Table of Contents

PPAP Package for: NURSAN

Customer Name: NURSAN
Customer Part Number: 1326031-2
(TE Connectivity Part Number): 1326031-2
Enter Date Here: 12.30.2011

Section A	Nondisclosure Agreement
Section # 1	Design Records
Section # 2	Engineering Change Documents
Section # 3	Customer Engineering Approval
Section # 4	Design FMEA
Section # 5	Process Flow Diagrams
Section # 6	Process FMEA
Section # 7	Control Plan
Section # 8	Measurement Systems Analysis Studies
Section # 9	Dimensional Results
Section # 10	Material, Performance Test Results
Section # 11	Initial Process Study
Section # 12	Qualified Laboratory Documentation
Section # 13	Appearance Approval Report
Section # 14	Sample Product
Section # 15	Master Sample
Section # 16	Checking Aids
Section # 17	Records Of Compliance With Customer-Specific Requirements
Section # 18	Part Submission Warrant
Section # 18a	Bulk Material Requirements

Nondisclosure Agreement

If a nondisclosure agreement has been reached with your company, it will be included on the following page(s). Please review the terms of this agreement to ensure that further actions associated with information contained within this PPAP package do not violate these terms.

If a nondisclosure agreement HAS NOT been reached, certain documents deemed confidential by TE Connectivity will not be included in this PPAP package. These documents include but are not limited to the Design FMEA, the Process Flow Diagram, the Process FMEA and the Control Plan. These documents can be reviewed by you company but cannot be retained.

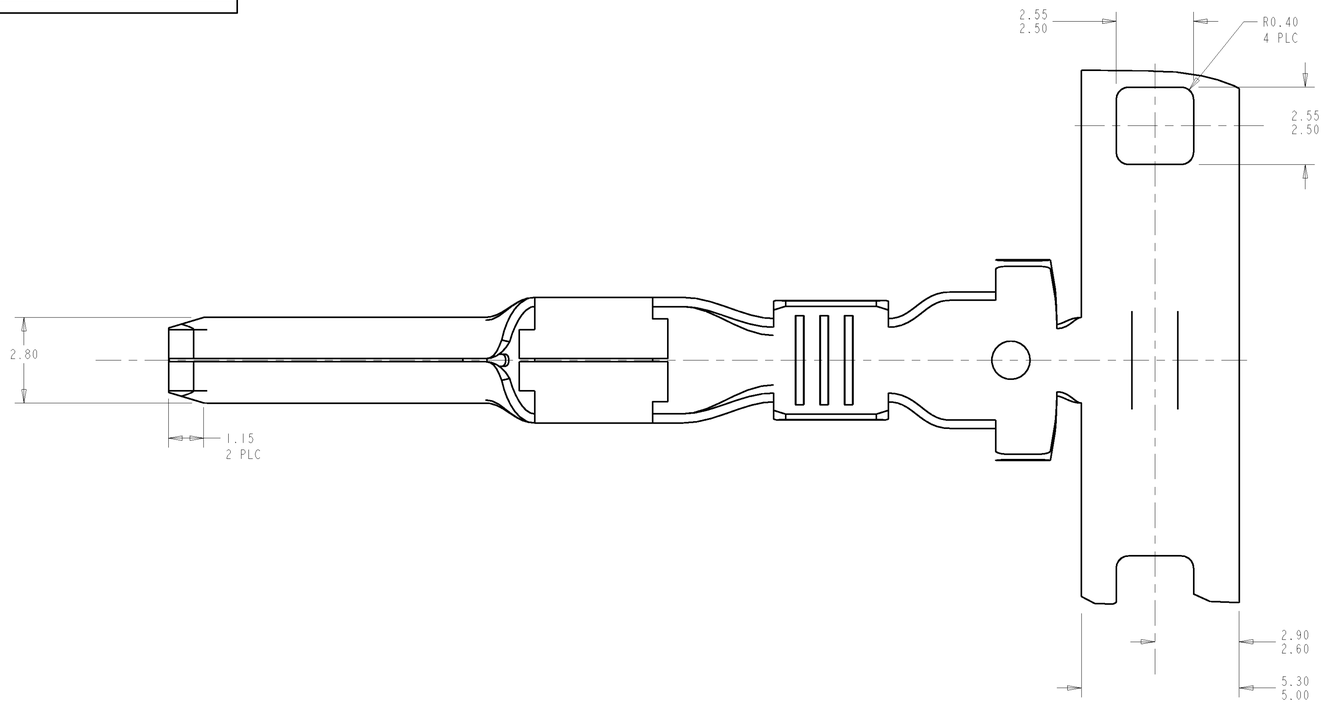
Section 1

Design Records

LOC	DIST
GE	00

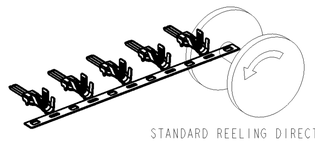
REVISIONS

P	LTR	DESCRIPTION	DATE	DWN	APVD
	D	REVISED PER EC 0K40-0405-02	17APR2002	AH	TW
	D1	REVISED PER EC 0K40-0248-03	02SEP2003	AH	TW
	E	REVISED PER 0K40-0074-04	23MAR2004	AG	TW
	F	REVISED PER ECR 05-003800	17NOV2005	DLD	JLT



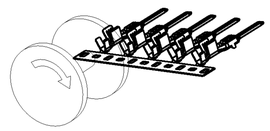
1. MATERIAL: 0.30 THICK COPPER ALLOY, PREPLATED WITH 0.0008 MINIMUM THICK MATTE TIN (ELV COMPLIANT).

2.



STANDARD REELING DIRECTION

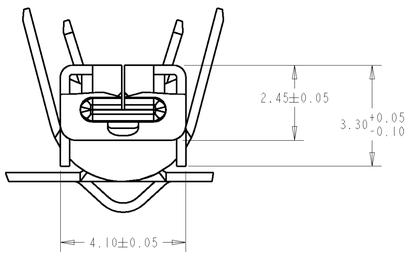
3.

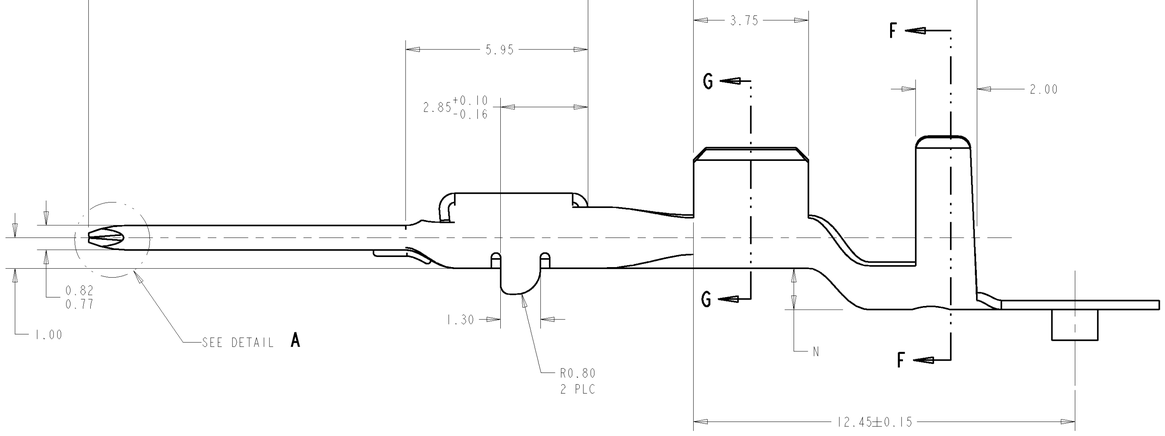


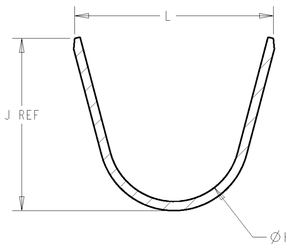
REVERSE REELING DIRECTION

4. QUALIFICATION OF THE CRIMP APPLICATION TOOLING SHALL BE CONTROLLED BY THE REQUIREMENTS ESTABLISHED UNDER USCAR 21.

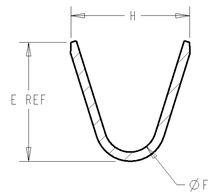
5. LOOSE END SPLICING TO BE USED.







