

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 CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. UNITS SHALL BE CAPABLE OF MEETING THE APPLICABLE REQUIREMENTS OF MIL-R-93 CHARACTERISTIC C; EXCEPT AS AND IN ADDITION TO THE REQUIREMENTS SPECIFIED HEREIN.
- B. PACKAGING: UNITS SHALL BE PACKAGED PER ND 1002129.
- C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS OF ND 1015404 CLASS 2.
- D. INTERPRET DRAWING IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

- A. RESISTANCE VALUES: SEE TABLE.
- B. RESISTANCE TOLERANCE: SEE TABLE.
- C. TEMPERATURE COEFFICIENT: ABOVE 10 Ω 15 PPM/ $^{\circ}$ C, (EXCEPT AS SPECIFIED IN NOTE 2) 10 Ω TO 1 Ω 30 PPM/ $^{\circ}$ C, 1 Ω AND BELOW 40 PPM/ $^{\circ}$ C.
- D. LEAD DATA: WELDABLE GRADE A GOLD PLATED NICKEL PER ND PS 1015400. A CERTIFICATE OF COMPLIANCE TO L THIS REQUIREMENT SHALL ACCOMPANY EACH LOT SHIPPED.
- E. MARKING: MARK UNITS ND1002019 WITH THE NASA PART NUMBER AND REVISION LETTER AND THE MANUFACTURER'S NAME AND/OR SYMBOL. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE. MARKING OF UNIT PACKAGES AND EXTERIOR SHIPPING CONTAINERS SHALL INCLUDE NASA PART NUMBER AND REVISION LETTER.

3. DESIGN REQUIREMENTS:

- A. POWER RATING: 1/10 WATT AT +125 $^{\circ}$ C DERATED TO ZERO AT 145 $^{\circ}$ C
- B. MAXIMUM VOLTAGE RATING: 150 VOLTS.
- C. STABILITY: 100 PPM/YEAR AT +25 $^{\circ}$ C AT 1/2 RATED POWER. (SEE NOTE 2)
- D. TEMPERATURE RANGE: MINUS 65 $^{\circ}$ C TO PLUS 125 $^{\circ}$ C.
- E. EACH LEAD SHALL BE CAPABLE OF WITHSTANDING TWO (2) BENDS UNDER A TWO (2) POUND VERTICAL PULL (LEADS VERTICAL WITH RESPECT TO UNIT BODY). TWO (2) BENDS SHALL BE ACCOMPLISHED BY MOVING THE BODY OF THE UNIT, WHILE IN THE PLANE, THROUGH 90 $^{\circ}$ IN ONE DIRECTION, THEN BACK 180 $^{\circ}$ TO THE OPPOSITE DIRECTION AND BACK 90 $^{\circ}$ TO THE ORIGINAL POSITION. NO MECHANICAL DAMAGE OR LACK OF PERFORMANCE SHALL BE EVIDENCED AFTER THE TEST.
- F. EACH LEAD SHALL BE CAPABLE OF WITHSTANDING AN AXIAL PULL OF FOUR (4) POUNDS MINIMUM.

4. SPECIAL CONDITIONING BY SUPPLIER:

- A. BURN IN: 100 HOURS @ 125 $^{\circ}$ C @ 1/10 WATT (AC OR DC). REJECT ANY PART WHICH CHANGES MORE THAN 0.1% OR CANNOT MEET PURCHASE TOLERANCE.

NOTES:

1. RESISTANCE VALUES ABOVE 35K ARE NOT AVAILABLE, PER THE REQUIREMENTS OF THIS DRAWING AND MIL-R-93, USING .001 MIN. DIA. WIRE.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND1002034 FOR THIS DRAWING

