ATTACHMENT 1.
WAFER FABRICATION FLOWCHART

INCOMING (▽)
QUALITY INSPECTION AND GATE
MANUFACTURING PROCESS (○)
QUALITY MONITOR / SURVEILLANCE (octagon)
REWORK (□)

Vendor: Linear Technology Corporation
Product: Generic Bipolar Process
Package: All Package Types
Location of Wafer Fab: Linear Technology Corp., Milpitas, CA./ Camas, WA.
Assembly: Penang/Carsem/Unisem Malaysia
Final Test: Linear Technology Corp., Milpitas, CA., Singapore
Q.C. Test Linear Technology Corp., Milpitas, CA., Singapore
Source Accept Test: Linear Technology Corp., Milpitas, CA., Singapore
Quality Contact: Dwight Somersett, LTC, Milpitas, CA.
(408) 432-1900 Ext. 2427

FLOW CHART INCOMING FAB REWORK	PROCESS STEP	DESCRIPTION	INSPECTION/ TEST CRITERIA	METHOD & EQUIPMENT	SAMPLING PLAN	SPC TECHNIQUE
▽	INCOMING RAW MATERIAL INSPECTION	WAFERS	VISUAL: SCRATCHES, PITS, HAZE, CRATERS, DIMPLES, CONTAMINATION,	1X INSPECTION	1.0% AQL TO 2.5% AQL LEVEL 1.	% LAR TREND CHART & % DEFECTIVE TREND CHART
			OXYGEN/CARBON MEASUREMENT	INFRERED SPECTROMETER	S/S = 2, ACC = 0	X BAR & R X BAR & S
			RESISTIVITY/ CONDUCTIVITY	MAGNETRON V/I METER	S/S = 2, ACC = 0	X & MOVING R RUN CHART
			DIMENSIONAL	CALIPERS	2.5% AQL, LEVEL 1	
			THICKNESS AND TAPER/BOW	DIAL THICKNESS GAGE	2.5% AQL, LEVEL 1	
			ORIENTATION	BREAK TEST	S/S = 1, ACC = 0	
			C OF C VERIFICATION AGAINST "MPS" REQUIREMENTS		EACH BATCH	
○		PHOTO MASK PLATES	VISUAL C.D. MEASUREMENT	AMS-100 CALIPERS COMPARATOR UV LAMP	EACH PLATE	LOGBOOK
○		CHEMICALS	C OF C VERIFICATION AGAINST "MPS" REQUIREMENTS		EACH BATCH	LOGBOOK
		GASES	PLUS YEARLY GAS ANALYSIS			LOGBOOK
		TARGETS	C OF C VERIFICATION		EACH TARGET	LOGBOOK
○—octagon	INITIAL OXIDATION	OXIDATION FURNACE	VISUAL	UV LAMP (100%) 20X MICROSCOPE	2 WAFERS/RUN < 2 DEFECTS PER FIELD OF VIEW	LOGBOOK
			OXIDE THICKNESS	NANOSPEC	3 WAFERS/CYCLE	
○—octagon	COLLECTOR MASK	RESIST MASK HF ETCHANT BATH	FINAL INSPECT	OPTICAL MICROSCOPE 100X	"Z" PATTERN SCAN 100% OF THE WAFERS	PRODUCTION LOG
○	COLLECTOR IMPLANT	IMPLANT				LOG BOOK
○—octagon	COLLECTOR DIFFUSION	OXIDATION AND DIFFUSION	VISUAL	UV LAMP (100%) 20X MICROSCOPE	2 WAFERS/RUN <2 DEFECTS PER FIELD	LOG BOOK
		FURNANCE	OXIDE THICKNESS	NANOSPEC	2 WAFERS/RUN	
			R □	4 POINT PROBE	1 TEST WAFER/RUN	
			XJ	PHILTEC GROOVE	1 TEST WAFER/ CYCLE	