SECTION F-F



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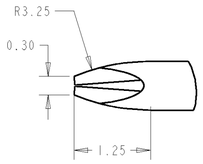
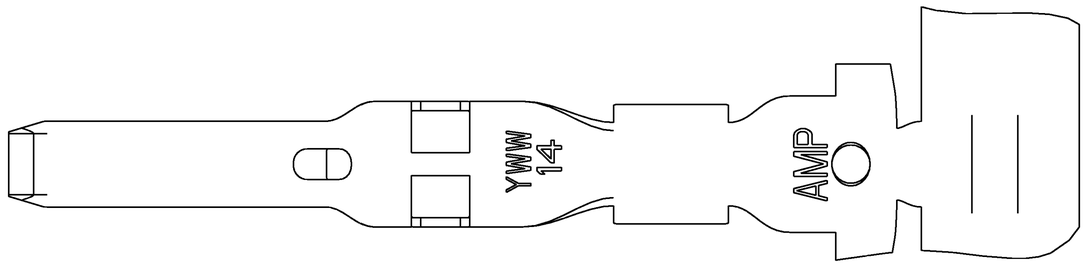


DETAIL A
SCALE 20:1



3	1-1326031-1 REELED FOR AMP APPLICATORS							12 AWG	1-1326031-2
2	1.35	6.8	4.30	5.89	4.7	2.7	5.25	12 AWG	1-1326031-1
3	1326031-5 REELED FOR AMP APPLICATORS							14 AWG	1-1326031-0
	1326031-4 REELED FOR AMP APPLICATORS							16 AWG	1326031-9
	1326031-3 REELED FOR AMP APPLICATORS							18 AWG	1326031-8
	1326031-2 REELED FOR AMP APPLICATORS							20 AWG	1326031-7
	1326031-1 REELED FOR AMP APPLICATORS							22 AWG	1326031-6
2	1.35	6.5	4.30	5.62	3.9	1.70	3.88	14 AWG	1326031-5
	1.10	5.6	3.80	4.54	3.9	1.70	3.88	16 AWG	1326031-4
	1.10	5.6	3.80	4.54	3.3	1.30	2.76	18 AWG	1326031-3
	0.90	5.0	3.40	4.11	3.3	1.30	2.76	20 AWG	1326031-2
	0.90	5.0	3.40	4.11	2.5	0.90	2.11	22 AWG	1326031-1
REELING	N	L	ØK	J	H	ØF	E	WIRE SIZE	PART NO.

DIMENSIONS: mm

TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLC ±-
1 PLC ±0.3
2 PLC ±0.10
3 PLC ±-
4 PLC ±-
ANGLES ±5°

MATERIAL 1

FINISH 1

DWN D. STRAUSSER 28APR99
CHK D. BROWN 28APR99
APVD D. BROWN 28APR99
PRODUCT SPEC SAE/USCAR-2 8/97
APPLICATION SPEC 114-13013
WEIGHT -

AMP Tyco Electronics Harrisburg, PA 17105-3608

NAME 2.8mm BLADE, SEALED

SIZE	CAGE CODE	DRAWING NO	RESTRICTED TO
A1	00779	C-1326031	-

CUSTOMER DRAWING

SCALE 10:1 SHEET 1 OF 1 REV F

Section 2

Engineering Change Documents

Not Applicable

Section 3

Customer Engineering Approval

Not Applicable

Section 4

Design FMEA

See Section A for nondisclosure conditions.
The Design FMEA, if included, is a Class II confidential document belonging to TE Connectivity. A class II document may not be further distributed and is subject to the conditions of the nondisclosure agreement.

Section 5

Process Flow Diagram

See Section A for nondisclosure conditions.
The Process Flow Diagram, if included, is a Class II confidential document belonging to TE Connectivity. A class II document may not be further distributed and is subject to the conditions of the nondisclosure agreement.

Section 6

Process FMEA

See Section A for nondisclosure conditions.
The Process FMEA, if included, is a Class II confidential document belonging to TE Connectivity. A class II document may not be further distributed and is subject to the conditions of the nondisclosure agreement.

Section 7

Control Plan

See Section A for nondisclosure conditions.
The Control Plan, if included, is a Class II confidential document belonging to TE Connectivity. A class II document may not be further distributed and is subject to the conditions of the nondisclosure agreement.

Section 8

Measurement System Analysis

tyco Electronics

Variable Data Gage R & R Study

PART NO. :	1326031-2	GAGE NAME:	Mitutoyo	OPERATOR A:	Fran Baker
PART DESC. :	2.8 mm Blade Sealed	GAGE NO. :	755083-13 FV	OPERATOR B:	W. Campell
SPEC. :	4.10 +/- 0.05	GAGE TYPE:	Micrometer	OPERATOR C:	J. Lashmit
TOL. SPREAD :	0.1000				

DEFINE INTENDED PURPOSE OF GAGE SYSTEM: (X)	Attribute Gauging:		QIP Inspection:		SPC:	X

	Operator A - Fran Baker				Operator B - W. Campell				Operator C - J. Lashmit			
	Trial 1	Trial 2	Trial 3	Range	Trial 1	Trial 2	Trial 3	Range	Trial 1	Trial 2	Trial 3	Range
1	4.1320	4.1350	4.1330	0.0030	4.1350	4.1360	4.1370	0.0020	4.1320	4.1330	4.1370	0.0050
2	4.1370	4.1380	4.1310	0.0070	4.1340	4.1320	4.1300	0.0040	4.1350	4.1330	4.1310	0.0040
3	4.1130	4.1170	4.1140	0.0040	4.1190	4.1190	4.1200	0.0010	4.1160	4.1100	4.1150	0.0060
4	4.1230	4.1220	4.1230	0.0010	4.1210	4.1190	4.1260	0.0070	4.1200	4.1210	4.1200	0.0010
5	4.1310	4.1340	4.1360	0.0050	4.1370	4.1370	4.1360	0.0010	4.1370	4.1350	4.1320	0.0050
6	4.2570	4.2500	4.2510	0.0070	4.2510	4.2520	4.2490	0.0030	4.2500	4.2520	4.2510	0.0020
7	4.1250	4.1210	4.1260	0.0050	4.1260	4.1250	4.1330	0.0080	4.1330	4.1300	4.1300	0.0030
8	4.1360	4.1310	4.1340	0.0050	4.1360	4.1400	4.1320	0.0080	4.1310	4.1290	4.1300	0.0020
9	4.1230	4.1270	4.1120	0.0150	4.1310	4.1280	4.1140	0.0170	4.1170	4.1150	4.1160	0.0020
10	4.1370	4.1380	4.1350	0.0030	4.1360	4.1340	4.1330	0.0030	4.1330	4.1350	4.1320	0.0030
Avg.	4.1414	4.1413	4.1395		4.1426	4.1422	4.1410		4.1404	4.1393	4.1394	
R	0.1440	0.1330	0.1390		0.1320	0.1330	0.1350		0.1340	0.1420	0.1360	

