

BPIX Module Testing Status - Week 23

11th June 2007

Production overview

Production Status: 687 modules produced (609 full/ 78 half)

- 430/102 graded as A/B → 87% || 61/11 → 92%
- 77 graded as C → 13% || 6 → 8%

Module Testing Report of Week 23:

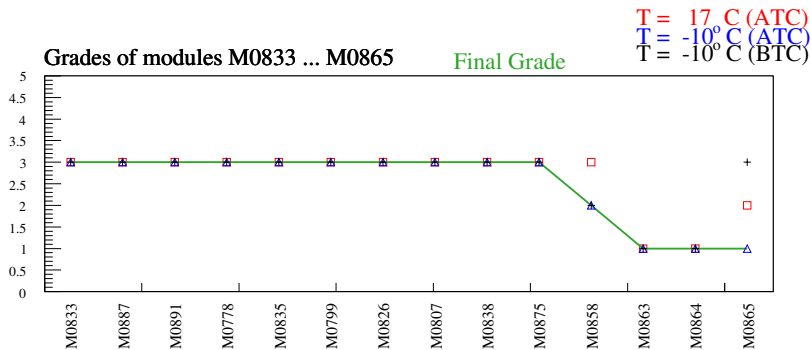
- 14 modules fully tested and therm. cycled (0 retested)

	Modules (14)			Halfmodules (–)		
Grade	A	B	C	A	B	C
T = –10° C, BTC*	11	1	2	–	–	–
T = –10° C, ATC	10	1	3	–	–	–
T = +17° C, ATC	11	1	2	–	–	–
Final Grade	10	1	3	–	–	–

