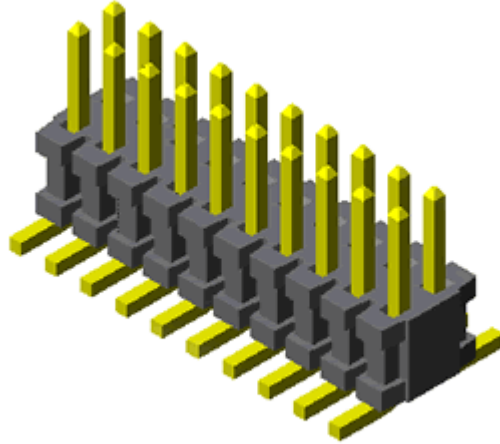




Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0119	
Requested by: John Schmelz		Date: 3/4/2003	Product Rev: BU
Part #: FTSH-150-03-L-DV		Lot #: NA	Tech: J.S. Eng: J.S.
Part description: FTSH			Qty to test: 10
Test Start: 3/4/2003	Test Completed: 3/6/2003		



**Perform Solder Heat Resistance using three temperature profiles: 230°C, 260°C and 280°C.  
Summary Report**

**PART DESCRIPTION**

**FTSH-150-03-L-DV**

**CERTIFICATION**

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to ISO 10012-1 and ANSI/NCSL 2540-1, as applicable.

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**SCOPE**

Perform Solder Heat Resistance using three temperature profiles: 230° C, 260° C and 280° C.

**APPLICABLE DOCUMENTS**

Standards: EIA Publication 364

**TEST SAMPLES AND PREPARATION.**

- 1) Parts are visually inspected for cleanliness.

