



VECO BEAD THERMISTORS

VECO bead thermistors are elliptical bodies fabricated from metallic oxide semiconductor materials sintered on platinum-iridium lead wires. A controlled glass coating applied to these beads provides them with an effective hermetic seal against conductive, corrosive and other hostile environments. Therefore, excellent stability over long periods of time under continuous exposure to harsh ambient conditions is assured.

VECO bead thermistors are characterized by fast response times and high power sensitivities. These characteristics, as well as their small size, make VECO bead thermistors well suited for applications involving the measurement and control of temperature and of liquid or gas flow, particularly where space is at a premium or when it is advan-

tageous to leave the temperature of the medium virtually undisturbed by the introduction of the sensor element. Typical of such applications is the use of VECO bead thermistors in gas chromatography and thermal conductivity gas analysis equipment, as well as in thermistor catheters and hypodermic needles for temperature and flow measurement.

VECO bead thermistors have been adapted for use in microwave power measurement applications, and are fabricated in a manner designed to improve the VSWR of the complete thermistor unit at microwave frequencies. When glass envelopes are used, they are constructed from special glass having high microwave transmission properties.

MAXIMUM OPERATING AND STORAGE TEMPERATURES OF VECO BEAD THERMISTORS

Continuous Operation	-----	325°C (617°F)
Intermittent Operation	-----	550°C (1022°F)

TABLE I — NOMINAL DISSIPATION AND TIME CONSTANTS OF VECO BEAD THERMISTORS
(Units supported by their leads in still air at 25°C)

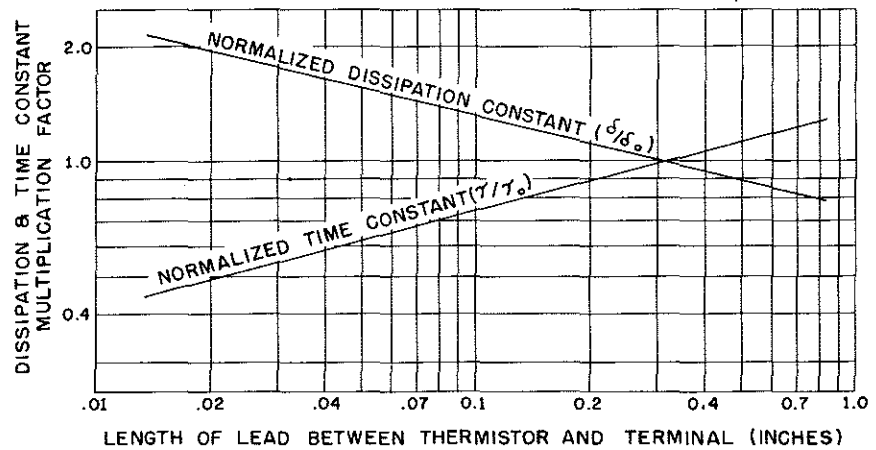
TYPE OF UNIT	BEAD DIAMETER (Inches)	DISSIPATION CONSTANT (δ) (Mw./°C)	TIME CONSTANT (τ) (Seconds)	PAGE NO.
Micro-Beads	0.005	0.045	0.12	2
Ultra-small Beads	0.010	0.09	0.5	3
Small Beads	0.013	0.10	1.0	3
Medium Beads	0.035	0.30	5.5	4
Medium Beads	0.043	0.35	6.0	4
Microwave Beads	See specifications.			6

The nominal dissipation constants (δ) and time constants (τ) of VECO bead thermistors as shown in Table I are measured with the specified minimum lead length between the bead and the test terminals.

All bead thermistors, by reason of their small size and the relatively high thermal conductivity of their leads, exhibit some variation in dissipation

and time constants with changes in lead length. This behavior is illustrated for 0.035" and 0.043" diameter beads in Figure 1. The dissipation and time constants of smaller beads are affected to a lesser degree by their lead length in still air; however, the effect becomes more pronounced in ambients with a lower thermal conductivity (e.g., vacuum).

Figure 1. Normalized dissipation and time constants vs. lead length for 0.035" and 0.043" diameter glass coated medium beads suspended by their leads in still air at 25°C.



VECO 0.005" MICRO-BEAD® THERMISTORS

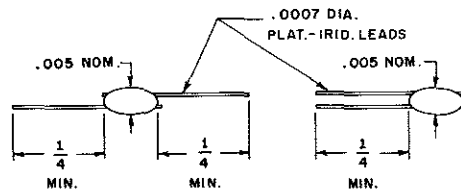


Figure 3

Figure 2

OPTIONS: Optional mechanical and electrical specifications for VECO thermistor beads are described on pages 7 and 8.

