PREPARED FOR

GEO. C. MARSHALL SPACE FLIGHT CENTER
MARSHALL SPACE FLIGHT CENTER, AL 35812

NASA TECHNICAL COR
FELMINIO VILLELLA
EC 43/BLDG 4487

BY JERRY L. BARTON

MOTOROLA INC.
SEMICONDUCTOR PRODUCTS DIVISION
5005 EAST McDOWELL ROAD
PHOENIX, ARIZONA 85008

FINAL REPORT

TRANSISTOR SCREENING EVALUATION
SJ6708H
CONTRACT NAS8-32087
JULY 1976 — NOVEMBER 1978

PREPARED FOR

GEO. C. MARSHALL SPACE FLIGHT CENTER
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TABLE OF CONTENTS

SECTION A. NARRATIVE OUTLINE

I. SCOPE OF WORK

II. DEVICE DESCRIPTION

III. TEST PLAN AND RESULTS

IV. CONCLUSIONS

V. RECOMMENDATIONS

Scope of Work

Motorola contracted to screen 125 transistors capable of withstanding the high level inductive voltages obtained when switching inductive loads. The transistors were to be similar in performance to those delivered to Rockwell International for application in the SSME Spark Igniter System, i.e. Rockwell Specification RES1075.

Planned differences included a change in die bonding to comply with NASA's desire for hard solder die attachment which further necessitated a change in package to conform to the required die mounting system. Evaluation of the electrical performance and recommended changes were to be made during the preliminary build phase of the program.

Device Description

Die: NPN, double diffused-epitaxial collector; glassivated mesa, 190 x 190 mils.
Package: TO-8, steel, molybdenum heat spreader, gold plated, glass feed-thru's.
Construction: Gold eutectic die attachment, 10 mil Mag-Alum wires, ultrasonic bonding on die, tweezer weld on posts.

Test Plan and Results

The Special Device Specification 48ARB64845A (SJ6708H) was written to provide internal Motorola control of processing and screening of devices in accordance with the NASA contract. A copy of this specification is included in Section C.

The sequence of testing and test result summary is contained in the Customer Data Summary Sheet in Section B. The documentation of data readouts is indexed and grouped in Section F.

Test equipment used in the testing and screening of these devices is listed in the Test Facility List of Section E.

The first problem encountered was an instability of the die after 100% high temperature reverse bias when 56 of 160 devices failed the electrical inspection (reference R.O. #10). The remaining 104 devices went to 100% Burn-In (49 devices were designated Group B-6 samples and 168 hr. endpoints were recorded on a separate tab run, i.e. R.O. #55). Nine devices failed after 168 hrs., eight in the standard 100% group and one in the B-6 group, but the remaining devices were stable thru the 2000 hr. B-6 test.

The second problem encountered was hermeticity failures (22 pcs) in the B-1 test sample. This sample had been submitted to Thermal Shock (Glass Strain) test and Terminal Strength test prior to the hermeticity test. These prior tests apparently damaged the glass to metal seals as indicated in the Failure Analysis Report PL-099 #034 contained in Section D. In order to determine the specific test causing the glass seal damage, a separate sample was run through B-1 again with a hermeticity check made after each mechanical test (see Pg. 10 Special Test in Customer Data Summary). The mechanical stress of the Terminal Strength test was determined to be the primary cause of seal failure.

A computer readout problem became evident in the final measurements of Group B testing. A number of devices showed low or no readings at all on BVCES, while the other measured parameters had normal values. An analysis of the Lorlin equipment showed a tendency for oscillations with these devices during the high voltage test resulting in low readings or no printout. All the BVCES failures were retested and observed on a curve tracer. Other than the tendency to oscillate at breakdown, the devices checked normal and within specification limits.

In Group B, subgroup VI, one device (S/N 21) showed no beta reading at 1500 hrs. The device beta measured 19.98 on verification test, a change of -5.6% from the initial reading. The device was sent to Failure Analysis for review. No evidence of a failure mechanism was found but the device was delidded and chemically etched during the analysis so it could not be returned for the last 500 hours of test. Since no problem was found in the device, we did not list it as a failure. There were sufficient spare devices in the test to maintain the correct sample size.

Conclusions:

Two major problems developed during the screening of the contract devices, (1) die instability, as evidenced by the high-temperature reverse-bias failures and (2) poor glass to metal seals in the mechanical package, as evidenced by the inability to pass the specified terminal strength test.

The mechanical package problems in screening surfaced again in subgroup I of qualification (Group B) testing. Oscillation problems at the computer caused a significant numere of "bad" endpoint readings in other Group B subgroups but retest and failure analysis indicates there were no subgroup failures.

The instability problem is a serious but not uncommon problem on high voltage devices. Significant improvements in lot to lot stability were achieved by the addition of glassivation to the exposed mesa junctions. This type glassivation was used on these contract devices to try to achieve maximum stability but as demonstrated in this effort, mesa glassivation alone is not always successful. Since the inception of this contract, considerable work has been in process on this problem due to similar failures on standard production lots. Our studies indicate that additional glassivation protection is needed over the basically planar emitter base junction. This technique has recently been incorporated into production with a marked improvement in the probability of die lot stability.

Another significant cause of instability in high-voltage die is the temperature effect on silicon resistivity. A number of theoretical and experimental studies have been published showing that resistivity peaks at a critical temperature for each doping concentration. Operation in the temperature region above the maximum resistivity can result in a run away condition. The maximum resistivity temperature for 50 ohm-cm material is about 160°C. The critical temperature decreases with increasing resistivity. The material used on this contract had resistivity in the range of 40 to 80 ohm-cm and the HTRB test temperature was run at 150°C. We believe that the high failure rate in HTRB can be, at least partially, attributed to the higher resistivity devices operating over their critical temperature.

The glass to metal seal problem is a vendor problem normally resolved by qualifying packages and vendors through Motorola's Manufacturing Engineering Department prior to a production commitment. At the time of this contract, Motorola did not have any production requirement for TO-8 hard-solder packages and therefore had no qualified vendors for such a package. The package used on this contract was obtained from the only available source of production TO-8 packages at that time. A full package qualification was not included or contemplated as part of this effort.

Recommendations:

As a result of this activity, Motorola recommends some changes in this device for future applications. The same mask and basic process design should be used but with lower resistivity material (25 to 40 ohm-cm) and the added protection of base/emitter passivation. This revised configuration has been submitted to extensive HTRB evaluation with good parametric stability results. Motorola is planning to use this revised die configuration to qualify the 2N6308 under MIL-S-19500/498. A major computer manufacturer is presently qualifying this die for their product line, and it is presently being used for a new procurement of the Rockwell International RES1075.

Motorola also recommends that future applications of this device be procurred in a steel TO-3 package instead of the TO-8 package. If mounting space is a serious consideration, a steel TO-66 package would be our next recommendation. A production requirement for the TO-8 package would require an extensive qualification of packages and suppliers. The TO-8 package is not used extensively for silicon devices. The TO-3 package is the most widely used package in the transistor industry. It is continually tested for reliability through JAN products, high reliability specials and user reliability programs. This is also true of the TO-66 but to a less degree because it is used in smaller quantities. The computer and MIL product will be built in the TO-3 package. Due to prior design commitments, the Rockwell device is being made in a TO-8 package but a new package source was located for this build.

SECTION B. CUSTOMER DATA SUMMARY AND X-RAY REPORTS

MOTOROLA INC. Discrete Semiconductor Division
P.O. BOX 20906, PHOENIX, ARIZONA 85036

CUSTOMER DATA SUMMARY SHEET

TEST SJ6708H P/N RES1075-01(1) Rev.A PL99.784 LA-1	SAMPLE PLAN			ACCEPTANCE DATA				REMARKS
	SIZE	AQL / LTPD	LEVEL	REJECTS FOUND	TYPE	ACCEP. NO.	REJECT NO.	
LOT SIZE: 168 DATE CODE: 7733 RELEASED: 7/18/78								
NOTE: Three (3) devices pulled for correlation in measurements, #149, 150, & 151.								
NOTE: 151 devices plus 17 (add-on) were processed as two groups and combined as follows:								
Internal Visual Insp. MIL-STD-750 Meth. 2072			100%					Done in Production
Electrical Inspection	165		100%	7 6 1	 BVCES #17,43,74,81,120,145 hFE3 #15			Recorded R.O.#05
NOTE: Only five (5) rejects pulled at this time from Readout #05, S/N's: 17,43,74, 81, & 145. S/N's: 15 & 120 pulled after Readout #10.								
Thermal Shock (Temp. Cycling) MIL-STD-202 Meth. 107 Cond. C except 10 cycles t(extreme≥15min.)	160		100%	0				
Constant Acceleration MIL-STD-750 Meth. 2006 10,000G's Y1 Orientation only	160		100%	0				
High Temp. Rev. Bias MIL-STD-750 Meth. 1039 Cond. A VCB=640V TA=150°C, t=48±4 hrs.	160		100%	0				
Electrical Inspection	160		100%	56 24 21 2 2 2 5	 ICES1 ICES1Δ% hFE3 hFE3% #15 & 120 pulled at this ES/B			Recorded R.O.#10 & Go No Go time. Go No Go

SPD 1053 R-1 (9/68)

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CUSTOMER DATA SUMMARY SHEET

TEST SJ6708H PL99.784 LA-1 Page 2	SAMPLE PLAN			ACCEPTANCE DATA				REMARKS
	SIZE	AQL / LTPD	LEVEL	REJECTS FOUND	TYPE	ACCEP. NO.	REJECT NO.	
NOTE: 49 devices pulled for Group B-6 and processed concurrently with Burn-In.								
Burn-In TJ=187.5±12.5°C t≥168 hrs. VCE≥20V adjust IC to maintain specified TJ	55		100%	0				
Post Burn-In Electrical Insp.	55		100%	8 1 1 1 5	 hFE3% #89 ICES1 #134 mech. #100 damaged #154,155,156,163, & 165			Recorded R.O.#15
NOTE: X-Ray processed in two groups with a total of 47 devices.								
X-Ray MIL-STD-750 Meth. 2076	42		100%	2	EM #77,104			Control #5410
X-Ray MIL-STD-750 Meth. 2076	5		100%	0				Control #5966
Hermetic Seal MIL-STD-750 Meth. 1071 Fine Leak Condition G or H leak rate≤1X10-8ATm cc/sec. Gross Leak Condition A,C,D,E, or F	45		100%	9 9 0	 radiflo #76,82,85,116,135,137,138,139,146			
External Visual Insp. MIL-STD-750 Meth. 2071	36		100%	0				
NOTE: One (1) device lost, #70, 22 pulled for B-3 sample, 3 pulled for B-5 sample. Only 5 devices processed to Group A as follows:								
GROUP A								
Subgroup I Visual & Mechanical	5		100%	0				

5PD 1053 R-1 (9/68)

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CUSTOMER DATA SUMMARY SHEET

TEST SJ6708H PL99.784 LA-1 Page 3	SAMPLE PLAN			ACCEPTANCE DATA				REMARKS
	SIZE	AQL / LTPD	LEVEL	REJECTS FOUND	TYPE	ACCEP. NO.	REJECT NO.	
Subgroup II Electrical Insp.	5		100%	1	ICEO #166			Go No Go
Subgroup III Electrical Insp.	4		100%	0				Go No Go
Subgroup IV Electrical Insp.	4		100%	0				Go No Go
Subgroup V Electrical Insp.	4		100%	0				Go No Go
GROUP B								
Initial Electrical	76			5	BVCES #5,27,31,36,41			Recorded R.O.#20
Subgroup I 1/ Physical Dimensions	20 total +2 spares			22		0	1	
MIL-STD-750 Meth. 2066	5			5		0	1	
Solderability MIL-STD-750 Meth. 2026 use of mildly activated flux is allowable (Superior 30 or equivalent)	2			0		0	1	
Resistance to Solvents MIL-STD-202 Meth. 215	2			1		0	1	
Thermal Shock (Temp. Cycling) MIL-STD-202 Meth. 107 Cond. C except 10 cycles t(extremes)=15min.	20+2 spares			0		0	1	
Thermal Shock (Glass Strain) MIL-STD-750 Meth. 1056 Condition B	20+2 spares			0		0	1	

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CUSTOMER DATA SUMMARY SHEET

TEST SJ6708H PL99.784 LA-1 Page 4	SAMPLE PLAN			ACCEPTANCE DATA				REMARKS
	SIZE	AQL / LTPD	LEVEL	REJECTS FOUND	TYPE	ACCEP. NO.	REJECT NO.	
Subgroup I (Continued)								
Terminal Strength (Tension) MIL-STD-750 Meth. 2036 Cond. A WT=10 lbs., t=15 sec.	20+2 spares			0		0	1	
Hermetic Seal MIL-STD-750 Meth. 1071 Fine Leak Condition G Leak Rate $\leq$ 1X10-8ATm cc/sec.	20+2 spares			22 22	 radiflo	0	1	
Gross Leak Cond. A,B,C,D, or F				not tested				
Moisture Resistance MIL-STD-750 Meth. 1021 omit initial conditioning				not tested				
End Points				not tested				
1/ Used 5 units from B-6 & 17 units from B-7.								
Subgroup II 2/ Salt Atmosphere (Corrosion) MIL-STD-750 Meth. 1041	20			0		0	1	No Elect. End Points
2/ Used electrical rejects.								
Subgroup III 3/ Shock(Non-Oper.) MIL-STD-750 Meth. 2016 1,500G's t=0.5mSec. 5 blows each in X1,Y1, Y2, & Z1 direction (20 blows total)	20			0 0		0	1	Recorded

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CUSTOMER DATA SUMMARY SHEET

TEST SJ6708H PL99.784 LA-1 Page 5	SAMPLE PLAN			ACCEPTANCE DATA				REMARKS
	SIZE	AQL / LTPD	LEVEL	REJECTS FOUND	TYPE	ACCEP. NO.	REJECT NO.	
Subgroup III (Continued)								
Vib. Var. Frequency MIL-STD-750 Meth. 2056 Vibrational environment for 7.8 hrs. in each of X1, Y1, Z1 axis				0				
Constant Acceleration MIL-STD-750 Meth. 2006 20,000G's X1, Y1, Y2, & Z1 Directions				0				
Accoustic MIL-STD-810 Meth. 515.2 Field Accoustic environment at 174 db.				0				
End Points				0				R.O.#30
NOTE: Two (2) devices damaged on Shock Test, R.O.#30 (90 & 106), and replaced with 2 more units.								
3/ Used same units for Subgroups III & IV.								
Subgroup IV Safe Operating Area (Switching) MIL-STD-750 Meth. 3053 Cond. C (unclamped inductive load) $R_S=0.1\Omega$, $t_r=t_f\leq 500\eta$Sec. DC$\leq$10%, TA=25°C Test #1 $t_p\approx$5mSec. (vary to obtain IC) $R_{BB1}=10\Omega$, $V_{BB1}=16V$ $R_{BB2}=\infty$, $V_{BB2}=0$ $V_{CC}=25V$, $I_C=7.0A$ L=5mH (Super Electric Corp. Type S16884 in parallel or equivalent DC resistance$\leq 0.1\Omega$)	20			0		C	1	Recorded

SPD 1053 R-1 (9/68)

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CUSTOMER DATA SUMMARY SHEET

TEST SJ6708H PL99.784 LA-1 Page 6	SAMPLE PLAN			ACCEPTANCE DATA				REMARKS
	SIZE	AQL / LTPD	LEVEL	REJECTS FOUND	TYPE	ACCEP. NO.	REJECT NO.	
Subgroup IV (Continued)								
Test #2 $tp \leq 5$mSec. (vary to obtain IC) RBB1=100Ω, VBB2=10V RBB2=∞, VBB2=0 VCC=25V, IC=0.5A L=100mH (Two Triad C48U in series; 80mH winding & 20mH winding or equivalent; DC resistance $\leq$1.0Ω)				0				
End Points				0				R.O.#35
Subgroup V 4/ High Temp. Life (Non-Oper.) MIL-STD-750 Meth. 1031 TA=200°C, t=1000 hrs. Total	20+3 spares			1		1	2	Recorded
High Temp. Life 0- 340 hrs. t=340 hrs.	20+3 spares			0				
Electrical Inspection (340 hrs.)	20+3 spares			1	BVCES #79			R.O.#40
High Temp. Life 340 - 670 hrs. t=330 hrs.	20+2 spares			0				
Electrical Inspection (670 hrs.)	20+2 spares			0				R.O.#45
High Temp. Life t70 - 1000 hrs. t=330 hrs.	20+2 spares			0				
Electrical Inspection (1000 hrs.)	20+2 spares			0				R.O.#50

4/ Used units from B-3 plus spares.

SPD 1053 R-1 (9/68)

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CUSTOMER DATA SUMMARY SHEET

TEST SJ6708H PL99.784 LA-1 Page 7	SAMPLE PLAN			ACCEPTANCE DATA				REMARKS
	SIZE	AQL / LTPD	LEVEL	REJECTS FOUND	TYPE	ACCEP. NO.	REJECT NO.	
Subgroup VI Steady State Operation Life MIL-STD-750 Meth. 1026 $V_{CE} \geq 20V$ $T_J = 187.5 \pm 12.5°C$ adjust IC to maintain specified TJ t=2000 hrs. total	40+4 spares			5		1	2	Recorded
Steady State Operating Life 0 - 168 hrs. t=168 hrs.	40+4 spares			0				
Electrical Inspection (168 Hrs.)	40+4 spares			1	ICES1 #61			R.O.#55
Steady State Operating Life 168 - 340 hrs. t=172 hrs.	40+3 spares			0				
Electrical Inspection (340 hrs.)	40+3 spares			0				R.O.#60
Steady State Operating Life 340 - 670 hrs. t=330 hrs.	40+3 spares			0				
Electrical Inspection (670 hrs.)	40+3 spares			0				R.O.#65
Steady State Operating Life 670 - 1000 hrs. t=330 hrs.	40+3 spares			0				
Electrical Inspection (1000 hrs.)	40+3 spares			0				R.O.#70
Steady State Operating Life 1000 - 1500 hrs. t=500 hrs.	40+3 spares			0				

SPD 1053 R-1 (9/68)

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CUSTOMER DATA SUMMARY SHEET

TEST SJ6708H PL99.784 LA-1 Page 8	SAMPLE PLAN			ACCEPTANCE DATA				REMARKS
	SIZE	AQL / LTPD	LEVEL	REJECTS FOUND	TYPE	ACCEP. NO.	REJECT NO.	
Subgroup VI (Continued)								
Electrical Inspection (1500 hrs.)	40+3 spares			0	hFE3 #21*			R.O.#75
Steady State Operating Life 1500 - 2000 hrs. t=500 hrs.	40+2 spares			0	damaged #13**			
* See attached failure analysis report #PL099 & 32.								
** See attached failure analysis report #278.								
Electrical Inspection (2000 hrs.)	40+1 spares			0 8/ 1	#69(spare)			R.O.#80
Subgroup VII 5/ Power Cycle VCE=100V TA=25±3°C adjust PD to obtain TC=100°C or ΔTC=75°C ton=toff=5min. 4000 cycles	15+2 spares			0 8/		0	1	Recorded
Electrical Inspection (1000 cycles)	15+2 spares			0 8/				R.O.#81
Power Cycle 1000 - 2000 cycles	15+1 spare			0				
Electrical Inspection (2000 cycles)	15+1 spare			0				R.O.#82
Power Cycle 2000 - 3000 cycles	15+1 spare			0				
Electrical Inspection (3000 cycles)	15+1 spare			0				R.O.#83
Power Cycle 3000 - 4000 cycles	15+1 spare			0				
Electrical Inspection (4000 cycles)	15+1 spare			0 8/				R.O.#84

SFD 1053 R-1 (9/68)

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CUSTOMER DATA SUMMARY SHEET

TEST SJ6708H PL99.784 LA-1 Page 9	SAMPLE PLAN			ACCEPTANCE DATA				REMARKS
	SIZE	AQL / LTPD	LEVEL	REJECTS FOUND	TYPE	ACCEP. NO.	REJECT NO.	
Subgroup VII (Continued)								
Thermal Shock 6/ (Temp. Cycling) MIL-STD-202 Meth. 107 T (low)=-65°C T (high)=125°C 500 cycles	15+2 spares			0		0	1	Recorded
Thermal Shock (Temp. Cycling) 25 cycles	15+2 spares			0				
Electrical Inspection (25 cycles)	15+2 spares			0				R.O.#85
Thermal Shock (Temp. Cycling) 75 cycles	15+2 spares			0				
Electrical Inspection (75 cycles)	15+2 spares			0				R.O.#86
Thermal Shock (Temp. Cycling) 175 cycles	15+2 spares			0				
Electrical Inspection (175 cycles)	15+2 spares			0				R.O.#87
Thermal Shock (Temp. Cycling) 300 cycles	15+2 spares			0				
Electrical Inspection (300 cycles)	15+2 spares			0				R.O.#88
Thermal Shock (Temp. Cycling) 500 cycles	15+2 spares			0				
Electrical Inspection (500 cycles)	15+2 spares			0				R.O.#89

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CUSTOMER DATA SUMMARY SHEET

TEST SJ6708H PL99.784 LA-1 Page 10	SAMPLE PLAN			ACCEPTANCE DATA				REMARKS
	SIZE	AQL / LTPD	LEVEL	REJECTS FOUND	TYPE	ACCEP. NO.	REJECT NO.	
Subgroup VII (Continued)								
Vibration, Variable 7/ Frequency Test (Monitored) #71-123 MIL-STD-750 Meth. 2057 VCES=400V 120G's or 0.1 inch DA as applicable Sine wave 5 to 2000Hz in 7.5 minutes Return to 5Hz in 7.5 min. X1, Y1, Z1 orientation	15+2 spares			0		0	1	
End Points	15+2 spares			0				R.O.#90
5/ Used 17 good units for Power Cycle Test.								
6/ Used 17 good units for Thermal Shock Test.								
7/ Used 17 units from B-5 for Vibration, Variable Frequency Test.								
8/ Data on these R.O. Nos. had oscillations problems. Units OK								
NOTE: 20 devices were submitted to a special test. These units consisted of 9 good units: S/N 132,133,142,147,148,157,158,159,164 plus 11 B-7 units from Vibration Variable Frequency test, S/N 71,72,73,75,86,95,105,108,123,113,114.								
Special Test								
Hermetic Seal MIL-STD-750 Meth. 1071	20		100%	3				
Fine Leak Condition G Leak Rate $\leq$ 1X10-8ATm cc/sec.				3	#71,132,164			
Gross Leak Condition F				0				
Thermal Shock (Temp. Cycling) MIL-STD-202 Meth. 107 Cond. C except 10 cycles t(extremes)=15 minutes	17		100%	0				

SPD 1053 R-1 (9/68)

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CUSTOMER DATA SUMMARY SHEET

TEST SJ6708H PL99.784 LA-1 Page 11	SAMPLE PLAN			ACCEPTANCE DATA				REMARKS
	SIZE	AQL / LTPD	LEVEL	REJECTS FOUND	TYPE	ACCEP. NO.	REJECT NO.	
Hermetic Seal MIL-STD-750 Meth. 1071 Fine Leak Condition G Leak Rate≤1X10-8ATm cc/sec. Gross Leak Condition F	17		100%	2 2 0	#105,133			
Thermal Shock (Glass Strain) MIL-STD-750 Meth. 1056 Condition B	15		100%	0				
Hermetic Seal MIL-STD-750 Meth. 1071 Fine Leak Condition G Leak Rate≤1X10-8ATm cc/sec. Gross Leak Condition F	15		100%	0				
Terminal Strength (Tension) MIL-STD-750 Meth. 2036 Condition A WT=10 lbs., t=15 seconds	15		100%	0				
Hermetic Seal MIL-STD-750 Meth. 1071 Fine Leak Condition C Leak Rate≤1X10-8ATm cc/sec. Gross Leak Condition F	15		100%	14 14***	#72,73,75,86,98,108,123,142,147 148,154,157,159,224 0			

*** See attached failure analysis report #243.

SPD 7053 R-1 (9/68)

MOTOROLA
Semiconductor
Products Inc.
A SUBSIDIARY OF MOTOROLA INC.
3005 EAST McDOWELL ROAD, PHOENIX, ARIZONA 85008

RADIOGRAPHIC CERTIFICATE OF COMPLIANCE

DATE 17 APRIL 1978

CUSTOMER

NASA

CUSTOMER P.O. NO. QUAL MOTOROLA P.O. NO. N/A

CUSTOMER PT. NO. RES1075 MOTOROLA PT. NO. S6708H

X-RAY CONTROL NO. 5966 QUANTITY X-RAYED 5 LOT 001

X-RAYED PER MIL. STD. 750, METHOD 2076.

DEFECT NUMBER REJECTED	QUANTITY REJECTED	% OF TOTAL

TOTAL ACCEPTED: 5

TOTAL REJECTED:

% REJECTED:

NOTE:

SEE ATTACHED CORRELATION SHEET FOR NUMBERING OF UNITS.

INTERPRETER: Louis H. Ahrens.

APPROVAL: Louis H. Ahrens.

DATE: 17 APRIL 1978

SPD 4364 R-1 (7/73)

X-RAY SERIAL # TO UNIT SERIAL
CROSS REFERENCE LIST

DEVICE	CHARGE NO.	LOT NO.	JOB NO.	CUSTOMER
SJ6708H		001		NASA

X-RAY	DEVICE	X-RAY	DEVICE	X-RAY	DEVICE	X-RAY	DEVICE
1	157	31		61		91	
2	158	32		62		92	
3	159	33		63		93	
4	164	34		64		94	
5	166	35		65		95	
6		36		66		96	
7		37		67		97	
8		38		68		98	
9		39		69		99	
10		40		70		100	
11		41		71		101	
12		42		72		102	
13		43		73		103	
14		44		74		104	
15		45		75		105	
16		46		76		106	
17		47		77		107	
18		48		78		108	
19		49		79		109	
20		50		80		110	
21		51		81		111	
22		52		82		112	
23		53		83		113	
24		54		84		114	
25		55		85		115	
26		56		86		116	
27		57		87		117	
28		58		88		118	
29		59		89		119	
30		60		90		120	

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A SUBSIDIARY OF MOTOROLA INC.
5005 EAST McDOWELL ROAD, PHOENIX, ARIZONA 85008

RADIOGRAPHIC CERTIFICATE OF COMPLIANCE

DATE 26 OCT. 1977

CUSTOMER: NASA

CUSTOMER P.O. NO. QUAL   MOTOROLA F.O. NO. N/A

CUSTOMER PT. NO. RES1075   MOTOROLA PT. NO. SJ6708-H

X-RAY CONTROL NO. 5410   QUANTITY X-RAYED 42   LOT 00[illegible]

X-RAYED PER MIL. STD. 750, METHOD 2076.

DEFECT NUMBER REJECTED	QUANTITY REJECTED	% OF TOTAL
EXTRANEOUS MAT. (EM) - 7, 17.		

TOTAL ACCEPTED: 40

TOTAL REJECTED: 2

% REJECTED:

NOTE:

SEE ATTACHED CORRELATION SHEET FOR NUMBERING OF UNITS.

INTERPRETER: Louis H. Ahrens. (signature; stamp: R&QA 4 B1059)

APPROVAL: Louis H. Ahrens. (signature; stamp: R&QA 4 B1059)

DATE: 26 OCT. 1977

SPD 4364 R-1 (7/73)

X-RAY SERIAL # TO UNIT SERIAL
CROSS REFERENCE LIST

DEVICE	CHARGE NO.	LOT NO.	JOB NO.	CUSTOMER
SI6708H		001	5410	Motorola

X-RAY	DEVICE	X-RAY	DEVICE	X-RAY	DEVICE	X-RAY	DEVICE
1	70	31	129	61		91	
2	71	32	130	62		92	
3	72	33	132	63		93	
4	73	34	133	64		94	
5	75	35	135	65		95	
6	76	36	137	66		96	
7	77 ✓	37	138	67		97	
8	78	38	139	68		98	
9	79	39	142	69		99	
10	80	40	146	70		100	
11	82	41	147	71		101	
12	85	42	148	72		102	
13	86	43		73		103	
14	90	44		74		104	
15	92	45		75		105	
16	95	46		76		106	
17	104 ✓	47		77		107	
18	105	48		78		108	
19	106	49		79		109	
20	108	50		80		110	
21	113	51		81		111	
22	114	52		82		112	
23	115	53		83		113	
24	116	54		84		114	
25	117	55		85		115	
26	118	56		86		116	
27	123	57		87		117	
28	124	58		88		118	
29	125	59		89		119	
30	127	60		90		120	

SECTION C. MOTOROLA DEVICE SPECIFICATION

MOTOROLA INC.
Semiconductor
Products Division

SPECIAL DEVICE SPECIFICATION

SPD 10604 (7/74) ISSUE: E

DEVICE	DOC. NO.
SJ6708H	48ARB64845A
	PAGE 1 OF 32

APPROVALS: ALL SIGNATURES ON FILE IN DOCUMENT CENTRAL

TITLE: TRANSISTOR, SILICON POWER

DATE OF ORIGINAL ISSUE: 11-9-76

MARKETER: Mc Donnell

SALESMAN:

SALES OFFICE:

CUSTOMER: NASA

CUST. LOC.: MARSHALL SPACE FLT CENTER, ALA.

SPECIFICATIONS	ISSUE	DATE	INCORP.	REF.	CODE
CUST. PRINT RES1075 *	A	12-11-74	X		E
*As modified per NASA ltr filed with SAR Issue	A	dated 3-31-77 this specification.			
OTHER					
Request #8-1-T-EC-06242					
Exhibit A	–	–	X		D
Exhibit B	–	–	X		E
RC1075	D	–	X		**
MIL-STD-130	Latest			X	
MIL-STD-202					
MIL-STD-750					
MIL-STD-810					
MIL-STD-1276					
MIL-S-19491					
MIL-S-19500	Latest			X	
** VIBRATIONAL ENVIRONMENT ONLY					

CUST. PART NO.: RES1075-01(1)

WRITTEN BY: W. F. Munzer DATE: 10-26-76

ACC'Y REVIEW: W. WERNHEISTER DATE: 10-28-76

MANDATORY SOURCE: PL99.784

SUGGESTED SOURCE:

POLARITY: NPN

PKG. 98ASB 54984E: Per FIGURE 1

CONSTRUCTION: WT ≤ 5 grams.

LEAD MATERIAL: Type F per MIL-STD-1276

LEAD FINISH:

SAME AS _____ EXCEPT FOR:

DATA - SHIPPING INSTR. - GENERAL NOTES:

(See NOTES 4, 5, and 6.)

ATTENTION HI-REL SCHEDULER: This specification is intended as a Part Qualification Program and not for furnishing Production Parts to the Customer's Specification. Following completion of the Program, all Test Samples and Test Data shall be sent to the Customer. A Final Report shall be prepared, customer approved, and distrubuted per NOTE 4.3 herein.

DOC. NO. 48ARB64845A

DEVICE SJ6708H

CUSTOMER APPROVAL DOCUMENT

THIS DOCUMENT 48ARB64845A IS SUBJECT TO REVIEW AND APPROVAL BY COGNIZANT CUSTOMER PERSONNEL.

Document Review Date 11/23/76

Reviewed and approved by Olivia Valdez Title NASA Technical COR

MOTOROLA INC.
Discrete Semiconductor Division

SPD 10602 (7/74) ISSUE: E

DISCRETE PROCESS FLOW

DEVICE	DOC. NO.
SJ6708H	48ARB64845A
	PAGE 3 OF

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
0.		PRODUCTION PROCESSING						
0.1		100% Internal Visual Inspection MIL-STD-750, Method 2072	C,CC,R					
0.2		Transfer Devices to Final Test						

C – CUSTOMER REQUIREMENT
CC – CERTIFICATE OF COMPLIANCE REQ.
S – SUMMARY DATA (ATTRIBUTES) REQ.

