Appendix G: Sensor Temperature Response Data Tables

Silicon diode DT-670

T (K)	V (volts)	dV/dT (mV/K)
1.4	1.64429	-12.49
4.2	1.57848	-31.59
10	1.38373	-26.84
20	1.19775	-15.63
30	1.10624	-1.96
50	1.07310	-1.61
77.35	1.02759	-1.73
100	0.98697	-1.85
150	0.88911	-2.05
200	0.78372	-2.16
250	0.67346	-2.24
300	0.55964	-2.30
350	0.44337	-2.34
400	0.32584	-2.36
450	0.20676	-2.39
500	0.09068	-2.12

Silicon diode DT-470

T (K)	V (volts)	dV/dT (mV/K)
1.4	1.6981	-13.1
4.2	1.6260	-33.6
10	1.4201	-28.7
20	1.2144	-17.6
30	1.1070	-2.34
50	1.0705	-1.75
77.35	1.0203	-1.92
100	0.9755	-2.04
150	0.8687	-2.19
200	0.7555	-2.31
250	0.6384	-2.37
300	0.5189	-2.4
350	0.3978	-2.44
400	0.2746	-2.49
450	0.1499	-2.46
475	0.0906	-2.22

Cernox® CX-1010*

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)·(dR/dT)
0.1	21389	-558110	-2.70
0.2	4401.6	-38756	-1.76
0.3	2322.4	-10788	-1.39
0.4	1604.7	-4765.9	-1.19
0.5	1248.2	-2665.2	-1.08
1	662.43	-514.88	-0.78
1.4	518.97	-251.77	-0.68
2	413.26	-124.05	-0.60
3	328.95	-58.036	-0.53
4.2	277.32	-32.209	-0.49
6	234.44	-17.816	-0.46
10	187.11	-8.063	-0.43
20	138.79	-3.057	-0.44
30	115.38	-1.819	-0.47
40	100.32	-1.252	-0.50
50	89.551	-0.929	-0.52
77.35	70.837	-0.510	-0.56
100	61.180	-0.358	-0.59
150	47.782	-0.202	-0.63
200	39.666	-0.130	-0.66
250	34.236	-0.090	-0.66
300	30.392	-0.065	-0.65

** Cernox sensors do not follow a standard response curve — the listed values are typical, but can vary widely; consult Lake Shore to choose a specific range*

Cernox® CX-1030*

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)·(dR/dT)
0.3	31312	-357490	-3.43
0.4	13507	-89651	-2.65
0.5	7855.7	-34613	-2.20
1	2355.1	-3265.2	-1.39
1.4	1540.1	-1264.9	-1.15
2	1058.4	-509.26	-0.96
3	740.78	-199.11	-0.81
4.2	574.20	-97.344	-0.71
6	451.41	-48.174	-0.64
10	331.67	-19.042	-0.57
20	225.19	-6.258	-0.56
30	179.12	-3.453	-0.58
40	151.29	-2.249	-0.59
50	132.34	-1.601	-0.61
77.35	101.16	-0.820	-0.63
100	85.940	-0.552	-0.64
150	65.864	-0.295	-0.67
200	54.228	-0.184	-0.68
250	46.664	-0.124	-0.67
300	41.420	-0.088	-0.64
350	37.621	-0.065	-0.61
400	34.779	-0.050	-0.57
420	33.839	-0.045	-0.55

** Cernox sensors do not follow a standard response curve — the listed values are typical, but can vary widely; consult Lake Shore to choose a specific range*

Cernox® CX-1050*

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)-(dR/dT)
1.4	26566	-48449	-2.55
2	11844	-11916	-2.01
3	5733.4	-3042.4	-1.59
4.2	3507.2	-1120.8	-1.34
6	2252.9	-432.14	-1.15
10	1313.5	-128.58	-0.98
20	692.81	-30.871	-0.89
30	482.88	-14.373	-0.89
40	373.11	-8.392	-0.90
50	305.19	-5.507	-0.90
77.35	205.67	-2.412	-0.91
100	162.81	-1.488	-0.91
150	112.05	-0.693	-0.93
200	85.800	-0.397	-0.92
250	69.931	-0.253	-0.90
300	59.467	-0.173	-0.87
350	52.142	-0.124	-0.83
400	46.782	-0.093	-0.79
420	45.030	-0.089	-0.77