- no retests with new DAC settings

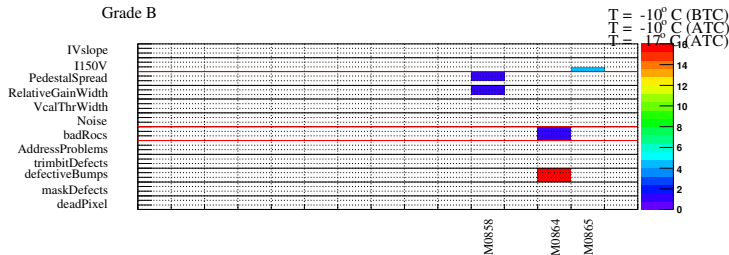
*without IV-criteria

Production summary

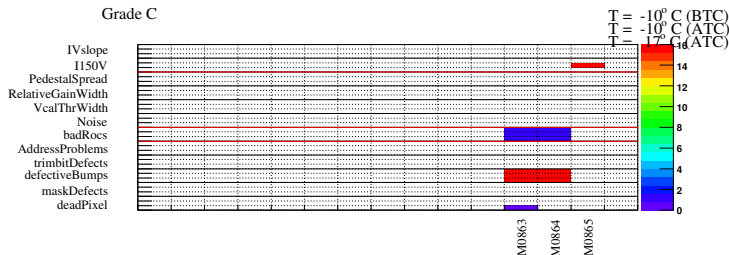


Module Failures Overview

Grade B



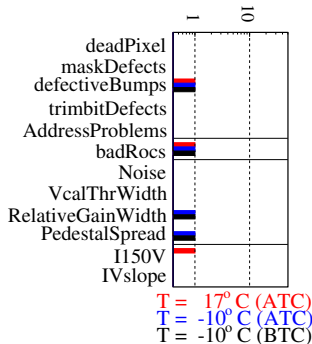
Grade C



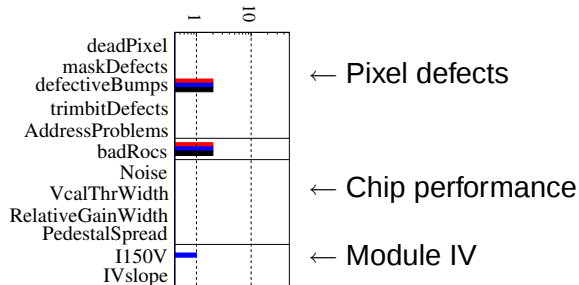
Production quality

Chip Failures

Grade B
Grade B



Grade C
Grade C



← Pixel defects

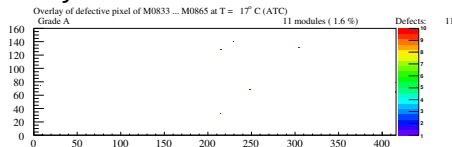
← Chip performance

← Module IV

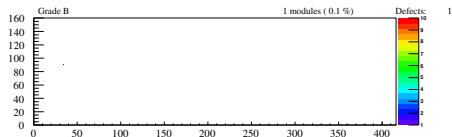
Defective pixel $T = 17^{\circ}\text{C}$ (ATC)

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

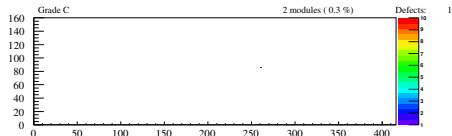
Grade A
(11 modules)



Grade B
(1 modules)



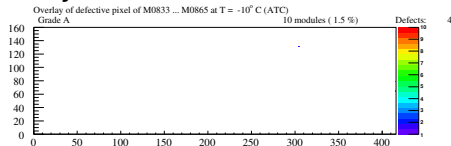
Grade C
(2 modules)



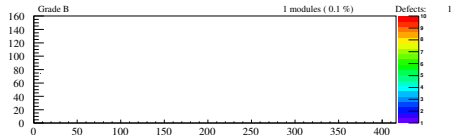
Defective pixel $T = -10^0\text{C}$ (ATC)

Overlay of all fully tested modules at $T = -10^0\text{C}$ (ATC)

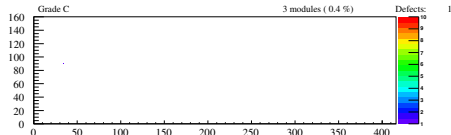
Grade A
(10 modules)



Grade B
(1 modules)



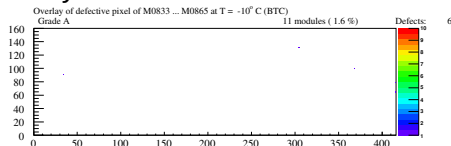
Grade C
(3 modules)



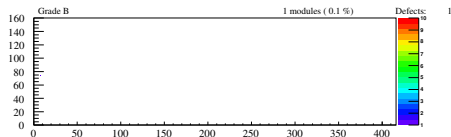
Defective pixel $T = -10^0\text{C}$ (BTC)

Overlay of all fully tested modules at $T = -10^0\text{C}$ (BTC)

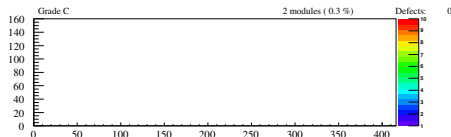
Grade A
(11 modules)



Grade B
(1 modules)



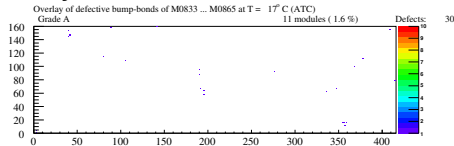
Grade C
(2 modules)



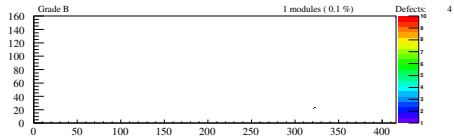
Defective bump-bonds $T = 17^{\circ}\text{C}$ (ATC)

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

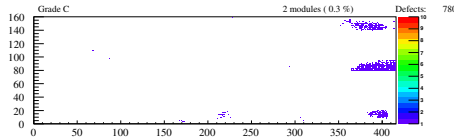
Grade A
(11 modules)



Grade B
(1 modules)



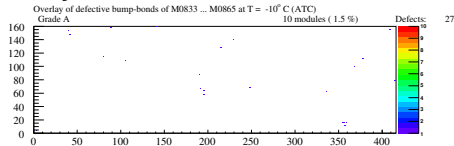
Grade C
(2 modules)