D – DESTRUCTIVE TEST
G – GO – NO GO

M – MOTOROLA OPTIONAL REQUIREMENT
R – REMOVE REJECTS
RR – READ AND RECORD

MOTOROLA INC.
Discrete Semiconductor Division

SPD 10602 (7/74) ISSUE: E

DISCRETE PROCESS FLOW

DEVICE	DOC. NO.
SJ6708H	48ARB64845A
	PAGE 4 OF

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
1.		FINAL TEST PROCESSING						
1.1		Select Devices per Source						
1.2		Electrical Test per TABLE I	M,G,R					
1.3		Transfer Devices to Q. A. Supply Q. A. a minimum of 20 electrical rejects, if available, for Group (B-2) tests. Use opens and shorts whenever possible. Package rejects separately from lot and tag as electrical rejects for Group B testing.						

C – CUSTOMER REQUIREMENT
CC – CERTIFICATE OF COMPLIANCE REQ.
S – SUMMARY DATA (ATTRIBUTES) REQ.

D – DESTRUCTIVE TEST
G – GO – NO GO

M – MOTOROLA OPTIONAL REQUIREMENT
R – REMOVE REJECTS
RR – READ AND RECORD

MOTOROLA INC.
Discrete Semiconductor Division

SPD 10602 (7/74) ISSUE: E

DEVICE: SJ6708H | DOC. NO. 48ARB64845A | PAGE 5 OF

DISCRETE PROCESS FLOW

PROCESSOR/EXT.	CONTROL NO.	HIGH ... LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.		QUALITY ASSURANCE PROCESSING						
2.1		Sample Group A Inspection per TABLE I (Sample Size and Parameters at Q. A. Option).	M,G,R					
2.2		100% Processing (Mark and Serialize Devices)	C,S					
2.2.1		Electrical Test per TABLE II Limit 1	RR,R					
2.2.2		Thermal Shock (Temp. Cycling) MIL-STD-202, Method 107 Cond. C except 10 cycles t(extremes) $\geq$ 15 minutes						
2.2.3		Constant Acceleration MIL-STD-750, Method 2006 10,000G's, Y1 orientation only						
2.2.4		High Temperature Reverse Bias MIL-STD-750, Method 1039 Cond. A VCB = 640V, TA = 150°C t = 48 $\pm$ 4 hours						
2.2.5		Electrical Test per TABLE II Limit 2	RR,R					

C – CUSTOMER REQUIREMENT
CC – CERTIFICATE OF COMPLIANCE REQ.
S – SUMMARY DATA (ATTRIBUTES) REQ.

D – DESTRUCTIVE TEST
G – GO – NO GO

M – MOTOROLA OPTIONAL REQUIREMENT
R – REMOVE REJECTS
RR – READ AND RECORD

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.2.6		Burn-IN 1/ VCE ≥ 20V, TJ = 187.5 ± 12.5°C, θJC = 7.0°C/W Adjust IC to maintain specified TJ t ≥ 168 hours						
2.2.7		Electrical Test per TABLE III Limit 2 (Delta Calculations shall be performed with reference to data recorded at Step 2.2.1)	RR,R					
2.2.8		X-Ray Inspection MIL-STD-750, Method 2076	R					
2.2.9		Hermetic Seal MIL-STD-750, Method 1071						
2.2.9.1		Fine Leak Cond. G or H Leak Rate ≤ 1 X 10^{-8} Atm cc/Sec.	R					
2.2.9.2		Gross Leak Cond. A, C, D, E, or F	R					
2.2.10		External Visual Inspection MIL-STD-750, Method 2071	R					

1/ Perform the 2000-hr Oper. Life test (Step 2.4.6, Subgroup B-6) concurrently. Samples for B-6 do not have to go through Burn-In.

MOTOROLA INC.
Semiconductor
Products Division

DISCRETE PROCESS FLOW

DEVICE	DOC. NO.
SJ6708H	48ARB64845A
	PAGE 7 OF

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

2.3 Group A Inspection per TABLE I 1/ (C,S,G,R)

2.3.5 (A-5) Elect. Test 2/	2.3.6 (A-6) Elect. Test 2/	2.3.7 (A-7) Elect. Test 2/

2.3.1 (A-1) 100% Vis. & Mech. 3/

2.3.2 (A-2) 100% Elect. Test

2.3.3 (A-3) 100% Elect. Test

2.3.4 (A-4) 100% Elect. Test

1/ Following completion of Group A Inspection there must be a minimum of 125 acceptable devices.

2/ Measure the test parameters to a Lot Tolerance Percent Defective (LTPD) of 5%. If any measurement exceeds this LTPD, reject devices shall be replaced with good devices and all devices tested 100% for the failed parameter.

3/ Since test was performed at Step 2.2.10, it need not be repeated.

2.4 Group B Inspection 1/ 2/ (C,S)

2.4.1 (B-1)	2.4.2 (B-2)	2.4.3 (B-3)	2.4.4 (B-4)
Elect. Test per TABLE IV (M,G,R) Phys. Dims. Solderability Resist Solv. Thermal Shock (Temp. Cycling) (Glass Strain) Term. Strength Hermetic Seal (Fine Leak) (Gross Leak) Moist. Resist Elect. Test per TABLE IV (RR,R)	Elect. Rejects May Be Used Salt Atmos.	Elect. Test per TABLE IV (M,G,R) Shock Vibr. Var. Freq. Const. Accel. Acoustic Elect. Test per TABLE IV (RR,R)	Elect. Test per TABLE IV (M,G,R) Safe Oper. Area (Test #1) (Test #2) Elect. Test per TABLE IV (RR,R)

2.4.5 (B-5)	2.4.6 (B-6) 3/	2.4.7 (B-7)
Elect. Test per TABLE IV (RR,R) High Temp. Life (Non-Oper.) Elect. Readouts per TABLE IV at 340, 670, and 1000 hrs. (RR,R)	Elect. Test per TABLE IV (RR,R) Steady State Oper. Life Elect. Readouts per TABLE IV at 168, 340, 670, 1000, 1500, and 2000 hrs. (RR,R)	Elect. Test per TABLE IV (RR,R) 1. Power Cycle Elect. Test per TABLE IV (RR,R) 2. Ther. Shock (Temp. Cycling) Elect. Test per TABLE IV (RR,R). 3. Vibr. Var. Freq. (Monitored) Elect. Test per TABLE IV (RR,R)

3/ Perform concurrently with Burn-In. (Step 2.2.6.)

2.5 Data Compilation and Review

2.6 Transfer to Shipping

---

3. SHIPPING PROCESSING

1/ A total of 125 Test Samples which passed Group A Inspection are required. Some Samples are used in multiple Subgroups. See Trip Ticket.

2/ All Test Samples shall be shipped to the customer.

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.4.1		(B-1) Sample Size = 20 Total Accept No. 0	C,S					
2.4.1.1		Electrical Test per TABLE IV, Limit 1	M,G,R					
2.4.1.2		Physical Dimensions Method 2066* Package per Page 1 Test 5-samples. No failures permitted.	R					
2.4.1.3		Solderability Method 2026* Use of mildly activated flux is allowable (Superior 30 or equivalent). Test 2-samples. No failures permitted.						
2.4.1.4		Resistance to Solvents MIL-STD-202, Method 215 All areas of the transistor body where markings has been applied shall be brushed. After testing, there shall be no evidence of mechanical damage to the device and markings shall remain legible. Test 2- samples. No failures permitted.						
		NOTE: Samples used in performing the above tests shall be combined with the untested samples and used in the subsequent tests. (20 samples total required).						
2.4.1.5		Thermal Shock (Temp. Cycling) MIL-STD-202, Method 107 Cond. C except 10 cycles t(extremes) = 15 minutes						

* Methods per MIL-STD-750

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.4.1		(B-1) (continued)						
2.4.1.6		Thermal Shock (Glass Strain) Method 1056*, Cond B						
2.4.1.7		Terminal Strength (Tension) Method 2036*, Cond. A WT = 10 lbs., t = 15 seconds.						
2.4.1.8		Hermetic Seal Method 1071*						
2.4.1.8.1		Fine Leak Cond. G or H Leak Rate $\leq$ 1 X 10^{-8} Atm cc/Sec.	R					
2.4.1.8.2		Gross Leak Cond. A, B, C, D or F	R					
2.4.1.9		Moisture Resistance Method 1021* Omit initial conditioning						
2.4.1.10		Electrical Test per TABLE IV Limit 1	RR,R					

NOTE: Test Samples which successfully pass this Subgroup shall be saved and used for tests in Subgroup (B-7), Step 2.4.7.

* Methods per MIL-STD-750

MOTOROLA INC.
Discrete Semiconductor Division

SPD 10602 (7/74) ISSUE: E

DISCRETE PROCESS FLOW

DEVICE	DOC. NO.
SJ6708H	48ARB64845A
	PAGE 11 OF

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.4.2		(B-2) 1/ Sample Size = 20 Total Accept No. = 0	C,S					
2.4.2.1		Salt Atmosphere (Corrosion) MIL-STD-750, Method 1041 See NOTE 5.3 for Sample disposition.	R					

1/ Electrical rjejcts may be used.

C – CUSTOMER REQUIREMENT
CC – CERTIFICATE OF COMPLIANCE REQ.
S – SUMMARY DATA (ATTRIBUTES) REQ.

D – DESTRUCTIVE TEST
G – GO – NO GO

M – MOTOROLA OPTIONAL REQUIREMENT
R – REMOVE REJECTS
RR – READ AND RECORD

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE-TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.4.3		(B-3) Sample Size = 20 Total Accept No. = 0	C,S					
2.4.3.1		Electrical Test per TABLE IV, Limit 1	M.G.R					
2.4.3.2		Shock (Non-Operating) Method 2016* 1500G's, t = 0.5mSec. 5 blows each in X1, Y1, Y2 and Z1 directions. (20 blows total)						
2.4.3.3		Vibration, Var. Freq. Method 2056* The transistors shall be exposed to the following vibrational environment a) Sinusoidal: (four one octave per minute sweeps) 5 to 25 Hz at 0.39 inch DA 25 to 180 Hz at 12G peak 180 to 315 Hz at 0.008 inch DA 315 to 2000 Hz at 40G peak b) Random: (apply for 7.8 hours) 20 to 1200 Hz at 0.3 $(Grms)^2/Hz$ 1200 to 1400 Hz at 48db/octave rise 1400 to 2000 Hz at 3.5 $(Grms)^2/Hz$						

* Methods per MIL-STD-750

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.4.3		(B-3) (continued)						
2.4.3.4		Constant Acceleration MIL-STD-750, Method 2006 20,000G's X1, Y1, Y2 and Z1 directions						
2.4.3.5		Acoustic MIL-STD-810, Method 515.2 Field Acoustic environment at 174db.						
2.4.3.6		Electrical Test per TABLE IV, Limit 1	RR,R					

DISCRETE PROCESS FLOW

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.4.4		(B-4) Sample Size = 20 Total Accept No. = 0	C,S					
2.4.4.1		Electrical Test per TABLE IV, Limit 1	M,G,R					
2.4.4.2		Safe Operating Area (Switching) MIL-STD-750, Method 3053 Cond. C (Unclamped inductive load) Rs = 0.1Ω, tr = tf ≤ 500nSec. DC ≤ 10%, TA = 25°C						
2.4.4.2.1		Test #1 tp ≃ 5mSec. (Vary to obtain IC) RBB1 = 10Ω, VBB1 = 16V RBB2 = ∞, VBB2 = 0 VCC = 25V, IC = 7.0A L = 5mH (Super Electric Corp. Type S16884 in parallel or equivalent; DC resistance ≤ 0.1Ω).						
2.4.4.2.2		Test #2 tp ≃ 5mSec. (Vary to obtain IC) RBB1 = 100Ω, VBB2 = 10V RBB2 = ∞, VBB2 = 0 VCC = 25V, IC = 0.5A L = 100mH (Two Triad C48U in series; 80mH winding and 20mH winding or equivalent; DC resistance ≤ 1.0Ω)						
2.4.4.3		Electrical Test per TABLE IV, Limit 1	RR,R					

C – CUSTOMER REQUIREMENT
CC – CERTIFICATE OF COMPLIANCE REQ.
S – SUMMARY DATA (ATTRIBUTES) REQ.

D – DESTRUCTIVE TEST
G – GO – NO GO

M – MOTOROLA OPTIONAL REQUIREMENT
R – REMOVE REJECTS
RR – READ AND RECORD

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.4.5		(B-5) Sample Size = 20 Total Accept No. = 1	C,S					
2.4.5.1		High Temperature Life (Non-Operating) MIL-STD-750, Method 1031 TA = 200°C, t = 1000 hrs Total						
2.4.5.1.1		Electrical Test per TABLE IV, Limit 1	RR,R					
2.4.5.1.2		0-340 hr. High Temp. Life t = 340 hours						
2.4.5.1.3		340 hour Electrical Readout per TABLE IV, Limit 2	RR,R					
2.4.5.1.4		340-670 hr. High Temp. Life t = 330 hrs.						
2.4.5.1.5		670 hour Electrical Readout per TABLE IV, Limit 2 (Delta calculations reference to values recorded at 0-hours).	RR,R					
2.4.5.1.6		670-1000 hr. High Temp. Life t = 330 hours						
2.4.5.1.7		1000 hour Electrical Readout per TABLE IV, Limit 2 (Delta calculations reference to values recorded at 0-hours).	RR,R					

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.4.6		(B-6) 1/ Sample Size = 40 Total Accept No. = 1	C,S					
2.4.6.1		Steady State Operation Life MIL-STD-750, Method 1026 VCE > 20V, TJ = 187.5 ± 12.5°C, θJC = 7.0°C/W Adjust IC to maintain specified TJ. t = 2000 hrs. Total						
2.4.6.1.1		Electrical Test per TABLE IV, Limit 1	RR,R					
2.4.6.1.2		0-168 hour Steady-State Oper. Life t = 168 hours						
2.4.6.1.3		Electrical Test per TABLE IV, Limit 2	RR,R					
2.4.6.1.4		168-340 hour Steady-State Operating Life t = 172 hours						
2.4.6.1.5		340 hour Electrical Readout per TABLE IV, Limit 2	RR,R					
2.4.6.1.6		340-670 hour Steady-State Operation Life t = 330 hours						
2.4.6.1.7		670 hour Electrical Readout per TABLE IV, Limit 2						
		1/ Perform concurrently with Burn-In (Step 2.2.6).						

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE.TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.4.6		(Continued)						
2.4.6.1	.8	670-1000 hour Steady-State Operation Life t = 330 hours						
2.4.6.1	.9	1000 hour Electrical Readout per TABLE IV, Limit 2 (Delta calculations reference to values recorded at 0-hours).	RR,R					
2.4.6.1	.10	1000-1500 hour Steady-State Operation Life t = 500 hours						
2.4.6.1	.11	1500 hour Electrical Readout per TABLE IV, Limit 2 (Dalta Calculations reference to valued recorded at 0-hours).	RR,R					
2.4.6.1	.12	1500-2000 hour Steady-State Operation Life t = 500 hours.						
2.4.6.1	.13	2000 hour Electrical Readout per TABLE IV, Limit 2 (Delta Calculations reference to values recorded at 0-hours)	RR,R					

DISCRETE PROCESS FLOW

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.4.7		(B-7) Sample Size = 45 Total	C,S					
		NOTE: The Test Samples of this Subgroup shall include the Samples that successfully passed the tests of Subgroup (B-1).						
2.4.7.1		Electrical Test per TABLE IV, Limit 1	M,G,R					
2.4.7.2		Power Cycling Sample Size = 15 Accept No. = 0						
2.4.7.2.1		Select 15 samples from the Test Sample Lot and record the Device Serial Numbers						
2.4.7.2.2		Power Cycle Test VCE = 100V, TA = 25 + 3°C Adjust PD to obtain $\overline{TC}$ = 100°C or ΔTC = 75°C ton = toff = 5 minutes						
2.4.7.2.3		Electrical Test per TABLE IV, Limit 1 at 1000 cycle intervals. (One cycle is defined as 5 minutes "on", 5 minutes "off"). 4000 cycles required	RR,R					
2.4.7.3		Thermal Shock (Temp. Cycling) Sample Size = 15 Accept No. = 0						
2.4.7.3.1		Select 15 samples from the Test Sample lot and record the Device Serial Numbers.						
2.4.7.3.2		Thermal Shock (Temp. Cycling) Test MIL-STD-202, Method 107 Test per FIGURE 4 T(low) = -65°C, T(high) = 125°C						
2.4.7.3.3		Electrical Test per TABLE IV Limit 1 at 25, 75, 175, 300, and 500 cycles.	RR,R					

PROCESSOR/EXT.	CONTROL NO.	HIGH REL. LOT NO.	SOURCE TYPE NO.	CHARGE NO.	CASE NO.

STEP NO.	DGS CODE	OPERATION DESCRIPTION	PROC. CODES	DATE IN	DATE OUT	VERIF.	COUNT IN	COUNT OUT
2.4.7		(Continued)						
2.4.7.4		Vibration, Variable Frequency						
2.4.7.4.1		Select 15 samples from the Test Samples Lot and record the Device Serial Numbers Sample Size = 15 Accept No. = 0						
2.4.7.4.2		Vibration, Variable Frequency Test (Monitored) MIL-STD-750, Method 2057 VCES = 400V 120G's or 0.1 inch DA as applicable. Sine wave 5 to 2000Hz in 7.5 minutes. return to 5Hz in 7.5 minutes. X1, Y1, and Z1 orientations.						
2.4.7.4.3		Electrical Test per TABLE IV, Limit 1 following completion of testing in each orientation (X1, Y1, and Z1).	RR,R					

NOTES

4. DATA REQUIREMENTS:

4.1 Motorola shall retain one copy of all data for a period of three years from date of P.O.

4.2 Data to ship with Devices:

4.2.1 C of C for internal Visual Inspection (Step 0.1)

4.2.2 Summary Data for 100% Processing, Group A and B Inspections (Step 2.2, 2.3, and 2.4).

4.2.3 All variables data and delta calculations for 100% Processing and Group B Inspections (Steps 2.2 and 2.4).

4.3 Final Report

4.3.1 Three draft copies of the Final Report shall be submitted to the Customer for approval prior to Final Printing and Distribution.

4.3.2 The Final Report shall contain the following:

a) A detailed description fo each test setup with identification of critical test equipment, test circuit diagrams and procedures.

b) A narrative discussion of test results, conclusions, and recommendations.

c) Measurement data, and as applicable, Tables, Graphs, Diagrams, Sketches, Curves, Procedure Photographs and Drawings.

As part of the Final Report, Motorola shall also complete and submit to MSFC Government Industry Data Exchange Program (GIDEP) Form 2:11-72.

4.3.3 Following approval of the Final Report by the Customer, 15 copies shall be sent per the distribution list furnished by the Customer.

NOTES (COntinued)

5. SHIPPING INSTRUCTIONS:

5.1 Customer Program Manager shall be notified prior to shipment of Test Samples (DD250 forms must be supplied).

5.2 Tray pack per MIL-S-19491, Level C.

5.3 Package Salt Atmosphere Test Samples separately and mark package "SALT ATMOSPHERE (Corrosion) TEST SAMPLES."

6. GENERAL NOTES:

6.1 Marking Instructions: Mark Devices with 04713, SJ6708H, Date Code per MIL-S-19500, RES1075-01(1), and Serial Number.

6.2 The following deviations to customer print Request # 8-1-T-EC-06242, Exhibit A, are authorized per TWX from H. Garrett, NASA to W. Albertin, Motorola, dated 7-18-77. (Copy of TWX on file with SAR for issue 0 of this specification.)

6.2.1 TABLE III, hFE4 shall be 7 min.

6.2.2 TABLE III, ES/B shall be 125 mJ min.

6.2.3 TABLE III, hFE1 shall be @ VCE = 3V.

6.2.4 FIGURE 3: changed resistor values for tf test only.

6.2.5 Burn-In and Operation Life shall be performed concurrently.

6.2.6 Revised FIGURE 2.

6.2.7 TABLE IV: Operation Life test samples (40) shall not include samples (20) that had Acoustic tests. A test to Burn-In end-points shall be performed after 168 hours of Operation Life test.

LOG# _____ CHG.# _____
CTL.# _____ PART CODE _____
LOT# _____ LOT QTY. _____
S.S. _____ LP NAME _____
S/N RANGE _____ THRU _____

TEST RECORDS
READ OUT ☐ GNG ☐ R&R ☐
INIT. FINAL ☐ NDA ☐ RETEST ☐
OFF LINE DATE _____
Q.A. ACC. ☐ REJ. ☐

CUSTOMER–
SOURCE INSPECTION
NOTIFY: GSI ☐ CSI ☐
NAME EXT.
PREVIOUS TEST _____

* PW ≤ 300µSec., DC ≤ 2%

MOTOROLA INC. Semiconductor Products Division
GROUP A INSPECTION TABLE I
POLARITY: NPN
DEVICE: SJ6708H
SPD 10605 (7/74)
ISSUE: E
DOC. NO. 48ARB64845A
PAGE 22 OF

TEST SEQUENCE STATION	SYMBOL METHOD MIL-STD. 750	CONDITIONS TC=25°C UNLESS OTHERWISE SPECIFIED	SUB GRP.	LIMITS MIN.	LIMITS MAX.	UNITS	AQL OR LTPD.	TEST SAMPLE SIZE	ACC. ON	REJ. ON	NO. OF REJECTS	TEST OP / TEST DATE
	Vis&Mech. 2071		A-1				100%					
			A-2				100%					
	IEBO 3061D	VBE = 8.0V		-	1.0	mA						
	ICEO 3041D	VCE = 450V		-	0.5	mA						
	ICES1 3041C	VCE = 640V		-	50	µA						
	BVCEO 3011D	IC = 1.0mA		450	-	V						
	BVCES 3011C	IC = 0.1mA		800	-	V						
			A-3				100%					
	VBE(s)1 3066A*	IC = 8.0A, IB = 1.6A		-	2.5	V						
	VCE(s)1 3071*	IC = 8.0A, IB = 1.6A		-	5.0	V						
	VBE(s)2 3066A	IC = 1.0A, IB = 0.1A		-	0.8	V						
	VCE(s)2 3071	IC = 1.0A, IB = 0.1A		-	1.0	V						

LOG#_____ CHG.#_____
CTL.#_____ PART CODE_____
LOT#_____ LOT QTY._____
S.S._____ LP NAME_____
S/N RANGE_____THRU_____

TEST RECORDS
READ OUT ☐ GNG ☐ R&R ☐
INIT. FINAL ☐ NDA ☐ RETEST ☐
OFF LINE DATE_____
Q.A. ACC. ☐ REJ. ☐

CUSTOMER-
SOURCE INSPECTION
NOTIFY: GSI ☐ CSI ☐
NAME EXT.
PREVIOUS TEST_____

MOTOROLA INC. Semiconductor Products Division
GROUP A INSPECTION TABLE 1 (Continued)

TEST SEQUENCE STATION	SYMBOL METHOD MIL-STD. 750	CONDITIONS TC = 25°C UNLESS OTHERWISE SPECIFIED	SUB GRP.	LIMITS MIN.	LIMITS MAX.	UNITS	AQL OR LTPD.	TEST SAMPLE SIZE	ACC. ON	REJ. ON	NO. OF REJECTS	TEST OP / TEST DATE
			A-4				100%					
	hFE1 3076*	VCE = 3.0V, IC = 3.0A		10	40	-						
	hFE2 3076*	VCE = 5.0V, IC = 8.0A		5	15	-						
	hFE3 3076	VCE = 1.0V, IC = 1.0A		20	60	-						
			A-5									
	hfe 3206	VCE = 5.0V, IC = 1.0A f = 1.0kHz		20	-	-	1/					
	ton 3251	See FIGURE 3		-	0.6	µS	1/					
	toff 3251	See FIGURE 3		-	5.0	µS	1/					
	tf 3251	See FIGURE 3		-	1.0	µS	1/					
	/hfe/ 3306	VCE = 10.0V, IC = 0.3A f = 1MHz		5	30	-	1/					
	Cobo 3236	VCB = 10.0V 100kHz < f < 1MHz		-	250	pF	1/					

1/ Sample Test LTPD = 5%. If any measurement exceeds the specified LTPD, replace rejects with good devices and perform that measurement on 100% of the devices.
* PW ≤ 300µSec., DC ≤ 2%

POLARITY: NPN
DEVICE: SJ6708H
SPD 10605 (7/74)
ISSUE: E
PAGE 23 OF
DOC. NO. 48ARB64845A

(continued)

MOTOROLA INC. Semiconductor Products Division

GROUP A INSPECTION TABLE I

POLARITY: NPN

DEVICE: SJ6708H

SPD 10605 (7/74)

ISSUE: E

DOC. NO. 48ARB64845A

PAGE 24 OF

LOG# _____ CHG.# _____
CTL.# _____ PART CODE _____
LOT# _____ LOT QTY. _____
S.S. _____ LP NAME _____
S/N RANGE _____ THRU _____

TEST RECORDS
READ OUT ☐ GNG ☐ R&R ☐
INIT. FINAL ☐ NDA ☐ RETEST ☐
OFF LINE DATE _____
Q.A. ACC. ☐ REJ. ☐

CUSTOMER-
SOURCE INSPECTION
NOTIFY: GSI ☐ CSI ☐
NAME EXT.
PREVIOUS TEST _____

TEST SEQUENCE STATION	SYMBOL METHOD MIL-STD. 750	CONDITIONS T_C = 25°C UNLESS OTHERWISE SPECIFIED	SUB GRP.	LIMITS MIN.	LIMITS MAX.	UNITS	AQL OR LTPD.	TEST SAMPLE SIZE	ACC. ON	REJ. ON	NO. OF REJECTS	TEST OP / TEST DATE
			A-6									
	ICES2 3041C	VCE = 640V TC = 150°C		-	2.5	mA	1/					
	hFE4 3076*	VCE = 1.0V, IC = 1.0A TC = -65°C		7	-	-	1/					
			A-7									
	θJC 3151			-	7	°C/W	1/					
	ES/B	See FIGURE 2		125	-	mJ	1/					

1/ Sample Test LTPD = 5%. If measurement exceeds the specified LTPD, replace reject with good devices and perform that measurement on 100% of the devices.

* PW ≤ 300μSec., DC ≤ 2%

LOG#_____ CHG.#_____
CTL.#_____ PART CODE_____
LOT#_____ LOT QTY._____
S.S._____ SUB. GRP._____
S/N RANGE_____ THRU _____
LTPD/AQL _____ ACC._____ REJ._____
L.P. NAME_____

WARNING
COMPLETE MEASUREMENTS
BY DATE TIME

Q.A. ACC. ☐ REJ. ☐

CUSTOMER _____

SOURCE INSPECTION
NOTIFY: GSI ☐ CSI ☐
NAME _____ EXT._____

PREVIOUS TEST _____

MOTOROLA INC. Semiconductor Products Division

ELECTRICAL TABLE II

POLARITY: NPN

DEVICE: SJ6708H

SPD 10601 (7/74)

TEST SEQUENCE STATION	SYMBOL METHOD MIL-STD 750	CONDITIONS TC=25°C UNLESS OTHERWISE SPECIFIED	INITIAL 1 LIMITS MIN	INITIAL 1 LIMITS MAX	END POINTS 2 LIMITS MIN	END POINTS 2 LIMITS MAX	UNITS	TEST RECORDS READ OUT GNG RR
	ICES1 3041C	VCE = 640V	-	50	-	50	μA	RO CDE / LIMITS / OFF DATE / DATE OPERATOR / NO. OF REJECTS
	ΔICES1	(Whichever is greater)				100% or ± 20	uA	of initial reading
	BVCEO 3011D	IC = 1.0mA	450	-	-	-	V	
	BVCES 3011C	IC = 0.1mA	800	-	-	-	V	
	VCE(s)2 3071	IC = 1.0A, IB = 0.1A	-	1.0	-	1.0	V	
	hFE3 3076	VCE = 1.0V, IC = 1.0A	20	60	20	60	-	
	ΔhFE3		-	-	-	± 20%		of initial reading
	ES/B	See FIGURE 2	125	-	-	-	mJ	

DOC. NO. 48ARB64845A ISSUE: E

PAGE 25 OF

LOG# _____ CHG.# _____
CTL.# _____ PART CODE _____
LOT# _____ LOT QTY. _____
S.S. _____ SUB. GRP. _____
S/N RANGE _____ THRU _____
LTPD/AQL _____ ACC. _____ REJ. _____
L.P. NAME _____

WARNING
COMPLETE MEASUREMENTS
BY DATE TIME

Q.A. ACC. ☐ REJ. ☐

CUSTOMER _____

SOURCE INSPECTION
NOTIFY: GSI ☐ CSI ☐
NAME _____ EXT. _____

PREVIOUS TEST _____

1/ Delta calculations shall be performed with reference to data recorded at Step 2.2.1.
2/ May be Sample Tested LTPD = 5%. If any measurement exceeds the specified LTPD, perform that measurement on 100% of the devices in the lot.

