

BPIX Module Testing Status - Week 38

24th September 2007

Production overview

Production Status: 594 modules produced (491 full/ 103 half)

- 343/89 graded as A/B → 88% || 74/19 → 90%
- 59 graded as C → 12% || 10 → 10%

Module Testing Report of Week 38:

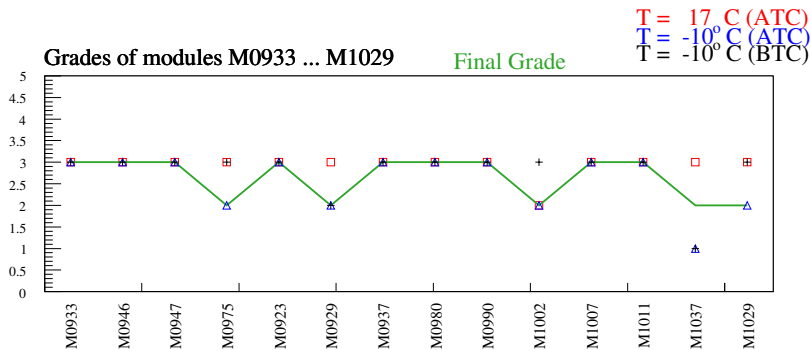
- 14 modules fully tested and therm. cycled (0 retested)

	Modules (10)			Halfmodules (4)		
Grade	A	B	C	A	B	C
T = -10° C, BTC*	9	1	0	3	0	1
T = -10° C, ATC	7	3	0	2	1	1
T = +17° C, ATC	9	1	0	4	0	0
Final Grade	7	3	0	2	2	0

