



# Reliability Report – 2N2907A

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General purpose medium power amplifier or switch in bare die form

## MIL-PRF-38534 CLASS K QUALIFICATION DATAPACK

Performed by Tandex Test Labs



# TANDEX

15849 Business Center Drive, Irwindale, CA 91706, U.S.A.

Phone (626) 962-7166, Fax (626) 960-6896

[www.tandexlabs.com](http://www.tandexlabs.com)

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- Post Steady-State Life Test at 25°C, -55°C, 125°C
- Scanning Electron Microscopy (SEM) analysis.





# MIL-PRF-38534 CLASS K DATAPACK

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## Certificate of Conformance



# **TANDEX TEST LABS, INC.**

15849 Business Center. Dr., Irwindale CA. 91706 U.S.A.

Phone: (626)962-7166 FAX: (626)960-689

<http://www.tandexlabs.com>

e-mail: via web site

## **Certificate of Conformance**

<b>CUSTOMER:</b>	<b>SIERRA COMPONENTS, INC.</b>	<b>DATE:</b> May 20, 2021
	2222 PARK PLACE SUITE 3E MINDEN, NV 89423	
<b>TEST REPORT:</b>	<b>SCI-459-01-A</b>	<b>QUANTITY RECEIVED:</b> 15
<b>P.O. NUMBER:</b>	<b>3163</b>	<b>QUANTITY REQUIRED:</b> 10+5
<b>DESCRIPTION:</b>	<b>TRANSISTOR</b>	<b>QUANTITY PROCESSED:</b> 10+5
		-10 SCREENED 5 BOND PULL
<b>PART NUMBER:</b>	<b>2N2907A</b>	<b>QUANTITY PASSED:</b> 10+5
<b>P/N AS RECEIVED / GENERIC:</b>	<b>2N2907A</b>	<b>QUANTITY FAILED:</b> 0
<b>LOT / DATE CODE:</b>	<b>1947 LOT#7GHW-7309 WF 3</b>	<b>QUANTITY SHIPPING:</b> 15*
<b>MANUFACTURE: CAGE CODE:</b>	<b>SIS</b>	*8 TRANSFERRED TO SCI-459-01-W
<b>TANDEX CAGE CODE:</b>	<b>1FE65</b>	

**METHOD OF TESTING: MIL-PRF-38534**

I hereby certify that the subject components have been processed and inspected in accordance with instructions with specifications referenced in your purchase order. Physical records and/or data pertinent to applicable military, proprietary, and/or commercial specifications are on file and available upon request for inspection at this facility.

  
Yvonne C. Carrasco  
QUALITY ASSURANCE



QMF 30



# MIL-PRF-38534 CLASS K DATAPACK

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Process Flow Chart + Mechanical Test Results



# TANDEX TEST LABS INC.

QMF22B

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PAGE 1 OF 5

## PROCESS FLOW CHART

FLOW NUMBER: SCI-459-01-A REV. 0

CUSTOMER:	SIERRA COMPONENTS, INC	P.O. NUMBER:	3163
PART NUMBER:	2N2907A	P/N AS RECEIVED:	2N2907A
PART TYPE:	TRANSISTOR	DRAWING:	MIL-PRF-38534
DUE DATE:	4/30/21	JOB NUMBER:	SCI-459-01-A
LOT DATE CODE:	1947 LOT#7GHW-7309 WF 3	QUANTITY RECEIVED:	24
QUOTE NUMBER:	SCI15287 MFG: SIS	QUANTITY REQUIRED:	10/5/8

**\*CAUTION: ESD REFER TO TTL DRAWING #P1025\***

01	FLO		FLOW PREPARED BY: <u>LSS</u> .ON: <u>1/11/21</u> CONTRACTUAL AGREEMENT REVIEW Y <input checked="" type="checkbox"/> NOT SPECIFIED N <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> Q-CLAUSES <input type="checkbox"/> DPAS <input type="checkbox"/> DFAR <input type="checkbox"/> ITAR <input type="checkbox"/> OTHER SPECIFIED							QA TANDEX 5	
02	QCI		TANDEX QUALITY CONTROL INSPECTION. FLOW APPROVED BY: <u>JML</u> .ON: <u>7/01/19</u>								QA TANDEX 5
03	RCV		VERIFY PART NUMBER. ENTER INTO INCOMING LOG. <u>X</u> CUSTOMER COUNT	QA TANDEX 5	24				7/01/19		
SEQ	PROC	REF #	DESCRIPTION	QTY	REJ	ACCEPT	DATE	INSP.			
04	VIS		PERFORM DIE VISUAL INSPECTION 100% PER MIL-STD-750 METHOD 2072. EQUIPMENT USED: <u>Olympus</u> ASSET #: <u>2009</u>	24	0	24	1/21/21			TTL 30 QA TANDEX 5	
ESD MAT DUE DATE <u>1/27/21</u>											
05	ASSY	P-1029	ASSEMBLE DIE INTO PACKAGES FOR ELEMENT EVALUATION AND BOND PULL PER REQUIREMENTS OF MIL-PRF-38534. DIE ATTACH: EUTECTIC TAPE PACKAGES FOR ELECTRICAL VERIFICATION 1st ARTICLE. Bond Pull * Package Type: TO-5 SEM SCI-459-01-W PERFORM PER MIL-STD-750 WIRE BOND: Utilize One Mil AL wire (0.001") (E) Utilize One Mil AL wire (0.001") (B)	10+1 10+2 LA	0	10+1	1/26/21		TTL 30		
ESD MAT DUE DATE <u>1/27/21</u>				5	0	5	1/26/21		TTL 30		
		P-4010		8					TTL 30		
				10+1	0	10+1	1/28/21		TTL 30		
			Bonder: <u>WEST-BOND</u> Asset #: <u>30789</u> Bonder: <u>West-Bond</u> Asset #: <u>30789</u>	5	0	5	1/28/21		TTL 30		

# TANDEX TEST LABS INC.

QMF22B







15849 BUSINESS CENTER DRIVE, IRVINDALE, CA. 91706 PH: (626)962-7166 FAX: (626) 960-6896

## PROCESS FLOW CHART

FLOW NUMBER: SCI-459-01-A REV. 0

CUSTOMER:	SIERRA COMPONENTS, INC	P.O. NUMBER:	3163
PART NUMBER:	2N2907A	P/N AS RECEIVED:	2N2907A
PART TYPE:	TRANSISTOR	DRAWING:	MIL-PRF-38534
DUE DATE:	4/30/21	JOB NUMBER:	SCI-459-01-A
LOT DATE CODE:	1947 LOT#7GHW-7309 WF 3	QUANTITY RECEIVED:	24
QUOTE NUMBER:	SCI15287 MFG: SIS	QUANTITY REQUIRED:	10/5/8

