ATTACHMENT 2.
ASSEMBLY FLOWCHART

INCOMING

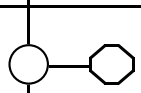
QUALITY INSPECTION AND GATE

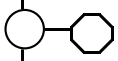
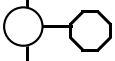
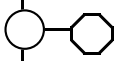
MANUFACTURING PROCESS

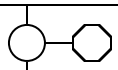
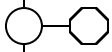
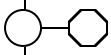
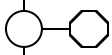
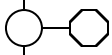
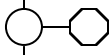
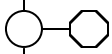
QUALITY MONITOR / SURVEILLANCE

REWORK

Vendor: Linear Technology Corporation
Product: BIPOLAR PROCESS
Package: DD PACK
Location of Wafer Fab: Linear Technology Corp., Milpitas, CA.
Assembly: Penang & Carsem 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 ASSY 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	1 X INSPECTION	1.0 % AQL TO 2.5% AQL LEVEL I	% LAR TREND CHART AND % DEFECTIVE TREND CHART
			OXYGEN/CARBON MEASUREMENT	INFRARED SPECTROMETER	S/S = 2, ACC = Ø	
			RESISTIVITY/ CONDUCTIVITY	MAGNETRON V/I METER	S/S = 2, ACC = Ø	
			DIMENTIONAL	CALIPERS	2.5% AQL, LEVEL S1	
			THICKNESS AND TAPER/BOW	DIAL THICKNESS GAUGE	2.5% AQL, LEVEL S1	
			ORIENTATION	BREAK TEST	S/S = 1, ACC = 0	
			C of C VERIFICATION AGAINST "MPS"		EACH BATCH	
		CHEMICALS	REQUIREMENTS PLUS YEARLY		EACH BATCH	
		GASES	GAS ANALYSIS			
	WAFER SORT	100% DIE LEVEL ELECTRICAL TEST REJECTS ARE RED INKED		WAFER PROBER		
	WAFER SORT MONITOR	MONITOR PROBING AND 2ND OPTICAL QUALITY	PROBE DEFECTS 2ND OPTICAL DEFECTS	3X TO 75X MICROSCOPE	MINIMUM OF 3 TIMES PER SHIFT. S/S = 1, ACC = 0	% DEFECTIVE TREND CHART
	KIT FOR OVERSEAS ASSEMBLY	WAFERS ARE KITTED WITH LTC BONDING DIAGRAM AND LTC ASSEMBLY TRAVELER				
	INCOMING PIECE PARTS INSPECTION	LEAD FRAME	VISUAL	10X TO 30X MICROSCOPE	1% AQL, LEVEL 2	% LAR TREND CHART
			MECHANICAL	OPTICAL COMPARATOR, CALIPERS, X-RAY FLOURESENCE		
			FUNCTIONAL (ASSEMBLY PROCESS SIMULATION): BOND PULL TEST DIE SHEAR TEST			

FLOW CHART INCOMING FAB REWORK	PROCESS STEP	DESCRIPTION	INSPECTION/ TEST CRITERIA	METHOD & EQUIPMENT	SAMPLING PLAN	SPC TECHNIQUE
	WAFER SAW	DIE SEPERATION	ALIGNMENT ACCURACY	TV ALIGNMENT MICRO AUTOMATION OR DISCO SAW 10X TO 30X MICROSCOPE		
	WAFER SAW MONITOR		SAW QUALITY SAW ACCURACY	10X TO 30X MICROSCOPE	6 X PER SHIFT, S/S = 1 WAFER, ACC = Ø S/S = 50 DIE, ACC = Ø	% DEFECTIVE TREND CHART nP CHART
	100% 2ND OPTICAL INSPECTION	DIE QUALITY	DIE VISUAL QUALITY	75X MICROSCOPE	EVERY LOT 100% BASIS	YIELD ANALYSIS
	QA 2ND OPTICAL INSPECTION		DIE VISUAL QUALITY	75X MICROSCOPE	LTPD = 5% S/S = 45, ACC = Ø	% LAR AND % UNIT DEFECTIVE TREND CHART
	DIE ATTACH	DIE BONDED TO LEAD FRAME WITH Pb/Sn WIRE		AUTO DIE BONDER		
	DIE ATTACH MONITOR		VISUAL QUALITY DIE SHEAR TEST	10X TO 30X MICROSCOPE DIE SHEAR TESTER	S/S = 1 STRIP PER WAFER, PER HOUR	nP CHART % DEFECTIVE TREND CHART X BAR & R DIE SHEAR STRENGTH CHART
	WIRE BOND	BALL BONDS GOLD 2.00 MIL WIRE	DEFECTS	AUTO THERMOSONIC BALL BONDER	SS = 100 EVERY HOUR, ACC = Ø	nP CHART
	WIRE BOND MONITOR		BOND PULL STRENGTH	10X TO 30X MICROSCOPE BOND PULL TESTER	EVERY SET-UP AND 1 TIME PER SHIFT	% DEF. TREND CHART. X BAR & R WIRE BOND STR. TREND CHART
	100% 3RD OPTICAL INSPECTION	CHECK FOR WORKMANSHIP QUALITY PRIOR TO MOLDING	DIE, DIE BOND, WIRE BOND VISUAL QUALITY	30X TO 60X MICROSCOPE	EVERY LOT 100% BASIS	YIELD CHART
	QA 3RD OPTICAL INSPECTION		ASSEMBLY VISUAL QUALITY	30X TO 60X MICROSCOPE	EVERY LOT LTPD = 5% S/S = 45, ACC = Ø	% LAR AND % UNIT DEFECTIVE TREND CHART

