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ELECTRO-OPTICAL AND MECHANICAL RESULTS SHEET CCD231-84, BI, 4k x 4k, NIMO, FOUR OUTPUT	DAS761341AS-1 Version 3 Sheet 1 of 2

Associated Documents: Data Sheet CCD231-84 BI NIMO, A1A-765136
CCD231-84 Test Plan : CCD231-84-E2V-PL-001

Device Serial Number	08123-18-01	Tester (Initials & No.)	RAB 0356	Date	04/03/2009
Device Type	CCD231-84-*-E06	Connector I.D. Number	022	Grade	0

All test performed at 173K, on output E, at 500 kHz and in mode-1 unless stated otherwise

TEST		RESULT	LIMITS	PASS / FAIL	UNITS
Amplifier Responsivity 500 kHz (mode-1)	OS-E	7.27	5.0 min	PASS	µV/e⁻
	OS-F	7.80	5.0 min	PASS	µV/e⁻
	OS-G	7.53	5.0 min	PASS	µV/e⁻
	OS-H	7.39	5.0 min	PASS	µV/e⁻
Amplifier Responsivity 500 kHz (mode-2)	OS-E	2.18	-	FIO	µV/e⁻
	OS-F	2.33	-	FIO	µV/e⁻
	OS-G	2.25	-	FIO	µV/e⁻
	OS-H	2.21	-	FIO	µV/e⁻
Amplifier Responsivity 50 kHz (mode-1)	OS-E	7.44	-	FIO	µV/e⁻
	OS-F	7.89	-	FIO	µV/e⁻
	OS-G	7.69	-	FIO	µV/e⁻
	OS-H	7.59	-	FIO	µV/e⁻
Noise 500 kHz	OS-E	4.6	-	FIO	rms e⁻
	OS-F	5.9	-	FIO	rms e⁻
	OS-G	4.8	-	FIO	rms e⁻
	OS-H	5.0	-	FIO	rms e⁻
Noise 50 kHz	OS-E	1.9	3.0 max	PASS	rms e⁻
	OS-F	2.5	3.0 max	PASS	rms e⁻
	OS-G	2.0	3.0 max	PASS	rms e⁻
	OS-H	2.1	3.0 max	PASS	rms e⁻
Output Node Capacity	OS-E	353	-	FIO	ke
	OS-F	325	-	FIO	ke
	OS-G	313	-	FIO	ke
	OS-H	310	-	FIO	ke
Max Non-Linearity (betweeen 10% and 80% of node capacity)	OS-E	0.8	3.0 max	PASS	%
	OS-F	0.7	3.0 max	PASS	%
	OS-G	0.5	3.0 max	PASS	%
	OS-H	0.6	3.0 max	PASS	%
Full Well/Blooming Limit (mode-2)		407	275 min	PASS	ke/pix
CTE (Serial)	OS-E	0.999999	0.999990 min, 1.000000 max	PASS	n/a
	OS-F	1.000000	0.999990 min, 1.000000 max	PASS	n/a
	OS-G	0.999998	0.999990 min, 1.000000 max	PASS	n/a
	OS-H	0.999997	0.999990 min, 1.000000 max	PASS	n/a
CTE (Parallel)		0.999996	0.999990 min, 1.000000 max	PASS	n/a
Deferred Charge (Parallel)		0	3 max	PASS	e⁻
Deferred Charge (Serial)		3	-	FIO	e⁻
Mean Dark Signal at -100°C		0.77	-	FIO	e⁻/pix/hr
Mean Dark Signal at -120°C (calculated)		0.004	2.0 max	PASS	e⁻/pix/hr
Area Dark Signal at -100°C		4.5	-	FIO	e⁻/pix/hr
Area Dark Signal at -120°C (calculated)		0.02	-	FIO	e⁻/pix/hr

Key: FIO = for information only

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Device serial number	08123-18-01	Connector I.D. Number	022

TEST		RESULT	LIMITS			PASS / FAIL	UNITS
			QE LIMIT FOR DEVICE VARIANT				
			Standard Si Astro-BB	Deep Depl'n Astro-BB	Deep Depl'n ER1		
		Tick Variant:			✔		
Quantum Eficiency	350 nm	34.0	40 min	40 min	20 min	PASS	%
	400 nm	51.1	70 min	70 min	35 min	PASS	%
	500 nm	75.5	80 min	75 min	65 min	PASS	%
	650 nm	94.9	75 min	70 min	80 min	PASS	%
	900 nm	58.7	25 min	40 min	45 min	PASS	%
PRNU (1σ)	400 nm	1.8	3.0 max			PASS	%
	650 nm	1.0	3.0 max			PASS	%
	900 nm	0.9	5.0 max			PASS	%
Cosmetics:			Grade 0	Grade 1	Grade 2	GRADE	
Defects in Darkness	Point Defects (a)	12	400 max	800 max	1200max	0	n/a
	Bright Columns (b)	0	FIO	FIO	FIO	FIO	n/a
PR Defects	Dark Points (c)	37	FIO	FIO	FIO	FIO	n/a
	Dark Columns (d)	2	FIO	FIO	FIO	FIO	n/a
	Bright Columns (e)	0	FIO	FIO	FIO	FIO	n/a
Traps (>200e⁻)		8	10 max	15 max	20 max	0	n/a
Total Spots (a)+(c)		49	800 max	1500max	2000max	0	n/a
Total Columns (b)+(d)+(e)		2	5 max	10 max	15 max	0	n/a
Mechanical Measurements:							
Chip Flatness Peak to Valley at -100°C (estimated)		4	20 μm max			PASS	μm
Package Height Measurement	minimum	14.991	14.990 min			PASS	mm
	maximum	15.001	15.010 max			PASS	mm

Key: n/a = not applicable FIO = for information only

CUSTOM TESTS (If applicable)

TEST	RESULT	LIMITS	PASS / FAIL	UNITS

OPERATING CONDITIONS

VOLTAGE	VALUE	MIN - MAX	UNITS	VOLTAGE	VALUE	MIN - MAX	UNITS
VOD, VDOD	27.5	27 - 31	V	VSS	0	0 - 10	V
VRD	17	16 - 19	V	VRØ	10	9 - 12	V
VOG (mode-1)	2	1 - 5	V	VØR	12	9 - 14	V
VOG (mode-2)	18	18	V	VIØ, VTGØ	10	9 - 12	V
VSW (mode-1)	10	9 - 12	V	VDG	0	-2 - 0.5	V
VSW (mode-2)	2	1 - 5	V	VDD	29	27 - 31	V

ELECTRO-OPTICAL TEST TEMPERATURES

MEASUREMENT	TYPICAL VALUE	ACTUAL VALUE	UNITS
All E-O Tests	-100	-100	°C

TBC ?

NOTES