- no retests with new DAC settings

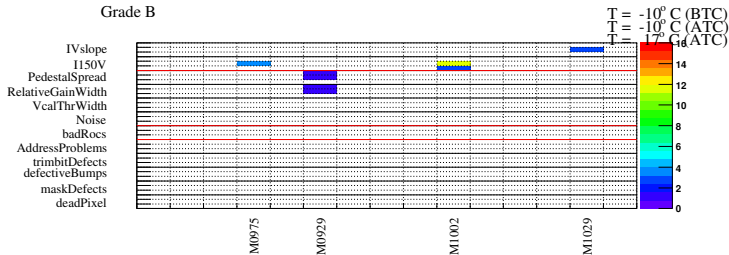
*without IV-criteria

Production summary

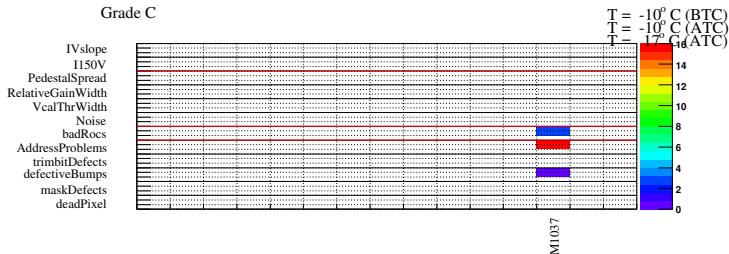


Module Failures Overview

Grade B



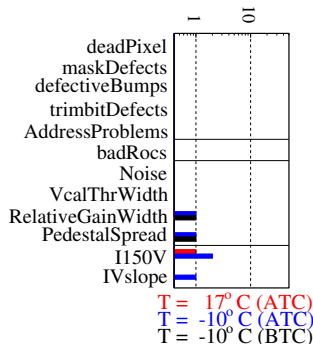
Grade C



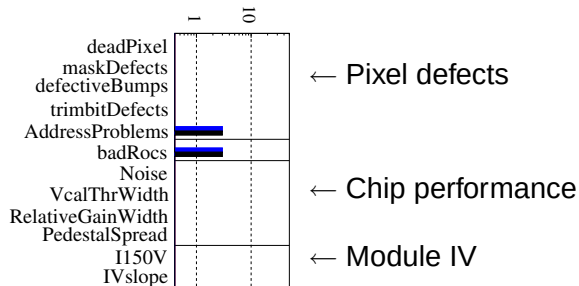
Production quality

Chip Failures

Grade B
Grade B



Grade C
Grade C



← Pixel defects

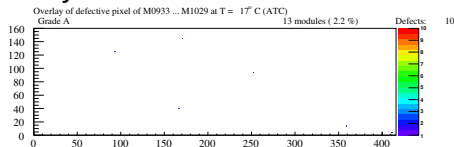
← Chip performance

← Module IV

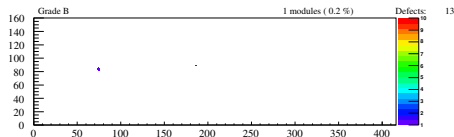
Defective pixel $T = 17^{\circ}\text{C}$ (ATC)

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

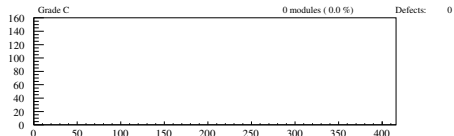
Grade A
(13 modules)



Grade B
(1 modules)



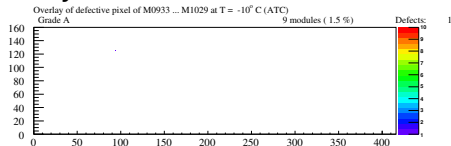
Grade C
(0 modules)



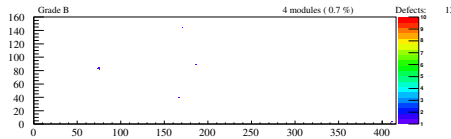
Defective pixel $T = -10^{\circ}\text{C}$ (ATC)

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

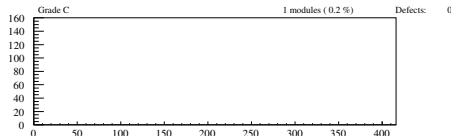
Grade A
(9 modules)



Grade B
(4 modules)



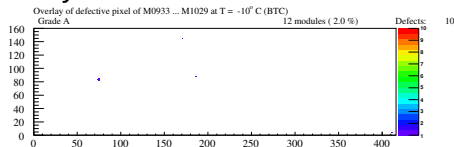
Grade C
(1 modules)



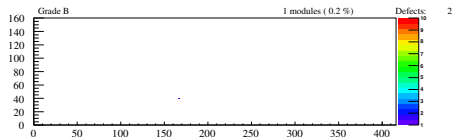
Defective pixel $T = -10^0\text{C}$ (BTC)

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

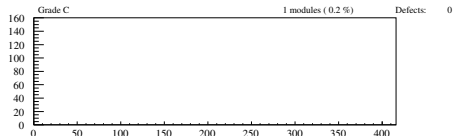
Grade A
(12 modules)



Grade B
(1 modules)



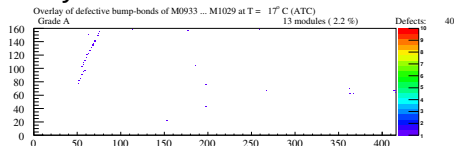
Grade C
(1 modules)



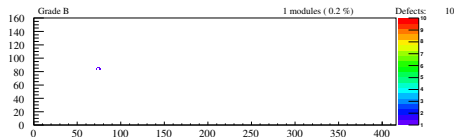
Defective bump-bonds $T = 17^{\circ}\text{C}$ (ATC)

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

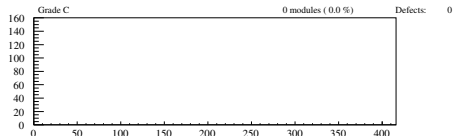
Grade A
(13 modules)



Grade B
(1 modules)



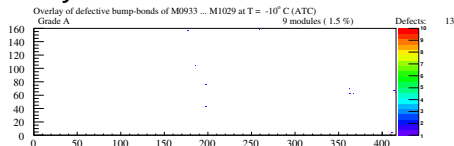
Grade C
(0 modules)