	1	2	3	4	5	6	7	8	9	10
Part Avg.	4.1344	4.1334	4.1159	4.1217	4.1350	4.2514	4.1277	4.1332	4.1203	4.1348

RESULTS SUMMARY

XBARa =	4.1407	RBARa =	0.0055
XBARb =	4.1419	RBARb =	0.0054
XBARc =	4.1397	RBARc =	0.0033

XdoubleBAR =	4.1408
RdoubleBAR =	0.0047
XBARdiff =	0.0022
UCLr = 0.0122	LCLr = 0.0000

	% Variation	% Tolerance
REPEATABILITY - EQUIPMENT VARIATION (EV)	6.6%	14.44%
REPRODUCIBILITY - APPRAISER VARIATION (AV)	2.5%	5.42%
REPEATABILITY & REPRODUCIBILITY (R & R)	7.0%	15.42%
PART VARIATION (PV)	99.8%	219.60%
TOTAL VARIATION (TV)	22.01%	220.14%

SIGNAL-TO-NOISE RATIO :	14.2
DATA CATEGORIES :	20.1

CONCLUSION:

NOTE: Reference AIAG Measurement System Analysis (MSA) for acceptance criteria.

Marginal gaging system with Gage R&R of **15.4%** (tolerance method)

Alternate calculation: **Accept** gaging system with Gage R&R of **7.0%** (variation method)

Accept gaging system with Data Categories of **20.1**

Gaging system **acceptable** based upon R&R and /or Data Category values.

Note: Engineering and Management authorization required for "Marginal" Gaging system.

DEFINE GAGE PROCEDURE:

Place recept in micrometer and measure box with . Zero micrometer and measure all recpt the same each time.

REMARKS:

RR01226

Evaluator — Date: 3/14/2011

Engineering and Management Authorization for "Marginal" — Date:

Section 9

Dimensional Results

PRODUCT / TOOLING APPROVAL LAB
WINSTON-SALEM N.C.

AUTHOR	: Ron Fortner
REQUEST	: 201111.130
PART DESC.	: 2.8mm Blade, Sealed
PART	: 1326031-2
TOOL	: 714149
CAVITY	: 1 out die
PRINT REV.	: E
METHOD	: Scope # T2993-0006
VENDOR	: Bldg. #253 / David Wilson
DATE	: 11/21/2011
FILENAME	: 11130p00.MES

** ALL DIMENSIONS IN MILLIMETERS **

LABEL = MEASUREMENT LABEL
DESC = FEATURE DESCRIPTION
NOM.VAL = NOMINAL VALUE
UPPER = UPPER TOLERANCE OR UPPER LIMIT OF A RANGE
LOWER = LOWER TOLERANCE OR LOWER LIMIT OF A RANGE
HM = HOW MEASURED DEVICE
ACT.VAL = ACTUAL MEASURED VALUE
DEV>TOL = DEVIATION GREATER THAN UPPER OR LOWER TOLERANCE

NOTES

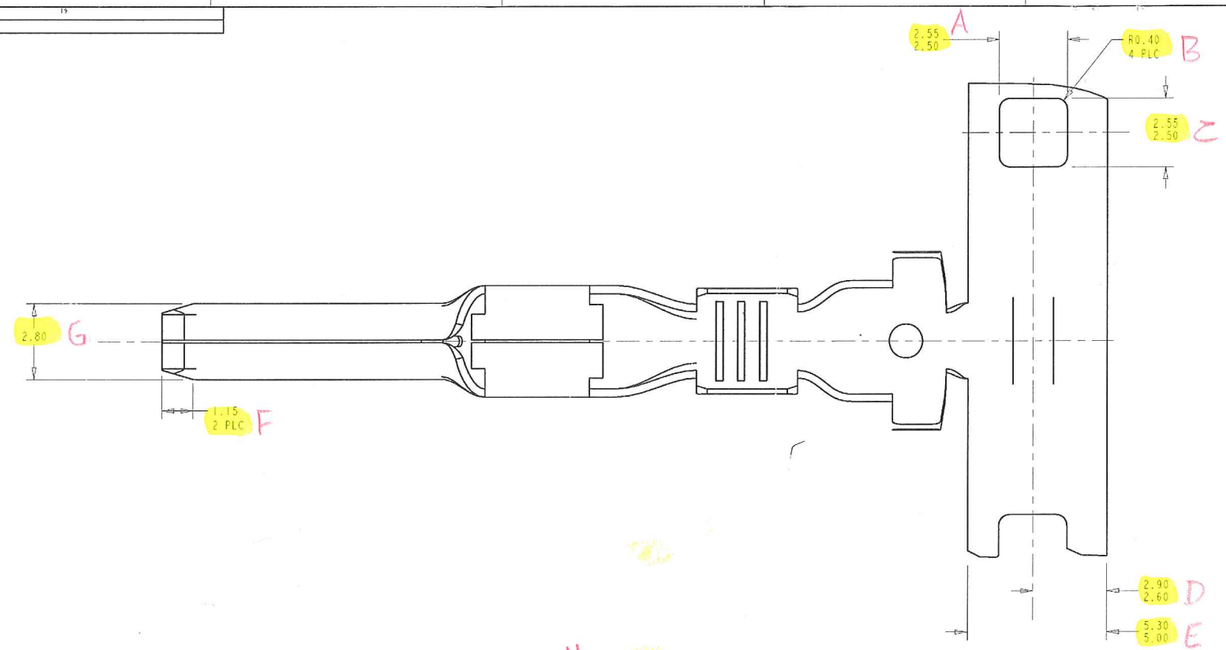
LABEL	DESC	NOMINAL	UPPER	LOWER	FN	HM	ACTUAL	DEV>TOL
A		RANGE	2.550	2.500	LXX	SCOP	2.543	
B	**TPLT**	0.400	0.100	0.100	MAE	SCOP	0.400	
B	**TPRT**	0.400	0.100	0.100	MAE	SCOP	0.400	
B	**BTLT**	0.400	0.100	0.100	MAE	SCOP	0.400	
B	**BTRT**	0.400	0.100	0.100	MAE	SCOP	0.400	
C		RANGE	2.550	2.500	LYY	SCOP	2.513	
D		RANGE	2.900	2.600	LXX	SCOP	2.811	
E		RANGE	5.300	5.000	LXX	SCOP	5.130	
F	**TOP**	1.150	0.100	0.100	LXX	SCOP	1.228	
F	**BOT**	1.150	0.100	0.100	LXX	SCOP	1.220	
G		2.800	0.100	0.100	LYY	SCOP	2.758	
H		29.000	0.200	0.200	LXX	SCOP	29.072	
J		9.250	0.200	0.200	LXX	SCOP	9.155	
K		3.750	0.100	0.100	LXX	SCOP	3.743	
L		2.000	0.100	0.100	LXX	SCOP	1.905	
M		12.450	0.150	0.150	LXX	SCOP	12.335	
N	**LT**	0.800	0.100	0.100	MAE	SCOP	0.750	
N	**RT**	0.800	0.100	0.100	MAE	SCOP	0.850	
P		1.300	0.100	0.100	LXX	SCOP	1.315	
Q		0.900	0.100	0.100	LYY	SCOP	0.892	
R		1.000	0.100	0.100	LYY	SCOP	1.059	
S		RANGE	0.820	0.770	LYY	SCOP	0.812	
T		2.850	0.100	0.160	LXX	SCOP	2.699	
U		5.950	0.100	0.100	LXX	SCOP	5.931	
V		16.300	0.100	0.100	LXX	SCOP	16.268	
W		2.450	0.050	0.050	LYY	SCOP	2.481	
X		3.300	0.050	0.100	LYY	SCOP	3.200	