NOMINAL DISSIPATION AND TIME CONSTANTS (IN STILL AIR @ 25°C)

DISSIPATION CONSTANT (δ)	0.045 Mw./°C
TIME CONSTANT (τ)	0.12 Seconds

TABLE II — VECO MICRO-BEAD* THERMISTORS

VECO Part Number		Zero-Power Resistance R_0 @ 25°C ($\Omega \pm 25\%$)	Temperature Coefficient α @ 25°C (%/°C)	Ratio		R-T Curve (Page 5)
Figure 2	Figure 3			R_0 @ 0°C	R_0 @ 25°C	
				R_0 @ 50°C	R_0 @ 125°C	
31A401A	31A401C	1,000	-3.2	5.1	12.5	A
32A401A	32A401C	1,500	-3.2	5.1	12.5	A
32A402A	32A402C	2,000	-3.3	5.2	13.2	A
33A401A	33A401C	3,000	-3.4	5.6	14.6	B
34A401A	34A401C	4,000	-3.4	5.6	14.6	B
35A401A	35A401C	5,000	-3.4	5.6	14.6	B
38A401A	38A401C	7,500	-3.6	6.0	16.1	C
41A401A	41A401C	10,000	-3.6	6.0	16.1	C
42A401A	42A401C	15,000	-3.8	6.8	19.3	D
42A402A	42A402C	20,000	-3.9	7.1	20.6	D
43A401A	43A401C	30,000	-3.9	7.1	20.6	D
44A401A	44A401C	40,000	-3.9	7.2	21.0	D
45A401A	45A401C	50,000	-3.9	7.2	21.0	D
48A401A	48A401C	75,000	-3.9	7.3	21.4	E
51A401A	51A401C	100,000	-4.0	7.4	21.8	E
52A401A	52A401C	150,000	-4.4	9.2	30.1	F
52A402A	52A402C	200,000	-4.4	9.2	30.1	F
53A401A	53A401C	300,000	-4.4	9.4	31.1	G
54A401A	54A401C	400,000	-4.4	9.4	31.1	G
55A401A	55A401C	500,000	-4.5	9.6	32.1	G
58A401A	58A401C	750,000	-4.6	10.3	35.8	H
61A401A	61A401C	1 Meg.	-4.6	10.3	35.8	H

DIMENSIONS ARE NOMINAL AND EXPRESSED IN INCHES

VECO 0.010" ULTRA-SMALL AND 0.013" SMALL BEADS

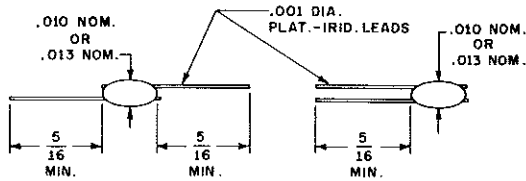


Figure 4.

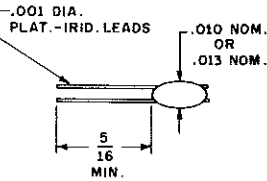


Figure 5.

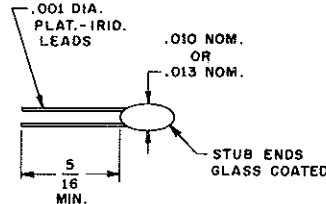


Figure 6.

OPTIONS: Optional mechanical and electrical specifications for VECO thermistor beads are described on pages 7 and 8.

NOMINAL DISSIPATION AND TIME CONSTANTS (IN STILL AIR @ 25°C)

