

BPIX Module Testing Status - week 40

5th January 2007

Production overview

Production Status: 308 modules produced

- 213/40 graded as A/B → 82%
- 55 graded as C → 18%

Testing Status of week 40:

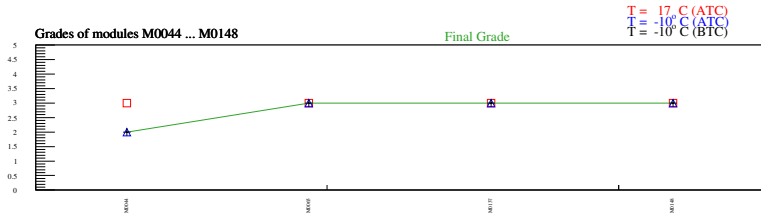
- 4 modules fully tested and therm. cycled

Grade	A	B	C
T = -10° C, BTC*	3	1	0
T = -10° C, ATC	3	1	0
T = $+17^{\circ}$ C, ATC	4	0	0
Final Grade	3	1	0

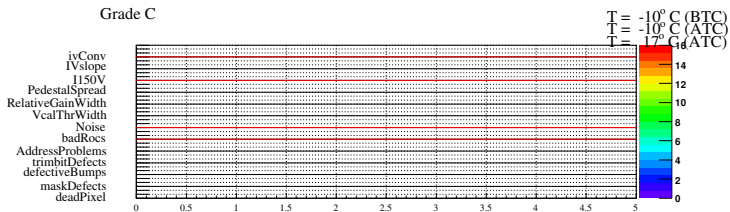
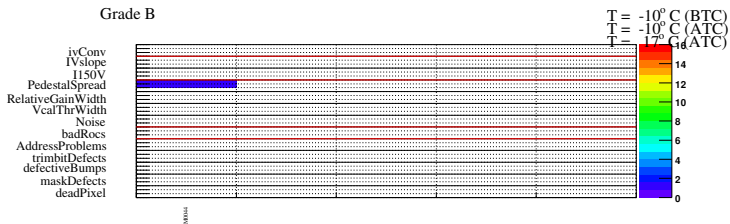
- -4 partially tested / testing failed
- no retests

*without IV-criteria

Production summary

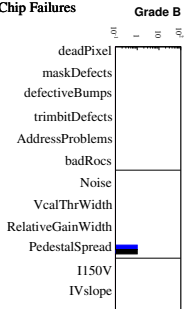


Module Failures Overview



Grade B

Chip Failures

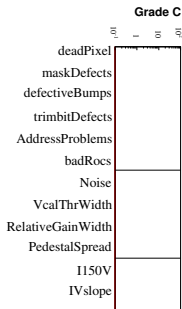


T = 17° C (ATC)

T = -10° C (ATC)

T = -10° C (BTC)

Grade C Failures



← Pixel defects

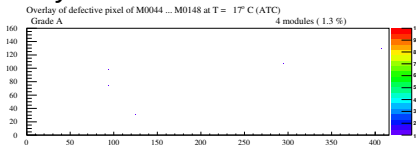
← Chip performance

← Module IV

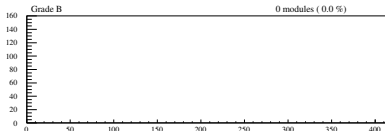
Defective pixel $T = 17^{\circ}\text{C}$ (ATC)

Overlay of all fully tested modules at $T = +17^{\circ}\text{C}$ (ATC)

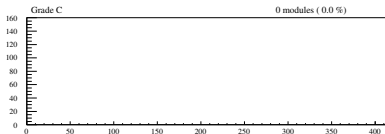
Grade A
(4 modules)



Grade B
(0 modules)



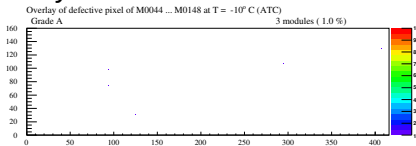
Grade C
(0 modules)



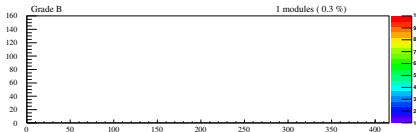
Defective pixel $T = -10^{\circ}\text{C}$ (ATC)