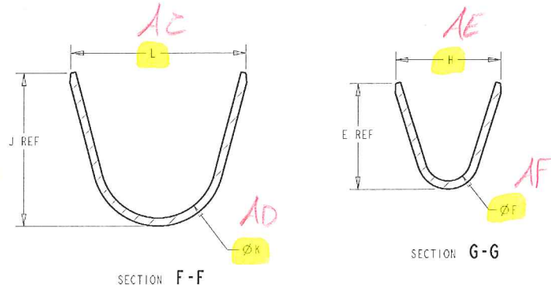
LABEL	DESC	NOMINAL	UPPER	LOWER	FN	HM	ACTUAL	DEV>TOL
Y		4.100	0.050	0.050	LXX	SCOP	4.065	
Z		3.250	0.100	0.100	MAE	SCOP	3.250	
AA		0.300	0.100	0.100	LYY	SCOP	0.265	
AB		1.250	0.100	0.100	LXX	SCOP	1.221	
AC		5.000	0.300	0.300	LXX	SCOP	5.022	
AD		3.400	0.100	0.100	MAE	SCOP	3.400	
AE		3.300	0.300	0.300	LXX	SCOP	3.309	
AF		1.300	0.100	0.100	MAE	SCOP	1.200	

LOC	DIST
GE	00

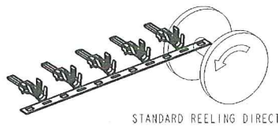
REVISIONS

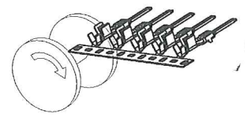
P	LTR	DESCRIPTION	DATE	DWN	APVD
	D	REVISED PER EC 0K40-0405-02	17APR2002	AH	TW
	D1	REVISED PER EC 0K40-0248-03	02SEP2003	AH	TW
	E	REVISED PER 0K40-0074-04	23MAR2004	AG	TW
	F	REVISED PER ECR 05-003800	17NOV2005	DLD	JLT





1. MATERIAL: 0.30 THICK COPPER ALLOY, PREPLATED WITH 0.0008 MINIMUM THICK MATTE TIN (ELV COMPLIANT).

2. 

3. 

4. QUALIFICATION OF THE CRIMP APPLICATION TOOLING SHALL BE CONTROLLED BY THE REQUIREMENTS ESTABLISHED UNDER USCAR 21.

5. LOOSE END SPLICING TO BE USED.

3	1-1326031-1 REELED FOR AMP APPLICATORS							12 AWG	1-1326031-2
2	1.35	6.8	4.30	5.89	4.7	2.7	5.25	12 AWG	1-1326031-1
3	1326031-5 REELED FOR AMP APPLICATORS							14 AWG	1-1326031-0
3	1326031-4 REELED FOR AMP APPLICATORS							16 AWG	1326031-9
3	1326031-3 REELED FOR AMP APPLICATORS							18 AWG	1326031-8
3	1326031-2 REELED FOR AMP APPLICATORS							20 AWG	1326031-7
3	1326031-1 REELED FOR AMP APPLICATORS							22 AWG	1326031-6
2	1.35	6.5	4.30	5.62	3.9	1.70	3.88	14 AWG	1326031-5
2	1.10	5.6	3.80	4.54	3.9	1.70	3.88	16 AWG	1326031-4
2	1.10	5.6	3.80	4.54	3.3	1.30	2.76	18 AWG	1326031-3
2	0.90	5.0	3.40	4.11	3.3	1.30	2.76	20 AWG	1326031-2
2	0.90	5.0	3.40	4.11	2.5	0.90	2.11	22 AWG	1326031-1
REELING	N	L	ØK	J	H	ØF	E	WIRE SIZE	PART NO.

DIMENSIONS: mm
TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLC ±-
1 PLC ±0.5
2 PLC ±0.10
3 PLC ±-
4 PLC ±-
ANGLES ±1°
MATERIAL 1
FINISH 1

DWN D. STRAUSSER 28APR99
CHK D. BROWN 28APR99
APVD D. BROWN 28APR99
PRODUCT SPEC SAE/USCAR-2 8/97
APPLICATION SPEC 114-13013
WEIGHT -

Tyco Electronics
Harrisburg, PA 17105-3608

NAME 2.8mm BLADE, SEALED

SIZE	CAGE CODE	DRAWING NO	RESTRICTED TO
A1	00779	C-1326031	-

CUSTOMER DRAWING | SCALE 10:1 | SHEET 1 OF 1 | REV F

Section 10

Material, Performance Test Results

JB537244

SUMCO LLC
An ISO 9001:2008 & 14001Certified Company

1351 S. Girls School Road
Indianapolis, IN 46231
DUNS: 83-296-2588

Date Tested	Job Number	Order Number
06/02/11	06541	
Alloy	**Size**	**Your Order**
197	.0118" X 1.456"/PN704900-4	36202517

SHIP TO:

PROPERTIES AND TESTING

Round #	Plating Material	Units	Plating Specification Min	Plating Specification Max	Actual Data Min	Actual Data Max	Solderability Test
60529	Matte Tin	μ"	31.5	63	54	62	
	Copper	μ"	19.7	-	20	30	
60298	Matte Tin	μ"	31.5	63	47	62	
	Copper	μ"	19.7	-	30	30	
60299	Matte Tin	μ"	31.5	63	43	52	
	Copper	μ"	19.7	-	20	30	
		μ"			0	0	
		μ"			0	0	
		μ"			0	0	
		μ"			0	0	
		μ"			0	0	
		μ"			0	0	
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		μ"			0	0	
		μ"			0	0	
		μ"			0	0	
		μ"			0	0	
		μ"			0	0	

(1) Plating thickness per ASTM B568
(2) Copper Plating per Tyco 112-300-2
- 2a) Plating Process Name: Copper Sulfate Electroplate
- 2b) Plating Bath Supplier: NA
- 2C) Plating Bath Name: NA - Generic Copper Sulfate Solution

(3) Matte Tin Plating per Tyco 112-65-1
- 3a) Plating Process Name: Tin Electroplate
- 3b) Plating Bath Supplier: OMG
- 3C) Plating Bath Name: Reel Satin 2544 LF

