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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 1
- UNITS SHALL BE CAPABLE OF MEETING ALL THE QUALIFICATION REQUIREMENTS OF ND 1002051, UNLESS MODIFIED OR AMENDED BY DESIGN REQUIREMENTS SECTION OF THIS DRAWING.
- UNIT PACKAGING AND PACKING SHALL BE IN ACCORDANCE WITH MIL-P-19491 LEVEL A.
- UNITS SHALL BE IN ACCORDANCE WITH MIL-S-19500 IN ADDITION TO THE REQUIREMENTS SPECIFIED HEREIN.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- LEAD DATA: KOVAR WITH GOLD PLATING PER ND 1015402 A CERTIFICATE OF COMPLIANCE WITH THIS REQUIREMENT SHALL ACCOMPANY EACH SHIPMENT.
 - MARKING: THE MANUFACTURER'S NAME, TRADEMARK OR CODE; MANUFACTURER'S TYPE DESIGNATION; DATE CODE; LOT CODE AND SERIAL NUMBER SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART PER MIL-STD-130. MARKING OF UNIT PACKAGES AND EXTERIOR SHIPPING CONTAINERS SHALL BE IN ACCORDANCE WITH MIL-P-19491 AND SHALL INCLUDE THE NASA DRAWING NUMBER AND REVISION LETTER.
 - MECHANICAL DIMENSIONS PER OUTLINE SHOWN.
- ###### B. ELECTRICAL REQUIREMENTS: PER TABLE II & III
- COLLECTOR CUTOFF CURRENT (I_{CBO}) AT 100°C
 - EMITTER CUTOFF CURRENT (I_{EBO})
 - SWITCHBACK VOLTAGE (V_{CE0})
 - STATIC FORWARD CURRENT TRANSFER RATIO (h_{FE})
 - STATIC FORWARD CURRENT TRANSFER RATIO, RATIO.
 - BASE VOLTAGE DIFFERENTIAL.
- COLLECTOR SATURATION VOLTAGE $V_{CE(SAT)}$

3. DESIGN REQUIREMENTS:

- ELECTRICAL RATING: PER TABLE I
- ELECTRICAL CHARACTERISTICS: PER TABLES II & III
- STORAGE AND OPERATING JUNCTION TEMPERATURE: -65°C TO +200°C
- POWER DISSIPATION: (EACH ELEMENT)
 - 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.
- LIFE TEST CONDITIONS FOR ND 1002051 SAME AS BURN-IN CONDITIONS.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND1002034 FOR THIS DRAWING ONLY

MASTER

4. SPECIAL CONDITIONING BY SUPPLIER:

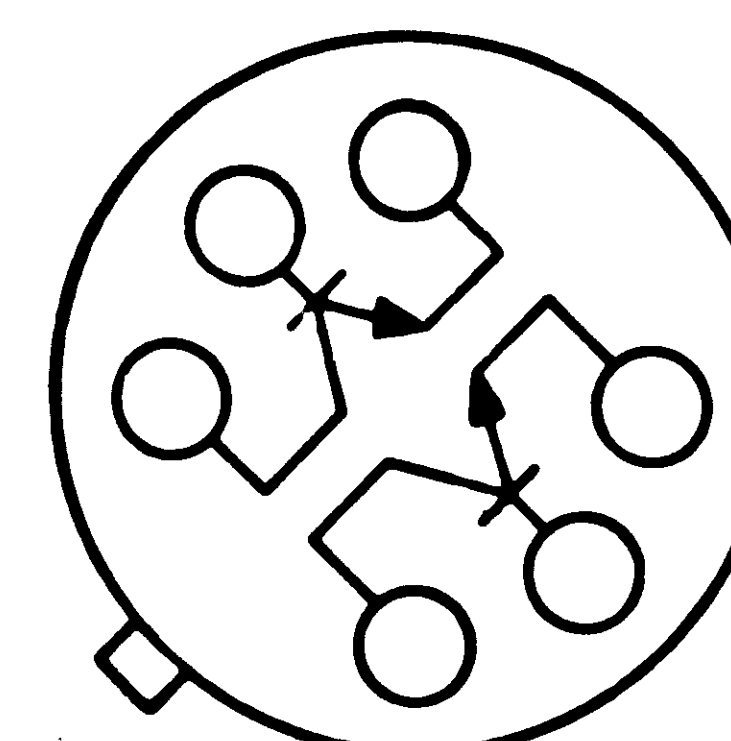
- BURN-IN: UNITS SHALL BE BURNED-IN FOR 240 HOURS AT THE FOLLOWING CONDITIONS:

