PQC Status Vienna

Maximilian Babeluk

April 20^{th} 2021

PQC Status

- New contacting procedure:
  - Align XY position with camera
  - Use LCR-meter for touchdown
  - Rp in Cp/Rp equivalent circuit as contact-quality measure
  - Across all needles (all VdP on flute1 parallel)
- Automatic re-measurement for suspicious results

Batch	Type	Wafers	Tested	Status	Date	Link
VPX35953	2-S	40 pcs	6+3	OK (BD pending, p-stop inhom.)	April 13^{th} 2021	https://indico.cern.ch/event/1028589
VPX35496	PS-P	44 pcs	8+0	OK (low Bulk resistivity)	today	https://indico.cern.ch/event/1028816
VPX35499	PS-P	47 pcs		pending		

VPX35496: Flute 1

	FET	MOS Quarter				Polysilicon VdP		n+ VdP		p-stop VdP		Capacitor	
	fet	v_fb	c_acc	t_ox	n_ox	vdpPoly	vdpPoly_r	vdpN	vdpN_r	vdpPstp	vdpPstp_r	cap_l	cap_r
	V	V	pF	nm	1E10cm^-3	kOhm/sq	kOhm/sq	Ohm/sq	Ohm/sq	kOhm/sq	kOhm/sq	pF	pF
HPK_VPX35496_001_PSP_HM_EL	2.23	5.21	87.9	653.3	19.5	—	—	35.3	35.1	18.6	18.6	3.46	3.31
HPK_VPX35496_001_PSP_HM_ER	2.57	4.72	86.6	662.9	17.6	—	—	35.1	35.3	18.5	18.5	3.36	3.22
HPK_VPX35496_001_PSP_HM_WL	2.59	4.71	86.7	662.2	17.6	—	—	35.5	35.3	18.5	18.5	3.39	3.24
HPK_VPX35496_001_PSP_HM_WR	2.19	5.38	87.4	657.1	19.9	—	—	35.3	35.4	18.7	18.7	3.43	3.29
HPK_VPX35496_002_PSP_HM_EL	failed	5.28	87.7	654.6	19.7	—	—	failed	failed	failed	failed	3.39	3.27
HPK_VPX35496_002_PSP_HM_ER	2.50	4.80	86.9	660.6	17.9	—	—	35.2	35.3	18.6	18.6	3.33	3.21
HPK_VPX35496_002_PSP_HM_WL	2.64	4.63	86.7	662.1	17.3	—	—	35.6	35.3	18.5	18.5	3.37	3.25
HPK_VPX35496_002_PSP_HM_WR	2.23	5.28	87.7	655.0	19.6	—	—	35.3	35.4	18.7	18.7	3.42	3.29
HPK_VPX35496_010_PSP_HM_EL	2.25	5.20	88.1	651.7	19.5	—	—	35.4	35.3	18.6	18.6	3.48	3.34
HPK_VPX35496_010_PSP_HM_ER	2.47	4.88	87.0	660.6	18.2	—	—	35.3	35.3	18.7	18.7	3.38	3.25
HPK_VPX35496_010_PSP_HM_WL	2.60	4.73	86.7	662.8	17.6	—	—	35.7	35.4	18.6	18.6	3.36	3.22
HPK_VPX35496_010_PSP_HM_WR	2.26	5.30	87.0	660.1	19.5	—	—	35.4	35.4	18.7	18.7	3.41	3.27
HPK_VPX35496_017_PSP_HM_EL	2.28	5.12	87.8	654.0	19.2	—	—	35.2	35.3	18.6	18.6	3.38	3.26