	0.010" DIA. BEADS	0.013" DIA. BEADS
DISSIPATION CONSTANT (δ) (Mw./°C)	0.09	0.10
TIME CONSTANT (τ) (Seconds)	0.5	1.0

TABLE III — VECO 0.010" DIA. ULTRA-SMALL AND 0.013" DIA. SMALL BEADS

VECO Part Number				Zero-Power Resistance R_0 @ 25°C (Ohms)	Temperature Coefficient α @ 25°C (%/°C)	Ratio		R-T Curve (Page 5)
0.010" Diameter		0.013" Diameter				R_0 @ 0°C	R_0 @ 25°C	
Fig. 4	Fig. 5	Fig. 4	Fig. 5			R_0 @ 50°C	R_0 @ 125°C	
31A7	31A36	31A45	31A46	1,000 ± 25%	-3.3	5.2	13.2	A
—	—	(2) 31A1	(2) 31A47	1,250 ± 25%	-3.4	5.6	14.6	B
32A172	32A173	32A174	32A175	1,500 ± 25%	-3.4	5.6	14.6	B
32A50	32A130	—	(1) 32A7	2,000 ± 25%	-3.4	5.6	14.6	B
—	—	(2) 32A48	(2) 32A49	2,000 ± 25%	-3.4	5.6	14.6	B
33A77	33A78	33A79	33A80	2,500 ± 25%	-3.4	5.6	14.6	B
33A27	33A28	33A29	33A30	3,000 ± 25%	-3.4	5.6	14.6	B
—	—	(2,3) 34A2	(1,3) 34A1	3,500 ± 15%	-3.6	6.2	16.9	C
34A18	34A19	34A20	34A21	4,000 ± 25%	-3.6	6.0	16.1	C
35A5	35A24	35A30	35A31	5,000 ± 25%	-3.6	6.0	16.1	C
38A9	38A10	38A11	38A12	7,500 ± 25%	-3.8	6.8	19.3	D
—	—	38C2	38C1	8,000 ± 25%	-3.8	6.9	19.7	D
41A5	41A14	41A22	41A23	10,000 ± 25%	-3.9	7.1	20.6	D
42A23	42A24	42A27	42A28	15,000 ± 25%	-3.9	7.1	20.6	D
42A25	42A26	42A29	42A30	20,000 ± 25%	-3.9	7.2	21.0	D
43A69	43A70	43A71	43A72	25,000 ± 25%	-3.9	7.2	21.0	D
43A6	43A20	(4) 43A2	(4) 43A1	30,000 ± 25%	-3.9	7.3	21.4	E
44A6	44A7	44A8	44A9	40,000 ± 25%	-4.0	7.4	21.8	E
45A4	45A25	45A23	45A24	50,000 ± 25%	-4.0	7.4	21.8	E
48A5	48A6	48A7	48A8	75,000 ± 25%	-4.4	9.2	30.1	F
51A22	51A59	51A30	51A32	100,000 ± 25%	-4.4	9.2	30.1	F
52A19	52A20	52A23	52A24	150,000 ± 25%	-4.4	9.4	31.1	G
52A21	52A22	52A25	52A26	200,000 ± 25%	-4.4	9.4	31.1	G
53A44	53A45	53A46	53A47	250,000 ± 25%	-4.5	9.6	32.1	G
53A3	53A4	53A5	53A6	300,000 ± 25%	-4.5	9.6	32.1	G
54A7	54A8	54A9	54A10	400,000 ± 25%	-4.6	10.3	35.8	H
55A5	55A16	55A9	55A8	500,000 ± 25%	-4.6	10.3	35.8	H
58A2	58A3	58A4	58A5	750,000 ± 25%	-4.7	10.9	39.4	I
61A5	61A14	61A9	61A8	1 Meg ± 25%	-4.7	10.9	39.4	I
62A9	62A10	62A13	62A14	1.5 Meg ± 25%	-5.0	12.3	49.6	J
62A11	62A12	62A15	62A16	2 Meg ± 25%	-5.0	12.3	49.6	J
63A43	63A44	63A45	63A46	2.5 Meg ± 25%	-5.0	12.3	49.6	J
63A3	63A4	63A5	63A6	3 Meg ± 25%	-5.0	12.3	49.6	J
64A2	64A3	64A4	64A5	4 Meg ± 25%	-5.0	12.6	51.9	J
65A14	65A15	65A16	65A17	5 Meg ± 25%	-5.0	12.6	51.9	J

(1) These units are supplied with stub ends glass coated, as in Figure 6.

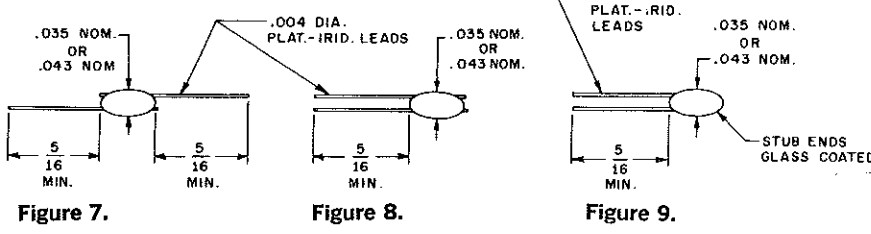
(2) These units are supplied with 3/8" min. leads.

(3) Bead dia. 0.014"; lead dia. 0.002"; δ 0.3 Mw./°C.

(4) Bead dia. 0.014".

DIMENSIONS ARE NOMINAL AND EXPRESSED IN INCHES

VECO 0.035" AND 0.043" MEDIUM BEADS



OPTIONS: Optional mechanical and electrical specifications for VECO thermistor beads are described on pages 7 and 8.

DISSIPATION AND TIME CONSTANTS: See Table I, Page 1.

