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TITLE: PROCESSING TEMPERATURE OF EDGECARD CONNECTORS WITH R-7 RYTON BODIES

TEST REPORT NO.: STR-052 December 23, 2004

APPROVED BY: Marshall Hulbert, Quality Assurance Manager

REVISION HISTORY

DATE	REVISION	J	DESCRIPTION	ENGR.
12/23/04	Α	INITIAL RELEASE		MNH

CERTIFICATION

This is to certify that all testing and evaluations that are described herein were designed and executed by certified personnel of Sullins Electronics, San Marcos, Ca.

All equipment and measuring devices used during test and verification were calibrated and traceable to NIST standards.

All data contained, raw and summarized, are the property of Sullins Electronics, no copy of this report, except in full, shall be forwarded to any agency, customer, etc. without the written approval of Sullins Electronics.

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SCOPE

To determine the use of Ryton R-7 Polypheneline Sulfide (PPS) as an acceptable insulator material in high temperature (260°C) re-flow soldering application, which are required for lead free soldering.

APPLICABLE DOCUMENTS

- 1. Unless otherwise specified, the following documents of issue at the time of testing performed form a part of this report. The specifications of sub-tier specifications and/or standards apply only when specifically referenced in this report.
- 2. Standards:

MIL-C-21097: Connectors, Electrical, Printed Wiring Board, General Purpose, General Specification For.

MIL-STD-1344: Method 3001.1, Dielectric Withstanding Voltage (DWV)

MIL-STD-1344: Method 3003.1, Insulation Resistance (IR).

TEST SAMPLES AND PREPARATION

- The following test samples were used to perform testing and evaluation. Description: Edgecard Connector, AMC25DRXH, 25 Position, Serial Number: HSXT.
- 2. Test samples were dimensionally verified and recorded (see Electrical and dimensional data summary for results)
- 3. Insertion/Withdraw of specific positions was tested and recorded. (See Insertion/Withdraw data sheets for results)
- 4. DWV and IR was tested and certified to pass (see see Electrical and dimensional data summary for results)
- 5. Samples placed over PCB on Aluminum plate to be placed in oven. See Figure 1.
- 6. Parts stabilized at 150°C for 5 minutes.
- 7. Parts taken to 260°C for 2 minutes (See figure 3 for Heat profile graph).
- 8. Steps 2, 3, and 4 repeated (see Electrical and dimensional data summary sheet, and Insertion/Withdraw data sheets for results)

SAMPLE CODING:

The test samples were coded in the following manner: ID # 1, 2, 3, 4, 5, 6

CONCLUSION

The use of Ryton R-7 PPS is acceptable as an insulator material for use in high temperature reflow soldering applications. As figure 3 shows, the temperature reached in

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the oven during test was 269°C. The connector showed no effects from the temperatures exposed to for the 2 minute duration. Therefore it is the conclusion of Sullins Electronics' Engineering and QA departments that the acceptable Temperature profile this material is as follows:

Max temperature: 260°C Max Duration: 2 minutes.

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FIGURE #1

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FIGURE #2

TEST PLAN FLOW CHART

SAMPLE PREPARATION

DIMENSIONAL VERIFICATION

INSERTION/WITHDRAW

DWV

IR

IR

TEMPERATURE PROFILE

DIMENSIONAL VERIFICATION

INSERTION/WITHDRAW

DWV

DWV

DWV

IR

PROCESSING TEMPERATURE OF EDGECARD CONNECTORS WITH R-7 RYTON BODIES

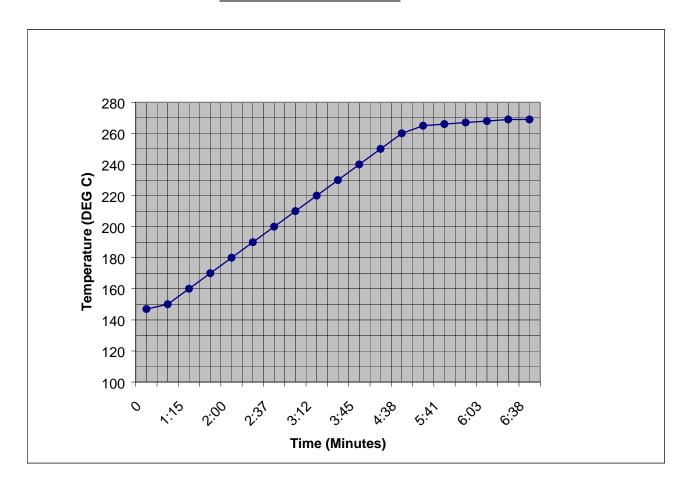
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TITLE:

