The case of the stochologies (FRC (101D Appeared)) The case	TEST @ RCH Cok large(> 1 67 FG shat be = or > 90% for oxel units Assembly Site NSP-ATKL	Pkg Description LQFP 100 14SQ1.4P0.5	0 Mold Description	0 EPOXY Description	FG-56% not required Report is available upon request	Oth within 4-1 signs or less than 4-15% to spec.	
FG CHAR EMC Coat vehicle Bit of Material (BOM) Guartza Fachaga Generic Data List: 233364	AEC-0190-009, NOT Data sheet spec For AEC, AEC-0190-007 For AEC, AEC-0190-007 SAE_1752/3 Emissions FabMass SetTech Global FabTech FabMass FabTech FabMass SetTech	Electrical Districturion (ED) To ad post Info (100) Paul Growing (PG) Paul Growing (PG) College	TEST @ RCH Cok larged 1st FG ghal be = or > 90% for oxel units Assembly Site Assembly Site	Pkg Description LGFP 100 LGPP 100 LGPP 100	0 Mold Description EME - G700SLS	0 EPOXY Description EN4900G*	For-dats not required Playon is evaluate upon request Was Description Down Potics	Oth within 4-1 signs or less than 4-15% to spec.	
FO CHAR CHAR EMC Guart which Bill of Material (BOM) 270862 Package Generic Data List: Guarts # 233564 Diagnosis Data List: Guarts #	AEC0100-009, NOT Data takes spec For MC000-0007 For AECMC-0100-0007 For AEC. AEC-0100-0007 For AEC. AEC. AEC. AEC. AEC. AEC. AEC. AEC.	Beconsol Determination (ED) To and post Info Children Faul Grading (FD) Faul Grading (FD) Faul Grading (FD) Froblet Charl Description (FB) Froblet	TEST (§ RCH Cat stroat > 1.67 FO shalles = or > 50% for over units Assembly Site NOV-ATIC. Assembly Site OOV-ATIC. Operating tempeties -40°C to 1-42°C*C	Pkg Description LGFP 100 LGPP 100 LGPP 100	0 Mold Description EME - G700SLS	0 EPOXY Description EN4900G*	For-dats not required Playon is evaluate upon request Was Description Down Poting	Oth within 4-1 signs or less than 4-15% to spec.	
ED CHAR CHAR EMC Charl shale Bit of Material (BOM) 270862 270862 270862 Discounts # Discounts Bit of Material (BOM) Discounts # Discounts Bit of Material (BOM) Discounts Bit of Material	AEC0100-009, NOT Data belies spec For AECAEC-0100-007 For AECAEC-0100-007 For AECAEC-0100-007 For AECAEC-0100-007 For AECAEC-0100-007 Radiance Emission Radiance R	Electrical Districturion (ED) To and post IPTO, 1000Hzs Faul Grading (FG) To and post IPTO, 1000Hzs Faul Grading (FG) To and post IPTO, 1000Hzs Faul Grading (FG) The Commission (CMAR); The Commission (CMAR); The Commission (CMAR); The Commission (CMAR) The Commiss	TEST (§ RCH Cat stroat > 1.67 FO shall be a or > 50% for over units Assembly Sile Assembly Sile Assembly Sile Operating tempetine -40°C to +109°C -40°C to +109°C -40°C to +109°C	Pkg Description LGFP 100 LGPP 100 LGPP 100	0 Mold Description EME - G700SLS	0 EPOXY Description EN4900G*	For-dats not required Playon is evaluate upon request Was Description Down Poting	Oth within 4-1 signs or less than 4-15% to spec.	
ED FO CHAR EMC Const training Bill of Material (BOM) Genetic 270862 Package Generic Data List: Counts # Cou	AEC0109-009, NOT Data sheet spec For AECAEC-0109-007 For AECAECAECAECAECAECAECAEC	Electrical Districturion (ED) To and post IPTO, 1000Hzs Faul Grading (FG) To and post IPTO, 1000Hzs Faul Grading (FG) To and post IPTO, 1000Hzs Faul Grading (FG) The Commission (CMAR); The Commission (CMAR); The Commission (CMAR); The Commission (CMAR) The Commiss	TEST @ RCH Cas spoot > 1-27 FG shall as out > 50% for controller Assembly Site FOR ARIA. Assembly Site OP ARIA. Assembly Site OP ARIA. Assembly Site APC to 1-25%	Pkg Description LGFP 100 LGPP 100 LGPP 100	0 Mold Description EME - G700SLS	0 EPOXY Description EN4900G*	For-dats not required Playon is evaluate upon request Was Description Down Poting	Oth within 4-1 signs or less than 4-15% to spec.	
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GO FO CHAR EMC CHAR EMC County which Bit of Masterial (BOM) Counting Counting Package Generic Data List: Counting County All Counting County Cou	AEC.0109-009. NOT Data steet spec. For MC., MC-0100-007 For AEC, MC-0100-007 For AEC, MC-0100-007 SER JYTS2/J - Federation Enterties SER JYTS2/J - Federation Enterties FaltMass RefTech. Outer Forunities 7-a7 71 106-471 H009F TH4 Outer Forunities 7-a7 71 006-471 H009F TH4 FaltMass RefTech. Outer Forunities 7-a7 706-471 H009F TH4 Grant Forunities 7-a7 706	Electrical Districturios (ED) To and post Info (District Paul Grading (FD) To and post Info (District Paul Grading (FD) To and post Info (District City portionated on rest instructions and part furnishs and ACL DOSIA. The part of the	TEST @ RCH Cas spool > 1.67 Fis shall be and > 50% for soul case Assembly Sile Assembly Sile	1 Pag Description LOPP 100 LOP	0 Mold Description EME - G700SLS	0 EPOXY Description EN4900G*	For-dats not required Playon is evaluate upon request Was Description Down Poting	Oth within 4-1 signs or less than 4-15% to spec.	
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