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	<i>This document specifies that referenced product(s) is(are) compliant to</i> PGQ 15: GENERAL PRINCIPLES OF QUALIFICATION	

PRODUCT DESCRIPTION	E2V PART-NUMBER	PACKAGE	Temp. range	Screening level
12-bit 3Gsps MuxDAC	EV12DS130AMLG9NB1	CLGA 255	-55°C < Tc Tj < 125°C	ESCC 9000
	EV12DS130AMGS9NB1	CI-CGA 255		
	EV12DS130AMGC9NB1	CCGA 255		

QUALIFICATION STATUS	<input checked="" type="checkbox"/> ACCEPTED	<input type="checkbox"/> PENDING	<input type="checkbox"/> REJECTED
<i>Products listed above have met all requirements of PGQ15</i>			

DICE INFORMATION	Wafer fab	INFINEON - Regensburg (Germany)
	Process	B7HF200
	Technology	200Ghz SiGe Bipolar
	Mask	VN15A
	Die size	4.58 x 4.58 mm (21 mm ²)
	Die thickness	300 µm
	Passivation	SiO2 (0.3 µm) & SiN (0.55 µm)
	Last metallization layer	Au (500nm) / Pt (60nm) / Ti (60nm)
PACKAGE INFORMATION	Outline	21 x 21 mm
	Pitch	1.27 mm
	Die attach material	JM7000
	Wire	Au 23 µm
	Lid	COMBO HIREL OD .645SQ
	Marking ink	Markem 4489 black
	LG	CLGA 255 - Au pad termination
	GS	CI-CGA 255 - Solder column interposer Pb 90 / Sn 10
	GC	CCGA 255 - Cu spiral column Pb 80 / Sn 20
ASSEMBLY LOCATION	e2v semiconductors - St Egrève - France	
TEST LOCATION		

Authorized Signature	Validation Date (Last update)
Christian CARMONA Semiconductors Quality Officer & DLA point of contact 	January 20th 2016

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QUALIFICATION BATCH INFORMATION			
Mask VN15A	Diffusion lot RU039535	Assy lot ID / WO 9971861 / 91163	Date Code 1130

TEST	METHODE	COND	DESCRIPTION	Qualif. sample	Σ (1)		
Construction analysis	MIL-STD-883 TM2018 ESA/SCC N°21400		8 dice from RU039535 diff lot	Pass	All diffusion lot		
ESD HBM	JESD22-A114E	>1000V	Class 1C	3(0)	-		
LATCH UP	JEDEC 78B		Class I Class II	6(0) 6(0)	- -		
HTOL Test	MIL-STD-883 TM1005		4000Hrs / Tj 156°C 2000Hrs / 156°C 500Hrs / Tj 156°C	15(0) 15(0) 45(0)	0 95(0) 0		
Reflow simulation	J-STD-020D	3x	SnPb profil peak >220°C	6 (0)	12 (0)		
Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.					
Interm. electrical	Device specification						
Reflow simulation	J-STD-020D	2x	SnPb profil peak >220°C				
Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.					
Interm. & End-point elect.	Device specification						
Temperature cycling	MIL STD 883 TM1010	C.	100cy	6 (0)	12(0)		
Thermal shock	MIL STD 883 TM1011	C. 100cy	-65°C/2min then +150°C/2min				
Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.					
Temp. cycling	MIL STD 883 TM1010	C.	400cy				
Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.					
External visual inspection	ESCC 20500						
End-point elect.	Device specification						
DPA	Internal inspection		wire loops & pad intermetallic				
Mechanical Shock	MIL STD 883 TM 2002	B. 5x	5x6 axis: duration of pulse 0.5ms/1500g			6 (0)	12(0)
Vibration	MIL STD 883 TM 2007	A. 12x	3 axis: 20-2000 Htz/20G/4min				
Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.					
External visual inspection	ESCC 20500						
Intermediate-point elect.	Device specification						
Mechanical Shock	MIL STD 883 TM 2002	B. 45x	5x6 axis: duration of pulse 0.5ms/1500g				
Vibration	MIL STD 883 TM 2007	A. 108x	3 axis: 20-2000 Htz/20G/4min				
Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.					
External visual inspection	ESCC 20500						
End-point elect.	Device specification						