** Cernox sensors do not follow a standard response curve — the listed values are typical, but can vary widely; consult Lake Shore to choose a specific range*

Cernox® CX-1070*

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)-(dR/dT)
4.2	5979.4	-2225.3	-1.56
6	3577.5	-794.30	-1.33
10	1927.2	-214.11	-1.11
20	938.93	-46.553	-0.99
30	629.90	-20.613	-0.98
40	474.89	-11.663	-0.98
50	381.42	-7.490	-0.98
77.35	248.66	-3.150	-0.98
100	193.29	-1.899	-0.98
150	129.60	-0.854	-0.99
200	97.626	-0.477	-0.98
250	78.723	-0.299	-0.95
300	66.441	-0.201	-0.91
350	57.955	-0.143	-0.86
400	51.815	-0.106	-0.81
420	49.819	-0.094	-0.80

** Cernox sensors do not follow a standard response curve — the listed values are typical, but can vary widely; consult Lake Shore to choose a specific range*

Cernox® CX-1080*

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)-(dR/dT)
20	6157.5	-480.08	-1.56
30	3319.7	-165.61	-1.50
40	2167.6	-79.551	-1.47
50	1565.3	-45.401	-1.45
77.35	836.52	-15.398	-1.42
100	581.14	-8.213	-1.41
150	328.75	-3.057	-1.40
200	220.93	-1.506	-1.36
250	163.73	-0.863	-1.32
300	129.39	-0.545	-1.26
350	106.98	-0.368	-1.20
400	91.463	-0.261	-1.14
420	86.550	-0.231	-1.12

** Cernox sensors do not follow a standard response curve — the listed values are typical, but can vary widely; consult Lake Shore to choose a specific range*

Germanium GR-50-AA

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)·(dR/dT)
0.05	35000	-3642000	-5.2
0.095	2725	-92170	-3.2
0.2	364.6	-4043	-2.2
0.3	164.0	-964.0	-1.8
0.5	73.75	-202.9	-1.4
1	33.55	-31.33	-0.93
1.4	24.73	-13.15	-0.74
2	19.32	-6.167	-0.64
3	15.59	-2.334	-0.45
4.2	13.66	-1.036	-0.32
5	13.02	-0.624	-0.24

Germanium GR-300-AA

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)·(dR/dT)
0.3	35180	-512200	-4.4
0.5	5443	-34800	-3.2
1	875.7	-1901	-2.2
1.4	448.6	-581.3	-1.8
2	248.8	-187.4	-1.5
3	142.2	-60.14	-1.3
4.2	94.46	-26.56	-1.2
6	61.89	-12.42	-1.2
10	33.20	-3.97	-1.2
20	16.08	-0.750	-0.93
30	10.81	-0.383	-1.1
50	5.91	-0.148	-1.3
77.35	3.50	-0.050	-1.1
100	2.72	-0.024	-0.88

Germanium GR-1400-AA

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)·(dR/dT)
1.4	35890	-94790	-3.7
2	11040	-16670	-3.0
3	3636	-2977	-2.5
4.2	1689	-861.9	-2.1
6	800.7	-278.9	-2.1
10	252.8	-61.95	-2.5
20	44.19	-5.41	-2.4
30	17.18	-1.23	-2.1
50	6.45	-0.211	-1.6
77.35	3.55	-0.050	-1.1
100	2.80	-0.021	-0.74

Rox™ RX-102A

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)·(dR/dT)
0.05	70020	-5090000	-3.6
0.1	19390	-266000	-1.4
0.2	8278	-43000	-1.0
0.3	5615	-16600	-0.89
0.5	3701	-5478	-0.74
1	2381	-1260	-0.53
1.4	2005	-667	-0.47
2	1726	-331	-0.38
3	1502	-152	-0.30
4.2	1370	-80.3	-0.25
6	1267	-40.5	-0.19
10	1167	-15.3	-0.13
20	1089	-3.96	-0.07
30	1063	-1.75	-0.05
40	1049	-1.06	-0.04

