

FIG. 1

TARGET COMPOSITION (wt%)				DEPOSITION TEMPERATURE		FILM THICKNESS	MEASURED RESISTANCE	SPECIFIC RESISTANCE	RESULTS OF ADHESION STRENGTH			TAPE PEEL TEST		
Ag	Zr	OTHER METALS	TEMPERATURE	A	(Ω)				Glass	SI WAFER	unit: N	Glass	Si WAFER	
EXAMPLE 1-1	94.8	1.7	3.5 (Au)	300°C	2100	0.030	2.9	6.47	3.01	NO PEEL	NO PEEL	NO PEEL	NO PEEL	
EXAMPLE 1-2	96.6	1.7	1.7 (Co)	300°C	2400	0.027	2.9	5.73	3.10	NO PEEL	NO PEEL	NO PEEL	NO PEEL	
EXAMPLE 1-3	96.6	1.7	1.7 (Ni)	300°C	2400	0.031	3.4	4.56	3.48	NO PEEL	NO PEEL	NO PEEL	NO PEEL	
EXAMPLE 1-4	68.3	1.7	30.0 (Al)	300°C	2400	0.031	3.4	4.64	3.21	NO PEEL	NO PEEL	NO PEEL	NO PEEL	
EXAMPLE 1-5	94.3	1.7	3.5 (Au) 0.5 (Pd)	300°C	2200	0.029	2.9	4.86	3.26	NO PEEL	NO PEEL	NO PEEL	NO PEEL	
EXAMPLE 1-6	94.3	1.7	3.5 (Au) 0.5 (Ru)	300°C	2300	0.031	3.2	4.23	3.05	NO PEEL	NO PEEL	NO PEEL	NO PEEL	
COMPARATIVE EXAMPLE 1-1	100	0	0	300°C	2200	0.022	2.2	0.58	0.98	COMPLETELY PEELED	COMPLETELY PEELED	COMPLETELY PEELED	COMPLETELY PEELED	
COMPARATIVE EXAMPLE 1-2	98.3	1.7	0	300°C	2300	0.026	2.7	2.06	0.51	PARTLY PEELED	PARTLY PEELED	PARTLY PEELED	PARTLY PEELED	
COMPARATIVE EXAMPLE 1-3	97.4	0	2.6 (Au)	300°C	2300	0.023	2.4	0.46	0.22	PARTLY PEELED	COMPLETELY PEELED	COMPLETELY PEELED	COMPLETELY PEELED	
COMPARATIVE EXAMPLE 1-4	98.3	0	1.7 (Co)	300°C	2200	0.028	2.8	2.58	0.47	NO PEEL	COMPLETELY PEELED	COMPLETELY PEELED	COMPLETELY PEELED	
COMPARATIVE EXAMPLE 1-5	98.2	0	1.8 (Ni)	300°C	2200	0.030	3.0	0.67	0.35	COMPLETELY PEELED	COMPLETELY PEELED	COMPLETELY PEELED	COMPLETELY PEELED	
COMPARATIVE EXAMPLE 1-6	70.0	0	30.0 (Al)	300°C	2600	0.031	3.7	2.64	0.98	NO PEEL	PARTLY PEELED	NO PEEL	NO PEEL	
COMPARATIVE EXAMPLE 1-7	98.0	0	0.5 (Pd) 1.0 (Cu)	300°C	2200	0.029	2.9	1.35	3.60	PARTLY PEELED	NO PEEL	NO PEEL	NO PEEL	
COMPARATIVE EXAMPLE 1-8	98.0	0	0.5 (Pd) 1.0 (Cu)	50°C	2100	0.043	4.1	1.02	0.99	COMPLETELY PEELED	COMPLETELY PEELED	COMPLETELY PEELED	COMPLETELY PEELED	
COMPARATIVE EXAMPLE 1-9	98.0	1.7	2.5 (Pd)	300°C	2200	0.122	12.2	2.53	8.36	PARTLY PEELED	NO PEEL	NO PEEL	NO PEEL	