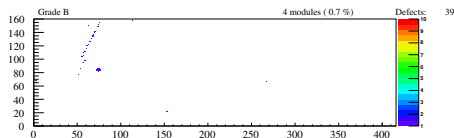
Defective bump-bonds $T = -10^{\circ}\text{C}$ (ATC)

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

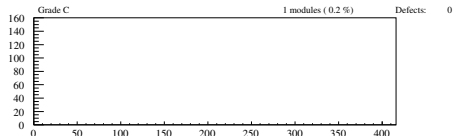
Grade A
(9 modules)



Grade B
(4 modules)



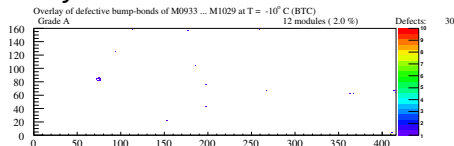
Grade C
(1 modules)



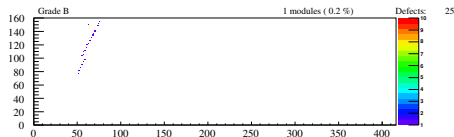
Defective bump-bonds $T = -10^{\circ}\text{C}$ (BTC)

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

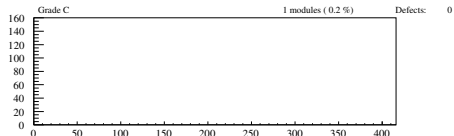
Grade A
(12 modules)



Grade B
(1 modules)



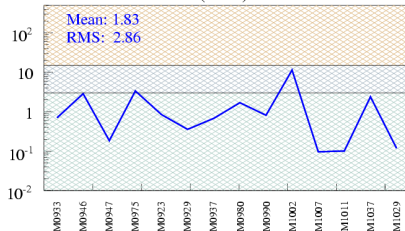
Grade C
(1 modules)



Current at 150 V

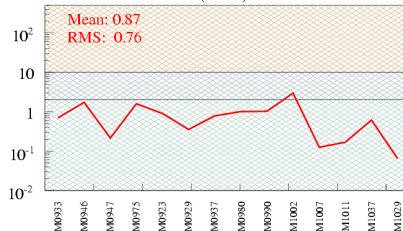
Current at 150 V (in μA) at $T = 17^\circ\text{C}$ and $T = -10^\circ\text{C}$

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



recalculated

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

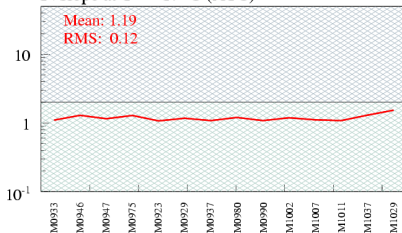


measured

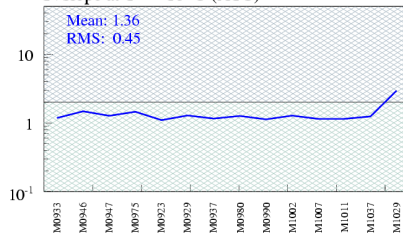
Slope of IV-Curve

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

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

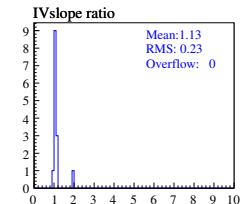
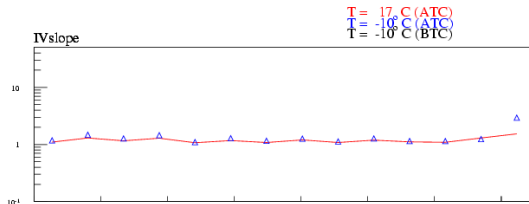
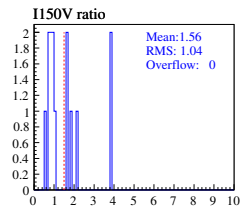
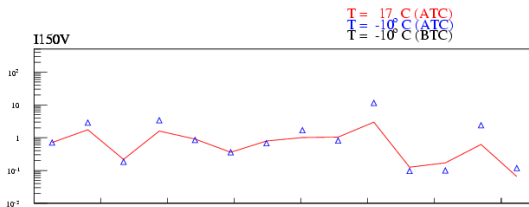


