

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

REQUIREMENTS:

1. GENERAL:

- 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.
- PACKAGING: UNITS SHALL BE PACKAGED PER ND 1002129.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS OF ND 1015404 CLASS 2.
- INTERPRET DRAWING

IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

- RESISTANCE VALUES: SEE TABLE.
- RESISTANCE TOLERANCE: SEE TABLE.
- TEMPERATURE COEFFICIENT: ABOVE 10 Ω 15 PPM/°C (EXCEPT AS SPECIFIED IN NOTE 2) 100 TO 1000 PPM/°C, 1 Ω AND BELOW 40 PPM/°C.
- LEAD DATA: WELDABLE GRADE A 60/40 PLATED NICKEL PER ND PS 1015400. A CERTIFICATE OF COMPLIANCE TO L THIS REQUIREMENT SHALL ACCOMPANY EACH LOT SHIPPED.
- MARKING: MARK UNITS PER ND 1002019 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 ON UNIT PACKAGES AND EXTERIOR SHIPPING CONTAINERS SHALL INCLUDE NASA PART NUMBER AND REVISION LETTER PER MIL-STD-129.

3. DESIGN REQUIREMENTS:

- POWER RATING: 1/10 WATT AT +125°C DERATED TO ZERO AT 145°C
- MAXIMUM VOLTAGE RATING: 150 VOLTS.
- STABILITY: 100 PPM/YEAR AT +25°C AT 1/2 RATED POWER. (SEE NOTE 2)
- TEMPERATURE RANGE: MINUS 65°C TO PLUS 125°C.
- 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° IN ONE DIRECTION, THEN BACK 180° TO THE OPPOSITE DIRECTION AND BACK 90° TO THE ORIGINAL POSITION. NO MECHANICAL DAMAGE OR LACK OF PERFORMANCE SHALL BE EVIDENCED AFTER THE TEST.
- EACH LEAD SHALL BE CAPABLE OF WITHSTANDING AN AXIAL PULL OF FOUR (4) POUNDS MINIMUM.

4. SPECIAL CONDITIONING BY SUPPLIER:

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

NOTES:

