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DATE: <i>April 2023</i>	QUALIFICATION REPORT	PAGE: 1/6
	In accordance with PD2-03: GENERAL PRINCIPLES OF QUALIFICATION	

Product:

EV12AQ60xA - Quad 12bit 1.6Gbps

Qualification status: **Accepted** **Pending** **Rejected**

This product has met all Teledyne e2v Grenoble qualification requirements.

Item	Qualified products	Package	Temperature range	Screening level
1	EV12AQ600ACSH	CBCGA 323	Tc 0°C, Tj +90°C	Standard
2	EV12AQ605ACSH	CBCGA 323	Tc 0°C, Tj +90°C	Standard
3	EV12AQ600AVSH	CBCGA 323	Tc -40°C, Tj +110°C	Standard
4	EV12AQ605AVSH	CBCGA 323	Tc -40°C, Tj +110°C	Standard
5	EV12AQ600AMSH	CBCGA 323	Tc -55°C, Tj +125°C	Standard
6	EV12AQ600AMGH	CBCGA 323	Tc -55°C, Tj +125°C	Standard
7	EV12AQ600AMGH9NB1	CBCGA 323	Tc -55°C, Tj +125°C	ESCC 9000
8	EV12AQ600AMGH-Y	CBCGA 323	Tc -55°C, Tj +125°C	MIL-PRF-38535
9	EV12AQ600ACSH-ADX4	CBCGA 323	Tc 0°C, Tj +90°C	Standard
10	EV12AQ605ACSH-ADX4	CBCGA 323	Tc 0°C, Tj +90°C	Standard
11	EV12AQ600AVSH-ADX4	CBCGA 323	Tc -40°C, Tj +110°C	Standard
12	EV12AQ605AVSH-ADX4	CBCGA 323	Tc -40°C, Tj +110°C	Standard
13	EV12AQ600AMSH-ADX4	CBCGA 323	Tc -55°C, Tj +125°C	Standard
14	EV12AQ600AMGH-ADX4	CBCGA 323	Tc -55°C, Tj +125°C	Standard
15	EV12AQ600AMGH9NB1-ADX4	CBCGA 323	Tc -55°C, Tj +125°C	ESCC 9000
16	EV12AQ600AMGH-Y-ADX4	CBCGA 323	Tc -55°C, Tj +125°C	MIL-PRF-38535
17	EV12AQ600ACUH	CBCGA 323	Tc 0°C, Tj +90°C	Standard
18	EV12AQ600AMUH	CBCGA 323	Tc -55°C, Tj +125°C	Standard
19	EV12AQ605AVUH	CBCGA 323	Tc -40°C, Tj +110°C	Standard
20	EV12AQ600ACUH-ADX4	CBCGA 323	Tc 0°C, Tj +90°C	Standard
21	EV12AQ600AVUH-ADX4	CBCGA 323	Tc -40°C, Tj +110°C	Standard
22	EV12AQ600AMUH-ADX4	CBCGA 323	Tc -55°C, Tj +125°C	Standard
23	EV12AQ605ACUH-ADX4	CBCGA 323	Tc 0°C, Tj +90°C	Standard
24	EV12AQ605AVUH-ADX4	CBCGA 323	Tc -40°C, Tj +110°C	Standard

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<i>Die information:</i>		
Die size: 6.21 mm x 8.27 mm (51.35 mm²)	P. dissipated in Watt: 6.65 W typical in reduced swing	Mask: VO03A
Wafer fab: ST Microelectronics (France)	Process: ST BICMOS9	Technology: 130 nm

<i>Package information:</i>		
Outline: 16 x 16 mm	Pitch: 0.8 mm	Solder ball composition: SAC305 / 90Pb 10Sn
Assy plant: e2v (Grenoble)	Moisture sensitivity level: MSL3	Max. peak reflow: 245°C

<i>Qualification batch information :</i>				
Mask :	Diffusion lot :	Assy lot ID :	Date Code :	Item
VO03A	J710JSG	990007182	1844	Covered by Item 1, 2, 3, 4, 5, 6
		660361973	1923	Covered by item 1, 2, 3, 4, 5, 6
		660361973	1931	Covered by item 7, 8
	J909YNN	660620898	2229	Covered by item 17, 18, 19