IVslope at $T = -10^{\circ}\text{C}$ (ATC)



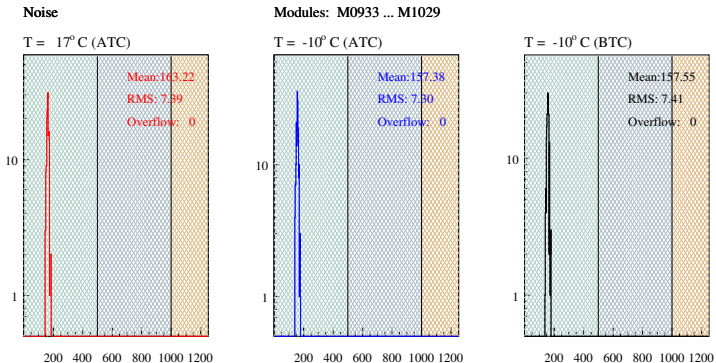
Current recalculation to $T = 17^{\circ}\text{C}$

Cross check of recalculated values with measured values



Noise

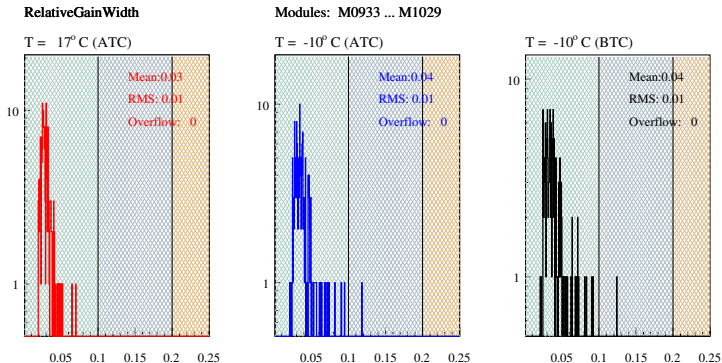
MeanNoise of chips



Noise in e^-

Relative Gain Width

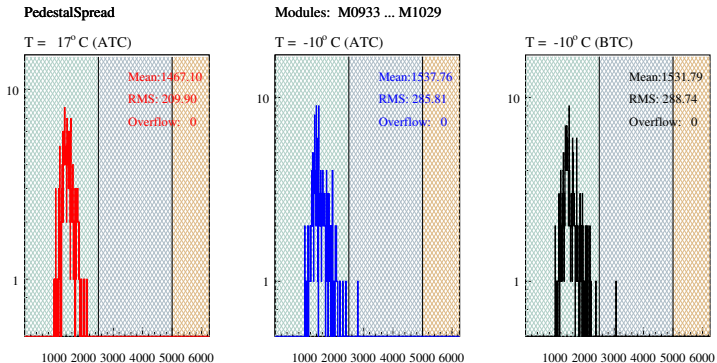
RelativeGainWidth of chips



Rel. Gain Width in %

Pedestal Spread

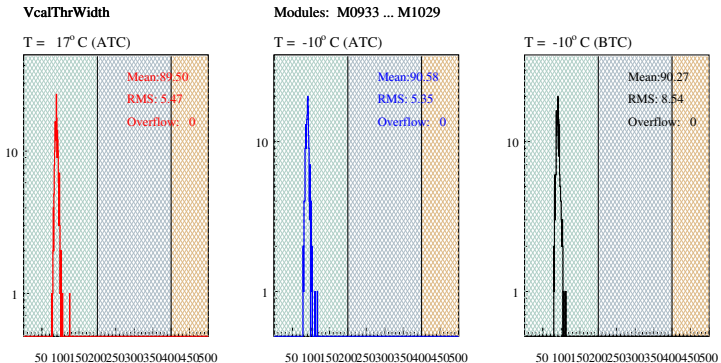
PedestalSpread of chips



Pedestal Spread in e^-

Vcal Threshold Width

VcalThresholdWidth of chips

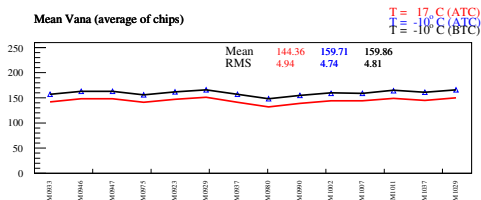


Vcal Thr. Width in e^-

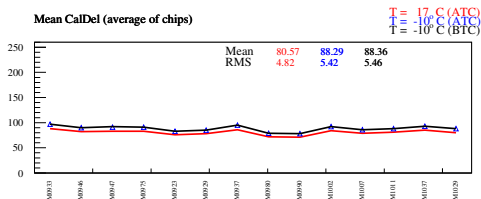
Operational parameters I

Mean DACs I

Mean Vana (average of chips)



Mean CalDel (average of chips)

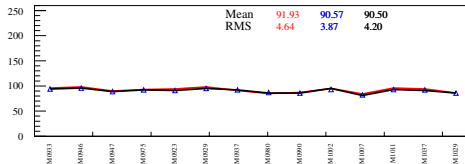


Operational parameters II

Mean DACs II

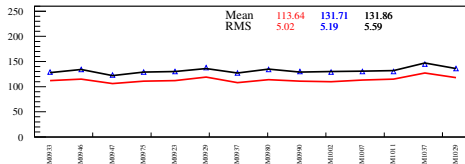
Mean VthrComp (average of chips)

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)

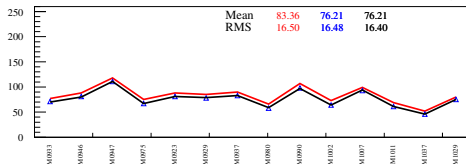