MOTOROLA INC. Semiconductor Products Division

ELECTRICAL TABLE

III

POLARITY	DEVICE
NPN	SJ6708H

SPD 10601 (7/74) ISSUE: E

DOC. NO. 48ARB64845A

PAGE 26 OF

TEST SEQUENCE STATION	SYMBOL METHOD MIL-STD 750	CONDITIONS TC=25°C UNLESS OTHERWISE SPECIFIED	INITIAL 1 LIMITS MIN	INITIAL 1 LIMITS MAX	END POINTS 2 LIMITS MIN	END POINTS 2 LIMITS MAX	UNITS	TEST RECORDS READ OUT / GNG / RR
	ICES1 3041C	VCE = 640V	-	-	-	50	µA	RO CDE / LIMITS / OFF DATE / DATE OPERATOR / NO. OF REJECTS
	ΔICES 1	(Whichever is greater)	-	-	-	100% or ± 20	uA	of initial reading / DATE OPERATOR / NO. OF REJECTS
	VCE(s)2 3071 2/	IC = 1.0A, IB = 0.1A	-	-	-	1.0	V	DATE OPERATOR / NO. OF REJECTS
	hFE3 3076	VCE = 1.0V, IC = 1.0A	-	-	20	60	-	DATF OPERATOR / NO. OF REJECTS
	ΔhFE3		-	-	-	± 20%		of initial reading / DATE OPERATOR / NO. OF REJECTS
	hFE4 3076 2/	VCE = 1.0V, IC = 1.0A TC = -65°C	-	-	7	-	-	DATE OPERATOR / NO. OF REJECTS
	ICES2 3041C	VCE = 640V TC = 150°C	-	-	-	2.5	mA	DATE OPERATOR / NO. OF REJECTS
	tf 3251	See FIGURE 3	-	-	-	1.0	µS	DATE OPERATOR / NO. OF REJECTS

LOG# _____ CHG.# _____
CTL.# _____ PART CODE _____
LOT# _____ LOT QTY. _____
S.S. _____ SUB. GRP. _____
S/N RANGE _____ THRU _____
LTPD/AQL _____ ACC. _____ REJ. _____
L.P. NAME _____

WARNING
COMPLETE MEASUREMENTS
BY DATE TIME

Q.A. ACC. ☐ REJ. ☐

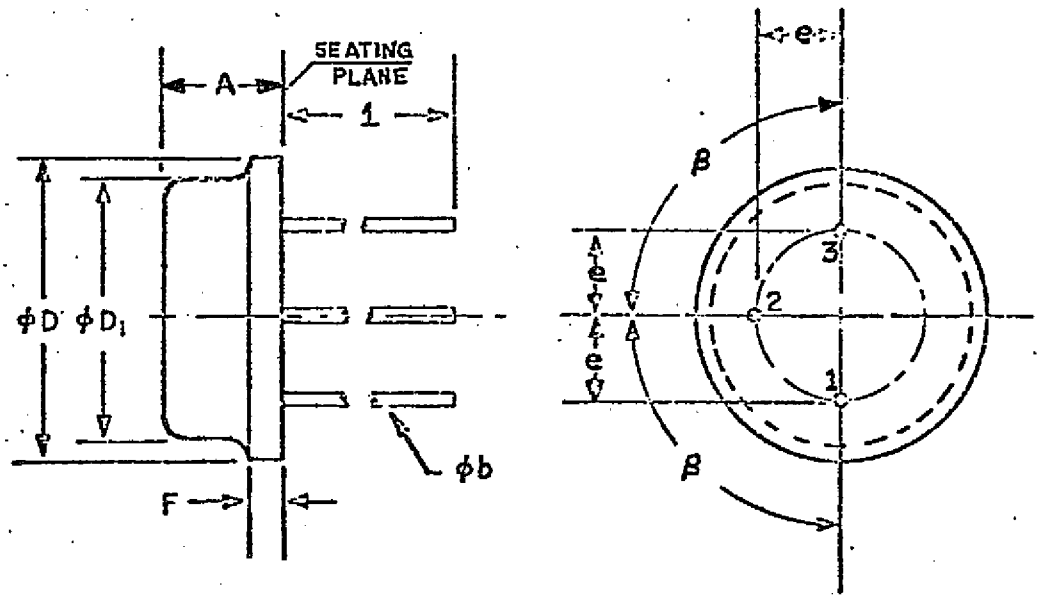
CUSTOMER _____
SOURCE INSPECTION
NOTIFY: GSI ☐ CSI ☐
NAME _____ EXT. _____
PREVIOUS TEST _____

MOTOROLA INC. Semiconductor Products Division

ELECTRICAL TABLE IV

POLARITY: NPN
DEVICE: SJ6708H
SPD 10601 (7/74)
ISSUE: E
DOC. NO. 48ARB64845A
PAGE 27 OF

TEST SEQUENCE STATION	SYMBOL METHOD MIL-STD 750	CONDITIONS TC=25°C UNLESS OTHERWISE SPECIFIED	INITIAL 1 LIMITS MIN	INITIAL 1 LIMITS MAX	END POINTS 2 LIMITS MIN	END POINTS 2 LIMITS MAX	UNITS	TEST RECORDS READ OUT / GNG / RR
	ICES1 3041C	VCE = 640V	-	50	-	50	μA	RO CDE / LIMITS / OFF DATE / DATE OPERATOR / NO. OF REJECTS
	ΔICES1	(Whichever is greater)	-	-	-	100% or ± 20	uA	of initial reading / DATE OPERATOR / NO. OF REJECTS
	BVCES 3011C	IC = 0.1mA	800	-	800	-	V	DATE OPERATOR / NO. OF REJECTS
	VCE(s)2	IC = 1.0A, IB = 0.1A	-	1.0	-	1.0	V	DATE OPERATOR / NO. OF REJECTS
	hFE3 3076	VCE = 1.0V, IC = 1.0A	20	60	20	60	-	DATE OPERATOR / NO. OF REJECTS
	ΔhFE3		-	-	-	± 20%		of initial reading / DATE OPERATOR / NO. OF REJECTS
								DATE OPERATOR / NO. OF REJECTS
								DATE OPERATOR / NO. OF REJECTS

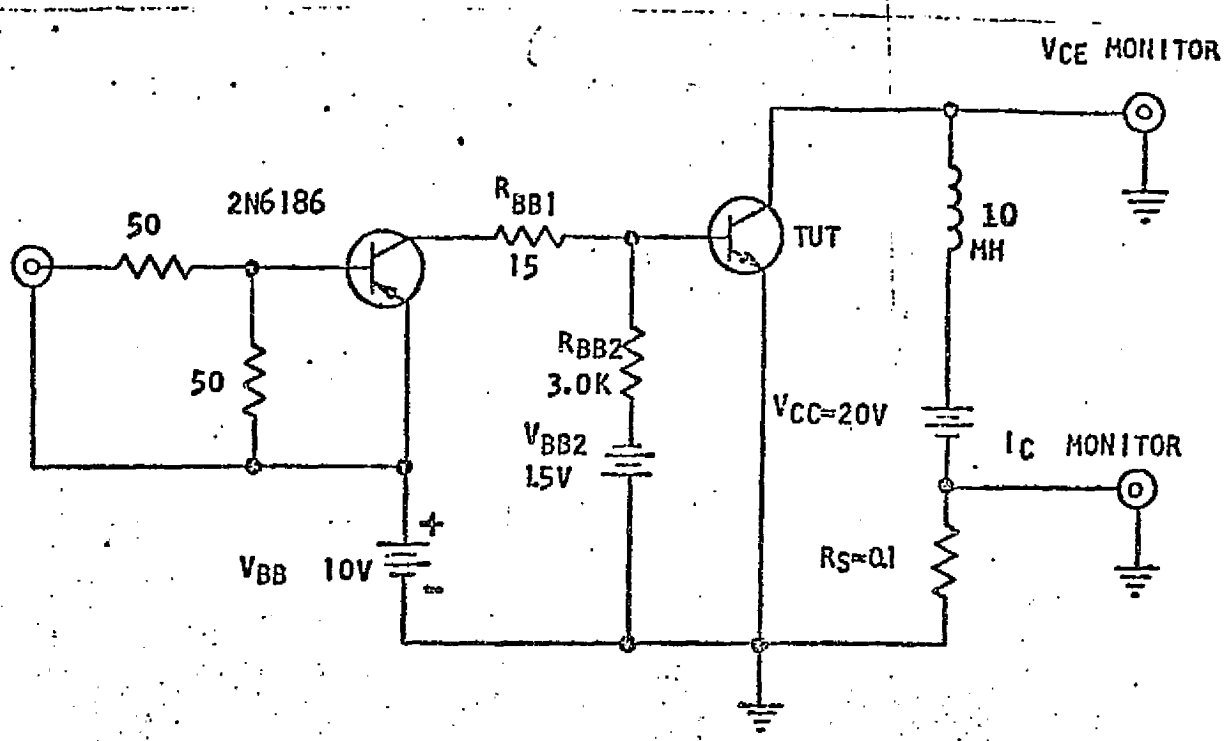


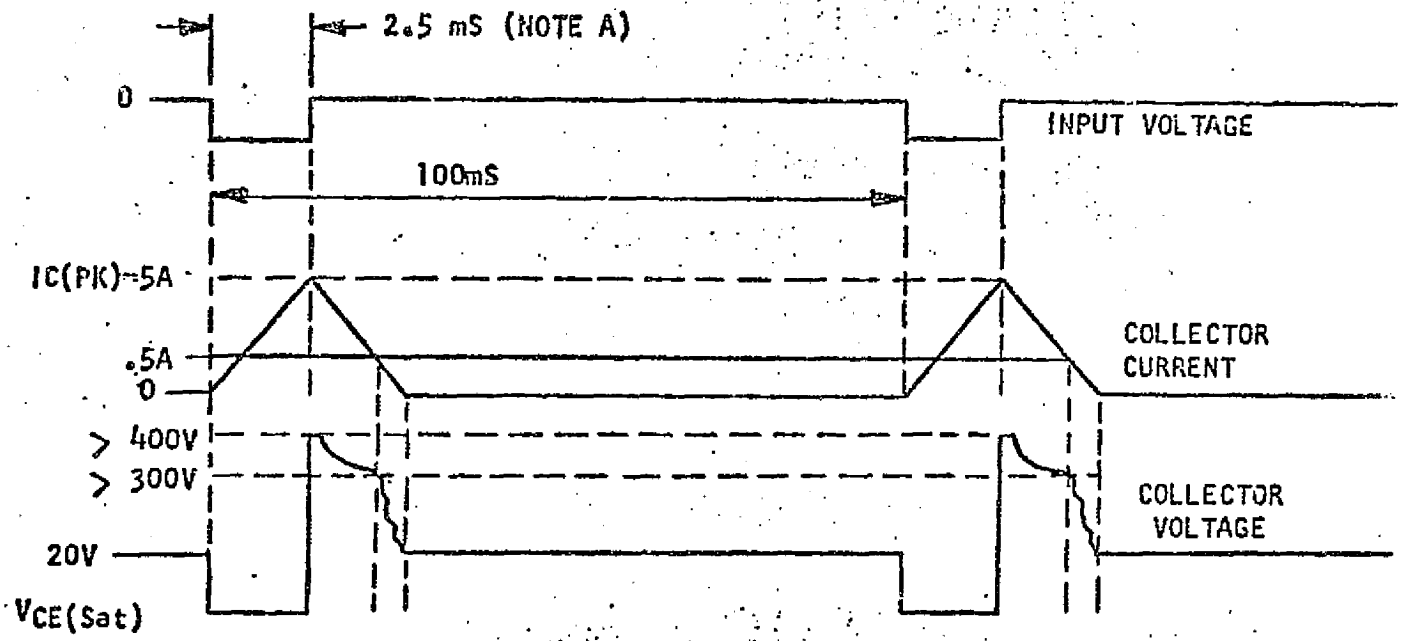
SYMBOL	INCHES MIN.	INCHES MAX.	MILLIMETERS MIN.	MILLIMETERS MAX.	NOTES
A	.270	.330	6.86	8.38	
ϕb	.027	.033	.686	.838	1
ϕD	.550	.650	13.97	16.51	
ϕD1	.444	.524	11.28	13.31	
e	.136	.146	3.45	3.71	
F		.115		2.92	
1	.360	.440	9.14	11.18	1
β	90° NOMINAL				

NOTES:

1. THREE LEADS.

FIGURE 1. PACKAGE OUTLINE.

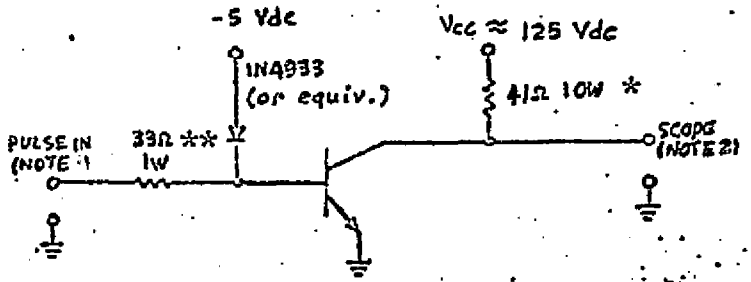


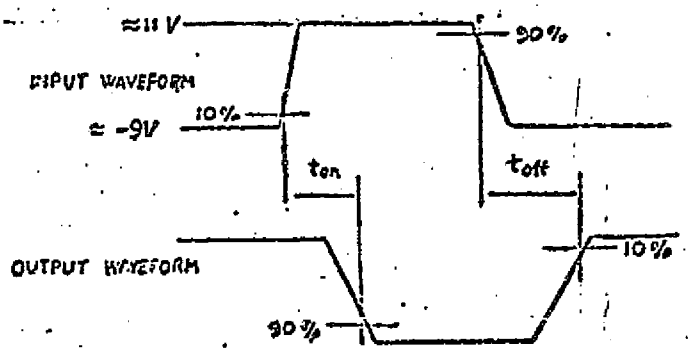


NOTE A: INPUT PULSE WIDTH IS INCREASED UNTIL I_C (PK)=5A

FIGURE 2

SECOND BREAKDOWN ENERGY TEST CIRCUIT AND WAVEFORMS





NOTES:

1. The rise time (t_r) and fall time (t_f) of the applied pulse shall be each $\leq$20 ns; duty cycle $\leq$1%, generator source impedance shall be be 50 Ω; pulse width = 30 us.

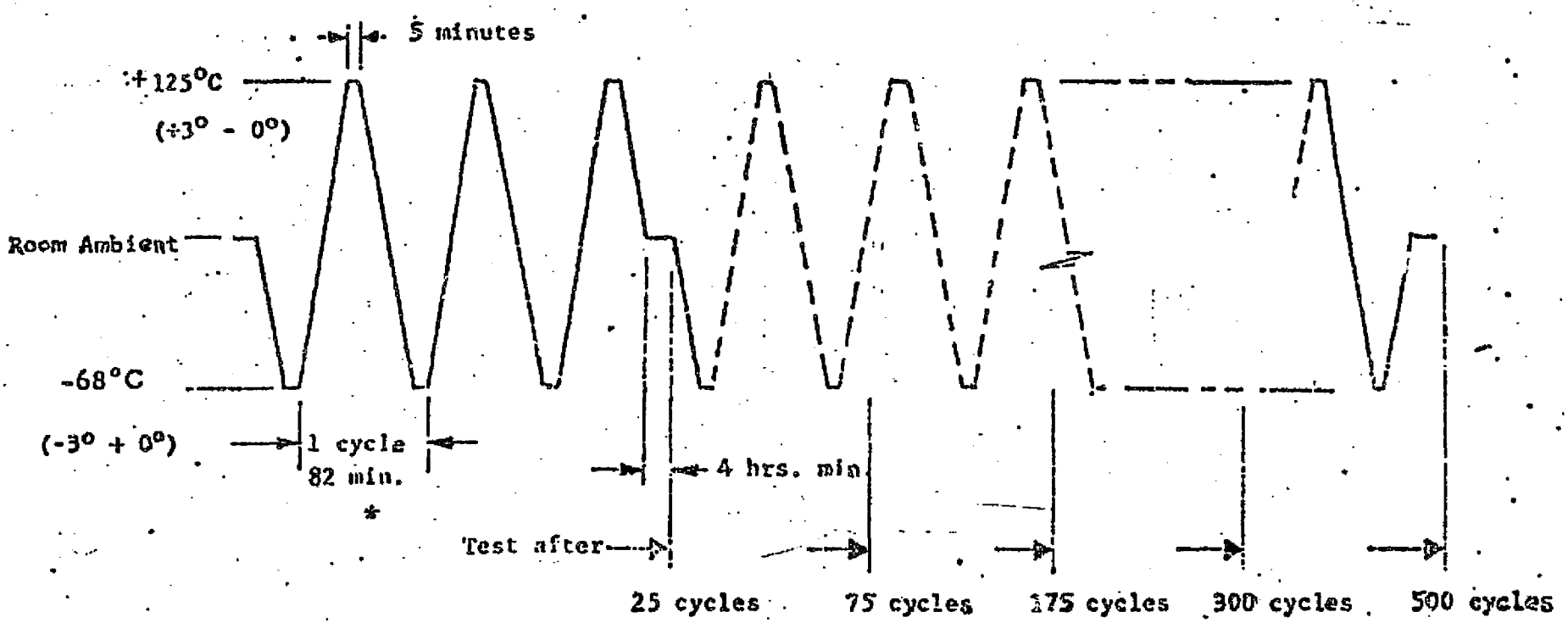
2. Output sampling oscilloscope: $Z_{in} \geq 20\ k\Omega$, $C_{in} \leq 50$ pF; rise time $\leq$20

TEST CONDITIONS:

Turn-on Time	Turn-off Time	Fall Time
VCC 125Vdc	VCC 125Vdc	VCC 125Vdc
IC = 3.0A	IC = 3.0A	IC = 1.0A
IB1 = 0.3A	IB1 = 0.3A	IB1 = IB2 = 0.1A
	-IB2 = 0.3A	

* use 120 ohms, 5W (tf only)
** use 100 ohms, 1W (tf only)

FIGURE 3. PULSE RESPONSE TEST CIRCUIT AND CONDITIONS.



*About five degrees per minute

FIGURE 4. THERMAL TEST PROFILE.

MOTOROLA INC. Semiconductor Products Division

REVISION SHEET

DEVICE	DOC. NO.	PAGE
SJ6708H	48ARB64845A	32 OF 32

REV. LTR. & RELEASE DATE	DESCRIPTION OF REVISION	ORDERS IN PROC. AFFECTED	WHSE. STOCK AFFECTED	WRITER & DATE	ACC'Y REVIEW & DATE
A 5-6-77	Exchanged "Signed" Customer Approval page 2 contained herein. Step 2.4.4.2.1 test condition IC was . IC = 8.0A. toff was 3.0uSec. max. in TABLE I. Added NASA letter reference which modified Customer specification RES1075.	YES	NO	wfm 5-5-77	K.LOEB 5-6-77
B 8-11-77	Added NOTE 6.2. Added flagnote to steps 2.2.6 & 2.4.6. Deleted boxed notes on sub-groups B-3 & B-6. Added 168 hr. readout to B-6. TABLE I:hFE1 was @ VCE = 1V. TABLES I & III:hFE4 was 10 min. TABLES I & II: ES/B was 30mJ min. Added tf note to FIGURE 3. Revised FIGURE 2.	YES	NO	JDG 8-1-77	D.E. 8-1-77
C 9-22-77	TABLE IV, VCE(s)2 condition was: IC=1.0A, IB=1.0A. (Typo error only)	NO	NO	W.W. 9-22-77	D.E 9-22-77
D 10-8-77	Added θJC = 7.0°C/W to Steps 2.2.6 and 2.4.6.1. Step 2.4.6.1.3 was per TABLE III, Limit 2 and Step 2.4.6.1.5 was TABLE III, Limit(to correct typo).	NO	NO	wfm 10-7-77	M.LOEB 10-7-77
E 11-14-77	Revised Step 2.4.3.3. TABLE III: ICES1 was at 60V. Added Customer Print RC1075.	YES	NO	M.LOEB 11-14-77	M.M. 11-14-77

SECTION D. FAILURE ANALYSIS REPORTS

MOTOROLA INC.
Semiconductor Group

RELIABILITY AND QUALITY ASSURANCE DEPARTMENT

PRODUCT ANALYSIS REPORT

SPC PR-2 (4/74) #243 REPORT NO. PL-099*034

PREPARED FOR	REFERENCE	DEVICE TYPE	LOT NUMBER	CUSTOMER PART NUMBER
ROCKETDYNE (NASA) (UNKN)	-	SJ6708H	-	-

POINT OF FAILURE: Hermetic Seal (AXX)

REASON FOR REJECTION: Non-hermetic

REQUESTOR: Don Brothers

TYPE OF REQUEST: [X] FIELD [ ] HiREL QA [ ] RELIABILITY [ ] RMR [ ] OTHER

TOTAL FAILURES	QUANTITY RECEIVED	LOT SIZE	SAMPLE SIZE	ACCEPTANCE LIMIT
8	8	-	-	-

PRODUCT CODE	DATE CODE(S)	SERIAL NUMBER(S)
AACA/Loc.B	7733	-

BACKGROUND:

Eight transistors in a flangeless TO-66 package (TO-8) with three 0.030" leads approximately 0.5" long were submitted for analysis because of hermeticity problems. The transistors contain a 5 RV 190 mil^2 chip mounted on a molybdenum heat spreader approximately 0.008" thick. Connections are of aluminum wire, 10 mils in diameter. All transistors have multiple bends in all three leads. These transistors were to find application in the Space Shuttle.

INVESTIGATION:

A cursory visual examination with a 10X lens revealed severe damage to the glass to metal seal in all transistors. They were subjected to a gross leak test utilizing dye penetrant and experienced 100% failure. A closer examination of the devices with the scanning electron microscope (Photos 1-5) demonstrated severe damage to the glass-to-metal seals. The quality of the glass in the feed throughs seemed to be normal. All leads exhibited movement with respect to the seal glass (Photo 4) in a direction away from the header, indicating damage was almost certainly induced by a pull on the lead. Checking of the lot history of these devices revealed they did experience a pull test according to MIL-STD-740, method 2036, where a 10 lb weight is suspended from the package for 15 seconds. Reports also indicate that 100% failure of a 20 piece sample of these parts, subjected to hermeticity checking did occur after lead tensioning test.

CAUSE:

Insufficient metal-to-glass seal integrity resulted in poor resistance to the lead tensioning test, cracking the glass, and causing failure of the devices to remain hermetic.

RECOMMENDATION:

This TO-8 package is not recommended for devices intended for use in the aerospace environment.

ANALYSIS PERFORMED BY		REPORT APPROVED BY	
S.W. Lee	21 Nov 78	[signature]	21 Nov. 78

MOTOROLA INC.
Semiconductor Group
P.O. BOX 2953, PHOENIX, ARIZONA 85036

RELIABILITY AND QUALITY ASSURANCE GROUP

PRODUCT ANALYSIS REPORT NUMBER
PL-099*034 PAGE OF

PREPARED FOR	REFERENCE	DEVICE TYPE	LOT NUMBER
ROCKETDYNE (NASA)	-	SJ6708H	-

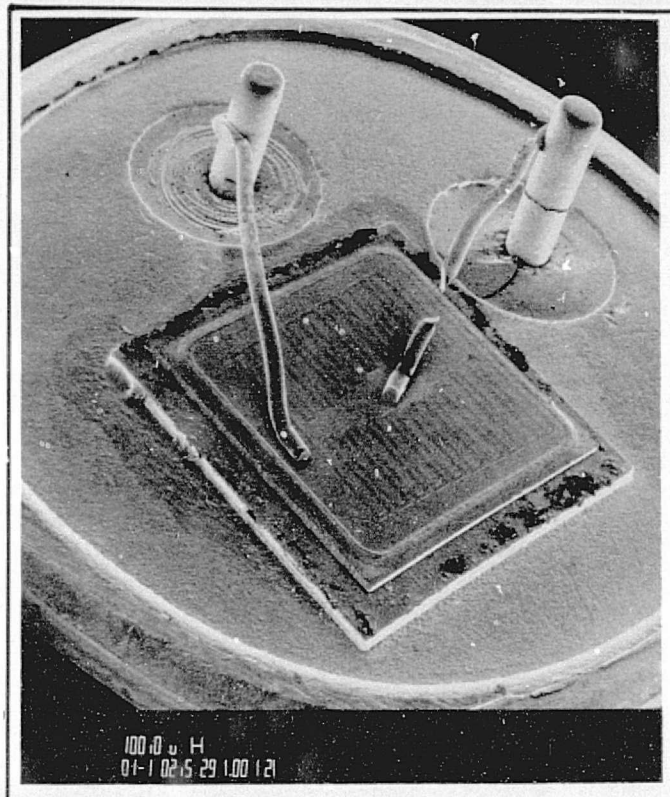


Photo 1. 10X

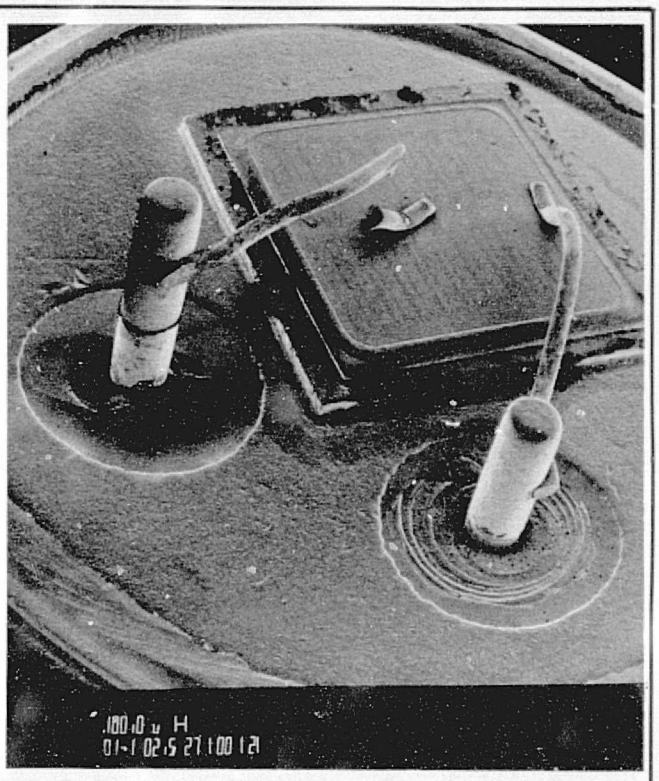


Photo 2. 10X

Photos 1 - 6 SEM views of damaged glass in transistor Ser 035. The damage seen here is typical of all samples. The emitter wire has been cut to allow the emitter post to be pushed up. This transistor and all samples presented for analysis were gross leak rejects. Note cracking and spalling of glass.

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PRODUCT ANALYSIS REPORT NUMBER
PL-099*034 PAGE OF

PREPARED FOR	REFERENCE	DEVICE TYPE	LOT NUMBER
ROCKETDYNE (NASA)	-	SJ6708H	-

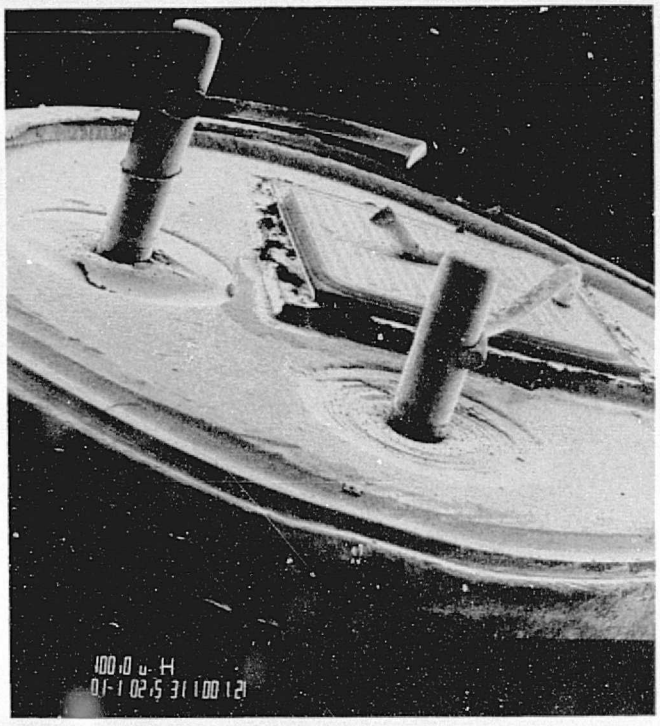
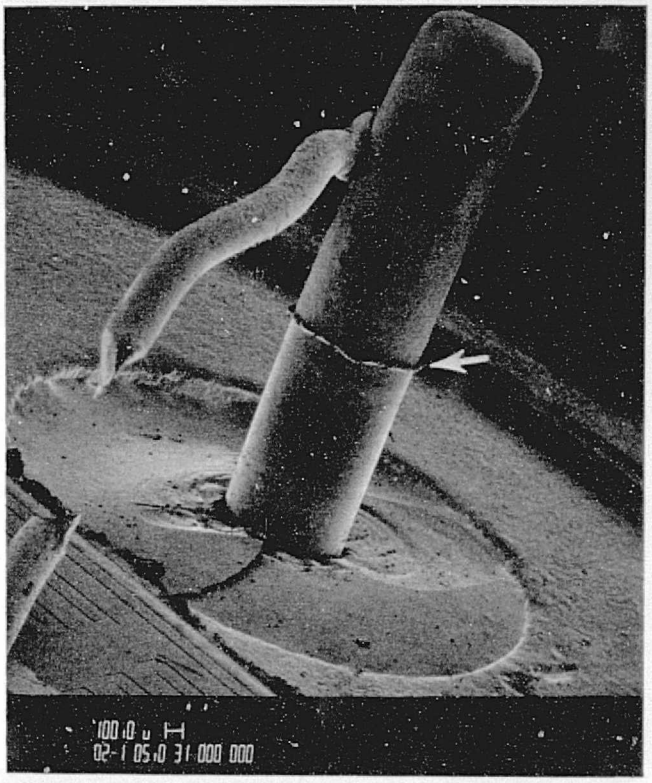


Photo 3. 10X



Close-up of emitter post. Note pushing of gold plating into tiny rolls, indicating tension applied to leads caused them to move within the glass.

Photo 4

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Semiconductor Group
P.O. BOX 2953, PHOENIX, ARIZONA 85036

PRODUCT ANALYSIS REPORT NUMBER
PL-099*034 PAGE OF

PREPARED FOR	REFERENCE	DEVICE TYPE	LOT NUMBER
ROCKETDYNE (NASA)	-	SJ6708H	-

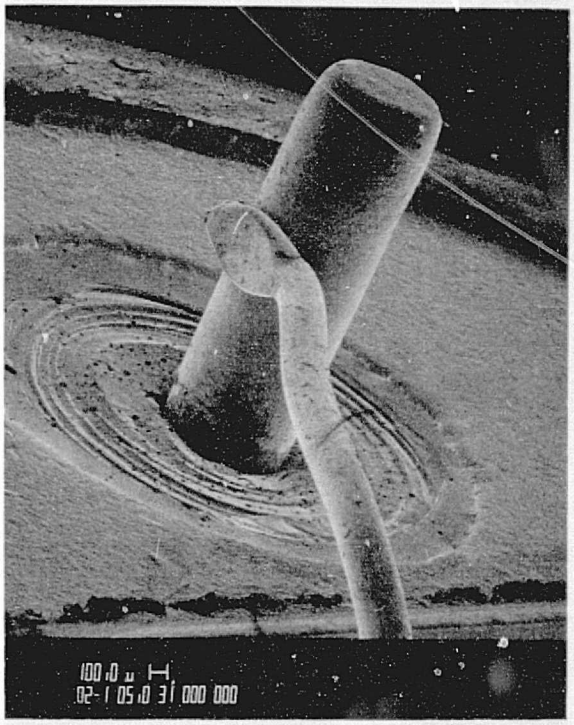

Photo 5 - Close-up of base post.

Note concentric spalling of glass, indicative of lead movement within seal area. All remanants of the meniscus are missing. (20X)

MOTOROLA INC.
Semiconductor Group

RELIABILITY AND QUALITY ASSURANCE DEPARTMENT

PRODUCT ANALYSIS REPORT

SPD 3547 R-2 (4/74)

#278 REPORT NO. PL-099*031

PREPARED FOR	REFERENCE	DEVICE TYPE	LOT NUMBER	CUSTOMER PART NUMBER
NATIONAL AERONAUTICS & SPACE ADMIN.	DS5238	SJ6708H	LA 1	

POINT OF FAILURE: Unloading after 2000 hrs. op life (JAA)

REASON FOR REJECTION: Life Lab N.O.D.

REQUESTOR: June C.

TYPE OF REQUEST: ☐ FIELD ☒ HiREL QA ☐ RELIABILITY ☐ RMR ☐ OTHER

TOTAL FAILURES	QUANTITY RECEIVED	LOT SIZE	SAMPLE SIZE	ACCEPTANCE LIMIT
2	1	8	41	-

PRODUCT CODE	DATE CODE(S)	SERIAL NUMBER(S)
AACA/Loc.B	7733	13

Device #13 was submitted on a N.O.D. following unloading. A preliminary electrical check proved the device to be good. A subsequent electrical check in the unloading area again proved the device to be good.

Cause for the N.O.D. at unloading is unknown at this time.

ANALYSIS PERFORMED BY		REPORT APPROVED BY	
Bert Dickerman	4-11-78	S W Lee	11 APR 78

MOTOROLA INC.
Semiconductor Group

RELIABILITY AND QUALITY ASSURANCE DEPARTMENT

PRODUCT ANALYSIS REPORT

PD 3547 R-2 (4/74)

#318 REPORT NO. PL-099*032

PREPARED FOR	REFERENCE	DEVICE TYPE	LOT NUMBER	CUSTOMER PART NUMBER
NATIONAL AERONAUTICS & SPACE ADMIN.	BS5238	SJ 6708 H	LA 1	-

POINT OF FAILURE: 2000 hr burn-in

REASON FOR REJECTION: #21 N.O.D. (E-B short) #4 & #69 limit reject

REQUESTOR: June C.

TYPE OF REQUEST: ☐ FIELD ☒ REL QA ☐ RELIABILITY ☐ RMR ☐ OTHER

TOTAL FAILURES	QUANTITY RECEIVED	LOT SIZE	SAMPLE SIZE	ACCEPTANCE LIMIT
2	3	-	40 + 1	-

PRODUCT CODE	DATE CODE(S)	SERIAL NUMBER(S)
AACA/Loc.B	7733	4, 21, 69

BACKGROUND:

Three units were submitted after 2000 hours of op life testing. Unit 21 was reported as an E-B short at unloading. Units 4 and 69 were limit rejects on the post 2000 hour read out.