**\*CAUTION: ESD REFER TO TTL DRAWING #1025\***

SEQ	PROC	REF #	DESCRIPTION	QTY	REJ	ACCEPT	DATE	INSP.
06	VIS		PERFORM ELEMENT VISUAL 100% PER MIL-STD-750 METHOD 2010  EQUIPMENT USED: <u>NIKON SMZ645</u> ASSET #: <u>30663</u>	16 LA	0	16	1/28/21	
ESD MAT DUE DATE <u>2/27/21</u>								
07	SEL	P-1060	COVER SEAL  FURNANCE  LDC  STAMP 	10+1 LA	0	10+1	2/11/21	
ESD MAT DUE DATE <u>2/27/21</u>								
08	SER		SERIALIZE INTERNALLY	10+1	0	10+1	2/2/21	
09	ELEC		PERFORM INITIAL ELECTRICAL TESTING PER MFG DATA SHEET AT AMBIENT OPERATING TEMPERATURE. GO/ NO GO  EQUIPMENT USED: <u>TESEC</u> ASSET# <u>15063</u> TEST FIXTURE: <u>1114</u> SOFTWARE ID: <u>2N2907ASS</u> REV <u>A</u>	10+1	0	10+1	2/2/21	
ESD MAT DUE DATE <u>2/27/21</u>								
11	TEMP		PERFORM TEMPERATURE CYCLING PER MIL-STD-883 METHOD 1010 COND. C  10 CYCLES, 10 MIN. DWELL, 10 EXTREMES -65°C+0/-10 TO 150°C+15/-0  EQUIPMENT USED <u>070 #2</u> ASSET# <u>31884</u>	10+1	0	10+1	2/4/21 8:15AM	#48 B.T.
			DATE IN TIME IN	10+1	0	10+1	2/4/21 2:35PM	#48 B.T.
			DATE OUT TIME OUT	10+1	0	10+1	2/5/21	#48 B.T.
			PERFORM VISUAL INSPECTION AFTER FINAL CYCLE PER MIL-STD-883 PARA 3.2	10+1	0	10+1	2/5/21	#48 B.T.

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## PROCESS FLOW CHART

FLOW NUMBER: SCI-459-01-A REV. 0

CUSTOMER:	SIERRA COMPONENTS, INC	P.O. NUMBER:	3163
PART NUMBER:	2N2907A	P/N AS RECEIVED:	2N2907A
PART TYPE:	TRANSISTOR	DRAWING:	MIL-PRF-38534
DUE DATE:	4/30/21	JOB NUMBER:	SCI-459-01-A
LOT DATE CODE:	1947 LOT#7GHW-7309 WF 3	QUANTITY RECEIVED:	24
QUOTE NUMBER:	SCI15287 MFG: SIS	QUANTITY REQUIRED:	10/5/8

**\*CAUTION: ESD REFER TO TTL DRAWING #1025\***

SEQ	PROC	REF #	DESCRIPTION	QTY	REJ	ACCEPT	DATE	INSP.
11	ACC		PERFORM CONSTANT ACCELERATION PER MIL-STD-883, METHOD 2001. 5,000Kg'S, Y <sub>1</sub> DIRECTION. EQUIPMENT USED __TRIO-TECH__ ASSET# __30260__	10+1	0	10+1	2/5/21	TTL 48
ESD MAT DUE DATE								
2/27/21								
12	ELEC		PERFORM INITIAL ELECTRICAL TESTING PER MFG DATA SHEET AT AMBIENT OPERATING TEMPERATURES. READ AND RECORD +25°C EQUIPMENT USED: TESEC __.ASSET# 15053__ TEST FIXTURE: 1114 SOFTWARE ID: 2N2907ASS REV A.	10+1	0	10+1	2/6/21	TTL 48
ESD MAT DUE DATE								
2/27/21								
13	BI		PERFORM BURN-IN PER MIL-STD-750, METHOD 1039, CONDITION A. DATE IN: TIME IN: T <sub>j</sub> = +150°C MIN @ t = 240 HOURS DATE OUT: TIME OUT: BURN-IN BOARD # / DESC: 15873 BURN-IN OVEN #: 1A Power Supplies 31923, 31929	10+1	2	10+1	3/5/21 0915	TTL 31
ESD MAT DUE DATE								
2/27/21								
14	ELEC		PERFORM POST BURN-IN ELECTRICAL TESTING PER MFG DATA SHEET AT AMBIENT, HIGH AND LOW OPERATING TEMPERATURES. READ AND RECORD +25°C -55°C +125°C EQUIPMENT USED: Tesec ASSET# 15053 TEST FIXTURE: 1114 SOFTWARE ID: 2N2907ASS REV A. TEMPERATURE SOAK 30 SEC 2N2907AC 2N2907AH	10+1 10+1 10+1	0 0 0	10+1 10+1 10+1	3/15/21 2/24/21 3/31/21	TTL 35 TTL 35 TTL 35
ESD MAT DUE DATE								
2/27/21								

TANDEX TEST LABS  
 BURN - IN MONITOR SHEET

JOB NUMBER SCI-459-01-A

TEMPERATURE Ta = 25'c

PART NUMBER 2N2907A

TEMP. METER # 31579

DATE CODE 1947

VOLTAGE Vcb = -10 Vdc Ie = 40 mA

BURN-IN TIME 1000 hrs min

VOLT METER# 31681

RΘJC = 150'c/w

POWER SUPPLY# 31550, 31524

BOARD# 15873

OVEN# \_\_\_\_\_

DATE	TIME	VOLTAGE	CURRENT	TEMP.	INITIAL	COMMENTS
4/6/2021	1415	Vcb = -10 Vdc	Ie = 40 mA	Ta = 25'c	R.M.	ON AT 1415
4/7/2021	1620	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 22.2	hm	
4/8/2021	1245	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 22.8	hm	
4/9/2021	0920	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 22.7	hm	
4/10/2021			WEEKEND			
4/11/2021			WEEKEND			
4/12/2021	1520	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 22.7	hm	
4/13/2021	1545	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 22.9	hm	
4/14/2021	1500	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 22.6	hm	
4/15/2021	1600	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 23.1	hm	
4/16/2021	0930	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 22.8	hm	
4/17/2021			WEEKEND			
4/18/2021			WEEKEND			