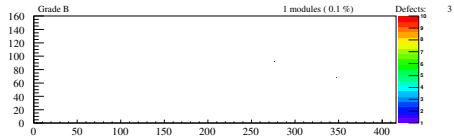
Defective bump-bonds $T = -10^{\circ}\text{C}$ (ATC)

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

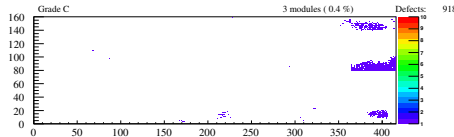
Grade A
(10 modules)



Grade B
(1 modules)



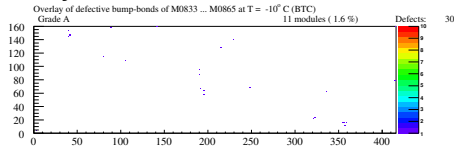
Grade C
(3 modules)



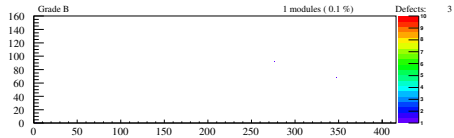
Defective bump-bonds $T = -10^{\circ}\text{C}$ (BTC)

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

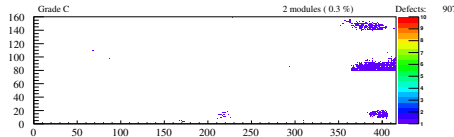
Grade A
(11 modules)



Grade B
(1 modules)



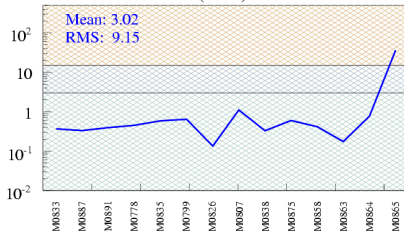
Grade C
(2 modules)



Current at 150 V

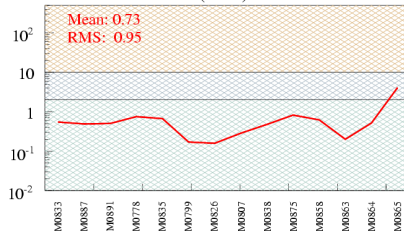
Current at 150 V (in μA) at $T = 17^\circ\text{C}$ and $T = -10^\circ\text{C}$

I150V at $T = -10^\circ\text{C}$ (ATC)



recalculated

I150V at $T = 17^\circ\text{C}$ (ATC)

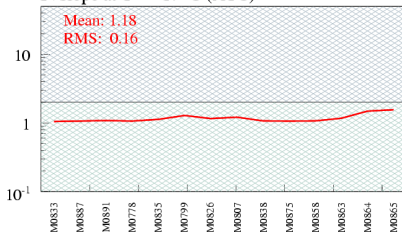


measured

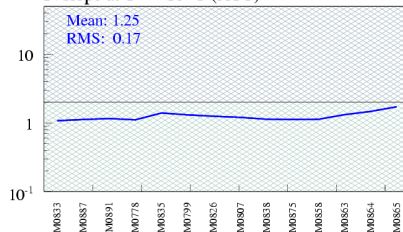
Slope of IV-Curve

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

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

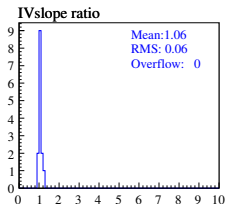
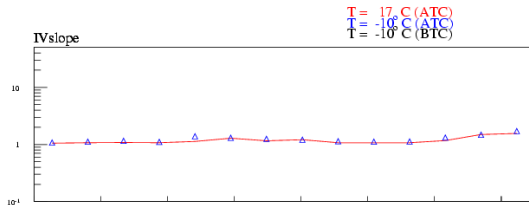
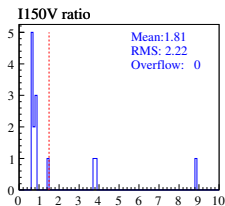
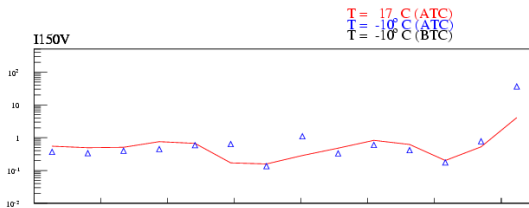