INVESTIGATION:

A parameter check found unit #4 to be good while units 21 and 69 were marginally low on hFE_3 (19.6, 19.4 - min 20).

Microscopic inspection of #21 after delidding and chemical etching disclosed no evidence of a failure mechanism that would cause an E-B short.

No further analysis was performed on unit #69.

CAUSE:

Unit #4 was found to be good.

Units 21 and 69 were marginally out of spec. and the failure mechanism is unknown at the present time.

ANALYSIS PERFORMED BY		REPORT APPROVED BY	
Bert Dickerson	4-11-78	T.W. Lee	11 APR 78

SECTION E. TEST FACILITIES LIST

MOTOROLA, INC.
Semiconductor Products Division
Type Number: SJ6708H

TEST FACILITIES LIST

MIL-STD-750 TEST METHOD	TEST STATION IDENTITY		MANUFACTURER	TYPE OR MODEL	ASSET NO.	PARAMETER
ELECTRICAL						
3061	99Q232*		Lorlin	Impact 100	153426	IEBO
3041	99Q232		Lorlin	Impact 100	153426	ICEO
3041	99O232		Lorlin	Impact 100	153426	ICES1
3011	99Q232		Lorlin	Impact 100	153426	BVCEO
3011	99Q232		Lorlin	Impact 100	153426	BVCES
3066	99Q232		Lorlin	Impact 100	153426	VBE(S)1
3071	99O232		Lorlin	Impact 100	153426	VCE(S)1
3066	99Q232		Lorlin	Impact 100	153426	VBE(S)2
3071	99Q232		Lorlin	Impact 100	153426	VCE(S)2
3076	99Q232		Lorlin	Impact 100	153426	hFE1
3076	99Q232		Lorlin	Impact 100	153426	hFE2
3076	99Q232		Lorlin	Impact 100	153426	hFE3
3076	99O232		Lorlin	Impact 100	153426	hFE4
3206	99O005 (Curve Tracer)		Tektronix	576	172120	hfe
3251	QC0308 (Plug-In)		Tektronix	82	079182	ton, toff & tf
3251	QC0449 (Oscilloscope)		Tektronix	585	53855	"
3251	QC1203 (Generator)		Hewlett Packard	214A	129526	"
3306	QC0336 (Generator)		Hewlett Packard	606A	154038	"
3236	99Q223 (Capacitance Limit Bridge)		Boonton	77B-S1	84160	Cobo
3151	99Q228 (Thermal Resistance Tester)		Motorola	HO-01	82278	θJC
3053	QC0449 (See Figure 2)		Tektronix	585	53855	ES/B

* Lorlin Multi Parameter Tester.

MOTOROLA, INC.
Semiconductor Products Division
Type Number: SJ6708H

TEST FACILITIES LIST

MIL-STD-750 TEST METHOD	TEST STATION IDENTITY		MANUFACTURER	TYPE OR MODEL	ASSET NO.	
DIMENSIONAL						
2066	Guage		Motorola	66CSB54061	#8	
2066	Calipers		Brown & Sharpe	579-1	4-542	
ENVIRONMENTAL						
MIL-STD-202 Method 107	Temp. Chamber		Blue M	WSP-109B-3	126676	
2006	Centrisafe		Triotech	G385-1B	142814	
1071	Bomb Station		Isovac	MKIV	144030	
2026	Solder Dip		Motorola	- - - -	996931	
1056	Thermal Shock		Thermal Dynamics	2103	177630	
2036	Tension Tester		Hunter	CTM	82286	
1021	Moist. Resist.		Blue M	FR366PB	87004	
1041	Salt Chamber		Associated	SS-3-4	65536	
2016	Shock		Avco	SM005-2	78361	
2056	Vibration		Ling	CP5/6	70933	
2057	Vibration		Ling	CP5/6	70933	
LIFE TESTS						
1031	LT-2 (High Temp. Chambers)		Blue M	POM-24	38907	
1026	LT-1 (Life Test Racks)		Motorola	C (Blue)	- - - -	

SECTION F. TEST MEASUREMENT DATA

READOUT INDEX

100% Processing			
	R.O. #05	100%	Initial Electrical Inspection
	#10	100%	Electrical Inspection, Post Shock, Constant Acceleration and HTRB. Pre-Burn In.
	#15	100%	Post Burn-In Electrical.
Group B			
Sub Group I - IV	#20	76 pc.	Group "B" initial Electrical.
	#30	20 pc.	B-III End Pts.
	#35	20 pc.	B-IV End Pts.
Sub Group V	#40	20 + 3	High Temp. Life, 340 hrs.
	#45	20 + 2	High Temp. Life, 670 hrs.
	#50	20 + 2	High Temp. Life, 1000 hrs.
Sub Group VI	#55	40 + 4	Steady State Operating Life Electrical Inspection, 168 hrs.
	#60	40 + 3	Steady State Operating Life, 340 hrs.
	#65	40 + 3	Steady State Operating Life, 670 hrs.
	#70	40 + 3	Steady State Operating Life, 1000 hrs.
	#75	40 + 3	Steady State Operating Life, 1500 hrs.
	#80	40 + 1	Steady State Operating Life, 2000 hrs.

Readout Index Continued

Sub group VII	#81	15 + 2	Electrical Inspection, Post Power Cycling, 1000 cycles.
	#82	15 + 1	Power Cycling, 2000 cycles.
	#83	15 + 1	Power Cycling, 3000 cycles.
	#84	15 + 1	Power Cycling, 4000 cycles.
	#85	15 + 2	Electrical Inspection, Post Thermal Shock, 25 cycles.
	#86	15 + 2	Thermal Shock, 75 cycles.
	#87	15 + 2	Thermal Shock, 175 cycles.
	#88	15 + 2	Thermal Shock, 300 cycles.
	#89	15 + 2	Thermal Shock, 500 cycles.
	#90	15 + 2	Sub group VII End points.

GACS050S MEASUREMENTS COVER SHEET DATE 02/21/78 PAGE 1

DEVICE = SJ6708H CONTROL # = 0SS238 SAMPLE SIZE = 165

LOT = 001 # REJECTS = 7

READOUT = 05 % REJECTED = 4.24 %

PRIOR = NONE

TST CMPL = 02/20/78

DESCRIPTION = NPN PL-99.784
TEMP CYC CONST ACCEL
HIGH TEM- REVERSE BIAS -8 HOURS
INITIAL TABLE 2

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001	MIN =	0	REJECT READING	MEAN = 1.2267391 UA
			MAX = 50. UA	1		3 STD DEV = 10.972451 UA
BVCEO	002	002	MIN = 450. V	0	REJECT READING	MEAN = 514.4060 V
			MAX =	0		3 STD DEV = 80.34104 V
BVCES	003	003	MIN = 800. V	6	REJECT READING	MEAN = 921.6663 V
			MAX =	0		3 STD DEV = 163.84707 V
VCES 2	004	004	MIN =	0	REJECT READING	MEAN = 134.46104 MV
			MAX = 1. V	0		3 STD DEV = 60.12247 MV
HFE 3	005	005	MIN = 20.	1	REJECT READING	MEAN = 29.752166
			MAX = 60.	0		3 STD DEV = 12.681398

QACS050S MEASUREMENTS READOUT DETAIL DATE 02/21/78 PAGE 2

DEVICE = SJ670BH CONTROL # = 055238
LOT = 001
READOUT = 05

UNIT	ICES 1	BVCEO	BVCES	VCES 2	HFE 3	
000001	644.0 NA	585. V	901.0 V	125.5 MV	31.0	
000002	1.0610 UA	545. V	859.5 V	185.0 MV	21.6	
000003	416.0 NA	510. V	880.5 V	129.5 MV	25.3	
000004	478.5 NA	490. V	863.5 V	123.5 MV	32.8	
000005	1.2745 UA	540. V	983.5 V	176.0 MV	28.4	
000006	365.0 NA	530. V	984.5 V	122.5 MV	34.5	
000007	461.5 NA	510. V	907.5 V	116.0 MV	35.6	
000008	2.0045 UA	520. V	909.5 V	168.5 MV	25.4	
000009	1.7515 UA	500. V	934.5 V	133.5 MV	31.9	
000010	402.5 NA	550. V	977.5 V	193.0 MV	22.0	
000011	485.0 NA	510. V	875.5 V	155.5 MV	26.5	
000012	722.5 NA	550. V	974.5 V	157.0 MV	29.2	
000013	1.4935 UA	490. V	879.5 V	136.5 MV	30.8	
000014	423.5 NA	490. V	883.5 V	115.0 MV	33.8	
000015R	434.5 NA	490. V	910.0 V	130.5 MV	4.88	*
000016	385.0 NA	540. V	1.0330 KV	125.0 MV	32.5	
000017R	42.55 UA	520. V	682.0 V*	155.0 MV	23.0	
000018	427.0 NA	500. V	946.0 V	115.0 MV	34.4	
000019	346.5 NA	540. V	1.0135 KV	127.0 MV	33.3	
000020	1.2155 UA	530. V	975.5 V	118.0 MV	34.1	
000021	297.0 NA	530. V	943.0 V	129.5 MV	25.5	
000022	650.5 NA	500. V	893.5 V	122.5 MV	34.9	
000023	543.5 NA	490. V	903.5 V	130.0 MV	31.5	
000024	914.0 NA	550. V	923.5 V	169.0 MV	22.3	
000025	399.0 NA	540. V	972.5 V	147.5 MV	31.5	
000026	373.5 NA	540. V	929.5 V	151.5 MV	27.9	
000027	511.0 NA	490. V	883.0 V	111.0 MV	34.5	
000028	410.5 NA	560. V	996.5 V	148.5 MV	24.3	
000029	1.7915 UA	580. V	895.5 V	147.0 MV	21.5	
000030	414.5 NA	540. V	1.0290 KV	125.5 MV	32.9	
000031	741.5 NA	540. V	911.5 V	122.5 MV	33.3	
000032	356.0 NA	550. V	935.5 V	147.0 MV	22.1	
000033	1.9335 UA	490. V	849.5 V	166.0 MV	20.7	
000034	1.7010 UA	510. V	952.5 V	137.0 MV	31.3	
000035	297.0 NA	540. V	996.5 V	132.0 MV	26.1	
000036	1.3755 UA	490. V	858.5 V	158.0 MV	27.6	
000037	357.5 NA	520. V	970.5 V	118.0 MV	34.9	
000038	278.5 NA	550. V	963.5 V	142.0 MV	24.5	
000039	512.5 NA	510. V	895.5 V	128.0 MV	29.9	
000040	511.5 NA	490. V	875.5 V	113.5 MV	34.9	
000041	447.5 NA	490. V	896.0 V	121.5 MV	25.6	
000042	353.0 NA	530. V	953.0 V	130.5 MV	25.0	
000043R	17.515 UA	500. V	794.5 V*	141.5 MV	28.5	
000044	582.5 NA	490. V	919.5 V	111.5 MV	38.4	
000045	852.5 NA	530. V	860.5 V	139.0 MV	26.9	
000046	478.5 NA	490. V	870.5 V	132.0 MV	28.4	
000047	557.0 NA	500. V	992.0 V	128.0 MV	35.3	
000048	379.0 NA	530. V	965.0 V	123.5 MV	32.2	
000049	2.400 UA	490. V	931.5 V	148.0 MV	31.4	
000050	434.5 NA	490. V	871.5 V	125.5 MV	31.0	

DEVICE = SJ6708H CONTROL # = 055238
LOT = 001
READOUT = 05

UNIT	ICES 1		BVCEO		BVCES		VCES 2		HFE 3
000051	485.5	NA	500.	V	839.5	V	124.5	MV	31.9
000052	453.0	NA	505.	V	951.5	V	112.0	MV	35.1
000053	429.5	NA	520.	V	953.0	V	119.0	MV	33.1
000054	354.5	NA	480.	V	868.5	V	121.0	MV	24.5
000055	292.5	NA	540.	V	983.5	V	132.5	MV	24.8
000056	420.0	NA	510.	V	996.0	V	114.0	MV	36.4
000057	382.0	NA	530.	V	930.0	V	129.0	MV	26.6
000058	411.0	NA	490.	V	925.0	V	113.5	MV	36.8
000059	498.5	NA	520.	V	1.0080	KV	120.5	MV	36.1
000060	425.0	NA	540.	V	1.0345	KV	132.0	MV	32.7
000061	602.0	NA	490.	V	901.5	V	130.5	MV	32.4
000062	1.1990	UA	490.	V	814.5	V	135.0	MV	27.9
000063	445.5	NA	550.	V	975.5	V	165.5	MV	26.8
000064	368.0	NA	530.	V	961.5	V	121.0	MV	34.1
000065	5.740	UA	505.	V	896.0	V	168.0	MV	29.5
000066	333.5	NA	550.	V	1.0390	KV	122.0	MV	31.8
000067	781.0	NA	510.	V	814.0	V	115.5	MV	36.5
000068	421.0	NA	490.	V	926.0	V	113.5	MV	35.1
000069	276.5	NA	540.	V	979.5	V	135.0	MV	25.5
000070	439.5	NA	480.	V	892.5	V	129.0	MV	31.9
000071	436.5	NA	520.	V	904.0	V	114.5	MV	35.6
000072	365.0	NA	550.	V	981.5	V	139.0	MV	29.9
000073	414.5	NA	540.	V	967.5	V	140.5	MV	31.7
000074R	464.5	NA	490.	V	743.5	V*	126.0	MV	28.5
000075	377.0	NA	520.	V	930.0	V	128.5	MV	25.6
000076	404.5	NA	500.	V	920.5	V	113.5	MV	34.5
000077	389.0	NA	540.	V	890.5	V	160.0	MV	26.9
000078	462.0	NA	510.	V	903.5	V	118.0	MV	34.4
000079	640.5	NA	510.	V	866.5	V	132.5	MV	29.9
000080	379.5	NA	505.	V	912.0	V	114.0	MV	34.1
000081R	6.020	UA	510.	V	794.5	V*	169.5	MV	25.3
000082	1.6745	UA	500.	V	951.5	V	136.0	MV	31.3
000083	456.5	NA	540.	V	873.5	V	139.0	MV	24.3
000084	478.5	NA	490.	V	881.5	V	113.0	MV	35.8
000085	412.5	NA	490.	V	939.0	V	113.5	MV	36.1
000086	429.0	NA	530.	V	999.0	V	119.5	MV	33.0
000087	834.0	NA	500.	V	855.5	V	135.0	MV	29.4
000088	932.0	NA	505.	V	913.5	V	160.5	MV	28.2
000089	602.5	NA	530.	V	990.0	V	128.5	MV	27.8
000090	340.0	NA	500.	V	923.5	V	140.5	MV	23.8
000091	340.5	NA	560.	V	942.5	V	150.0	MV	23.1
000092	446.5	NA	520.	V	988.0	V	114.5	MV	36.1
000093	459.0	NA	550.	V	851.5	V	160.5	MV	21.6
000094	454.5	NA	540.	V	934.0	V	150.0	MV	24.3
000095	2.020	UA	540.	V	937.5	V	164.0	MV	27.0
000096	417.0	NA	580.	V	963.5	V	149.0	MV	21.5
000097	463.0	NA	490.	V	898.0	V	130.5	MV	26.1
000098	3.305	UA	500.	V	881.0	V	150.5	MV	25.9
000099	781.0	NA	530.	V	967.5	V	149.5	MV	31.1
000100	370.5	NA	540.	V	980.5	V	124.0	MV	26.9

QACS0505 MEASUREMENTS READOUT DETAIL DATE 02/21/76 PAGE 4

DEVICE = SJ670BM CONTROL # = 055238
LOT = 001
READOUT = 05

UNIT	ICES 1		BVCEO		BVCES		VCES 2		HFE 3
000101	368.5	NA	540.	V	1.0065	KV	122.0	MV	33.2
000102	932.0	NA	540.	V	980.0	V	212.0	MV	21.6
000103	414.5	NA	530.	V	947.0	V	142.0	MV	24.0
000104	1.0505	UA	520.	V	922.0	V	128.0	MV	33.0
000105	4.525	UA	500.	V	901.0	V	165.0	MV	30.6
000106	432.5	NA	550.	V	975.5	V	191.0	MV	28.9
000107	429.0	NA	505.	V	819.5	V	123.0	MV	27.4
000108	594.5	NA	500.	V	911.0	V	123.5	MV	30.1
000109	377.0	NA	540.	V	915.5	V	130.5	MV	25.6
000110	937.0	NA	530.	V	831.5	V	121.0	MV	28.9
000111	636.5	NA	530.	V	1.0040	KV	122.5	MV	28.2
000112	698.5	NA	510.	V	961.0	V	134.0	MV	30.3
000113	821.0	NA	500.	V	914.0	V	188.0	MV	31.9
000114	530.5	NA	510.	V	913.5	V	117.0	MV	34.6
000115	402.5	NA	510.	V	871.5	V	125.5	MV	25.6
000116	417.0	NA	490.	V	884.0	V	122.0	MV	29.1
000117	378.5	NA	530.	V	963.5	V	120.0	MV	34.2
000118	647.0	NA	500.	V	843.5	V	132.5	MV	29.6
000119	317.0	NA	520.	V	925.0	V	128.0	MV	23.9
000120R	381.0	NA	530.	V	0.	MV*	130.5	MV	24.6
000121	1.3015	UA	490.	V	861.5	V	185.0	MV	24.2
000122	296.0	NA	540.	V	991.5	V	136.5	MV	24.7
000123	1.1225	UA	540.	V	975.5	V	181.5	MV	28.3
000124	4.030	UA	500.	V	909.5	V	156.5	MV	31.6
000125	426.5	NA	500.	V	869.5	V	125.0	MV	31.6
000126	501.5	NA	540.	V	863.5	V	150.0	MV	22.8
000127	417.0	NA	490.	V	913.5	V	114.5	MV	39.0
000128	372.5	NA	560.	V	969.0	V	134.0	MV	22.9
000129	929.0	NA	490.	V	940.5	V	141.5	MV	31.7
000130	357.5	NA	550.	V	1.0015	KV	134.0	MV	31.3
000131	5.660	UA	510.	V	900.5	V	169.0	MV	26.9
000132	680.0	NA	510.	V	921.0	V	123.5	MV	30.4
000133	5.700	UA	510.	V	921.0	V	155.5	MV	30.9
000134	725.0	NA	520.	V	982.5	V	124.5	MV	29.3
000135	490.0	NA	490.	V	845.5	V	123.0	MV	30.4
000136	507.0	NA	530.	V	901.0	V	136.0	MV	23.3
000137	714.0	NA	560.	V	946.5	V	160.5	MV	24.0
000138	453.5	NA	520.	V	906.5	V	143.0	MV	30.0
000139	361.0	NA	550.	V	986.5	V	129.0	MV	32.6
000140	398.0	NA	520.	V	887.0	V	119.0	MV	28.7
000141	414.5	NA	530.	V	1.0175	KV	120.0	MV	33.2
000142	394.0	NA	520.	V	991.5	V	116.0	MV	35.2
000143	1.0690	UA	540.	V	953.0	V	176.0	MV	21.3
000144	343.5	NA	560.	V	1.0110	KV	142.0	MV	24.0
000145R	7.680	UA	500.	V	784.0	V*	128.0	MV	31.0
000146	653.0	NA	540.	V	1.0255	KV	122.5	MV	34.1
000147	429.0	NA	530.	V	911.5	V	120.5	MV	33.4
000148	457.0	NA	520.	V	850.5	V	122.5	MV	27.8
000152	500.5	NA	490.	V	809.5	V	124.0	MV	32.4
000153	463.0	NA	470.	V	909.5	V	128.5	MV	33.0

DEVICE = SJ6708H

CONTROL # = 05E238
LOT = 001
READOUT = 05

UNIT	ICES 1		BVCED		BVCES		VCES 2		HFE 3
000154	466.5	NA	470.	V	864.5	V	110.0	MV	34.5
000155	501.5	NA	470.	V	851.0	V	118.5	MV	28.8
000156	500.5	NA	465.	V	835.0	V	116.0	MV	32.9
000157	560.5	NA	470.	V	836.5	V	121.0	MV	31.0
000158	646.5	NA	465.	V	808.5	V	119.5	MV	30.2
000159	438.5	NA	470.	V	891.5	V	110.5	MV	34.1
000160	700.0	NA	468.	V	868.5	V	120.5	MV	32.2
000161	2.125	UA	465.	V	844.5	V	130.0	MV	28.1
000162	520.0	NA	475.	V	938.5	V	110.5	MV	37.0
000163	469.0	NA	470.	V	846.5	V	108.5	MV	33.1
000164	470.5	NA	472.	V	908.0	V	110.5	MV	35.0
000165	662.5	NA	475.	V	849.5	V	123.0	MV	31.8
000166	1.2290	UA	460.	V	819.0	V	117.5	MV	30.4
000167	569.0	NA	462.	V	868.0	V	112.5	MV	33.3
000168	5.600	UA	475.	V	883.0	V	146.5	MV	28.5

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 05

REJECT LIST

000015	000017	000043	000074	000081	000120	000145

DEVICE = SJ6708H

CONTROL # = 0S5238
LOT = 001
READOUT = 05

REJECT LIST

ELECTRICAL REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000015	HFE 3	2										
000017	BVCES	2										
000043	BVCES	2										
000074	BVCES	3										
000081	BVCES	3										
000120	BVCES	4										
000145	BVCES	4										

OACS050S MEASUREMENTS COVER SHEET DATE 03/16/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 10
PRIOR = 05
TST CMPL = 03/15/78

SAMPLE SIZE = 160
REJECTS = 51
% REJECTED = 31.88 %

DESCRIPTION = NPN PL-99.784
TEMP CYC CONST ACCEL
HIGH TEMP REVERSE BIAS 48 HOURS
END POINTS TABLE 2

PARAMETER	CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES1		001	001				
				MIN =	0	ELECT READING	MEAN = 7.876647 UA
				MAX = 50. UA	24		3 STD DEV = 34.20247 UA
ICES1	(D)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 21	
				MIN = -20. UA	0	DELTA	MEAN = 2.7118894 UA
				MAX = 20. UA	45	DEPENDENT CODE 1	3 STD DEV = 14.633700 UA
ICES1	(%)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 22	
				MIN =	0	% DELTA	MEAN = 26.268256 %
				MAX = 100. %	101	DEPENDENT CODE 3	3 STD DEV = 110.06872 %
BVCEO		002	002				
				MIN =	0	ELECT READING	MEAN = 541.0061 V
				MAX =	0		3 STD DEV = 431.7094 V
BVCES		003	003				
				MIN =	0	ELECT READING	MEAN = 854.0749 V
				MAX =	0		3 STD DEV = 406.0124 V
VCES 2		004	004				
				MIN =	0	ELECT READING	MEAN = 139.7647 MV
				MAX = 1. V	0		3 STD DEV = 61.82649 MV
HFE3		005	005				
				MIN = 20.	14	ELECT READING	MEAN = 27.833450
				MAX = 60.	0		3 STD DEV = 11.456213
HFE3	(%)	005	005	PARM # 1 = 005 PARM # 2 = 005		CALC # = 22	
				MIN = -20. %	15	% DELTA	MEAN = -6.222183 %
				MAX = 20. %	1		3 STD DEV = 14.550642 %

DEVICE = SJ6708H
CONTROL # = 0S5238
LOT = 001
READOUT = 10

UNIT	ICES1	ICES1(D)	ICES1(%)	BVCEO	BVCES	VCES 2	HFE3
000001	2.020 UA	1.3760 UA	213.00 %*	500. V	908.5 V	133.5 MV	27.9
000002R	169.60 UA*	168.5390 UA*	15.800 K%*	780. V	500.0 V	189.5 MV	16.63 *
000003	1.9720 UA	1.5560 UA	374.00 %*	500. V	791.5 V	133.0 MV	24.1
000004	14.160 UA	13.6815 UA	2.8500 K%*	800. V	893.0 V	128.5 MV	27.5
000005	17.760 UA	16.4855 UA	1.2900 K%*	520. V	747.5 V	176.5 MV	27.7
000006R	36.80 UA	36.4350 UA*	9.9800 K%*	535. V	1.0075 KV	125.0 MV	30.2
000007	496.5 NA	35.0 NA	7.5800 %	500. V	967.5 V	122.0 MV	33.1
000008	4.350 UA	2.3455 UA	117.00 %*	505. V	859.5 V	199.0 MV	23.3
000009	1.4035 UA	-348.0 NA	-19.800 %	490. V	949.5 V	140.0 MV	30.0
000010R	256.0 UA*	255.5975 UA*	63.500 K%*	675. V	567.5 V	187.5 MV	19.15 *
000011	922.5 NA	437.5 NA	90.200 %	500. V	937.5 V	162.5 MV	25.2
000012	1.5520 UA	829.5 NA	114.00 %*	535. V	943.5 V	166.0 MV	27.5
000013	1.8905 UA	397.0 NA	26.500 %	480. V	905.5 V	154.0 MV	24.9
000014	545.0 NA	121.5 NA	28.600 %	475. V	815.5 V	116.5 MV	31.8
000015R	1.4020 UA	967.5 NA	222.00 %*	485. V	831.5 V	138.0 MV	29.2
000016	410.0 NA	25.0 NA	6.4900 %	530. V	1.0175 KV	131.0 MV	30.0
000018	589.5 NA	162.5 NA	38.000 %	490. V	955.5 V	120.5 MV	32.2
000019	503.5 NA	157.0 NA	45.300 %	525. V	959.5 V	130.5 MV	31.7
000020	1.2155 UA	0. PA	0. P%	515. V	935.5 V	125.5 MV	31.7
000021	567.0 NA	290.0 NA	97.600 %	510. V	863.5 V	133.0 MV	24.3
000022R	27.10 UA	26.4495 UA*	4.0600 K%*	475. V	656.0 V	119.5 MV	32.8
000023	1.2590 UA	715.5 NA	131.00 %*	480. V	899.5 V	136.0 MV	29.5
000024R	82.40 UA*	81.4860 UA*	8.9100 K%*	520. V	660.5 V	181.5 MV	21.1
000025	612.5 NA	213.5 NA	53.500 %	530. V	943.5 V	145.0 MV	29.9
000026	943.0 NA	569.5 NA	152.00 %*	535. V	911.5 V	157.0 MV	26.0
000027	781.0 NA	270.0 NA	52.800 %	480. V	791.5 V	116.0 MV	31.9
000028R	44.80 UA	44.3895 UA*	10.800 K%*	950. V	917.0 V	154.5 MV	19.32 *
000029R	57.40 UA*	55.6085 UA*	3.1000 K%*	900. V	787.5 V	164.0 MV	16.96 *
000030	548.0 NA	133.5 NA	32.200 %	550. V	975.5 V	131.5 MV	30.8
000031	13.560 UA	12.8185 UA	1.7200 K%*	520. V	715.5 V	129.0 MV	31.6
000032R	30.75 UA	30.3940 UA*	8.5300 K%*	535. V	719.5 V	153.5 MV	21.1
000033	5.605 UA	3.6715 UA	189.00 %*	475. V	843.5 V	169.5 MV	26.4
000034	1.3725 UA	-328.5 NA	-19.300 %	495. V	954.5 V	141.5 MV	30.0
000035	480.0 NA	183.0 NA	61.600 %	525. V	831.5 V	138.0 MV	24.5
000036	8.255 UA	6.8795 UA	500.00 %*	480. V	767.5 V	164.0 MV	25.6
000037R	57.60 UA*	57.2425 UA*	16.000 K%*	510. V	642.5 V	121.5 MV	32.9
000038	906.0 NA	627.5 NA	225.00 %*	540. V	879.5 V	133.0 MV	27.8
000039R	362.5 NA	-150.0 NA	-29.200 %	500. V	959.5 V	145.5 MV	23.2
000040	640.5 NA	129.0 NA	25.200 %	480. V	847.5 V	121.5 MV	32.3
000041	409.0 NA	-36.5 NA	-8.6000 %	480. V	900.0 V	126.5 MV	24.0
000042	474.5 NA	121.5 NA	34.400 %	515. V	927.5 V	136.5 MV	23.7
000044R	202.0 UA*	201.4175 UA*	34.500 K%*	670. V	570.5 V	113.5 MV	21.0
000045R	34.00 UA	33.1475 UA*	3.8800 K%*	485. V	859.5 V	153.5 MV	21.2
000046	539.5 NA	61.0 NA	12.700 %	480. V	807.5 V	139.0 MV	24.8
000047R	28.15 UA	27.5930 UA*	4.9500 K%*	485. V	843.0 V	133.0 MV	33.3
000048	406.5 NA	27.5 NA	7.2500 %	520. V	895.5 V	131.5 MV	29.8
000049	1.0715 UA	-1.3285 UA	-55.300 %	480. V	943.5 V	152.0 MV	30.2
000050	578.0 NA	143.5 NA	33.000 %	480. V	927.5 V	131.0 MV	29.7
000051	456.0 NA	-27.5 NA	-5.6600 %	485. V	944.5 V	130.5 MV	30.2
000052	395.0 NA	-58.0 NA	-12.800 %	495. V	927.5 V	118.5 MV	32.8

