



CLVC125AQPWRG4Q1	MSA00284PWR	SN74LVC07AQPWRSV	SN74LVC32AQPWRG4Q1
CLVC126AQPWRG4Q1	MSA00298PWR	SN74LVC08AQPWRG4HT	SN74LVC32AQPWRQ1
CLVC138AQPWRG4Q1	SN74ALVC00IPWRG4Q1	SN74LVC08AQPWRG4Q1	SN74LVC32AQPWRVS
CLVC139AQPWRG4Q1	SN74ALVC08IPWRG4Q1	SN74LVC08AQPWRQ1	SN74LVC4245AQPWRCT
CLVC157AQPWRG4Q1	SN74ALVC08IPWRQ1	SN74LVC125AQPWRCT	SN74LVC540AQPWRQ1
CLVC244AQPWRG4Q1	SN74LVC00AQPWRG4Q1	SN74LVC125AQPWRQ1	SN74LVC541AQPWRCT
CLVC257AQPWRG4Q1	SN74LVC00AQPWRQ1	SN74LVC138AQPWRQ1	SN74LVC541AQPWRQ1
CLVC374AQPWRG4Q1	SN74LVC02AQPWRG4Q1	SN74LVC139AQPWRQ1	SN74LVC573AQPWRQ1
CLVC540AQPWRG4Q1	SN74LVC02AQPWRQ1	SN74LVC14AQPWRG4Q1	SN74LVC74AQPWRG4Q1
CLVC541AQPWRG4Q1	SN74LVC04AQPWRG4Q1	SN74LVC14AQPWRNS	SN74LVC74AQPWRQ1
CLVC573AQPWRG4Q1	SN74LVC04AQPWRQ1	SN74LVC14AQPWRQ1	SN74LVC86AQPWRG4Q1
CLVC574AIPWRG4MO	SN74LVC06AQPWRG4Q1	SN74LVC157AQPWRQ1	SN74LVC86AQPWRQ1
CLVC574AQPWRG4Q1	SN74LVC07AQPWRM	SN74LVC244AQPWRNS	SN74LVC8T245QPWRQ1
LVC245AQPWRG4HT	SN74LVC07AQPWRG4Q1	SN74LVC244AQPWRQ1	
MSA00149PWR	SN74LVC07AQPWRQ1	SN74LVC245AQPWRHT	

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

### Qualification Report Approved 27-Jan-2022

#### Product Attributes

Attributes	Qual Device: <u>1P8T245QPWRQ1</u>	QBS Process Reference: <u>SN74LVC2G06QDCKRQ1</u>	QBS Process Reference: <u>SN74LVC2G14QDCKRQ1</u>	QBS Package Reference: <u>SN74AC240QPWRSV</u>
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C
Product Function	SL-SL	Logic	Logic	Logic
Wafer Fab Supplier	FFAB	FFAB	FFAB	SFAB
Die Revision	-	D	D	A
Assembly Site	MLA	UTAC-2 (NS-2)	UTAC-2 (NS-2)	MLA
Package Type	TSSOP	SOT	SOT	TSSOP
Package Designator	PW	DCK	DCK	PW
Ball/Lead Count	24	6	6	20

- QBS: Qual By Similarity
- Qual Device 1P8T245QPWRQ1 is qualified at LEVEL1-260CG

#### 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: <u>1P8T245QPWRQ1</u>	QBS Process Reference: <u>SN74LVC2G06QDCKRQ1</u>	QBS Process Reference: <u>SN74LVC2G14QDCKRQ1</u>	QBS Package Reference: <u>SN74AC240QPWRSV</u>
<b>Test Group A – Accelerated Environment Stress Tests</b>										
PC	A1	JEDEC J-STD-020	3	77	Automotive Preconditioning	Level 1-260C	No Fails	No Fails	No Fails	No Fails