IVslope at $T = -10^{\circ}\text{C}$ (ATC)



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

Cross check of recalculated values with measured values

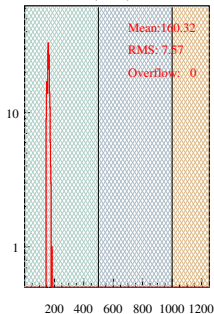


Noise

MeanNoise of chips

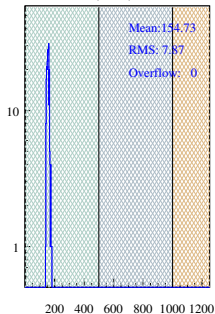
Noise

T = 17° C (ATC)

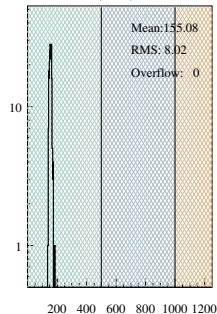


Modules: M0833 ... M0865

T = -10° C (ATC)

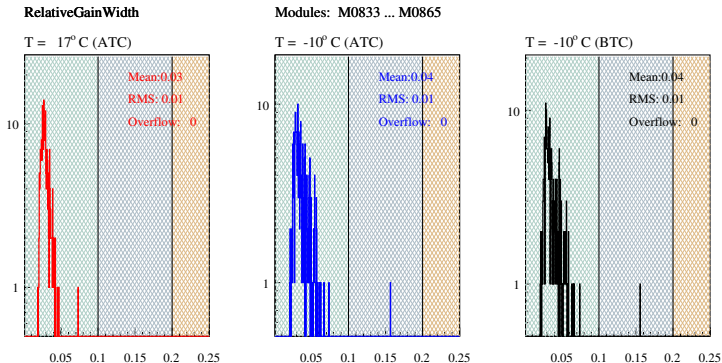


T = -10° C (BTC)