- AMBIENT TEMPERATURE: $25^{\circ} \pm 5^{\circ}\text{C}$
- COLLECTOR VOLTAGE V_{CE} : 45 ± 5 VDC PER ELEMENT
- POWER DISSIPATION: 150 MW $\pm 10\%$ PER ELEMENT

- THE MANUFACTURER SHALL DETERMINE AND RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS PRIOR TO AND FOLLOWING BURN-IN:

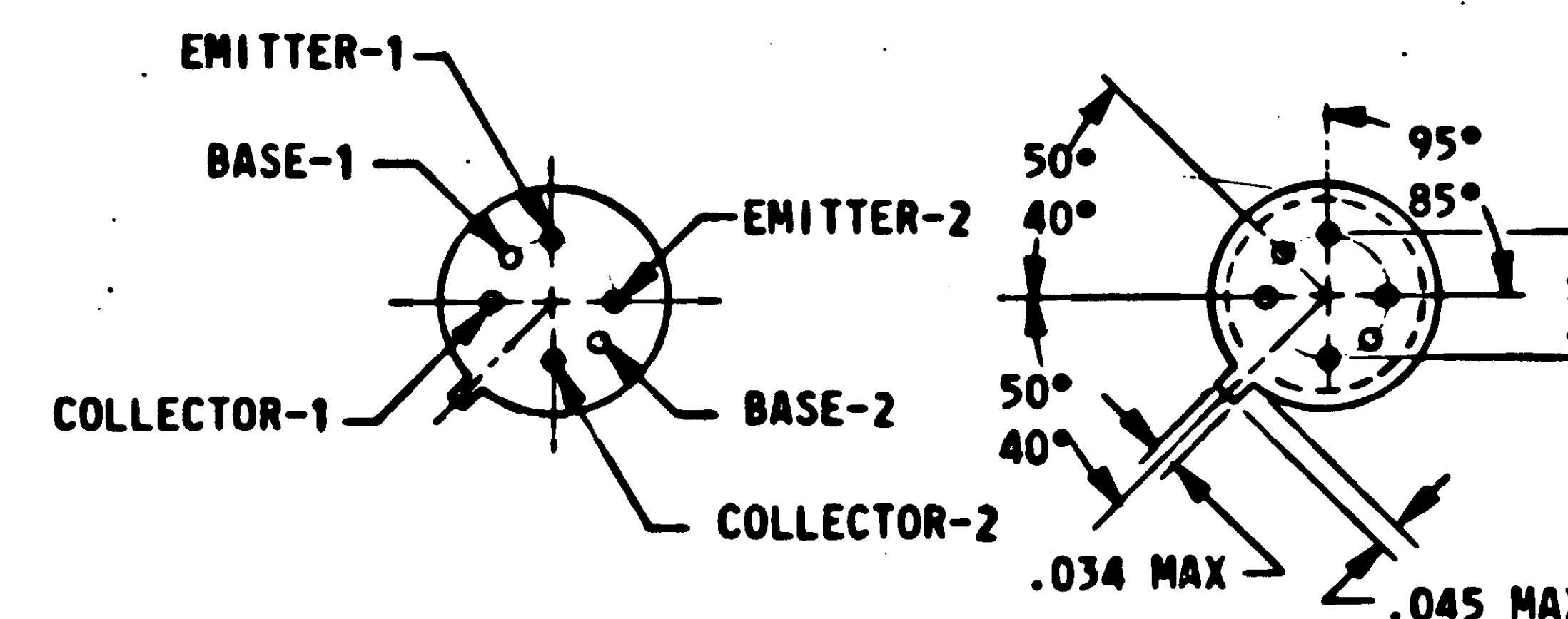
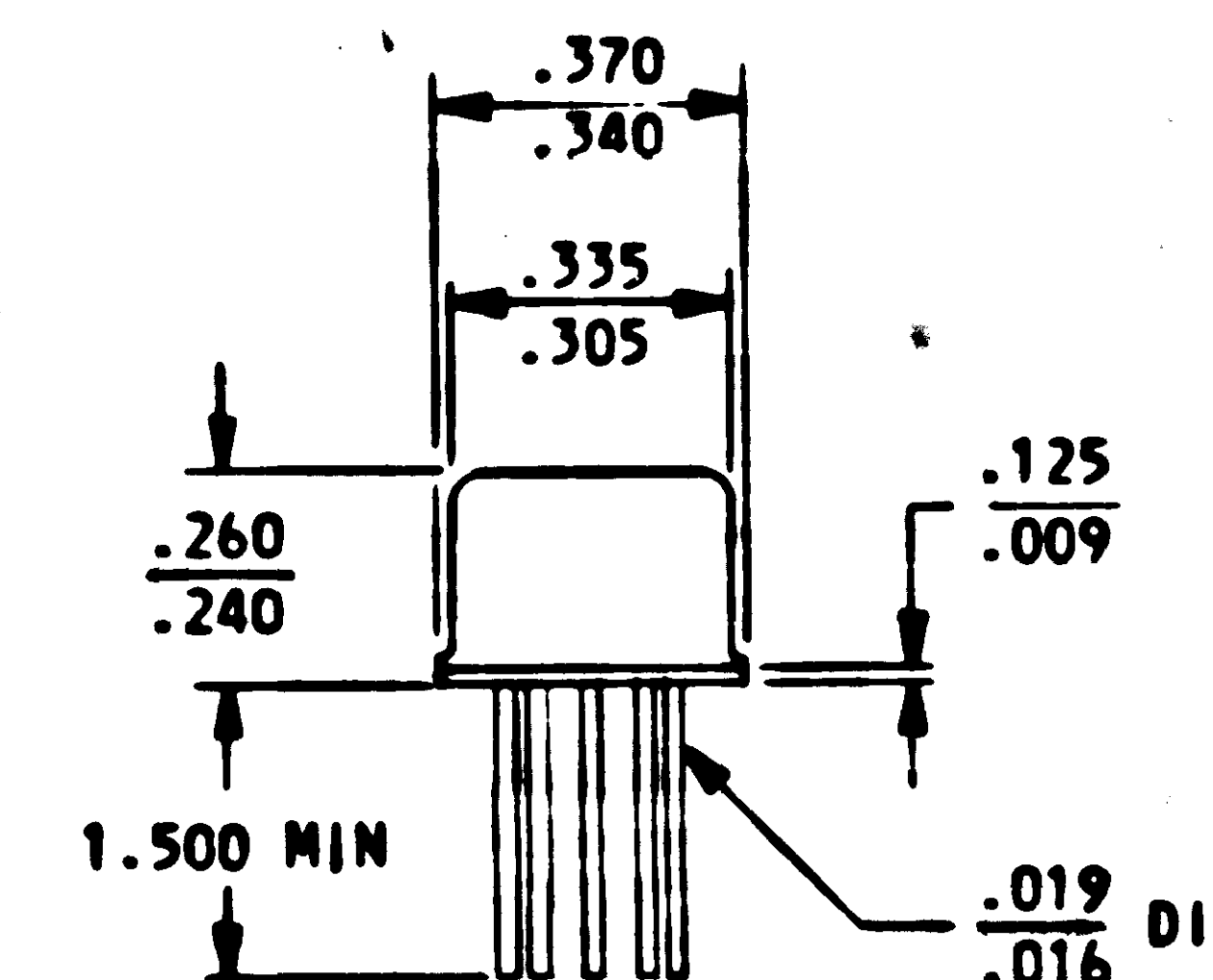
- EMITTER CUTOFF CURRENT, I_{EBO} .
- COLLECTOR CUTOFF CURRENT, I_{CBO} .
- COLLECTOR SATURATION VOLTAGE, $V_{CE(SAT)}$
- STATIC FORWARD CURRENT TRANSFER RATIO, h_{FE} , SEE NOTE 3.