TABLE IV — VECO 0.035" DIA. AND 0.043" DIA. MEDIUM BEADS

VECO Part Number				Zero-Power Resistance R ₀ @ 25°C (Ohms)	Temperature Coefficient α @ 25°C (%/°C)	Ratio		R-T Curve (Page 5)
0.035" Diameter		0.043" Diameter				R ₀ @ 0°C	R ₀ @ 25°C	
Fig. 7	Fig. 8	Fig. 7	Fig. 8			R ₀ @ 50°C	R ₀ @ 125°C	
13A23	13A24	13A21	13A22	30±20%	-3.0	4.5	10.9	A
14A19	14A20	14A17	14A18	40±20%	-3.0	4.5	10.9	A
15A23	15A24	15A21	15A22	50±20%	-3.0	4.5	10.9	A
18A19	18A20	18A17	18A18	75±20%	-3.1	4.7	11.5	A
21A22	21A23	21A1	21A2	100±20%	-3.2	5.1	12.9	A
22A52	22A53	22A48	22A49	150±20%	-3.2	5.1	12.9	A
22A54	22A55	22A50	22A51	200±20%	-3.5	5.7	15.0	B
23A42	23A37	23A38	23A39	250±20%	-3.5	5.7	15.0	B
23A43	23A44	23A40	23A41	300±20%	-3.5	5.7	15.0	B
24A22	24A23	24A20	24A21	400±20%	-3.6	6.1	16.5	C
—	—	(3) 25A2	(3) 25A3	500±20%	-3.5	5.9	15.7	C
25A25	25A26	25A4	25A5	500±20%	-3.6	6.1	16.5	C
28A24	28A25	28A22	28A23	750±20%	-3.8	6.9	19.7	D
31A80	31A79	31A3	31A2	1,000±20%	-3.8	6.9	19.7	D
—	—	32A238	32A239	1,500±5%	-3.9	7.1	20.6	D
32A244	32A245	32A240	32A241	1,500±20%	-3.9	7.1	20.6	D
—	—	—	(1) 32A145	2,000±1%	-3.9	7.1	20.6	D
—	—	32A105	32A242	2,000±1%	-3.9	7.1	20.6	D
—	—	32A104	32A243	2,000±5%	-3.9	7.1	20.6	D
—	—	—	(1) 32A8	2,000±20%	-3.9	7.1	20.6	D
32A246	32A247	32A13	32A12	2,000±20%	-3.9	7.1	20.6	D
33A81	33A82	33A73	33A74	2,500±20%	-3.9	7.1	20.6	D
33A83	33A84	33A75	33A76	3,000±20%	-3.9	7.2	21.0	D
34A51	34A52	34A49	34A50	4,000±20%	-4.0	7.4	21.8	E
—	—	35A19	35A45	5,000±1%	-4.0	7.4	21.8	E
35A46	35A47	35A2	(1) 35A26	5,000±20%	-4.0	7.4	21.8	E
38A43	38A44	38A41	38A42	5,000±20%	-4.0	7.4	21.8	E
—	—	41A49	41A50	7,500±20%	-4.0	7.5	22.2	E
41A51	41A48	41A3	41A2	10,000±2%	-4.4	9.1	29.7	F
—	—	41A3	41A2	10,000±20%	-4.4	9.1	29.7	F
42A84	42A85	42A89	42A10	15,000±15%	-4.4	9.1	29.7	F
—	—	42A11	42A91	15,000±20%	-4.4	9.1	29.7	F
42A86	42A87	42A90	42A12	20,000±15%	-4.5	9.4	31.1	G
43A75	43A76	42A82	42A83	20,000±20%	-4.5	9.4	31.1	G
—	—	43A73	43A74	25,000±20%	-4.5	9.4	31.1	G
43A77	43A78	43A5	43A4	30,000±20%	-4.5	9.4	31.1	G
—	—	44A2	44A37	40,000±15%	-4.5	9.5	31.5	G
44A40	44A41	44A38	44A39	40,000±20%	-4.5	9.5	31.5	G
—	—	45A64	45A65	50,000±15%	-4.5	9.5	31.5	G
45A66	45A67	45A17	45A2	50,000±20%	-4.5	9.5	31.5	G
—	—	48A28	48A29	75,000±15%	-4.6	10.3	35.8	H
48A32	48A33	48A30	48A31	75,000±20%	-4.6	10.3	35.8	H
—	—	51A48	51A131	100,000±1%	-4.6	10.3	35.8	H
—	—	51A66	51A132	100,000±2%	-4.6	10.3	35.8	H
—	—	51A67	51A70	100,000±5%	-4.6	10.3	35.8	H
—	—	—	(1) 51A72	100,000±15%	-4.6	10.3	35.8	H
51A133	51A134	51A3	51A2	100,000±15%	-4.6	10.3	35.8	H
52A59	52A62	—	—	100,000±20%	-4.6	10.3	35.8	H
52A63	52A64	52A60	52A61	150,000±20%	-4.7	10.9	39.4	I
—	—	52A5	52A4	200,000±20%	-4.7	10.9	39.4	I
53A52	53A53	53A48	53A49	250,000±20%	-5.0	12.3	49.6	J
53A54	53A55	53A50	53A51	300,000±20%	-5.0	12.3	49.6	J
54A40	54A41	54A38	54A39	400,000±20%	-5.0	12.3	49.6	J
55A32	55A33	55A3	55A2	500,000±20%	-5.0	12.3	49.6	J
58A28	58A25	58A26	58A27	750,000±20%	-5.0	12.6	51.9	J
61A31	61A32	61A3	61A2	1 Meg±20%	-5.0	12.6	51.9	J
62A53	62A54	62A51	62A2	1.5 Meg±20%	-5.0	12.6	51.9	J
62A55	62A56	62A52	62A3	2 Meg±20%	-5.0	12.6	51.9	J
63A51	63A52	63A47	63A48	2.5 Meg±20%	-5.1	13.2	56.8	J
63A53	63A54	63A49	63A50	3 Meg±20%	-5.1	13.2	56.8	J
64A27	64A28	64A25	64A26	4 Meg±20%	-5.4	15.3	75.0	K
65A31	65A32	(2) 65A6	(2) 65A5	5 Meg±20%	-5.4	15.3	75.0	K
68A22	68A23	68A20	68A21	7.5 Meg±20%	-5.6	17.0	95.6	L
71A36	71A37	71A8	71A34	10 Meg±20%	-5.7	17.4	95.6	L
—	—	71A9	71A35	12 Meg±20%	-5.7	17.4	95.6	L

