

BGA Assembly Generic QC Flow & Control Plan

Process Flow	Operation	Function	Frequency	Sample size
	Incoming Wafer Inspection	Visual check for broken wafer	Every wafer	Whole area of wafer back
		wafer backside check for crack and scratch	Every wafer	5 wafer
		Inspection for die defect	Every wafer	75ea/5 wafers; 9points per wafer
	Backgrinding	Backgrind thickness	Every setup	5 data. 1 wafer
		Wafer backside roughness measure	1x/shift/machine	1 pcs wafer
		TTV	Every setup	1 pcs wafer
	Wafer saw	Visual check	1x/shift/every change device	50 units
		Saw Line	Between 5th to 15th line in wafer	Every wafer
	2/0 QC Gate	Visual defects	Every wafer lot	125 dies
	Die Attach	Visual inspection	Every set-up	2ea
		Die backside inspection	Every setup, Every 8 hrs / MC	5ea. (2ea monitor)
		Die tilt	Every setup, Every 8 hrs / MC	2ea
		Fillet height	Every setup, Every 8 hrs / MC	2ea
		Epoxy coverage	Every setup, Every 8 hrs / MC	2ea
		Die backside chip measurement	Every setup	2ea
		Die placement	Every setup, Every 8 hrs / MC	2ea
		Epoxy void	Every setup, Every 12 hrs / MC	2ea, size<100 units 10% lot size; >100 units 10 good dice
	Die Attach Cure	Die shear	per oven/12hours	2ea
		Epoxy void	Per day/mc	1 strip
	Plasma clean	Contact angle measurement on die surface	1x / 1day / machine	3ea
	Wire Bond	Wire pull test	1x/shift/machine	10 wires
		Ball shear test	1x/shift/machine	10 ball/d
		Ball size	Every Setup	1 unit,5 wires/ 5 balls
		Ball thickness	Evert Setup	1 unit,5 wires/ 5 balls
		Cratering	Every setup	1 ea
	3/0 QC Gate	Visual inspection	Per lot	125ea: Lot sizes≤3200, 200ea: 3200<Lot sizes≤10000 315ea: 10000<Lot sizes≤35000 500ea: Lot size > 35000
	Plasma clean	Contact angle measurement on die surface	1x / 1day / machine	Every machine
	Mold	Visual inspection	Every setup	1st good shot
		warpage	Every mold die set-up	1st good shot,2unit/strip
		Package thickness	Every mold die set-up 1X/mold die/MC/shift	1st good shot,1unit/strip 1X/mold die/MC/shift. (monitor)
	Laser marking	Visual inspection	Every setup; 1X/Shift/Machine	First strip; 1 strips
		Engraving depth	Every setup	5 points of 1st strip
Post mold cure	Temperature / time	3 oven/1shift	Nil	
	Warpage	Per pkg type/size/day	2 units	
	Delamination	3 ovens/ shift	1 strip/Oven	
Plasma clean	Contact angle measurement on die surface	1x / 1day / machine	Every machine	
Solder Ball	Reflow Owen	Every Setup	Nil	
	Flux Clean	Every Setup	Nil	
	Reflow Profile	Every Setup	Nil	
	Solder Ball Diameter	Every Set up; 1X / shift / m/c	10 Balls form 2 units	
	Solder Ball Height	Every Set up; 1X / shift / m/c	10 Balls form 2 units	
Saw Singulation	Dimension check	Every change of substrate or package type / after mc repair or idle for 24hrs/ after regular PM / Changing 1-Up half cut into cell (Full Cut) within the same package or vice versa // After cutting empty ring for check cutting table level	5 units	
	Visual Inspection		5 units	
Pick & Place	F Dimension Check	1x / Setup / machine	5 units	
	Visual Inspection	1x / Setup / machine	5 units	
Final visual QC Gate	Ball Coplanarity	Per Lot	125 units(min)	
	Ball Diameter	Per Lot	125 units(min)	
	Visual defects	Per sub-lot	AQL 0.04	
	Side defects visual inspection	Per sub-lot	10 units	
	Reject verification	Per sub-lot	5 units	

Test Generic QC Flow & Control Plan

Process Flow	Process	Function	Frequency	Sample size
	Electrical Test	EQA buyoff	Every lot	per AQL sampling plan, min 0.065
	OQA	Visual defects	Every lot	315units/lot
	Pack	Document, label		Every lot