Overlay of all fully tested modules at $T = -10^{\circ}\text{C}$ (ATC)

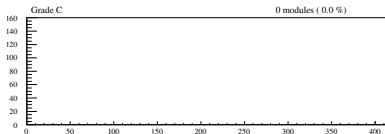
Grade A
(3 modules)



Grade B
(1 modules)



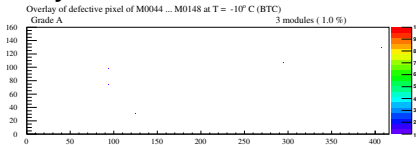
Grade C
(0 modules)



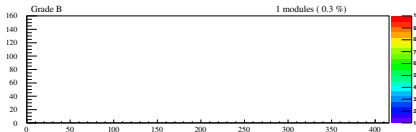
Defective pixel $T = -10^{\circ}\text{C}$ (BTC)

Overlay of all fully tested modules at $T = -10^{\circ}\text{C}$ (BTC)

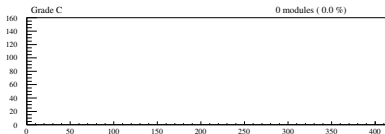
Grade A
(3 modules)



Grade B
(1 modules)



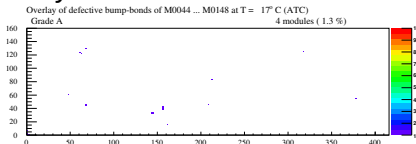
Grade C
(0 modules)



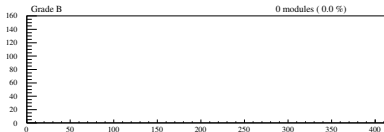
Defective bump-bonds $T = 17^{\circ}\text{C}$ (ATC)

Overlay of all fully tested modules at $T = +17^{\circ}\text{C}$ (ATC)

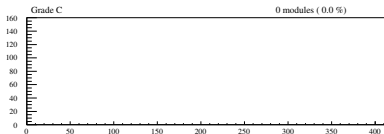
Grade A
(4 modules)



Grade B
(0 modules)



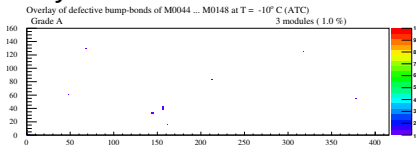
Grade C
(0 modules)



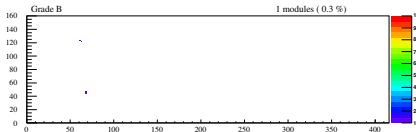
Defective bump-bonds $T = -10^{\circ}\text{C}$ (ATC)

Overlay of all fully tested modules at $T = -10^{\circ}\text{C}$ (ATC)

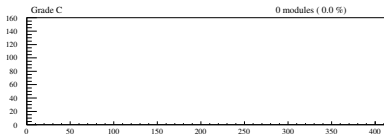
Grade A
(3 modules)



Grade B
(1 modules)



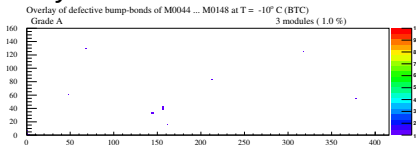
Grade C
(0 modules)



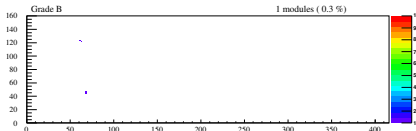
Defective bump-bonds $T = -10^{\circ}\text{C}$ (BTC)

Overlay of all fully tested modules at $T = -10^{\circ}\text{C}$ (BTC)

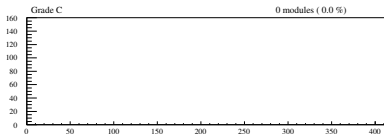
Grade A
(3 modules)



Grade B
(1 modules)

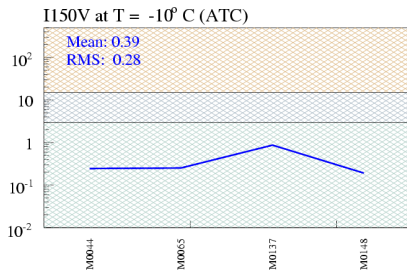


Grade C
(0 modules)

