Sample ID: ***W1558*** **Description** *shallow iHEMT with in-situ Al Gate* **Date** *12/12/2019*

Grower	CC
Requestor	UNSW
Episoft	W1558
Proposed use	in-situ grown Schottky gates

Substrate ID **BT652-12-W-06** **Loading Date** 15/11/2019

Ingot	BT652	**Material list**	GaAs	**Block No.**	W-06
Slice	12	**Doping type**	none	**Loaded By**	CC
Supplier	AXT	**Orientation**	(100)		
Notes	SSP, 3", sapphire backing, shinny up				

Notes:

Sample B as per W1557 with 10 nm Al gate.

Substrate Degas

Date	[hh:mm]	T(E)	Pressure
12/12/2019	23:59	450	4.17E-10

Process request: AFM

Source Calibration

Source	T[E] ºC	Base[C]	Tip[C]	Oscil.	µ/h	nA/Torr	B/G	Mil	Cracker ºC	Doping
W- 1-As		430				5.94E-06	1.68E-09	240	900	
W- 6-Ga		1033.1	1133.1			3.39E-07	1.77E-09			
W- 8-Al		1072.7	1022.7			1.09E-07	1.70E-09			

Observations

Time	T(E) ºC	Pyro	BandiT	G1	G2	Notes
13:31:04	0			7.23E-11	3.30E-10	2nd day. G3: 3.50e-10. Start of Al film precise timing.
13:32:41	0	466		7.28E-11	3.30E-10	2nd day. G3: 3.48e-10. Pyro has a reading? Going down...
13:47:59	0	405		7.36E-11	3.40E-10	2nd day. G3: 3.48e-10. End of Al film.
14:20:55	450			6.85E-09	4.80E-08	G3: 2.94e-8. 16.5/11.5, 3.5 A.
14:48:08	761	629	667	2.49E-08	1.80E-07	G3: 8.56e-8. BE 1178. 33.2/23.5, 5.6 A. Degassing.
15:21:23	770	630	666	2.60E-08	1.80E-07	G3: 9.32e-8. BE 1177. Close As1 to 253 mil.
15:30:08	729	596	625	2.55E-08	1.80E-07	G£: 9.20e-8. BE 1157. End of degas, ready to start GaAs buffer.
16:01:55	729	598	627	2.50E-08	1.80E-07	G3: 9.04e-8. BE 1158. 51% of 1um GaAs. Close As1 to 251mil.
16:19:16	729	598	627	2.47E-08	1.80E-07	G3: 8.94e-8. BE 1158. Close As1 to 248mil.
16:32:06	729	600	629	2.44E-08	1.80E-07	G3: 8.92e-8. BE 1158. 50% of 33nm AlGaAs.

Matrix Layers

Layer	Material	Time	[nm]	Ratio	Repeat?	No.	T-SUB	Dopant	Doping	Comments
1	GaAs	01:00:00	1000		☐		598			
2	AlGaAs	00:01:19	33	0.33	☐		600			
3	GaAs	00:00:07	2		☐		601			
4	Interrupt	21:00:00			☐		0			
5	Al	00:16:26	10		☐		420			0.365*AlAs rate estimation
	Total	22:17:52	1045	*Note that the calculated total values do not include repeat layers*						