Rox™ RX-102B

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)·(dR/dT)
0.01	9856.38	-413888	-0.42
0.02	7289.79	-170565	-0.47
0.03	5975.92	-100138	-0.50
0.04	5184.10	-62048	-0.48
0.05	4676.87	-41480	-0.44
0.1	3548.94	-12578	-0.35
0.2	2813.75	-4116	-0.29
0.3	2502.26	-2365	-0.28
0.5	2187.50	-1056	-0.24
1	1884.56	-350.8	-0.19
1.4	1779.33	-197.7	-0.16
2	1691.44	-114.5	-0.14
3	1606.45	-63.53	-0.12
4.2	1546.44	-40.04	-0.11
6	1488.89	-26.05	-0.11
10	1410.19	-15.43	-0.11
20	1300.92	-7.82	-0.12
30	1239.54	-4.83	-0.12
40	1198.80	-3.41	-0.11

Rox™ RX-103A

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)·(dR/dT)
1.4	30750	-13570	-0.62
2	25090	-6550	-0.52
3	20710	-2940	-0.43
4.2	18150	-1560	-0.36
6	16130	-811	-0.3
10	14060	-315	-0.22
20	12290	-103	-0.17
30	11550	-52.4	-0.14
40	11150	-21.7	-0.08

Rox™ RX-202A

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)·(dR/dT)
0.05	110000	-12300000	-5.6
0.1	23340	-274000	-1.2
0.2	11420	-49000	-0.86
0.3	8364	-19400	-0.69
0.5	6069	-6791	-0.56
1	4366	-2000	-0.46
1.4	3797	-935	-0.34
2	3420	-440	-0.26
3	3112	-218	-0.21
4.2	2918	-121	-0.17
6	2757	-66.6	-0.15
10	2579	-31.6	-0.12
20	2390	-11.9	-0.10
30	2300	-6.88	-0.09
40	2244	-4.58	-0.08

Platinum PT-100

T (K)	R (Ω)	dR/dT (Ω/K)	(T/R)·(dR/dT)
20	2.2913	0.085	0.74
30	3.6596	0.191	1.60
50	9.3865	0.360	1.90
77.35	20.380	0.423	1.60
100	29.989	0.423	1.40
150	50.788	0.409	1.20
200	71.011	0.400	1.10
250	90.845	0.393	1.10
300	110.354	0.387	1.10
400	148.640	0.383	1.00
500	185.668	0.378	1.00
600	221.535	0.372	1.00
700	256.243	0.366	1.00
800	289.789	0.360	1.00

Thermocouple type E (T_{Ref} = 273.15 K)

T (K)	EMF (µV)	dV/dT (µV/K)
3.2	-9834.9	1.59
4.2	-9833.0	2.09
10	-9813.3	4.66
20	-9747.0	8.51
30	-9643.8	12.1
40	-9505.5	15.5
50	-9334.2	18.7
75	-8777.7	25.6
100	-8063.4	31.4
150	-6238.1	41.2
200	-3967.4	49.3
250	-1328.7	56.0
300	1608.0	61.1
350	4777.7	65.6
400	8159.8	69.6
500	15426	75.3
600	23138	78.6
670	28694	80.0
700	31100	80.4
800	39179	81.0
900	47256	80.4
1000	55247	79.3
1100	63119	78.1
1200	70842	76.3
1270	76136	75.2

Thermocouple type K (T_{Ref} = 273.15 K)

T (K)	EMF (µV)	dV/dT (µV/K)
3.2	-6457.7	0.743
4.2	-6456.9	0.916
10	-6448.5	2.01
10.5	-6447.4	2.12
20	-6417.8	4.15
30	-6365.1	6.39
40	-6290.0	8.61
50	-6193.3	10.7
75	-5862.9	15.6
100	-5417.6	19.9
150	-4225.5	27.5
200	-2692.8	33.5
250	-897.60	38.0
300	1075.3	40.6
350	3135.8	41.5
400	5200.0	40.8
500	9215.6	40.3
600	13325	41.7
670	16264	42.2
700	17533	42.4
800	21789	42.6
900	26045	42.4
1000	30251	41.7
1100	34373	40.7
1200	38396	39.7
1270	41153	39.0
1300	42318	38.7
1400	46131	37.5
1500	49813	36.1
1600	53343	34.5
1640	54712	34.0