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DATE: Janv. 2017	<b>QUALIFICATION REPORT</b>	PAGE: 1 / 3
	<i>This document specifies that referenced product(s) is(are) compliant to MIL-PRF-38535 Class V requirements</i>	

PRODUCT DESCRIPTION	E2V PART-NUMBER	STANDARD MICROCIRCUIT DRAWING
12-bit 3GspS MuxDAC	EV12DS130BMLG-V	5962-1522202VXC
	EV12DS130BMGS-V	5962-1522202VYF
	EV12DS130BMGC-V	5962-1522202VZF

<b>QUALIFICATION STATUS</b> <input checked="" type="checkbox"/> ACCEPTED <input type="checkbox"/> PENDING <input type="checkbox"/> REJECTED <i>Products listed above have met all requirements of MIL-PRF-38535.</i>
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DICE INFORMATION	Wafer fab	INFINEON - Regensburg (Germany)
	Process	B7HF200
	Technology	200Ghz SiGe Bipolar
	Mask	VN54B
	Die size	5.04 mm x 4.67 mm (23.54 mm <sup>2</sup> )
	Die thickness	300 µm
	Passivation	SiO <sub>2</sub> (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
	case outline LG / X	CLGA 255 - Au pad termination
	case outline GS / Y	CI-CGA 255 - Solder column interposer Pb 90 / Sn 10
case outline GC / Z	CCGA 255 - Cu spiral column Pb 80 / Sn 20	
ASSEMBLY LOCATION	e2v semiconductors - St Egrève - France	
TEST LOCATION		

Authorized Signature	Validation Date (Last update)
<b>Christian CARMONA</b> Semiconductors Quality Officer & DLA point of contact 	January 18 <sup>th</sup> 2017

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DATE: Janv. 2017	<b>QUALIFICATION REPORT</b>	PAGE: 2 / 3
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QUALIFICATION BATCH INFORMATION			
Mask VN54B	Diffusion lot RU349519	Assy lot ID / WO 99000041 / 990000833	Date Code 1433

TEST	METHODE	COND	DESCRIPTION	Qualif. sample	$\Sigma$ (1)
Construction analysis	MIL-STD-883 TM2018 ESA/SCC N°21400		8 dice from RU349519 diff lot	Pass	All diffusion lot
ESD HBM	JESD22-A114E	>1000V	Class 1C	5(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	25(0)	-
Reflow simulation	J-STD-020D	3x	SnPb profil peak >220°C	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			0	12(0)
Temperature cycling	MIL STD 883 TM1010	C.	100cy		
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		
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				

<sup>(1)</sup>  $\Sigma$  corresponds to cumulative tests done on same product family

RELIABILITY REPORT <i>Cumulative LFR on B7HF200 technology</i>	Equivalent Tj Tj 125°C	Nb components hours 3 408 235	Nb failure 0	Activation Energy 0.7 eV
e2v Calculation	For Tj 125°C	Confidence level: 60 %	LFR = 268 FIT	MTTF = 3 718 751 Hrs (425 Years)
Extrapolation with ARRHENIUS law	For Tj 110°C	Confidence level: 60 %	LFR = 121 FIT	MTTF = 8 261 120 Hrs (943 Years)
	For Tj 90°C	Confidence level: 60 %	LFR = 38 FIT	MTTF = 26 533 328 Hrs (3029 Years)

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PRODUCT FAMILY INFORMATION (for cumulative calculation)			
Mask	Product family	Description	Package
VN15A	EV10DS130A	10bit 3Gsp MuxDAC	CLGA255 / CI-CGA255 / CCGA255
VN15A	EV12DS130A	12bit 3Gsp MuxDAC	CLGA255 / CI-CGA255 / CCGA255
VN54B	EV12DS130B	12bit 3Gsp MuxDAC	CLGA255 / CI-CGA255 / CCGA255
VN41A	EV10AS180A	10bit 1.5Gsp ADC	CLGA255 / CI-CGA255 / CCGA255

LAT Sub.	TEST	METHODE	COND	DESCRIPTION	LAT-QCI sample <sup>(1)</sup>	Σ (2)
LAT3 B1	Resistance to solvents Permanence of marking	MIL-STD-883 TM2015 ESCC 24800			2 3	26(0) 9(0)
LAT3 B2	Internal visual inspection	MIL-STD-883 TM2010			4(0)	31(0)
	Bond strength	MIL-STD-883 TM2011		22 bonds x 4 devices	88(0)	624(0)
	Bond shear	ASTM-F1269-06		10 bonds x 4 devices	40(0)	480(0)
	Substrate attach strength	MIL-STD-883 TM2027			3(0)	27(0)
LAT3 B3	Solderability	MIL-STD-883 TM2003 JESD22-B102E			-	4(0) 12(0)
LAT3 B4	Solder column pull test	MIL-STD-883 TM2038		45 columns from 2 parts	-	96(0)
LAT2 C	HTOL Test	MIL-STD-883 TM1005		2000Hrs / 156°C	22(0)	148(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		16(0)	143(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.		16(0)	143(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.		-	23(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)	9(0)
D9	Soldering heat	MIL-STD-883 TM2036			-	3(0)
	Seal (fine & gross leaks)	MIL-STD-883 TM1014	A. & C.			
	External visual inspection	MIL-STD-883 TM2009				
	End-point electrical	Device specification				

<sup>(1)</sup> LAT & QCI tests done on EV12DS130B devices

<sup>(2)</sup> cumulative LAT & QCI tests done on same product family