HPK_VPX35496_017_PSP_HM_ER	2.49	4.86	87.1	659.1	18.1	—	—	35.2	35.4	18.7	18.6	3.32	3.21
HPK_VPX35496_017_PSP_HM_WL	2.41	4.79	86.6	662.9	17.8	—	—	35.7	35.4	18.6	18.7	3.35	3.23
HPK_VPX35496_017_PSP_HM_WR	2.26	5.25	87.6	655.9	19.5	—	—	35.4	35.4	18.8	18.7	3.40	3.28
HPK_VPX35496_026_PSP_HM_EL	2.38	5.00	88.2	651.4	18.8	—	—	35.3	35.1	18.4	18.5	3.45	3.30
HPK_VPX35496_026_PSP_HM_ER	2.70	4.37	87.4	657.1	16.6	—	—	35.0	35.3	18.5	18.5	3.37	3.23
HPK_VPX35496_026_PSP_HM_WL	2.78	4.30	87.1	659.3	16.3	—	—	35.4	35.2	18.5	18.5	3.38	3.24
HPK_VPX35496_026_PSP_HM_WR	2.35	5.11	87.6	655.4	19.1	—	—	35.3	35.5	18.5	18.5	3.42	3.28
HPK_VPX35496_032_PSP_HM_EL	2.38	4.99	88.0	652.7	18.7	—	—	35.2	35.2	18.6	18.7	3.36	3.24
HPK_VPX35496_032_PSP_HM_ER	2.70	4.34	87.7	655.0	16.5	—	—	35.1	35.2	18.6	18.6	3.33	3.21
HPK_VPX35496_032_PSP_HM_WL	2.75	4.25	88.0	652.5	16.3	—	—	35.6	35.2	18.6	18.6	3.39	3.26
HPK_VPX35496_032_PSP_HM_WR	2.37	5.02	88.0	652.7	18.9	—	—	35.3	35.3	18.7	18.7	3.41	3.28
HPK_VPX35496_040_PSP_HM_EL	2.31	5.00	88.4	649.5	18.9	—	—	35.3	35.2	18.7	18.8	3.24	3.11
HPK_VPX35496_040_PSP_HM_ER	2.63	4.47	88.0	653.0	17.0	—	—	35.1	35.4	18.7	18.7	3.16	3.04
HPK_VPX35496_040_PSP_HM_WL	2.68	4.33	88.1	652.0	16.6	—	—	35.6	35.2	18.7	18.7	3.18	3.06
HPK_VPX35496_040_PSP_HM_WR	2.26	5.09	88.3	650.8	19.1	—	—	35.4	35.4	18.8	18.8	3.22	3.10
HPK_VPX35496_044_PSP_HM_EL	2.27	5.12	87.8	654.3	19.1	—	—	35.1	35.2	18.9	18.8	3.14	3.03
HPK_VPX35496_044_PSP_HM_ER	2.53	4.60	87.9	653.4	17.4	—	—	35.1	35.3	18.9	18.9	3.12	3.02
HPK_VPX35496_044_PSP_HM_WL	2.63	4.47	88.5	648.9	17.1	—	—	35.7	35.4	18.9	18.9	3.19	3.09
HPK_VPX35496_044_PSP_HM_WR	2.20	5.16	88.8	646.8	19.5	—	—	35.5	35.5	18.9	18.9	3.23	3.12
Median	nan	nan	87.7	654.8	nan	0.00	0.00	35.3	35.3	18.6	18.7	3.37	3.24
Average	nan	nan	87.6	655.6	nan	0.00	0.00	35.4	35.3	18.7	18.7	3.34	3.21
Std dev.	nan	nan	0.6	4.4	nan	0.00	0.00	0.2	0.1	0.1	0.1	0.10	0.09
OK/Tot.	0/32	0/32	32/32	32/32	0/32	1/1	1/1	31/32	31/32	31/32	31/32	32/32	32/32
OK (rel)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.97	0.97	0.97	0.97	1.00	1.00

