

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 THEREBY.

NOTES:

1. GENERAL REQUIREMENTS:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 2.
- UNITS SHALL BE CAPABLE OF MEETING THE QUALIFICATION REQUIREMENTS OF ND 1002057.
- MARKING: UNIT PACKAGES SHALL BE PERMANENTLY AND LEGIBLY MARKED, PER MIL-STD-129, WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, LOT CODE OR SERIAL NUMBER, DATE OF MANUFACTURE, AND THE NASA PART NUMBER (DRAWING NUMBER, REVISION LETTER, AND DASH NUMBER).

2. ACCEPTANCE AND INSPECTION REQUIREMENTS (100%)

A. MECHANICAL REQUIREMENTS:

- LEAD MATERIAL: NICKEL (GRADE A) PER ND PS 1015400.
- PROTECTIVE VARNISH: MOISTURE AND FUNGUS PROOF VARNISH PER MIL-V-173.
- MATERIAL AND FINISH CERTIFICATION: LEAD MATERIAL AND RESISTOR MOISTURE PROOF VARNISH COMPLIANCE SHALL BE CERTIFIED WITH EACH SHIPMENT.

B. ELECTRICAL CHARACTERISTICS (AT $25^{\circ} \pm 0.1^{\circ}\text{C}$):

- RESISTANCE VALUE: TABLE I VALUE $\pm 1\%$.
- RESISTANCE-TEMPERATURE CHARACTERISTIC: $R_T = R_{298} \cdot K e^{\beta(\frac{1}{T} - \frac{1}{298})}$
SEE TABLE II FOR β AND TABULATED VALUES OF R_T .

3. DESIGN REQUIREMENTS:

- DISSIPATION CONSTANT: SEE TABLE I FOR THE AMOUNT OF POWER WHICH WILL RAISE THE THERMISTOR ONE DEGREE CENTIGRADE ABOVE AMBIENT.
- TIME CONSTANT: SEE TABLE I FOR THE TIME REQUIRED FOR THE THERMISTOR TO REACH 63% OF THE TEMPERATURE CHANGE FOR A CERTAIN CHANGE IN AMBIENT TEMPERATURE. THE THERMISTOR WILL REACH 98% OF TEMPERATURE CHANGE IN APPROX 5 TIMES THE CONSTANT LISTED.
- STORAGE LIFE: 1 YEAR MINIMUM AT ROOM TEMPERATURE AND HUMIDITY WHEN STORED IN UNOPENED CONTAINERS.
- CONSTRUCTION: RESISTIVE WAFER MATERIAL WITH LEADS SOLDERED IN PLACE.
- ENVIRONMENTAL: CAPABLE OF OPERATION OVER THE AMBIENT TEMPERATURE RANGE OF -55°C TO $+105^{\circ}\text{C}$.

