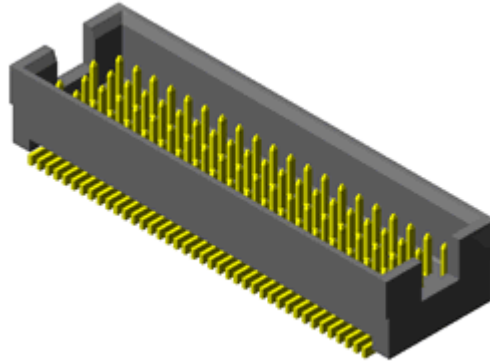




Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0118	
Requested by: John Schmelz		Date: 3/4/2003	Product Rev: AE
Part #: TOLC-150-02-L-Q		Lot #: NA	Tech: J.S. Eng: J.S.
Part description: TOLC			Qty to test: 10
Test Start: 3/4/2003	Test Completed: 3/6/2003		



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

PART DESCRIPTION

TOLC-150-02-L-Q



Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0118				
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Part description: TOLC					Qty to test: 10	
Test Start: 3/4/2003		Test Completed: 3/6/2003				

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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Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0118				
Requested by: John Schmelz		Date: 3/4/2003		Product Rev: AE		
Part #: TOLC-150-02-L-Q			Lot #: NA		Tech: J.S.	Eng: J.S.
Part description: TOLC					Qty to test: 10	
Test Start: 3/4/2003		Test Completed: 3/6/2003				

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.



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Part #: TOLC-150-02-L-Q			Lot #: NA		Tech: J.S.
Part description: TOLC					Qty to test: 10
Test Start: 3/4/2003		Test Completed: 3/6/2003			

FLOWCHART

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

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



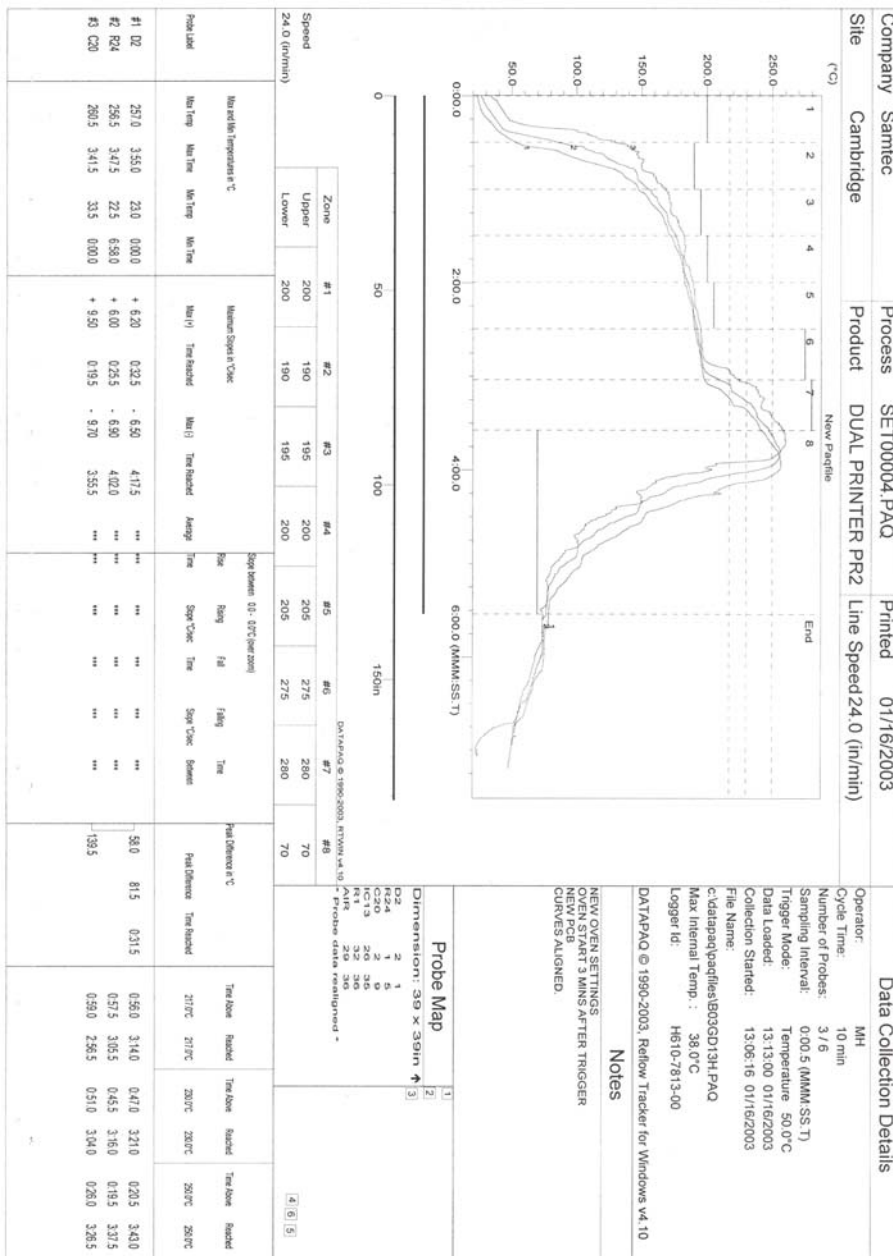
Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0118			
Requested by: John Schmelz		Date: 3/4/2003		Product Rev: AE	
Part #: TOLC-150-02-L-Q			Lot #: NA		Tech: J.S.
Part description: TOLC					Eng: J.S.
Test Start: 3/4/2003					Qty to test: 10
Test Completed: 3/6/2003					