FIG. 2

	TARGET COMPOSITION(wt%)		DEPOSITION TEMPERATURE	FILM THICKNESS	MEASURED RESISTANCE	SPECIFIC RESISTANCE	RESULTS OF ADHESION STRENGTH		TAPE PEEL TEST	
	Cu	wt%(OTHER METALS)					unit: N	Glass	Si WAFER	pieces/pieces
			TEMPERATURE	A	(Ω)	($\mu\Omega\cdot\text{cm}$)	Glass	Si WAFER	Glass	Si WAFER
EXAMPLE 2-1	96.0	4.0(Au)	RT(ROOM TEMPERATURE)	2100	0.040	3.8	5.72	3.48	0/100	2/100
EXAMPLE 2-2	98.3	1.7(Au)	RT	2119	0.030	2.9	4.37	3.12	0/100	5/100
EXAMPLE 2-3	96.3	3.7(Co)	RT	2119	0.030	2.9	5.54	3.65	0/100	10/100
EXAMPLE 2-4	95.2	4.8(Co)	RT	2200	0.032	3.2	5.68	3.68	0/100	10/100
EXAMPLE 2-5	95.0	2.3(Au)	RT	2240	0.038	3.9	5.52	3.54	0/100	0/100
EXAMPLE 2-6	94.6	1.2(Au)	RT	2450	0.036	4.0	5.31	3.07	0/100	0/100
COMPARATIVE EXAMPLE 2-1	100	—	RT	2180	0.040	4.0	<0.1	<0.1	100/100	100/100
COMPARATIVE EXAMPLE 2-2	97.0	3.0(Zr)	RT	1860	0.120	10.1	0.65	1.64	12/100	40/100
COMPARATIVE EXAMPLE 2-3	98.1	1.9(Ni)	RT	1970	0.100	8.9	0.24	1.41	100/100	30/100
COMPARATIVE EXAMPLE 2-4	94.6	5.4(Al)	RT	2230	0.110	11.1	0.13	1.71	100/100	50/100
COMPARATIVE EXAMPLE 2-5	93.5	6.5(In)	RT	2480	0.080	9.0	0.73	0.82	20/100	30/100
COMPARATIVE EXAMPLE 2-6	97.2	2.8(Bi)	RT	2500	0.090	10.2	0.62	0.94	100/100	100/100
COMPARATIVE EXAMPLE 2-7	98.3	1.7(Sn)	RT	2570	0.400	46.6	0.53	0.64	100/100	100/100
COMPARATIVE EXAMPLE 2-8	98.8	1.2(Ti)	RT	2530	0.039	4.5	0.47	0.78	100/100	100/100
COMPARATIVE EXAMPLE 2-9	98.4	1.6(W)	RT	2260	0.210	21.5	0.57	0.69	100/100	100/100