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

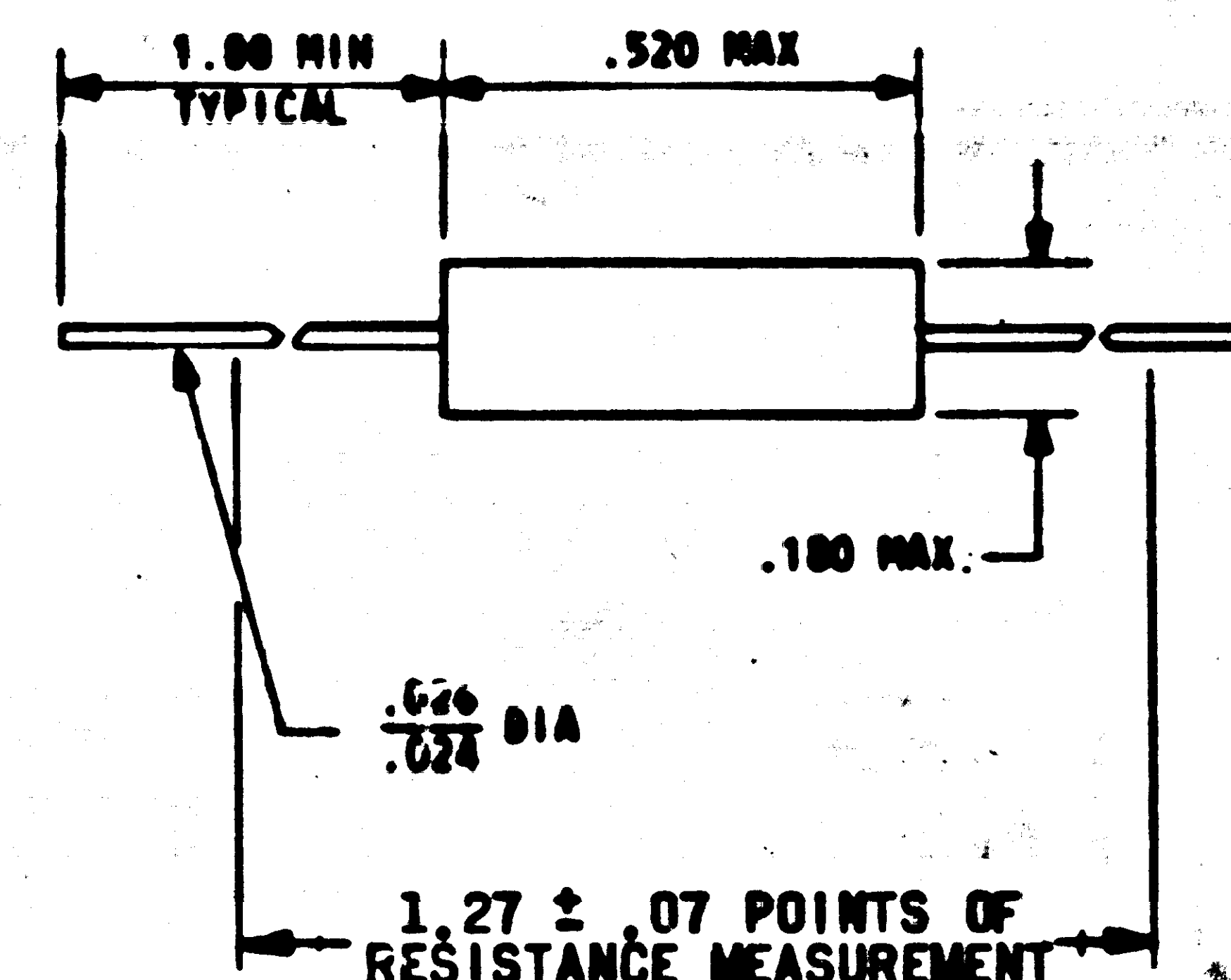
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND1002034 FOR THIS DRAWING

SEE NOTE 1.

DASH NO.	NOMINAL RES OHMS	RES TOL	DASH NO.	NOMINAL RES OHMS	RES TOL
1	4,000	±0.1%	53	25,000	±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	±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	±0.1%	74	18	
23	50	±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	134,300		96	107,500	
45	157,000		97	108,750	
46	179,200		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	

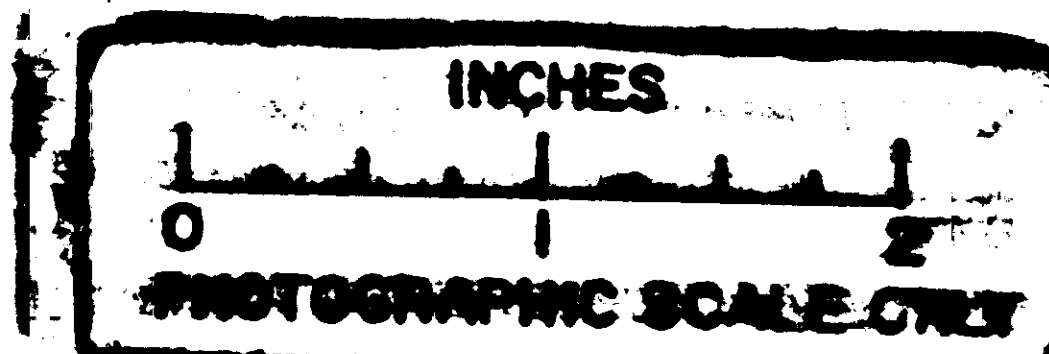
110101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
K	REPLACES REV J WITH CHANGES AND UPGRADED TO CLASS A RELEASE PER TDRR 02103	7/17/63	WLC
L	REVISED PER TDRR 02478	8-2-63	WLC
M	REVISED PER TDRR 03382	9/24/63	WLC
N	REVISED PER TDRR 03968	10/2/63	WLC
P	REVISED PER TDRR 07311	5/31/64	WLC
R	REVISED PER TDRR 08175	4/15/64	WLC
S	REVISED PER TDRR 08941	4/15/64	WLC
T	REVISED PER TDRR 10045	4/15/64	WLC
U	REVISED PER TDRR 11508	8/12/64	WLC
V	REVISED PER TDRR 12408	6/1/65	WLC