Operational parameters III

Mean DACs III

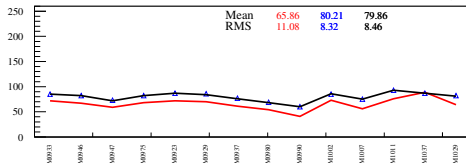
Mean Ibias_DAC (average of chips)

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



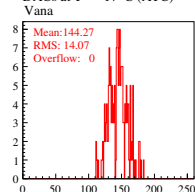
Mean VoffsetOp (average of chips)

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

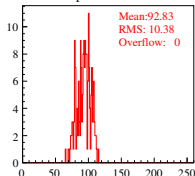


Operational parameters at $T = +17^{\circ}\text{C}$ (ATC)

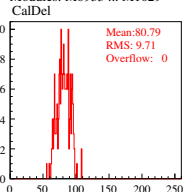
DAC distribution (of chips)

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

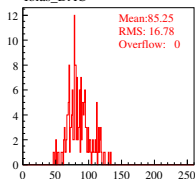
VthrComp



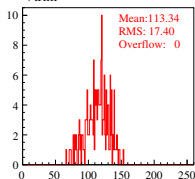
Modules: M0933 ... M1029



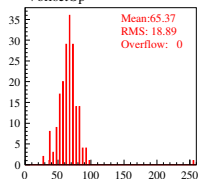
Ibias_DAC



Vtrim

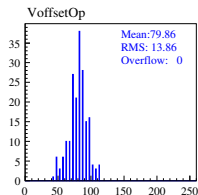
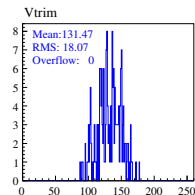
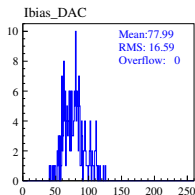
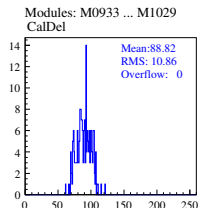
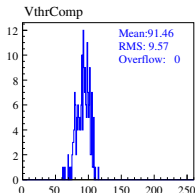
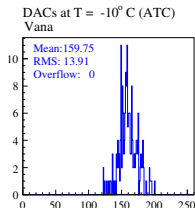


VoffsetOp



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)