TANDEX TEST LABS  
 BURN - IN MONITOR SHEET

JOB NUMBER SCI-459-01-A

TEMPERATURE Ta = 25'c

PART NUMBER 2N2907A

TEMP. METER # 31579

DATE CODE 1947

VOLTAGE Vcb = -10 Vdc Ie = 40 mA

BURN-IN TIME 1000 hrs min

VOLT METER# 31681

RΘJC = 150'c/w

POWER SUPPLY# 31550, 31524

BOARD# 15873

OVEN# \_\_\_\_\_

DATE	TIME	VOLTAGE	CURRENT	TEMP.	INITIAL	COMMENTS
4/19/2021	0900	Vcb = 70 vdc	Ie = 40mA	Tc = 22.9	hm	
4/20/2021	1620	Vcb = 70 vdc	Ie = 40mA	Tc = 22.6	hm	
4/21/2021	1630	Vcb = 70 vdc	Ie = 40mA	Tc = 22.8	hm	
4/22/2021	1420	Vcb = 70 vdc	Ie = 40mA	Tc = 23.0	hm	
4/23/2021	1150	Vcb = 70 vdc	Ie = 40mA	Tc = 40mA	hm	
4/24/2021			WEEKEND			
4/25/2021			WEEKEND			
4/26/2021	1630	Vcb = 70 vdc	Ie = 40mA	Tc = 22.7	hm	
4/27/2021	1620	Vcb = 70 vdc	Ie = 40mA	Tc = 23.0	hm	
4/28/2021	1510	Vcb = 70 vdc	Ie = 40mA	Tc = 23.1	hm	
4/29/2021	1620	Vcb = 70 vdc	Ie = 40mA	Tc = 22.8	hm	
4/30/2021					hm	NO DATA TAKEN
5/1/2021			WEEKEND			

TANDEX TEST LABS  
 BURN - IN MONITOR SHEET

JOB NUMBER SCI-459-01-A

TEMPERATURE Ta = 25'c

PART NUMBER 2N2907A

TEMP. METER # 31579

DATE CODE 1947

VOLTAGE Vcb = -10 Vdc Ie = 40 mA

BURN-IN TIME 1000 hrs min

VOLT METER# 31681

RΘJC = 150'c/w

POWER SUPPLY# 31550, 31524

BOARD# 15873

OVEN# \_\_\_\_\_

DATE	TIME	VOLTAGE	CURRENT	TEMP.	INITIAL	COMMENTS
5/2/2021			WEEKEND			
5/3/2021	1630	Vcb = -10Vdc	Ie = 40mA	Ta = 22.6	hm	
5/4/2021	1530	Vcb = -10Vdc	Ie = 40mA	Ta = 23.4	hm	
5/5/2021	1640	Vcb = -10Vdc	Ie = 40mA	Ta = 23.2	hm	
5/6/2021	1600	Vcb = -10Vdc	Ie = 40mA	Ta = 22.7	hm	
5/7/2021	1100	Vcb = -10Vdc	Ie = 40mA	Ta = 23.0	hm	
5/8/2021			WEEKEND			
5/9/2021			WEEKEND			
5/10/2021	1340	Vcb = -10Vdc	Ie = 40mA	Ta = 22.7	hm	
5/11/2021	1640	Vcb = -10Vdc	Ie = 40mA	Ta = 22.9	hm	
5/12/2021	0745	Vcb = -10Vdc	Ie = 40mA	Ta = 22.7	hm	
5/13/2021	1520	Vcb = -10Vdc	Ie = 40mA	Ta = 22.5	hm	
5/14/2021	1010	Vcb = -10Vdc	Ie = 40mA	Ta = 22.6	hm	

TANDEX TEST LABS  
 BURN - IN MONITOR SHEET

JOB NUMBER SCI-459-01-A

TEMPERATURE Ta = 25'c

PART NUMBER 2N2907A

TEMP. METER # 31579

DATE CODE 1947

VOLTAGE Vcb = -10 Vdc Ie = 40 mA

BURN-IN TIME 1000 hrs min

VOLT METER# 31681

RΘJC = 150'c/w

POWER SUPPLY# 31550, 31524

BOARD# 15873

OVEN#

DATE	TIME	VOLTAGE	CURRENT	TEMP.	INITIAL	COMMENTS
5/15/2021			WEEKEND			
5/16/2021			WEEKEND			
5/17/2021	0730	vcb = -10 vdc	Ie = 40 mA	Ta = 23.1	Am	
5/18/2021	1400	vcb = -10 vdc	Ie = 40 mA	Ta = 22.6	Am	OFF AT 1400

TANDEX TEST LABS  
 BURN - IN MONITOR SHEET

JOB NUMBER SCI-459-01-A

TEMPERATURE Ta = 25°C

PART NUMBER 2N2907A

TEMP. METER # 31579

DATE CODE 1947

VOLTAGE Vcb = -10 Vdc Ie = 40 mA

BURN-IN TIME 240 hrs min

VOLT METER# 31681

R $\theta$ JC = 150°C/w

POWER SUPPLY# 31923, 31929

BOARD# 15873

OVEN# \_\_\_\_\_

DATE	TIME	VOLTAGE	CURRENT	TEMP.	INITIAL	COMMENTS
3/5/2021	0915	Vcb = -10 Vdc	Ie = 40 mA	Ta = 25°C	R.M.	ON AT 0915
3/6/2021			WEEKEND			
3/7/2021			WEEKEND			
3/8/2021	1100	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 23.0	hm	
3/9/2021	1630	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 22.7	hm	
3/10/2021	1330	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 22.5	hm	
3/11/2021	1250	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 23.1	hm	
3/12/2021	1050	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 22.6	hm	
3/13/2021			WEEKEND			
3/14/2021			WEEKEND			
3/15/2021	0930	Vcb = -10 Vdc	Ie = 40 mA	T <sub>c</sub> = 22.5	hm	OFF AT 0930

## TANDEX TEST LABS BOND STRENGTH TESTING

TTL Job No.  SCI-459-01-A	Part Number  2N2907A	Part Type  TRANSISTOR	Date  May 18, 2021
Lot Date Code  LOT# 7GHW-7309 WF 3	Sample Qty.  5	Sample Numbers  11-15	Test Specifications Mil-Std-883 Method 2011 Condition C Mil-PRF-38534L, C.6.3.3.2, Table C-Xb1
Misc.	Qty Accept  5	Qty Reject  0	Suspect  0