FIGURE #4 HEAT/TIME PROFILE



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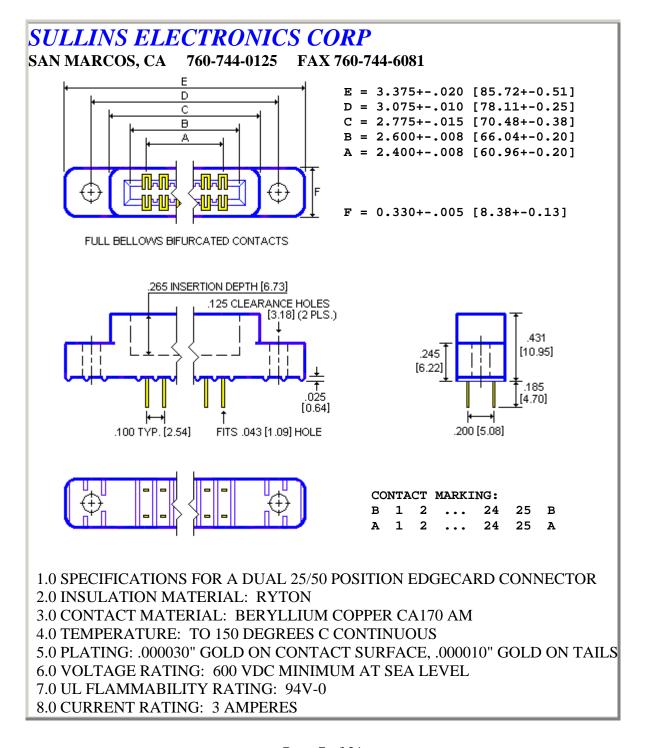
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FIGURE #4

Connector Specification



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9.0 VOLTAGE DROP: 30 MILLIVOLTS AT RATED CURRENT

10.0 INSULATION RESISTANCE: 5,000 MEGA OHMS

11.0 IDENTIFICATION: PART TO BE MARKED WITH PART NUMBER AND DATE CODE

12.0 BOARD THICKNESS ACCOMMODATED: .054 INCH TO .070 INCH

13.0 INSERTION FORCE: 16 OZ MAX PER CONTACT PAIR USING .062 INCH BLADE

14.0 WITHDRAWAL FORCE: 1 OZ MIN PER CONTACT PAIR USING .054 INCH BLADE

15.0 SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

16.0 TOLERANCE: +-.010 INCH UNLESS OTHERWISE NOTED

17.0 NOT DRAWN TO SCALE

SULLINS PART NUMBER: AMC25DRXH DATE: 12-23-04

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DIMENSIONAL AND ELECTRICAL DATA SUMMARY

Part Number:	AMC25DRXH	Part ID Number:	1
Drawing Number:	WEB SPEC.	Inspector:	DALAVONG
Lot Number:	HSXT		
Date:	12-14-04	PRE-REFLOW	POST-REFLOW
Dimension	Tolerance	Actual	Actual
(A) 2.400	±.008	2.400	2.402
(B) 2.600	±.008	2.603	2.600
(C) 2.775	±.015	2.784	2.781
(D) 3.075	±.010	3.079	3.076
(E) 3.375	±.020	3.384	3.380
(F) .330	±.005	.327/.328	.327/.328
.245	±.005	.244	.244
.431	±.005	.428	.428
.185	±.020	.189	.190
.100 PIN SPCG.	±.005	.099	.099
	D. 4 G.G.		
DWV=600 VDC	PASS		
IR=5,000 MEGA OHMS	PASS	>10G Ohms	