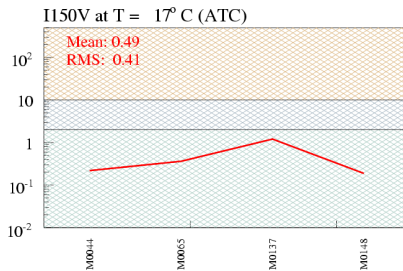


Current at 150 V

Current at 150 V (in μA) at $T = 17^\circ\text{C}$ and $T = -10^\circ\text{C}$



recalculated

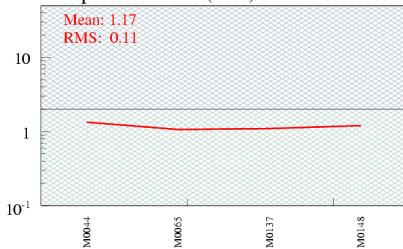


measured

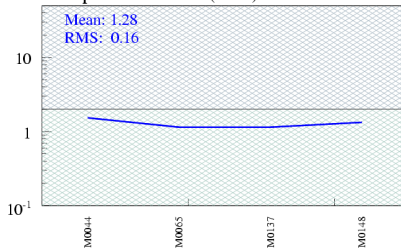
Slope of IV-Curve

Slope of IV-Curve at $T = 17^{\circ}\text{C}$ and $T = -10^{\circ}\text{C}$

IVslope at $T = 17^{\circ}\text{C}$ (ATC)

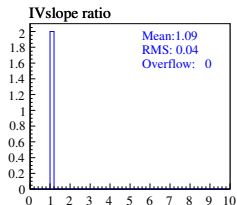
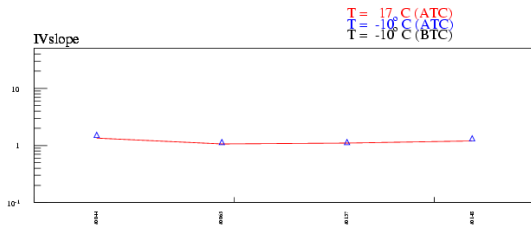
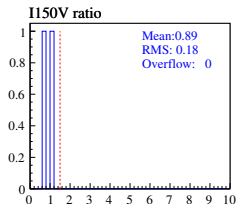
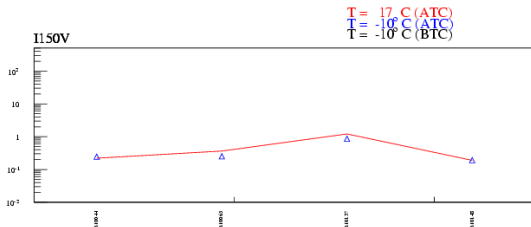


IVslope at $T = -10^{\circ}\text{C}$ (ATC)