DEVICE = SJ6706H CONTROL # = 055230
LOT = 001
READOUT = 10

UNIT	ICES1	ICES1(D)	ICES1(%)	BVCEO	BVCES	VCES 2	HFE3	
000053	831.5 NA	402.0 NA	95.500 %	510. V	895.5 V	125.0 MV	30.9	
000054	402.5 NA	48.0 NA	13.500 %	470. V	857.5 V	127.5 MV	23.2	
000055	361.0 NA	68.5 NA	23.400 %	525. V	823.5 V	140.0 MV	23.3	
000056	1.2480 UA	828.0 NA	197.00 %*	500. V	855.5 V	119.0 MV	33.9	
000057R	105.60 UA*	105.2480 UA*	29.900 K%*	510. V	629.5 V	136.0 MV	24.6	
000058R	1.775 MA*	1.7745890 MA*	431.700 K%*	520. V	58.5 V	118.0 MV	29.2	
000059R	31.30 UA	30.8015 UA*	6.1700 K%*	518. V	976.5 V	124.5 MV	30.4	
000060	7.680 UA	7.2550 UA	1.7000 K%*	530. V	919.5 V	129.5 MV	30.3	
000061	873.0 NA	271.0 NA	45.000 %	475. V	895.5 V	137.0 MV	30.8	
000062R	42.40 UA	41.2010 UA*	3.4300 K%*	880. V	825.0 V	142.0 MV	21.8	
000063	3.395 UA	2.9495 UA	662.00 %*	540. V	831.5 V	173.5 MV	25.0	
000064	902.5 NA	534.5 NA	145.00 %*	520. V	987.0 V	124.0 MV	31.7	
000065	4.510 UA	-1.230 UA	-21.400 %	500. V	843.5 V	171.0 MV	28.4	
000066	487.5 NA	154.0 NA	46.100 %	535. V	1.0075 KV	135.5 MV	29.8	
000067	1.4605 UA	679.5 NA	87.000 %	500. V	807.5 V	122.0 MV	33.4	
000068	389.5 NA	-31.5 NA	-7.4800 %	480. V	919.5 V	119.0 MV	33.1	
000069	530.5 NA	254.0 NA	91.800 %	530. V	903.5 V	142.5 MV	23.8	
000070	3.310 UA	2.8705 UA	853.00 %*	475. V	827.5 V	133.5 MV	30.9	
000071	5.310 UA	4.8735 UA	1.1100 K%*	500. V	902.0 V	120.5 MV	32.9	
000072	613.5 NA	248.5 NA	68.000 %	540. V	975.5 V	146.5 MV	27.9	
000073	704.0 NA	289.5 NA	69.800 %	535. V	863.5 V	147.0 MV	29.6	
000075	1.2800 UA	903.0 NA	239.00 %*	505. V	831.5 V	134.0 MV	24.1	
000076	421.0 NA	16.5 NA	4.0700 %	485. V	939.5 V	119.5 MV	32.5	
000077	1.6080 UA	1.2190 UA	313.00 %*	525. V	947.5 V	169.0 MV	24.9	
000078	491.5 NA	89.5 NA	22.200 %	500. V	951.5 V	123.0 MV	32.3	
000079	2.305 UA	1.6145 UA	233.00 %*	510. V	855.5 V	140.0 MV	27.2	
000080	1.7995 UA	1.4200 UA	374.00 %*	495. V	928.0 V	120.0 MV	31.6	
000082	2.640 UA	965.5 NA	57.600 %	495. V	934.0 V	140.0 MV	29.9	
000083R	28.80 UA	28.3495 UA*	6.2900 K%*	635. V	828.5 V	144.5 MV	20.3	
000084R	51.20 UA*	50.7245 UA*	10.600 K%*	700. V	683.0 V	118.0 MV	27.6	
000085	15.895 UA	15.4825 UA	3.7500 K%*	630. V	959.5 V	116.5 MV	29.8	
000086	1.0765 UA	649.5 NA	151.00 %*	515. V	915.5 V	126.0 MV	30.0	
000087R	18.415 UA	17.5810 UA	2.1000 K%*	800. V	892.5 V	140.5 MV	22.6	
000088R	6.245 UA	5.3130 UA	570.00 %*	600. V	791.5 V	181.0 MV	22.3	
000089	11.920 UA	11.3175 UA	1.8700 K%*	500. V	983.5 V	139.0 MV	22.9	
000090	1.4075 UA	1.0675 UA	313.00 %*	545. V	927.5 V	158.5 MV	22.1	
000091R	108.80 UA*	108.4595 UA*	31.800 K%*	485. V	629.0 V	159.5 MV	21.2	
000092	1.980 UA	1.5335 UA	343.00 %*	500. V	871.5 V	121.0 MV	35.4	
000093R	57.60 UA*	57.1410 UA*	12.400 K%*	770. V	705.5 V	164.0 MV	17.66	*
000094R	70.40 UA*	69.9455 UA*	15.300 K%*	720. V	679.5 V	153.0 MV	20.2	
000095	6.890 UA	4.870 UA	241.00 %*	990. V	957.5 V	189.5 MV	22.1	
000096R	30.00 UA	29.5830 UA*	7.0900 K%*	870. V	821.5 V	159.5 MV	17.51	*
000097R	26.80 UA	26.3370 UA*	5.6800 K%*	620. V	889.5 V	125.5 MV	22.6	
000098R	11.575 UA	8.270 UA	250.00 %*	900. V	922.0 V	164.5 MV	18.48	*
000099R	51.20 UA*	50.4190 UA*	6.4500 K%*	800. V	766.5 V	150.0 MV	26.0	
000100	10.850 UA	10.4795 UA	2.8200 K%*	520. V	960.0 V	133.5 MV	24.3	
000101	1.0765 UA	708.0 NA	192.00 %*	530. V	927.5 V	129.0 MV	30.9	
000102R	153.60 UA*	152.6680 UA*	16.300 K%*	680. V	599.5 V	211.5 MV	18.05	*
000103R	192.0 UA*	191.5650 UA*	46.200 K%*	470. V	542.5 V	150.0 MV	22.4	
000104	1.6000 UA	849.5 NA	52.300 %	510. V	787.5 V	122.5 MV	32.9	

GACS0505 MEASUREMENTS READOUT DETAIL DATE 03/16/78 PAGE 4

DEVICE = SJ6708H CONTROL # = 055238
LOT = 001
READOUT = 10

UNIT	ICES1	ICES1(D)	ICES1(%)	BVCEO	BVCES	VCES 2	HFE3	
000105	2.145 UA	-2.380 UA	-52.500 %	490. V	931.0 V	168.5 MV	29.9	
000106	2.165 UA	1.7325 UA	400.00 %*	535. V	855.5 V	199.0 MV	22.5	
000107R	60.80 UA*	60.3710 UA*	14.000 K%*	490. V	665.5 V	-130.5 MV	26.0	
000108	518.5 NA	-76.0 NA	-12.700 %	485. V	917.5 V	128.0 MV	28.4	
000109R	140.80 UA*	140.4230 UA*	37.200 K%*	525. V	620.0 V	141.5 MV	23.8	
000110R	24.90 UA	23.9630 UA*	2.5500 K%*	460. V	915.0 V	130.5 MV	25.5	
000111	3.705 UA	3.0665 UA	480.00 %*	260. V	995.0 V	128.5 MV	25.6	
000112R	76.80 UA*	76.1095 UA*	11.000 K%*	460. V	859.5 V	141.5 MV	23.5	
000113	776.0 NA	-45.0 NA	-5.4800 %	485. V	931.5 V	133.0 MV	30.3	
000114	506.0 NA	-24.5 NA	-4.6100 %	500. V	971.5 V	121.0 MV	32.1	
000115	406.5 NA	4.0 NA	993.00 M%	495. V	887.5 V	131.0 MV	24.5	
000116	450.0 NA	33.0 NA	7.9100 %	480. V	882.5 V	128.5 MV	23.7	
000117	7.695 UA	7.5165 UA	1.9800 K%*	520. V	975.5 V	126.0 MV	29.9	
000118	1.0225 UA	374.5 NA	57.700 %	495. V	914.5 V	143.0 MV	26.2	
000119R	70.40 UA*	70.0830 UA*	22.100 K%*	505. V	663.5 V	133.5 MV	22.8	
000120	379.0 NA	-2.0 NA	-524.00 M%	505. V	911.5 V	134.0 MV	23.6	
000121R	30.00 UA	28.6985 UA*	2.2000 K%*	800. V	800.0 V	192.0 MV	19.78	*
000122R	40.80 UA	40.5040 UA*	13.600 K%*	940. V	938.5 V	142.5 MV	19.96	*
000123	3.285 UA	2.1625 UA	192.00 %*	525. V	941.5 V	186.5 MV	27.1	
000124	2.680 UA	-1.380 UA	-34.200 %	485. V	920.0 V	163.5 MV	30.1	
000125	1.1610 UA	734.5 NA	172.00 %*	495. V	927.5 V	130.5 MV	30.0	
000126R	331.0 UA*	330.4985 UA*	65.900 K%*	675. V	925.5 V	155.5 MV	18.74	*
000127	5.160 UA	4.7430 UA	1.1300 K%*	475. V	887.5 V	121.5 MV	32.5	
000128R	20.80 UA	20.4215 UA*	5.3900 K%*	525. V	971.5 V	143.5 MV	20.4	
000129	1.2900 UA	361.0 NA	38.800 %	480. V	935.5 V	145.5 MV	30.0	
000130	1.1065 UA	749.0 NA	209.00 %*	540. V	935.5 V	140.5 MV	29.1	
000131R	16.690 UA	13.030 UA	230.00 %*	950. V	866.5 V	177.5 MV	17.88	*
000132	18.740 UA	18.2600 UA	3.8000 K%*	460. V	912.0 V	131.0 MV	26.3	
000133	3.585 UA	-115. NA	-3.1000 %	500. V	857.5 V	159.0 MV	29.6	
000134	20.40 UA	19.6750 UA	2.7100 K%*	500. V	768.0 V	133.0 MV	24.4	
000135	1.2695 UA	779.5 NA	159.00 %*	480. V	861.5 V	128.5 MV	29.0	
000136R	28.00 UA	27.4930 UA*	5.4200 K%*	900. V	893.5 V	139.0 MV	26.3	
000137	17.370 UA	16.6560 UA	2.3300 K%*	510. V	960.0 V	172.5 MV	20.1	
000138	2.325 UA	1.8715 UA	412.00 %*	515. V	949.5 V	153.0 MV	26.2	
000139	632.0 NA	267.0 NA	73.100 %	515. V	1.0075 KV	134.0 MV	30.4	
000140R	24.00 UA	23.6060 UA*	5.9900 K%*	480. V	929.0 V	128.5 MV	25.0	
000141R	63.40 UA*	62.9855 UA*	15.100 K%*	505. V	767.5 V	128.0 MV	30.0	
000142	565.5 NA	171.5 NA	43.500 %	515. V	999.5 V	123.5 MV	32.8	
000143R	676.0 UA*	674.9310 UA*	63.100 K%*	540. V	150.5 MV	179.5 MV	18.63	*
000144R	51.20 UA*	50.8565 UA*	14.800 K%*	880. V	733.5 V	145.5 MV	19.62	*
000146	745.0 NA	92.0 NA	14.000 %	520. V	991.5 V	129.5 MV	31.7	
000147	1.5975 UA	1.1685 UA	272.00 %*	520. V	943.5 V	126.0 MV	30.6	
000148	1.5660 UA	1.1110 UA	243.00 %*	508. V	795.5 V	130.0 MV	25.7	
000152	17.440 UA	16.9395 UA	3.3800 K%*	0. V	935.0 V	122.5 MV	27.5	
000153R	71.10 UA*	70.6370 UA*	15.200 K%*	540. V	758.5 V	127.0 MV	29.3	
000154	684.0 NA	215.5 NA	45.900 %	470. V	899.5 V	115.5 MV	33.1	
000155	754.0 NA	252.5 NA	50.300 %	480. V	871.5 V	128.5 MV	24.9	
000156	11.300 UA	10.7995 UA	2.1500 K%*	470. V	806.0 V	119.5 MV	31.9	
000157	1.1355 UA	575.0 NA	102.00 %*	470. V	876.5 V	124.5 MV	30.7	
000158	1.3220 UA	675.5 NA	104.00 %*	460. V	835.5 V	123.0 MV	28.9	

DEVICE = SJ6708H
CONTROL # = 055238
LOT = 001
READOUT = 10

UNIT	ICES1	ICES1(D)	ICES1(%)	BVCEO	BVCES	VCES 2	HFE3
000159	8.260 UA	7.8215 UA	1.7800 K%*	470. V	903.5 V	110.0 MV	32.6
000160R	33.60 UA	32.8940 UA*	4.6500 K%*	560. V	862.0 V	119.0 MV	28.7
000161R	37.55 UA	35.425 UA*	1.6600 K%*	0. V	806.5 V	130.5 MV	23.2
000162	914.0 NA	394.0 NA	75.700 %	0. V	949.5 V	114.5 MV	35.5
000163	745.0 NA	256.0 NA	52.300 %	470. V	887.5 V	113.0 MV	31.2
000164	730.0 NA	259.5 NA	55.100 %	480. V	921.0 V	112.5 MV	33.4
000165	7.740 UA	7.0775 UA	1.0600 K%*	480. V	881.5 V	125.5 MV	29.8
000166	9.630 UA	8.4010 UA	683.00 %*	480. V	848.0 V	117.0 MV	27.3
000167R	33.60 UA	33.0310 UA*	5.8000 K%*	800. V	775.5 V	112.5 MV	28.1
000168R	30.40 UA	24.800 UA*	442.00 %*	820. V	829.5 V	154.5 MV	20.8

QACS0505 MEASUREMENTS READOUT DETAIL DATE 03/16/18 PAGE 6

DEVICE = SJ6708H

CONTROL # = OS5238
LOT = 001
READOUT = 10

UNIT	HFE3(%)	
000001	-10.000	%
000002R	-23.000	%*
000003	-4.7400	%
000004	-16.100	%
000005	-2.4600	%
000006R	-12.400	%
000007	-7.0200	%
000008	-8.2600	%
000009	-5.9500	%
000010R	-12.900	%
000011	-4.9000	%
000012	-5.8200	%
000013	-19.100	%
000014	-5.9100	%
000015R	498.00	%*
000016	-7.6900	%
000018	-6.3900	%
000019	-4.8000	%
000020	-7.0300	%
000021	-4.7000	%
000022R	-6.0100	%
000023	-6.3400	%
000024R	-9.4400	%
000025	-5.0700	%
000026	-6.8100	%
000027	-7.8300	%
000028R	-20.400	%*
000029R	-21.100	%*
000030	-6.3800	%
000031	-5.1000	%
000032R	-4.5200	%
000033	-1.1200	%
000034	-4.1500	%
000035	-6.1300	%
000036	-5.1800	%
000037R	-5.7300	%
000038	13.400	%
000039R	-22.400	%*
000040	-7.4400	%
000041	-6.2500	%
000042	-3.2000	%
000044R	-19.200	%
000045R	-21.100	%*
000046	-6.0600	%
000047R	-5.6600	%
000048	-7.4500	%
000049	-3.8200	%
000050	-4.1900	%
000051	-5.3200	%
000052	-6.5500	%

DEVICE = SJ6708H

CONTROL # = 0SS238
LOT = 001
READOUT = 10

UNIT	HFE3(%)	
000053	-6.6400	%
000054	-5.3000	%
000055	-6.0400	%
000056	-6.8600	%
000057R	-7.5100	%
000058R	-20.600	%*
000059R	-15.700	%
000060	-7.3300	%
000061	-4.9300	%
000062R	-21.800	%*
000063	-6.7100	%
000064	-7.0300	%
000065	-3.7200	%
000066	-6.2800	%
000067	-5.9100	%
000068	-5.6900	%
000069	-6.6600	%
000070	-3.1300	%
000071	-7.5800	%
000072	-6.8800	%
000073	-6.6200	%
000075	-5.8500	%
000076	-5.7900	%
000077	-7.4300	%
000078	-6.1000	%
000079	-9.6300	%
000080	-7.3500	%
000082	-4.4700	%
000083R	-16.400	%
000084R	-22.900	%*
000085	-17.400	%
000086	-9.0900	%
000087R	-23.100	%*
000088R	-20.900	%*
000089	-17.600	%
000090	-7.1400	%
000091R	-8.2200	%
000092	-7.4700	%
000093R	-18.200	%
000094R	-16.800	%
000095	-18.100	%
000096R	-18.500	%
000097R	-13.400	%
000098R	-28.600	%*
000099R	-16.300	%
000100	-5.6600	%
000101	-6.9200	%
000102R	-16.000	%
000103R	-6.6600	%
000104	-6.0000	%

DEVICE = SJ6708H

CONTROL # = 05523A
LOT = 001
READOUT = 10

UNIT	HFE3(%)	
000105	-2.2800	%
000106	-5.8500	%
000107R	-5.1000	%
000108	-5.6400	%
000109R	-7.7500	%
000110R	-12.400	%
000111	-9.2100	%
000112R	-22.400	%*
000113	-5.0100	%
000114	-7.2200	%
000115	-5.0300	%
000116	-5.5700	%
000117	-12.200	%
000118	-11.400	%
000119R	-4.6000	%
000120	-4.8300	%
000121R	-18.200	%
000122R	-19.100	%
000123	-4.2400	%
000124	-4.7400	%
000125	-5.0600	%
000126R	-17.800	%
000127	-9.7200	%
000128R	-10.900	%
000129	-5.3600	%
000130	-7.0200	%
000131R	-33.500	%*
000132	-13.400	%
000133	-4.2800	%
000134	-16.700	%
000135	-4.6000	%
000136R	-21.000	%*
000137	-16.200	%
000138	-12.600	%
000139	-6.7400	%
000140R	-12.800	%
000141R	-9.6300	%
000142	-6.8100	%
000143R	-12.500	%
000144R	-18.200	%
000146	-7.0300	%
000147	-6.3800	%
000148	-6.2000	%
000152	-15.100	%
000153R	-11.200	%
000154	-4.0500	%
000155	-13.500	%
000156	-3.0300	%
000157	-967.00	MA
000158	-4.3000	%

QACS0505 MEASUREMENTS READOUT DETAIL DATE 03/16/78 PAGE 9

DEVICE = SJ6708H

CONTROL # = 055238
LOT # 001
READOUT = 10

UNIT	HFE3(%)
000159	-4.3900 %
000160R	-10.800 %
000161R	-17.400 %
000162	-4.0500 %
000163	-5.7400 %
000164	-4.5700 %
000165	-5.0900 %
000166	-10.100 %
000167R	-15.600 %
000168R	-27.000 %

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 10

REJECT LIST

000002	000006	000010	000015	000022	000024	000028	000029	000032	000037	000039	000044	000045
000047	000057	000058	000059	000062	000083	000084	000087	000088	000091	000093	000094	000096
000097	000098	000099	000102	000103	000107	000109	000110	000112	000119	000121	000122	000126
000128	000131	000136	000140	000141	000143	000144	000153	000160	000161	000167	000168	

DEVICE = SJ6708H

CONTROL # = DS5238
LOT = 001
READOUT = 10

REJECT LIST

ELECTRICAL REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000002	ICES1	2	HFE3	2								
000010	ICES1	2	HFE3	2								
000024	ICES1	2										
000028	HFE3	2										
000029	ICES1	2	HFE3	2								
000037	ICES1	2										
000044	ICES1	2										
000057	ICES1	3										
000058	ICES1	3										
000084	ICES1	3										
000091	ICES1	3										
000093	ICES1	3	HFE3	3								
000094	ICES1	3										
000096	HFE3	3										
000098	HFE3	3										
000099	ICES1	3										
000102	ICES1	3	HFE3	3								
000103	ICES1	3										
000107	ICES1	4										
000109	ICES1	4										
000112	ICES1	4										
000119	ICES1	4										
000121	HFE3	4										
000122	HFE3	4										
000126	ICES1	4	HFE3	4								
000131	HFE3	4										
000141	ICES1	4										
000143	ICES1	4	HFE3	4								
000144	ICES1	4	HFE3	4								
000153	ICES1	4										

DELTA REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000002	ICES1	2										
000006	ICES1	2										
000010	ICES1	2										
000022	ICES1	2										
000024	ICES1	2										
000028	ICES1	2										
000029	ICES1	2										
000032	ICES1	2										
000037	ICES1	2										
000044	ICES1	2										
000045	ICES1	2										
000047	ICES1	2										
000057	ICES1	3										
000058	ICES1	3										
000059	ICES1	3										
000062	ICES1	3										
000083	ICES1	3										
000084	ICES1	3										
000091	ICES1	3										

DEVICE = SJ67C8H

CONTROL # = 055238
LOT = 001
READOUT = 10

REJECT LIST

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000093	ICES1	3										
000094	ICES1	3										
000096	ICES1	3										
000097	ICES1	3										
000099	ICES1	3										
000102	ICES1	3										
000103	ICES1	3										
000107	ICES1	4										
000109	ICES1	4										
000110	ICES1	4										
000112	ICES1	4										
000119	ICES1	4										
000121	ICES1	4										
000122	ICES1	4										
000126	ICES1	4										
000128	ICES1	4										
000136	ICES1	4										
000140	ICES1	4										
000141	ICES1	4										
000143	ICES1	4										
000144	ICES1	4										
000153	ICES1	4										
000160	ICES1	5										
000161	ICES1	5										
000167	ICES1	5										
000168	ICES1	5										

PERCENT DELTA REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000002	ICES1	2	HFE3	6								
000006	ICES1	2										
000010	ICES1	2										
000015	HFE3	6										
000022	ICES1	2										
000024	ICES1	2										
000028	ICES1	2	HFE3	6								
000029	ICES1	2	HFE3	6								
000032	ICES1	2										
000037	ICES1	2										
000039	HFE3	6										
000044	ICES1	2										
000045	ICES1	2	HFE3	6								
000047	ICES1	2										
000057	ICES1	3										
000058	ICES1	3	HFE3	7								
000059	ICES1	3										
000062	ICES1	3	HFE3	7								
000083	ICES1	3										
000084	ICES1	3	HFE3	7								
000087	HFE3	7										
000088	HFE3	7										
000091	ICES1	3										

DEVICE = SJ6708H

CONTROL # = 056238
LOT = 001
READOUT = 10

REJECT LIST

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000093	ICES1	3										
000094	ICES1	3										
000096	ICES1	3										
000097	ICES1	3										
000098	HFE3	7										
000099	ICES1	3										
000102	ICES1	3										
000103	ICES1	3										
000107	ICES1	4										
000109	ICES1	4										
000110	ICES1	4										
000112	ICES1	4	HFE3	8								
000119	ICES1	4										
000121	ICES1	4										
000122	ICES1	4										
000126	ICES1	4										
000128	ICES1	4										
000131	HFE3	8										
000136	ICES1	4	HFE3	8								
000140	ICES1	4										
000141	ICES1	4										
000143	ICES1	4										
000144	ICES1	4										
000155	ICES1	4										
000160	ICES1	5										
000161	ICES1	5										
000167	ICES1	5										
000168	ICES1	5	HFE3	9								

QACS0505 MEASUREMENTS COVER SHEET DATE 04/13/78 PAGE 1

DEVICE = SJ6708M

CONTROL # = DS5238
LOT = 001
READOUT = 15
PRIOR = 05
TST CMPL = 04/13/78

SAMPLE SIZE = 55
REJECTS = 8
% REJECTED = 14.55 %

DESCRIPTION = NPN PL-99.784
BURN-IN TJ 187.5 DEG C
168 HOURS TABLE 3

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES1	001	001				
			MIN =	0	ELECT READING	MEAN = 1.6888743 UA
			MAX = 50. UA	1		3 STD DEV = 7.449702 UA
ICES1 (D)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 21	
			MIN = -20. UA	0	DELTA	MEAN = 915.1987 NA
			MAX = 20. UA	1	DEPENDENT CODE 1	3 STD DEV = 7.238853 UA
ICES1 (%)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 22	
			MIN =	0	% DELTA	MEAN = 12.672760 %
			MAX = 100. %	15	DEPENDENT CODE 3	3 STD DEV = 96.33563 %
VCES 2	002	002				
			MIN =	0	ELECT READING	MEAN = 134.39266 MV
			MAX = 1. V	1		3 STD DEV = 55.26873 MV
ICES 2	003	005				
			MIN =	0	ELECT READING	MEAN = 239.73511 U
			MAX = 2.5 M	6		3 STD DEV = 487.0726 U
HFE 4	004	004				
			MIN = 7.	0	ELECT READING	MEAN = 11.689181
			MAX =	1		3 STD DEV = 5.502648
HFE3	005	003				
			MIN = 20.	0	ELECT READING	MEAN = 27.305480
			MAX = 60.	1		3 STD DEV = 9.428051
HFE3 (%)	005	003	PARM # 1 = 005 PARM # 2 = 005		CALC # = 22	
			MIN = -20. %	1	% DELTA	MEAN = -12.094210 %
			MAX = 20. %	1		3 STD DEV = 11.677136 %

QACS0505 MEASUREMENTS COVER SHEET DATE 04/13/76 PAGE 2

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 15

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
TF	006	006				
			MIN =	0	ELECT READING	MEAN = 356.5720 NS
			MAX = 1. US	1		3 STD DEV = 172.57838 NS

DEVICE = SJ6708H CONTROL # = 0S5238
LOT = 001
READOUT = 15

UNIT	ICES1	ICES1(D)	ICES1(%)	VCES 2	ICES 2	HFE 4	HFE3
000070	565.0 NA	125.5 NA	28.55500 %	132.5 MV	292.5 U	12.11	29.9
000071	474.0 NA	37.5 NA	8.60000 %	120.5 MV	281.0 U	12.29	31.6
000072	836.5 NA	471.5 NA	129.1700 %*	147.0 MV	10.240 U	14.79	27.2
000073	421.0 NA	6.5 NA	1.568100 %	139.5 MV	242.0 U	11.42	28.5
000075	350.5 NA	-26.5 NA	-7.02900 %	136.0 MV	245.5 U	7.77	22.9
000076	447.5 NA	43.0 NA	10.63000 %	117.5 MV	289.0 U	12.09	32.1
000077	450.5 NA	61.5 NA	15.80900 %	162.0 MV	192.00 N	10.82	24.0
000078	514.5 NA	112.5 NA	27.98500 %	119.5 MV	233.0 U	14.01	29.1
000079	756.0 NA	65.5 NA	9.49200 %	150.0 MV	320.0 U	11.22	26.2
000080	1.1650 UA	785.5 NA	206.9800 %*	116.5 MV	267.0 U	11.09	28.1
000082	2.180 UA	505.5 NA	30.19700 %	136.5 MV	283.0 U	11.00	29.0
000085	858.0 NA	445.5 NA	108.0000 %*	118.0 MV	318.5 U	11.45	29.5
000086	548.5 NA	119.5 NA	27.85500 %	127.0 MV	306.5 U	10.97	28.5
000089R	8.760 UA	8.1575 UA	1.353900 K%*	144.0 MV	868.0 U	8.00	22.2
000090	384.0 NA	44.0 NA	12.94100 %	146.5 MV	19.05 U	9.07	20.8
000092	528.5 NA	82.0 NA	18.36500 %	117.0 MV	278.5 U	11.53	30.3
000095	1.4680 UA	-552.0 NA	-27.32600 %	168.0 MV	342.5 U	9.44 *	22.5 *
000100R	7.595 UA	7.2245 UA	1.949900 K%*	*	17.45 U		
000104	1.4720 UA	421.5 NA	40.1400 %	121.0 MV	352.5 U	13.35	32.2
000105	3.190 UA	-1.335 UA	-29.50200 %	167.5 MV	9.55 U	10.66	28.5
000106	2.395 UA	1.9625 UA	453.700 %*	184.5 MV	12.75 U	11.06	21.1
000108	469.0 NA	-125.5 NA	-21.11000 %	128.5 MV	273.0 U	11.32	27.7
000113	701.5 NA	-119.5 NA	-14.55500 %	133.5 MV	255.5 U	11.17	29.2
000114	485.0 NA	-45.5 NA	-8.56400 %	116.5 MV	198.40 N	11.29	30.1
000115	357.0 NA	-45.5 NA	-11.30400 %	122.5 MV	242.0 U	9.39	23.9
000116	347.5 NA	-69.5 NA	-16.66600 %	133.0 MV	255.5 U	7.06	21.6
000117	2.265 UA	1.8865 UA	498.400 %*	126.0 MV	203.20 N	13.35	29.2
000118	645.5 NA	-2.5 NA	-385.800 M%	133.5 MV	256.0 U	13.54	24.2
000123	2.060 UA	937.5 NA	83.5500 %	181.5 MV	371.0 U	10.15	27.0
000124	2.780 UA	-1.250 UA	-31.01700 %	162.0 MV	23.40 U	10.75	29.2
000125	1.2000 UA	773.5 NA	181.3500 %*	125.0 MV	205.5 U	13.77	26.8
000127	557.0 NA	140.0 NA	33.5700 %	119.0 MV	221.0 U	13.83	28.9
000129	725.5 NA	-203.5 NA	-21.90500 %	145.0 MV	236.0 U	14.38	28.5
000130	2.095 UA	1.7375 UA	486.000 %*	138.5 MV	242.0 U	15.13	28.5
000132	2.560 UA	2.0800 UA	433.300 %*	132.0 MV	261.5 U	12.89	25.7
000133	6.070 UA	2.370 UA	64.0500 %	158.5 MV	329.0 U	14.02	28.8
000134R	472.0 UA*	471.2750 UA*	65.0000 K%*	127.0 MV	3.500 M *	10.48	25.1
000135	628.5 NA	138.5 NA	28.26500 %	124.0 MV	2.0475 U	12.24	27.1
000137	14.555 UA	13.8410 UA	1.938500 K%*	163.5 MV	448.0 U	10.28	20.1
000138	869.0 NA	415.5 NA	91.7200 %	155.5 MV	278.5 U	12.02	25.0
000139	338.5 NA	-26.5 NA	-7.26000 %	131.5 MV	306.0 U	14.18	29.1
000142	489.0 NA	95.0 NA	24.11100 %	123.0 MV	246.5 U	14.81	31.9
000146	493.0 NA	-160.0 NA	-24.50200 %	124.0 MV	244.5 U	14.40	30.0
000147	367.5 NA	-61.5 NA	-14.33500 %	119.5 MV	242.0 U	12.85	27.5
000148	473.0 NA	16.0 NA	3.50100 %	124.0 MV	274.0 U	12.52	22.7
000154R	423.5 NA	-45.0 NA	-9.61500 %	112.5 MV	99.9 M *	13.06	31.4
000155R	535.5 NA	34.0 NA	6.78600 %	130.5 MV	99.9 M *	9.49	23.1
000156R	970.5 NA	470.0 NA	94.0000 %	122.5 MV	99.9 M *	11.90	29.5
000157	1.4145 UA	854.0 NA	152.3600 %*	125.5 MV	178. U	10.89	27.7
000158	1.1040 UA	457.5 NA	70.6200 %	127.5 MV	218. U	10.33	26.8

QACS0505 MEASUREMENTS READOUT DETAIL DATE 04/13/78 PAGE 4

DEVICE = SJ6708H

CONTROL # = 0S5238
LOT = 001
READOUT = 15

UNIT	ICES1	ICES1(D)	ICES1(%)	VCES 2	ICES 2	HFE 4	HFE3
000159	3.450 UA	3.0115 UA	687.500 %*	114.0 MV	286. U	12.44	30.3
000163R	496.5 NA	9.5 NA	1.942700 %	119.5 MV	99.9 M *	10.42	28.2
000164	439.5 NA	-31.0 NA	-6.59500 %	114.5 MV	153. U	12.50	32.0
000165R	822.5 NA	160.0 NA	24.15000 %	130.5 MV	99.9 M *	10.63	27.9
000166	4.650 UA	3.4210 UA	278.3500 %*	122.5 MV	710. U	9.60	25.3

QACS0505 MEASUREMENTS READOUT DETAIL DATE 04/13/78 PAGE 5

DEVICE = SJ6708H CONTROL # = 055238
LOT = 001
READOUT = 15

UNIT	HFE3(%)		TF	
000070	-6.26900	%	350.	NS
000071	-11.23500	%	460.	NS
000072	-9.03000	%	400.	NS
000073	-10.09400	%	450.	NS
000075	-10.54600	%	325.	NS
000076	-6.95600	%	425.	NS
000077	-10.78000	%	330.	NS
000078	-15.40600	%	445.	NS
000079	-12.37400	%	340.	NS
000080	-17.59500	%	400.	NS
000082	-7.34800	%	350.	NS
000085	-18.28200	%	400.	NS
000086	-13.63600	%	400.	NS
000089R	-20.14300	%*	325.	NS
000090	-12.60500	%	350.	NS
000092	-16.06600	%	425.	NS
000095	-16.66600	%	360.	NS
000100R		*	999.	S*
000104	-8.00000	%	350.	NS
000105	-5.88200	%	350.	NS
000106	-11.71500	%	325.	NS
000108	-7.97300	%	300.	NS
000113	-8.46300	%	350.	NS
000114	-13.00500	%	440.	NS
000115	-7.36400	%	350.	NS
000116	-13.94400	%	300.	NS
000117	-14.61900	%	450.	NS
000118	-18.24300	%	340.	NS
000123	-4.59300	%	330.	NS
000124	-7.59400	%	325.	NS
000125	-15.18900	%	400.	NS
000127	-19.72200	%	350.	NS
000129	-10.09400	%	350.	NS
000130	-8.94500	%	450.	NS
000132	-15.46000	%	320.	NS
000133	-6.79600	%	375.	NS
000134R	-14.33400	%	360.	NS
000135	-10.85500	%	335.	NS
000137	-16.25000	%	340.	NS
000138	-16.66600	%	325.	NS
000139	-10.73600	%	470.	NS
000142	-9.37500	%	420.	NS
000146	-12.02300	%	410.	NS
000147	-17.66400	%	450.	NS
000148	-17.15300	%	320.	NS
000154R	-8.98500	%	320.	NS
000155R	-19.79100	%	245.	NS
000156R	-10.33400	%	300.	NS
000157	-10.64500	%	280.	NS
000158	-11.25800	%	250.	NS

QACS0505 MEASUREMENTS READOUT DETAIL DATE 04/13/78 PAGE 6

DEVICE = SJ6708H

CONTROL # = 0S5238
LOT = 001
READOUT = 15

UNIT	HFE3(%)	TF
000159	-11.14300 %	320. NS
000163R	-14.80300 %	280. NS
000164	-8.57100 %	320. NS
000165R	-11.14600 %	280. NS
000166	-16.77600 %	240. NS

