

ELECTRO-OPTICAL AND MECHANICAL RESULTS SHEET CCD231-C6 MULTILAYER COATING, BI, 6k x 6k, NIMO, FOUR OUTPUT	DAS770208AS-1 Version 1 Sheet 1 of 2
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Associated Documents: Data Sheet CCD231-C6 BI NIMO, Provisional Version 3, Jan 2012
 CCD231-C6 Test Plan : CCD231-C6-E2V-PL-001

Device Serial Number	10382-14-01	Tester (Initials & No.)	IS 1145	Date	31/05/2012
Device Type	CCD231-C6-x-F08	Connector I.D. Number	005	Grade	5

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	8.04	5.00 min	PASS	$\mu\text{V}/e^-$
	OS-F	8.02	5.00 min	PASS	$\mu\text{V}/e^-$
	OS-G	8.15	5.00 min	PASS	$\mu\text{V}/e^-$
	OS-H	8.04	5.00 min	PASS	$\mu\text{V}/e^-$
Amplifier Responsivity 500 kHz (mode-2)	OS-E	1.85	-	FIO	$\mu\text{V}/e^-$
	OS-F	1.94	-	FIO	$\mu\text{V}/e^-$
	OS-G	2.10	-	FIO	$\mu\text{V}/e^-$
	OS-H	2.07	-	FIO	$\mu\text{V}/e^-$
Amplifier Responsivity 50 kHz (mode-1)	OS-E	8.03	-	FIO	$\mu\text{V}/e^-$
	OS-F	7.94	-	FIO	$\mu\text{V}/e^-$
	OS-G	7.99	-	FIO	$\mu\text{V}/e^-$
	OS-H	7.97	-	FIO	$\mu\text{V}/e^-$
Noise 500 kHz	OS-E	4.6	-	FIO	rms e^-
	OS-F	4.6	-	FIO	rms e^-
	OS-G	4.4	-	FIO	rms e^-
	OS-H	4.4	-	FIO	rms e^-
Noise 50 kHz	OS-E	1.9	3.0 max	PASS	rms e^-
	OS-F	1.9	3.0 max	PASS	rms e^-
	OS-G	2.3	3.0 max	PASS	rms e^-
	OS-H	2.1	3.0 max	PASS	rms e^-
Output Node Capacity	OS-E	297	-	FIO	ke
	OS-F	285	-	FIO	ke
	OS-G	313	-	FIO	ke
	OS-H	316	-	FIO	ke
Max Non-Linearity (between 10% and 80% of node capacity)	OS-E	0.34	3.0 max	PASS	%
	OS-F	0.41	3.0 max	PASS	%
	OS-G	0.18	3.0 max	PASS	%
	OS-H	0.26	3.0 max	PASS	%
Full Well/Blooming Limit (mode-2)	382	275 min		PASS	ke/pix
CTE (Serial)	OS-E	0.999999	0.999990 min, 1.000000 max	PASS	n/a
	OS-F	0.999999	0.999990 min, 1.000000 max	PASS	n/a
	OS-G	0.999999	0.999990 min, 1.000000 max	PASS	n/a
	OS-H	1.000000	0.999990 min, 1.000000 max	PASS	n/a
CTE (Parallel)	0.999995	0.999990 min, 1.000000 max		PASS	n/a
Deferred Charge (Parallel)	1	3 max		PASS	e^-
Deferred Charge (Serial)	2	-		FIO	e^-
Mean Dark Signal at -100°C	5.45	-		FIO	$e^-/\text{pix}/\text{hr}$
Mean Dark Signal at -120°C (calculated)	0.03	2.0 max		PASS	$e^-/\text{pix}/\text{hr}$
Area Max Dark Signal at -100°C	13.9	-		FIO	$e^-/\text{pix}/\text{hr}$
Area Max Dark Signal at -120°C (calculated)	0.08	-		FIO	$e^-/\text{pix}/\text{hr}$

Key: FIO = for information only

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Device serial number	10382-14-01	Connector I.D. Number	005
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TEST	RESULT	LIMITS	PASS / FAIL	UNITS	
Deep Depletion Astro AR Multi-Layer					
Quantum Efficiency (see note 1)	350 nm	34.1	30 min	PASS	%
	400 nm	73.7	70 min	PASS	%
	500 nm	77.5	75 min	PASS	%
	650 nm	78.3	75 min	PASS	%
	900 nm	48.9	50 min	FAIL	%
PRNU (1σ)	400 nm	2.4	3.0 max	PASS	%
	650 nm	1.3	3.0 max	PASS	%
	900 nm	1.4	5.0 max	PASS	%

Cosmetics:		Grade 0	Grade 1	Grade 2	GRADE		
Defects in Darkness	Point Defects (a)	0	1000 max	2000 max	3000max	0	n/a
	Bright Columns (b)	0	FIO	FIO	FIO	FIO	n/a
PR Defects	Dark Points (c)	120	FIO	FIO	FIO	FIO	n/a
	Dark Columns (d)	0	FIO	FIO	FIO	FIO	n/a
	Bright Columns (e)	0	FIO	FIO	FIO	FIO	n/a
Traps (>200e ⁻)		2	20 max	30 max	40 max	0	n/a
Total Spots (a)+(c)		120	2000 max	4000max	6000max	0	n/a
Total Columns (b)+(d)+(e)		0	10 max	20 max	30 max	0	n/a

Mechanical Measurements:					
Chip Flatness Peak to Valley at -100°C (estimated)		20	40 max	PASS	μm
Package Height Measurement		Pass	PASS/FAIL (20.000 ± 0.015 mm)	PASS	mm

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

CUSTOM TESTS (If applicable)

TEST	RESULT	LIMITS	PASS / FAIL	UNITS

OPERATING CONDITIONS (for clocks, high levels non-charge dumping shown)

VOLTAGE	VALUE	MIN - MAX	UNITS	VOLTAGE	VALUE	MIN - MAX	UNITS
VOD, VDOD	30	25 - 31	V	VSS	0	0 - 10	V
VRD	18	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	25 - 31	V

ELECTRO-OPTICAL TEST TEMPERATURES

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

NOTES

1) The low QE results are thought to be due to a test error and not poor device performance.