Noise in e^-

Relative Gain Width

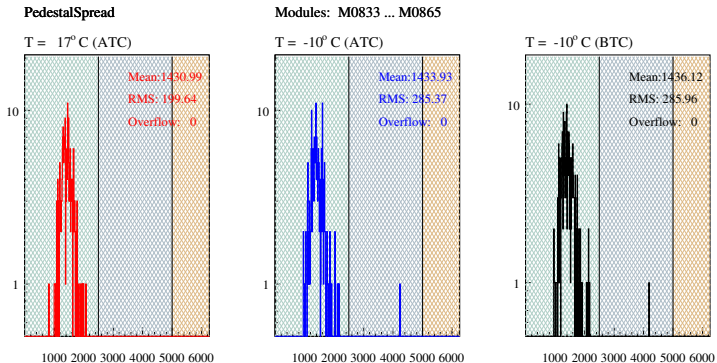
RelativeGainWidth of chips



Rel. Gain Width in %

Pedestal Spread

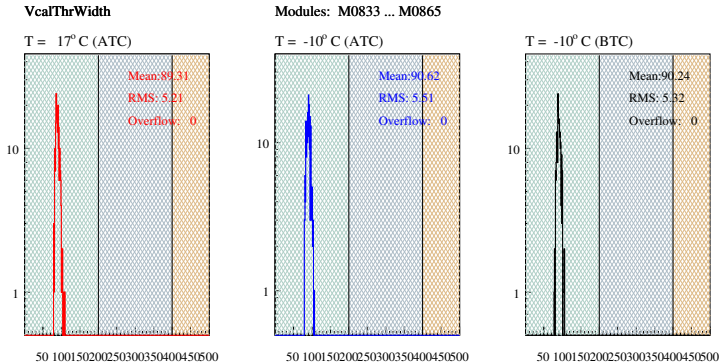
PedestalSpread of chips



Pedestal Spread in e^-

Vcal Threshold Width

VcalThresholdWidth of chips

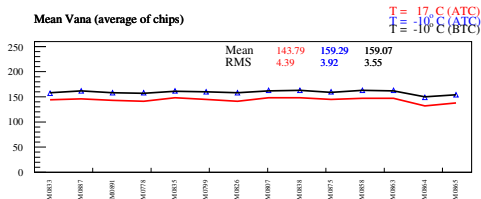


Vcal Thr. Width in e^-

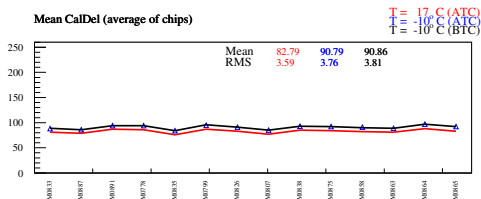
Operational parameters I

Mean DACs I

Mean Vana (average of chips)



Mean CalDel (average of chips)

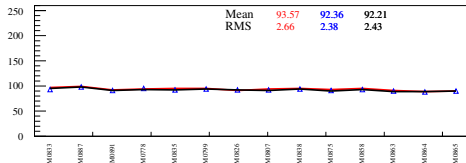


Operational parameters II

Mean DACs II

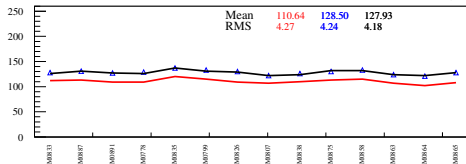
Mean VthrComp (average of chips)

T = 17° C (ATC)
T = -10° C (ATC)
T = -10° C (BTC)



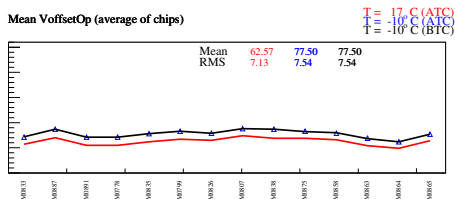
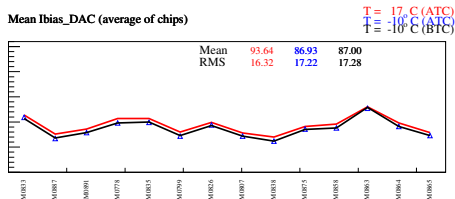
Mean Vtrim (average of chips)

T = 17° C (ATC)
T = -10° C (ATC)
T = -10° C (BTC)



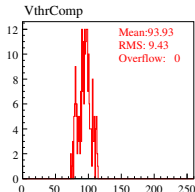
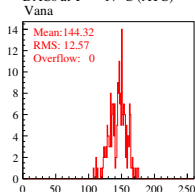
Operational parameters III

Mean DACs III

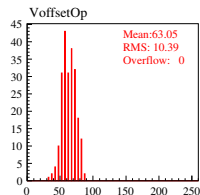
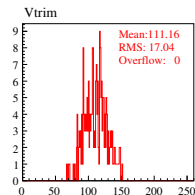
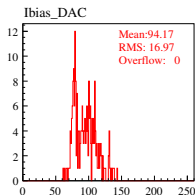
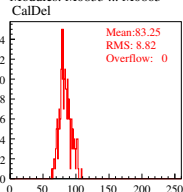


Operational parameters at $T = +17^{\circ}\text{C}$ (ATC)

DAC distribution (of chips)

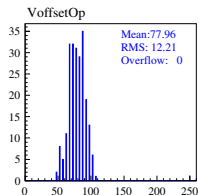
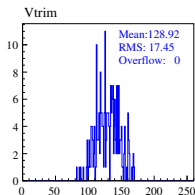
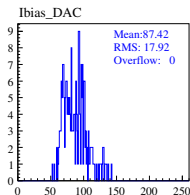
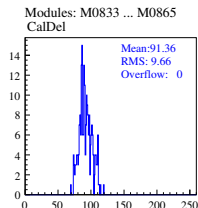
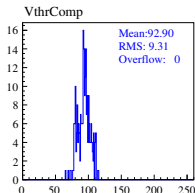
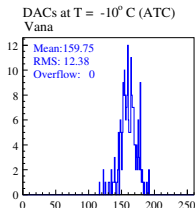
DACs at $T = 17^{\circ}\text{C}$ (ATC)

Modules: M0833 ... M0865



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)