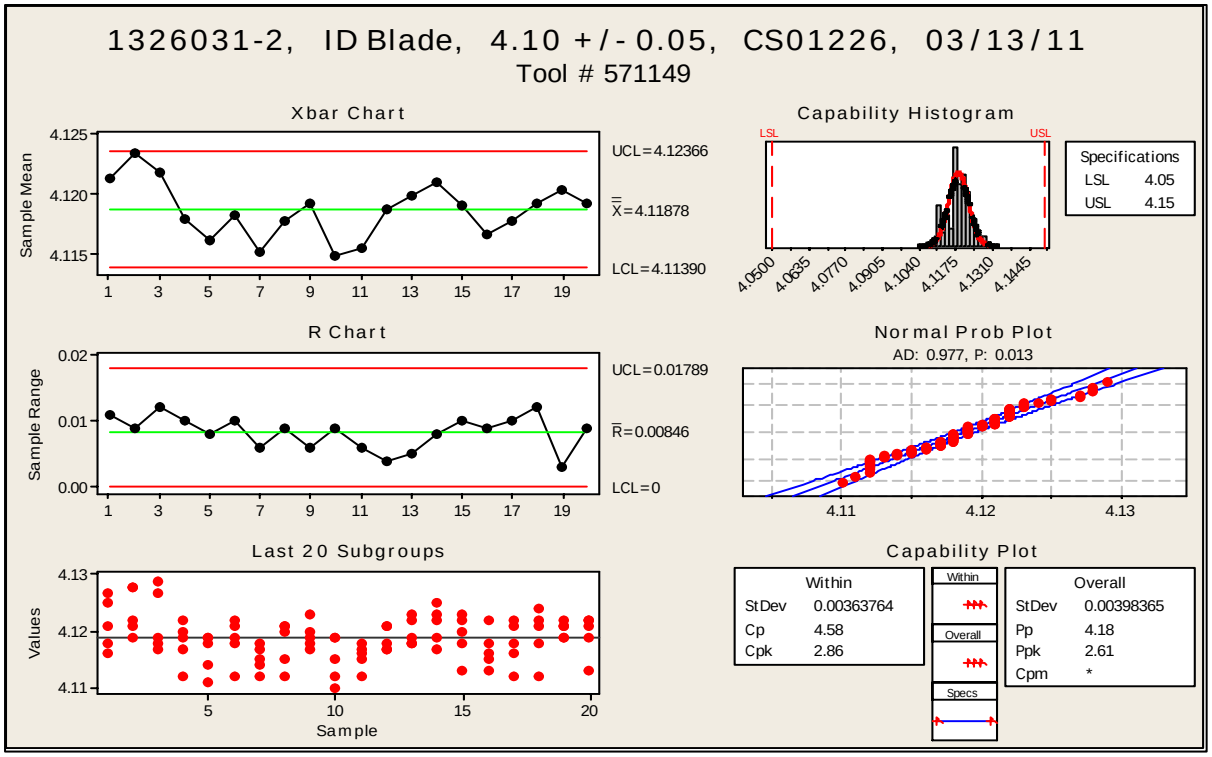
(2) Adhesion Test per ASTM B571 - Performed on all plated product and rejected if test failed.
(3) Solderability Test per ASTM B678 - Pass/Fail for those products requiring solderability testing.

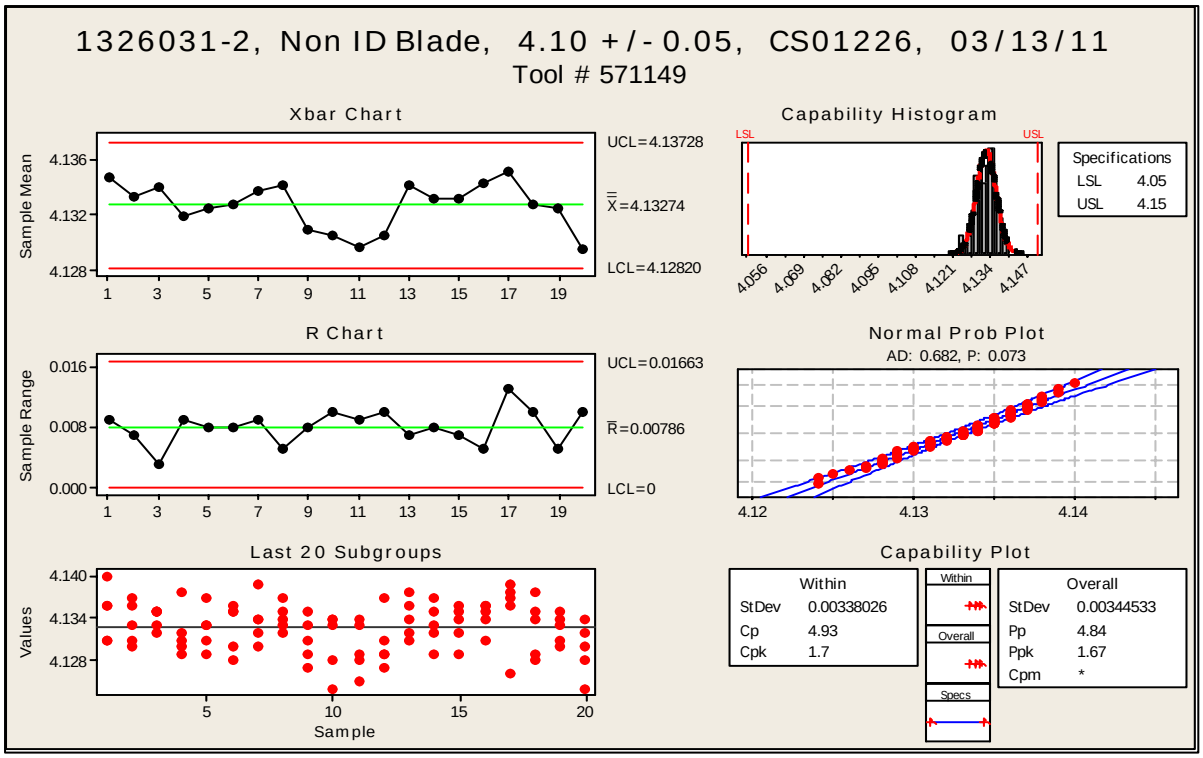
We hereby certify that the material described in this report has been tested and the results are shown above.

Quality Manager: Amy Schultz

Section 11

Initial Process Studies


1326031-2, ID Blade, 4.10 +/- 0.05, CS01226, 03/13/11
Tool # 571149
Xbar Chart
Sample Mean
UCL=4.12366
X=4.11878
LCL=4.11390
Capability Histogram
LSL
USL
Specifications
LSL 4.05
USL 4.15
R Chart
Sample Range
UCL=0.01789
R=0.00846
LCL=0
Normal Prob Plot
AD: 0.977, P: 0.013
Last 20 Subgroups
Values
Sample
Capability Plot
Within
StDev 0.00363764
Cp 4.58
Cpk 2.86
Overall
StDev 0.00398365
Pp 4.18
Ppk 2.61
Cpm *
Specs


1326031-2, Non ID Blade, 4.10 +/- 0.05, CS01226, 03/13/11
Tool # 571149
Xbar Chart
Sample Mean
UCL=4.13728
X=4.13274
LCL=4.12820
Capability Histogram
LSL
USL
Specifications
LSL 4.05
USL 4.15
R Chart
Sample Range
UCL=0.01663
R=0.00786
LCL=0
Normal Prob Plot
AD: 0.682, P: 0.073
Last 20 Subgroups
Values
Sample
Capability Plot
Within
StDev 0.00338026
Cp 4.93
Cpk 1.7
Overall
StDev 0.00344533
Pp 4.84
Ppk 1.67
Cpm *
Specs

