TI Information
Selective Disclosure

Automotive New Product Qualification Summary
(As per AEC-Q100 / Q006 and JEDEC Guidelines)

LM2903BQDGKRQ1
Approved 02-Jul-2021

Product Attributes

Attributes	Qual Device: LM2903BQDGKRQ1	QBS Product Reference: LM2903BQDRQ1	QBS Process Reference: LM2904BQDRQ1
Automotive Grade Level	Grade 1	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C	-40 to +125 C
Product Function	Signal Chain	Signal Chain	Signal Chain
Wafer Fab Supplier	CFAB	CFAB	CFAB
Die Revision	A0	A0	B
Assembly Site	HFTFAT	FMX	FMX
Package Type	VSSOP	SOIC	SOIC
Package Designator	DGK	D	D
Ball/Lead Count	8	8	8

- QBS: Qual By Similarity
- Qual Device LM2903BQDGKRQ1 is qualified at LEVEL1-260C

Qualification Results
Data Displayed as: Number of lots / Total sample size / Total failed

	Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: LM2903BQDGKRQ1	QBS Product Reference: LM2903BQDRQ1	QBS Process Reference: LM2904BQDRQ1
Test Group A – Accelerated Environment Stress Tests										
	PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	MSL 1- 260C	3/924/0	-	-
	HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 110C/85%RH	264/hrs @110C	3/240/2 (1)	-	-
	HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 110C/85%RH	528/hrs @110C	3/210/0	-	-

	Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: LM2903BQDGKRQ1	QBS Product Reference: LM2903BQDRQ1	QBS Process Reference: LM2904BQDRQ1
	TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-	-
	TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	1000 Cycles	3/210/0	-	-
	PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	-	-
	HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000/ Hours	3/231/0	-	-
	HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	2000 Hours	3/228/0	-	-
Test Group B – Accelerated Lifetime Simulation Tests										
	HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	300 Hours	1/77/0	3/231/0	-
	ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	1/800/0	3/2400/4 (2)
	EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	-	-
Test Group C – Package Assembly Integrity Tests										
	WBS	C1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	-	-	-	-
	WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	-	-	-	-
	SD	C3	JEDEC JESD22-B102	1	15	Pb Free Surface Mount Solderability	Pb Free/Solderability	1/15/0	-	-
	SD	C3	JEDEC JESD22-B102	1	15	Pb Surface Mount Solderability	Pb Solderability	1/15/0	-	-
	PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	-	3/30/0	-	-
	SBS	C5	AEC Q100-010	3	50	Solder Ball Shear (Cpk>1.67)	Solder Balls	N/A	-	-
	LI	C6	JEDEC JESD22-B105	1	50	Lead Integrity	-	-	-	-
Test Group D – Die Fabrication Reliability Tests										
	EM	D1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements	-	-
	TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements	-	-
	HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	-	-
	NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology	-	-

	Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: LM2903BQDGKRQ1	QBS Product Reference: LM2903BQDRQ1	QBS Process Reference: LM2904BQDRQ1
								Requirements		
	SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	-	-
Test Group E – Electrical Verification Tests										
	HBM	E2	AEC Q100-002	1	3	ESD - HBM - Q100	2000 V	1/3/0	-	-
	CDM	E3	AEC Q100-011	1	3	ESD - CDM - Q100	1500 V	1/3/0	-	-
	LU	E4	AEC Q100-004	1	6	Latch-up	(Per AEC-Q100-004)	1/6/0	-	-
	ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	3/90/0	-	-

A1 (PC): Preconditioning:
Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.

Note (1): fails due to wire bond corrosion. See FA attached to eQDB

Note (2): ELFR fails due to a defect screenable at production test. See 8D attached to eQDB

Ambient Operating Temperature by Automotive Grade Level:
Grade 0 (or E): -40°C to +150°C
Grade 1 (or Q): -40°C to +125°C
Grade 2 (or T): -40°C to +105°C
Grade 3 (or I) : -40°C to +85°C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):
Room/Hot/Cold : HTOL, ED
Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU
Room : AC/uHAST

Green/Pb-free Status:
Qualified Pb-Free(SMT) and Green

TI Qualification ID: 20190802-130791

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