WIRE TYPE  Al	PACKAGE/POST  Au	BOND TYPE  WEDGE BOND
DIE METALIZATION  Al	WIRE SIZE  0.001	MINIMUM PULL STRENGTH  1.0gm

S/N 11			S/N 12			S/N 13			S/N 14			S/N 15			S/N		
WIRE NO	FORCE	CODE	WIRE NO	FORCE	CODE	WIRE NO	FORCE	CODE	WIRE NO	FORCE	CODE	WIRE NO	FORCE	CODE	WIRE NO	FORCE	CODE
1	1.3	G	1	1.7	G	1	1.8	G	1	1.6	H	1	1.0	H	1		
2	1.0	H	2	1.2	H	2	1.3	H	2	1.2	H	2	1.5	H	2		
3			3			3			3			3			3		
4			4			4			4			4			4		
5			5			5			5			5			5		

### CODE INDEX

- A. NO BREAKS UP TO \_\_\_\_\_gms.
- B. BOND LIFTS FROM DIE.
- C. BOND LIFTS FROM POST.
- D. WIRE BREAKS AT SUBSTRATE/HEAL.
- E. BOND REMOVES UNDERLYING METALLIZATION.
- F. NO CONNECTION.
- G. WIRE BREAKS AT DIE/HEAL.
- H. WIRE BREAKS AT POST/HEAL.
- J. WIRE BREAKS AT SPAN.
- X. BOND DAMAGE PRIOR TO TESTING.



TECHNICIAN STAMP:

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## PROCESS FLOW CHART

FLOW NUMBER: SCI-459-01-A REV. 0

CUSTOMER:	SIERRA COMPONENTS, INC	P.O. NUMBER:	3163
PART NUMBER:	2N2907A	P/N AS RECEIVED:	2N2907A
PART TYPE:	TRANSISTOR	DRAWING:	MIL-PRF-38534
DUE DATE:	4/30/21	JOB NUMBER:	SCI-459-01-A
LOT DATE CODE:	1947 LOT#7GHW-7309 WF 3	QUANTITY RECEIVED:	24
QUOTE NUMBER:	SCI15287 MFG: SIS	QUANTITY REQUIRED:	10/5/8

**\*CAUTION: ESD REFER TO TTL DRAWING #1025\***

SEQ	PROC	REF#	DESCRIPTION	QTY	REJ	ACCEPT	DATE	INSP
15	SSL		<p>PERFORM STEADY STATE LIFE PER MIL-STD-750, METHOD 1039, COND. B</p> <p>DATE IN: 10+1 TIME IN: 4/6/21 t = 1000 HOURS MIN. TA = +125°C</p> <p>DATE OUT: 10+1 TIME OUT: 5/18/21</p> <p>BIAS REMOVAL _____</p> <p>BURN-IN OVEN#: <u>NA</u></p> <p>BURN-IN BOARD #/ DESC.: <u>15973</u></p> <p>POWER SUPPLY: <u>31550, 31524</u></p>	10+1	0	10+1	4/6/21 1415	TTL 31
16	ELEC		<p>PERFORM FINAL ELECTRICAL TESTING PER MFG DATA SHEET AT AMBIENT, HIGH AND LOW OPERATING TEMPERATURES. READ AND RECORD</p> <p>+25°C 10 0 10 5/18/21</p> <p>-55°C 10 0 10 5/18/21</p> <p>+125°C 10 0 10 5/18/21</p> <p>TESTING TO BE COMPLETED WITHIN 24 HR</p> <p>EQUIPMENT USED: <u>Tesec</u> ASSET# <u>15053</u></p> <p>TEST FIXTURE: <u>1114</u></p> <p>SOFTWARE ID: <u>2N2907ASS</u> REV <u>A</u></p> <p>TEMPERATURE SOAK <u>30 SEC</u></p>	10	0	10	5/18/21	TTL 29 TTL 35 TTL 35
<div style="border: 1px solid black; padding: 2px;"> <p>ESD MAT DUE DATE <u>5/27/21</u></p> </div>								
17	BP	P-1021	<p>PERFORM DESTRUCTIVE BOND PULL TEST PER MIL-STD-883 METHOD 2011, Mil-Prf-38534L, c. 6.3.3.2, Cable C-4b1</p> <p>STAY BAKE PRIOR TO BOND PULL T = 300°C @ t = 1 Hr ±0</p> <p>DELTA DESIGN 2300R #30522</p> <p>TECAM 820A #31579</p> <p>NO USED</p> <p>TIME IN: 5</p> <p>TIME OUT: 5</p> <p>TEN (10) WIRES FIVE (5) DEVICES. TWO (2) WIRES PER DEVICE.</p> <p>EQUIPMENT USED <u>DNEG</u> ASSET# <u>30785</u></p>	5	0	5	5/18/21 11:30AM 5/18/21 12:30PM	#48 BT #48 BT- TTL 4

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## PROCESS FLOW CHART

FLOW NUMBER: SCI-459-01-A REV. 0

CUSTOMER:	SIERRA COMPONENTS, INC	P.O. NUMBER:	3163
PART NUMBER:	2N2907A	P/N AS RECEIVED:	2N2907A
PART TYPE:	TRANSISTOR	DRAWING:	MIL-PRF-38534
DUE DATE:	4/30/21	JOB NUMBER:	SCI-459-01-A
LOT DATE CODE:	1947 LOT#7GHW-7309 WF 3	QUANTITY RECEIVED:	24
QUOTE NUMBER:	SCI15287 MFG: SiS	QUANTITY REQUIRED:	10/5/8

**\*CAUTION: ESD REFER TO TTL DRAWING #1025\***

SEQ	PROC	REF #	DESCRIPTION	QTY	REJ	ACCEPT	DATE	INSP.
18	QCI		TANDEX QUALITY CONTROL INSPECTION. QCI VERIFY CAR IN SEQ 01 IS COMPLIANT	24	Ø	24	5/20/21	QA TANDEX 5
19	PKG	P-1221	USE ORIGINAL CONTAINER OR TANDEX PACKAGING INCLUDE SEM REPORT SCI-438-01-W BEFORE SHIPPING	24	Ø	24	5/20/21	QA TANDEX 5
20	QAR	P-1073	TANDEX QUALITY ASSURANCE REVIEW SHIP VIA: UPS SHIP/ BILL TO: SIERRA COMPONENTS 2222 PARK PLACE SUITE 3E MINDEN, NV. 89423  * 10 SCREENED + 1 SPARE 5 BOND PULL 8 SEM	* 24			5/20/21	QA TANDEX 5