- THE DATA SHALL BE PRESENTED IN A MANNER THAT PROVIDES POSITIVE IDENTIFICATION OF EACH INDIVIDUAL TRANSISTOR WITH THE INITIAL TEST READING, THE FINAL READING AND THE PERCENT CHANGE BETWEEN THE FINAL AND INITIAL READING. THE TEST DATA SUBMITTED SHALL ALSO IDENTIFY PARTS THAT FAIL TO MEET THE SPECIFIED REQUIREMENTS. HISTOGRAMS SHALL BE PLOTTED TO SHOW THE FREQUENCY DISTRIBUTION OF THE ABSOLUTE VALUE OF EACH CHARACTERISTIC AND TO SHOW THE FREQUENCY DISTRIBUTION OF THE PERCENT CHANGE OF EACH CHARACTERISTIC FROM ITS INITIAL READING. UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS OR HAVING CHANGED MORE THAN 20% IN h_{FE} , OR HAVING INCREASED MORE THAN 3 TIMES IN I_{CBO} (THE ABSOLUTE CHANGE MUST BE GREATER THAN 5 NANOAMPERE) SHALL NOT BE ACCEPTABLE.



GRAPHICAL SYMBOL
ELEMENTS INSULATED FROM CASE

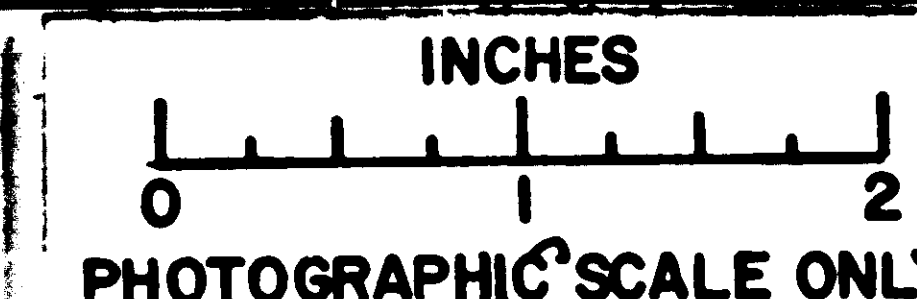
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
F	REPLACES REV E WITH CHANGES AND UPGRADED TO CLASS A RELEASE PER TDRR	6-26-63	WK
G	REVISED PER TDRR 04250	6-26-63	WK



G	F	F	G
F	F	F	F
SHEET 1	SHEET 2	SHEET 3	SHEET 4
REVISION STATUS OF SHEETS			

REPLACES REV(E) WITH CHANGE

MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT NAS9-497 DATE 25 MAY 63 DRAWN [Signature] CHECKED [Signature] 31 MAY 63 APPROVAL [Signature] 25 JUN 63	MANNED SPACECRAFT CENTER HOUSTON, TEXAS TRANSISTOR, NPN, SILICON, DUAL SECTION SPECIFICATION CONTROL DRAWING
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL	NASA APPROVAL [Signature] MIT APPROVAL [Signature] 6-26-63
HEAT TREATMENT NONE	CODE IDENT NO. SIZE C
FINAL FINISH NONE	NASA DRAWING NO. 1010376
NEXT ASSY USED ON APPLICATION	SCALE NONE WT SHEET 1 OF 4



ADDITIONAL ELECTRICAL CHARACTERISTICS AT TC = 25°C & 1000 CPS (UNLESS OTHERWISE SPECIFIED)								
NASA PART NUMBER	TYPE DESIGNATION (FOR REF ONLY)	NO. OR ELEMENTS PER DEVICE	PARAMETER	TEST CONDITIONS	SYMBOL	LIMITS		UNIT
						MIN	MAX	
1010376-4		2	ALL REQUIREMENTS OF -1					
			SWITCHBACK VOLTAGE	I _C =10mA, I _B =0	LV _{CEO}	80	-	VOLTS
			STATIC FORWARD CURRENT TRANSFER RATIO	V _{CE} =1.0VDC I _C =5mA	h _{FE}	50	-	-
			COLLECTOR TO EMITTER BREAKDOWN VOLTAGE PULSED - SEE NOTE 4	I _C =100mA R _{BE} =10Ω	BV _{CER}	100	-	VOLTS

REVISIONS			
SYM	DESCRIPTION	DATE	APPD.
F	THIS SHEET ADDED PER TDRR 01775	6/2/63	WIL
G	REVISED PER TDRR 04250	6/10/63	WIL

THIS SHEET ADDED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES + - + - + - - - - - - DO NOT SCALE THIS DRAWING MATERIAL NEXT ASSY USED ON APPLICATION		MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. 02139- CONTRACT 492		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
		DRAWN <i>Janowski</i> DATE 29 MAY 63 CHECKED <i>P. Rando</i> 31 MAY 63 APPROVAL <i>A. P. Test</i> 25 JUN 63		TRANSISTOR NPN, SILICON, DUALSECTION SPECIFICATION CONTROL DRAWING		
		NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i> 26 JUN 63		CODE IDENT NO. SCALE NONE	SIZE C	1010376
		CONTRACT		SHEET 4 OF 4		