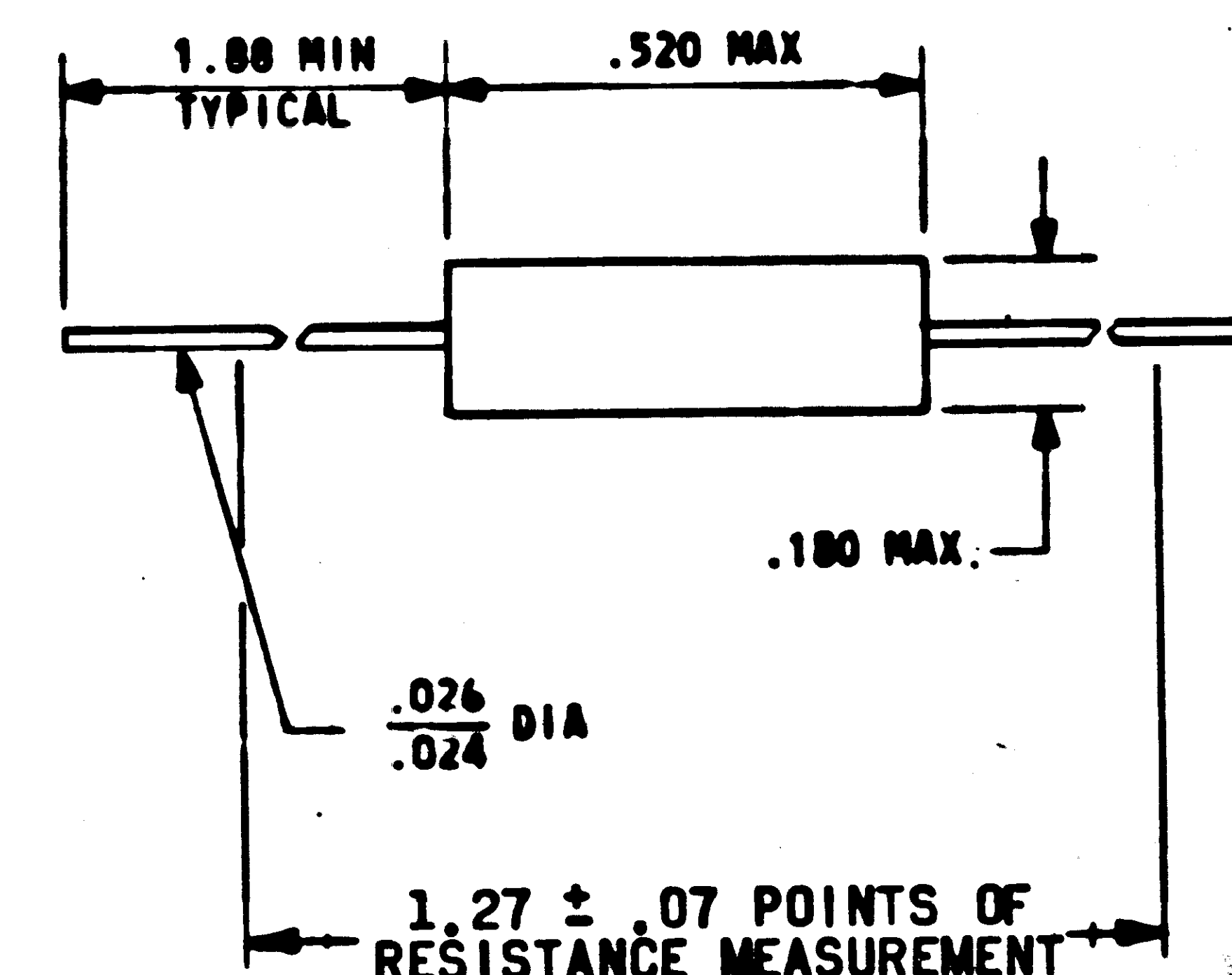
SEE NOTE 1.