# MIL-PRF-38534 CLASS K DATAPACK

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Post Acceleration Test Results at 25°C



SCI-459-01-A  
PN 2N2907A

TANDEX TEST LABS  
PRELIMINARY,+25C,SEQ 9

2/2/2021  
file:SCI-459-01-A

TEST#		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
SYMBOL		BVCBO	BVCEO	BVEBO	ICEX	ICBO	IEBO	HFE	HFE	HFE	HFE	SAME	HFE	VCESAT	VCESAT	VBESAT	VBESAT
COND.1		10.0uA	10.0mA	10.0uA	30.0 V	50.0 V	4.00 V	10.0 V	10.0 V	10.0 V	10.0 V	11	10.0 V	150mA	500mA	150mA	500mA
COND.2					500mV			100uA	1.00mA	10.0mA	150mA		500mA	15.0mA	50.0mA	15.0mA	50.0mA
MAX LIMIT					50.00nA	10.00nA	50.00nA					300		400.0mV	1.600 V	1.300 V	2.600 V
MIN LIMIT		60.00 V	60.00 V	5.000 V				75	100	100	100		50				
SER #	BIN	V	V	V	A	A	A							V	V	V	V
1	1	114.5	87.83	8.765	20.20p	84.50p	36.90p	162.3	167.0	169.1	156.2	156.2	109.1	155.2m	458.0m	867.6m	1.008
2	1	116.5	87.22	8.779	38.40p	56.30p	78.10p	168.0	173.5	176.3	163.4	163.4	112.7	152.8m	450.2m	863.9m	1.007
3	1	115.5	87.58	8.783	13.50p	206.6p	4.100p	168.4	173.4	175.8	162.5	162.5	111.6	155.9m	457.9m	863.0m	1.004
4	1	115.7	87.74	8.766	35.20p	132.6p	18.00p	161.6	167.0	169.7	156.9	156.9	109.0	159.0m	468.5m	868.1m	1.014
5	1	115.2	87.99	8.820	56.50p	16.90p	97.00p	183.6	185.6	185.7	169.3	169.3	114.5	152.9m	448.3m	866.3m	1.007
6	1	114.9	87.98	8.814	18.80p	64.70p	32.40p	185.2	187.0	187.1	170.1	170.1	114.9	155.2m	456.0m	866.5m	1.010
7	1	115.7	88.05	8.817	80.90p	159.2p	55.10p	184.7	186.6	186.8	169.7	169.7	114.3	150.9m	444.9m	863.5m	1.001
8	1	114.7	88.00	8.798	119.9p	223.1p	129.0p	174.0	177.0	178.2	163.7	163.7	112.9	153.2m	449.9m	863.5m	1.002
9	1	114.0	87.99	8.818	119.7p	218.0p	133.7p	183.6	185.7	185.9	169.3	169.3	114.6	154.9m	453.9m	867.0m	1.010
10	1	113.9	87.98	8.813	117.9p	212.3p	66.10p	184.4	186.3	186.5	169.7	169.7	115.0	152.8m	446.5m	865.5m	1.005



# MIL-PRF-38534 CLASS K DATAPACK

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Pre Burn-In Test Results at 25°C



SCI-459-01-A  
PN 2N2907A

TANDEX TEST LABS  
INITIAL,+25C,SEQ 12

2/5/2021  
file:SCI-459-01-A

TEST#		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
SYMBOL		BVCBO	BVCEO	BVEBO	ICEX	ICBO	IEBO	HFE	HFE	HFE	HFE	SAME	HFE	VCESAT	VCESAT	VBESAT	VBESAT
COND.1		10.0uA	10.0mA	10.0uA	30.0 V	50.0 V	4.00 V	10.0 V	10.0 V	10.0 V	10.0 V	11	10.0 V	150mA	500mA	150mA	500mA
COND.2					500mV			100uA	1.00mA	10.0mA	150mA		500mA	15.0mA	50.0mA	15.0mA	50.0mA
MAX LIMIT					50.00nA	10.00nA	50.00nA					300		400.0mV	1.600 V	1.300 V	2.600 V
MIN LIMIT		60.00 V	60.00 V	5.000 V				75	100	100	100		50				
SER #	BIN	V	V	V	A	A	A							V	V	V	V
1	1	113.9	87.85	8.757	75.80p	33.00p	124.4p	159.5	164.4	166.7	154.6	154.6	108.6	154.5m	457.7m	868.0m	1.007
2	1	114.8	87.17	8.765	235.0p	345.1p	299.3p	164.7	170.4	173.4	161.4	161.4	112.3	151.2m	443.0m	865.2m	1.006
3	1	116.8	87.48	8.761	71.90p	98.90p	171.9p	163.5	168.6	171.2	159.2	159.2	110.9	153.5m	447.9m	865.5m	1.003
4	1	114.9	87.72	8.757	105.4p	75.60p	172.3p	159.6	165.1	167.8	155.6	155.6	108.6	155.3m	459.5m	867.7m	1.009
5	1	113.2	87.98	8.811	90.20p	52.90p	153.2p	181.4	183.6	183.9	167.9	167.9	114.2	151.1m	441.8m	866.5m	1.005
6	1	113.6	87.94	8.808	99.70p	67.50p	171.1p	182.1	184.1	184.4	168.3	168.3	114.6	154.4m	451.2m	869.0m	1.010
7	1	114.2	88.01	8.810	124.3p	99.00p	210.5p	182.2	184.2	184.6	168.2	168.2	114.1	149.9m	438.2m	863.4m	1.000
8	1	114.6	87.97	8.791	97.60p	66.60p	165.1p	171.5	174.6	175.9	162.2	162.2	112.5	150.3m	445.6m	864.7m	1.001
9	1	114.1	87.99	8.814	19.40p	61.90p	32.00p	182.0	183.9	184.2	168.1	168.1	114.4	152.8m	448.9m	867.1m	1.008
10	1	113.5	87.96	8.808	159.9p	261.7p	210.9p	182.8	184.7	184.9	168.7	168.7	114.8	152.7m	446.2m	866.5m	1.004



# MIL-PRF-38534 CLASS K DATAPACK

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Post Burn-In Test Results at 25°C