VPX35496: Flute 1

	FET	MOS Quarter				Polysilicon VdP		n+ VdP		p-stop VdP		Capacitor	
	fet	v_fb	c_acc	t_ox	n_ox	vdpPoly	vdp-Poly_r	vdpN	vdpN_r	vdpPstp	vdpP-stp_r	cap_l	cap_r
	V	V	pF	nm	1E10cm^-3	kOhm/sq	kOhm/sq	Ohm/sq	Ohm/sq	kOhm/sq	kOhm/sq	pF	pF
HPK_VPX35496_001_PSP_HM_EL	2.23	5.21	87.9	653.3	19.5	—	—	35.3	35.1	18.6	18.6	3.46	3.31
HPK_VPX35496_001_PSP_HM_ER	2.57	4.72	86.6	662.9	17.6	—	—	35.1	35.3	18.5	18.5	3.36	3.22
HPK_VPX35496_001_PSP_HM_WL	2.59	4.71	86.7	662.2	17.6	—	—	35.5	35.3	18.5	18.5	3.39	3.24
HPK_VPX35496_001_PSP_HM_WR	2.19	5.38	87.4	657.1	19.9	—	—	35.3	35.4	18.7	18.7	3.43	3.29
HPK_VPX35496_002_PSP_HM_EL	failed	5.28	87.7	654.6	19.7	—	—	failed	failed	failed	failed	3.39	3.27
HPK_VPX35496_002_PSP_HM_ER	2.50	4.80	86.9	660.6	17.9	—	—	35.2	35.3	18.6	18.6	3.33	3.21
HPK_VPX35496_002_PSP_HM_WL	2.64	4.63	86.7	662.1	17.3	—	—	35.6	35.3	18.5	18.5	3.37	3.25
HPK							—	35.3	35.4	18.7	18.7	3.42	3.29
HPK							—	35.4	35.3	18.6	18.6	3.48	3.34
HPK							—	35.3	35.3	18.7	18.7	3.38	3.25
HPK							—	35.7	35.4	18.6	18.6	3.36	3.22
HPK							—	35.4	35.4	18.7	18.7	3.41	3.27
HPK							—	35.2	35.3	18.6	18.6	3.38	3.26
HPK							—	35.2	35.4	18.7	18.6	3.32	3.21
HPK							—	35.7	35.4	18.6	18.7	3.35	3.23
HPK							—	35.4	35.4	18.8	18.7	3.40	3.28
HPK							—	35.3	35.1	18.4	18.5	3.45	3.30
HPK							—	35.0	35.3	18.5	18.5	3.37	3.23
HPK							—	35.4	35.2	18.5	18.5	3.38	3.24
HPK							—	35.3	35.5	18.5	18.5	3.42	3.28
HPK							—	35.2	35.2	18.6	18.7	3.36	3.24
HPK							—	35.1	35.2	18.6	18.6	3.33	3.21
HPK_VPX35496_032_PSP_HM_EL							—	35.6	35.2	18.6	18.6	3.39	3.26
HPK_VPX35496_032_PSP_HM_WR	2.37	5.02	88.0	652.7	18.9	—	—	35.3	35.3	18.7	18.7	3.41	3.28
HPK_VPX35496_040_PSP_HM_EL	2.31	5.00	88.4	649.5	18.9	—	—	35.3	35.2	18.7	18.8	3.24	3.11
HPK_VPX35496_040_PSP_HM_ER	2.63	4.47	88.0	653.0	17.0	—	—	35.1	35.4	18.7	18.7	3.16	3.04
HPK_VPX35496_040_PSP_HM_WL	2.68	4.33	88.1	652.0	16.6	—	—	35.6	35.2	18.7	18.7	3.18	3.06
HPK_VPX35496_040_PSP_HM_WR	2.26	5.09	88.3	650.8	19.1	—	—	35.4	35.4	18.8	18.8	3.22	3.10
HPK_VPX35496_044_PSP_HM_EL	2.27	5.12	87.8	654.3	19.1	—	—	35.1	35.2	18.9	18.8	3.14	3.03
HPK_VPX35496_044_PSP_HM_ER	2.53	4.60	87.9	653.4	17.4	—	—	35.1	35.3	18.9	18.9	3.12	3.02
HPK_VPX35496_044_PSP_HM_WL	2.63	4.47	88.5	648.9	17.1	—	—	35.7	35.4	18.9	18.9	3.19	3.09
HPK_VPX35496_044_PSP_HM_WR	2.20	5.16	88.8	646.8	19.5	—	—	35.5	35.5	18.9	18.9	3.23	3.12
Median	nan	nan	87.7	654.8	nan	0.00	0.00	35.3	35.3	18.6	18.7	3.37	3.24
Average	nan	nan	87.6	655.6	nan	0.00	0.00	35.4	35.3	18.7	18.7	3.34	3.21
Std dev.	nan	nan	0.6	4.4	nan	0.00	0.00	0.2	0.1	0.1	0.1	0.10	0.09
OK/Tot.	0/32	0/32	32/32	32/32	0/32	1/1	1/1	31/32	31/32	31/32	31/32	32/32	32/32
OK (rel)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.97	0.97	0.97	0.97	1.00	1.00

- Flatband voltage higher than 2-S/PS-S
- FET V_{th} lower than in 2-S/PS-S
- Very good p-stop and FET V_{th} homogenity
- No polysilicon layer on PS-P
- High capacitance on capacitor structure

