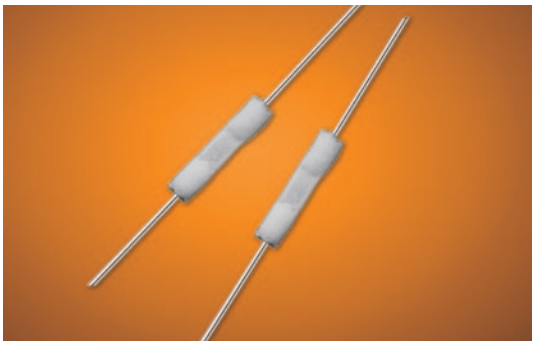
SDT310VASP2

small type platinum thin film thermal sensors (small heater element)

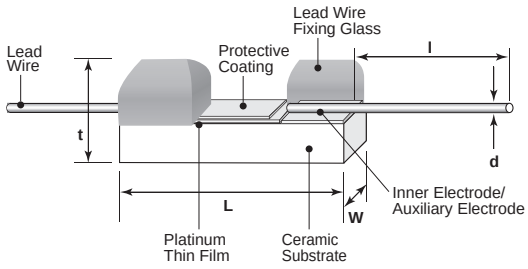


features

- Achieves a thermal time constant of 2.8-seconds due to volume reduction
- Excellent heat-resistance
- Applies axial lead type suitable to use as heater element
- Products with lead-free terminations meet EU RoHS requirements
- AEC-Q200 Qualified[1]

[1] Please contact us for details

dimensions and construction



Type	Dimensions inches (mm)				
	W	L	t	l	d
SDT310VASP2	.016 $^{+.006}_{-.004}$ ($0.4\ ^{+0.15}_{-0.1}$)	.079±.004 (2.0±0.10)	.026 max. (0.65 max.)	.394±.079 (10±2.0)	.005±.002 (0.12±0.05)

ordering information

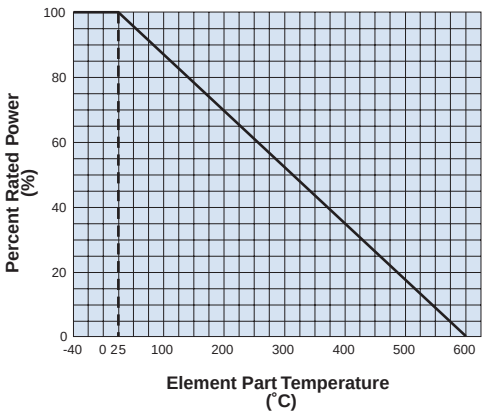
SDT310V	AS	P	2	K	20	F	40
Type	Style	Terminal Surface Material	Generation	Packaging	Nominal Resistance	Resistance Tolerance	T.C.R. Tolerance
		P: Pt clad		K: Chip Tray B: Bulk	20: 20Ω	F: ±1	40: ±40 x 10^{-6}/K

applications and ratings

Part Designation	Resistance (Ω at 0°C)	Resistance Tolerance (%)	T.C.R. x 10^{-6}/K[2]	Thermal Time Constant[3] (s)	Maximum Current (mA)	Power Rating (W)	Operating Temperature Range[4]
SDT310VASP2	20Ω	±1%	3850±40	2.8	76	0.336	-55°C to +600°C

[2] T.C.R. measuring temperature: 0°C/+100°C.
[3] Thermal time constant is value measured in stationary air and is typical value, which are values of elements and vary with connecting or fixing methods.
[4] Temperature of the device including a self-heating.

Derating Curve



For sensors operated at an element part temperature of 25°C or above, a power rating shall be derated in accordance with the derating curve.

For more details on derating click here, "*Derating Curves – Caution & Terms*."

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

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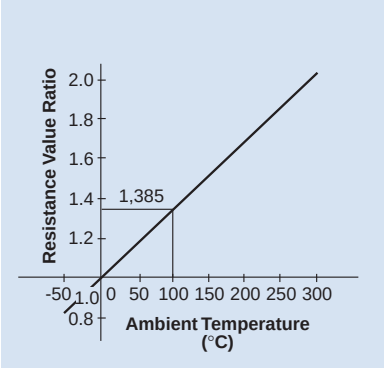
environmental applications

Temperature Characteristics



Approximate Expression for Resistance-Temperature Characteristics

-55°C~0°C :$R_T=R_0\{1+C_1T+C_2T^2+C_3(T-100)T^3\}$

0°C~+400°C :$R_T=R_0(1+C_1T+C_2T^2)$

R_T : Resistance value at T°C
R_0 : Resistance value at 0°C°C
T : Ambient temperature(°C)
Constants C_1, C_2, C_3:

$C_1=3.908\times10^{-3}$ °C^{-1}
$C_2=-5.775\times10^{-7}$ °C^{-2}
$C_3=-4.183\times10^{-12}$ °C^{-4}

Pt20 Resistance - Temperature Characteristic 20 at 0°C

Temperature (°C)	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-50	16.06	15.98	15.90	15.82	15.74	15.66	–	–	–	–
–40	16.85	16.77	16.70	16.62	16.54	16.46	16.38	16.30	16.22	16.14
–30	17.64	17.57	17.49	17.41	17.33	17.25	17.17	17.09	17.01	16.93
–20	18.43	18.35	18.27	18.20	18.12	18.04	17.96	17.88	17.80	17.72
–10	19.22	19.14	19.06	18.98	18.90	18.82	18.75	18.67	18.59	18.51
0	20.00	19.92	19.84	19.77	19.69	19.61	19.53	19.45	19.37	19.30
	0	1	2	3	4	5	6	7	8	9
0	20.00	20.08	20.16	20.23	20.31	20.39	20.47	20.55	20.62	20.70
10	20.78	20.86	20.94	21.01	21.09	21.17	21.25	21.33	21.40	21.48
20	21.56	21.64	21.71	21.79	21.87	21.95	22.02	22.10	22.18	22.26
30	22.33	22.41	22.49	22.57	22.64	22.72	22.80	22.88	22.95	23.03
40	23.11	23.19	23.26	23.34	23.42	23.49	23.57	23.65	23.73	23.80
50	23.88	23.96	24.03	24.11	24.19	24.26	24.34	24.42	24.49	24.57
60	24.65	24.73	24.80	24.88	24.96	25.03	25.11	25.19	25.26	25.34
70	25.42	25.49	25.57	25.64	25.72	25.80	25.87	25.95	26.03	26.10
80	26.18	26.26	26.33	26.41	26.48	26.56	26.64	26.71	26.79	26.87
90	26.94	27.02	27.09	27.17	27.25	27.32	27.40	27.47	27.55	27.63
100	27.70	27.78	27.85	27.93	28.00	28.08	28.16	28.23	28.31	28.38
110	28.46	28.53	28.61	28.69	28.76	28.84	28.91	28.99	29.06	29.14
120	29.21	29.29	29.36	29.44	29.51	29.59	29.67	29.74	29.82	29.89
130	29.97	30.04	30.12	30.19	30.27	30.34	30.42	30.49	30.57	30.64
140	30.72	30.79	30.87	30.94	31.02	31.09	31.17	31.24	31.32	31.39
150	31.47	31.54	31.61	31.69	31.76	31.84	31.91	31.99	32.06	32.14
160	32.21	32.29	32.36	32.43	32.51	32.58	32.66	32.73	32.81	32.88
170	32.95	33.03	33.10	33.18	33.25	33.33	33.40	33.47	33.55	33.62
180	33.70	33.77	33.84	33.92	33.99	34.07	34.14	34.21	34.29	34.36
190	34.43	34.51	34.58	34.66	34.73	34.80	34.88	34.95	35.02	35.10
200	35.17	35.24	35.32	35.39	35.47	35.54	35.61	35.69	35.76	35.83
210	35.91	35.98	36.05	36.13	36.20	36.27	36.34	36.42	36.49	36.56
220	36.64	36.71	36.78	36.86	36.93	37.00	37.08	37.15	37.22	37.29
230	37.37	37.44	37.51	37.59	37.66	37.73	37.80	37.88	37.95	38.02
240	38.19	38.17	38.24	38.31	38.38	38.46	38.53	38.60	38.67	38.75
250	38.82	38.89	38.96	39.04	39.11	39.18	39.25	39.33	39.40	39.47
260	39.54	39.61	39.69	39.76	39.83	39.90	39.97	40.05	40.12	40.19
270	40.26	40.33	40.41	40.48	40.55	40.62	40.69	40.77	40.84	40.91
280	40.98	41.05	41.12	41.20	41.27	41.34	41.41	41.48	41.55	41.63
290	41.70	41.77	41.84	41.91	41.98	42.05	42.13	42.20	42.27	42.34
300	42.41	42.48	42.55	42.62	42.70	42.77	42.84	42.91	42.98	43.05
310	43.12	43.19	43.26	43.33	43.41	43.48	43.55	43.62	43.69	43.76
320	43.83	43.90	43.97	44.04	44.11	44.18	44.25	44.33	44.40	44.47
330	44.54	44.61	44.68	44.75	44.82	44.89	44.96	45.03	45.10	45.17
340	45.24	45.31	45.38	45.45	45.52	45.59	45.66	45.73	45.80	45.87
350	45.94	46.01	46.08	46.15	46.22	46.29	46.36	46.43	46.50	46.57
360	46.64	46.71	46.78	46.85	46.92	46.99	47.06	47.13	47.20	47.27
370	47.34	47.41	47.48	47.55	47.62	47.69	47.76	47.83	47.90	47.97
380	48.04	48.10	48.17	48.24	48.31	48.38	48.45	48.52	48.59	48.66
390	48.73	48.80	48.87	48.94	49.00	49.07	49.14	49.21	49.28	49.35
400	49.42	49.49	49.56	49.63	49.69	49.76	49.83	49.90	49.97	50.04
410	50.11	50.18	50.24	50.31	50.38	50.45	50.52	50.59	50.66	50.72
420	50.79	50.86	50.93	51.00	51.07	51.13	51.20	51.27	51.34	51.41
430	51.48	51.54	51.61	51.68	51.75	51.82	51.88	51.95	52.02	52.09
440	52.16	52.22	52.29	52.36	52.43	52.50	52.56	52.63	52.70	52.77