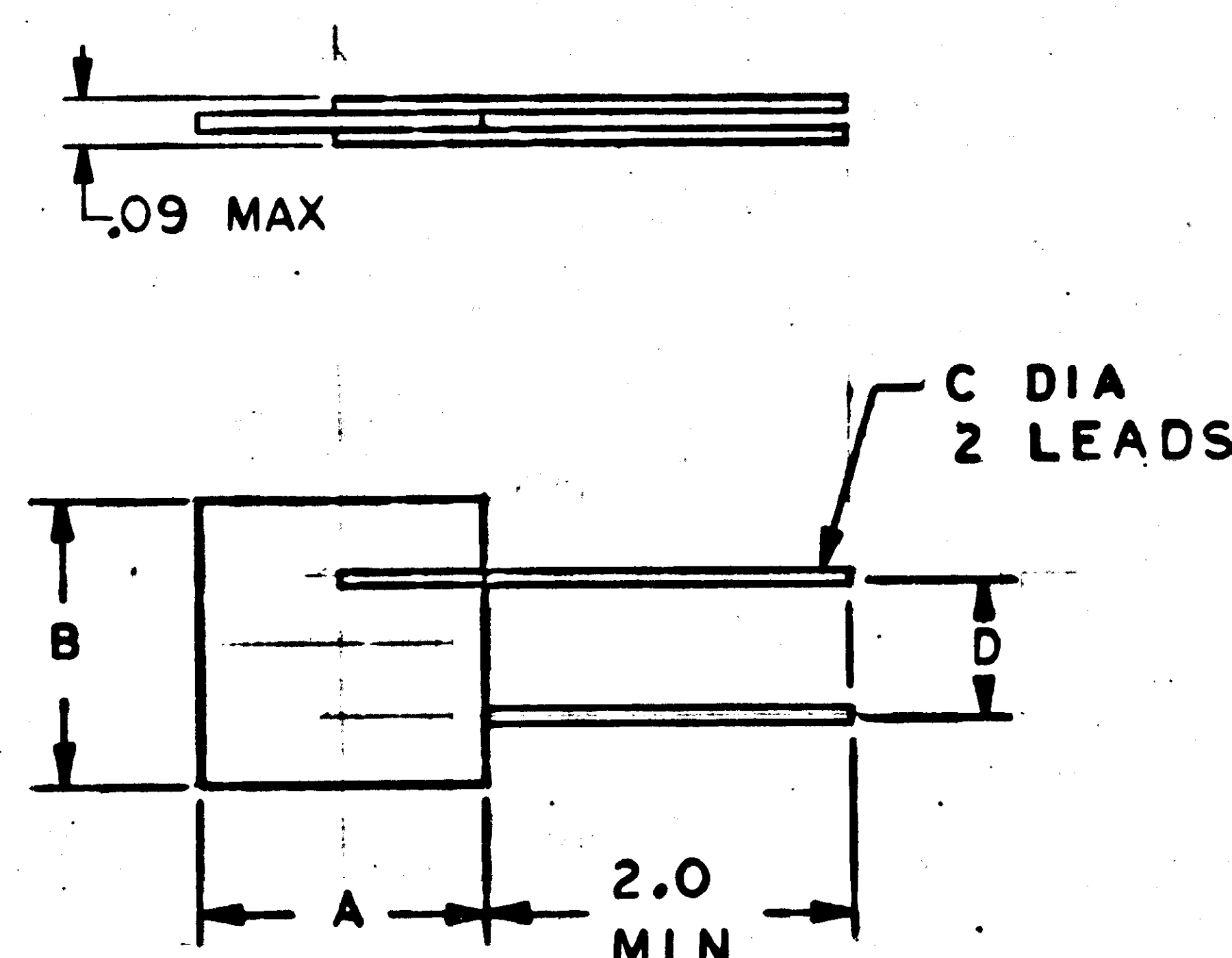
4. SPECIAL CONDITIONING:

- TEMPERATURE CYCLING: RESISTORS SHALL BE TESTED PER MIL-STD-202, METHOD 102, CONDITION C EXCEPT TEMPERATURE EXTREMES OF -55°C AND $+105^{\circ}\text{C}$. RESISTANCE, ONE HOUR AFTER TESTING, SHALL NOT VARY MORE THAN $\pm 1\%$ FROM THE INITIAL MEASUREMENT. THERE SHALL BE NO MECHANICAL DAMAGE.
- BURN-IN: RESISTORS SHALL BE BURNED IN NON-OPERATING AT 50°C FOR 100 HOURS. RESISTANCE, ONE HOUR AFTER TESTING SHALL NOT VARY MORE THAN $\pm 1\%$ FROM THE INITIAL MEASUREMENT. THERE SHALL BE NO MECHANICAL DAMAGE.