SCI-459-01-A  
PN 2N2907A

TANDEX TEST LABS  
POST BURN-IN,+25C,SEQ 14

3/15/2021  
file:SCI-459-01-A

TEST#		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
SYMBOL		BVCBO	BVCEO	BVEBO	ICEX	ICBO	IEBO	HFE	HFE	HFE	HFE	SAME	HFE	VCESAT	VCESAT	VBESAT	VBESAT
COND.1		10.0uA	10.0mA	10.0uA	30.0 V	50.0 V	4.00 V	10.0 V	10.0 V	10.0 V	10.0 V	11	10.0 V	150mA	500mA	150mA	500mA
COND.2					500mV			100uA	1.00mA	10.0mA	150mA		500mA	15.0mA	50.0mA	15.0mA	50.0mA
MAX LIMIT					50.00nA	10.00nA	50.00nA					300		400.0mV	1.600 V	1.300 V	2.600 V
MIN LIMIT		60.00 V	60.00 V	5.000 V				75	100	100	100		50				
SER #	BIN	V	V	V	A	A	A							V	V	V	V
1	1	115.5	87.93	8.818	930.5p	1.400n	709.0p	177.5	181.3	182.6	166.1	166.1	111.6	151.5m	441.6m	850.7m	986.0m
2	1	114.3	87.17	8.805	388.5p	538.0p	432.0p	177.2	182.5	184.6	169.0	169.0	113.9	148.9m	431.9m	855.0m	991.0m
3	1	115.7	87.45	8.806	658.7p	700.5p	574.7p	178.7	182.5	184.1	168.3	168.3	113.3	150.5m	437.9m	853.0m	988.0m
4	1	116.8	87.66	8.799	848.0p	906.0p	687.0p	174.2	178.4	180.1	164.4	164.4	111.2	153.5m	446.5m	855.4m	995.0m
5	1	114.8	87.89	8.847	2.230n	915.9p	769.8p	199.0	199.8	199.0	178.5	178.5	117.1	148.6m	427.9m	854.0m	989.0m
6	1	111.2	87.81	8.837	38.50p	175.9p	20.80p	200.0	200.0	199.0	178.5	178.5	117.5	150.3m	435.0m	858.0m	993.0m
7	1	113.0	87.85	8.839	2.090n	2.025n	1.586n	197.2	197.7	197.0	176.8	176.8	116.5	145.9m	422.9m	854.0m	985.0m
8	1	114.0	87.90	8.829	341.0p	456.0p	272.0p	186.8	189.1	189.3	171.8	171.8	115.1	148.9m	431.5m	852.0m	986.0m
9	1	113.2	87.85	8.850	787.1p	648.5p	697.5p	200.5	200.6	199.7	178.9	178.9	117.4	150.2m	433.5m	855.2m	991.0m
10	1	113.5	87.87	8.845	117.9p	77.00p	115.0p	200.6	200.3	199.3	178.8	178.8	117.3	149.7m	430.7m	854.1m	988.0m



# MIL-PRF-38534 CLASS K DATAPACK

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Post Burn-In Test Results at -55°C



SCI-459-01-A  
PN 2N2907A

TANDEX TEST LABS  
POST BURN-IN,-55C,SEQ 14

3/31/2021  
file:SCI-459-01-A

TEST#	2	
SYMBOL	HFE	
COND.1	10.0 V	
COND.2	10.0mA	
MAX LIMIT		
MIN LIMIT	50	
SER #	BIN	
1	1	96.61
2	1	93.37
3	1	95.05
4	1	90.00
5	1	101.1
6	1	96.15
7	1	96.33
8	1	94.51
9	1	112.7
10	1	102.8





# MIL-PRF-38534 CLASS K DATAPACK

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Post Burn-In Test Results at +125°C



SCI-459-01-A  
PN 2N2907A

TANDEX TEST LABS  
POST BURN-IN,+125C,SEQ 14

3/31/2021  
file:SCI-459-01-A

TEST#	2	
SYMBOL	ICBO	
COND.1	50.0 V	
COND.2		
MAX LIMIT	10.00uA	
MIN LIMIT		
SER #	BIN	A
1	1	10.22n
2	1	16.28n
3	1	15.77n
4	1	25.77n
5	1	10.13n
6	1	15.78n
7	1	16.50n
8	1	10.16n
9	1	26.25n
10	1	29.22n



# MIL-PRF-38534 CLASS K DATAPACK

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Post Steady-State Life Test Results at 25°C



SCI-459-01-A  
PN 2N2907A

TANDEX TEST LABS  
FINAL,+25C,SEQ 16

5/18/2021  
file:SCI-459-01-A

TEST#		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
SYMBOL		BVCBO	BVCEO	BVEBO	ICEX	ICBO	IEBO	HFE	HFE	HFE	HFE	SAME	HFE	VCESAT	VCESAT	VBESAT	VBESAT
COND.1		10.0uA	10.0mA	10.0uA	30.0 V	50.0 V	4.00 V	10.0 V	10.0 V	10.0 V	10.0 V	11	10.0 V	150mA	500mA	150mA	500mA
COND.2					500mV			100uA	1.00mA	10.0mA	150mA		500mA	15.0mA	50.0mA	15.0mA	50.0mA
MAX LIMIT					50.00nA	10.00nA	50.00nA					300		400.0mV	1.600 V	1.300 V	2.600 V
MIN LIMIT		60.00 V	60.00 V	5.000 V				75	100	100	100		50				
SER #	BIN	V	V	V	A	A	A							V	V	V	V
1	1	113.8	87.78	8.772	53.90p	1.974n	159.0p	167.8	172.0	173.4	158.7	158.7	109.6	159.2m	463.2m	863.5m	1.004
2	1	115.2	87.16	8.779	144.5p	2.551n	37.90p	169.3	174.3	176.6	162.9	162.9	112.1	156.0m	453.9m	862.7m	1.007
3	1	113.8	87.46	8.777	399.9p	2.961n	332.5p	168.4	173.0	175.0	161.2	161.2	111.0	158.3m	459.9m	862.5m	1.004
4	1	113.9	87.71	8.779	270.7p	2.446n	124.2p	165.8	170.9	173.0	158.8	158.8	109.2	160.7m	467.9m	863.2m	1.009
5	1	113.9	87.93	8.827	160.5p	2.271n	20.80p	190.0	191.6	191.1	172.3	172.3	114.9	155.5m	449.7m	861.9m	1.003
6	1	115.9	87.86	8.815	90.90p	1.875n	350.7p	190.0	191.2	190.7	172.1	172.1	115.3	157.9m	457.2m	864.5m	1.008
7	1	115.9	87.91	8.815	47.70p	2.483n	140.0p	188.6	189.7	189.2	170.8	170.8	114.4	153.9m	445.2m	861.8m	999.0m
8	1	115.5	87.94	8.805	385.7p	2.923n	259.1p	178.6	181.3	181.8	165.8	165.8	113.1	157.6m	456.1m	860.6m	999.0m
9	1	113.6	87.94	8.825	105.9p	1.669n	371.3p	189.4	190.9	190.2	171.8	171.8	115.0	157.8m	458.5m	862.3m	1.008
10	1	113.7	87.99	8.834	108.7p	2.622n	32.20p	192.5	193.7	192.8	173.6	173.6	115.4	157.5m	453.7m	860.1m	1.001