QACS0505 MEASUREMENTS READOUT DETAIL DATE 04/13/78 PAGE 7

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 15

REJECT LIST

000089 000100 000134 000154 000155 000156 000163 000165

QACS050S MEASUREMENTS READOUT DETAIL DATE 04/13/78 PAGE 8

DEVICE = SJ6708H

CONTROL # = US5238
LOT = 001
READOUT = 15

REJECT LIST

ELECTRICAL REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000100	VCES 2	3	HFE 4	3	HFE3	3	TF	5				
000134	ICES1	3	ICES 2	3								
000154	ICES 2	3										
000155	ICES 2	3										
000156	ICES 2	3										
000163	ICES 2	4										
000165	ICES 2	4										

DELTA REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000134	ICES1	3										

PERCENT DELTA REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000089	HFE3	5										
000100	HFE3	5										
000134	ICES1	3										

E-9

QACS0505 MEASUREMENTS COVER SHEET DATE 04/06/78 PAGE 1

DEVICE = SJ6708M

CONTROL # = DS5238
LOT = 001
READOUT = 20
PRIOR = NONE
TST CMPL = 04/05/78

SAMPLE SIZE = 76
REJECTS = 5
% REJECTED = 6.58 %

DESCRIPTION = NPN PL-99.784
GROUP B INITIAL TABLE 4

PARAMETER	CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES		001	001				
				MIN =	0	ELECT READING	MEAN = 1.5803606 UA
				MAX = 50. UA	0		3 STD DEV = 0.332187 UA
BVCES		002	002				
				MIN = 800. V	5	ELECT READING	MEAN = 922.9436 V
				MAX =	0		3 STD DEV = 157.80326 V
VCES 2		003	003				
				MIN =	0	ELECT READING	MEAN = 137.26270 MV
				MAX = 1. V	0		3 STD DEV = 57.78476 MV
HFE 3		004	004				
				MIN = 20.	0	ELECT READING	MEAN = 28.290710
				MAX = 60.	0		3 STD DEV = 9.746618

QACS0505 MEASUREMENTS READOUT DETAIL DATE 04/06/78 PAGE 2

DEVICE = SJ6708H CONTROL # = OS5238
LOT = 001
READOUT = 20

UNIT	ICES	BVCES	VCES 2	HFE 3
000001	2.530 UA	894.5 V	129.5 MV	27.9
000003	520.0 NA	805.5 V	130.5 MV	24.1
000004	18.400 UA	894.0 V	128.0 MV	27.7
000005R	7.600 UA	791.5 V*	182.5 MV	28.1
000007	609.0 NA	959.5 V	119.5 MV	33.2
000008	3.320 UA	871.5 V	196.0 MV	23.3
000009	2.585 UA	936.5 V	137.5 MV	30.7
000011	713.0 NA	939.0 V	158.0 MV	25.3
000012	1.3915 UA	943.5 V	162.0 MV	27.7
000013	2.035 UA	905.5 V	151.0 MV	24.9
000014	450.0 NA	815.5 V	115.0 MV	31.8
000016	536.5 NA	1.0045 KV	129.0 MV	30.7
000018	690.5 NA	952.5 V	119.0 MV	32.4
000019	596.5 NA	951.5 V	136.0 MV	31.4
000020	1.3105 UA	935.5 V	123.5 MV	31.7
000021	553.0 NA	871.5 V	132.0 MV	24.8
000023	1.0900 UA	919.5 V	136.5 MV	30.4
000025	768.0 NA	951.5 V	142.0 MV	30.3
000026	1.0060 UA	911.5 V	154.5 MV	26.1
000027R	512.5 NA	799.5 V*	116.5 MV	32.5
000030	800.0 NA	991.5 V	129.0 MV	31.2
000031R	15.100 UA	715.5 V*	127.0 MV	31.5
000033	4.160 UA	847.5 V	167.5 MV	26.5
000034	1.5690 UA	951.0 V	142.0 MV	30.1
000035	509.0 NA	831.5 V	137.5 MV	24.5
000036R	3.370 UA	799.5 V*	160.5 MV	26.5
000038	458.5 NA	967.5 V	142.0 MV	23.9
000040	726.5 NA	851.5 V	119.0 MV	33.1
000041R	475.0 NA	149.0 V*	124.5 MV	24.5
000042	514.0 NA	927.5 V	141.5 MV	23.9
000046	513.5 NA	815.5 V	136.5 MV	25.2
000048	578.5 NA	919.5 V	129.0 MV	30.4
000049	1.2740 UA	938.5 V	148.0 MV	30.4
000050	634.0 NA	924.0 V	137.5 MV	29.7
000051	481.0 NA	944.5 V	128.0 MV	30.5
000052	397.5 NA	931.5 V	118.0 MV	32.9
000053	1.3780 UA	911.5 V	125.0 MV	31.4
000054	461.0 NA	858.5 V	125.0 MV	23.5
000055	564.5 NA	831.5 V	137.5 MV	25.6
000056	1.3945 UA	887.5 V	116.0 MV	34.2
000060	1.0290 UA	945.5 V	127.5 MV	30.7
000061	1.4810 UA	875.5 V	136.0 MV	31.3
000063	3.015 UA	831.5 V	172.0 MV	25.3
000064	1.4385 UA	978.5 V	124.0 MV	32.1
000065	4.770 UA	871.5 V	177.5 MV	28.4
000066	400.5 NA	1.0245 KV	140.5 MV	29.8
000067	1.5080 UA	808.5 V	117.0 MV	33.7
000068	425.0 NA	923.5 V	115.5 MV	33.4
000069	602.0 NA	911.5 V	138.0 MV	24.1
000071	680.0 NA	907.5 V	117.5 MV	32.2

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 20

UNIT	ICES	BVCES	VCES 2	HFE 3
000072	516.5 NA	1.0075 KV	143.5 MV	27.4
000073	403.0 NA	1.0065 KV	135.5 MV	28.1
000075	346.5 NA	941.5 V	132.5 MV	22.9
000078	606.5 NA	970.5 V	117.0 MV	28.9
000079	807.5 NA	903.5 V	137.5 MV	26.4
000080	626.0 NA	965. V	114.0 MV	28.6
000086	608.5 NA	957.5 V	124.0 MV	28.9
000090	417.5 NA	983.5 V	145.5 MV	21.1
000092	745.0 NA	933.0 V	114.5 MV	30.7
000095	1.7240 UA	976.0 V	185.0 MV	22.8
000105	3.560 UA	910.5 V	164.0 MV	29.4
000106	936.0 NA	1.0250 KV	181.5 MV	21.2
000106	609.0 NA	910.5 V	125.5 MV	28.3
000113	858.5 NA	889.5 V	130.0 MV	29.5
000114	574.5 NA	940.5 V	113.5 MV	30.1
000115	347.0 NA	987.5 V	123.0 MV	23.7
000117	2.855 UA	1.0145 KV	123.0 MV	29.9
000118	677.0 NA	956.0 V	132.5 MV	24.0
000123	765.0 NA	1.0195 KV	161.0 MV	27.4
000124	1.560 UA	926.0 V	158.5 MV	29.0
000125	263.5 NA	942.5 V	123.0 MV	27.9
000126	672.0 NA	910.0 V	114.0 MV	30.0
000127	712.5 NA	905.0 V	144.0 MV	27.5
000128	427.5 NA	915.5 V	135.5 MV	27.6
000129	712.5 NA	905.0 V	144.0 MV	27.5
000130	427.5 NA	915.5 V	135.5 MV	27.6

DEVICE = SJ6708M

CONTROL # = DS5238
LOT = 001
READOUT = 20

REJECT LIST

000005 000027 000031 000036 000041

QACS0505 MEASUREMENTS READOUT DETAIL DATE 04/06/78 PAGE 5

DEVICE = SJ6708H

CONTROL # = 0S5238
LOT = 001
READOUT = 20

REJECT LIST

ELECTRICAL REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000005	BVCES	2										
000027	BVCES	2										
000031	BVCES	2										
000036	BVCES	2										
000041	BVCES	2										

QACS0505 MEASUREMENTS COVER SHEET DATE 02/09/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = 0S5236
LOT = 001
READOUT = 30
PRIOR = NONE
TST CMPL = 02/09/78

SAMPLE SIZE = 20
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
B-3 SHOCK VIB VAR FREQ
CONSTANT ACCELERATION ACOUSTIC
TABLE 4 LIMIT 1

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001				
			MIN =	0	ELECT READING	MEAN = 1.1661722 UA
			MAX = 50. UA	0		3 STD DEV = 2.9947786 UA
BVCES	002	002				
			MIN = 800. V	0	ELECT READING	MEAN = 946.7500 V
			MAX =	0		3 STD DEV = 123.09599 V
VCES 2	003	003				
			MIN =	0	ELECT READING	MEAN = 134.79965 MV
			MAX = 1. V	0		3 STD DEV = 63.57187 MV
HFE 3	004	004				
			MIN = 20.	0	ELECT READING	MEAN = 27.829940
			MAX = 60.	0		3 STD DEV = 7.376669

DEVICE = SJ6708H

CONTROL # = 0S5238
LOT = 001
READOUT = 30

UNIT	ICES 1	BVCES	VCES 2	HFE 3
000071	626.0 NA	904.0 V	119.0 MV	31.7
000072	522.0 NA	1.0055 KV	143.5 MV	27.3
000073	445.5 NA	1.0055 KV	135.5 MV	27.9
000075	473.0 NA	896.0 V	132.0 MV	23.4
000078	865.0 NA	973.0 V	117.0 MV	29.7
000079	884.5 NA	902.0 V	138.0 MV	26.5
000080	521.0 NA	967.5 V	113.5 MV	28.1
000092	829.5 NA	931.5 V	114.0 MV	30.8
000095	3.030 UA	975.5 V	185.0 MV	23.0
000096	679.5 NA	955.5 V	126.0 MV	29.2
000105	3.670 UA	909.5 V	164.0 MV	29.4
000108	634.0 NA	910.5 V	125.0 MV	28.3
000113	918.5 NA	887.5 V	130.0 MV	29.5
000114	619.0 NA	937.5 V	114.0 MV	30.0
000115	445.0 NA	927.5 V	120.0 MV	24.1
000117	3.070 UA	1.0115 KV	123.0 MV	29.9
000118	715.0 NA	947.5 V	131.5 MV	28.9
000123	875.0 NA	1.0215 KV	182.5 MV	27.5
000124	2.695 UA	907.5 V	160.0 MV	29.3
000125	808.0 NA	958.5 V	122.5 MV	27.1

QACS0505 MEASUREMENTS COVER SHEET DATE 12/14/77 PAGE 1

DEVICE = SJ6708H

CONTROL # = OS5238
LOT = 001
READOUT = 35
PRIOR = NONE
TST CMPL = 12/14/77

SAMPLE SIZE = 20
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
B-4 SAFE OPERATING AREA
TABLE 4 LIMIT 1

PARAMETER	CONDITIONS	PARM #	TEST #	LIMITS		# FAILURES	REJECT CRITERIA		
ICES 1		001	001						
				MIN =		0	ELECT READING	MEAN =	897.0237 NA
				MAX =	50. UA	0		3 STD DEV =	2.2618778 UA
BVCES		002	002						
				MIN =	800. V	0	ELECT READING	MEAN =	959.5498 V
				MAX =		0		3 STD DEV =	131.34851 V
VCES 2		003	003						
				MIN =		0	ELECT READING	MEAN =	137.04967 MV
				MAX =	1. V	0		3 STD DEV =	69.39715 MV
HFE 3		004	004						
				MIN =	20.	0	ELECT READING	MEAN =	26.939941
				MAX =	60.	0		3 STD DEV =	9.408920

QACS0505 MEASUREMENTS READOUT DETAIL DATE 12/14/77 PAGE 2

DEVICE = SJ6708H

CONTROL # = OS5238
LOT = 001
READOUT = 35

UNIT	ICES 1		BVCES		VCES 2		HFE 3
000071	634.0	NA	908.5	V	117.5	MV	32.1
000072	528.0	NA	1.0118	KV	143.5	MV	27.5
000073	453.5	NA	1.0035	KV	138.0	MV	28.3
000075	439.5	NA	945.0	V	133.0	MV	23.6
000078	563.5	NA	970.5	V	116.0	MV	28.8
000079	877.0	NA	903.5	V	137.5	MV	26.6
000080	539.5	NA	951.5	V	114.0	MV	28.1
000086	621.0	NA	955.5	V	124.0	MV	29.0
000090	341.5	NA	979.5	V	144.5	MV	20.7
000092	628.5	NA	930.0	V	114.0	MV	30.1
000095	1.4100	UA	967.5	V	185.5	MV	22.5
000105	3.360	UA	908.5	V	165.0	MV	29.0
000106	1.4400	UA	1.0220	KV	184.0	MV	21.1
000108	478.5	NA	896.0	V	124.0	MV	27.7
000113	677.5	NA	886.5	V	130.5	MV	29.1
000114	602.0	NA	941.5	V	113.0	MV	30.3
000115	345.0	NA	1.0235	KV	121.0	MV	23.7
000117	2.560	UA	1.0125	KV	123.5	MV	29.4
000118	717.5	NA	958.5	V	131.5	MV	24.2
000123	704.0	NA	1.0155	KV	181.0	MV	27.0

QACS0505 MEASUREMENTS COVER SHEET DATE 04/06/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 40
PRIOR = 20
TST CMPL = 04/05/78

SAMPLE SIZE = 23
REJECTS = 1
% REJECTED = 4.35 %

DESCRIPTION = NPN PL-99.784
B-5 HIGH TEMP LIFE TA_200 DEG C
340 HOURS TABLE 4

PARAMETER	CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1		001	001				
				MIN =	0	ELECT READING	MEAN = 894.7386 NA
				MAX = 50. UA	0		3 STD DEV = 2.6684137 UA
ICES 1	(D)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 21	
				MIN = -20. UA	0	DELTA	MEAN = -17.586681 NA
				MAX = 20. UA	0	DEPENDENT CODE 1	3 STD DEV = 1.6146186 UA
ICES 1	(%)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 22	
				MIN =	0	% DELTA	MEAN = -2.6594781 %
				MAX = 100. %	0	DEPENDENT CODE 3	3 STD DEV = 98.50291 %
BVCES		002	002				
				MIN = 800. V	1	ELECT READING	MEAN = 843.8636 V
				MAX =	0		3 STD DEV = 94.04853 V
VCES 2		003	003				
				MIN =	0	ELECT READING	MEAN = 132.15184 MV
				MAX = 1. V	0		3 STD DEV = 59.20349 MV
HFE 3		004	004				
				MIN = 20.	0	ELECT READING	MEAN = 28.060791
				MAX = 60.	0		3 STD DEV = 7.504437
HFE 3	(%)	004	004	PARM # 1 = 004 PARM # 2 = 004		CALC # = 22	
				MIN = -20. %	0	% DELTA	MEAN = 1.0756855 %
				MAX = 20. %	0		3 STD DEV = 10.009348 %

QACS0505 MEASUREMENTS READOUT DETAIL DATE 04/06/78 PAGE 2

DEVICE = SJ6708H CONTROL # = DS5238
LOT = 001
READOUT = 40

UNIT	ICES 1	ICES 1(D)	ICES 1(%)	BVCES	VCES 2	HFE 3	HFE 3(%)
000071	410.0 NA	-270.0 NA	-39.7000 %	893.5 V	114.0 MV	31.6	-1.863300 %
000072	365.5 NA	-151.0 NA	-29.23500 %	847.5 V	140.5 MV	26.6	-2.919700 %
000073	400.5 NA	-2.5 NA	-620.300 MX	863.5 V	134.5 MV	28.0	-355.800 MX
000075	402.5 NA	56.0 NA	16.16100 %	823.5 V	128.5 MV	23.6	3.056700 %
000078	587.0 NA	-19.5 NA	-3.21510 %	845.5 V	114.0 MV	30.6	5.88200 %
000079R	740.5 NA	-67.0 NA	-8.30200 %	795.5 V*	135.0 MV	26.2	-757.500 MX
000080	591.5 NA	-34.5 NA	-5.51100 %	871.5 V	111.5 MV	30.3	5.94400 %
000086	442.5 NA	-164.0 NA	-27.04000 %	854.5 V	122.0 MV	28.2	-2.422100 %
000092	450.0 NA	-295.0 NA	-39.5900 %	877.5 V	112.0 MV	31.5	2.605800 %
000095	2.955 UA	1.2210 UA	71.4000 %	871.5 V	182.0 MV	23.4	2.631500 %
000105	3.470 UA	-90. NA	-2.528000 %	813.5 V	162.0 MV	29.4	0. MX
000108	555.0 NA	-54.0 NA	-8.86600 %	809.5 V	124.0 MV	27.4	-3.180200 %
000113	764.5 NA	-94.0 NA	-10.94900 %	806.5 V	128.5 MV	26.4	-3.72800 %
000114	580.5 NA	6.0 NA	1.044300 %	843.5 V	112.5 MV	31.3	3.98600 %
000115	328.0 NA	-19.0 NA	-5.47500 %	831.5 V	127.0 MV	23.1	-2.531600 %
000117	1.1585 UA	-1.6965 UA	-59.4200 %	935.5 V	119.0 MV	29.9	0. MX
000118	578.5 NA	-98.5 NA	-14.54900 %	807.5 V	131.5 MV	24.5	2.083300 %
000123	904.0 NA	139.0 NA	18.16900 %	823.5 V	177.5 MV	28.0	2.189700 %
000124	2.960 UA	1.400 UA	89.7400 %	847.5 V	156.5 MV	29.4	1.379300 %
000125	370.5 NA	107.0 NA	40.6000 %	831.5 V	121.0 MV	27.5	-1.433600 %
000127	549.5 NA	-163.0 NA	-22.87700 %	811.5 V	112.5 MV	30.3	10.18100 %
000129	618.0 NA	-94.5 NA	-13.26300 %	823.5 V	140.0 MV	28.1	2.181800 %
000130	397.0 NA	-30.5 NA	-7.14200 %	831.5 V	133.5 MV	28.1	1.811500 %

QAC50505 MEASUREMENTS READOUT DETAIL DATE 04/06/78 PAGE 3

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 40

REJECT LIST

000079

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 40

REJECT LIST

ELECTRICAL REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000079	BVCES	2										

QACS0505 MEASUREMENTS COVER SHEET DATE 04/27/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = CS5238
LOT = 001
READOUT = 45
PROOF = 20
TST CMPL = 04/26/78

SAMPLE SIZE = 22
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.764
B-S HIGH TEMP LIFE TA_200 DEG C
670 HOURS TABLE 4

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001	MIN =	0	ELECT READING	MEAN = 1.0988596 UA
			MAX = 50. UA	0		3 STD DEV = 4.381328 UA
ICES 1 (D)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 21	
			MIN = -20. UA	0	DELTA	MEAN = 101.77252 NA
			MAX = 20. UA	0	DEPENDENT CODE 1	3 STD DEV = 3.1355820 UA
ICES 1 (%)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 22	
			MIN =	0	% DELTA	MEAN = -7.675933 %
			MAX = 100. %	2	DEPENDENT CODE 3	3 STD DEV = 91.78782 %
BVCES	002	002	MIN = 800. V	0	ELECT READING	MEAN = 833.8635 V
			MAX =	0		3 STD DEV = 87.65245 V
VCES 2	003	003	MIN =	0	ELECT READING	MEAN = 138.47686 MV
			MAX = 1. V	0		3 STD DEV = 59.18470 MV
HFE 3	004	004	MIN = 20.	0	ELECT READING	MEAN = 28.186279
			MAX = 60.	0		3 STD DEV = 7.474024
HFE 3 (%)	004	004	PARM # 1 = 004 PARM # 2 = 004		CALC # = 22	
			MIN = -20. %	0	% DELTA	MEAN = 1.3187870 %
			MAX = 20. %	0		3 STD DEV = 10.026941 %

QACS0505 MEASUREMENTS READOUT DETAIL DATE 04/27/78 PAGE 2

DEVICE = SJ67C6H CONTROL # = CS6238
LOT = 001
READOUT = 45

UNIT	ICES 1		ICES 1(D)		ICES 1(%)		BVCES		VCES 2		HFE 3	HFE 3(%)	
000071	450.	NA	-230.0	NA	-33.8200	%	863.5	V	115.5	MV	31.7	-1.852700	%
000072	400.	NA	-116.5	NA	-22.55500	%	831.5	V	138.5	MV	26.8	-2.189700	%
000073	470.	NA	67.0	NA	16.62500	%	847.5	V	136.5	MV	28.0	-355.800	M%
000075	340.	NA	-6.5	NA	-1.875900	%	815.5	V	128.5	MV	23.4	2.183400	%
000078	435.	NA	-171.5	NA	-28.27600	%	835.	V	114.5	MV	30.3	4.84400	%
000080	430.	NA	-196.0	NA	-31.30900	%	831.5	V	112.0	MV	30.0	4.89500	%
000086	475.	NA	-131.5	NA	-21.66100	%	823.5	V	123.0	MV	27.3	-5.53600	%
000092	470.	NA	-275.0	NA	-36.9100	%	831.5	V	112.0	MV	31.7	3.257300	%
000095	5.5	UA	3.7760	UA	219.0200	%*	863.5	V	182.0	MV	23.6	3.80800	%
000105	[illegible]	UA	1.440	UA	40.4400	%	840.	V	161.0	MV	29.9	1.700600	%
000108	600.	NA	-9.0	NA	-1.477800	%	830.	V	125.5	MV	27.1	-4.24000	%
000113	880.	NA	21.5	NA	2.505800	%	820.	V	128.5	MV	28.9	-2.033800	%
000114	500.	NA	-74.5	NA	-12.96700	%	840.	V	114.5	MV	31.3	3.98600	%
000115	400.	NA	53.0	NA	15.27300	%	823.5	V	129.0	MV	23.4	-1.265800	%
000117	770.	NA	-2.085	UA	-73.1500	%	891.5	V	121.0	MV	30.0	334.400	M%
000118	680.	NA	3.0	NA	443.100	M%	820.	V	130.0	MV	24.9	3.76000	%
000123	870.	NA	105.0	NA	13.72500	%	815.5	V	177.0	MV	28.3	3.28400	%
000124	3.5	UA	1.540	UA	124.3500	%*	823.5	V	157.0	MV	29.6	2.068500	%
000125	445.	NA	181.5	NA	68.8800	%	850.	V	121.5	MV	27.7	-716.800	M%
000127	420.	NA	-292.5	NA	-41.0800	%	825.	V	113.0	MV	29.9	8.72700	%
000129	780.	NA	67.5	NA	9.48000	%	807.5	V	140.5	MV	28.8	4.72700	%
000130	360.	NA	-67.5	NA	-15.76900	%	815.5	V	133.5	MV	27.5	-362.300	M%

QACS0505 MEASUREMENTS COVER SHEET DATE 05/25/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = DS5238
LOT = 001
READOUT = 50
PRIOR = 20
TST CMPL = 05/24/78

SAMPLE SIZE = 22
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
1000 HOURS TABLE 4

PARAMETER	CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1		001	001			ELECT READING	MEAN = 1.1995398 UA
				MIN =	0		3 STD DEV = 6.331744 UA
				MAX = 50. UA	0		
ICES 1	(D)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 21	
				MIN = -20. UA	0	DELTA	MEAN = 282.45432 NA
				MAX = 20. UA	0	DEPENDENT CODE 1	3 STD DEV = 5.547414 UA
ICES 1	(%)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 22	
				MIN =	0	% DELTA	MEAN = -14.651146 %
				MAX = 100. %	2	DEPENDENT CODE 3	3 STD DEV = 79.39457 %
BVCES		002	002				
				MIN = 800. V	0	ELECT READING	MEAN = 822.9770 V
				MAX =	0		3 STD DEV = 53.19712 V
VCES 2		003	003				
				MIN =	0	ELECT READING	MEAN = 132.22688 MV
				MAX = 1. V	0		3 STD DEV = 61.61437 MV
HFE 3		004	004				
				MIN = 20.	0	ELECT READING	MEAN = 27.704483
				MAX = 60.	0		3 STD DEV = 7.549638
HFE 3	(%)	004	004	PARM # 1 = 004 PARM # 2 = 004		CALC # = 22	
				MIN = -20. %	0	% DELTA	MEAN = -425.1390 M%
				MAX = 20. %	0		3 STD DEV = 10.959042 %

QACSQ505 MEASUREMENTS READOUT DETAIL DATE 05/25/78 PAGE 2

DEVICE = SJ6708H CONTROL # = 055238
LOT = 001
READOUT = 50

UNIT	ICES 1	ICES 1(D)	ICES 1(%)	BVCES	VCES 2	HFE 3	HFE 3(%)
000071	500. NA	-180.0 NA	-26.47000 %	839.5 V	113.5 MV	31.2	-3.105500 %
000072	430. NA	-86.5 NA	-16.74700 %	823.5 V	140.0 MV	26.0	-5.10900 %
000073	430. NA	27.0 NA	6.69900 %	831.5 V	135.5 MV	27.9	-711.700 M%
000075	320. NA	-26.5 NA	-7.66800 %	805. V	129.5 MV	22.5	-1.746700 %
000078	440. NA	-166.5 NA	-27.45200 %	805. V	113.5 MV	29.9	3.46000 %
000080	470. NA	-156.0 NA	-24.92000 %	810.5 V	112.5 MV	29.2	2.097900 %
000086	410. NA	-196.5 NA	-32.39900 %	819.5 V	120.5 MV	27.4	-5.19000 %
000092	460. NA	-285.0 NA	-38.2500 %	811.5 V	111.0 MV	31.3	1.954300 %
000095	10. UA	8.2760 UA	480.000 %*	847.5 V	183.5 MV	23.4	2.631500 %
000105	3.8 UA	240. NA	6.74100 %	812.5 V	160.5 MV	29.9	1.700600 %
000108	530. NA	-79.0 NA	-12.97200 %	820. V	123.0 MV	26.2	-7.42000 %
000113	750. NA	-108.5 NA	-12.63800 %	810. V	128.0 MV	27.9	-5.42300 %
000114	460. NA	-114.5 NA	-19.93000 %	820. V	112.5 MV	30.7	1.993300 %
000115	350. NA	3.0 NA	864.500 M%	815.5 V	130.5 MV	22.6	-4.64100 %
000117	540. NA	-2.315 UA	-81.2200 %	863.5 V	122.5 MV	29.0	-3.010000 %
000118	640. NA	-37.0 NA	-5.46500 %	800. V	131.5 MV	25.0	4.16600 %
000123	800. NA	35.0 NA	4.57500 %	850. V	180.5 MV	27.4	0. M%
000124	3.2 UA	1.640 UA	105.1200 %*	815.5 V	155.0 MV	29.6	2.068900 %
000125	420. NA	156.5 NA	59.3900 %	820. V	121.0 MV	27.6	-1.075200 %
000127	390. NA	-322.5 NA	-45.2300 %	805. V	111.0 MV	29.4	6.90900 %
000129	700. NA	-12.5 NA	-1.754300 %	820. V	141.0 MV	28.3	2.909000 %
000130	350. NA	-77.5 NA	-18.12800 %	860. V	132.5 MV	27.1	-1.811500 %

QACS0505 MEASUREMENTS COVER SHEET DATE 12/22/77 PAGE 1

DEVICE = SJ6708H

CONTROL # = 0S5238
LOT = 001
READOUT = 55
PRIOR = 20
TST CMPL = 00/00/00

SAMPLE SIZE = 44
REJECTS = 1
% REJECTED = 2.27 %

DESCRIPTION = NPN PL-99.784
B-6 SS OPERATION LIFE TJ_187.5 DEG C
168 HOURS TABLE 4

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001				
			MIN =	0	ELECT READING	MEAN = 929.4145 NA
			MAX = 50. UA	1		3 STD DEV = 2.2248368 UA
ICES 1 (D)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 21	
			MIN = -20. UA	0	DELTA	MEAN = -669.9007 NA
			MAX = 20. UA	1	DEPENDENT CODE 1	3 STD DEV = 7.668341 UA
ICES 1 (%)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 22	
			MIN =	0	% DELTA	MEAN = -19.484313 %
			MAX = 100. %	3	DEPENDENT CODE 3	3 STD DEV = 151.47029 %
BVCES	002	002				
			MIN = 600. V	1	ELECT READING	MEAN = 941.1162 V
			MAX =	0		3 STD DEV = 154.76005 V
VCES 2	003	003				
			MIN =	0	ELECT READING	MEAN = 135.06770 MV
			MAX = 1. V	0		3 STD DEV = 47.94356 MV
HFE 3	004	004				
			MIN = 20.	0	ELECT READING	MEAN = 27.261260
			MAX = 60.	0		3 STD DEV = 10.609914
HFE 3 (%)	004	004	PARM # 1 = 004 PARM # 2 = 004		CALC # = 22	
			MIN = -20. %	0	% DELTA	MEAN = -5.525446 %
			MAX = 20. %	0		3 STD DEV = 9.989178 %

DEVICE = SJ6708H CONTROL # = 0S5238
LOT = 001
READOUT = 55

UNIT	ICES 1	ICES 1(D)	ICES 1(%)	BVCES	VCES 2	HFE 3	HFE 3(%)
000001	639.5 NA	-1.8905 UA	-74.700 %	912.5 V	128.0 MV	25.3	-9.3100 %
000003	256.0 NA	-264.0 NA	-50.700 %	889.0 V	128.5 MV	22.0	-8.7100 %
000004	2.075 UA	-16.325 UA	-88.700 %	921.5 V	126.5 MV	28.9	4.3300 %
000007	704.0 NA	95.0 NA	15.500 %	943.5 V	118.0 MV	32.4	-2.4000 %
000008	2.0475 UA	-1.2725 UA	-38.300 %	978.0 V	176.0 MV	22.1	-5.1500 %
000009	1.7920 UA	-793.0 NA	-30.600 %	943.5 V	132.5 MV	28.0	-8.7900 %
000011	764.0 NA	51.0 NA	7.1500 %	932.5 V	163.0 MV	23.6	-6.7100 %
000012	511.5 NA	-880.0 NA	-63.200 %	1.0335 KV	152.5 MV	25.5	-7.9400 %
000013	2.395 UA	360. NA	17.600 %	895.5 V	152.0 MV	24.6	-1.2000 %
000014	768.0 NA	318.0 NA	70.600 %	932.0 V	111.5 MV	29.0	-8.8000 %
000016	512.0 NA	-26.5 NA	-4.9200 %	991.0 V	131.5 MV	28.8	-6.1800 %
000018	640.0 NA	-50.5 NA	-7.3100 %	954. V	116.5 MV	31.2	-3.7000 %
000019	127.5 NA	-469.0 NA	-78.600 %	999.5 V	127.5 MV	31.4	0. MX
000020	1.5355 UA	225.0 NA	17.100 %	1.0190 KV	118.0 MV	28.9	-8.8300 %
000021	3.5 NA	-549.5 NA	-99.300 %	937.5 V	129.5 MV	22.1	-10.800 %
000023	327.5 NA	-762.5 NA	-69.900 %	921.5 V	131.0 MV	28.3	-6.9000 %
000025	768.0 NA	0. PA	0. P%	1.0240 KV	135.0 MV	27.7	-8.5800 %
000026	223.5 NA	-842.5 NA	-79.000 %	1.0230 KV	149.5 MV	25.7	-9.1900 %
000030	511.5 NA	-288.5 NA	-36.000 %	991.5 V	126.5 MV	29.2	-6.4100 %
000033	1.2800 UA	-2.8800 UA	-69.200 %	898.5 V	164.5 MV	25.8	-2.6400 %
000034	1.6640 UA	95.0 NA	6.0500 %	939.5 V	140.5 MV	24.1	-3.3200 %
000035	383.5 NA	-125.5 NA	-24.600 %	935.5 V	135.0 MV	22.1	-9.7900 %
000038	496.0 NA	37.5 NA	8.1700 %	957.5 V	143.0 MV	22.4	-6.2700 %
000040	895.5 NA	169.0 NA	23.200 %	895.5 V	120.0 MV	31.6	-4.5300 %
000042	255.5 NA	-258.5 NA	-50.200 %	923.5 V	136.5 MV	20.5	-14.200 %
000046	2.0475 UA	1.5340 UA	298.00 %*	819.5 V	141.0 MV	23.8	-5.5500 %
000048	384.0 NA	-194.5 NA	-33.600 %	983.5 V	126.5 MV	27.7	-8.8800 %
000049	1.4075 UA	133.5 NA	10.400 %	919.5 V	151.0 MV	29.1	-4.2700 %
000050	511.5 NA	-122.5 NA	-19.300 %	903.5 V	129.0 MV	28.7	-3.3600 %
000051	256.5 NA	-224.5 NA	-46.600 %	914.5 V	128.0 MV	29.7	-2.6200 %
000052	767.5 NA	370.0 NA	93.000 %	895.5 V	118.0 MV	32.0	-2.7300 %
000053	2.800 UA	1.4220 UA	103.00 %*	925.5 V	132.0 MV	30.0	-4.4500 %
000054	127.5 NA	-333.5 NA	-72.300 %	834.5 V	130.0 MV	22.1	-5.9500 %
000055	1.0635 UA	499.0 NA	88.300 %	927.5 V	141.0 MV	22.3	-6.3000 %
000056	640.0 NA	-754.5 NA	-54.100 %	948.5 V	117.5 MV	32.8	-4.0900 %
000060	512.0 NA	-517.0 NA	-50.200 %	999.5 V	129.5 MV	29.3	-4.5600 %
000061R	54.15 UA*	52.6990 UA*	3.6300 K%*	780.0 V*	133.0 MV	30.4	-2.8700 %
000063	512.0 NA	-2.5030 UA	-83.000 %	1.0335 KV	173.0 MV	24.7	-2.3700 %
000064	384.0 NA	-1.0545 UA	-73.300 %	954.5 V	123.5 MV	30.7	-4.3600 %
000065	3.040 UA	-1.730 UA	-36.200 %	931.5 V	171.0 MV	28.1	-1.0500 %
000066	544.0 NA	137.5 NA	33.800 %	1.0055 KV	134.5 MV	28.4	-4.6900 %
000067	1.7280 UA	223.0 NA	14.800 %	816.0 V	118.0 MV	32.8	-2.6700 %
000068	767.5 NA	342.5 NA	80.500 %	937.5 V	111.0 MV	30.3	-9.2800 %
000069	896.0 NA	294.0 NA	48.800 %	925.5 V	142.5 MV	22.4	-7.0500 %

