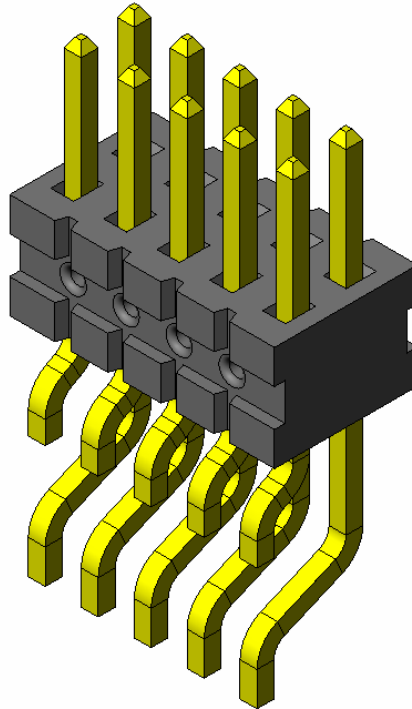




Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0143	
Requested by: John Schmelz	Date: 3/6/2003	Product Rev: AH	
Part #: FTSH-150-02-L-DH	Lot #: NA	Tech: J.S.	Eng: J.S.
Part description: FTSH			Qty to test: 10
Test Start: 3/10/2003	Test Completed: 3/10/2003		



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

**PART DESCRIPTION**

**FTSH-150-02-L-DH**



Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0143				
Requested by: John Schmelz		Date: 3/6/2003		Product Rev: AH		
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Part description: FTSH					Qty to test: 10	
Test Start: 3/10/2003		Test Completed: 3/10/2003				

### 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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Requested by: John Schmelz		Date: 3/6/2003	Product Rev: AH
Part #: FTSH-150-02-L-DH		Lot #: NA	Tech: J.S. Eng: J.S.
Part description: FTSH			Qty to test: 10
Test Start: 3/10/2003	Test Completed: 3/10/2003		

**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.



Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0143			
Requested by: John Schmelz		Date: 3/6/2003		Product Rev: AH	
Part #: FTSH-150-02-L-DH			Lot #: NA		Tech: J.S.
Part description: FTSH					Qty to test: 10
Test Start: 3/10/2003		Test Completed: 3/10/2003			