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	Difficustorial 1	marysis Accord	
Part Number:	AMC25DRXH	Part ID Number:	2
Drawing Number:	WEB SPEC.	Inspector:	DALAVONG
Lot Number:	HSXT		
Dates	12-14-04	PRE-REFLOW	POST-REFLOW
Dimension	Tolerance	Actual	Actual
(A) 2.400	±.008	2.404	2.404
(B) 2.600	±.008	2.602	2.600
(C) 2.775	±.015	2.785	2.783
(D) 3.075	±.010	3.080	3.076
(E) 3.375	±.020	3.381	3.381
(F) .330	±.005	.327/.328	.327/.328
.245	±.005	.244	.244
.431	±.005	.428	.428
.185	±.020	.189	.192
.100 PIN SPCG.	±.005	.100	.100
DWV=600 VDC	PASS		
IR=5,000 MEGA OHMS	PASS	>10G Ohms	

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	Difficusional Analysis Record						
Part Number:	AMC25DRXH	Part ID Number:	3				
Drawing Number:	WEB SPEC.	Inspector:	DALAVONG				
Lot Number:	HSXT						
Date:	12-14-04	PRE-REFLOW	POST-REFLOW				
Dimension	Tolerance	Actual	Actual				
(A) 2.400	±.008	2.401	2.403				
(B) 2.600	±.008	2.602	2.600				
(C) 2.775	±.015	2.784	2.781				
(D) 3.075	±.010	3.078	3.076				
(E) 3.375	±.020	3.382	3.381				
(F) .330	±.005	.327/.328	.327/.328				
.245	±.005	.244	.243				
.431	±.005	.428	.428				
.185	±.020	.189	.189				
.100 PIN SPCG.	±.005	.099	.100				
DWV=600 VDC	PASS						
IR=5,000 MEGA OHMS	PASS	>10G Ohms					

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Part Number:	AMC25DRXH	Part ID Number:	4
Drawing Number:	WEB SPEC.	Inspector:	DALAVONG
Lot Number:	HSXT		
Dates	12-14-04	PRE-REFLOW	POST-REFLOW
Dimension	Tolerance	Actual	Actual
(A) 2.400	±.008	2.404	2.403
(B) 2.600	±.008	2.603	2.600
(C) 2.775	±.015	2.784	2.780
(D) 3.075	±.010	3.079	3.076
(E) 3.375	±.020	3.381	3.380
(F) .330	±.005	.327/.329	.327/.328
.245	±.005	.245	.244
.431	±.005	.428	.428
.185	±.020	.190	.190
.100 PIN SPCG.	±.005	.101	.100
DWV=600 VDC	PASS		
IR=5,000 MEGA OHMS	PASS	>10G Ohms	

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Sullins Electronics Dimensional Analysis Record

AMC25DRXH **Part Number: Part ID Number:** 5 **Drawing Number:** WEB SPEC. **Inspector: DALAVONG Lot Number: HSXT** Date: 12-14-04 **PRE-REFLOW POST-REFLOW Dimension Tolerance** Actual Actual (A) 2.400 2.403 2.402 $\pm .008$ (B) 2.600 $\pm .008$ 2.603 2.601 (C) 2.775 2.783 2.781 $\pm .015$ (D) 3.075 3.078 3.075 $\pm .010$ ±.020 3.381 3.381 (E) 3.375 .327/.328 (F) .330 .327/.328 $\pm .005$.245 $\pm .005$.244 .243 .431 .428 .428 $\pm .005$.185 .190 .190 $\pm .020$.100 PIN SPCG. .099 .099 $\pm .005$ **DWV=600 VDC PASS** IR=5,000 MEGA OHMS **PASS** >10G Ohms