ID Blade	Non ID Blade
4.127	4.136
4.121	4.131
4.116	4.14
4.125	4.131
4.118	4.136
4.119	4.131
4.122	4.13
4.128	4.136
4.121	4.133
4.128	4.137
4.118	4.133
4.127	4.135
4.129	4.135
4.117	4.132
4.119	4.135
4.12	4.131
4.117	4.13
4.112	4.129
4.122	4.132
4.119	4.138
4.114	4.133
4.119	4.131
4.118	4.133
4.119	4.129
4.111	4.137
4.112	4.135
4.118	4.128
4.119	4.13
4.121	4.136
4.122	4.135
4.114	4.132
4.112	4.134
4.118	4.134
4.115	4.139
4.117	4.13
4.112	4.137
4.121	4.135
4.115	4.132
4.121	4.134
4.12	4.133
4.123	4.131
4.118	4.129
4.12	4.127
4.117	4.135
4.119	4.133
4.119	4.134
4.11	4.133
4.119	4.124
4.115	4.134
4.112	4.128
4.115	4.133

4.116	4.134
4.117	4.128
4.112	4.125
4.118	4.129
4.117	4.131
4.121	4.127
4.121	4.129
4.118	4.129
4.117	4.137
4.118	4.134
4.122	4.131
4.123	4.138
4.118	4.136
4.119	4.132
4.117	4.129
4.125	4.137
4.123	4.132
4.122	4.133
4.119	4.135
4.118	4.129
4.122	4.132
4.12	4.136
4.113	4.134
4.123	4.135
4.118	4.135
4.116	4.136
4.122	4.131
4.115	4.136
4.113	4.134
4.121	4.139
4.122	4.126
4.112	4.137
4.116	4.138
4.118	4.136
4.121	4.128
4.112	4.135
4.118	4.138
4.122	4.134
4.124	4.129
4.122	4.134
4.121	4.131
4.119	4.135
4.119	4.133
4.121	4.13
4.119	4.128
4.122	4.124
4.121	4.132
4.113	4.134
4.122	4.13

Section 12

Qualified Laboratory Documentation

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO/TS 16949:2009

This is to certify that:

TE Connectivity
Global Automotive Division
Americas North
233 Burgess Road
Greensboro
North Carolina
27409
USA

Holds Certificate No: **TS 514458-000**

and operates a Quality Management System which complies with the requirements of ISO/TS 16949:2009 for the following scope:

Design and manufacture of electrical interconnecting devices for the automotive industry.

For and on behalf of BSI:

VP Regulatory Affairs, BSI Group America Inc.

Originally Registered: **02/11/2010** Latest Issue: **03/29/2011** Expiry Date: **02/10/2013**

IATF Number: 0097555

Certificate No: **TS 514458-000**

Location	*Registered Activities*
TE Connectivity Global Automotive Division Americas North 233 Burgess Road Greensboro North Carolina 27409 USA	Stamping, molding and assembly. Including the following remote support functions: TE Connectivity Global Automotive Division Americas North Troy, MI Design and Development. TE Connectivity Global Automotive Division Americas North Middletown, PA Design and Development, Product Testing and Customer Service. TE Connectivity Global Automotive Division Americas North Winston-Salem, NC Design and Development, Product Testing and Calibration, Business Office (Quote Process) and Purchasing. TE Connectivity Global Automotive Division Americas North Markham, ON Canada Design and Development and product testing (optics lab). TE Connectivity Global Automotive Division Americas North Harrisburg, PA Provision of Product Testing to TE Connectivity Manufacturing Sites.

Originally Registered: **02/11/2010** Latest Issue: **03/29/2011** Expiry Date: **02/10/2013**

IATF Number: 0097555

TYCO ELECTRONICS GAD-AN
NORTH CAROLINA LABORATORIES SCOPE OVERVIEW

SERVICE	EQUIPMENT		TYPICAL PROCEDURES
Product/Tooling Approval Laboratory 3800 Reidsville Road, Winston-Salem, NC 27101			
Layout Inspection	Leitz Toolmakers Microscopes Starrett Coordinate Meas. Machine Mycrona Vision/Contact CMM Mitutoyo Hand Measuring Devices Micro-Vu Vertex Vision/Contact Measuring Center		AAP129, AAP165, AWP127-LB
Cross-Sectioning	Low speed saws Polishing/grinding equipment		ASTM E3
SERVICE	**EQUIPMENT**		**TYPICAL PROCEDURES**
Product Reliability Center 3800 Reidsville Road, Winston-Salem, NC 27101			
Electrical, High Current			
Current Cycling	Hewlett-Packard 6032A	System Power Supply	TIN 109-51, SAE/USCAR-2
Current Surge	Wavetek 395, Kepco ATE 15-50M	Current Pulsing Station	Customer/Product Specific
Maximum Current Rating	T System	Portable Data Acquisition System	SAE/USCAR-2
Millivolt Drop	READA System		SAE/USCAR-2, EIA 364-6B, IEC 60512-2-2
T-rise at Rated Current	READA System		SAE/USCAR-2, EIA 364-70A Method 1
T-rise vs. Current Curve	T System		SAE/USCAR-2, EIA 364-70A Method 2
Resistive Load Verification	Agilent 60502B and 6681A	Programmable loads & power supplies	Customer/Product Specific
Electrical, Low Current			
Termination Resistance, Dry Circuit	READA System, Buttons System, H-P Micro-Voltmeter	Portable Data Acquisition System Hand Probe	SAE/USCAR-2, -17 & 20, EIA 364-23A, IEC 60512-2-1
Electrical, Voltage			
Breakdown Voltage	Associated Research 4271m13, EDNA System, Quadtec	HiPot Dielectric Tester	EIA 364-20B, IEC 60512-4-1
Dielectric Withstanding Voltage			SAE/USCAR-2, -17 & -20, EIA 364-20B, IEC 60512-4-1
Insulation Resistance	GenRad 1644-A, Quadtech	Megohm Bridge, Dielectric Analyzer	SAE/USCAR-2, -17 & -20, EIA 364-21C, IEC 60512-3-1
Electrical, RF			
Insertion Loss	Agilent 8753ES	Network Analyzer	SAE/USCAR-17
VSWR	Agilent 8753ES	Network Analyzer	SAE/USCAR-17

Environmental			
Heat Age	Blue M Models Such as OV490A-2, POM966E, POM206EX, HS3802FG, POM336B-1, CW5512F-1, POM336EX, Despatch LEB1-76-4	Oven	SAE/USCAR-2 & -20, EIA 364-17B, IEC 60512-11-9
Humidity / Temp. Cycling	Thermotron F-52-CHMV ESPEC ETH37 4DW CSZ Models CTH-32-15-15-S/WC CTH-16-705-705-S/W ZH-16-2-2-H/AC CVH-16-3-3-H/WC Blue M Electric Models FR-256PB, FR-366PB LRM386E CSZ ZH-8	Temperature / Humidity Chamber	SAE/USCAR-2 & -20, EIA 364-31B, IEC 60512-11-3, IEC 60512-11-12
Immersion	Blue M Electric OV490A-2, GenRad 1644-A	Oven, Megohm Bridge	SAE/USCAR-2
Pressure / Vacuum Leak	Ashcroft 415P-20, Ashcroft 4116P	Precision Gauges	SAE/USCAR-2
Salt Spray	Harshaw 4100-000-003	Salt Fog Chamber	SAE/USCAR-2 (Aug 97) EAI 364-26B, ASTM B117
Submergible Air Leak	Ashcroft 415P-20, Ashcroft 4116P	Precision Gauges	SAE/USCAR-2
Temp. Cycling	Blue M Models VRC30-PS-6WE VRC12-PC-4WE GOP 1004-12-2TPE CSZ Models Z-16-2-2-H/AC Z-8-1-1-H/AC BAV-1.6-033-033-H/A	Temperature Cycling Chamber	Customer/Product Specific
Thermal Shock	-Ransco 7103-1 -ESPEC TSA-70H-W -Thermotron ATS-100-3-3-LN2 ATS-150-H-3-3-LN2 -CSZ VTS-2.6-705-705-S/W VTS-3.3-705-705-S/A -Envirotronics SV2-2-2-3	Thermal Shock Chamber	SAE/USCAR-2 & -20, EIA 364-32C, IEC 60512-11-4
High Pressure Washing (Hot & Ambient)	Landa Pressure Washer, Wika Pressure gage	Pressure washer set-up	Customer Specific
Dust Testing	Triton	Dust Chamber	PF-9688, Customer Specific
Air Leak Detector	Furness – Sovereign	Leak Detector	Customer Specific