**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**



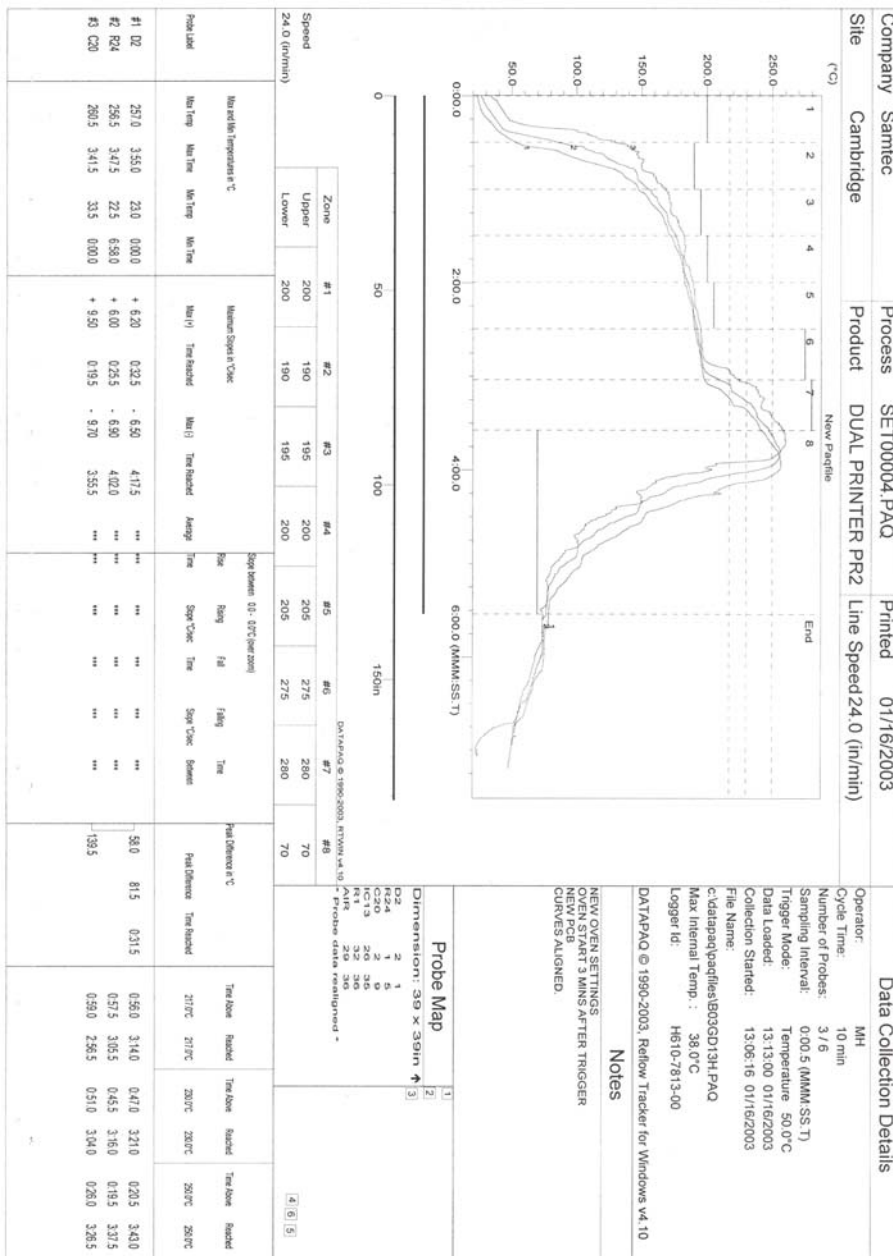
Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0143			
Requested by: John Schmelz		Date: 3/6/2003		Product Rev: AH	
Part #: FTSH-150-02-L-DH			Lot #: NA		Tech: J.S.
Part description: FTSH					Eng: J.S.
Test Start: 3/10/2003					Qty to test: 10
Test Completed: 3/10/2003					

### ATTRIBUTE DEFINITIONS

Following is a brief, simplified description of attributes.

#### THERMAL PROFILE:

- The Following Thermal Profile was used to stress the parts.





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Part description: FTSH			Qty to test: 10
Test Start: 3/10/2003	Test Completed: 3/10/2003		