⁽¹⁾ Σ corresponds to cumulative tests done on same product family

RELIABILITY REPORT Cumulative EFR & LFR	Equivalent Tj Tj 125°C	Nb components hours 2 586 377	Nb failure 0	Activation Energy 0.7 eV
e2v Calculation	For Tj 125°C	Confidence level: 60 %	LFR = 369 FIT	MTTF = 2 822 016 Hrs (322 Years)
Extrapolation with ARRHENIUS law	For Tj 110°C	Confidence level: 60 %	LFR = 160 FIT	MTTF = 6 269 043 Hrs (716 Years)
	For Tj 90°C	Confidence level: 60 %	LFR = 50 FIT	MTTF = 20 135 112 Hrs (2319 Years)

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PRODUCT FAMILY INFORMATION (for cumulative calculation)			
Mask	Product family	Description	Package
VN15A	EV10DS130A	10bit 3GspS MuxDAC	CLGA255 / CI-CGA255 / CCGA255
VN15A	EV12DS130A	12bit 3GspS MuxDAC	CLGA255 / CI-CGA255 / CCGA255
VN41A	EV10AS180A	10bit 1.5GspS ADC	CLGA255 / CI-CGA255 / CCGA255

LAT Sub.	TEST	METHODE	COND	DESCRIPTION	LAT-QCI sample ⁽¹⁾	Σ ⁽²⁾
LAT3 B1	Resistance to solvents	MIL-STD-883 TM2015			3(0)	9(0)
	Permanence of marking	ESCC 24800			2(0)	20(0)
LAT3 B2	Internal visual inspection	MIL-STD-883 TM2010			4(0)	19(0)
	Bond strength	MIL-STD-883 TM2011		22 bonds x 4 devices	44(0)	360(0)
	Bond shear	ASTM-F1269-06		10 bonds x 4 devices	40(0)	360(0)
	Substrate attach strength	MIL-STD-883 TM2027			3(0)	18(0)
LAT3 B3	Solderability	MIL-STD-883 TM2003			3(0)	7(0)
		JESD22-B102E			3(0)	9(0)
LAT3 B4	Solder column pull test	MIL-STD-883 TM2038		45 columns from 2 parts	48(0)	144(0)
LAT2 C	HTOL Test	MIL-STD-883 TM1005		4000Hrs / Tj 156°C	15(0)	0
				2000Hrs / 156°C	15(0)	195(0)
				500Hrs / Tj 156°C	45(0)	0
	Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.		100%(0)	100%(0)
External visual inspection	MIL-STD-883 TM2009					
Interm. & End-point elect.	Device specification					
D1	Physical dimensions	MIL-STD-883 TM2016		Included in screening	100%(0)	100%(0)
LAT1 D3	Thermal shock	MIL-STD-883 TM1011	C. 15cy		15(0)	128(0)
	Temperature cycling	MIL-STD-883 TM1010	C. 100cy			
	Moisture resistance	MIL-STD-883 TM1004				
	Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.			
	External visual inspection	MIL-STD-883 TM2009				
	End-point electrical	Device specification				
LAT1 D4	Mechanical shock	MIL-STD-883 TM2002	B.		15(0)	128(0)
	Vibration	MIL-STD-883 TM2007	A.			
	Constant acceleration	MIL-STD-883 TM2001	D. Y1			
	Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.			
	External visual inspection	MIL-STD-883 TM2009				
	End-point electrical	Device specification				
D5	Salt atmosphere	MIL-STD-883 TM1009	A.		15(0)	15(0)
	External visual inspection	MIL-STD-883 TM2009				
	Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.			
D6	Internal water vapor test	MIL-STD-883 TM1018		Monitoring	3(0)	-
D9	Soldering heat	MIL-STD-883 TM2036			3(0)	3(0)
	Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.			
	External visual inspection	MIL-STD-883 TM2009				
	End-point electrical	Device specification				

(1) LAT & QCI tests done on EV12DS130A devices

(2) cumulative LAT & QCI tests done on same product family