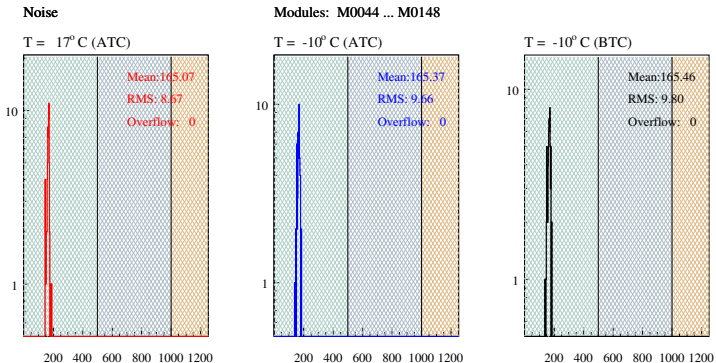


Current recalculation to $T = 17^{\circ}\text{C}$

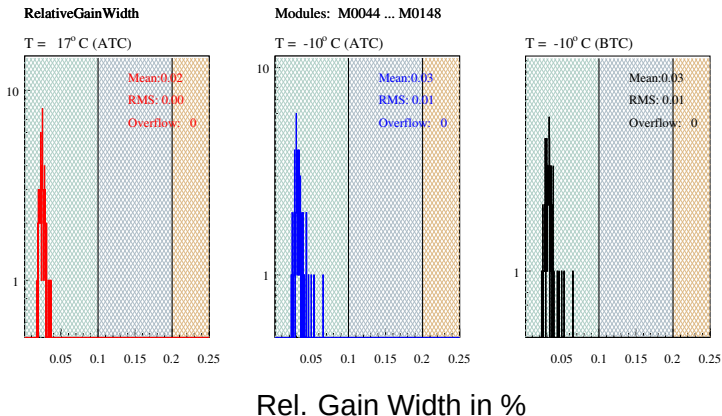
Cross check of recalculated values with measured values



MeanNoise of chips



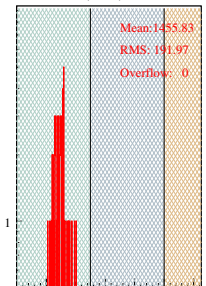
RelativeGainWidth of chips



PedestalSpread of chips

PedestalSpread

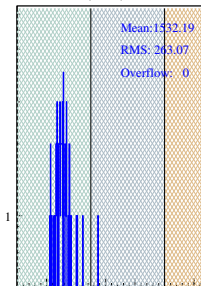
T = 17° C (ATC)



1000 2000 3000 4000 5000 6000

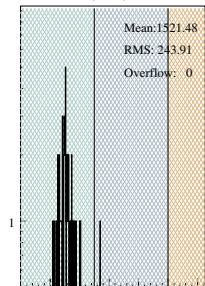
Modules: M0044 ... M0148

T = -10° C (ATC)



1000 2000 3000 4000 5000 6000

T = -10° C (BTC)

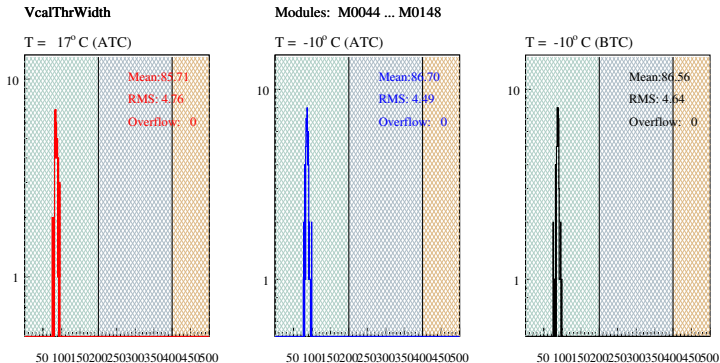


1000 2000 3000 4000 5000 6000

Pedestal Spread in e^-

Vcal Threshold Width

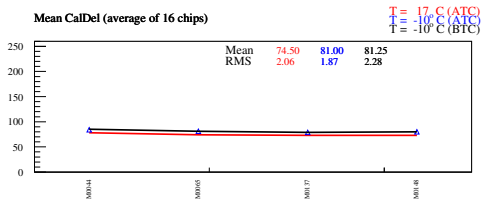
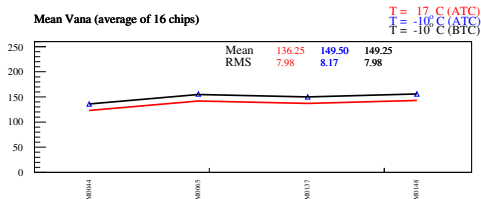
VcalThresholdWidth of chips



Vcal Thr. Width in e^-

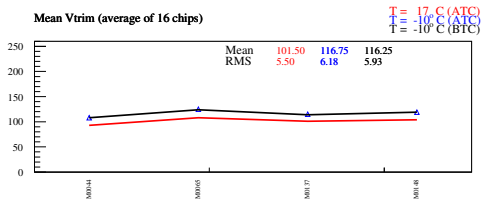
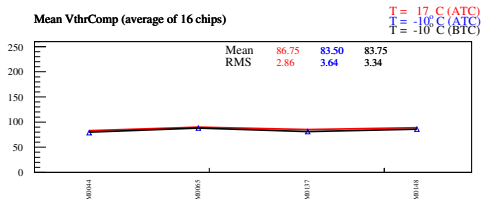
Operational parameters I