(1) These units are supplied with stub ends glass coated, as in Figure 9.

(2) These units are supplied with 1/2" min. leads.

(3) Bead dia. 0.088"; lead dia. 0.005"; δ 0.8 Mw./°C; τ 0.3 sec.

DIMENSIONS ARE NOMINAL AND EXPRESSED IN INCHES

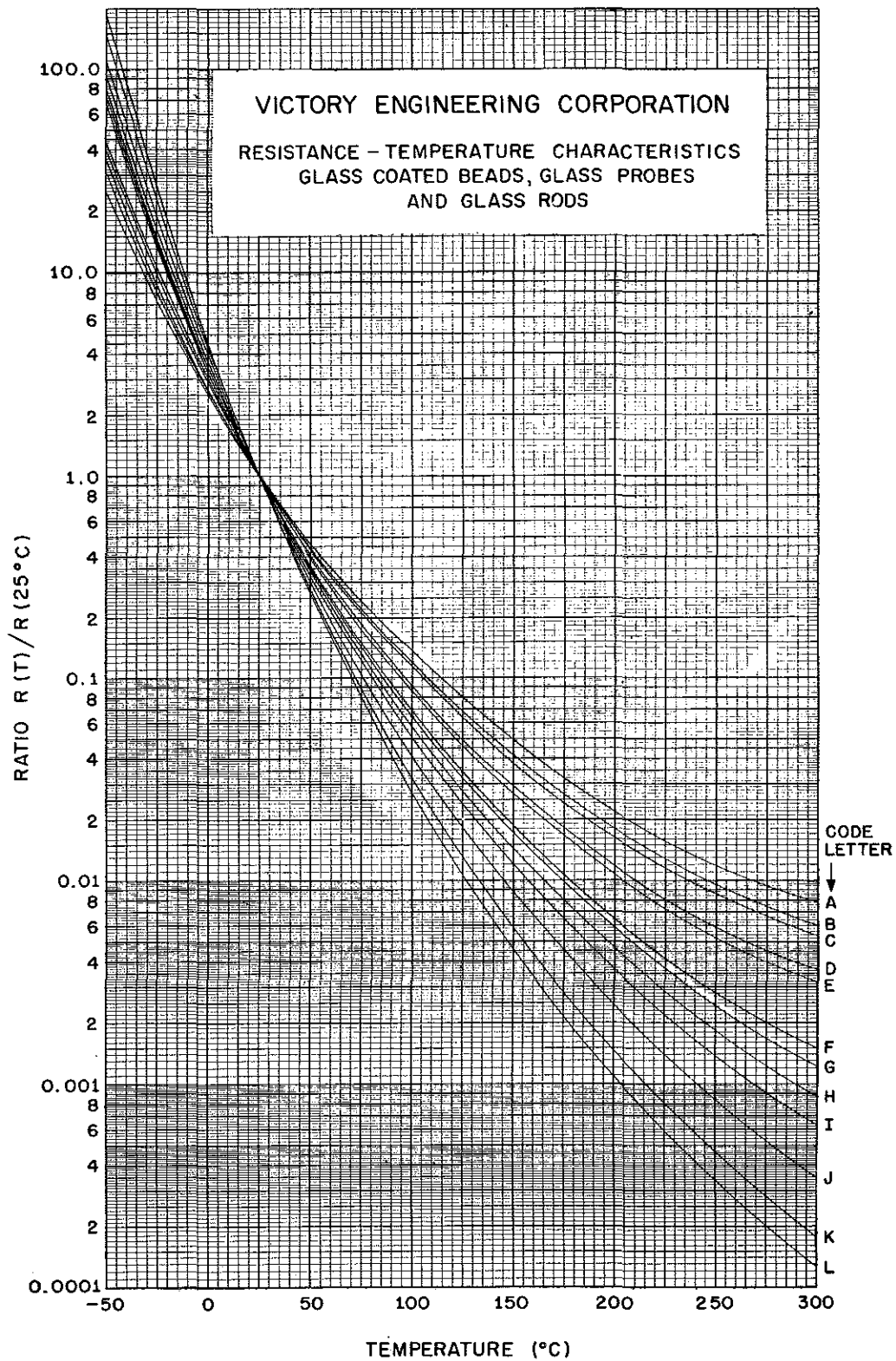


Figure 10.