VPX35496: Flute 2

	GCD	Poly-R	Line thickness			break-down
	i_surf	me-and_poly	lw_n	lw_pstp4	lw_pstp2	v_bd
	pA	MOhm	um	um	um	V
HPK_VPX35496_001_PSP_HM_EL	13.38	—	35.0	60.8	37.2	160.0
HPK_VPX35496_001_PSP_HM_ER	11.52	—	34.3	58.6	36.8	166.0
HPK_VPX35496_001_PSP_HM_WL	10.43	—	35.0	57.5	36.5	162.0
HPK_VPX35496_001_PSP_HM_WR	failed	—	35.1	61.6	37.5	158.0
HPK_VPX35496_002_PSP_HM_EL	14.28	—	failed	failed	failed	failed
HPK_VPX35496_002_PSP_HM_ER	12.46	—	34.8	59.0	36.9	160.0
HPK_VPX35496_002_PSP_HM_WL	12.92	—	34.9	57.9	36.6	160.0
HPK_VPX35496_002_PSP_HM_WR	13.75	—	35.1	61.2	37.2	161.0
HPK_VPX35496_010_PSP_HM_EL	14.34	—	34.9	61.0	37.1	164.0
HPK_VPX35496_010_PSP_HM_ER	13.11	—	34.6	58.8	36.8	160.0
HPK_VPX35496_010_PSP_HM_WL	12.55	—	35.0	57.4	36.4	172.0
HPK_VPX35496_010_PSP_HM_WR	14.21	—	35.0	61.0	37.3	162.0
HPK_VPX35496_017_PSP_HM_EL	14.23	—	34.8	60.6	37.0	160.0
HPK_VPX35496_017_PSP_HM_ER	13.33	—	34.7	58.8	37.0	161.0
HPK_VPX35496_017_PSP_HM_WL	13.02	—	34.9	58.3	36.6	162.0
HPK_VPX35496_017_PSP_HM_WR	14.27	—	35.0	61.1	37.3	164.0
HPK_VPX35496_026_PSP_HM_EL	14.41	—	35.0	60.3	36.9	160.0
HPK_VPX35496_026_PSP_HM_ER	11.20	—	34.6	58.0	36.7	failed
HPK_VPX35496_026_PSP_HM_WL	11.23	—	34.8	57.2	36.8	150.0
HPK_VPX35496_026_PSP_HM_WR	13.73	—	35.0	60.2	37.0	159.0
HPK_VPX35496_032_PSP_HM_EL	14.30	—	34.7	60.2	36.9	160.0
HPK_VPX35496_032_PSP_HM_ER	11.33	—	34.5	57.7	36.3	150.0
HPK_VPX35496_032_PSP_HM_WL	11.60	—	34.7	57.0	36.0	150.0
HPK_VPX35496_032_PSP_HM_WR	14.54	—	34.9	60.6	37.1	160.0
HPK_VPX35496_040_PSP_HM_EL	15.62	—	34.8	60.0	37.0	170.0
HPK_VPX35496_040_PSP_HM_ER	12.82	—	34.5	58.3	36.4	170.0
HPK_VPX35496_040_PSP_HM_WL	12.49	—	35.0	57.1	36.5	165.0
HPK_VPX35496_040_PSP_HM_WR	15.03	—	34.9	62.2	38.4	155.0
HPK_VPX35496_044_PSP_HM_EL	15.65	—	34.7	61.0	37.1	165.0
HPK_VPX35496_044_PSP_HM_ER	12.99	—	34.6	58.7	36.5	165.0
HPK_VPX35496_044_PSP_HM_WL	12.83	—	34.8	58.0	36.7	160.0
HPK_VPX35496_044_PSP_HM_WR	14.95	—	34.9	60.9	36.8	155.0
Median	13.33	0.00	34.9	59.0	36.9	160.0
Average	13.31	0.00	34.8	59.4	36.9	160.9
Std dev.	1.33	0.00	0.2	1.5	0.4	5.3
OK/Tot.	31/32	1/1	31/32	31/32	31/32	30/32
OK (rel)	0.97	1.00	0.97	0.97	0.97	0.94