Authorized Signature:	Carine NIKITINE <i>HRS Quality Officer</i>		April 28th, 2023
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Tests for Standard Qualification:

TEST	Acceptable criteria	METHOD	Condition	Sample	Fail	Status
Construction analysis	<i>ST BICMOS9 specifications</i>	MIL-STD-883 TM2010.14 ESA/SCC Basic Specification N° 21400		3 dice	0	<i>Pass</i>
ESD HBM	<i>ATE program</i>	JS-001 3 devices ok: 1000V & 3 devices ok : 2000V		6	0	<i>Pass</i>
ESD CDM	<i>ATE program</i>	JS-001 3 devices ok: 250V & 3 devices ok : 500V		6	0	<i>Pass</i>
LATCH UP	<i>ATE program</i>	JS-002	<i>Class I</i>	4	0	<i>Pass</i>
Operating Life Test	<i>ATE program</i>	JESD22-A108 500 Hrs / Tj 140°C 1000 Hrs / Tj 140°C 2000 Hrs / Tj 140°C		22	0	<i>Pass</i>
Mechanical tests						
External Visual Inspection		MIL-STD-883 TM 2009				
Electrical test		ATE program				
Pre-conditioning MSL3		JSTD020 Temperature humidity 30°C 60%RH, 192Hrs				
External Visual Inspection		MIL-STD-883 TM 2009				
Electrical test		ATE program				
Deballing						
Electrical test		ATE program				
Mechanical shock		MIL-STD-883 TM 2002.5 cond B. 5x(6 axis : pulse duration 0.5 ms/1500 g)		22	0	<i>Pass</i>
External Visual Inspection		MIL-STD-883 TM2009				
Vibration		MIL-STD-883 TM 2007.3 cond A 4x(3 axis: 20 to 2000 Htz/20 G/4 min mini)				
External Visual Inspection		MIL-STD-883 TM 2009				
Electrical test		ATE program				
UHAST						
External Visual Inspection		MIL-STD-883 TM 2009				
Electrical test		ATE program				
Pre-conditioning MSL3		JSTD020 Temperature humidity 30°C 60%RH, 192Hrs		22	0	<i>Pass</i>
External Visual Inspection		MIL-STD-883 TM 2009				
Electrical test		ATE program				
UHAST		JESD22-A118 cond. A 130°C/85% RH, 96Hrs				
External Visual Inspection		MIL-STD-883 TM2009				
Electrical test		ATE program				
THB						
External Visual Inspection		MIL-STD-883 TM 2009				
Electrical test		ATE program				
Pre-conditioning MSL3		JSTD020 Temperature humidity 30°C 60%RH, 192Hrs		22	0	<i>Pass</i>
External Visual Inspection		MIL-STD-883 TM 2009				
Electrical test		ATE program				

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THB	External Visual Inspection Electrical test	JESD22-A101 cond. A <i>85°C/85% RH, 1000Hrs</i> MIL-STD-883 TM2009 ATE program			
Temperature Cycling	External Visual Inspection Electrical test	MIL-STD-883 TM 2009 ATE program			
Pre-conditioning MSL3		JSTD020 <i>Temperature humidity 30°C 60%RH, 192Hrs</i>	22	0	Pass
TC	External Visual Inspection Electrical test	MIL-STD-883 TM 2009 ATE program MIL-STD-883 TM1010 <i>-55°C/+125°C, 1800 cycles</i>			
	External Visual Inspection Electrical test	MIL-STD-883 TM2009 ATE program			

Additional qualifications have been made for new substrate (article number 107834) :