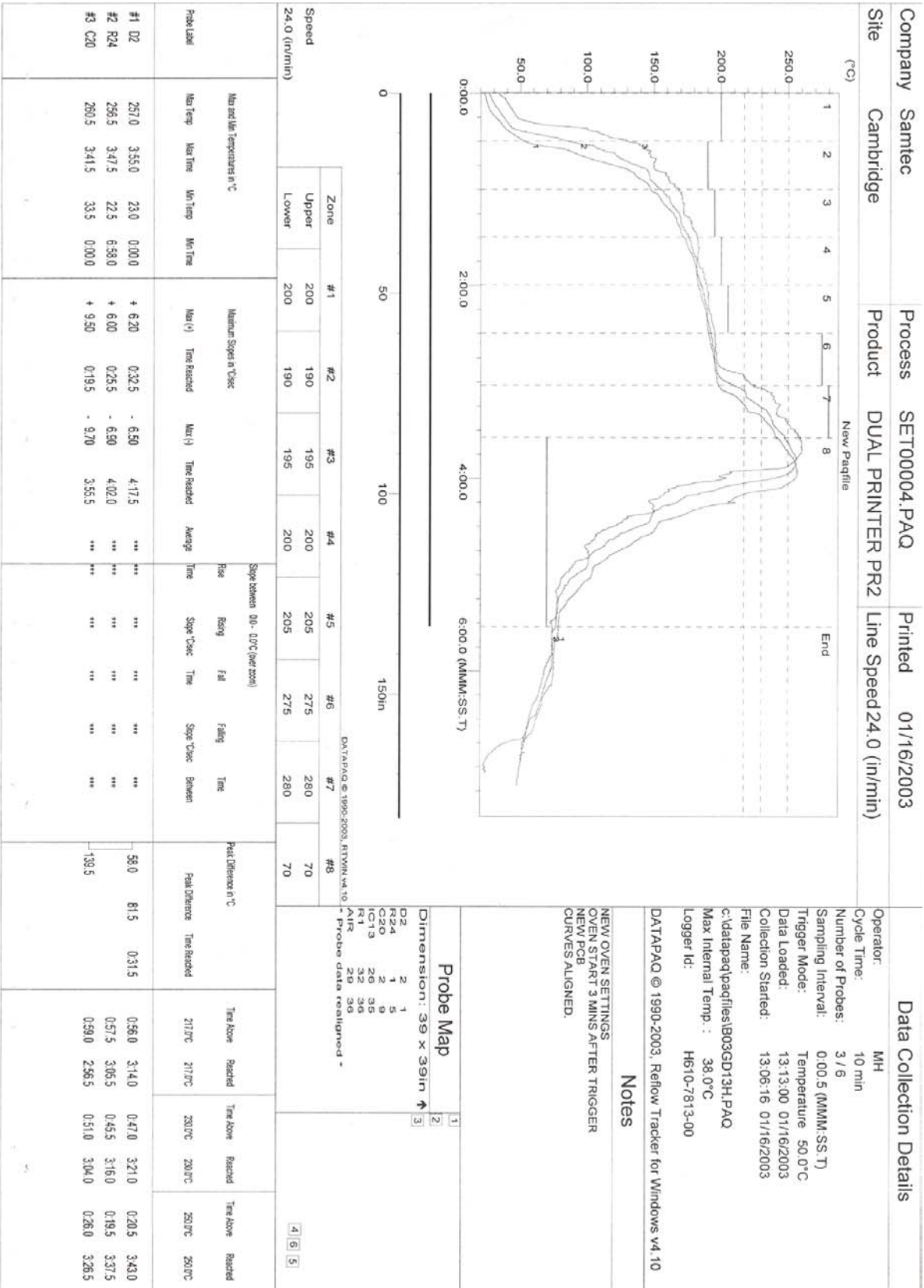
**FLOWCHART**

TEST STEP	260 °C		280 °C GROUP D	230 °C GROUP E Control
01	1 Pass	<b>Group A</b>	1 Pass	1 Pass
02	Solder Heat Resistance		Solder Heat Resistance	Solder Heat Resistance
03	2nd Pass	<b>Group B</b>		
04	Solder Heat Resistance			
05	3rd Pass	<b>Group C</b>		
06	Solder Heat Resistance			

**Solder Heat Resistance (Visual): Blistering, Distortion (Bowed or Twisted), Discoloration**

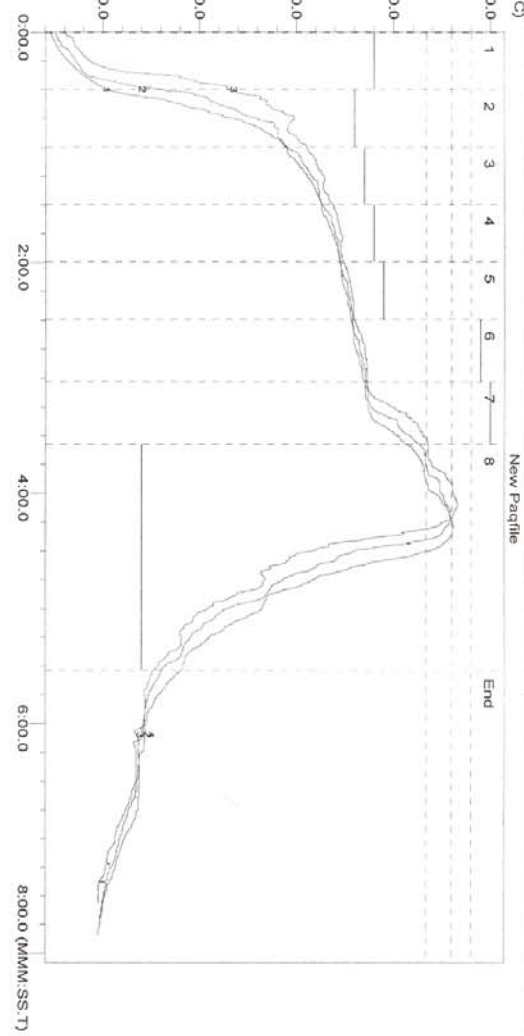
**OVEN THERMAL PROFILE (Control):**

1) The Following Thermal Profiles were used to stress the parts.