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	Difficusional F	Miaiysis Necoru	
Part Number:	AMC25DRXH	Part ID Number:	6
Drawing Number:	WEB SPEC.	Inspector:	DALAVONG
Lot Number:	HSXT		
Date:	12-14-04	PRE-REFLOW	POST-REFLOW
Dimension	Tolerance	Actual	Actual
(A) 2.400	±.008	2.404	2.403
(B) 2.600	±.008	2.603	2.600
(C) 2.775	±.015	2.783	2.783
(D) 3.075	±.010	3.078	3.078
(E) 3.375	±.020	3.382	3.383
(F) .330	±.005	.327/.329	.327/.328
.245	±.005	.245	.244
.431	±.005	.428	.428
.185	±.020	.190	.190
.100 PIN SPCG.	±.005	.100	.100
DWV=600 VDC	PASS		
IR=5,000 MEGA OHMS	PASS	>10G Ohms	
1	1		

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INSERTION/WITHDRAW FORCES DATA SUMMARY

PART ID NUMBER: 1	LOT # HSXT	All units are Oz's	

NUMBER. I		LOT # HSXT	All units are Oz's	
	PRE R	EFLOW	POST R	REFLOW
PART NUMBER	INSERTION	WITHDRAW	INSERTION	WITHDRAW
AMC25DRXH				
<u>POSITION</u>				
1	12.5	7	12.5	7.5
2	13	7	12.5	7.5
12	12.5	7.5	11.5	7
13	12.5	7.13	11.5	7.5
14	12	7	11.5	7.5
24	12.5	7.5	12	8
25	12.5	7.5	12	8

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PART ID NUMBER: 2	LOT # HSXT	All units are Oz's	

	PRE RI	EFLOW	POST REFLOW	
PART NUMBER	INSERTION	WITHDRAW	INSERTION	WITHDRAW
AMC25DRXH				
POSITION				
1	14.5	8	13	8
2	14	8	13	8
12	13.5	7.5	11.5	7
13	13.5	7.5	12	7
14	14	8	12	8
24	13.5	8	13	7
25	13	8	13	7

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PART ID NUMBER: 3	LOT # HSXT	All units are Oz's	

	PRE R	PRE REFLOW		POST REFLOW	
PART NUMBER	INSERTION	WITHDRAW	INSERTION	WITHDRAW	
AMC25DRXH					
POSITION					
1	14	9	14	8.5	
2	14	8	13	8	
12	14	8	12.5	7.5	
13	14	9	13	8.5	
14	14	8	12.5	7.5	
24	14	8	14	9.5	
25	14	8	14	10	

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PART ID NUMBER: 4	LOT # HSXT	All units are Oz's	

	PRE REFLOW		POST REFLOW	
PART NUMBER	INSERTION	WITHDRAW	INSERTION	WITHDRAW
AMC25DRXH				
POSITION				
1	14	8	15.5	11
2	14.5	9	14	9
12	14	9	12	8.5
13	13	9	12	7
14	14	8.5	13	9
24	15	10	15	10
25	13.5	10	14.5	10

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PART ID NUMBER: 5	LOT # HSXT	All units are Oz's	

	PRE REFLOW		POST REFLOW	
PART NUMBER	INSERTION	WITHDRAW	INSERTION	WITHDRAW
AMC25DRXH				
POSITION				
1	14	8	13.5	9
2	14	9	13.5	9
12	14.5	9	13	8
13	14	10	13.5	9
14	13	8	13	8
24	14	9.5	14	9
25	14	9	14	9

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PART ID NUMBER: 6	LOT # HSXT	All units are Oz's	

	PRE REFLOW		POST REFLOW		
PART NUMBER	INSERTION	WITHDRAW	INSERTION	WITHDRAW	
AMC25DRXH					
<u>POSITION</u>					
1	14	10	15	12	
2	14	10	16	12	
12	14	9	14	10	
13	15	10	14	10	
14	14	10	13.5	9	
24	14	10	15	11	
25	14.5	10	15.5	11.5	

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EQUIPMENT LIST

Next cal	Last Cal	Equiptment Name	Manufacturer	Model #	Serial #
		FURNACE	BARNSTEAD	FB1315M	
06/01/05	06/01/04	VISION SYSTEM	QC SOLUTIONS	SMB44	QC230
08/19/05	08/19/04	CALIPER	STARRETT	721	
			ASSOCIATED		
08/19/05	08/19/04	AC/DC DWV TESTER W/ IR	RESEARCH	3670	9330578
10/25/05	10/25/04	FORCE TESTER	CHATILLON	DPF-16	