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: 1P8T245QP WRQ1	QBS Process Reference: SN74LVC2G06QD CKRQ1	QBS Process Reference: SN74LVC2G14QD CKRQ1	QBS Package Reference: SN74AC240QP WRSV
		JESD 22-A113			Level 1					
HAST	A2	JEDEC JESD 22-A110	3	77	Biased HAST, 130C/85% RH	96 Hours	1/77/0	2/154/0	1/77/0	3/231/0
AC	A3	JEDEC JESD 22-A102	3	77	Autoclave 121C	96 Hours	1/77/0	2/154/0	1/77/0	3/231/0
TC	A4	JEDEC JESD 22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	1/77/0	2/154/0	1/77/0	3/231/0
TC-BP	A4	MIL-STD883 Method 2011	1	60	Post Temp. Cycle Bond Pull	Wires	1/5/0	1/5/0	-	-
PTC	A5	JEDEC JESD 22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	-	-	-
HTSL	A6	JEDEC JESD 22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	1/45/0	-	-	3/135/0
HTSL	A6	JEDEC JESD 22-A103	1	45	High Temp Storage Bake 175C	500 Hours	-	2/90/0	1/45/0	-
<b>Test Group B – Accelerated Lifetime Simulation Tests</b>										
HTOL	B1	JEDEC JESD 22-A108	3	77	Life Test, 150C	408 Hours	-	2/154/0	1/77/0	-
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 150C	24 Hours	-	2/1600/0	1/800/0	-
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	-	-	-

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: 1P8T245QP WRQ1	QBS Process Reference: SN74LVC2G06QD CKRQ1	QBS Process Reference: SN74LVC2G14QD CKRQ1	QBS Package Reference: SN74AC240QP WRSV
<b>Test Group C – Package Assembly Integrity Tests</b>										
WBS	C1	AEC Q100-001	1	30	Auto Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	1/30/0	-	-	3/90/0
WBP	C2	MIL-STD883 Method 2011	1	30	Auto Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	1/30/0	-	-	3/90/0
SD	C3	JEDEC JESD 22-B102	1	15	Surface Mount Solderability	Pb	1/15/0	-	-	2/30/0
SD	C3	JEDEC JESD 22-B102	1	15	Surface Mount Solderability	Pb Free	1/15/0	-	-	2/30/0
PD	C4	JEDEC JESD 22-B100 and B108	3	10	Auto Physical Dimensions	Cpk>1.67	1/30/0	-	-	-
LI	C6	JEDEC JESD 22-B105	1	50	Lead Pull	Wires	-	-	-	2/44/0
<b>Test Group D – Die Fabrication Reliability Tests</b>										
EM	D1	JESD 61	-	-	Electromigration	-	Completed Per Process Technology Requirements	-	-	-
TDDB	D2	JESD 35	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements	-	-	-
HCI	D3	JESD 60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	-	-	-
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements	-	-	-

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>1P8T245QP</u> <u>WRQ1</u>	QBS Process Reference: <u>SN74LVC2G06QD</u> <u>CKRQ1</u>	QBS Process Reference: <u>SN74LVC2G14QD</u> <u>CKRQ1</u>	QBS Package Reference: <u>SN74AC240QP</u> <u>WRSV</u>
SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	-	-	-
<b>Test Group E – Electrical Verification Tests</b>										
HBM	E2	AEC Q100-002	1	3	ESD - HBM	2000 V	-	2/6/0	1/3/0	-
CDM	E3	AEC Q100-011	1	3	ESD - CDM	1000 V	-	2/6/0	1/3/0	-
ED	E5	AEC Q100-009	3	30	Auto Electrical Distributions	Cpk>1.67	3/90/0	-	-	3/90/0

**A1 (PC): Preconditioning:**

Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.

**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

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

### Q006 Qualification of UBOM for TSSOP Devices

Approved 27-Jan-2022

#### Product Attributes

Attributes	Qual Device: <u>1P8T245QPWRQ1</u>	QBS Package Reference: <u>SN74AC240QPWRSV</u>
Automotive Grade Level	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C
Product Function	SL-SL	Logic
Wafer Fab Supplier	FFAB	SFAB
Die Revision	-	A
Assembly Site	MLA	MLA
Package Type	TSSOP	TSSOP
Package Designator	PW	PW

<b>Attributes</b>	<b>Qual Device:</b> <u>1P8T245QPWRQ1</u>	<b>QBS Package Reference:</b> <u>SN74AC240QPWRSV</u>
<b>Ball/Lead Count</b>	24	20