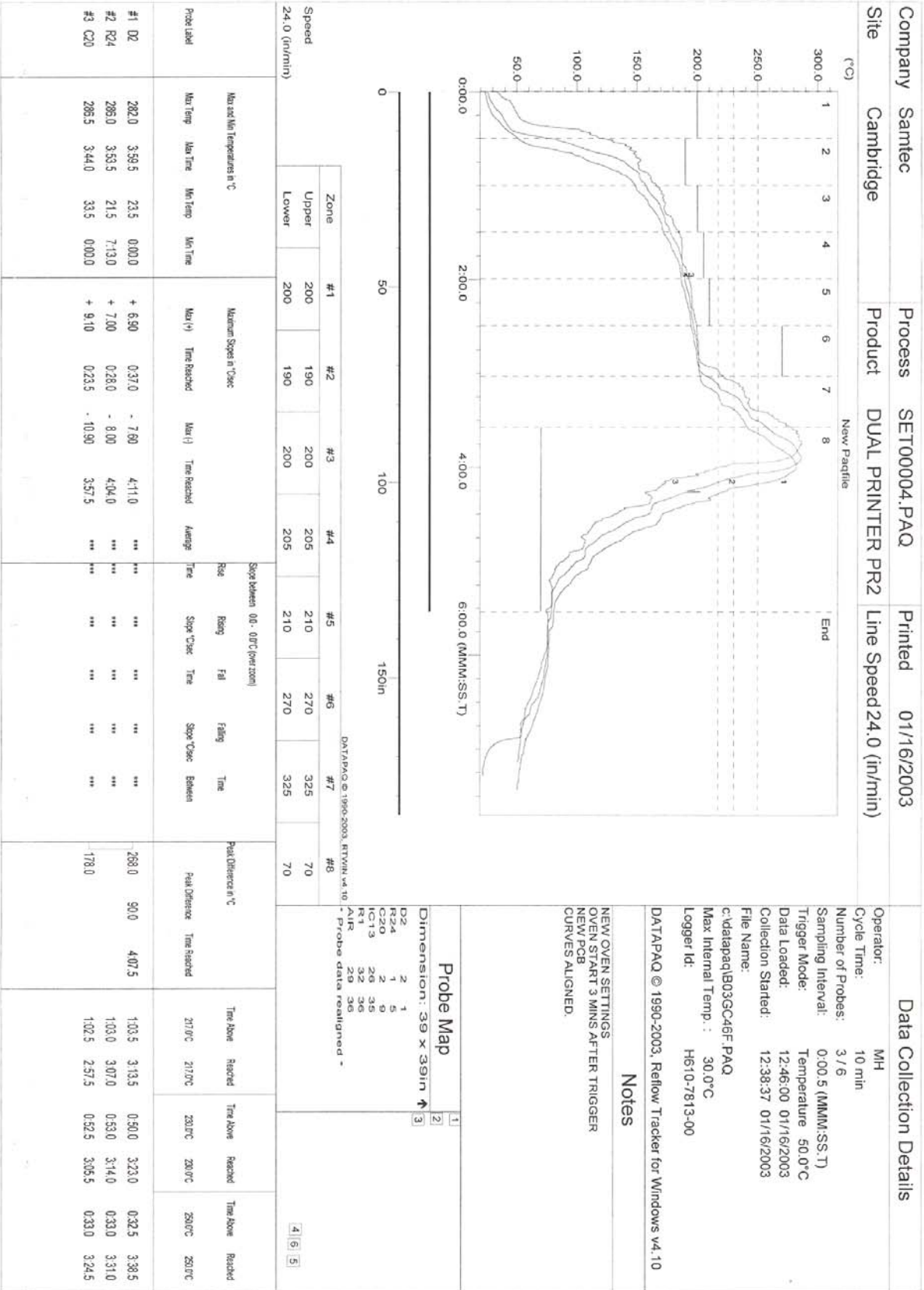


**OVEN THERMAL PROFILE, SUPPLEMENTAL TEST:  
Solder Heat Resistance (Visual) at 230 °C**

Company	Samtec	Process	SET00004.PAQ	Printed	01/16/2003	Data Collection Details						
Site	Cambridge	Product	DUAL PRINTER PR2	Line Speed	24.0 (in/min)	Operator:	MH					
						Cycle Time:	10 min					
						Number of Probes:	3 / 6					
						Sampling Interval:	0.005 (MMMS.S.T)					
						Trigger Mode:	Temperature 50.0°C					
						Data Loaded:	13:33:00 01/16/2003					
						Collection Started:	13:25:59 01/16/2003					
						File Name:	c:\atapaq\paqfiles\B03GD3J1.PAQ					
						Max Internal Temp.:	48.5°C					
						Logger Id:	H610-7813-00					
						DATAPAQ @ 1990-2003, Reflow Tracker for Windows v4.10 <b>Notes</b> NEW OVEN SETTINGS OVEN START 3 MINS AFTER TRIGGER NEW PCB CURVES ALIGNED.						
						NEW OVEN SETTINGS OVEN START 3 MINS AFTER TRIGGER NEW PCB CURVES ALIGNED.						
						DATAPAQ @ 1990-2003, Reflow Tracker for Windows v4.10 - Probe data realigned -						
						Dimension: 39 x 39in 1 2 3 4 5						
						Probe Map D2 2 1 R24 1 5 C20 2 9 R13 26 34 R15 32 36 A18 29 36						
						Speed 24.0 (in/min) Zone #1 #2 #3 #4 #5 #6 #7 #8 Upper 190 180 195 190 195 245 250 70 Lower 190 180 195 190 195 245 250 70						
						Measured Min. Temperatures in °C Max Temp Max Time Min Temp Min Time #1 D2 231.0 4.165 22.5 000.0 #2 R24 229.5 4.690 25.5 000.0 #3 C20 233.0 4.045 30.0 000.0						
						Maximum Slopes in °C/sec Max (+) Time Based Max (-) Time Based Average #1 #2 #3 #4 #5 #6 #7 #8 + 5.60 0.325 - 5.50 4.36.0 ... + 7.30 0.28.0 - 6.60 4.26.5 ... + 8.00 0.20.5 - 7.70 4.23.5 ...						