DASH NO.	NOMINAL RES OHMS	RES TOL	DASH NO.	NOMINAL RES OHMS	RES TOL
1	4,000	$\pm 0.1\%$	53	25,000	$\pm 0.1\%$
2	87,500		54	12,500	
3	88,750		55	8,330	
4	90,000		56	6,250	
5	91,250		57	1	$\pm 0.5\%$
6	92,500		58	2	
7	93,750		59	3	
8	95,000		60	4	
9	96,250		61	5	
10	97,500		62	6	
11	98,750		63	7	
12	100,000		64	8	
13	101,250		65	9	
14	102,500		66	10	
15	103,750		67	11	
16	105,000		68	12	
17	106,250		69	13	
18	107,500		70	14	
19	108,750		71	15	
20	110,000		72	16	
21	111,250		73	17	
22	112,500	$\pm 0.1\%$	74	18	
23	50	$\pm 1\%$	75	19	
24	374		76	82,500	
25	400		77	83,750	
26	600		78	85,000	
27	650		79	86,250	
28	700		80	87,500	
29	750		81	88,750	
30	775		82	90,000	
31	850		83	91,250	
32	925		84	92,500	
33	1,000		85	93,750	
34	1,100		86	95,000	
35	1,200		87	96,250	
36	3,300		88	97,500	
37	10,000		89	98,750	
38	22,500		90	100,000	
39	35,000		91	101,250	
40	45,000		92	102,500	
41	67,500		93	103,750	
42	90,000		94	105,000	
43	112,000		95	106,250	
44	134,000		96	107,500	
45	157,000		97	108,750	
46	179,500		98	110,000	
47	202,500		99	111,250	
48	225,000		100	112,500	
49	39,000		101	113,750	
50	20,000		102	115,000	
51	5,000		103	116,250	
52	25,000		104	117,500	

R 1010377

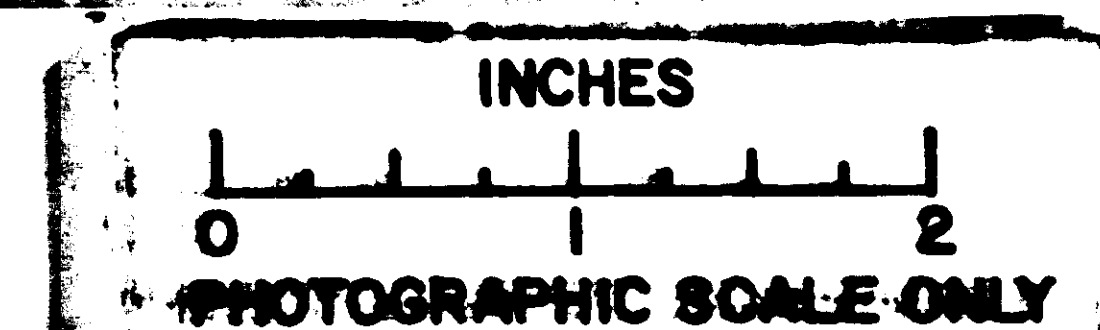
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
K	REPLACES REV J WITH CHANGES AND UPGRADED TO CLASS A RELEASE PER TDRR 02103	7/17/62	WIL
L	REVISED PER TDRR 02478	8-7-62	WIL
M	REVISED PER TDRR 03382	9/24/62	WIL
N	REVISED PER TDRR 03968	10/21/62	WIL
P	REVISED PER TDRR 07311	3/31/64	WIL
R	REVISED PER TDRR 08175	4/25/64	WIL

R	R
P	P
N	N
M	M
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	



K REPLACES REV J WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FINO NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT NA59-437 DUE NO 7 JUN 63 DRAWN [Signature] DATE 7 JUN 63 CHECKED [Signature] DATE 15 JUL 63 APPROVAL [Signature] APPROVAL [Signature]		MANNED SPACECRAFT CENTER HOUSTON, TEXAS RESISTORS, FIXED, WW, PRECISION SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE NASA DRAWING NO. C 1010377 SCALE WT SHEET 1 OF 2	



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 NOR 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 CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