# MIL-PRF-38534 CLASS K DATAPACK

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Post Steady-State Life Test Results at -55°C



SCI-459-01-A  
PN 2N2907A

TANDEX TEST LABS  
FINAL,-55C,SEQ 16

5/18/2021  
file:SCI-459-01-A

TEST#	2	
SYMBOL	HFE	
COND.1	10.0 V	
COND.2	10.0mA	
MAX LIMIT		
MIN LIMIT	50	
SER #	BIN	
1	1	105.7
2	1	109.1
3	1	106.4
4	1	99.40
5	1	115.7
6	1	119.1
7	1	121.1
8	1	114.0
9	1	121.5
10	1	134.4



# MIL-PRF-38534 CLASS K DATAPACK

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Post Steady-State Life Test Results at 125°C



SCI-459-01-A  
PN 2N2907A

TANDEX TEST LABS  
FINAL,+125C,SEQ 16

5/18/2021  
file:SCI-459-01-A

TEST#	2	
SYMBOL	ICBO	
COND.1	50.0 V	
COND.2		
MAX LIMIT	10.00uA	
MIN LIMIT		
SER #	BIN	A
1	1	8.530n
2	1	9.030n
3	1	7.630n
4	1	8.790n
5	1	7.365n
6	1	6.200n
7	1	8.262n
8	1	7.285n
9	1	7.370n
10	1	9.227n





# MIL-PRF-38534 CLASS K DATAPACK

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Scanning Electron Microscopy (SEM) analysis



# TANDEX TEST LABS, INC.

15849 Business Ctr. Dr. Irwindale CA. 91706

Phone: (626)-962-7166 Fax: (626)-960-6896

## SCANNING ELECTRON MICROSCOPE ANALYSIS

SIERRA COMPONENTS, INC.

TTL Job # SCI-459-01-W

Date: February 3, 2021

Part Number: 2N2907A

Part Type: Transistor

Lot/DC: LOT# 7GHW-7309 WF 3 D/C: 1947

MFR: SiS

Quantity: Eight (8)

Purchase Order: 3163

Submitted by: \_\_\_\_\_

  
Jason A. Salinas  
DPA/MTS

Approved by: \_\_\_\_\_

  
Deborah M. Gorham  
Quality Assurance

## TANDEX TEST LABS TTL Job # SCI-459-01-W

Summary

Eight (8) Transistor P/N: 2N2907A were submitted by Sierra Components, Inc. for SEM Analysis. This Analysis was performed in accordance with Mil-Std-750, Method 2077.5 The devices were assigned sample number 1 through 8 by Tandex Test Labs.

1. **Plasma Etching** Carbon Tetraflouride Gas 92% and 8% Oxygen was used to remove the glassivation. This etching is destructive and uneven in the rates of glass removal in various areas of the die.
2. **SEM Inspection** was performed per Mil-Std-750, Method 2077.5 on all eight of the devices. No anomalous conditions were noted. See figures 1 through 3, for typical photographs.

**Conclusion:** This lot is acceptable for use.

**TANDEX TEST LABS TTL Job # SCI-459-01-W  
SEM EXAMINATION**

TTL Job No. <b>SCI-459-01-W</b>	Part Number <b>2N2907A</b>	Part Type <b>Transistor</b>	Date <b>February 1, 2021</b>
Lot Date Code: <b>LOT# 1947 7GHW-7309 WF 3</b>	Sample Qty. <b>8</b>	Serial Numbers <b>1 - 8</b>	Test Specifications <b>Mil-Std-750 Method 2077.5</b>
Misc. ID No.	Qty. Accept <b>8</b>	Qty. Reject <b>0</b>	Qty. Suspect <b>0</b>

**Notes:**

S/N	Investigation Findings / Comments	A/R/S
1	No Anomalies	A
2	No Anomalies	A
3	No Anomalies	A
4	No Anomalies	A
5	No Anomalies	A
6	No Anomalies	A
7	No Anomalies	A
8	No Anomalies	A

Each sample was inspected for the general metallization condition at a magnification between 1,000 X and 6,000 X over 25% of the total metallization (unless specified differently). Each sample was inspected from four (4) viewing directions at a magnification between 5,000 X and 20,000 X

Inspection required Yes:  No:  Devices constructed with expanded Metallization Yes:  No:

Sample Glassivated Yes:  No:  Dual Level Metallization Yes:  No:

Glassivation Removed Using: PLASMA ETCHING

Beam accelerating voltage 10kV to 20kV Viewing angle 45 deg



\_\_\_\_\_  
Technician Stamp:

TANDEX TEST LABS TTL Job # SCI-459-01-W

## Photodocumentation

TANDEX TEST LABS TTL Job # SCI-459-01-W

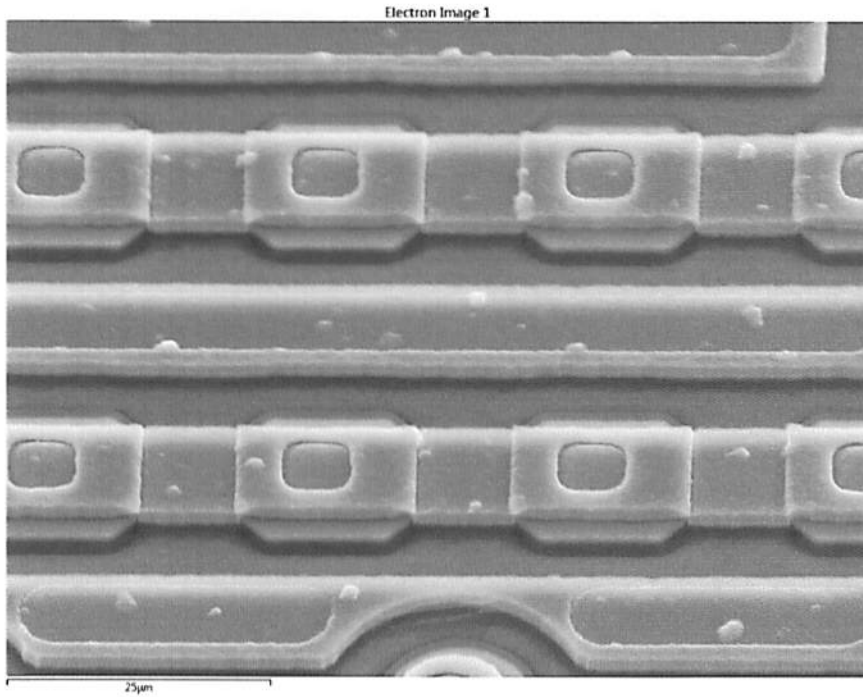


Fig: 1

Mag: 1,500X

S/N: 3

Description: SEM photograph of General metallization.