### ATTRIBUTE DEFINITIONS Continued

#### **SOLDER HEAT RESISTANCE (Visual):**

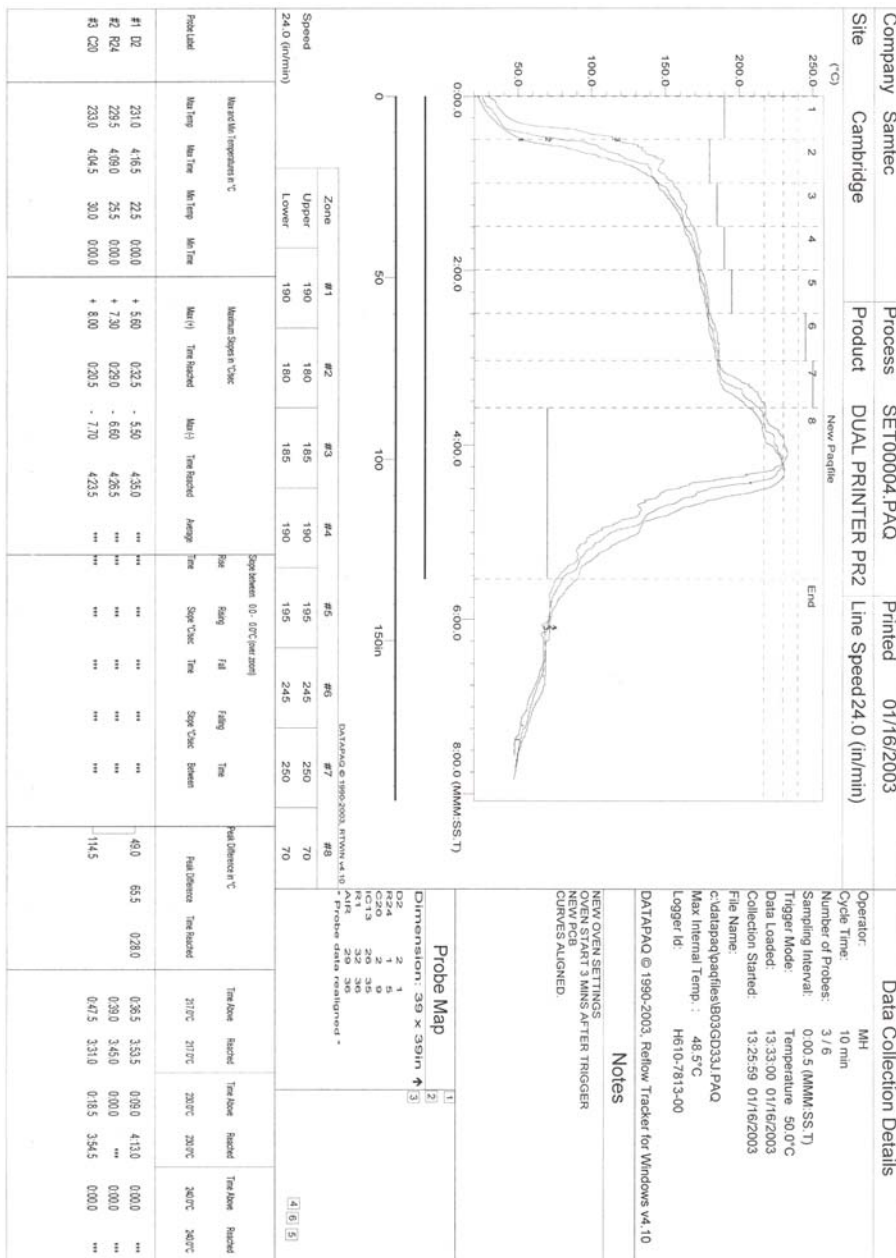
- 1) Blistering
  - a) Pass/Fail
- 2) Distortion
  - a) Bowed or Twisted
- 3) Discoloration
  - a) Pass/Fail



Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0143			
Requested by: John Schmelz		Date: 3/6/2003		Product Rev: AH	
Part #: FTSH-150-02-L-DH			Lot #: NA		Tech: J.S.
Part description: FTSH					Eng: J.S.
Test Start: 3/10/2003					Qty to test: 10
Test Completed: 3/10/2003					