FLOW CHART INCOMING FAB REWORK	PROCESS STEP	DESCRIPTION	INSPECTION/ TEST CRITERIA	METHOD & EQUIPMENT	SAMPLING PLAN	SPC TECHNIQUE
	EPI	DEPOSIT EPI GEMINI REACTOR	VISUAL	UV LAMP	100% FOR EPI SPIKE MORE THAN 5/WFR IS REJECT	
				INTERFERENCE CONTRAST MICRO-SCOPE	MORE THAN 1 SLIP AND STACKING FAULT IS REJECT	
			$R_{\square}$	4 POINT PROBE	2 READING/PASS	X & MOVING R
			EPI THICKNESS	NICOLET	2 READING/PASS	RUN CHART
	EPI RE-OX	OXIDATION FURNACE	VISUAL	UV LAMP	100%	
				20X MICROSCOPE	2 WAFERS/RUN <2 DEFECTS PER FIELD OF VIEW	LOGBOOK
			OXIDE THICKNESS	NANOSPEC	2 WAFERS/RUN	
	ISOLATION MASK	RESIST MASK HF ETCHANT BATH	FINAL INSPECTION	OPTICAL MICRO-SCOPE 100X	"Z" PATTERN SCAN. 100% OF THE WAFERS	PRODUCTION LOG
	ISOLATION PREDEPOSITION	BORON DEPOSI-TION FURNACE	VISUAL	UV LAMP	100% <10 DEFECTS/ WAFER	
				20X MICROSCOPE	2 WAFERS/RUN <4 DEFECTS/PER FIELD OF VIEW	TREND CHART
			$R_{\square}$	4 POINT PROBE	2 TEST WAFERS/RUN	
	ISOLATION DIFFUSION	DIFFUSION FURNACE	VISUAL	UV LAMP	100% <10 DEFECTS/ WAFER	
				20X MICROSCOPE	2 WAFERS/RUN <2 DEFECTS PER FIELD OF VIEW	
			$R_{\square}$	4 POINT PROBE	2 TEST WAFERS/RUN	LOG BOOK
			XJ	PHILTEC GROOVE	1TEST CHIP/RUN	
			TOX	NANOSPEC	2 PRODUCT WAFERS/ RUN	
	SINKER MASK	RESIST MASK HF ETCHANT BATH	FINAL INSPECT	OPTICAL MICROSCOPE 100X	"Z" PATTERN SCAN. 100% OF THE WAFERS	PRODUCTION LOG BOOK
	SINKER PREDEP	DEPOSITION FURNACE	VISUAL	UV LAMP	100% <10 DEFECTS/ WAFER	TREND CHART
			$R_{\square}$	4 POINT PROBE	2 TEST WAFERS/RUN	
	SINKER DIFFUSION	DIFFUSION FURNACE	VISUAL	UV LAMP	100%	
				20 X MICROSCOPE	<3 DEFECTS PER FIELD OF VIEW	LOG BOOK
			$R_{\square}$	4 POINT PROBE	2 TEST WAFERS/RUN	
			TOX	NANOSPEC	2 TEST WAFERS/RUN	