- QBS: Qual By Similarity

### 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: <u>1P8T245QPWRQ1</u>	QBS Package Reference: <u>SN74AC240QPWRSV</u>
<b>Test Group A – Accelerated Environment Stress Tests</b>								
PC	A1	-	3	22	SAM Analysis, Pre Stress	Completed	1/22/0	3/66/0
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 1-260C	No fails	No fails
PC	A1	-	3	22	SAM Analysis, Post Stress	Completed	1/22/0	3/66/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	1/77/0	3/231/0
HAST	A2	-	3	1	Cross Section, Post bHAST 96 Hours	Completed	1/1/0	-
HAST	A2	-	3	30	Wire Bond Shear, Post bHast, 96 Hours	Wires	1/30/0	-
HAST	A2	-	3	30	Bond Pull over Stitch, post bHAST, 96 Hours	Wires	1/30/0	-
HAST	A2	-	3	30	Bond Pull over Ball, Post bHAST, 96 Hours	Wires	1/30/0	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	192 Hours	1/77/0	3/231/0
HAST	A2	-	3	1	Cross Section, Post bHAST 192 Hours	Completed	1/22/0	-
HAST	A2	-	3	22	SAM Analysis, Post bHAST, 192 Hours	Completed	1/22/0	3/66/0
HAST	A2	-	3	30	Wire Bond Shear, Post bHast, 192 Hours	Wires	1/30/0	-
HAST	A2	-	3	30	Bond Pull over Stitch, post bHAST, 192 Hours	Wires	1/30/0	-
HAST	A2	-	3	30	Bond Pull over Ball, Post bHAST, 192 Hours	Wires	1/30/0	-
TC	A4	JEDEC JESD22-A104 and	3	77	Temperature Cycle, -65/150C	500 Cycles	1/77/0	3/231/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>1P8T245QPWRQ1</u>	QBS Package Reference: <u>SN74AC240QPWRSV</u>
		Appendix 3						
TC	A4	-	3	1	Cross Section, Post T/C 500 Cycles	Completed	3/3/0	3/3/0
TC	A4	-	3	22	SAM Analysis, Post T/C, 500 Cycles	Completed	1/22/0	3/66/0
TC	A4	-	3	30	Wire Bond Shear, Post T/C 500 Cycles	Wires	1/30/0	3/90/0
TC	A4	-	3	30	Bond Pull over Stitch Post T/C 500 Cycles	Wires	1/30/0	3/90/0
TC	A4	-	3	30	Bond Pull over Ball Post T/C 500 Cycles	Wires	1/30/0	3/90/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	1000 Cycles	1/77/0	3/210/0
TC	A4	-	3	1	Cross Section, Post T/C 1000 Cycles	Completed	1/1/0	3/3/0
TC	A4	-	3	22	SAM Analysis, Post T/C, 1000 Cycles	Completed	1/22/0	3/66/0
TC	A4	-	3	30	Wire Bond Shear, Post T/C 1000 Cycles	Wires	1/30/0	3/90/0
TC	A4	-	3	30	Bond Pull over Stitch, Post T/C, 1000 Cycles	Wires	1/30/0	3/90/0
TC	A4	-	3	30	Bond Pull over Ball, Post T/C, 1000 Cycles	Wires	1/30/0	3/90/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle -40/125C	1000 Cycles	N/A	N/A
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle -40/125C	2000 Cycles	N/A	N/A
HTSL	A6	JEDEC JESD22-A103	3	45	High Temp Storage Bake 150C	1000 Hours	1/45/0	3/135/0
HTSL	A6	-	3	1	Cross Section, Post HTSL 1000 Hours	Completed	1/1/0	-
HTSL	A6	JEDEC JESD22-A103	3	44	High Temp Storage Bake 150C	2000 Hours	3/132/0	3/132/0
HTSL	A6	-	3	1	Cross Section, Post HTSL 2000 Hours	Completed	1/1/0	-
<b>Test Group C – Package Assembly Integrity Tests</b>								
WBS	C1	AEC Q100-001	3	30	Wire Bond Shear, Cpk>1.67	Wires	1/30/0	3/90/0
WBP	C2	MIL-STD883	3	30	Bond Pull over Ball,	Wires	1/30/0	3/90/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>1P8T245QPWRQ1</u>	QBS Package Reference: <u>SN74AC240QPWRSV</u>
		Method 2011			Cpk >1.67			

**A1 (PC): Preconditioning:**

Performed for THB, Biased HAST, AC, uHAST & TC samples, as applicable.

**Ambient Operating Temperature by Automotive Grade Level:**

Grade 0 (or E): -40C to +150C

Grade 1 (or Q): -40C to +125C

Grade 2 (or T): -40C to +105C

Grade 3 (or I) : -40C to +85C

**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

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