GACS0505 MEASUREMENTS READOUT DETAIL DATE 12/22/77 PAGE 3

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 55

REJECT LIST

000061

QACS050S MEASUREMENTS READOUT DETAIL DATE 12/22/77 PAGE 4

DEVICE = SJ6703H

CONTROL # = 055238
LOT = 001
READOUT = 55

REJECT LIST

QACS0505 MEASUREMENTS READOUT DETAIL DATE 12/22/77 PAGE 5

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 55

REJECT LIST

DEVICE = SJ6708H

CONTROL # = DS5238
LOT = 001
READOUT = 55

REJECT LIST

QACS0505 MEASUREMENTS READOUT DETAIL DATE 12/22/77 PAGE 7

DEVICE = SJ6708H

CONTROL # = 056238
LOT = 001
READOUT = 55

REJECT LIST

ELECTRICAL REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000061	ICES 1	2	BVCES	2								

DELTA REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000061	ICES 1	2										

PERCENT DELTA REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000061	ICES 1	2										

QACS0505 MEASUREMENTS COVER SHEET DATE 12/22/77 PAGE 1

DEVICE = SJ6708H

CONTROL # = 055236
LOT = 001
READOUT = 60
PRIOR = 20
TST CMPL = 00/00/00

SAMPLE SIZE = 43
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
B-6 SS OPERATION LIFE TJ_187.5 DEG C
340 HOURS TABLE 4

PARAMETER	CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1		001	001				
				MIN =	0	ELECT READING	MEAN = 1.0187141 UA
				MAX = 50. UA	0		3 STD DEV = 2.6976258 UA
ICES 1	(D)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 21	
				MIN = -20. UA	0	DELTA	MEAN = -580.5994 NA
				MAX = 20. UA	0	DEPENDENT CODE 1	3 STD DEV = 8.680022 UA
ICES 1	(%)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 22	
				MIN =	0	% DELTA	MEAN = -26.607284 %
				MAX = 100. %	5	DEPENDENT CODE 3	3 STD DEV = 104.51380 %
BVCES		002	002				
				MIN = 600. V	0	ELECT READING	MEAN = 935.6975 V
				MAX =	0		3 STD DEV = 149.24807 V
VCES 2		003	003				
				MIN =	0	ELECT READING	MEAN = 133.09258 MV
				MAX = 1. V	0		3 STD DEV = 48.51396 MV
HFE 3		004	004				
				MIN = 20.	0	ELECT READING	MEAN = 26.967346
				MAX = 60.	0		3 STD DEV = 10.732223
HFE 3	(%)	004	004	PARM # 1 = 004 PARM # 2 = 004		CALC # = 22	
				MIN = -20. %	0	% DELTA	MEAN = -6.367243 %
				MAX = 20. %	0		3 STD DEV = 10.879139 %

DEVICE = SJ6708H
CONTROL # = DS5238
LOT = 001
READOUT = 60

UNIT	ICES 1	ICES 1(D)	ICES 1(%)	BVCES	VCES 2	HFE 3	HFE 3(%)
000001	660.5 NA	-1.8695 UA	-73.800 %	936.5 V	129.5 MV	26.2	-6.0900 %
000003	3.170 UA	2.6500 UA	509.00 %*	847.5 V	129.5 MV	22.3	-7.4600 %
000004	681.0 NA	-17.7190 UA	-96.200 %	910.5 V	123.0 MV	28.6	3.2400 %
000007	555.0 NA	-54.0 NA	-8.8600 %	931.5 V	119.0 MV	32.6	-1.8000 %
000008	2.020 UA	-1.300 UA	-39.100 %	981.0 V	175.0 MV	22.1	-5.1500 %
000009	1.6065 UA	-978.5 NA	-37.800 %	925.5 V	133.0 MV	28.9	-5.8600 %
000011	591.0 NA	-122.0 NA	-17.100 %	917.0 V	162.5 MV	23.6	-6.7100 %
000012	1.6240 UA	232.5 NA	16.700 %	986.0 V	157.5 MV	24.9	-10.100 %
000013	1.8370 UA	-196.0 NA	-9.7200 %	908.5 V	140.0 MV	25.3	-6.4200 %
000014	4.805 UA	4.3550 UA	967.00 %*	859.5 V	113.0 MV	28.5	-10.300 %
000016	383.5 NA	-185.0 NA	-28.700 %	1.0150 KV	131.5 MV	29.2	-4.8800 %
000018	511.0 NA	-179.5 NA	-25.900 %	933.5 V	117.5 MV	31.5	-2.7700 %
000019	386.5 NA	-210.0 NA	-35.200 %	983.5 V	126.5 MV	30.8	-1.9100 %
000020	1.5205 UA	210.0 NA	16.000 %	989.5 V	117.5 MV	27.9	-11.900 %
000021	329.0 NA	-224.0 NA	-40.500 %	930.5 V	127.5 MV	21.8	-12.000 %
000023	784.5 NA	-305.5 NA	-28.000 %	907.5 V	130.0 MV	28.8	-5.2600 %
000025	741.0 NA	-27.0 NA	-3.5100 %	1.0285 KV	132.0 MV	28.1	-7.2600 %
000026	2.460 UA	1.3940 UA	130.00 %*	967.5 V	151.0 MV	23.3	-10.700 %
000030	486.5 NA	-313.5 NA	-39.100 %	1.0055 KV	125.0 MV	29.8	-4.4800 %
000033	1.1385 UA	-3.0215 UA	-72.600 %	899.5 V	162.5 MV	26.0	-1.8800 %
000034	1.4985 UA	-70.5 NA	-4.4900 %	925.5 V	141.0 MV	28.5	-5.3100 %
000035	615.5 NA	106.5 NA	20.900 %	923.5 V	135.5 MV	21.6	-11.800 %
000038	266.5 NA	-192.0 NA	-41.800 %	947.0 V	136.5 MV	22.0	-7.9400 %
000040	509.5 NA	-217.0 NA	-29.800 %	906.0 V	113.5 MV	31.2	-5.7400 %
000042	395.0 NA	-119.0 NA	-23.100 %	936.0 V	134.5 MV	20.4	-14.600 %
000046	434.0 NA	-79.5 NA	-15.400 %	860.5 V	125.5 MV	24.1	-4.3600 %
000048	393.0 NA	-185.5 NA	-32.000 %	983.5 V	126.5 MV	27.4	-9.8600 %
000049	1.5585 UA	284.5 NA	22.300 %	903.5 V	149.0 MV	28.6	-5.9200 %
000050	971.5 NA	337.5 NA	53.200 %	917.5 V	122.5 MV	28.4	-4.3700 %
000051	406.5 NA	-74.5 NA	-15.400 %	939.0 V	123.5 MV	29.3	-3.9300 %
000052	1.1745 UA	177.0 NA	19.00 %*	895.5 V	117.5 MV	31.5	-4.2500 %
000053	565.0 NA	-813.0 NA	-58.900 %	934.5 V	118.0 MV	28.4	-9.5500 %
000054	301.5 NA	-159.5 NA	-34.600 %	827.5 V	129.5 MV	21.4	-8.9300 %
000055	1.6035 UA	1.0390 UA	184.00 %*	919.5 V	141.5 MV	21.6	-9.2400 %
000056	552.0 NA	-842.5 NA	-60.400 %	938.5 V	116.5 MV	32.5	-4.9700 %
000060	411.5 NA	-617.5 NA	-60.000 %	1.0115 KV	124.5 MV	29.1	-5.2100 %
000063	489.0 NA	-2.5260 UA	-83.700 %	1.0315 KV	171.5 MV	24.7	-2.3700 %
000064	399.5 NA	-1.0390 UA	-72.200 %	949.5 V	122.0 MV	30.3	-5.6000 %
000065	2.510 UA	-2.260 UA	-47.300 %	933.0 V	168.5 MV	28.3	-352.00 MX
000066	480.0 NA	73.5 NA	18.000 %	1.0115 KV	133.5 MV	28.8	-3.3500 %
000067	993.0 NA	-512.0 NA	-34.000 %	816.0 V	119.0 MV	32.4	-3.8500 %
000068	682.0 NA	257.0 NA	60.400 %	920. V	112.5 MV	29.4	-11.900 %
000069	304.0 NA	-298.0 NA	-49.500 %	931.5 V	137.5 MV	21.5	-10.700 %

OACS0505 MEASUREMENTS COVER SHEET DATE 12/12/77 PAGE 1

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 65
PRIOR = 20
TST CMPL = 12/12/77

SAMPLE SIZE = 43
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
B-6 SS OPERATION LIFE TJ 187.5 DEG C
670 HOURS TABLE 4

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001				
			MIN =	0	ELECT READING	MEAN = 913.9377 NA
			MAX = 50. UA	0		3 STD DEV = 2.1849327 UA
ICES 1 (D)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 21	
			MIN = -20. UA	0	DELTA	MEAN = -685.3779 NA
			MAX = 20. UA	0	DEPENDENT CODE 1	3 STD DEV = 8.464044 UA
ICES 1 (%)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 22	
			MIN =	0	% DELTA	MEAN = -31.308868 %
			MAX = 100. %	5	DEPENDENT CODE 3	3 STD DEV = 100.56674 %
BVCES	002	002				
			MIN = 800. V	3	ELECT READING	MEAN = 931.5581 V
			MAX =	0		3 STD DEV = 156.18600 V
VCES 2	003	003				
			MIN =	0	ELECT READING	MEAN = 134.13912 MV
			MAX = 1. V	0		3 STD DEV = 48.46382 MV
HFE 3	004	004				
			MIN = 20.	0	ELECT READING	MEAN = 26.385955
			MAX = 60.	0		3 STD DEV = 10.445343
HFE 3 (%)	004	004	PARM # 1 = 004 PARM # 2 = 004		CALC # = 22	
			MIN = -20. %	0	% DELTA	MEAN = -8.362752 %
			MAX = 20. %	0		3 STD DEV = 11.394787 %

DEVICE = SJ6708H CONTROL # = 055238
LOT = 001
READOUT = 65

UNIT	ICES 1	ICES 1(D)	ICES 1(%)	BVCES	VCES 2	HFE 3	HFE 3(%)
000001	473.0 NA	-2.0570 UA	-81.300 %	939.0 V	131.5 MV	25.6	-8.2400 %
000003	277.5 NA	-2425. NA	-46.600 %	889.5 V	128.5 MV	21.9	-9.1200 %
000004	456.0 NA	-17.9440 UA	-97.500 %	891.0 V	126.5 MV	27.3	-1.4400 %
000007	690.0 NA	81.0 NA	13.300 %	974.5 V	116.5 MV	31.0	-6.6200 %
000008	2.190 UA	-1.130 UA	-34.000 %	976.0 V	173.5 MV	22.4	-3.8600 %
000009	1.7835 UA	-801.5 NA	-31.000 %	910.5 V	135.0 MV	28.4	-7.4900 %
000011	586.0 NA	-127.0 NA	-17.800 %	877.0 V	158.5 MV	23.6	-6.7100 %
000012	758.5 NA	-633.0 NA	-45.400 %	1.0115 KV	159.0 MV	24.9	-10.100 %
000013	2.145 UA	110. NA	5.4000 %	879.5 V	145.5 MV	22.7	-8.8300 %
000014	1.3910 UA	941.0 NA	209.00 %*	905.5 V	113.0 MV	27.6	-13.200 %
000016	365.0 NA	-173.5 NA	-32.200 %	999.5 V	130.0 MV	28.2	-8.1400 %
000018	393.0 NA	-297.5 NA	-43.000 %	923.5 V	119.0 MV	30.4	-6.1700 %
000019	306.5 NA	-290.0 NA	-48.600 %	998.5 V	123.5 MV	29.5	-6.0500 %
000020	923.5 NA	-387.0 NA	-29.500 %	975.5 V	119.5 MV	26.4	-16.700 %
000021	411.5 NA	-141.5 NA	-25.500 %	909.0 V	132.5 MV	20.5	-17.300 %
000023	742.5 NA	-347.5 NA	-31.800 %	882.5 V	133.5 MV	28.0	-7.8900 %
000025	690.5 NA	-77.5 NA	-10.000 %	1.0035 KV	139.5 MV	26.4	-12.800 %
000026	342.5 NA	-723.5 NA	-67.800 %	1.0155 KV	149.5 MV	22.9	-12.200 %
000030	420.0 NA	-380.0 NA	-47.500 %	997.5 V	127.0 MV	28.8	-7.6900 %
000033	941.0 NA	-3.2190 UA	-77.300 %	903. V	164.5 MV	25.5	-3.7700 %
000034	1.4350 UA	-134.0 NA	-8.5400 %	923.5 V	141.5 MV	28.3	-5.9800 %
000035	1.2580 UA	749.0 NA	147.00 %*	894.5 V	140.0 MV	21.0	-14.200 %
000038	223.5 NA	-235.0 NA	-51.200 %	941.5 V	140.0 MV	21.1	-11.700 %
000040	463.5 NA	-263.0 NA	-36.200 %	904.0 V	114.0 MV	30.4	-8.1500 %
000042	326.5 NA	-187.5 NA	-36.400 %	932.0 V	136.0 MV	20.2	-15.400 %
000046	374.5 NA	-139.0 NA	-27.000 %	861.5 V	128.0 MV	23.6	-6.3400 %
000048	383.0 NA	-195.5 NA	-33.700 %	975.5 V	127.0 MV	27.4	-9.8600 %
000049	1.8865 UA	612.5 NA	48.000 %	901.5 V	149.5 MV	29.1	-6.2700 %
000050	786.5 NA	152.5 NA	24.000 %	915.5 V	124.0 MV	28.1	-5.3800 %
000051	417.0 NA	-64.0 NA	-13.300 %	929.5 V	126.5 MV	29.2	-4.2600 %
000052	2.980 UA	2.5825 UA	649.00 %*	855.5 V	119.0 MV	31.2	-5.1600 %
000053	2.360 UA	982.0 NA	71.200 %	948.5 V	122.0 MV	28.1	-10.500 %
000054	262.5 NA	-198.5 NA	-43.000 %	825.0 V	131.0 MV	21.1	-10.200 %
000055	1.1650 UA	600.5 NA	106.00 %*	919.5 V	143.5 MV	21.4	-10.000 %
000056	493.0 NA	-901.5 NA	-64.600 %	926.5 V	115.0 MV	32.2	-5.8400 %
000060	416.0 NA	-613.0 NA	-59.500 %	1.0055 KV	123.5 MV	28.3	-7.8100 %
000063	402.5 NA	-2.6125 UA	-86.600 %	1.0239 KV	174.0 MV	24.3	-3.9500 %
000064	1.2820 UA	-156.5 NA	-10.800 %	987.5 V	116.0 MV	30.1	-6.2300 %
000065	2.955 UA	-1.815 UA	-38.000 %	867.5 V	166.0 MV	27.5	-3.1600 %
000066	352.0 NA	-54.5 NA	-13.400 %	1.0035 KV	134.5 MV	28.0	-6.0400 %
000067	1.1725 UA	-332.5 NA	-22.000 %	816.0 V	115.0 MV	32.3	-4.1500 %
000068	1.2615 UA	836.5 NA	196.00 %*	915.5 V	115.5 MV	28.6	-14.300 %
000069	357.0 NA	-245.0 NA	-40.600 %	919.5 V	140.5 MV	21.1	-12.400 %

QACS0505 MEASUREMENTS COVER SHEET DATE 05/14/79 PAGE 1

DEVICE = SJ6708H CONTROL # = 0S5238 SAMPLE SIZE = 43
LOT = 001 # REJECTS = 1
READOUT = 75 % REJECTED = 2.33 %
PRIOR = 20
TST CMPL = 03/06/78

DESCRIPTION = NPN PL-99.784
B-6 SS OPERATION LIFE TJ_187.5 DEG C
1500 HOURS TABLE 4

PARAMETER	CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1		001	001				
				MIN =	0	ELECT READING	MEAN = 1.0537960 UA
				MAX = 50. UA	0		3 STD DEV = 2.7137521 UA
ICES 1	(D)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 21	
				MIN = -20. UA	0	DELTA	MEAN = -545.5174 NA
				MAX = 20. UA	0	DEPENDENT CODE 1	3 STD DEV = 8.476748 UA
ICES 1	(%)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 22	
				MIN =	0	% DELTA	MEAN = -19.265446 %
				MAX = 100. %	4	DEPENDENT CODE 3	3 STD DEV = 101.73367 %
BVCES		002	002				
				MIN = 800. V	0	ELECT READING	MEAN = 940.5581 V
				MAX =	0		3 STD DEV = 155.79972 V
VCES 2		003	003				
				MIN =	0	ELECT READING	MEAN = 133.69733 MV
				MAX = 1. V	0		3 STD DEV = 48.46556 MV
HFE 3		004	004				
				MIN = 20.	1	ELECT READING	MEAN = 26.435623
				MAX = 60.	0		3 STD DEV = 9.657045
HFE 3	(%)	004	004	PARM # 1 = 004 PARM # 2 = 004		CALC # = 22	
				MIN = -20. %	0	% DELTA	MEAN = -8.654001 %
				MAX = 20. %	0		3 STD DEV = 12.691145 %

QACS0505 MEASUREMENTS READOUT DETAIL DATE 05/14/79 PAGE 2

DEVICE = SJ6708H CONTROL # = 0S5238
LOT = 001
READOUT = 75

UNIT	ICES 1		ICES 1(D)		ICES 1(%)		BVCES		VCES 2		HFE 3		HFE 3(%)	
000001	1.8785	UA	-651.5	NA	-25.75000	%	972.5	V	125.0	MV	27.0		-3.225800	%
000003	400.5	NA	-119.5	NA	-22.98000	%	905.0	V	126.5	MV	22.4		-7.05300	%
000004	751.0	NA	-17.6490	UA	-95.9100	%	903.5	V	132.0	MV	27.0		-2.527000	%
000007	896.0	NA	287.0	NA	47.1200	%	967.5	V	118.0	MV	29.9		-9.93900	%
000008	2.695	UA	-625.	NA	-18.82500	%	943.5	V	175.0	MV	22.5		-4.29100	%
000009	2.970	UA	385.	NA	14.89300	%	879.5	V	134.5	MV	28.7		-6.51400	%
000011	4.795	UA	4.0820	UA	572.500	%*	875.5	V	155.5	MV	24.3		-3.95200	%
000012	834.5	NA	-557.0	NA	-40.0400	%	1.0115	KV	158.0	MV	25.1		-9.38600	%
000013	1.9425	UA	-92.5	NA	-4.54500	%	921.5	V	145.0	MV	21.2		-14.85900	%
000014	1.1890	UA	739.0	NA	164.2200	%*	926.5	V	113.5	MV	29.4		-7.54700	%
000016	378.5	NA	-160.0	NA	-29.71200	%	1.0135	KV	130.5	MV	27.9		-9.12000	%
000018	525.5	NA	-165.0	NA	-23.89500	%	959.0	V	116.0	MV	30.3		-6.48100	%
000019	414.5	NA	-182.0	NA	-30.51100	%	1.0175	KV	123.5	MV	30.2		-3.82100	%
000020	1.8650	UA	554.5	NA	42.3200	%	927.5	V	122.0	MV	27.8		-12.30200	%
000021R	474.5	NA	-78.5	NA	-14.19500	%	916.5	V	137.0	MV	19.98	*	-19.43500	%
000023	601.0	NA	-489.0	NA	-44.8600	%	919.5	V	133.5	MV	28.3		-8.90700	%
000025	612.5	NA	-155.5	NA	-20.24700	%	1.0025	KV	139.5	MV	25.3		-16.50100	%
000026	914.0	NA	-152.0	NA	-14.25800	%	998.5	V	153.5	MV	22.4		-14.17600	%
000030	522.5	NA	-277.5	NA	-34.6800	%	1.0075	KV	126.0	MV	28.4		-8.97400	%
000033	1.0870	UA	-3.0730	UA	-73.8700	%	906.5	V	158.0	MV	26.0		-1.886700	%
000034	1.5620	UA	-7.0	NA	-446.100	M%	911.5	V	141.0	MV	28.4		-5.64700	%
000035	1.5405	UA	1.0315	UA	202.6500	%*	907.5	V	139.0	MV	20.6		-15.91800	%
000038	304.5	NA	-154.0	NA	-33.5800	%	946.5	V	139.5	MV	21.5		-10.04100	%
000040	521.5	NA	-205.0	NA	-28.23600	%	909.0	V	116.0	MV	30.5		-7.85400	%
000042	438.5	NA	-75.5	NA	-14.68800	%	933.5	V	135.0	MV	21.4		-10.46000	%
000046	478.5	NA	-35.0	NA	-6.82200	%	850.5	V	132.0	MV	23.4		-7.14200	%
000048	484.5	NA	-94.0	NA	-16.24800	%	881.5	V	130.0	MV	27.7		-8.88100	%
000049	1.4840	UA	210.0	NA	16.48300	%	914.5	V	150.0	MV	29.6		-2.631500	%
000050	734.5	NA	100.5	NA	15.85100	%	903.0	V	135.0	MV	27.9		-6.06000	%
000051	542.5	NA	61.5	NA	12.78500	%	940.5	V	126.0	MV	28.9		-5.24500	%
000052	594.0	NA	196.5	NA	49.4300	%	967.5	V	115.5	MV	29.0		-11.85400	%
000053	525.0	NA	-853.0	NA	-61.9000	%	971.5	V	120.0	MV	26.6		-15.28600	%
000054	427.0	NA	-34.0	NA	-7.37500	%	815.0	V	122.5	MV	21.5		-8.51000	%
000055	544.0	NA	-20.5	NA	-3.63400	%	942.5	V	135.5	MV	21.6		-9.24300	%
000056	527.5	NA	-867.0	NA	-62.1900	%	971.5	V	113.5	MV	29.4		-14.03500	%
000060	383.5	NA	-645.5	NA	-62.7300	%	1.0055	KV	125.0	MV	27.8		-9.44600	%
000063	470.5	NA	-2.5445	UA	-84.5300	%	1.0235	KV	173.0	MV	24.4		-3.55700	%
000064	986.5	NA	-452.0	NA	-31.43200	%	969.5	V	120.0	MV	29.3		-8.72200	%
000065	2.660	UA	-2.110	UA	-44.2300	%	879.5	V	168.5	MV	27.4		-3.52100	%
000066	429.0	NA	22.5	NA	5.54100	%	1.0305	KV	127.0	MV	28.0		-6.04000	%
000067	2.100	UA	595.0	NA	39.5300	%	816.0	V	111.5	MV	31.2		-7.41800	%
000068	1.4900	UA	1.0650	UA	250.5800	%*	939.	V	112.0	MV	29.8		-10.77800	%
000069	338.5	NA	-263.5	NA	-43.7700	%	939.5	V	139.0	MV	20.5		-14.93700	%

QACS0505 MEASUREMENTS COVER SHEET DATE 12/22/77 PAGE 1

DEVICE = SJ6708M

CONTROL # = 055238
LOT = 001
READOUT = 70
PRIOR = 20
TST CMPL = 12/21/77

SAMPLE SIZE = 43
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
B-6 SS OPERATION LIFE TJ 187.5 DEG C
1000 HOURS TABLE 4

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001				
			MIN =	0	ELECT READING	MEAN = 1.2116915 UA
			MAX = 50. UA	0		3 STD DEV = 4.449415 UA
ICES 1 (D)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 21	
			MIN = -20. UA	0	DELTA	MEAN = -387.6210 NA
			MAX = 20. UA	0	DEPENDENT CODE 1	3 STD DEV = 9.325350 UA
ICES 1 (%)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 22	
			MIN =	0	% DELTA	MEAN = -27.739166 %
			MAX = 100. %	0	DEPENDENT CODE 3	3 STD DEV = 92.47485 %
BVCES	002	002				
			MIN = 800. V	0	ELECT READING	MEAN = 943.6276 V
			MAX =	0		3 STD DEV = 171.52876 V
VCES 2	003	003				
			MIN =	0	ELECT READING	MEAN = 131.96466 MV
			MAX = 1. V	0		3 STD DEV = 48.92823 MV
HFE 3	004	004				
			MIN = 20.	0	ELECT READING	MEAN = 26.644104
			MAX = 60.	0		3 STD DEV = 9.898175
HFE 3 (%)	004	004	PARM # 1 = 004 PARM # 2 = 004		CALC # = 22	
			MIN = -20. %	0	% DELTA	MEAN = -7.376805 %
			MAX = 20. %	0		3 STD DEV = 11.341157 %

DEVICE = SJ6708H CONTROL # = 055238
LOT = 001
READOUT = 70

UNIT	ICES 1	ICES 1(D)	ICES 1(%)	BVCES	VCES 2	HFE 3	HFE 3(%)
000001	2.160 UA	-370. NA	-14.500 %	970.0 V	122.0 MV	27.4	-1.7900 %
000003	332.0 NA	-188.0 NA	-36.100 %	909.0 V	124.0 MV	23.1	-4.1400 %
000004	1.0305 UA	-17.3695 UA	-94.300 %	890.5 V	126.5 MV	27.7	0. MX
000007	621.0 NA	12.0 NA	1.9700 %	983.0 V	114.0 MV	30.8	-7.2200 %
000008	2.500 UA	-820. NA	-24.600 %	985.0 V	174.5 MV	22.6	-3.0000 %
000009	2.195 UA	-390. NA	-15.000 %	898.5 V	135.0 MV	28.7	-6.5100 %
000011	644.5 NA	-68.5 NA	-9.6000 %	893.5 V	156.5 MV	23.8	-5.9200 %
000012	829.0 NA	-562.5 NA	-40.400 %	991.5 V	158.0 MV	25.0	-9.7400 %
000013	1.8450 UA	-190.0 NA	-9.3300 %	930.0 V	138.0 MV	22.4	-10.000 %
000014	1.4935 UA	1.0435 UA	231.00 %*	921.5 V	112.5 MV	28.3	-11.000 %
000016	335.0 NA	-203.5 NA	-37.700 %	1.0075 KV	126.5 MV	28.4	-7.4900 %
000018	396.5 NA	-294.0 NA	-42.500 %	931.0 V	119.0 MV	30.5	-5.8600 %
000019	335.0 NA	-263.5 NA	-44.100 %	1.0240 KV	120.0 MV	30.7	-2.2200 %
000020	962.0 NA	-348.5 NA	-26.500 %	989.5 V	118.5 MV	27.5	-13.200 %
000021	1.1330 UA	580.0 NA	104.00 %*	903.0 V	134.5 MV	20.4	-17.700 %
000023	752.5 NA	-337.5 NA	-30.900 %	891.5 V	133.0 MV	28.2	-7.2300 %
000025	495.5 NA	-272.5 NA	-35.400 %	1.0490 KV	136.5 MV	27.0	-10.800 %
000026	350.5 NA	-715.5 NA	-67.100 %	1.0240 KV	148.5 MV	23.3	-10.700 %
000030	490.0 NA	-310.0 NA	-38.700 %	1.0315 KV	123.0 MV	28.8	-7.6900 %
000033	997.5 NA	-3.1625 UA	-76.000 %	914. V	155.5 MV	26.3	-754.00 MX
000034	1.5200 UA	-49.0 NA	-3.1200 %	925.5 V	140.0 MV	28.4	-5.6400 %
000035	5.500 UA	4.9910 UA	980.00 %*	938.5 V	134.5 MV	21.3	-13.000 %
000038	237.0 NA	-221.5 NA	-48.300 %	959.0 V	134.5 MV	22.0	-7.9400 %
000040	437.5 NA	-289.0 NA	-39.700 %	912.0 V	115.5 MV	30.4	-8.1500 %
000042	457.0 NA	-57.0 NA	-11.000 %	942.0 V	131.0 MV	21.4	-10.400 %
000046	400.0 NA	-113.5 NA	-22.100 %	859.5 V	128.0 MV	23.5	-6.7400 %
000048	432.0 NA	-146.5 NA	-25.300 %	987.5 V	128.5 MV	27.7	-8.8800 %
000049	1.2690 UA	-5.0 NA	-392.00 MX	919.5 V	149.5 MV	29.9	-1.6400 %
000050	985.0 NA	351.0 NA	55.300 %	908.5 V	124.0 MV	28.4	-4.3700 %
000051	445.5 NA	-35.5 NA	-7.3800 %	931.0 V	127.0 MV	29.4	-3.6000 %
000052	566.5 NA	169.0 NA	42.500 %	973.5 V	112.5 MV	29.6	-10.000 %
000053	722.0 NA	-556.0 NA	-47.600 %	981.5 V	115.5 MV	28.7	-8.5900 %
000054	291.5 NA	-169.5 NA	-36.700 %	887.5 V	125.5 MV	21.9	-6.8000 %
000055	1.4615 UA	897.0 NA	158.00 %*	932.5 V	134.0 MV	21.6	-9.2400 %
000056	1.8290 UA	434.5 NA	31.100 %	965.0 V	109.5 MV	31.2	-8.7700 %
000060	365.5 NA	-663.5 NA	-64.400 %	1.0105 KV	122.0 MV	28.3	-7.8100 %
000063	386.5 NA	-2.6285 UA	-87.100 %	1.0295 KV	173.5 MV	24.4	-3.5500 %
000064	1.6085 UA	-430.0 NA	-29.800 %	988.5 V	118.5 MV	29.6	-7.7800 %
000065	2.480 UA	-2.290 UA	-48.000 %	882.5 V	169.0 MV	27.4	-3.5200 %
000066	356.0 NA	-50.5 NA	-12.400 %	1.0065 KV	133.0 MV	28.4	-4.6900 %
000067	1.0365 UA	-468.5 NA	-31.100 %	819.0 V	117.5 MV	31.7	-5.9300 %
000068	1.3005 UA	875.5 NA	206.00 %*	915.5 V	114.5 MV	28.7	-14.000 %
000069	8.720 UA	8.1180 UA	1.3400 K%*	843.5 V	141.0 MV	20.9	-13.200 %