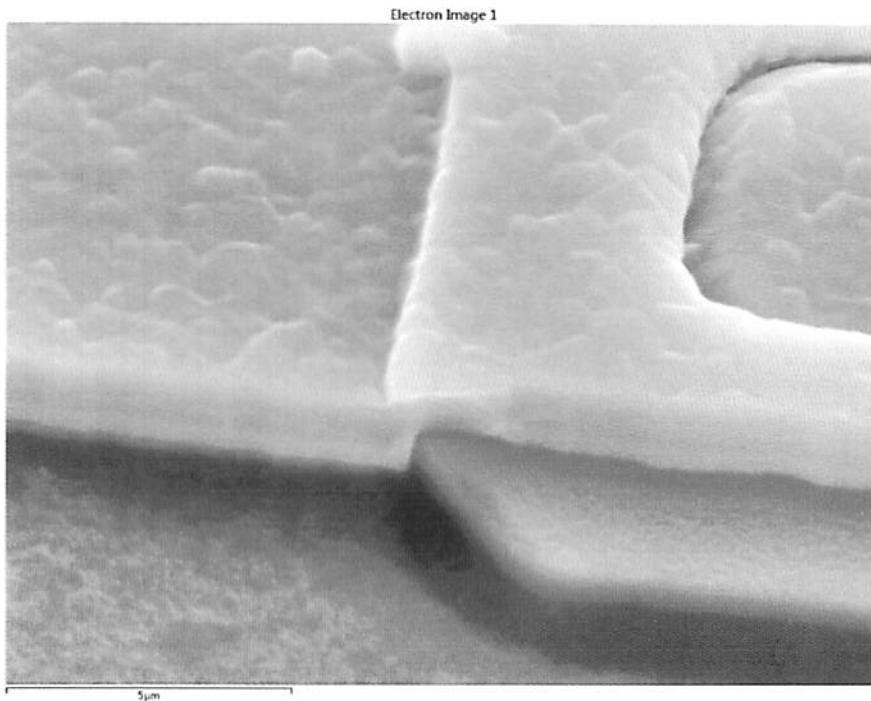


Fig: 2

Mag: 8,000X

S/N: 3

Description: SEM photograph of typical metallization step.

TANDEX TEST LABS TTL Job # SCI-459-01-W

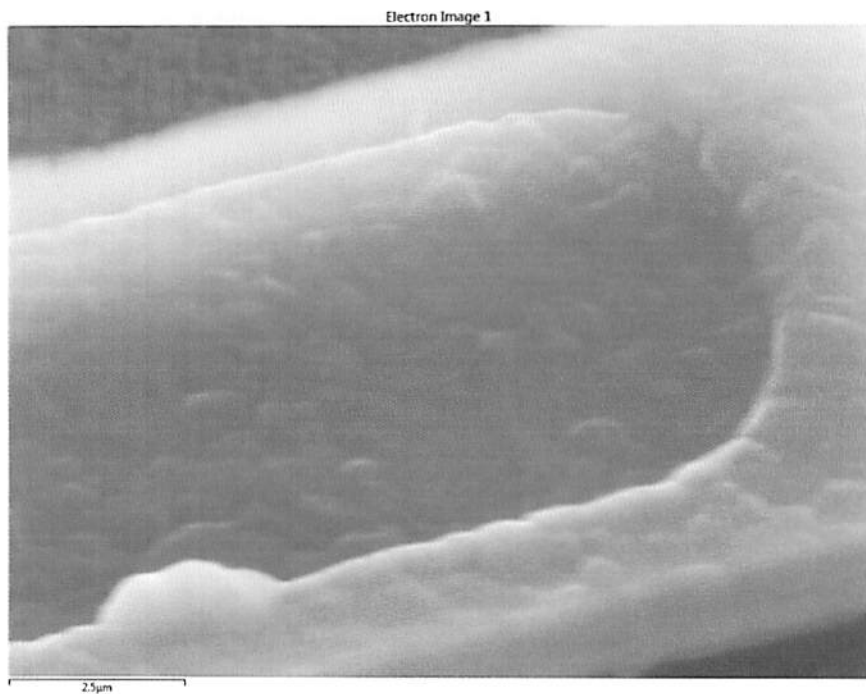


Fig: 3

Mag: 10,000X

S/N: 3

Description: SEM photograph of typical contact window, rotated 90°.

# **TANDEX TEST LABS, INC.**

15849 Business Center. Dr., Irwindale CA. 91706

Phone: (626)962-7166 FAX: (626)960-6896

<http://www.tandexlabs.com>

e-mail: via web site

## **Certificate of Conformance**

CUSTOMER:	SIERRA COMPONENTS, INC. 2222 PARK PLACE, BLDG 3, STE E  MINDEN, NV 89423	DATE: February 3, 2021
TEST REPORT:	SCI-459-01-W	QUANTITY REQUIRED: 8
P.O. NUMBER:	3163	QUANTITY PROCESSED: 8
DESCRIPTION:	Transistor	QUANTITY PASSED: 8
PART NUMBER(S):	2N2907A	QUANTITY FAILED: 0
MFG PART NUMBER	2N2907A	QUANTITY SHIPPING: 8
LOT / DATE CODE:	LOT# 7GHW-7309 WF3 MFR: SIS	

METHOD OF TESTING: MIL-STD-750 METHOD 2077.5

I hereby certify that the subject components have been processed and inspected in accordance with instructions with specifications referenced in your purchase order. Physical records and/or data pertinent to applicable military, proprietary, and/or commercial specifications are on file and available upon request for inspection at this facility.

*Deborah M. Gorham*

Deborah M. Gorham  
QUALITY ASSURANCE

