

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1010376		REVISIONS	
SYM	DESCRIPTION	DATE	APPROVAL
-	TAKEN FROM BUWEP DWG C2318944		

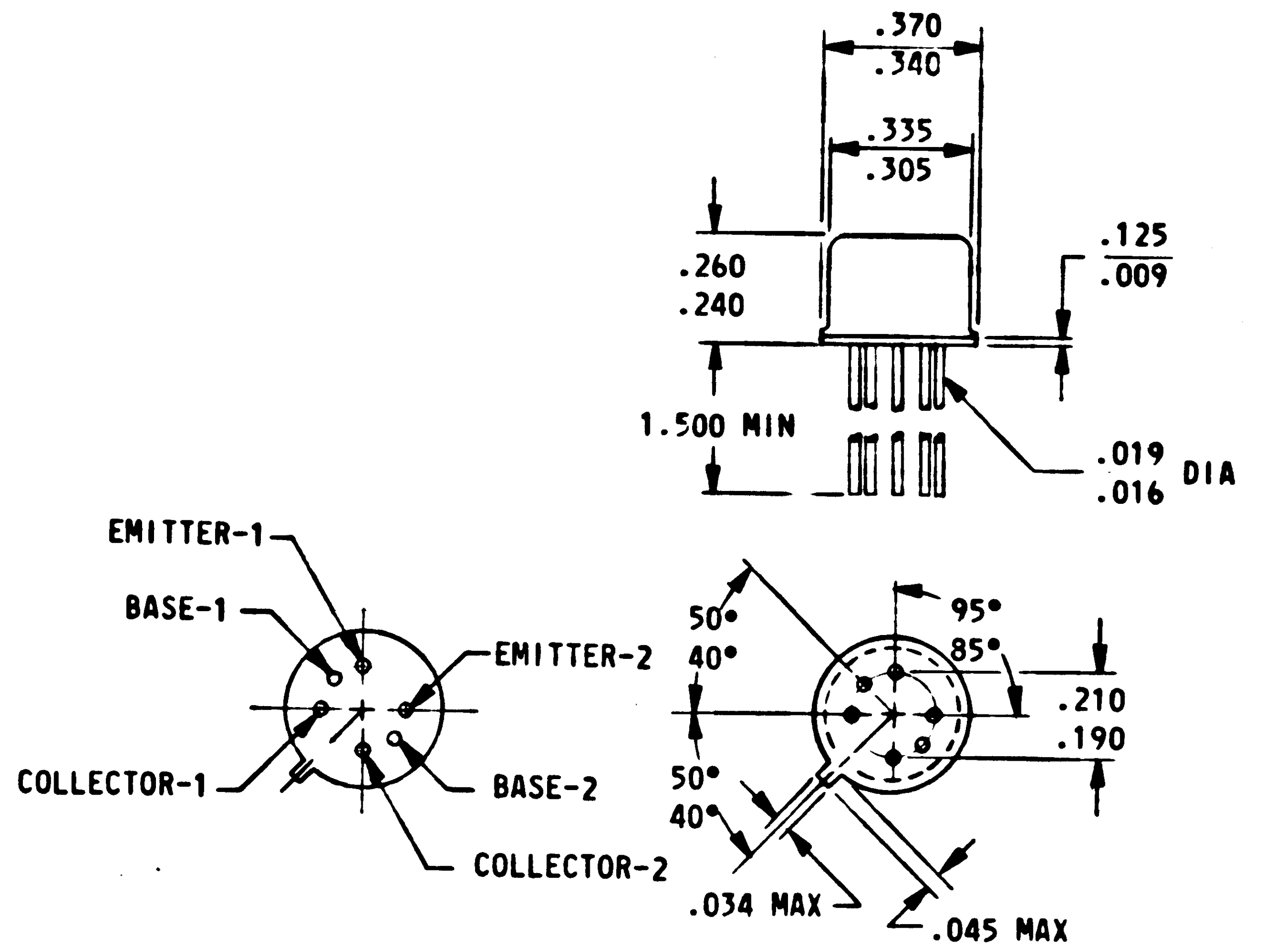
NOTES:

1. GENERAL REQUIREMENTS FOR EACH SECTION, UNLESS OTHERWISE SPECIFIED.
 - A. UNIT SHALL BE IN ACCORDANCE WITH MIL-S-19500, IN ADDITION TO THE REQUIREMENTS SPECIFIED HEREIN.
 - B. ABSOLUTE MAXIMUM RATINGS AT 25 ± 3 DEGREES CENTIGRADE, (AMBIENT):
 - COLLECTOR TO EMITTER VOLTAGE (VCE0): 60 VOLTS DC.
 - COLLECTOR TO EMITTER VOLTAGE (VCE): 80 VOLTS DC (RBE < 10n).
 - COLLECTOR TO BASE VOLTAGE (VCBO): 100 VOLTS DC.
 - EMITTER TO BASE VOLTAGE (VEBO): 7 VOLTS DC.
 - POWER DISSIPATION: (EACH SECTION)
 - AT 25°C CASE TEMPERATURE: 1.5 WATTS.
 - AT 100°C CASE TEMPERATURE: 860 MILLIWATTS.
 - AT 25°C AMBIENT TEMPERATURE: 500 MILLIWATTS.
 - POWER DISSIPATION (DUAL) TOTAL:
 - AT 25°C CASE TEMPERATURE: 3 WATTS.
 - AT 100°C CASE TEMPERATURE: 1.7 WATTS.
 - AT 25°C AMBIENT TEMPERATURE: 600 MILLIWATTS.
 - C. TEMPERATURE RANGE:
 - STORAGE: MINUS 65 TO PLUS 200 DEGREES CENTIGRADE.
 - OPERATING JUNCTION: PLUS 200 DEGREES CENTIGRADE, MAX.
 - D. ELECTRICAL CHARACTERISTICS: PER TABLE I AND II.
 - E.T.P.D.: AS SPECIFIED HEREIN WITH MAXIMUM ACCEPTANCE NUMBER 3 PER MIL-S-19500.
 - TEST DATA SHALL BE FURNISHED UPON REQUEST.
 - ORDERS SHALL BE FILLED FROM ONE MANUFACTURING LOT, HOWEVER, ORDERS WHICH ARE GREATER THAN ONE MANUFACTURING LOT MAY BE FILLED FROM ADDITIONAL LOTS. SUPPLIER SHALL CONFORM WITH THE QUALITY ASSURANCE PROVISIONS OF ND1015404 SECTION.
2. CONSTRUCTION REQUIREMENTS:
 - A. SEMICONDUCTOR: SILICON, NPN, DOUBLE-DIFFUSED,
 - B. CASE: METAL, SUITABLY PROTECTED TO WITHSTAND ENVIRONMENTAL REQUIREMENTS.
 - C. LEADS: SIX (6), SOLDERABLE, FLEXIBLE AND WELDABLE SOLID *KOVAR CONDUCTORS GREASE AND OIL FREE; GOLD FLASHED PER ND PS1015402. A CERTIFICATE OF COMPLIANCE FOR LEAD MATERIAL SHALL ACCOMPANY EACH LOT SHIPPED. EACH LEAD SHALL WITHSTAND AN AXIAL PULL OF FOUR (4) POUNDS MINIMUM.
 - D. HEADER: SHALL BE HERMETICALLY (GLASS-KOVAR) SEALED AND IMPERVIOUS TO LIGHT.
 - E. MARKING: PER MIL-S-19500 AND SHALL INCLUDE THE MANUFACTURER'S NAME AND OR SYMBOL, DATE CODE, AND TYPE NUMBER. THE NASA NO. SHALL APPEAR ON EACH INTERIOR AND EXTERIOR SHIPPING CONTAINER AS WELL AS ON A TAG TO BE INCLUDED IN EACH SHIPPING CONTAINER.
3. ENVIRONMENTAL REQUIREMENTS: SHALL MEET THE REQUIREMENTS OF ND 1002000
4. PULSE CONDITIONS: WIDTH = 300u sec; DUTY CYCLE < 1%.
5. LOWEST VALUE OF hFE SHALL BE hFE1 (NUMERATOR).
6. VALUES SHOWN IN PARENTHESES IN TABLES, ARE APPLICABLE ONLY FOR 1010376-3.
7. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ORIGINAL SOURCE OF SUPPLY:
 FAIRCHILD SEMICONDUCTOR CORP.
 545 WHISMAN ROAD
 MOUNTAIN VIEW, CALIFORNIA

1010376-1 TYPE NO. SP-8126
 1010376-2 TYPE NO. SP8127
 SAME AS 2318944-1, EXCEPT, SUBSTITUTE FOR hfe (1kc) REQUIREMENTS; hfe=80 TO 120 AT VCE=5V; IC=1mA; f=1kc; TA=25°C
 1010376-3 TYPE NO. SP-8143
 SAME AS 1010376-1, EXCEPT FOR ADDITIONAL REQUIREMENTS: hfe=75 TO 125 AT VCE=10V; IC=300uA; TA=25°C. (SEE NOTE 7)
 (CONTINUED ON SHEET 2)