THERMISTOR BEADS FOR MICROWAVE POWER MEASUREMENT

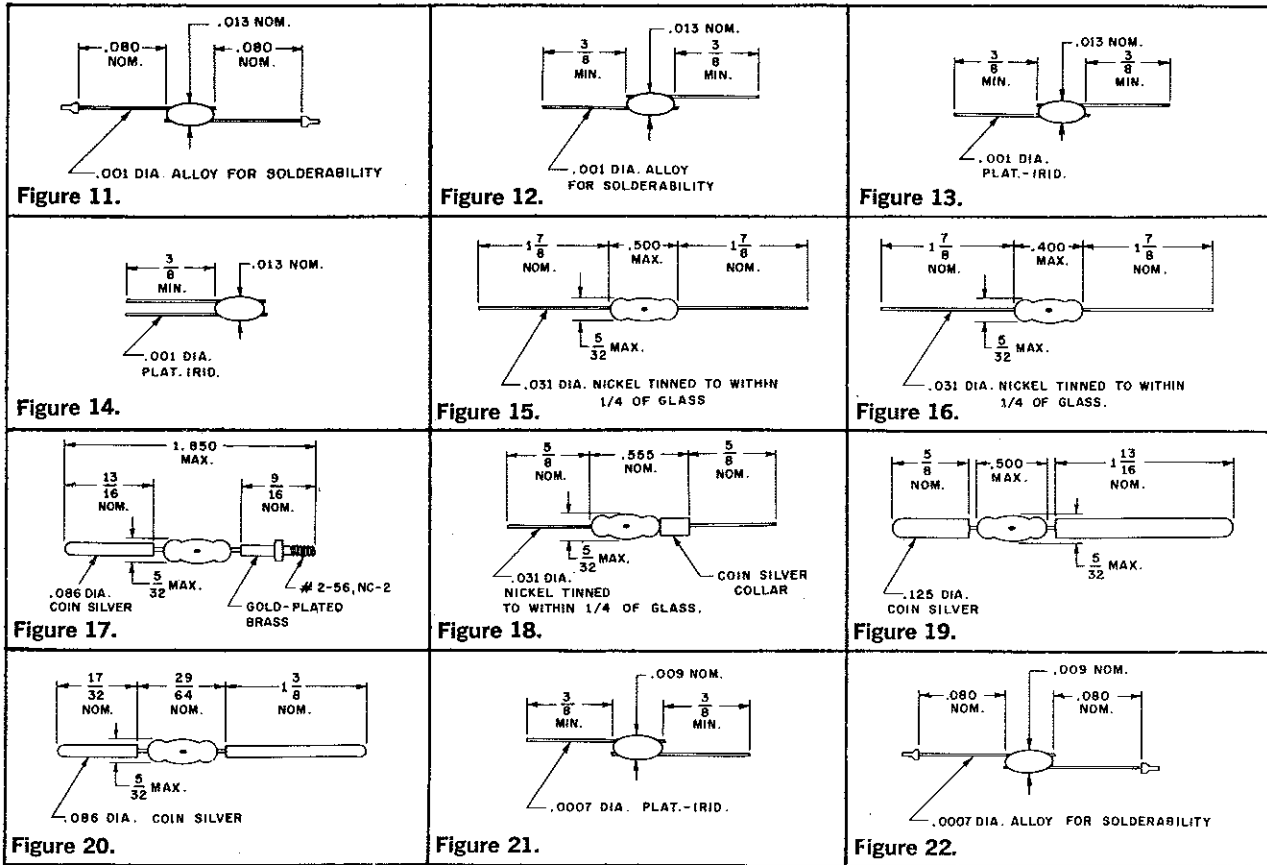


TABLE V — VECO BEAD THERMISTORS FOR MICROWAVE POWER MEASUREMENT

VECO Part Number	Fig.	Zero-Power Resistance R_0 @ 25°C (Ohms)	Temperature Coefficient α @ 25°C (%/°C)	Ratio*		Time Constant τ (Seconds)	Dissipation Constant δ (Mw./°C)	R-T Curve (Page 5)	Special Features of Unit
				R_0 @ 0°C	R_0 @ 25°C				
32A503	11	1,800 ± 30%	-3.4	5.6	14.6	1	0.1	B	Controlled and calibrated resistance at an elevated temperature. Controlled voltage at a specified d.c. Controlled capacitance. High stability.
32A505	12	2,000 ± 25%	-3.4	5.6	14.6	1	0.1	B	Controlled capacitance.
32A5	13	2,000 ± 25%	-3.4	5.6	14.6	1	0.1	B	Controlled resistance within a specified current range.
32A23	14	2,000 ± 25%	-3.4	5.6	14.6	1	0.1	B	
32A2	15	2,000 ± 25%	-3.6	6.0	16.1	—	0.4	C	
32A3	16	2,000 ± 25%	-3.4	5.6	14.6	—	0.1	B	
32A10	17	2,000 ± 25%	-3.4	5.6	14.6	—	0.1	B	Controlled voltage at a specified direct current.
32A14	18	2,000 ± 25%	-3.4	5.6	14.6	—	0.1	B	
32A15	19	2,000 ± 25%	-3.6	6.0	16.1	—	0.4	C	
32A25	20	2,000 ± 25%	-3.4	5.6	14.6	—	0.1	B	Controlled resistance within a specified current range.
32A34	16	2,348 ± 6.3%	-3.4	5.6	14.6	—	0.1	B	Controlled voltage at a specified direct current.
33A9	21	3,000 ± 30%	-3.3	5.4	13.9	0.5	0.08	B	Controlled resistance within a specified current range.
33A501	22	3,000 ± 30%	-3.3	5.4	13.9	0.5	0.08	B	Controlled and calibrated resistance at an elevated temperature (100 Ω @ 165°C). High stability.
33A502	22	3,000 ± 30%	-3.3	5.4	13.9	0.5	0.08	B	Controlled and calibrated resistance at an elevated temperature (200 Ω @ 130°C.) High stability.

* Ratio and R-T curve values are nominal.

DIMENSIONS ARE NOMINAL AND EXPRESSED IN INCHES