ATTRIBUTE DEFINITIONS

Following is a brief, simplified description of attributes.

THERMAL PROFILE:

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





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Part description: TOLC			Qty to test: 10
Test Start: 3/4/2003	Test Completed: 3/6/2003		

ATTRIBUTE DEFINITIONS Continued

SOLDER HEAT RESISTANCE (Visual):

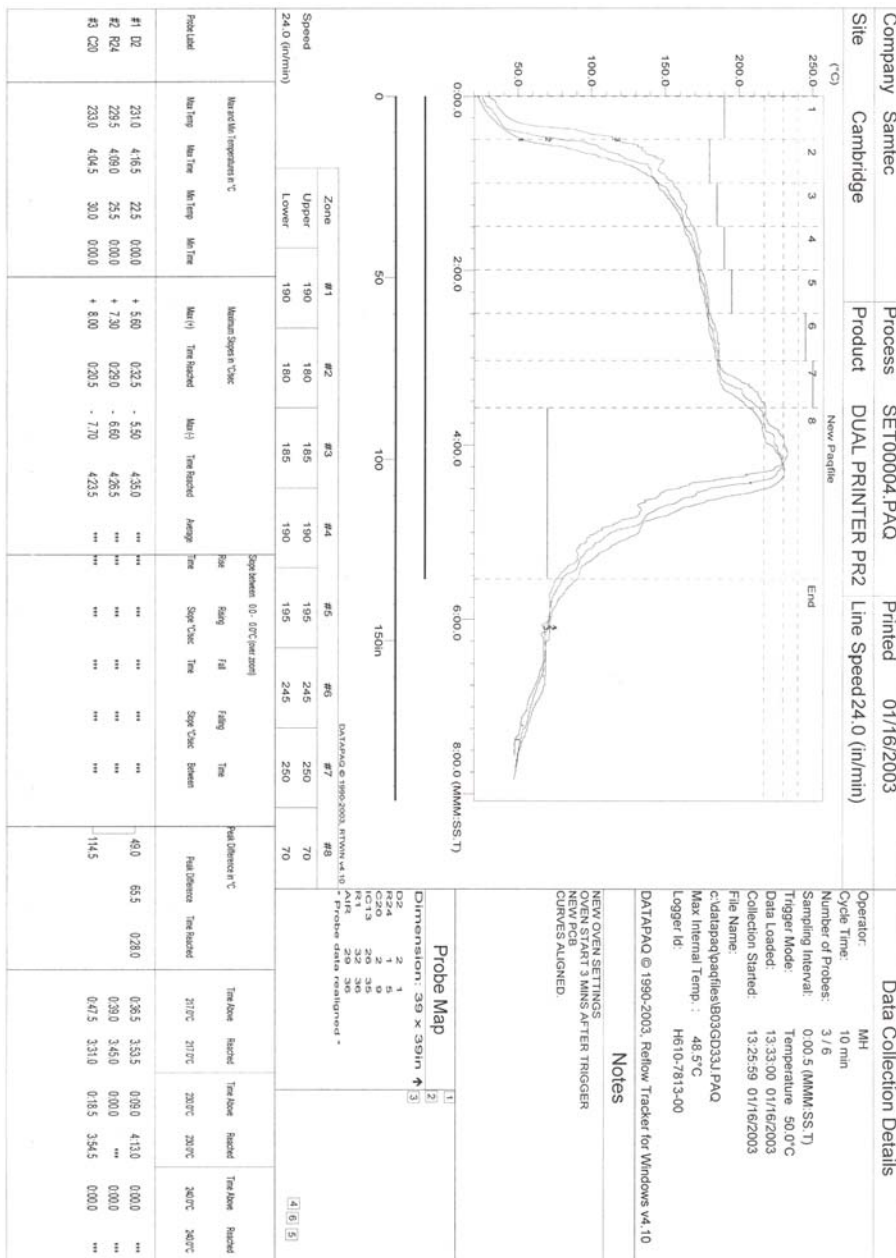
- 1) Blistering
 - a) Pass/Fail
- 2) Distortion
 - a) Bowed or Twisted
- 3) Discoloration
 - a) Pass/Fail



Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0118			
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Part #: TOLC-150-02-L-Q			Lot #: NA		Tech: J.S.
Part description: TOLC					Eng: J.S.
Test Start: 3/4/2003					Qty to test: 10
Test Completed: 3/6/2003					

ATTRIBUTE DEFINITIONS Continued

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

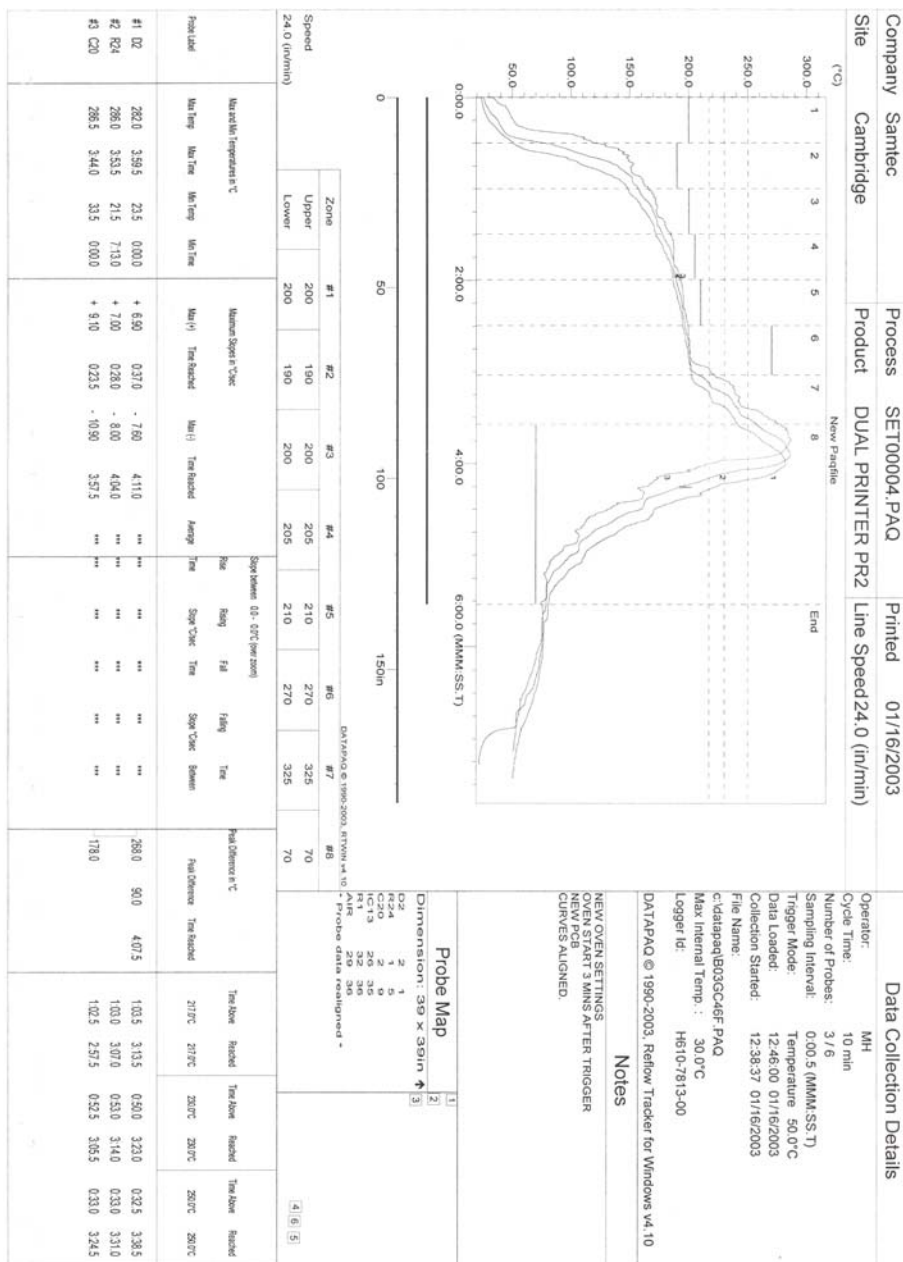




Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0118			
Requested by: John Schmelz		Date: 3/4/2003		Product Rev: AE	
Part #: TOLC-150-02-L-Q			Lot #: NA		Tech: J.S.
Part description: TOLC					Qty to test: 10
Test Start: 3/4/2003		Test Completed: 3/6/2003			

ATTRIBUTE DEFINITIONS Continued

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





Project Number: Lead Free		Tracking Code: TC0310-Lead Free-0118	
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Part description: TOLC			Qty to test: 10
Test Start: 3/4/2003	Test Completed: 3/6/2003		

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



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Part description: TOLC			Qty to test: 10
Test Start: 3/4/2003	Test Completed: 3/6/2003		

**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**



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Requested by: John Schmelz		Date: 3/4/2003	Product Rev: AE
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Part description: TOLC			Qty to test: 10
Test Start: 3/4/2003	Test Completed: 3/6/2003		

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