FOR INFORMATION ONLY
 CLASS B RELEASE TDR No. 00162 DATE 12.12.62



REV-	REV-	REV-
SHEET 1	SHEET 2	SHEET 3
REVISION STATUS OF SHEETS		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Ray Wheeler</i> DATE 3 Dec 62 CHECKED <i>B.M. Slepov</i> 6 DEC 62 APPROVAL <i>B. Graham</i> 10 Dec 62		SEMICONDUCTOR DEVICE, TRANSISTOR, SILICON, DUAL SECTION SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W.J. R. Price</i> 12-12-62 MIT APPROVAL <i>W.H. Kuffner</i> 12/12/62			
CODE IDENT NO.	SIZE	NASA DRAWING NO.	
	C	1010376	
SCALE	NONE	WT	SHEET 1 OF 3

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ±	DO NOT SCALE THIS DRAWING	MATERIAL	HEAT TREATMENT	FINAL FINISH
SEE NOTE 2			NONE	NONE
NEXT ASSY	USED ON	APPLICATION		

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

TABLE I

TEST PROCEDURE, INSPECTION & SYMBOLS PER MIL-S-19500						
STANDARD TEST CONDITIONS, UNLESS OTHERWISE SPECIFIED: TA = 25°C; f=1kc						
GROUP A						
PARAMETER	TEST CONDITIONS	SYMBOL	LIMITS		UNITS	LTPD (%)
			MIN	MAX		
COLLECTOR CUT-OFF CURRENT	IE=0 VCB=80V	ICBO	--	2	10 ⁻⁹ A	5 COMBINED
COLLECTOR CUT-OFF CURRENT	IE=0 VCB=80V TA=150°C	ICBO	--	10	10 ⁻⁶ A	
EMITTER CUT-OFF CURRENT	IC=0 VEB=5V	IEBO	--	2	nA	
BREAKDOWN VOLTAGE	IE=100uA IC=0	BVEBO	7	--	VOLTS	5 COMBINED
BREAKDOWN VOLTAGE (SEE NOTE 4)	IC=100mA RBE=10Ω	LVCER	80	--	VOLTS	
BREAKDOWN VOLTAGE	IC=100uA IE=0	BVCBO	100	--	VOLTS	
BREAKDOWN VOLTAGE (SEE NOTE 4)	IC=30mA IB=0	LVCED	60	--	VOLTS	
STATIC FORWARD CURRENT TRANSFER RATIO	IC=10uA VCE=10V	hFE	25 (40)	75 (100)	--	
STATIC FORWARD CURRENT TRANSFER RATIO	IC=100uA VCE=10V	hFE	30 (60)	90 (125)	--	
STATIC FORWARD CURRENT TRANSFER RATIO	IC=1mA VCE=10V	hFE	40 (80)	120 (150)	--	
STATIC FORWARD CURRENT TRANSFER RATIO (SEE NOTE 4)	IC=10mA VCE=10V	hFE	50 (90)	150 (180)	--	
STATIC FORWARD CURRENT TRANSFER RATIO, RATIO (SEE NOTE 5)	IC=1mA VCE=10V	hFE 1 hFE 2	.9	1	--	5 COMBINED
STATIC FORWARD CURRENT TRANSFER RATIO, RATIO (SEE NOTE 5)	IC=100uA VCE=10V	hFE 1 hFE 2	.9	1	--	
SATURATION VOLTAGE	IC=50mA IB=5mA	VCE (sat)	--	1.2	VOLTS	
SATURATION VOLTAGE	IC=50mA IB=5mA	VBE (sat)	--	.9	VOLTS	5 COMBINED
BASE VOLTAGE DIFFERENTIAL (ABSOLUTE VALUE)	IC=1mA VCE=5V	VBE 1 - VBE 2	--	5	mV	
BASE VOLTAGE DIFFERENTIAL (ABSOLUTE VALUE)	IC=100uA VCE=5V	VBE 1 - VBE 2	--	5	mV	
BASE VOLTAGE DIFFERENTIAL CHANGE	IC=100uA VCE=5V TA=-55°C TO 125°C	Δ VBE 1 - VBE 2	--	10	uV/°C	
SMALL-SIGNAL, SHORT-CIRCUIT INPUT IMPEDANCE	IC=1mA VCB=5V	hib	20	30	OHMS	
SMALL-SIGNAL, SHORT-CIRCUIT FORWARD CURRENT TRANSFER RATIO	IC=1mA VCE=5V	hfe	50 (75)	150 (180)	--	5 COMBINED

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TABLE I (CONTINUED)

