Passivation Glass

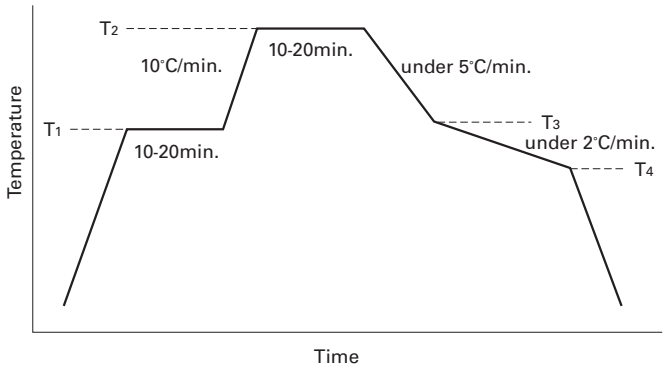
Zinc-borosilicate passivation glass is applicable for use in manufacturing highly reliable devices because no change occurs to surface charge density in BT treatment when applied with DC bias and heating.
Lead silicate glass and lead borosilicate passivation glass have excellent chemical durability and can be applied to transistors, thyristors, and diodes with nickel-plated electrodes.
Various particle sizes are available upon request.

Properties

Properties/Glass Code			GP-014	GP-031	GP-5210	GP-180	GP-190	GP-200
Grind type*1			350	350	350	S	S	S
Coefficient of thermal expansion	30-300°C	$\times10^{-7}$/K	43	36	33	44.5	43.5	44
Transformation point		°C	550	535	550	590	620	595
Softening point		°C	650	635	650	775	810	780
Density		$\times10^{3}$kg/m^{3}	3.78	3.93	3.84	3.87	3.81	3.78
Alkali content	Na_2O	ppm	≦20	≦20	≦20	≦30	≦30	≦30
	K_2O	ppm	≦10	≦10	≦10	≦10	≦10	≦10
	Li_2O	ppm	≦5	≦5	≦10	≦10	≦10	≦10
Application (Reverse breakdown voltage level)*2			Low	Low	High	Medium	High	Medium
Surface charge density: NFB*3		$\times10^{11}$/cm^{2}	0–+1	0–+1	+6–+7	+7–+8	+15–+16	+6–+7
Glass type			$ZnO{\cdot}B_2O_3{\cdot}SiO_2$	$ZnO{\cdot}B_2O_3{\cdot}SiO_2{\cdot}PbO$		$PbO{\cdot}SiO_2{\cdot}Al_2O_3$		

∗1 350: Dmax 44μm, D_{50} 16μm S: Dmax 44μm, D_{50} 7.5μm
∗2 Selection guide depending on your device level.
∗3 Silicon side

Firing Profile



Glass Code	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)
GP-014	590	680-690	590	540
GP-031	570	700-720	570	520
GP-5210	590	720-730	590	540
GP-180	650	800-820	630	580
GP-190	670	860-870	650	600
GP-200	650	810-820	630	580
GP-230	670	855-865	650	600
GP-605	660	850-860	630	580
GP-620	670	850-860	650	600
GP-350	520	710-720	520	450
GP-370	570	750-760	570	450
GP-380	600	770-780	560	510
GP-390	600	770-780	570	520

*You may not be able to obtain sufficient firing, crystallizing status, and electrical characteristics, in case your firing profile is not within our recommendation.

GP-230	**GP-605**	**GP-620**	**GP-350**	**GP-370**	**GP-380**	**GP-390**
S	S	S	S	S	S	S
41.5	44	43	46.5	42.0	44.5	43
610	590	620	470	475	535	540
830	790	810	645	680	740	740
3.58	3.84	3.76	3.53	3.32	3.61	3.54
≦30	≦30	≦30	≦30	≦30	≦30	≦30
≦10	≦10	≦10	≦30	≦10	≦10	≦10
≦10	≦10	≦10	≦10	≦10	≦10	≦10
Medium	High	High	Low	Medium	Medium	High
+7–+8	+11–+12	+14–+15	+2–+3	+5–+6	+6–+7	+14–+15
			$PbO{\cdot}B_2O_3{\cdot}SiO_2{\cdot}Al_2O_3$			