### ATTRIBUTE DEFINITIONS Continued

#### SUPPLEMENTAL TEST: Solder Heat Resistance (Visual) at 230 °C

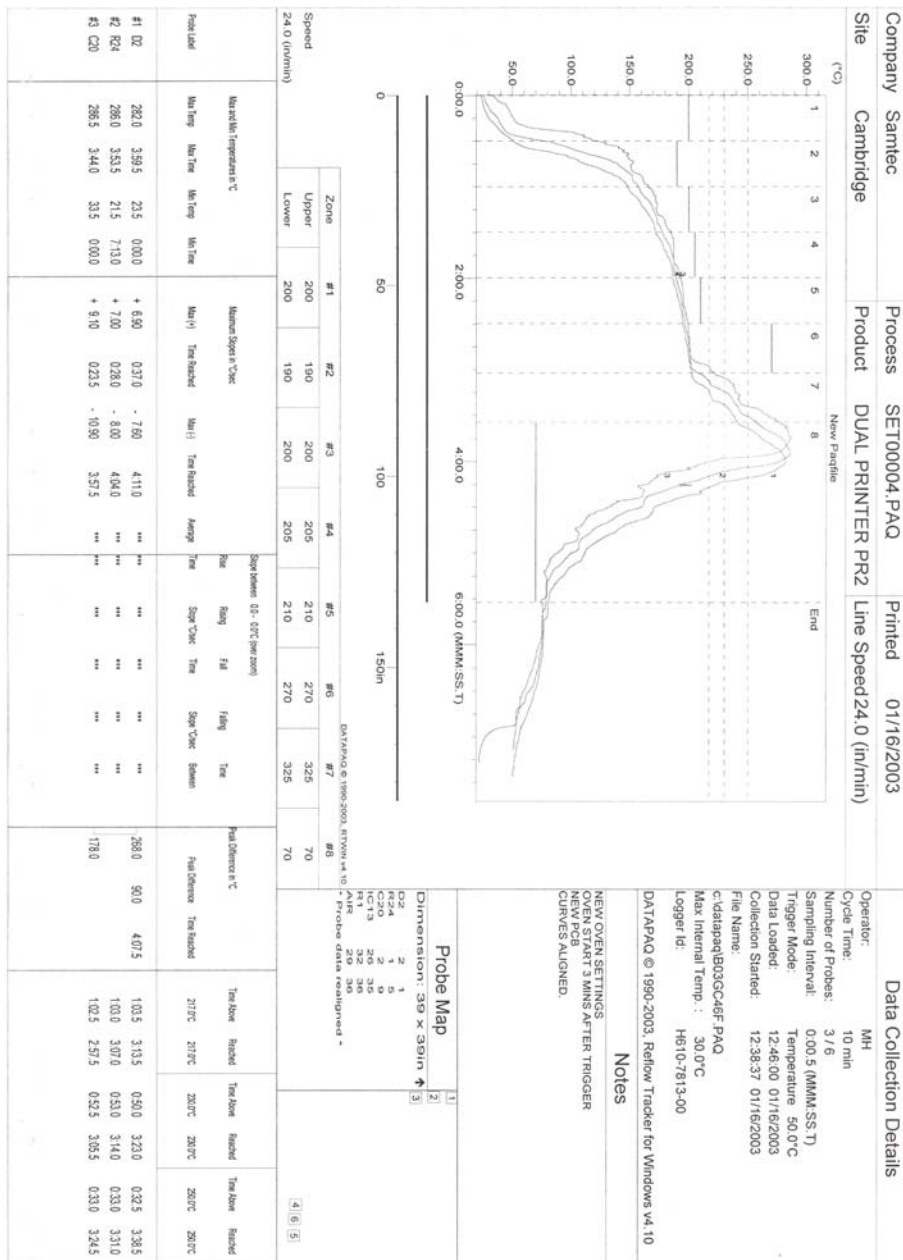




Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0143			
Requested by: John Schmelz		Date: 3/6/2003		Product Rev: AH	
Part #: FTSH-150-02-L-DH			Lot #: NA		Tech: J.S.
Part description: FTSH					Eng: J.S.
Test Start: 3/10/2003					Qty to test: 10
Test Completed: 3/10/2003					

### ATTRIBUTE DEFINITIONS Continued

### SUPPLEMENTAL TEST: Solder Heat Resistance (Visual) at 280 °C





Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0143	
Requested by: John Schmelz		Date: 3/6/2003	Product Rev: AH
Part #: FTSH-150-02-L-DH		Lot #: NA	Tech: J.S. Eng: J.S.
Part description: FTSH			Qty to test: 10
Test Start: 3/10/2003	Test Completed: 3/10/2003		

## 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



Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0143	
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Part #: FTSH-150-02-L-DH		Lot #: NA	Tech: J.S. Eng: J.S.
Part description: FTSH			Qty to test: 10
Test Start: 3/10/2003	Test Completed: 3/10/2003		

**RESULTS Continued  
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**



Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0143	
Requested by: John Schmelz		Date: 3/6/2003	Product Rev: AH
Part #: FTSH-150-02-L-DH		Lot #: NA	Tech: J.S. Eng: J.S.
Part description: FTSH			Qty to test: 10
Test Start: 3/10/2003	Test Completed: 3/10/2003		

### 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