VPX35496: Flute 2

	GCD	Poly-R	Line thickness			break-down
	i_surf	me-and_poly	lw_n	lw_pstp4	lw_pstp2	v_bd
	pA	MOhm	um	um	um	V
HPK_VPX35496_001_PSP_HM_EL	13.38	—	35.0	60.8	37.2	160.0
HPK_VPX35496_001_PSP_HM_ER	11.52	—	34.3	58.6	36.8	166.0
HPK_VPX35496_001_PSP_HM_WL	10.43	—	35.0	57.5	36.5	162.0
HPK_VPX35496_001_PSP_HM_WR	failed	—	35.1	61.6	37.5	158.0
HPK_VPX35496_002_PSP_HM_EL	14.28	—	failed	failed	failed	failed
HPK_VPX35496_002_PSP_HM_ER	12.46	—	34.8	59.0	36.9	160.0
HPK_VPX35496_002_PSP_HM_WL	12.92	—	34.9	57.9	36.6	160.0
HPK_VPX35496_002_PSP_HM_WR	13.75	—	35.1	61.2	37.2	161.0
HPK_VPX35496_010_PSP_HM_EL	14.34	—	34.9	61.0	37.1	164.0
HPK_VPX35496_010_PSP_HM_ER	13.11	—	34.6	58.8	36.8	160.0
HPK_VPX35496_010_PSP_HM_WL	12.55	—	35.0	57.4	36.4	172.0
HPK_VPX35496_010_PSP_HM_WR	14.21	—	35.0	61.0	37.3	162.0
HPK_VPX35496_017_PSP_HM_EL	14.23	—	34.8	60.6	37.0	160.0
HPK_VPX35496_017_PSP_HM_ER	13.33	—	34.7	58.8	37.0	161.0
HPK_VPX35496_017_PSP_HM_WL	13.02	—	34.9	58.3	36.6	162.0
HPK_VPX35496_017_PSP_HM_WR	14.27	—	35.0	61.1	37.3	164.0
				.3	36.9	160.0
				.0	36.7	failed
				.2	36.8	150.0
				.2	37.0	159.0
				.2	36.9	160.0
				.7	36.3	150.0
				.0	36.0	150.0
HPK_VPX35496_032_PSP_HM_WR	14.54	—	34.9	60.6	37.1	160.0
HPK_VPX35496_040_PSP_HM_EL	15.62	—	34.8	60.0	37.0	170.0
HPK_VPX35496_040_PSP_HM_ER	12.82	—	34.5	58.3	36.4	170.0
HPK_VPX35496_040_PSP_HM_WL	12.49	—	35.0	57.1	36.5	165.0
HPK_VPX35496_040_PSP_HM_WR	15.03	—	34.9	62.2	38.4	155.0
HPK_VPX35496_044_PSP_HM_EL	15.65	—	34.7	61.0	37.1	165.0
HPK_VPX35496_044_PSP_HM_ER	12.99	—	34.6	58.7	36.5	165.0
HPK_VPX35496_044_PSP_HM_WL	12.83	—	34.8	58.0	36.7	160.0
HPK_VPX35496_044_PSP_HM_WR	14.95	—	34.9	60.9	36.8	155.0
Median	13.33	0.00	34.9	59.0	36.9	160.0
Average	13.31	0.00	34.8	59.4	36.9	160.9
Std dev.	1.33	0.00	0.2	1.5	0.4	5.3
OK/Tot.	31/32	1/1	31/32	31/32	31/32	30/32
OK (rel)	0.97	1.00	0.97	0.97	0.97	0.94

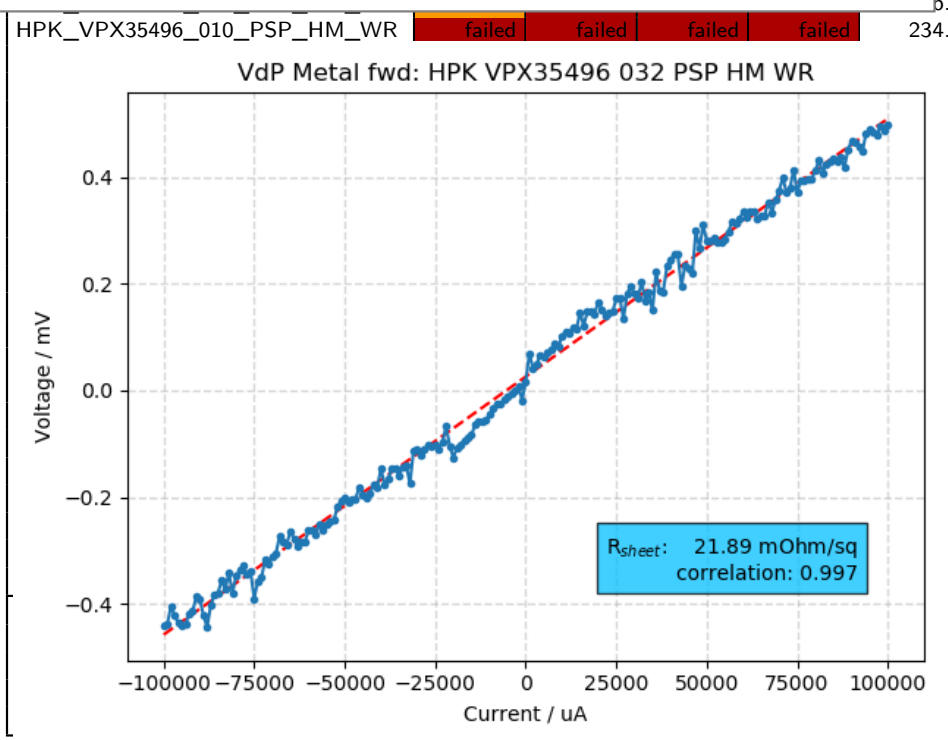
- Early dielectric breakdown, often the minimal 150V
- Fits to high capacitance on flute 1: thin oxide is thinner