Mechanical			
Drop	n/a	n/a	Ford SDS #40
Durability	AMP Inc. 37517	Cycling Machine	SAE/USCAR-2, EIA 364-9C, IEC 60512-9-1
Mechanical Shock	AVCO SM105MP Vibration Machines	Mechanical Shock Tester High Frequency Vibration Machines	SAE/USCAR-2 EIA 364-27B IEC 60512-6-3
Torque	Snap-On TQJE1000	Torque Tester	TIN 109-183, Customer/Product Specific
Vibration – Low	LAB LVH18-100	Low-Frequency	Mil Std 202 Method 201A
Frequency		Vibration Machine	EIA 364-28A Test Cond. I
Vibration – High Frequency	Unholtz-Dickie Models SA30-560/ST MA250D-206 Ti000-14 206 LDS V850	High-Frequency Vibration Machine	SAE/USCAR-2 & -20 EIA 364-28D, IEC 60512-6-4
Miscellaneous			
Audible Feedback	Bruel & Kjaer 1561725	Sound Meter (db)	TIN 109-133, SDS #EL-0017, Customer Specific
Thermal Imaging	Nikon Laird 3AS	Infrared Camera	Application Specific
Tensile / Compression			
Axial Pull Test	Instron 4502	Tensile / Compression Machine	SAE/USCAR-2 & -17
Bend Force			SAE/USCAR-2
Bend, Crimp			SAE/USCAR-2
Connector - Connector Engage / Disengage			SAE/USCAR-2, EIA 364-13B IEC60512-13-1
Connector Lock Strength Integrity			SAE/USCAR-2 & -17
Connector Mechanical Integrity			SAE/USCAR-2
Contact Insertion			SAE/USCAR-2, TIN 109-41
Contact Retention			SAE/USCAR-2, TIN 109-41
Crimp Tensile			SAE/USCAR-2, EIA 364-8B, IEC 60512-16-4 & -20
Engaging Force			SAE/USCAR-2, TIN 109-35
Force vs. Deflection			TIN 109-98
Insulated Crimp			SAE/USCAR-2
Latch Depression			SAE/USCAR-2
Lock Insertion & Removal Forces			SAE/USCAR-2 & -17
Misc. Component Engage / Disengage			SAE/USCAR-2 & -17
Contact Normal Force			TIN 109-98
Panel Retention			TIN 109-41

Secondary Lock Strength			SAE/USCAR-2, TIN 109-35,
Separating Force			USCAR-2, TIN 109-98
Spring Rate			Ford SDS #32
Staging Latch Strength			SAE/USCAR-2, Ford SDS #32
Tensile			SAE/USCAR-2, EIA 364-8B, IEC 60512-16-4 & -20
Terminal Assurance Retention			SAE/USCAR-2, TIN 109-14
Terminal Insertion / No False Lock-up			SAE/USCAR-2, TIN 109-14
Terminal Push Thru			SAE/USCAR-2, TIN 109-14
Unmating Force			SAE/USCAR-2, EIA 364-13B, IEC 60512-13-1
SERVICE	**EQUIPMENT**		**TYPICAL PROCEDURES**
Electromechanical Components Laboratory 3920 Reidsville Road, Winston-Salem, NC 27101			
Electrical, APT			
Pull-in/Drop-out Voltage	Markenrich Tester	APT	VTEST-0001
Pull-in/Drop-out Current	Markenrich Tester	APT	VTEST-0001
Operate/Release time	Markenrich Tester	APT	VTEST-0001
Contact Voltage Drop	Markenrich Tester, CVD Tester	APT	VTEST-0001
Contact Resistance	Markenrich Tester, CVD Tester	APT	VTEST-0001
Contact Bounce	Markenrich Tester	APT	VTEST-0001
Coil Resistance	Markenrich Tester	APT	VTEST-0001
Electrical, Durability			
Overload and Endurance	Life Test Monitor	L.T.M.	Customer Specific
Current Cycling	Power Supplies	L.T.M.	Customer Specific
Flasher Testing	Power Supplies, Temp Chambers, Flasher Tester	Flasher Test Set-up	Customer Specific VTEST-0055 & 0056
Continuous Current Overload	Life Test Monitor	L.T.M.	Customer Specific
Millivolt Drop Testing	Power Supplies, Agilent 34970A, Millivolt LTMs	Millivolt Drop Testers	VTEST-0001, Customer Specific
Load Soak	Power Supplies Temp Chambers	Load Soak Set-up	VTEST-0003
Electrical, Coil			
Coil Over/Under Voltage	Power Supplies Multi-meters	Coil Over/Under Voltage Test Set-up	Customer Specific
Coil Temperature Rise	YEW Chart Recorder/ Power Supplies/Temp. Chambers, Agilent 34970A	Coil Temperature Rise Test Set-up	Customer Specific
Coil Input (power)	Power Supply/Multi-meter	Coil Power Test Set-up	Customer Specific

Electrical, Voltage			
Breakdown Voltage	Kikusui Tos 8650, Quadtech Guardian 2530, Quadtech Sentry 30	Hipot Tester	EIA 364-20B, IEC 60512-4-1
Dielectric Testing	Kikusui Tos 8650, Quadtech Guardian 2530, Quadtech Sentry 30	Hipot Tester	VTEST-0001
Insulation Resistance	Quadtech Guardian 2530, Quadtech Sentry 30	IR Tester	EIA 364-21C, IEC 60512-3-1, VTEST-0001
Circuit Breaker			
Short Circuit AC	Short Circuit Tester	Short Circuit Tester	Customer Specific
Calibration- Circuit Breakers	Model F-EDC12159	Circuit Breaker Calibration	Customer Specific
Current Cycling Endurance	Power Supplies/LTM/ pneumatic cycler.	Circuit Breaker Cycler Set-up	Customer Specific
Environmental			
Humidity / Temp. Cycling	Thermotron/Tenney Chambers/LTM	Humidity / Temp. Cycling Set-up	EIA 364-31B, IEC 60512-11-3, IEC 60512-11-12
Thermal Shock	Thermal Shock Chambers @ 3800RR	Thermal Shock Chambers	EIA 364-32C, IEC 60512-11-4
Dust	Dust Chamber	Dust Test Chamber	VTEST-0011
Salt Fog	Harshaw 4100-000-003	Salt Fog Chambers	EIA 364-26B, ASTM B117
Temp. Cycling	LTM/Power supplies/Temp Chamber	Temp. Cycling Set-up	Customer/Product Specific
Mechanical			
Drop	Drop Tester	Drop Test Set-up	VTEST-0008
Mechanical Shock	AVCO SM105MP Vibration Tables @ 3800RR	Mechanical Shock Tester High-Frequency Vibration Machines	EIA 364-27B IEC 60512-6-3
Vibration – Low Frequency	LAB LVH18-100 @ 3800 RR	Low-Frequency Vibration Machines	EIA 364-27B IEC 60512-6-3
Vibration – High Frequency	Vibration Tables at 3800RR	High-Frequency Vibration Machine	EIA 364-28D, BTEST-0010 IEC 60512-6-4
Mechanical Life Cycling	Power Supplies/ Counter	Mechanical Life Cycling Test Set-up	Customer Specific Technical Data Book
Mechanical, Miscellaneous			
Audible Sound	Sound Meter / Sound Chamber	Audible Sound Test Set-up	VTEST-0017
Tensile/Compression			
Panel Retention	Insertion 4502 @ 3800RR	Tensile / Compression Machine	TIN109-41
Tensile	Instron 4502 @ 3800RR	Tensile / Compression Machine	EIA 364-8B, IEC 60512-16-4 & -20
Cover Retention	Instron 4502 @ 3800RR	Tensile / Compression Machine	VTEST-0005
Thermal retention	Instron 4502 @ 3800RR	Tensile / Compression Machine	VTEST-0004