.QACS0505 MEASUREMENTS COVER SHEET DATE 03/10/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 80
PRIOR = 20
TST CMPL = 03/10/78

SAMPLE SIZE = 41
REJECTS = 2
% REJECTED = 4.88 %

DESCRIPTION = NPN PL-99.784
B-6 SS OPERATION LIFE TJ 187.5 DEG C
2000 HOURS TABLE 4

PARAMETER	CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1		001	001			ELECT READING	MEAN = 1.0000676 UA
				MIN =	0		3 STD DEV = 2.5479894 UA
				MAX = 50. UA	0		
ICES 1	(D)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 21	
				MIN = -20. UA	0	DELTA	MEAN = -614.1386 NA
				MAX = 20. UA	0	DEPENDENT CODE 1	3 STD DEV = 7.634583 UA
ICES 1	(%)	001	001	PARM # 1 = 001 PARM # 2 = 001		CALC # = 22	
				MIN =	0	% DELTA	MEAN = -22.981582 %
				MAX = 100. %	4	DEPENDENT CODE 3	3 STD DEV = 113.15394 %
BVCES		002	002				
				MIN = 800. V	1	ELECT READING	MEAN = 943.9873 V
				MAX =	0		3 STD DEV = 162.20993 V
VCES 2		003	003				
				MIN =	0	ELECT READING	MEAN = 133.48734 MV
				MAX = 1. V	0		3 STD DEV = 49.16884 MV
HFE 3		004	004				
				MIN = 20.	1	ELECT READING	MEAN = 26.314910
				MAX = 60.	0		3 STD DEV = 9.071491
HFE 3	(%)	004	004	PARM # 1 = 004 PARM # 2 = 004		CALC # = 22	
				MIN = -20. %	0	% DELTA	MEAN = -9.630936 %
				MAX = 20. %	0		3 STD DEV = 13.707444 %

QACS0505 MEASUREMENTS READOUT DETAIL DATE 03/10/78 PAGE 2

DEVICE = SJ6708H CONTROL # = DS5238
LOT = 001
READOUT = 80

UNIT	ICES 1	ICES 1(D)	ICES 1(%)	BVCES	VCES 2	HFE 3	HFE 3(%)
000001	1.1895 UA	-1.3405 UA	-52.900 %	962.5 V	124.5 MV	26.2	-6.0900 %
000003	347.0 NA	-173.0 NA	-33.200 %	901.5 V	130.0 MV	21.7	-9.9500 %
000004R	4.095 UA	-14.305 UA	-77.700 %	795.5 V*	124.5 MV	28.7	3.6100 %
000007	770.5 NA	161.5 NA	26.500 %	973.0 V	116.5 MV	29.2	-12.000 %
000008	3.200 UA	-120. NA	-3.6100 %	977.0 V	176.0 MV	22.2	-4.7200 %
000009	1.6360 UA	-949.0 NA	-36.700 %	902.5 V	136.5 MV	28.3	-7.8100 %
000011	2.515 UA	1.8020 UA	252.00 %*	895.5 V	157.5 MV	23.3	-7.9000 %
000012	776.0 NA	-615.5 NA	-44.200 %	1.0350 KV	154.5 MV	26.1	-5.7700 %
000014	866.0 NA	415.0 NA	92.200 %	931.5 V	111.5 MV	28.9	-9.1100 %
000016	353.0 NA	-185.5 NA	-34.400 %	1.0055 KV	131.5 MV	27.4	-10.700 %
000018	474.5 NA	-216.0 NA	-31.200 %	968.0 V	115.5 MV	28.8	-11.100 %
000019	512.0 NA	-84.5 NA	-14.100 %	1.0195 KV	124.5 MV	29.8	-5.0900 %
000020	1.5405 UA	230.0 NA	17.500 %	1.0080 KV	117.5 MV	29.1	-8.2000 %
000023	557.5 NA	-532.5 NA	-48.800 %	925.5 V	132.5 MV	27.5	-9.5300 %
000025	2.490 UA	1.7220 UA	224.00 %*	945.0 V	144.0 MV	24.8	-18.100 %
000026	397.5 NA	-668.5 NA	-62.700 %	1.0195 KV	153.5 MV	22.1	-15.300 %
000030	457.0 NA	-343.0 NA	-42.800 %	1.0075 KV	125.5 MV	27.8	-10.800 %
000033	1.1080 UA	-3.0520 UA	-73.300 %	911.5 V	157.5 MV	25.3	-4.5280 %
000034	1.5385 UA	-30.5 NA	-1.9400 %	891.5 V	138.0 MV	29.2	-2.9900 %
000035	1.1290 UA	620.0 NA	121.00 %*	887.0 V	141.0 MV	20.2	-17.500 %
000038	453.0 NA	-5.5 NA	-1.1900 %	945.5 V	138.5 MV	21.1	-11.700 %
000040	712.0 NA	-14.5 NA	-1.9900 %	930.0 V	114.0 MV	30.2	-8.7600 %
000042	640.0 NA	126.0 NA	24.500 %	935.5 V	136.0 MV	21.3	-10.800 %
000046	461.0 NA	-52.5 NA	-10.200 %	860.0 V	129.5 MV	23.1	-8.3300 %
000046	445.5 NA	-133.0 NA	-22.900 %	979.5 V	128.5 MV	27.4	-9.8600 %
000049	1.6750 UA	401.0 NA	31.400 %	875.5 V	146.5 MV	29.1	-4.2700 %
000050	574.5 NA	-59.5 NA	-9.3800 %	901.0 V	126.5 MV	27.4	-7.7400 %
000051	525.5 NA	44.5 NA	9.2500 %	944.5 V	127.0 MV	28.3	-7.2100 %
000052	602.0 NA	204.5 NA	51.400 %	941.5 V	116.5 MV	29.0	-11.800 %
000053	690.0 NA	-688.0 NA	-49.900 %	959.0 V	120.5 MV	26.5	-15.600 %
000054	421.5 NA	-39.5 NA	-8.8600 %	814.0 V	128.0 MV	20.4	-13.100 %
000055	342.0 NA	-222.5 NA	-39.400 %	953.5 V	137.0 MV	21.1	-11.300 %
000056	393.0 NA	-1.0015 UA	-71.800 %	955.0 V	117.5 MV	27.4	-19.800 %
000060	362.0 NA	-657.0 NA	-64.800 %	999.5 V	128.0 MV	27.5	-10.400 %
000063	453.5 NA	-2.5615 UA	-84.900 %	1.0225 KV	174.5 MV	24.2	-4.3400 %
000064	626.0 NA	-812.5 NA	-56.400 %	981.0 V	120.0 MV	28.8	-10.200 %
000065	2.445 UA	-2.325 UA	-48.700 %	890.5 V	168.0 MV	27.1	-4.5700 %
000066	365.5 NA	-41.0 NA	-10.000 %	1.0240 KV	130.0 MV	27.2	-8.7200 %
000067	1.0775 UA	-427.5 NA	-28.400 %	815.5 V	117.0 MV	29.9	-11.200 %
000068	1.408 UA	983.0 NA	231.00 %*	937.5 V	113.5 MV	29.	-13.100 %
000069R	379.0 NA	-223.0 NA	-37.000 %	927.5 V	143.5 MV	19.64 *	-18.500 %

DEVICE = SJ6708H

CONTROL # = OS5238
LOT = 001
READOUT = 80

REJECT LIST

000004 000069

.QACS0505 MEASUREMENTS READOUT DETAIL DATE 03/10/76 PAGE 4

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 80

REJECT LIST

ELECTRICAL REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000004	BVCES	2										
000069	HFE 3	2										

QACS0505 MEASUREMENTS COVER SHEET DATE 04/07/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = OS5238
LOT = 001
READOUT = 81
PRIOR = NONE
TST CMPL = 04/07/78

SAMPLE SIZE = 17
REJECTS = 1
% REJECTED = 5.88 %

DESCRIPTION = NPN BL-99.784
B-7 POWER CYCLING
1000 CYCLES

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001				
			MIN =	0	ELECT READING	MEAN = 2.7644082 UA
			MAX = 50. UA	0		3 STD DEV = 18.320264 UA
BVCES	002	002				
			MIN = 800. V	1	ELECT READING	MEAN = 968.7187 V
			MAX =	0		3 STD DEV = 144.55943 V
VCES 2	003	003				
			MIN =	0	ELECT READING	MEAN = 136.02918 MV
			MAX = 1. V	0		3 STD DEV = 53.38771 MV
HFE 3	004	004				
			MIN = 20.	0	ELECT READING	MEAN = 26.282302
			MAX = 60.	0		3 STD DEV = 7.732818

OACS0505 MEASUREMENTS READOUT DETAIL DATE 04/07/78 PAGE 2

DEVICE = SJ6708H

CONTROL # = 0S5238
LOT = 001
READOUT = 81

UNIT	ICES 1		BVCES		VCES 2		HFE 3
000001	1.2820	UA	968.5	V	125.5	MV	26.3
000003	336.5	NA	963.5	V	129.0	MV	21.8
000007	395.0	NA	991.5	V	117.0	MV	29.0
000008	2.085	UA	979.5	V	177.5	MV	22.0
000009	1.2745	UA	923.0	V	134.5	MV	28.3
000011	1.3440	UA	918.5	V	157.0	MV	23.7
000012	736.0	NA	1.09N0	KV	154.5	MV	26.1
000014	666.0	NA	927.5	V	112.0	MV	28.7
000016	314.0	NA	1.0115	KV	130.5	MV	27.5
000018	409.0	NA	968.5	V	117.0	MV	26.7
000019	385.0	NA	1.0185	KV	125.5	MV	29.4
000020	1.1700	UA	1.0320	KV	118.5	MV	28.7
000023	754.5	NA	919.0	V	132.0	MV	27.3
000025R	26.05	UA	773.5	V*	141.5	MV	24.9
000026	8.435	UA	890.5	V	154.0	MV	21.7
000030	376.0	NA	1.0265	KV	127.5	MV	27.7
000033	982.5	NA	911.0	V	159.0	MV	25.0

QACS0505 MEASUREMENTS READOUT DETAIL DATE 04/07/78 PAGE 3

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 81

REJECT LIST

000325

Q-CS0505 MEASUREMENTS READOUT DETAIL DATE 04/07/78 PAGE 4

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 81

REJECT LIST

ELECTRICAL REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000025	BVCES	2										

QACS0505 MEASUREMENTS COVER SHEET DATE 05/16/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = DS5238
LOT = 001
READOUT = 82
PRIOR = NONE
TST CMPL = 05/15/78

SAMPLE SIZE = 16
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
8-7 POWER CYCLING
2000 CYCLES

PARAMETER	CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1		001	001				
				MIN =	0	ELECT READING	MEAN = 1.599370 UA
				MAX = 50. UA	0		3 STD DEV = 7.063003 UA
BVCES		002	002				
				MIN = 800. V	0	ELECT READING	MEAN = 964.2187 V
				MAX =	0		3 STD DEV = 152.00779 V
VCES 2		003	003				
				MIN =	0	ELECT READING	MEAN = 136.59346 MV
				MAX = 1. V	0		3 STD DEV = 54.06278 MV
HFE 3		004	004				
				MIN = 20.	0	ELECT READING	MEAN = 26.524948
				MAX = 60.	0		3 STD DEV = 7.981698

QACS0505 MEASUREMENTS READOUT DETAIL DATE 05/16/78 PAGE 2

DEVICE = SJ6708H

CONTROL # = OS5238
LOT = 001
READOUT = 82

UNIT	ICES 1	BVCES	VCES 2	HFE 3
000001	1.6 UA	962.5 V	125.5 MV	26.5
000003	420. NA	912.5 V	129.5 MV	22.1
000007	440. NA	993.5 V	119.0 MV	29.4
000008	2.9 UA	981.0 V	178.0 MV	22.0
000009	2.1 UA	918.5 V	134.5 MV	28.5
000011	7. UA	917.5 V	158.5 MV	23.6
000012	960. NA	1.0515 KV	155.0 MV	26.3
000014	980. NA	931.5 V	114.5 MV	29.1
000016	350. NA	1.0065 KV	133.5 MV	27.5
000018	460. NA	970.5 V	118.5 MV	29.0
000019	360. NA	1.0210 KV	125.5 MV	29.3
000020	1.4 UA	1.0365 KV	119.0 MV	28.7
000023	820. NA	910.5 V	131.5 MV	27.5
000026	8.6 UA	887.5 V	155.5 MV	21.9
000030	400. NA	1.0145 KV	129.0 MV	27.9
000033	1.6 UA	912.0 V	158.5 MV	25.1

QACS0505 MEASUREMENTS COVER SHEET DATE 06/16/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = DS5238
LOT = 001
READOUT = 83
PRIOR = NONE
TST CMPL = 06/16/78

SAMPLE SIZE = 16
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
B-7 POWER CYCLING
3000 CYCLES

PARAMETER	CONDITIONS	PARM #	TEST #	LIMITS		# FAILURES	REJECT CRITERIA		
ICES 1		001	001						
				MIN =		0	ELECT READING	MEAN =	1.4892721 UA
				MAX =	50. UA	0		3 STD DEV =	4.875165 UA
BVCES		002	002						
				MIN =	800. V	0	ELECT READING	MEAN =	975.7500 V
				MAX =		0		3 STD DEV =	287.73022 V
VCES 2		003	003						
				MIN =		0	ELECT READING	MEAN =	141.96848 MV
				MAX =	1. V	0		3 STD DEV =	58.61491 MV
HFE 3		004	004						
				MIN =	20.	0	ELECT READING	MEAN =	26.274948
				MAX =	60.	0		3 STD DEV =	7.956882

DEVICE = SJ6708H

CONTROL # = 0S5238
LOT = 001
READOUT = 83

UNIT	ICES 1	BVCES	VCES 2	HFE 3
000001	1.5 UA	960. V	138.0 MV	26.1
000003	420. NA	904.5 V	132.0 MV	21.6
000007	430. NA	1.000 KV	120.0 MV	29.4
000008	2.4 UA	980.0 V	187.0 MV	21.7
000009	1.5 UA	930.5 V	136.0 MV	27.9
000011	5. UA	917.0 V	158.0 MV	23.4
000012	800. NA	1.300 KV	166.0 MV	25.9
000014	800. NA	910. V	123.0 MV	28.8
000016	320. NA	1.0075 KV	134.5 MV	27.3
000018	390. NA	944.0 V	116.5 MV	28.6
000019	350. NA	1.020 KV	134.5 MV	28.9
000020	1.4 UA	1.022 KV	120.0 MV	28.4
000023	800. NA	905.5 V	142.5 MV	27.5
000026	6. UA	879.5 V	157.0 MV	21.9
000030	420. NA	1.0195 KV	137.0 MV	27.9
000033	1.3 UA	912.0 V	169.5 MV	25.1

QAGS0505 MEASUREMENTS COVER SHEET DATE 07/18/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 84
PRIOR = NONE
TST CMPL = 07/18/78

SAMPLE SIZE = 16
REJECTS = 7
% REJECTED = 43.75 %

DESCRIPTION = NPN PL-99.784
8-7 POWER CYCLING
4000 CYCLES

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001	MIN =	0	ELECT READING	MEAN = 3.1567442 UA
			MAX = 50. UA	0		3 STD DEV = 21.475396 UA
BVCES	002	002	MIN = 800. V	6	ELECT READING	MEAN = 947.1110 V
			MAX =	1		3 STD DEV = 120.04216 V
VCES 2	003	003	MIN =	0	ELECT READING	MEAN = 136.74968 MV
			MAX = 1. V	0		3 STD DEV = 54.33976 MV
HFE 3	004	004	MIN = 20.	0	ELECT READING	MEAN = 26.631210
			MAX = 60.	0		3 STD DEV = 8.130887

DEVICE = SJ6708H

CONTROL # = 0S5238
LOT = 001
READOUT = 84

UNIT	ICES 1	BVCES	VCES 2	HFE 3
000001	1.5 UA	968.0 V	130.0 MV	26.3
000003	400. NA	916.0 V	129.0 MV	22.1
000007	800. NA	985.5 V	118.0 MV	29.4
000008	2.3 UA	981.5 V	178.5 MV	21.9
000009	1.2 UA	930.5 V	136.5 MV	28.3
000011R	30. UA	645.0 V*	156.0 MV	23.9
000012R	770. NA	*	157.5 MV	26.2
000014R	750. NA	0. MV*	114.5 MV	29.0
000016	370. NA	1.0115 KV	134.5 MV	27.6
000018R	450. NA	0. MV*	119.5 MV	29.2
000019R	390. NA	0. MV*	123.5 MV	29.9
000020R	1.2 UA	0. MV*	119.0 MV	28.6
000023	530. NA	939.5 V	130.5 MV	27.7
000026	8.0 UA	878.5 V	155.5 MV	21.9
000030R	380. NA	0. MV*	127.0 MV	28.6
000033	1.5 UA	913.0 V	158.5 MV	25.5

QACS0505 MEASUREMENTS READOUT DETAIL DATE 07/18/78 PAGE 3

DEVICE = SJ6708H

CONTROL # = 0S5238
LOT = 001
READOUT = 84

REJECT LIST

000011 000012 000014 000018 000019 000020 000030

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 84

REJECT LIST

ELECTRICAL REJECTS

UNIT	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE	PARAM	PAGE
000011	BVCES	2										
000012	BVCES	2										
000014	BVCES	2										
000018	BVCES	2										
000019	BVCES	2										
000020	BVCES	2										
000030	BVCES	2										

QACS0505 MEASUREMENTS COVER SHEET DATE 03/28/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 85
PRIOR = NONE
TST CMPL = 03/27/78

SAMPLE SIZE = 17
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
B-7 POWER CYCLE THERMAL SHOCK
25 CYCLES

PARAMETER CONDITIONS	PARM #	TEST #		LIMITS	# FAILURES	REJECT CRITERIA		
ICES 1	001	001						
			MIN =		0	ELECT READING	MEAN =	650.4112 NA
			MAX =	50. UA	0		3 STD DEV =	1.0317507 UA
BVCES	002	002						
			MIN =	800. V	0	ELECT READING	MEAN =	939.0000 V
			MAX =		0		3 STD DEV =	152.33679 V
VCES 2	003	003						
			MIN =		0	ELECT READING	MEAN =	130.58793 MV
			MAX =	1. V	0		3 STD DEV =	41.02011 MV
HFE 3	004	004						
			MIN =	20.	0	ELECT READING	MEAN =	26.417587
			MAX =	60.	0		3 STD DEV =	10.810658

QACS0005 MEASUREMENTS READOUT DETAIL DATE 03/26/76 PAGE 2

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 85

UNIT	ICES 1	BVCES	VCES 2	HFE 3
000034	1.5245 UA	893.5 V	137.5 MV	30.0
000035	481.0 NA	891.5 V	138.0 MV	20.7
000038	469.0 NA	964.5 V	135.5 MV	22.0
000040	762.0 NA	934.5 V	114.0 MV	31.3
000042	573.5 NA	937.0 V	131.5 MV	21.9
000046	516.0 NA	864.5 V	129.5 MV	23.9
000048	480.5 NA	983.5 V	128.0 MV	26.4
000049	1.6055 UA	886.5 V	148.0 MV	29.6
000050	489.0 NA	927.5 V	125.5 MV	28.0
000051	614.5 NA	958.5 V	124.5 MV	29.5
000052	589.0 NA	960.0 V	114.0 MV	30.4
000053	530.0 NA	984.5 V	119.0 MV	27.5
000054	400.5 NA	827.0 V	125.5 MV	21.1
000055	465.5 NA	957.0 V	134.0 MV	21.9
000056	521.0 NA	959.5 V	117.5 MV	28.8
000060	491.5 NA	1.0035 KV	125.5 MV	26.9
000063	564.0 NA	1.0295 KV	172.5 MV	25.2

QACS0505 MEASUREMENTS COVER SHEET DATE 04/06/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 86
PRIOR = NONE
TST CMPL = 04/05/78

SAMPLE SIZE = 17
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
B-7 POWER CYCLE THERMAL SHOCK
75 CYCLES

PARAMETER	CONDITIONS	PARM #	TEST #	LIMITS		# FAILURES	REJECT CRITERIA		
ICES 1		001	001						
				MIN =		0	ELECT READING	MEAN =	536.9701 NA
				MAX =	50. UA	0		3 STD DEV =	1.0648491 UA
BVCES		002	002						
				MIN =	800. V	0	ELECT READING	MEAN =	938.7351 V
				MAX =		0		3 STD DEV =	151.49812 V
VCES 2		003	003						
				MIN =		0	ELECT READING	MEAN =	130.67620 MV
				MAX =	1. V	0		3 STD DEV =	40.80827 MV
HFE 3		004	004						
				MIN =	20.	0	ELECT READING	MEAN =	25.952896
				MAX =	60.	0		3 STD DEV =	10.347897

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 86

UNIT	ICES 1		BVCES		VCES 2		HFE 3
000034	1.3570	UA	894.5	V	135.5	MV	29.3
000035	429.0	NA	895.5	V	137.5	MV	20.8
000038	373.5	NA	964.5	V	137.5	MV	21.6
000040	514.5	NA	939.0	V	114.5	MV	30.3
000042	439.5	NA	936.5	V	134.0	MV	21.5
000046	418.0	NA	863.0	V	127.0	MV	25.6
000048	353.0	NA	985.5	V	128.0	MV	27.9
000049	1.6210	UA	882.5	V	145.5	MV	29.4
000050	442.5	NA	926.0	V	124.0	MV	27.9
000051	432.0	NA	955.5	V	124.5	MV	28.7
000052	527.0	NA	967.5	V	115.0	MV	30.2
000053	420.0	NA	982.0	V	121.5	MV	27.0
000054	315.0	NA	829.5	V	126.0	MV	20.7
000055	392.0	NA	958.5	V	134.0	MV	22.0
000056	345.0	NA	958.0	V	118.0	MV	27.9
000060	328.0	NA	1.0025	KV	125.0	MV	28.8
000063	421.5	NA	1.0270	KV	174.0	MV	24.6

QACS0505 MEASUREMENTS COVER SHEET DATE 04/13/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = 055236
LOT = 001
READOUT = 67
PRIOR = NONE
TST CMPL = 04/12/78

SAMPLE SIZE = 17
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
B-7 POWER CYCLE THERMAL SHOCK
175 CYCLES

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001				
			MIN =	0	ELECT READING	MEAN = 517.9406 NA
			MAX = 50. UA	0		3 STD DEV = 1.0895319 UA
BVCES	002	002				
			MIN = 800. V	0	ELECT READING	MEAN = 938.0881 V
			MAX =	0		3 STD DEV = 163.25038 V
VCES 2	003	003				
			MIN =	0	ELECT READING	MEAN = 130.97023 MV
			MAX = 1. V	0		3 STD DEV = 38.59139 MV
HFE 3	004	004				
			MIN = 20.	0	ELECT READING	MEAN = 25.776397
			MAX = 60.	0		3 STD DEV = 10.423547

QACS0505 MEASUREMENTS READOUT DETAIL DATE 06/16/78 PAGE 2

DEVICE = SJ6706H CONTROL # = 0S5238
LOT = 001
READOUT = 83

UNIT	ICES 1	BVCES	VCES 2	HFE 3
000001	1.5 UA	960. V	138.0 MV	26.1
000003	420. NA	904.5 V	132.0 MV	21.6
000007	430. NA	1.000 KV	120.0 MV	29.4
000008	2.4 UA	980.0 V	167.0 MV	21.7
000009	1.5 UA	930.5 V	136.0 MV	27.9
000011	5. UA	917.0 V	158.0 MV	23.4
000012	800. NA	1.300 KV	166.0 MV	25.9
000014	800. NA	910. V	123.0 MV	28.8
000016	320. NA	1.0075 KV	134.5 MV	27.3
000018	390. NA	944.0 V	116.5 MV	28.6
000019	350. NA	1.020 KV	134.5 MV	28.9
000020	1.4 UA	1.022 KV	120.0 MV	28.4
000023	800. NA	905.5 V	142.5 MV	27.5
000026	6. UA	879.5 V	157.0 MV	21.9
000030	420. NA	1.0195 KV	137.0 MV	27.9
000033	1.3 UA	912.0 V	169.5 MV	25.1

CACS0505 MEASUREMENTS COVER SHEET DATE 04/27/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = CS5231
LOT = 001
READOUT = 88
PRIOR = NONE
TST CMPL = 04/26/78

SAMPLE SIZE = 17
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
8-7 POWER CYCLE THERMAL SHOCK
300 CYCLES

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001				
			MIN =	0	ELECT READING	MEAN = 803.8231 NA
			MAX = 50. UA	0		3 STD DEV = 1.9261624 UA
BVCES	002	002				
			MIN = 800. V	0	ELECT READING	MEAN = 942.2646 V
			MAX =	0		3 STD DEV = 166.98463 V
VCES 2	003	003				
			MIN =	0	ELECT READING	MEAN = 130.82319 MV
			MAX = 1. V	0		3 STD DEV = 40.80089 MV
HFE 3	004	004				
			MIN = 20.	0	ELECT READING	MEAN = 26.235229
			MAX = 60.	0		3 STD DEV = 10.475488

GACS0505 MEASUREMENTS READOUT DETAIL DATE 04/27/78 PAGE 2

DEVICE = SJ67C8H CONTROL # = CS5238
LOT = 001
READOUT = 88

UNIT	ICES 1	EVCES	VCES 2	HFE 3
000034	2.1 UA	902.5 V	137.0 MV	30.0
000035	520. NA	905.5 V	139.5 MV	20.9
000038	350. NA	969.0 V	137.0 MV	22.0
000040	620. NA	926.5 V	113.5 MV	30.9
000042	430. NA	943.5 V	133.5 MV	21.9
000046	475. NA	865.0 V	128.0 MV	24.0
000048	1.7 UA	1.0065 KV	127.5 MV	28.4
000049	2.3 UA	879.5 V	145.5 MV	29.5
000050	560. NA	916.0 V	125.5 MV	28.0
000051	575. NA	957.0 V	124.5 MV	26.9
000052	1.6 UA	972.0 V	115.5 MV	29.8
000053	475. NA	965.5 V	120.5 MV	27.2
000054	380. NA	831.5 V	126.0 MV	20.9
000055	320. NA	957.5 V	136.5 MV	21.6
000056	430. NA	955.5 V	116.0 MV	28.2
000060	350. NA	1.0055 KV	125.5 MV	28.8
000063	480. NA	1.0300 KV	172.5 MV	25.0

QACS0505 MEASUREMENTS COVER SHEET DATE 05/16/78 PAGE 1

DEVICE = SJ6708H

CONTROL # = 055238
LOT = 001
READOUT = 89
PRIOR = NONE
TST CMPL = 05/15/78

SAMPLE SIZE = 17
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
B-7 POWER CYCLE THERMAL SHOCK
500 CYCLES

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001				
			MIN =	0	ELECT READING	MEAN = 761.7642 NA
			MAX = 50. UA	0		3 STD DEV = 2.0449988 UA
BVCES	002	002				
			MIN = 800. V	0	ELECT READING	MEAN = 941.2058 V
			MAX =	0		3 STD DEV = 154.28503 V
VCES 2	003	003				
			MIN =	0	ELECT READING	MEAN = 130.08791 MV
			MAX = 1. V	0		3 STD DEV = 39.11977 MV
HFE 3	004	004				
			MIN = 20.	0	ELECT READING	MEAN = 26.088195
			MAX = 60.	0		3 STD DEV = 10.375797

DEVICE = SJ6708H

CONTROL # = 0S5238
LOT = 001
READOUT = 89

UNIT	ICES 1	BVCES	VCES 2	HFE 3
000034	2.5 UA	899.5 V	137.5 MV	29.8
000035	480. NA	907.5 V	137.0 MV	21.1
000038	350. NA	968.5 V	136.0 MV	21.7
000040	570. NA	925.0 V	116.0 MV	30.4
000042	400. NA	941.5 V	131.0 MV	21.7
000046	440. NA	863.0 V	127.0 MV	23.5
000048	1.16 UA	1.0035 KV	126.5 MV	27.9
000049	2.5 UA	881.5 V	145.0 MV	29.7
000050	540. NA	917.0 V	124.0 MV	28.0
000051	510. NA	957.0 V	123.5 MV	28.9
000052	1.20 UA	972.5 V	115.5 MV	30.0
000053	430. NA	985.0 V	119.0 MV	27.2
000054	350. NA	851.5 V	125.5 MV	21.0
000055	340. NA	957.0 V	134.5 MV	21.5
000056	390. NA	959.5 V	118.0 MV	28.1
000060	330. NA	1.0075 KV	124.5 MV	28.1
000063	460. NA	1.0235 KV	171.0 MV	24.9

QACS0505 MEASUREMENTS COVER SHEET DATE 07/06/78 PAGE 1

DEVICE = SJ6708M

CONTROL # = 055238
LOT = 001
READOUT = 90
PRIOR = NONE
TST CMPL = 07/01/78

SAMPLE SIZE = 17
REJECTS = 0
% REJECTED = .00 %

DESCRIPTION = NPN PL-99.784
B-7 POWER CYCLE THERMAL SHOCK
VIBRATION VARIABLE FREQUENCY
TABLE 4 LIMIT 1

PARAMETER CONDITIONS	PARM #	TEST #	LIMITS	# FAILURES	REJECT CRITERIA	
ICES 1	001	001				
			MIN =	0	ELECT READING	MEAN = 1.0841140 UA
			MAX = 50. UA	0		3 STD DEV = 5.732714 UA
BVCES	002	002				
			MIN = 800. V	0	ELECT READING	MEAN = 826.8823 V
			MAX =	0		3 STD DEV = 66.01277 V
VCES 2	003	003				
			MIN =	0	ELECT READING	MEAN = 133.73494 MV
			MAX = 1. V	0		3 STD DEV = 62.39303 MV
HFE 3	004	004				
			MIN = 20.	0	ELECT READING	MEAN = 27.447006
			MAX = 60.	0		3 STD DEV = 8.228665

DEVICE = SJ6708M

CONTROL # = DS5238
LOT = 001
READOUT = 90

UNIT	ICES 1	BVCES	VCES 2	HFE 3
000071	460. NA	851.5 V	116.0 MV	30.9
000072	420. NA	827.5 V	140.5 MV	25.9
000073	380. NA	847.5 V	135.5 MV	27.7
000075	340. NA	807.5 V	132.0 MV	22.4
000078	410. NA	821.0 V	116.0 MV	29.8
000080	420. NA	876.0 V	117.5 MV	29.6
000086	380. NA	815.5 V	122.5 MV	27.3
000092	410. NA	815.0 V	114.0 MV	31.2
000095	8.2 UA	847.5 V	183.5 MV	23.7
000105	3.4 UA	812.5 V	162.5 MV	29.6
000108	460. NA	807.5 V	126.0 MV	26.6
000113	640. NA	810.5 V	131.5 MV	28.1
000114	420. NA	807.5 V	114.0 MV	30.4
000115	320. NA	815.5 V	130.5 MV	22.7
000117	550. NA	869.5 V	121.0 MV	28.9
000118	560. NA	805.5 V	132.5 MV	24.2
000123	660. NA	819.5 V	178.0 MV	27.6