FIG.3

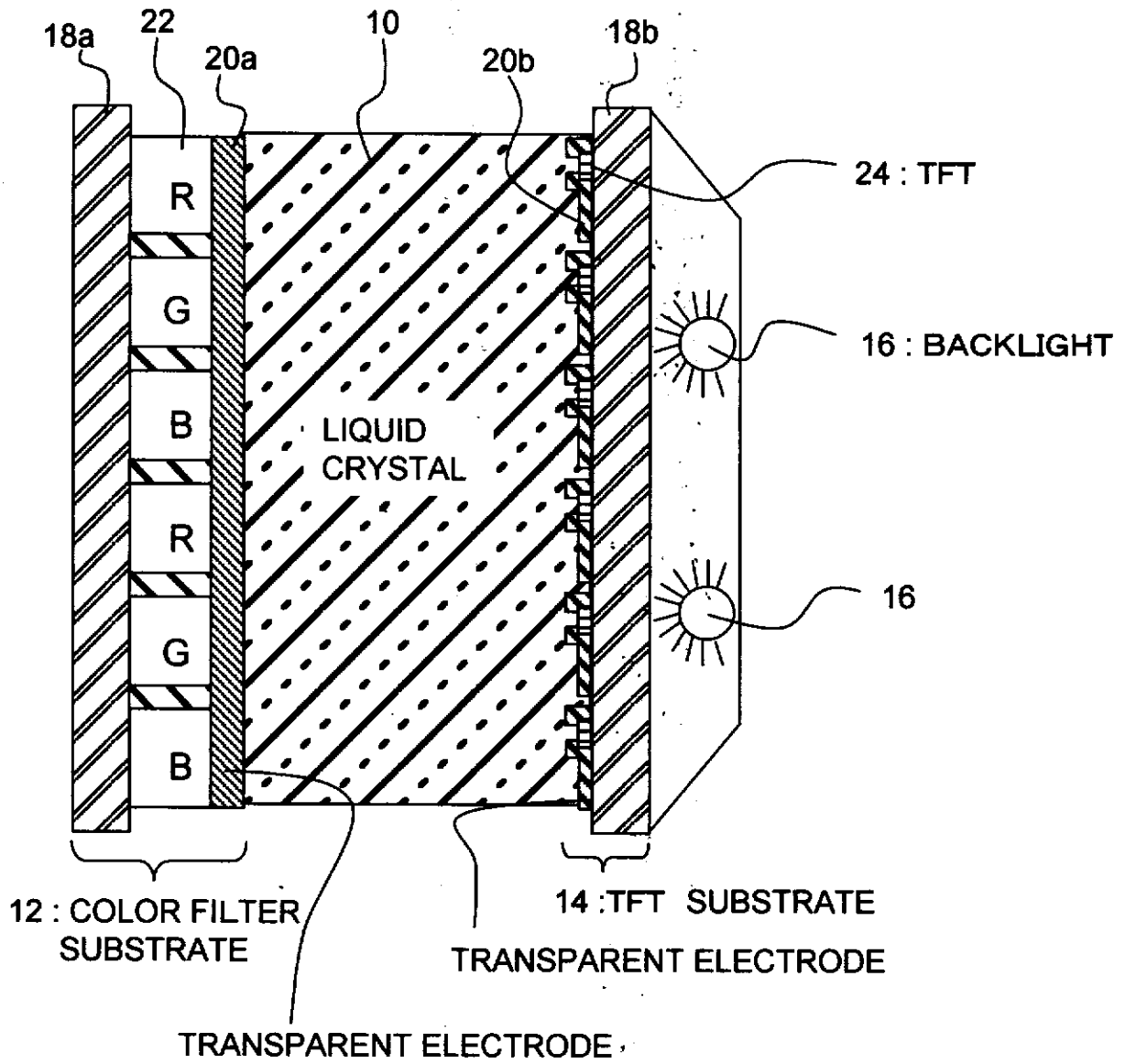


FIG.4

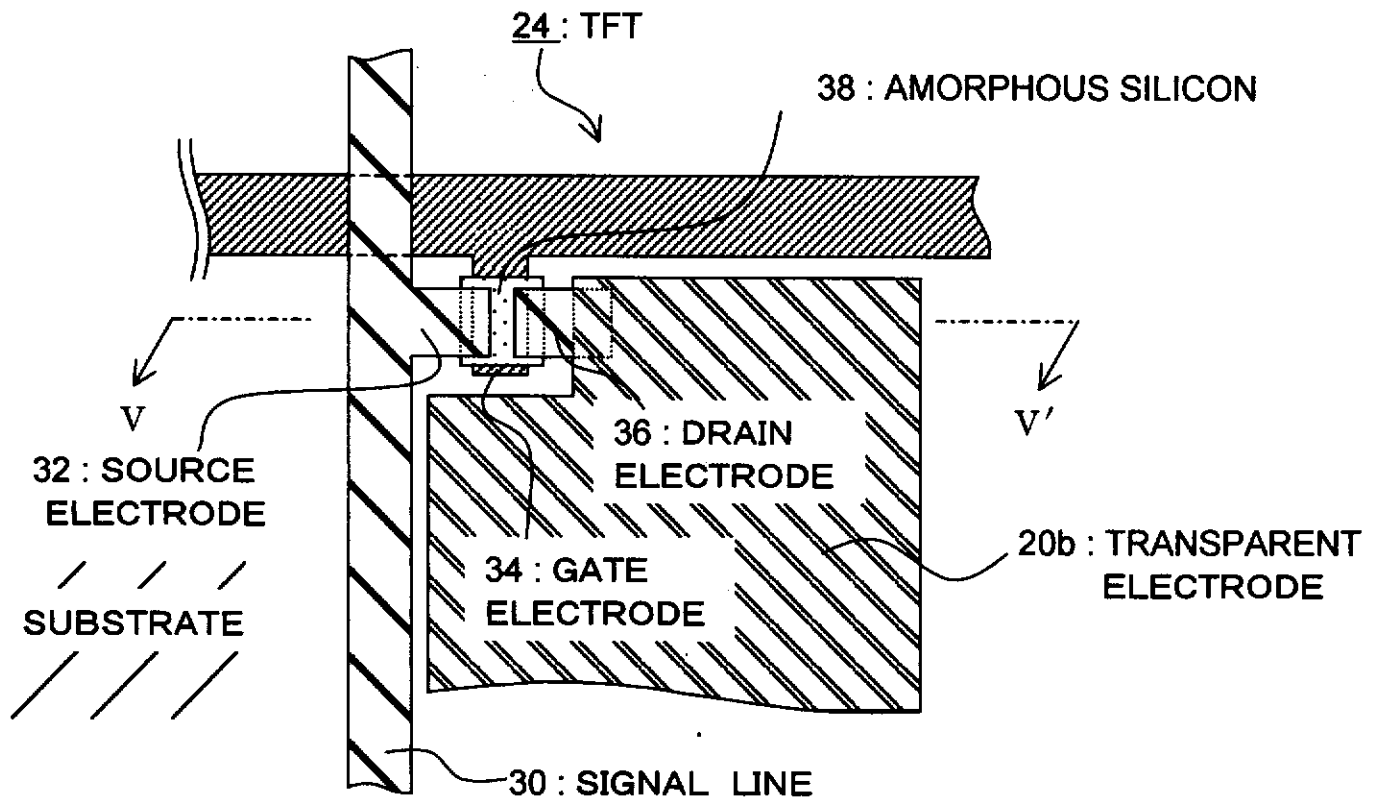