FLOW CHART INCOMING ASSY REWORK	PROCESS STEP	DESCRIPTION	INSPECTION/ TEST CRITERIA	METHOD & EQUIPMENT	SAMPLING PLAN	SPC TECHNIQUE
	MOLD	ENCAPSULATION WITH EPOXY NOVOLAC		TRANSFER MOLD	5 TIMES PER SHIFT PER MOLD 1 SHOT, ACC = Ø	nP CHART
	MOLD MONITOR	MOLDING QUALITY	VISUAL: CHIP, VOID AND CRACKS, MISALIGNMENT ETC.	30X TO 60X MICROSCOPE		% LAR TREND CHART LOG BOOK
	POST MOLD BAKE	CURE MOLDING COMPOUND		BAKE IN +175°C OVEN FOR 6 HOURS	1X PER DAY	X BAR & R
	MOLD BAKE MONITOR	PROCESS MONITOR	CHECK OVEN TEMPERATURE	MOLD CURE IN OVEN	EACH OVEN AT START AND 1 TIME PER SHIFT	% FAILED MONITOR TREND CHART
	SLURRY DEFLASH	REMOVE MOLD FLASH FROM PACKAGE	L/F & HEATSINK MUST BE FREE FROM MOLD FLASH			
	DEFLASH MONITOR	PROCESS MONITOR	VISUAL: INCOMPLETE DEFLASH, PACKAGE DAMAGE	7X TO 30X MICROSCOPE	2 STRIPS EVERY 2 HOURS, ACC = Ø	% UNIT DEFECTIVE TREND CHART
	SOLDER PLATE	LEAD FINISH			2X PER SHIFT	
	SOLDER PLATE INSPECTION	SOLDER PLATE QUALITY	COVERAGE, THICKNESS, QUALITY	UN-AIDED EYE	100%	% DEFECTIVE TREND CHART
	SOLDERABILITY TEST	SOLDER PLATE QUALITY	MINIMUM 95% COVERAGE	3X TO 10X MICROSCOPE	S/S = 11, ACC = Ø	% LAR CHART
	MARK	TRACEABILITY, DATE CODE & DEVICE MARKING		OFFSET MARKING WITH MARKEM 7224 OR LASER MARK	EVERY HALF HOUR, S/S = 15 UNITS, ACC = Ø PER MACHINE.	
	MARK MONITOR	CHECK MARKING QUALITY	VISUAL: ILLEGIBLE MARK, CORRECT MARK, MARKING PERMANENCY TEST (IF INK MARKED)	UN-AIDED EYE, 6 INCHES UNDER NORMAL ROOM LIGHTING METHOD 2015 MIL-STD-883	2 TIMES PER SHIFT PER MACHINE S/S = 20, ACC = Ø	% UNIT DEFECTIVE P.A. TREND CHART
	TRIM & FORM SINGULATION	SINGULATE UNIT AND PLACE IN ANTISTATIC TUBE	VISUAL: BENT LEAD, PACKAGE DAMAGE	ASM AUTO MACHINE 7X TO 30X MICROSCOPE	2 STRIPS PER SHIFT	LOGBOOK
	FINAL VISUAL INSPECT	100% INSPECT	VISUAL: BENT LEADS MOLD FLASH, SOLDER QUALITY ETC	UN-AIDED EYE TO 10X MICROSCOPE	EVERY LOT 100% BASIS	% LAR AND % UNIT DEFECTIVE P.A. TREND CHART
	PACK	PACKING & PREPERATION FOR DELIVERY		ANTI-STATIC SHIPPING TUBE		
	SHIP TO LTC					