VPX35496: Flute 3

	DiodeHalf					Metal VdP		p-edge			Bulk VdP		
	i600	v_fd	rho	d_conc	me-and_meta	vdp_met	vdp_met_r	vdp_cb	vdp_cb_r	t_line_cb	vdpBulk	vdp-Bulk_r	vdp-Bulk_rho
	uA	V	kOhm cm	1E12cm^-3	Ohm	mOhm/sq	mOhm/sq	kOhm/sq	kOhm/sq	um	kOhm/sq	kOhm/sq	kOhm*cm
HPK_VPX35496_001_PSP_HM_EL	failed	failed	failed	failed	243.1	27.0	26.3	1.23	1.23	33.5	61.7	61.8	3.33
HPK_VPX35496_001_PSP_HM_ER	failed	failed	failed	failed	242.7	26.9	26.2	1.23	1.23	33.9	61.2	61.2	3.30
HPK_VPX35496_001_PSP_HM_WL	failed	290.0	2.12	6.54	241.5	26.2	24.7	1.19	1.19	33.3	61.4	61.2	3.31
HPK_VPX35496_001_PSP_HM_WR	failed	failed	failed	failed	239.6	26.0	26.0	1.19	1.19	33.4	61.6	61.2	3.31
HPK_VPX35496_002_PSP_HM_EL	failed	failed	failed	failed	240.7	27.2	26.8	1.25	1.25	33.4	60.7	60.7	3.28
HPK_VPX35496_002_PSP_HM_ER	failed	failed	failed	failed	240.0	25.6	26.3	1.24	1.24	33.7	60.4	60.4	3.26
HPK_VPX35496_002_PSP_HM_WL	failed	279.8	2.08	6.69	238.5	26.8	26.3	1.21	1.20	33.4	60.3	60.6	3.26
HPK_VPX35496_002_PSP_HM_WR	failed	failed	failed	failed	237.1	26.8	26.2	1.20	1.20	33.5	60.7	60.9	3.28
HPK_VPX35496_010_PSP_HM_EL	failed	failed	failed	failed	238.6	26.8	26.1	1.24	1.24	33.5	60.6	60.8	3.28
HPK_VPX35496_010_PSP_HM_ER	failed	332.5	2.19	6.33	238.3	26.8	26.3	1.23	1.23	33.9	60.7	60.5	3.27
HPK_VPX35496_010_PSP_HM_WL	390.1	failed	failed	failed	236.1	26.5	25.7	1.19	1.19	33.0	60.5	60.5	3.27
HPK_VPX35496_010_PSP_HM_WR	failed	failed	failed	failed	234.8	26.4	26.2	1.19	1.19	33.3	60.3	60.6	3.26
HPK_VPX35496_017_PSP_HM_EL	failed	failed	failed	failed	235.8	26.5	26.4	1.25	1.25	33.6	60.9	60.8	3.29
HPK_VPX35496_017_PSP_HM_ER	failed	343.9	2.11	6.58	235.0	27.1	25.8	1.24	1.24	33.6	61.0	60.9	3.29
HPK_VPX35496_017_PSP_HM_WL	495.3	failed	failed	failed	234.3	26.6	26.2	1.20	1.20	33.7	60.9	60.9	3.29
HPK_VPX35496_017_PSP_HM_WR	failed	failed	failed	failed	232.5	26.2	26.4	1.20	1.20	33.5	60.5	60.6	3.27
HPK_VPX35496_026_PSP_HM_EL	failed	352.7	1.86	7.48	240.0	26.6	25.7	1.24	1.24	33.2	60.9	61.1	3.29
HPK_VPX35496_026_PSP_HM_ER	failed	291.5	2.01	6.90	239.4	25.9	25.9	1.25	1.24	33.6	60.9	60.9	3.29
HPK_VPX35496_026_PSP_HM_WL	327.5	293.4	2.02	6.87	237.8	26.9	26.0	1.20	1.20	33.5	61.4	61.1	3.31
HPK_VPX35496_026_PSP_HM_WR	failed	failed	failed	failed	236.9	25.7	25.8	1.19	1.20	33.8	60.7	60.3	3.27
HPK_VPX35496_032_PSP_HM_EL	—	—	—	—	240.3	22.4	22.5	1.23	1.24	32.8	62.2	61.8	3.35
HPK_VPX35496_032_PSP_HM_ER	—	—	—	—	239.6	22.2	22.2	1.24	1.24	33.5	61.9	61.8	3.34
HPK_VPX35496_032_PSP_HM_WL	—	—	—	—	237.7	22.1	22.0	1.19	1.18	33.9	62.2	61.8	3.35
HPK_VPX35496_032_PSP_HM_WR	—	—	—	—	236.1	21.9	22.1	1.19	1.19	33.1	61.4	61.6	3.32
HPK_VPX35496_040_PSP_HM_EL	—	—	—	—	237.3	20.3	20.1	1.24	1.24	33.2	61.9	61.5	3.33
HPK_VPX35496_040_PSP_HM_ER	—	—	—	—	236.4	20.1	19.9	1.25	1.24	33.7	62.1	62.2	3.36
HPK_VPX35496_040_PSP_HM_WL	—	—	—	—	236.0	20.2	20.0	1.20	1.19	33.6	60.7	60.7	3.28
HPK_VPX35496_040_PSP_HM_WR	—	—	—	—	234.7	20.0	19.9	1.20	1.20	33.7	61.7	61.7	3.33
HPK_VPX35496_044_PSP_HM_EL	—	—	—	—	233.2	20.4	20.1	1.24	1.25	33.3	61.7	61.6	3.33
HPK_VPX35496_044_PSP_HM_ER	—	—	—	—	231.9	20.2	20.0	1.24	1.24	33.5	61.6	61.7	3.33
HPK_VPX35496_044_PSP_HM_WL	—	—	—	—	231.3	20.1	20.1	1.20	1.19	32.8	61.5	61.4	3.32
HPK_VPX35496_044_PSP_HM_WR	—	—	—	—	229.7	19.9	19.9	1.19	1.19	33.3	61.1	61.1	3.30
Median	nan	292.5	nan	nan	237.2	26.1	25.8	1.22	1.22	33.5	61.1	61.1	nan
Average	nan	305.2	nan	nan	237.1	24.4	24.1	1.22	1.22	33.5	61.2	61.1	nan
Std dev.	nan	24.0	nan	nan	3.2	2.8	2.7	0.02	0.02	0.3	0.6	0.5	nan
OK/Tot.	0/20	6/20	0/20	0/20	32/32	32/32	32/32	32/32	32/32	32/32	32/32	32/32	0/32
OK (rel)	0.00	0.30	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00