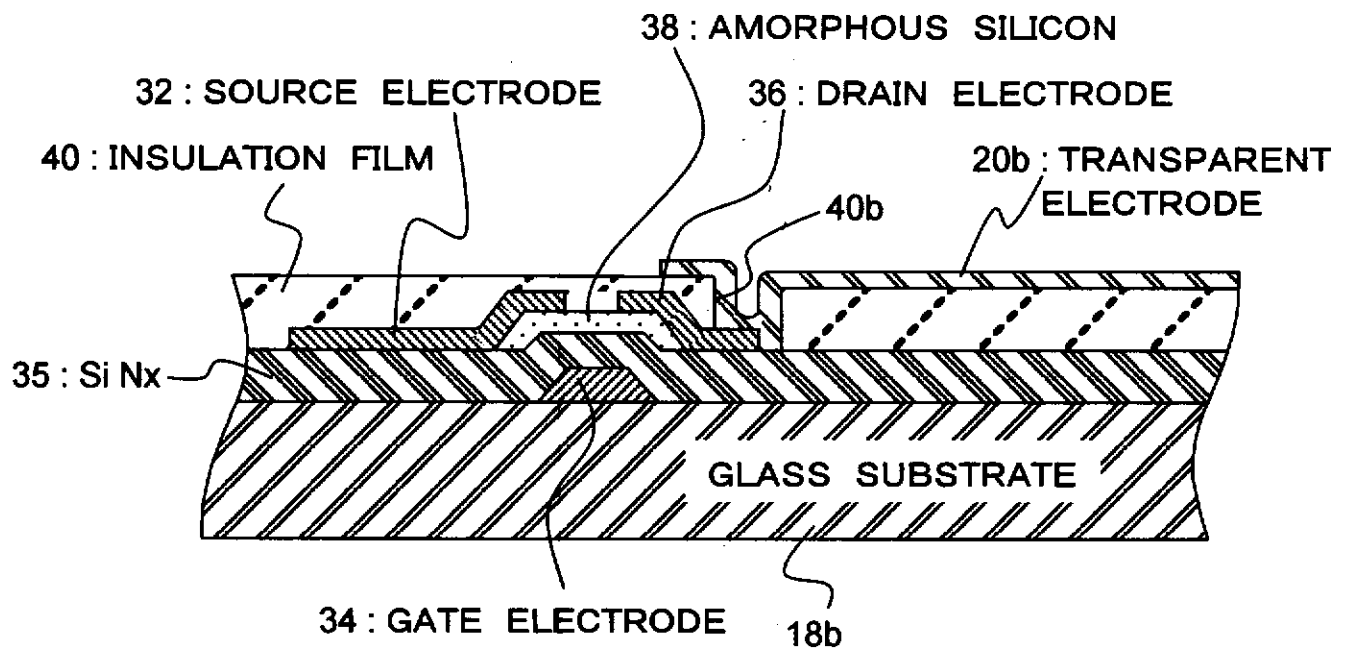


FIG.5



V - V' CROSS-SECTION