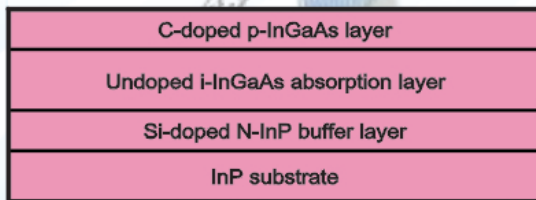


VPEC's InGaAs PIN Epiwafer

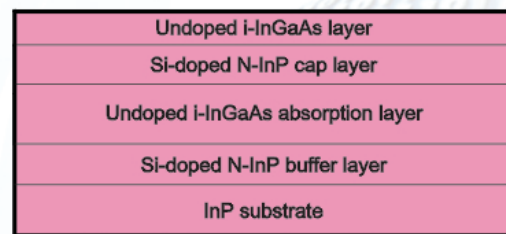
Planar Type and Mesa Type up to 4-inch Wafer

- ★ Very low defect and particle densities on wafer surface for high device yield.
- ★ Very low background of i-InGaAs absorption layer ($<5E14/cm^3$) for high speed application.
- ★ In-process device verification of dark current, capacitance and their uniformities using our own front side process and diffusion capabilities for high quality control.
- ★ Very low dark current in device performance (<100 pA for $300\mu m$ in-diameter InGaAs PIN device) for high device responsivity.
- ★ Low sheet resistance of p-type InGaAs layer and n-type InP buffer layer with great uniformities for mesa-type InGaAs PIN epiwafer.
- ★ Excellent on-wafer, wafer-to-wafer uniformities and batch-to-batch consistency up to 4-inch including material composition, layer thickness and doping concentrations for high cost-effectiveness.
- ★ Grown on n-type or Semi-Insulator substrates are all available.
- ★ Low cost with very high performance and high probe yield ($>90\%$).

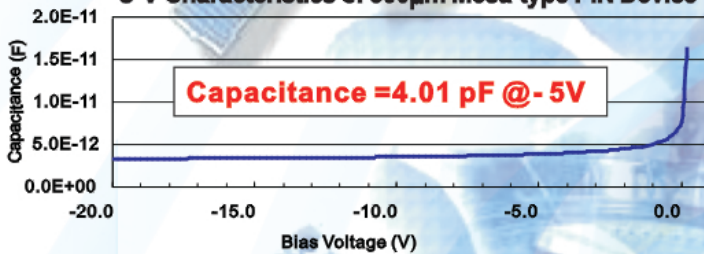
Mesa type InGaAs PIN epi-wafer



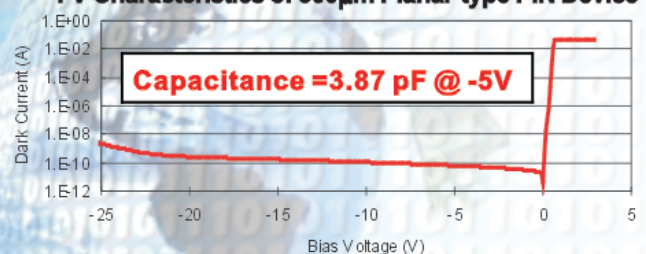
Planar type InGaAs PIN epi-wafer



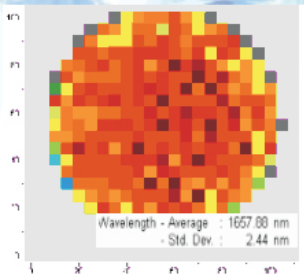
C-V Characteristics of $300\mu m$ Mesa-type PIN Device



I-V Characteristics of $300\mu m$ Planar-type PIN Device

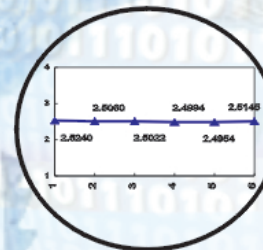


InGaAs Wavelength Mapping



InGaAs Absorption Material

Thickness: 2.507µm Uniformity: 0.42%



4.04	4.03				
4.03	4.03	4.03	4.04	4.02	
4.03	4.04	4.03	4.03	4.03	4.05
4.01	4.03	4.03	4.05	4.04	4.04
4.01	4.01	4.03	4.05	4.04	4.04
3.97	3.99	4.02	4.04	4.08	4.03
3.96	3.97	4.01	4.02	4.01	4.02
3.95	3.95	3.96	4.01	4.00	4.01
3.95	3.95	3.97	3.99	4.00	4.01

Capacitance Mapping ($300\mu m$ device @-5V)

4-inch Mesa-type InGaAs PIN wafer
Ave: 4.02 pF
Stdev: 0.68%

4-inch Planar-type InGaAs PIN wafer
Ave: 74 pA
Min: 63 pA
Max: 92 pA

83	92				
83	85	90	86	87	
79	82	81	85	84	92
80	79	73	77	79	83
76	88	77	70	74	79
73	75	75	67	68	69
68	76	66	70	69	70
66	73	72	65	64	68
63	67	70	69	66	69



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