VPX35496: Flute 3

- Bulk resistivity lower than 3.5 kOhm*cm
- DiodeHalf does not work on PS-P, stopped measuring it as agreed
- Metal clover leaf investigations running:
  - 30 mA close to what is possible for K2410
  - different maximum for current ramp
  - result depends on maximum current



	Metal VdP		p-edge			Bulk VdP		
ne-eta	vdp_met	vdp_met_r	vdp_cb	vdp_cb_r	t_line_cb	vdpBulk	vdp-Bulk_r	vdp-Bulk_rho
hm	mOhm/sq	mOhm/sq	kOhm/sq	kOhm/sq	um	kOhm/sq	kOhm/sq	kOhm*cm
3.1	27.0	26.3		1.23	33.5	61.7	61.8	3.33
2.7	26.9	26.2		1.23	33.9	61.2	61.2	3.30
1.5	26.2	24.7		1.19	33.3	61.4	61.2	3.31
9.6	26.0	26.0		1.19	33.4	61.6	61.2	3.31
0.7	27.2	26.8		1.25	33.4	60.7	60.7	3.28
0.0	25.6	26.3		1.24	33.7	60.4	60.4	3.26
8.5	26.8	26.3		1.20	33.4	60.3	60.6	3.26
7.1	26.8	26.2		1.20	33.5	60.7	60.9	3.28
8.6	26.8	26.1		1.24	33.5	60.6	60.8	3.28
8.3	26.8	26.3		1.23	33.9	60.7	60.5	3.27
6.1	26.5	25.7		1.19	33.0	60.5	60.5	3.27
234.8	26.4	26.2		1.19	33.3	60.3	60.6	3.26
8	26.5	26.4		1.25	33.6	60.9	60.8	3.29
0	27.1	25.8		1.24	33.6	61.0	60.9	3.29
3	26.6	26.2		1.20	33.7	60.9	60.9	3.29
5	26.2	26.4		1.20	33.5	60.5	60.6	3.27
0	26.6	25.7		1.24	33.2	60.9	61.1	3.29
4	25.9	25.9		1.24	33.6	60.9	60.9	3.29
8	26.9	26.0		1.20	33.5	61.4	61.1	3.31
9	25.7	25.8		1.20	33.8	60.7	60.3	3.27
3	22.4	22.5		1.24	32.8	62.2	61.8	3.35
6	22.2	22.2		1.24	33.5	61.9	61.8	3.34
7	22.1	22.0		1.18	33.9	62.2	61.8	3.35
1	21.9	22.1		1.19	33.1	61.4	61.6	3.32
3	20.3	20.1		1.24	33.2	61.9	61.5	3.33
4	20.1	19.9		1.24	33.7	62.1	62.2	3.36
0	20.2	20.0		1.19	33.6	60.7	60.7	3.28
7	20.0	19.9		1.20	33.7	61.7	61.7	3.33
2	20.4	20.1		1.25	33.3	61.7	61.6	3.33
9	20.2	20.0		1.24	33.5	61.6	61.7	3.33
3	20.1	20.1		1.19	32.8	61.5	61.4	3.32
7	19.9	19.9		1.19	33.3	61.1	61.1	3.30
2	26.1	25.8	1.22	1.22	33.5	61.1	61.1	nan
1	24.4	24.1	1.22	1.22	33.5	61.2	61.1	nan
2	2.8	2.7	0.02	0.02	0.3	0.6	0.5	nan
2	32/32	32/32	32/32	32/32	32/32	32/32	32/32	0/32
0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00