Mean DACs I



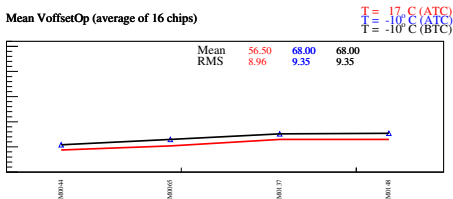
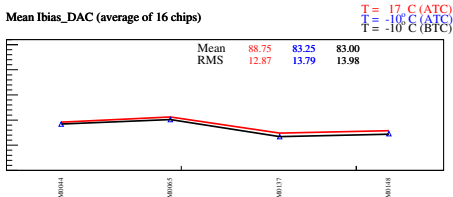
Operational parameters II

Mean DACs II



Operational parameters III

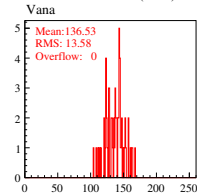
Mean DACs III



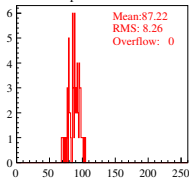
Operational parameters at $T = +17^{\circ}\text{C}$ (ATC)

DAC distribution (of chips)

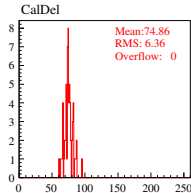
DACs at $T = 17^{\circ}\text{C}$ (ATC)



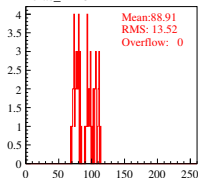
VthrComp



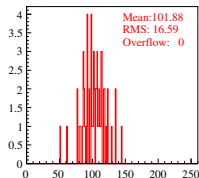
Modules: M0044 ... M0148



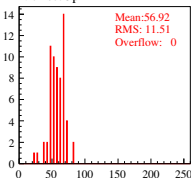
Ibias_DAC



Vtrim

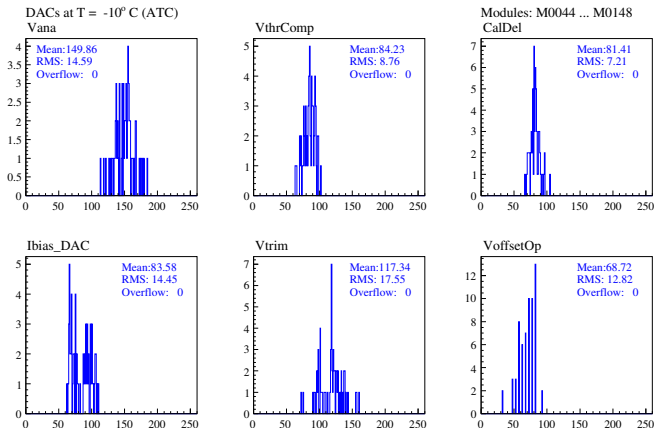


VoffsetOp



Operational parameters at $T = -10^{\circ}\text{C}$ (ATC)

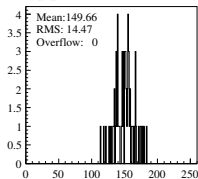
DAC distribution (of chips)



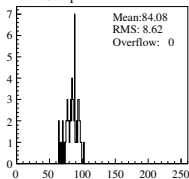
Operational parameters at $T = +17^{\circ}\text{C}$ (BTC)

DAC distribution (of chips)

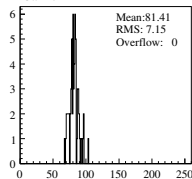
DACs at $T = -10^{\circ}\text{C}$ (BTC)
Vana



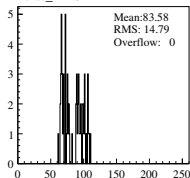
VthrComp



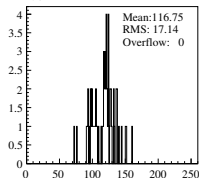
Modules: M0044 ... M0148
CalDel



Ibias_DAC



Vtrim



VoffsetOp