FLOW CHART INCOMING FAB REWORK	PROCESS STEP	DESCRIPTION	INSPECTION/ TEST CRITERIA	METHOD & EQUIPMENT	SAMPLING PLAN	SPC TECHNIQUE
	BASE MASK	RESIST MASK HF ETCHANT BATH	FINAL INSPECT	OPTICAL MICROSCOPE 100X	"Z" PATTERN SCAN. 100% OF THE WAFERS	X BAR & R
	ISO DIODE CHECK	CURVE TRACER BVCSO	BVCSO	CURVE TRACER	4 WAFERS/RUN >1PER 12 READING IS FAIL	LOG BOOK
	BASE PREDEP	DEPOSITION FURNACE	VISUAL	UV LAMP	100% <10 DEFECTS/ WAFER	X BAR & R
				20X MICROSCOPE	2 WAFERS/RUN <4 DEFECTS/PER FIELD OF VIEW	
			$R_{\square}$	4 POINT PROBE	2 TEST WAFERS/RUN	
	BASE DIFFUSION	DIFFUSION FURNACE	VISUAL	UV LAMP	100% <10 DEFECTS PER WAFER	TREND CHART
				20X MICROSCOPE	2 WAFERS PER RUN <4 DEFECTS PER FIELD OF VIEW	
			$R_{\square}$	4 POINT PROBE	2 TEST WAFERS/RUN	
			TOX	NANOSPEC	2 PRODUCT WAFERS PER RUN	
	EMITTER MASK	RESIST MASK HF ETCHANT BATH	FINAL INSPECT	OPTICAL MICROSCOPE 100X	"Z" PATTERN SCAN. 100% OF THE WAFERS	PRODUCTION LOG
	CB DIODE CHECK	CURVE TRACER	BVCBO	CURVE TRACER	<1 OUT OF 16 READINGS IS FAIL	LOG BOOK
	EMITTER DIFFUSION	DEPOSITION FURNACE	$R_{\square}$	4 POINT PROBE	2 TEST CHIP/CYCLE	LOG BOOK
			BETA/LV	CURVE TRACER	3 SITE PER WAFER EVERY FOURTH WAFER >2 READINGS OUT OF SPEC	
	CONTACT MASK	RESIST MASK HF ETCHANT BATH	FINAL INSPECT	OPTICAL MICROSCOPE 100X 1000X	"Z" PATTERN SCAN. 100% OF THE WAFERS CRITICAL DIMENSION MEASURE. 2 WAFERS PER RUN LOT, ACCEPT ON Ø FAILURES	PRODUCTION LOG TREND CHART
	METAL DEPOSITION	DEPOSITION SPUTTER MACHINE	VISUAL	UV LAMP	<5 DEFECTS/WAFER 100%	X BAR & R
			$R_{\square}$/ THICKNESS	4 POINT PROBE	2 READINGS / PASS	
	METAL MASK	RESIST MASK ETCHANT BATH	FINAL INSPECT	OPTICAL MICROSCOPE 200X 1000X	"Z" PATTERN SCAN 100% OF THE WAFERS CRITICAL DIMENSION MEASURE. 2 WAFERS PER RUN LOT, ACCEPT ON Ø FAILURES	PRODUCTION LOG CD LOG BOOK

FLOW CHART INCOMING FAB REWORK	PROCESS STEP	DESCRIPTION	INSPECTION/ TEST CRITERIA	METHOD & EQUIPMENT	SAMPLING PLAN	SPC TECHNIQUE
	ALLOY	ANNEAL FURNACE	VISUAL	UV LAMP	100% <10 DEFECTS/ PER WAFER	LOG BOOK
	ELECTRICAL TEST	TO EVALUATE ELECTRICAL PARAMETERS LOMAC			EVERY WAFER	LOG BOOK
	LPOM	PASSIVATION LPCVD FURNACE	VISUAL	UV LAMP	100%, MORE THAN 2 COLOR CHANGE IS FAIL	X BAR & R
				10X MICROSCOPE	3 WAFERS/CYCLE <3 DEFECTS/PER FIELD OF VIEW	
			TOX	NANOSPEC	3 WAFERS/CYCLE	
			PHOSPHOROUS CONCENTRATION	10:1 HP ETCH RATE	3 WAFERS/CYCLE	
	PEN	PECVD NITRIDE DEPOSITION FURNACE	VISUAL	UV LAMP	100%, MORE THAN 2 COLOR CHANGE IS FAIL	TREND CHART
				10X MICROSCOPE	2 WAFERS/RUN, <5 DEFECTS PER FIELD OF VIEW	
			THICKNESS	NANOSPEC	3 WAFERS/CYCLE	
			INDEX OF REFRACTION	ELIPSOMETER	3 WAFERS/CYCLE	
	PAD MASK	RESIST MASK RF PLASMA ETCH & OXIDE WET ETCHANT BATH	FINAL INSPECT	OPTICAL MICROSCOPE 100X	"Z" PATTERN SCAN. 100% OF THE WAFERS	PRODUCTION LOG
	ELECTRICAL TEST	EVALUATE ELECTRICAL PARAMETERS			100%	LOG BOOK
	BACKLAP	DISCO.	N / A	N / A	N / A	LOG BOOK
	BACKSIDE METAL	BACKSIDE METALIZATION	VISUAL	UN-AIDED EYE	100%	LOG BOOK
	SEM	STEP COVERAGE	2 PHOTOS	SCANNING ELECTRON MICROSCOPE	1 WAFER PER WEEK	LOG BOOK
		GENERAL METALIZATION	1 PHOTO			