30mA range (met. VdP)

100mA

200mA

VPX35496: Flute 4

	GCD05	CBKR		Contact chain		
	i_surf05	r_cont_poly	r_cont_n	cont_p	cont_poly	cont_n
	pA	kOhm	Ohm	kOhm	MOhm	kOhm
HPK_VPX35496_001_PSP_HM_EL	19.3	—	27.8	71.5	—	96.8
HPK_VPX35496_001_PSP_HM_ER	16.0	—	28.2	71.5	—	94.1
HPK_VPX35496_001_PSP_HM_WL	17.7	—	27.9	69.3	—	90.7
HPK_VPX35496_001_PSP_HM_WR	19.4	—	28.0	70.6	—	94.5
HPK_VPX35496_002_PSP_HM_EL	19.4	—	failed	71.5	—	92.2
HPK_VPX35496_002_PSP_HM_ER	16.6	—	28.1	72.2	—	96.7
HPK_VPX35496_002_PSP_HM_WL	18.2	—	28.0	70.1	—	89.3
HPK_VPX35496_002_PSP_HM_WR	20.7	—	28.1	71.5	—	93.4
HPK_VPX35496_010_PSP_HM_EL	20.4	—	27.9	71.3	—	90.8
HPK_VPX35496_010_PSP_HM_ER	18.0	—	28.2	71.3	—	93.7
HPK_VPX35496_010_PSP_HM_WL	18.1	—	27.9	69.6	—	87.6
HPK_VPX35496_010_PSP_HM_WR	20.3	—	28.6	71.0	—	89.2
HPK_VPX35496_017_PSP_HM_EL	20.2	—	27.7	71.9	—	88.6
HPK_VPX35496_017_PSP_HM_ER	18.4	—	28.0	71.9	—	95.6
HPK_VPX35496_017_PSP_HM_WL	19.1	—	28.0	70.1	—	88.1
HPK_VPX35496_017_PSP_HM_WR	20.5	—	28.4	71.2	—	90.9
HPK_VPX35496_026_PSP_HM_EL	20.3	—	27.7	73.4	—	83.0
HPK_VPX35496_026_PSP_HM_ER	15.8	—	27.8	73.8	—	86.0
HPK_VPX35496_026_PSP_HM_WL	16.6	—	28.0	71.3	—	80.1
HPK_VPX35496_026_PSP_HM_WR	20.7	—	28.2	72.6	—	82.1
HPK_VPX35496_032_PSP_HM_EL	20.1	—	27.9	72.5	—	89.7
HPK_VPX35496_032_PSP_HM_ER	15.7	—	27.8	73.2	—	89.5
HPK_VPX35496_032_PSP_HM_WL	17.3	—	27.9	71.4	—	85.8
HPK_VPX35496_032_PSP_HM_WR	21.0	—	28.5	72.8	—	88.8
HPK_VPX35496_040_PSP_HM_EL	22.1	—	28.0	72.5	—	90.4
HPK_VPX35496_040_PSP_HM_ER	17.7	—	28.4	73.4	—	92.2
HPK_VPX35496_040_PSP_HM_WL	18.7	—	27.8	71.5	—	86.4
HPK_VPX35496_040_PSP_HM_WR	22.2	—	28.3	72.3	—	92.0
HPK_VPX35496_044_PSP_HM_EL	21.9	—	28.1	73.0	—	84.6
HPK_VPX35496_044_PSP_HM_ER	17.9	—	28.4	72.2	—	90.3
HPK_VPX35496_044_PSP_HM_WL	19.4	—	27.7	70.9	—	82.2
HPK_VPX35496_044_PSP_HM_WR	22.4	—	28.2	72.7	—	88.5
Median	19.4	0.0	28.0	71.5	0.0	89.6
Average	19.1	0.0	28.1	71.7	0.0	89.5
Std dev.	1.9	0.0	0.2	1.1	0.0	4.2
OK/Tot.	32/32	1/1	31/32	32/32	1/1	32/32
OK (rel)	1.00	1.00	0.97	1.00	1.00	1.00

VPX35496: Summary

- Bulk resistivity low
- Breakdown structure: early breakdown, but DC process anyway
- p-stop/FET V_{th} very homogeneous
- Batch VPX35496 can be accepted?