SERVICE	EQUIPMENT	TYPICAL PROCEDURES
Materials and Processes Laboratory 3800 Reidsville Road, Winston-Salem, NC 27101		
Metallographic Sample Preparation	Embedding Media, polishing compounds, LECO AP-200 polisher	ASTM E3
Optical Examination of Cross-Sectioned Materials	Nikon Epiphot Metallograph	TIN 109-52, Method 2 ASTM E112
Vickers Hardness	Micromet Microhardness Tester	ASTM E384, ASTM E92
Knoop Hardness	Micromet Microhardness Tester	ASTM B758, ASTM E384
Rockwell Hardness	Wilson Series 500 Hardness Tester	ASTM E18, ASTM 1842
Coercive Force	Forster Coercive Force Tester	ASTM A867, ASTM A848
Tensile Testing – Materials	United TM-10 Tensile Tester	TIN 109-79, ASTM E8
Differential Scanning Calorimetry (DSC)	Mettler DSC 20 Differential Scanning Calorimeter	TIN 109-172, ASTM D3417
Scanning Electron Microscopy (SEM) Surface Characterization	AMRAY 1830i Scanning Electron Microscope	Application Specific
Elemental Analysis – Qualitative and Quantitative Energy Dispersive Spectroscopy	EDAX International EDS Detector PV9700/43 with Phoenix Software	Application Specific, ASTM E1508
Fourier Transform Infrared (FTIR) Material Identification	Nicolet 5PC FTIR with IR-Plan analytical microscope	Application Specific, ASTM E1252, ASTM E334
Melt Viscosity	Kayeness (Dynisco) Capillary Rheometer	ASTM D3835, TIN 109-57, TIN 103-2915
Melt Flow Rate	Dynisco Melt Indexer	ASTM D1238, TIN 118-1952
Melt Volume Rate	Dynisco Melt Indexer	ISO 1133, TIN 118-4440
Moisture Content	Computrac Vapor Pro	TIN 118-1953
Solderability	Multicore Solder Must II	MIL-STD 883C, TIN 109-11

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2008

This is to certify that:

Sumco, LLC
1351 South Girls School Road
Indianapolis
Indiana
46231
USA

Holds Certificate No: **FM 556796**

and operates a Quality Management System which complies with the requirements of ISO 9001:2008 for the following scope:

Electroplating of coil stock material and component parts for the automotive and commercial industries.

For and on behalf of BSI:

President, BSI America, Inc.

Originally Registered: **12/01/2009** Latest Issue: **02/22/2010** Expiry Date: **11/30/2012**

Section 13

Appearance Approval Report

Not Applicable

Section 14

Sample Product

Sent in separate package
(if required)

Section 15

Master Sample

Retained at manufacturing location

Section 16

Checking Aids

Not Applicable

Section 17

Records of Compliance with Customer-Specific Requirements

Section 18

Part Submission Warrant

DaimlerChrysler Ford GM

Part Submission Warrant

Part Name: 2.8mm BLD, Sealed
Cust. Part Number: 1326031-2
Shown on Drawing No.: C-1326031
Org. Part Number: 1326031-2
Engineering Change Level: F
Dated: 17-Nov-2005
Additional Engineering Changes: N/A
Dated: N/A
Safety and/or Government Regulation: ☐ Yes ☑ No
Purchase Order No.: N/A
Weight (kg): 0.0005
Checking Aid Number: N/A
Checking Aid Engineering Change Level: N/A
Dated: N/A

ORGANIZATION MANUFACTURING INFORMATION

TE CONNECTIVITY J6DRY
Supplier Name & Supplier/Vendor Code

233 Burgess Road
Street Address

Greensboro | NC | 27409 | US
City | Region | Postal Code | Country

CUSTOMER SUBMITTAL INFORMATION

Nursan
Customer Name/Division

NA
Buyer/Buyer Code

AUTOMOTIVE
Application

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported? ☑ Yes ☐ No ☐ N/A

Submitted by IMDS or other customer format: 2163563

Are polymeric parts identified with appropriate ISO marking codes? ☐ Yes ☐ No ☑ N/A

REASON FOR SUBMISSION

- ☑ Initial submission
- ☐ Engineering Change(s)
- ☐ Tooling: Transfer, Replacement, Refurbishment, or additional
- ☐ Correction of Discrepancy
- ☐ Tooling Inactive > than 1 year
- ☐ Change to Optional Construction or Material
- ☐ Sub-Supplier or Material Source Change
- ☐ Change in Part Processing
- ☐ Parts produced at Additional Location
- ☐ Other - please specify

REQUESTED SUBMISSION LEVEL (Check one)

- ☐ Level 1 - Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.
- ☐ Level 2 - Warrant with product samples and limited supporting data submitted to customer.
- ☑ Level 3 - Warrant with product samples and complete supporting data submitted to customer.
- ☐ Level 4 - Warrant and other requirements as defined by customer.
- ☐ Level 5 - Warrant with product samples and complete supporting data reviewed at supplier's manufacturing location.

SUBMISSION RESULTS

The results for ☑ dimensional measurements ☑ material and functional te ☐ appearance criteria ☐ statistical process package
These results meet all design record requirements: ☑ YES ☐ NO (If "NO" - Explanation Required)
Mold / Cavity / Production Process: Stamping

DECLARATION

I affirm that the samples represented by this warrant are representative or our parts, which were made by a process that meets all Production Part Approval Process Manual 4th Edition Requirements. I further affirm the these samples were produced at a production rate of 401,484 / 24 hours
I also certify that the documented evidence of such compliance is on file and available for review. I have noted any deviation from the declaration below.

EXPLANATION/COMMENTS:

Is each Customer Tool properly tagged and numbered? ☑ Yes ☐ No

Organization Authorized Signature: David Wilson
Date: 15-11-2014

Print Name: David Wilson
Phone No.: 336-665-4428
Fax No.: 336-665-4571

Title: Quality
E-mail: dwwilson@tycoelectronics.com

FOR CUSTOMER USE ONLY (IF APPLICABLE)

Part Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature
Date

Print Name
Customer Tracking Number (optional)

Section 18a

Bulk Material Requirements

Not Applicable