PARAMETER	TEST CONDITIONS	SYMBOL	LIMITS		UNIT	LTPD (%)
			MIN	MAX		
SMALL-SIGNAL, SHORT-CIRCUIT FORWARD CURRENT TRANSFER RATIO	IC=50mA VCE=10V f=20mc	hfe	3		--	5 COMBINED
SMALL-SIGNAL, SHORT-CIRCUIT INPUT IMPEDANCE	IC=1mA VCE=5V	hie	1000	4000 (5000)	OHMS	
SMALL-SIGNAL, OPEN CIRCUIT OUTPUT ADMITTANCE	IC=1mA VCE=5V	hoe	4	16 (20)	UMHO	
OUTPUT CAPACITANCE	IE=0 VCB=10V f=140KC	Cob	--	15	uuf	5 COMBINED
INPUT CAPACITANCE	IC=0 VEB=0.5V f=140KC	Cib	--	85	uuf	
NOISE FIGURE	IC=300uA VCE=10V BW=1- Rg=510Ω	NF	--	10	db	5

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Raymond Barber</i> DATE 3 Dec 62		SEMICONDUCTOR DEVICE, TRANSISTOR, SILICON, DUALSECTION SPECIFICATION CONTROL DRAWING	
CHECKED <i>D. M. Slusher</i> 6 DEC 62			
APPROVAL <i>D. Cushman</i> 10 Dec 62		CODE IDENT NO.	NASA DRAWING NO.
HEAT TREATMENT		SIZE	1010376
FINAL FINISH		SCALE	NONE WT
NEXT ASSY		MIT APPROVAL <i>W. J. R. White</i> 12-12-62	SHEET 2 OF 3
APPLICATION			

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TABLE II

TEST PROCEDURE, INSPECTION & SYMBOLS PER MIL-S-19500					
STANDARD TEST CONDITIONS, UNLESS OTHERWISE SPECIFIED: TA = 25°C					
GROUP B					
PARAMETER	TEST			LTPD (%)	
SUB GROUP 1: PHYSICAL DIMENSIONS	PER SKETCH			5	
SUB GROUP 2: SOLDERING TEMPERATURE CYCLING THERMAL SHOCK MOISTURE RESISTANCE	PER MIL-S-19500 -65 TO +200°C, 3 CYCLES PER MIL-STD-202 METHOD 102, TEST CONDITION C 100°C TO 0°C PER MIL-S-19500			5 COMBINED	
SUB GROUP 3: SHOCK CONSTANT ACCELERATION VIBRATION FATIGUE VIBRATION VARIABLE FREQUENCY	1500 G, 0.5m SEC, 5 BLOWS IN X1, Y1, Y2, Z1 DIRECTIONS, 20 BLOWS TOTAL 20,000G 20G 20G FROM 5 TO 2000 CYCLES LIMITED TO .5DA, 3 CYCLES, 15 MINUTES PER CYCLE MINIMUM.			5	
SUB GROUP 4: LEAD FATIGUE	PER MIL-S-19500, EXCEPT NO 3/32 RESTRICTION			5	
SUB GROUP 5: BAROMETRIC PRESSURE (OPERATING) SALT ATMOSPHERE	200,000 FEET ± 60 SEC. USE ICBO END POINT TEST MIL-S-19500			5 COMBINED	
SUB GROUP 6: STORAGE LIFE	Tstg=200°C ±5°C, METHOD B, 1000 HR.			=5	
SUB GROUP 7: OPERATING LIFE	P=600mW, VCB=50V MIN., TA=25°C, METHOD B 1000 HR.			=5	
END POINTS	TEST CONDITIONS	SYMBOL	LIMITS		UNITS
END POINTS FOR SUB GROUPS 2,3,5,6 AND 7	IC=1mA VCE=10V	hFE	36 (70)	160 (170)	-
	IE=0 VCB=80V	ICBO	-	20	10 ⁻⁹ A
ADDITIONAL END POINTS FOR SUB GROUPS 6 AND 7	1mA VCB=10V	hFE 1 hFE 2	.87	-	-

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DRAWN <i>Ray W. Keeler</i> DATE 3 Dec 62 CHECKED <i>B. M. Sluiper</i> 6 DEC 62 APPROVAL <i>D. Gushman</i> 10 Dec 62		SEMICONDUCTOR DEVICE, TRANSISTOR, SILICON, DUAL SECTION SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT		NASA APPROVAL <i>W. J. Rennie</i> 12-12-62	NASA DRAWING NO. 1010376
FINAL FINISH		MIT APPROVAL <i>W. J. Rennie</i> 12/12/62	SCALE NONE WT SHEET 3 OF 3

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	FRACTIONS	DECIMALS	ANGLES
	±	±	±
DO NOT SCALE THIS DRAWING	MATERIAL		
NEXT ASSY	USED ON	APPLICATION	

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