D	DASH NO.	NOMINAL RES OHMS	RES TOL
	105	16,000	$\pm 1.0\%$
	106	6,200	
	107	100	
	108	150	
	109	7,500	
	110	4,700	
	111	91,000	
	112	1	
	113	15	$\pm 0.1\%$
	114	17	
	115	19	
	116	21	
	117	23	
	118	25	
	119	27	
	120	29	
	121	31	
	122	33	
	123	35	
	124	37	
	125	39	
	126	41	
	127	43	
	128	45	
	129	47	
	130	49	
	131	51	
	132	53	
	133	55	
	134	57	
	135	59	
	136	61	
	137	63	
	138	65	
	139	67	
	140	69	
	141	71	
	142	73	
	143	75	
	144	77	
	145	79	
	146	81	
	147	83	
	148	85	
	149	87	
	150	89	
	151	91	
	152	93	
	153	95	
	154	97	
	155	99	
	156	101	
	157	103	
	158	105	
	159	107	
	160	109	
	161	111	
	162	113	
	163	115	
	164	117	

DASH NO.	NOMINAL RES OHMS	RES TOL
225	880	$\pm 0.1\%$
226	890	
227	900	
228	910	
229	920	
230	930	
231	940	
232	950	
233	960	
234	970	
235	980	
236	990	
237	1000	
238	1010	
239	1020	
240	1030	
241	1040	
242	1050	
243	1060	
244	1070	
245	1080	
246	1090	
247	1100	
248	1110	
249	1120	
250	1130	
251	1140	
252	1150	
253	1160	
254	1170	
255	1180	
256	1190	
257	1200	
258	1210	
259	1220	
260	1230	
261	1240	
262	1250	
263	1260	
264	1270	
265	1280	
266	1290	
267	1300	
268	1310	
269	1320	
270	1330	
271	1340	
272	1350	
273	1360	
274	1370	

DASH NO.	NOMINAL RES OHMS	RES TOL
275	1380	$\pm 0.1\%$
276	1390	
277	1400	
278	500	$\pm 1\%$
279	2100	
280	1620	
281	53K	$\pm 1\%$
282	64K	
283	73K	
284	127K	
285	136K	
286	145K	
287	154K	
288	163K	
289	172K	
290	181K	
291	190K	
292	199K	
293	208K	
294	217K	
295	226K	
296	235K	
297	244K	
298	253K	
299	262K	
300	271K	
301	866.980	$\pm 0.1\%$
302	1.9638K	
303	2.6027K	
304	4.000K	
305	8.000K	
306	12.500K	
307	25.000K	
308	25.490K	
309	30.000K	
310	30.067K	
311	44.999K	
312	100.000K	
313	128.146K	
314	80K	$\pm 1\%$
315	25.760K	$\pm 0.1\%$
316	125.574K	$\pm 0.1\%$

NOTE 2: DASH 301 TO 313 AND DASH 315, 316 SHALL HAVE TEMP COEFFICIENT OF 3 PPM/°C BETWEEN THE TEMPERATURES OF 0°C TO +65°C. AND SHALL HAVE SPECIAL STABILITY FEATURE OF 50 PPM/YR @ 25°C AT 1/2 RATED POWER

1010377

SYM	DESCRIPTION	DATE	APPROVAL
K	REPLACES REV J WITH CHANGES AND UPGRADED TO CLASS A RELEASE PER TDRR 02103	7/1/63	W
L	REVISED PER TDRR 02478	8-7-63	W
M	REVISED PER TDRR 033F2	7/2/63	W
N	REVISED PER TDRR 03968	10/1/63	W
P	REVISED PER TDRR 07311	3/31/64	W
R	REVISED PER TDRR 08175	1/28/64	W

K REPLACES J WITH CHANGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		
TOLERANCES ON		
FRACTIONS	DECIMALS	ANGLES
$\pm$	$\pm$	$\pm$
DO NOT SCALE THIS DRAWING		
MATERIAL		
HEAT TREATMENT		
FINAL FINISH		
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Engel</i> DATE 10 JUN 63		RESISTORS, FIXED, WW, PRECISION	
CHECKED <i>William H. Hunsel</i>		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>W. R. Tait</i> 15 JUL 63			
APPROVAL			
NASA APPROVAL <i>W. J. S. J.</i> 7/17/63		CODE IDENT NO.	SIZE
MIT APPROVAL <i>W. J. S. J.</i> 7/17/63		C	1010377
		SCALE	WT
		SHEET 2 OF 2	