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

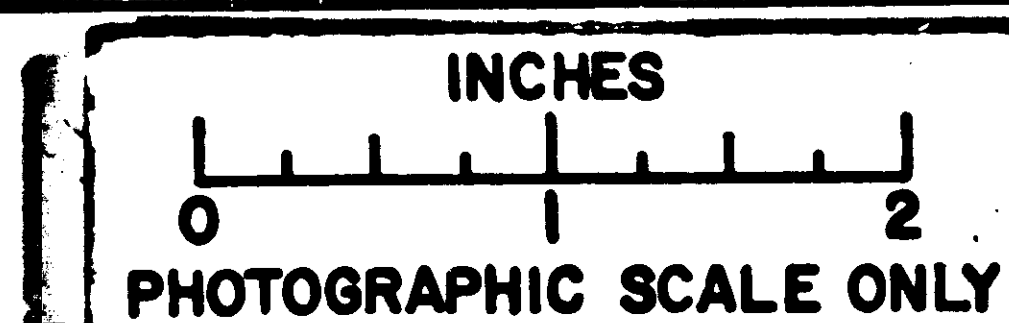
1006712

REVISIONS 03038			
SYM	DESCRIPTION	DATE	APPROVAL
-	INITIAL RELEASE CLASS A PER TDRR 03038	11/16/63	WIL
A	REVISED PER TDRR 06243	1-18-64	WIL



A	A
SHEET 1	SHEET 2
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>[Signature]</i> DATE <i>8 Aug 63</i>		RESISTOR, TEMPERATURE SENSITIVE, WAFER	
CHECKED <i>[Signature]</i> DATE <i>11/16/63</i>		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>[Signature]</i> DATE <i>9/19/63</i>		NASA DRAWING NO. 1006712	
NASA APPROVAL <i>[Signature]</i> DATE <i>9/19/63</i>		CODE IDENT NO. SIZE	SCALE NONE WT
MIT APPROVAL <i>[Signature]</i> DATE <i>10/16/63</i>		SHEET 1 OF 2	



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2129001

REVISIONS 03038			
SYM	DESCRIPTION	DATE	APPROVAL
-	INITIAL RELEASE CLASS A PER TDRR 03038	10/14/63	WJL
A	REVISED PER TDRR 06243	1-18-64	WJL

TABLE I

DASH NO.	NOMINAL RESISTANCE OHMS	RESISTANCE -TEMPERATURE CHARACTERISTIC TC/°C NOTE 2.B(2)	DISSIPATION CONSTANT MW/°C MIN	TIME CONSTANT SECONDS MIN	DIMENSIONS -			
					A	B	C	D NOM
-1	500	CURVE D	2.25	5.25	.19 .11	.19 .11	.021 .019	.10
-2	1000	CURVE D	1.95	3.75	.13 .07	.13 .07	.021 .019	.10
-3	5000	CURVE F	3.225	9.95	.28 .18	.28 .18	.021 .019	.20

TABLE II

NOMINAL RATIO $R_T/R_{25^\circ C}$			
TEMP °C	CURVE "D" $\beta = 3900 \pm 55$	CURVE "E" $\beta = 3400 \pm 80$	CURVE "F" $\beta = 4320 \pm 80$
-60	145.2	73.04	330.3
-50	68.8	38.95	131.6
-40	34.28	21.51	56.82
-30	17.92	12.33	26.31
-20	9.792	7.307	13.20
-10	5.560	4.476	6.880
0	3.274	2.825	3.93
+10	1.992	1.830	2.159
+20	1.250	1.216	1.275
+25	1.000	1.000	1.000
+30	.8053	.8267	.7890
+40	.5316	.5742	.5000
+50	.3595	.4067	.3260
+60	.2482	.2937	.2190
+70	.1747	.2160	.1500
+80	.1252	.1615	.1050
+90	.0912	.1229	.0753
+100	.0675	.0946	.0545
+110	.0507	.0739	.0407
+120	.0386	.0584	.0298
+130	.0298	.0470	.0232
+140	.0232	.0382	.0176
+150	.0184	.0313	.0137

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 Whelan</i> DATE <i>10/15/63</i> CHECKED <i>J. Ruggen</i> DATE <i>10/15/63</i> APPROVAL <i>AY G. MAYO</i> 9/1/63 APPROVAL <i>Edmond Hall</i> 9/24/63		RESISTOR, TEMPERATURE SENSITIVE, WAFER SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT		CODE IDENT NO.	NASA DRAWING NO.
NEXT ASSY USED ON		SIZE C	1006712
APPLICATION		SCALE NONE WT	SHEET 2 OF 2
FINAL FINISH		MIT APPROVAL <i>W. J. Hall</i> 10/14/63	