K REPLACES REV J WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIG NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN: <i>Copied</i> DATE: 7 JUN 63 CHECKED: <i>WLC</i> DATE: 11 June 63 APPROVAL: <i>WLC</i> DATE: 15 JUL 63		RESISTORS, FIXED, WW, PRECISION SPECIFICATION CONTROL DRAWING	
NASA APPROVAL: <i>WLC</i> DATE: 7/17/63 MIT APPROVAL: <i>WLC</i> DATE: 7/17/63		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1010377
SCALE		WT	SHEET 1 OF 2



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A

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
165	119	$\pm 0.1\%$
166	121	
167	123	
168	125	
169	127	
170	129	
171	131	
172	133	
173	135	
174	137	
175	139	
176	141	
177	143	
178	145	
179	147	
180	149	
181	151	
182	153	
183	155	
184	157	
185	159	
186	161	
187	163	
188	165	
189	167	
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195	179	
196	181	
197	183	
198	185	
199	187	
200	189	
201	191	
202	193	
203	195	
204	197	
205	199	
206	201	
207	203	
208	205	
209	207	
210	209	
211	211	
212	213	
213	215	
214	217	
215	219	
216	221	
217	223	
218	225	
219	227	
220	229	
221	231	
222	233	
223	235	
224	237	

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	866.98 Ω	$\pm 0.1\%$
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	$\pm 0.1\%$
SEE NOTE 2		
317	16.5 Ω	$\pm 1\%$
318	21.4 Ω	
319	27.0 Ω	
320	33.7 Ω	
321	43.0 Ω	
322	20.7 Ω	
323	18.8 Ω	
324	44.0 Ω	$\pm 1\%$

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

DASH NO.	NOMINAL RES OHMS	RES TOL
325	740	$\pm 1\%$
326	810	
327	890	
328	960	
329	1050	
330	1150	
331	42	$\pm 1\%$
332	125.842K	$\pm 0.1\%$
333	25.708K	$\pm 0.1\%$
334	25.009K	$\pm 0.1\%$

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
K	REPLACES REV J WITH CHANGES AND UPGRADED TO CLASS A RELEASE PER TDRR 02103	7/7/63	W
L	REVISED PER TDRR 021478	8-7-63	W
M	REVISED PER TDRR 03382	7/21/63	W
N	REVISED PER TDRR 03968	9/24/63	W
P	REVISED PER TDRR 07311	3/31/64	W
R	REVISED PER TDRR 08775	4/28/64	W
S	REVISED PER TDRR 08941	6/12/64	W
T	REVISED PER TDRR 10045	6/19/64	W
U	REVISED PER TDRR 1508	8/14/64	W
V	REVISED PER TDRR 12608	9/12/64	W

K REPLACES J WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIG NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT NAS9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Chick</i> DATE <i>8 JUN 63</i>		RESISTORS, FIXED, WW, PRECISION	
CHECKED <i>William H. Hunsel</i>		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>W. B. Test</i> 15 JUL 63		CODE IDENT NO. SIZE NASA DRAWING NO.	
NASA APPROVAL <i>W. B. Test</i> 7/17/63		C 1010377	
MIT APPROVAL <i>W. B. Test</i> 7/17/63		SCALE WT SHEET 2 OF 2	

