

ATLAS SCT Module Test Report

MODULE NAME: k3113

DATABASE S/N:

1. COMPONENTS

	Database S/N	Manufacturer S/N	Encapsulant	Comment
Baseboard	20220330100001		Epoxy	Standard TPG baseboard

Detectors	Database S/N	Manufacturer S/N	I _{leakage} (nA)	C _{interstrip} (pF)	Pin holes	Comment
Top far	20220900200112				0	<100>irrad, 285um
Top near	20220900200116				0	<100>irrad, 285um
Total	-	-				-
Bottom far	20220900200122				0	<100>irrad, 285um
Bottom near	20220900200125				0	<100>irrad, 285um
Total	-	-			0	3x10 ¹⁴ p/cm ² irradiated

6*: strip#32-#37 metal short

	Database S/N	Manufacturer S/N	Comment
Hybrid		k3113	Barrel Cu/Polyimide flex v3/Polymer-coated bridges

Chips	Database S/N	Batch	Wafer	X	Y	xeff	nDead	Non Trim	Gain	Offset	qfactor
M0		29476	15	3	16		0	5	57.5	7.7	7.2
S1		29476	15	4	5		1	9	53.9	6.8	6.4
S2		29476	15	1	3		0	2	58.5	5.6	7.4
S3		29476	15	0	11		1	2	58.9	7.6	7.6
S4		29476	15	6	7		1	13	56.1	1.6	5.0
E5		29476	15	4	15		0	17	56.3	9.5	6.1
M8		29476	15	4	1		0	13	56.8	2.8	7.9
S9		29476	15	5	7		0	12	55.2	9.2	5.0
S10		29476	15	3	18		0	4	58.4	10.0	7.5
S11		29476	15	2	18		0	2	59.8	10.6	6.4
S12		29476	15	5	16		0	14	57.3	3.4	6.4
E13		29476	15	2	13		0	32	58.3	1.0	4.1
Total	-	-	-	-	-		2	125	<57.3>	<6.3>	<6.4>

Capacitors	#locations	C	Vendor	Part No.	F _{Resonance}
HV decoupling	4	10	Murata	Murata GHM1530-B-103-K-630	70
Large LV	4 * 2	330	Murata	Murata GRM42-6-X7R-334-K-25	15
Small LV	7 * 2	100	Murata	Murata GRM39-X7R-104-K-25	26
		nF			MHz

Miscellaneous	Vendor	Part No.	Comment
Temp. Sensors	Semitec	103KT1608-1P	

2. CONSTRUCTION DETAILS

Adhesives	Vendor	Part No.	Comment
Chip Glue	Ion-chemi	–	Silver-loaded, RT-cure, 50°C 2hr curing
Det. Elec. Glue	Ion-chemi	–	Silver-loaded, RT-cure, 50°C 2hr curing
Det. Therm. Glue			Araldite2011+BN

Bonding	#locations	# bonds / location	Comment
AG-DG connections	14	5	
Detector Backplane	2	2	Top side only
Strip Bias: detector to fanin	4	2	Top and bottom sides
Strip Bias: fanin to AG	4	2	Top and bottom sides

Were any components changed during production? If so, give brief details here:

3. OPERATING CONDITIONS

	Default	Actual	Comment
Vcc	3.5V	3.50	
Vdd	4.0V	4.00	Vcal=4 fC, Vth=2fC, static
Vdet	100V	300	irradiated sensors
Icc	-	0.98A	
Idd	-	0.48A	Vcal=4 fC, Vth=2fC, static
Idet	-	4.4 mA	irradiated sensors
Bias Current	267mA	267 uA	
Shaper Current	30mA	30 uA	
Compression Mode	1 (LEVEL XIX)	0	
Edge Detect	0 (OFF)	0	
Box Grounding	AG at PCB	DG at Patch	DG at Patch is done by design
Box Cooling	Fan	Fan	Lid closed in Climate box
Module Temp	< 45C	~0 C	Outer environment temp= -15 C

4. TRIMMING

	Default	Actual	Comment
Trim Method	Minimisation of n Non Trim	Manual setting	Alternate: Minimisation of RMS
Trim VCAL		20 mV	
Target Value		200 mV	
n Non Trim (link 0)	-	60	
n Non Trim (link 1)	-	66	
n Non Trim (total)	-	126	
RMS of vt50 distribution after trimming	-	2.95, 2.75 mV	

5. RESULTS

	M0	S1	S2	S3	S4	E5	Link 0	
Gain (2,3fC lin)	71.60	69.03	69.78	73.02	70.28	70.86	70.76	mV/fC
Noise @2fC	13.76	14.09	12.98	14.17	13.50	13.25	13.63	mV
Noise @2fC	0.192	0.204	0.186	0.194	0.192	0.187	0.193	fC
Noise @2fC	1202	1276	1163	1213	1200	1169	1204	ENC
Gain (0,2,3fC lin)	62.5	58.3	55.5	61.7	57.7	58.9	59.1	mV/fC
Noise @2fC	13.8	14.3	13.0	14.3	13.5	13.2	13.7	mV
Noise @2fC	0.221	0.245	0.235	0.232	0.234	0.224	0.232	fC
Noise @2fC	1381	1530	1468	1451	145	1401	1450	ENC
Stability point	clean	instability	clean	clean	clean	clean	clean	mV
Offset (by Noise Occupancy)	83.1	91.5	98.0	87.6	98.7	91.2	91.7	mV
RMS of dist. of NO offsets	4.57	5.66	4.37	6.17	8.87	8.08	6.90	mV
Stability - Offset	--	-18 +6	--	--	--	--	--	mV
Stability - Offset	--	-0.3 +0.1	--	--	--	--	--	fC
n Non Trim	4	12	4	1	19	17	60	
n Masked	0	0	0	0	0	0		-

	M8	S9	S10	S11	S12	E13	Link 1	Overall	
Gain (2,3fC lin)	64.33	69.63	74.61	74.69	72.10	70.55	70.98	70.9	mV/fC
Noise @2fC	11.97	13.21	13.45	13.20	13.42	13.35	13.10	13.4	mV
Noise @2fC	0.186	0.190	0.180	0.177	0.186	0.189	0.185	0.189	fC
Noise @2fC	1163	1186	1126	1105	1164	1183	1155	1180	ENC
Gain (0,2,3fC lin)	50.7	61.7	62.7	64.1	58.5	60.5	59.7	59.4	mV/fC
Noise @2fC	12.2	13.4	15.6	13.4	13.5	13.4	13.2	13.5	mV
Noise @2fC	0.241	0.217	0.216	0.208	0.230	0.222	0.222	0.227	fC
Noise @2fC	1503	1354	1351	1303	1440	1388	1390	1420	ENC
Stability point	clean	clean	clean	clean	clean	clean	clean		mV
Offset (by Noise Occupancy)	108.5	95.0	89.2	87.3	94.0	93.4	94.6	93.1	mV

RMS of dist. of NO offsets	14.5	10.4	7.9	7.1	6.1	8.7	9.1	8.0	mV
Stability - Offset	--	--	--	--	--	--	--		mV
Stability - Offset	--	--	--	--	--	--	--		fC
n Non Trim	18	15	7	5	15	6	66	126	
n Masked	0	0	0	0	0	0	0	0	-