INSTRUCTIONS FOR SPECIFYING OPTIONS

VECO part numbers listed in Tables II through V of this bulletin cover units with platinum-iridium leads, for example, 41A14.

To specify certain options, the numbers are changed by the addition of prefixes or suffixes, as follows:

- Alloy leads* for improved solderability and weldability: Order by VECO part number from appropriate table, adding prefix S, as S41A14.
- Platinum-iridium leads with stub ends glass coated for use in conductive media. Order by VECO part number from appropriate table, adding prefix G, as G41A14. NOTE: If the listed unit is already supplied with stub ends glass coated no additional prefix is necessary.
- Alloy leads* for improved solderability and weldability, but with stub ends glass coated: Order by VECO part number from appropriate table, adding prefixes GS, as GS41A14.
- Optional resistance tolerances: To order VECO beads with other than listed tolerances, add as a suffix to the listed part number the percentage symbol (%) and the desired tolerance, as 41A14%5.
- Bead mounted on a small feed-through terminal (butt) as in Figure 23: Order by VECO part number from appropriate table, adding prefix E, as E41A14.
- Bead mounted on a large feed-through terminal (butt) as in Figure 24: Order by VECO part number from appropriate table, adding prefix F, as F41A14.

It is, of course, possible to specify a combination of several options by combining several prefixes or suffixes: For example, a small 0.010" diameter bead with platinum-iridium leads, 5% tolerance on resistance, and mounted on large feed-through terminal as in Figure 24, would be specified as F41A14%5.

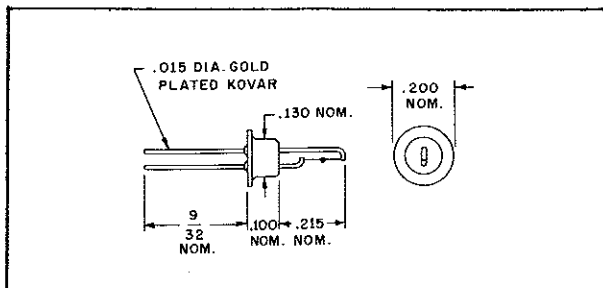


Figure 23. Bead mounted on a small feed-through terminal.