Note: Desired temperature values are obtained by adding temperatures in the vertical and horizontal axes. When calculating a resistance value of 105°C, read the value in the column where 100°C in the vertical axis and 5°C in the horizontal axis cross. The value will be 28.08Ω.

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environmental applications (continued)

Pt20 Resistance - Temperature Characteristic 20 at 0°C

Temperature (°C)	0	1	2	3	4	5	6	7	8	9
450	52.84	52.90	52.97	53.04	53.11	53.17	53.24	53.31	53.38	53.44
460	53.51	53.58	53.65	53.71	53.78	53.85	53.92	53.98	54.05	54.12
470	54.19	54.25	54.32	54.39	54.46	54.52	54.59	54.66	54.72	54.79
480	54.86	54.93	54.99	55.06	55.13	55.19	55.26	55.33	55.39	55.46
490	55.53	55.60	55.66	55.73	55.80	55.86	55.93	56.00	56.06	56.13
500	56.20	56.26	56.33	56.40	56.46	56.53	56.59	56.66	56.73	56.79
510	56.86	56.93	56.99	57.06	57.13	57.19	57.26	57.32	57.39	57.46
520	57.52	57.59	57.66	57.72	57.79	57.85	57.92	57.99	58.05	58.12
530	58.18	58.25	58.32	58.38	58.45	58.51	58.58	58.64	58.71	58.78
540	58.84	58.91	58.97	59.04	59.10	59.17	59.24	59.30	59.37	59.43
550	59.50	59.56	59.63	59.69	59.76	59.82	59.89	59.96	60.02	60.09
560	60.15	60.22	60.28	60.35	60.41	60.48	60.54	60.61	60.67	60.74
570	60.80	60.87	60.93	61.00	61.06	61.13	61.19	61.26	61.32	61.39
580	61.45	61.52	61.58	61.65	61.71	61.77	61.84	61.90	61.97	62.03
590	62.10	62.16	62.23	62.29	62.36	62.42	62.48	62.55	62.61	62.68
600	62.74	–	–	–	–	–	–	–	–	–

Note: Desired temperature values are obtained by adding temperatures in the vertical and horizontal axes. When calculating a resistance value of 105°C, read the value in the column where 100°C in the vertical axis and 5°C in the horizontal axis cross. The value will be 28.08Ω.

Performance Characteristics

Parameter	Requirement Δ R ±(%+0.05Ω) Limit	Typical	Test Method
Resistance	Within specified tolerance	—	0°C
T.C.R.	Within specified T.C.R.	—	0°C/ +100°C
Rapid Change of Temperature	±0.5%	-0.15%	-55°C (30 minutes)/ +200°C (30 minutes) 1000 cycles
Moisture Resistance	±0.5%	-0.12%	85°C ± 2°C, 85% RH, 1000 hours, 10mA, 1.5 hr ON, 0.5 hr OFF cycle
Normal Temperature Load Life	±0.5%	±0.10%	25°C ± 10°C, 1000 hours, 76mA, 1.5 hr ON, 0.5 hr OFF cycle
High Temperature Load Life	±0.5%	±0.11%	125°C, 1000 hours, 73mA continuous turning on electricity
Mechanical Shock	±0.5%	±0.04%	100g's maximum, 6Dms (standard), 12.3ft/s
Vibration	±0.5%	-0.03%	Test from 10-1900hz 30g's for 20 minutes, 12 cycles each of 3 orientations
Component Strength	400g and more	—	Pull test

Actual Value (out of guarantee)

Test Items	Reference	Test Method
High Temperature Exposure	0.4%	+600°C, 1000h