TEST	<i>Acceptable criteria</i>	METHOD	<i>Condition</i>	Sample	Fail	Status
Mechanical tests	External Visual Inspection Electrical test	MIL-STD-883 TM 2009 ATE program				
Pre-conditioning MSL3		JSTD020 <i>Temperature humidity 30°C 60%RH, 192Hrs</i>				
	External Visual Inspection Electrical test	MIL-STD-883 TM 2009 ATE program				
	Deballing Electrical test	ATE program	22	0	Pass	
Mechanical shock		ATE program MIL-STD-883 TM 2002.5 cond B. <i>5x(6 axis : pulse duration 0.5 ms/1500 g)</i>				
Vibration	External Visual Inspection	MIL-STD-883 TM2009 MIL-STD-883 TM 2007.3 cond A <i>4x(3 axis: 20 to 2000 Htz/20 G/4 min mini)</i>				
	External Visual Inspection Electrical test	MIL-STD-883 TM 2009 ATE program				
Temperature Cycling	External Visual Inspection Electrical test	MIL-STD-883 TM 2009 ATE program				
Pre-conditioning MSL3		JSTD020 <i>Temperature humidity 30°C 60%RH, 192Hrs</i>	22	0	Pass	
TC	External Visual Inspection Electrical test	MIL-STD-883 TM 2009 ATE program MIL-STD-883 TM1010 <i>-55°C/+125°C, 500 cycles</i>				
	External Visual Inspection Electrical test	MIL-STD-883 TM2009 ATE program				

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Tests for Spatial Qualification:

TEST	METHOD	Sample	Fail	Status
<i>Acceptable criteria</i>	<i>Condition</i>			
Operating Life Test <i>ATE program</i>	JESD22-A108 500 Hrs / Tj 140°C 1000 Hrs / Tj 140°C 2000 Hrs / Tj 140°C	22	0	Pass
Physical Dimension	MIL-STD-883 TM 2016	15	0	Pass
Solderability Solderability	MIL-STD-883 TM 2003 solder temperature +245°C +-5°C	3	0	Pass
Ball shear test	JESD22-B117 45 balls from 2 devices	2		
Environmental tests External Visual Inspection Electrical test Pre-conditioning MSL3	MIL-STD-883 TM 2009 ATE program JSTD020 Temperature humidity 30°C 60%RH, 192Hrs			
External Visual Inspection Electrical test Thermal shock	MIL-STD-883 TM 2009 ATE program MIL-STD-883 TM 1011 cond. B (15 cycles -55°C/+125°C)	16	0	Pass
Temperature cycling Unbiased HAST	MIL-STD-883 TM 1010 cond. C (100 cycles -65°C/+150°C) JESD22 A118, cond. A (130°C, 85% RH, 96h)			
External Visual Inspection Electrical test	MIL-STD-883 TM 2009 ATE program			
Mechanical tests External Visual Inspection Simulation of ball attach Electrical test Pre-conditioning MSL3	MIL-STD-883 TM 2009 ATE program JSTD020 Temperature humidity 30°C 60%RH, 192Hrs			
External Visual Inspection Electrical test	MIL-STD-883 TM 2009 ATE program	18	0	Pass
Electrical test Mechanical shock	ATE program MIL-STD-883 TM 2002.5 cond B. 5x(6 axis : pulse duration 0.5 ms/1500 g)			
External Visual Inspection Vibration	MIL-STD-883 TM2009 MIL-STD-883 TM 2007.3 cond A 4x(3 axis: 20 to 2000 Htz/20 G/4 min mini)			
External Visual Inspection Electrical test	MIL-STD-883 TM 2009 ATE program			
Salt Atmosphere External Visual Inspection Salt atmosphere	MIL-STD-883 TM 2010 TM 1009 cond. A (24h)	15	0	Pass
External Visual Inspection	MIL-STD-883 TM 2010			
Temperature Cycling External Visual Inspection	MIL-STD-883 TM 2009	22	0	Pass

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CSAM T0 Pre-conditioning MSL3	Electrical test	ATE program MIL-STD-883 TM 2030 JSTD020 <i>Temperature humidity 30°C 60%RH, 192h, 3x reflow 235°C peak temperature</i>			
	External Visual Inspection	MIL-STD-883 TM 2009			
CSAM T1 TC	Electrical test	ATE program MIL-STD-883 TM 2030 MIL-STD-883 TM1010 <i>-55°C/+125°C, 1000 cycles</i>			
TC	Electrical test	ATE program MIL-STD-883 TM1010 <i>-55°C/+125°C, 400 cycles</i>			
TC	Electrical test	ATE program MIL-STD-883 TM1010 <i>-55°C/+125°C, 400 cycles</i>			
	Electrical test	ATE program			
	External Visual Inspection	MIL-STD-883 TM2009			
	Electrical test	ATE program			

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