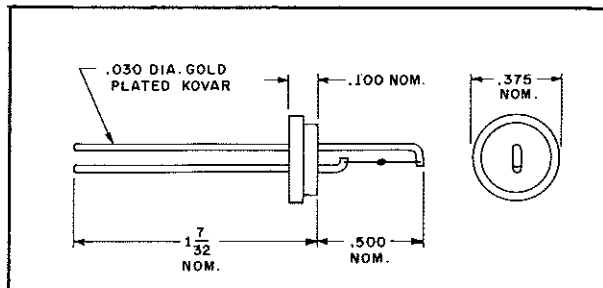


Figure 24. Bead mounted on a large feed-through terminal.

OTHER MECHANICAL OPTIONS

In some cases, it is advantageous to use thermistor beads with mechanical characteristics different from those specified in this bulletin.

1. VECO bead thermistors can be supplied with lead lengths other than those shown. Extension leads can be specified either as continuous bead leads or as a variety of different wire types

that can be welded or soldered to the existing leads.

2. VECO bead thermistors can be supplied with nickel welding tabs crimped to the bead leads. Specify spacing between bead and tab.

3. VECO bead thermistors can be supplied without the glass-coating, when desired.

*PATENT APPLIED FOR

MATCHING AND CALIBRATION OPTIONS

1. VECO thermistor resistances can be recorded at one or more specified points over the range of -75°C and $+300^{\circ}\text{C}$ to within the accuracies defined in the following table:

TABLE VI — THERMISTOR CALIBRATION

CALIBRATION SCHEDULE NUMBER	TOLERANCE ON RESISTANCE	TOLERANCE ON AMBIENT TEMP.
I	$\pm 0.01\%$	$\pm 0.01^{\circ}\text{C}$
II	$\pm 0.05\%$	$\pm 0.01^{\circ}\text{C}$
III	$\pm 0.05\%$	$\pm 0.02^{\circ}\text{C}$
IV	$\pm 0.05\%$	$\pm 0.03^{\circ}\text{C}$
V*	$\pm 0.10\%$	$\pm 0.05^{\circ}\text{C}$

*If calibration is requested without tolerances or schedule number, Schedule No. V will be supplied.

2. VECO thermistors can be supplied to meet close resistance tolerances at one or more temperature points and expanded tolerances (to allow for Beta variation) at distant points.

3. VECO thermistors can be supplied to track a nominal resistance vs. temperature curve to within a stated tolerance over a specified range. Unless special resistance vs. temperature curves (developed for this type of application) are cited, the actual curve that the units in this category will follow will be furnished by VECO. Subsequent units will meet the same specifications.

4. VECO thermistors can be supplied such that the units within a group (pairs, triplets, etc.) track each other at one or more discrete points or over a specified temperature range to within a given tolerance on resistance. In this option it is not required that units in different groups track each other. When ordering, specify the number of units in a group and the nominal resistance of the groups at the reference temperature(s).

5. VECO thermistors can be supplied such that their resistance ratio (resistance at temperature T divided by resistance at a reference temperature) vs. temperature characteristics follow a nominal curve over a specified temperature range to within a stated tolerance.

VECO offers EXPERIENCE

Bead thermistors have been designed and manufactured by VECO since 1951.

VECO offers SERVICE

Inquiries for special requirements are welcomed by VECO's staff of experienced engineers.

VECO offers ACCURACY

Unequaled investment in the most precise test equipment, standards, and controlled environmental baths and chambers provides unparalleled thermistor calibration accuracy. Calibrations are performed with accuracies of 0.01% or better on resistance and 0.01°C or better on temperature.

VECO offers unsurpassed QUALITY CONTROL

Every VECO thermistor undergoes a minimum of 17 tests and inspections during its manufacture. Stringent quality control has gained VECO an enviable reputation for high quality achievement.

VECO offers the ultimate in RELIABILITY

For example, a Bell Telephone Laboratories reliability group reported that VECO Titan I sensors compiled approximately 10^8 sensor hours of operation without a single failure.

VECO offers FAST DELIVERY

Ready for immediate shipment are a variety of thermistor beads, glass probes, glass rods, disks, rods, washers, and assemblies in a wide range of resistance values.



Prices available upon request.

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Available VECO Technical Bulletins

MDRW031	Thermistor Disk, Rod, & Washer
SL-2	Lox Thermistors
MMT102	Military Grade Thermistors
MTD131	Thermistor Terminology
MTM141	Isotherm Matched Thermistors
MS081	Thermistor Sensor Assemblies
MHT151	Indirectly-Heated Thermistors
MGR061	Glass Probe and Rod Thermistors
VM2056	Thinistors-Thick Film Flake Thermistors
	Thinistor Infrared Detectors