						Slope between 0.0 - 0.0°C (over zone) Rise Ring Fall Time #1 #2 #3 #4 #5 #6 #7 #8 ... .. Peak Difference in °C #1 #2 #3 #4 #5 #6 #7 #8 49.0 66.5 0.26.0 Fall Difference Time Based #1 #2 #3 #4 #5 #6 #7 #8 0.36.5 3.53.5 0.09.0 4.13.0 0.00.0 ... 0.39.0 3.45.0 0.00.0 ... 0.47.5 3.31.0 0.18.5 3.54.5 0.00.0 ...						



**OVEN THERMAL PROFILE, SUPPLEMENTAL TEST Continued:  
Solder Heat Resistance (Visual) at 280 °C**



**ATTRIBUTE DEFINITION****SOLDER HEAT RESISTANCE (Visual):**

- 1) Blistering
  - a) Pass/Fail
- 2) Distortion
  - a) Bowed or Twisted
- 3) Discoloration
  - a) Pass/Fail

## RESULTS

### Solder Heat Resistance, 260 °C Thermal Stressing

- **Blistering**
  - One Thermal Stress-----Pass
  - Two Thermal Stresses-----Pass
  - Three Thermal Stresses-----Pass
- **Distortion**
  - One Thermal Stress-----Pass
  - Two Thermal Stresses-----Pass
  - Three Thermal Stresses-----Pass
- **Discoloration**
  - One Thermal Stress-----Pass
  - Two Thermal Stresses-----Pass
  - Three Thermal Stresses-----Pass

### Supplemental Tests

#### Solder Heat Resistance, 230°C Thermal Stressing

- **Blistering**
  - One Thermal Stress-----Pass
- **Distortion**
  - One Thermal Stress-----Pass
- **Discoloration**
  - One Thermal Stress-----Pass

#### Solder Heat Resistance, 280 °C Thermal Stressing

- **Blistering**
  - One Thermal Stress-----Pass
- **Distortion**
  - One Thermal Stress-----Pass
- **Discoloration**
  - One Thermal Stress-----Pass

**EQUIPMENT AND CALIBRATION SCHEDULES****Equipment #:** THL-01**Description:** Temperature/Humidity Chart Recorder**Manufacturer:** Dickson**Model:** THDX**Serial #:** 9316255**Accuracy:** Temp: +/- 1C; Humidity: +/-2% RH (0 - 60%) +/- 3% RH (61 - 95%).

... Last Cal: 7/15/02, Next Cal: 7/15/03

**Equipment #:** OV-5**Description:** Nitrogen Purge IR Reflow**Manufacturer:** Vitronics Soltec**Model:** XPM-730**Serial #:** XN 70328**Accuracy:** +/- 5° C