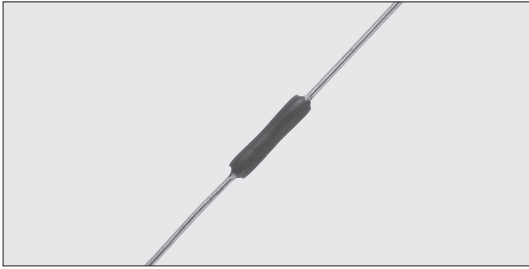
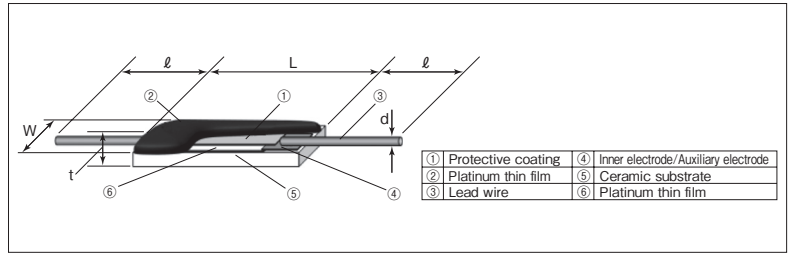


SDT310VASP | Small type Platinum Thin Film Thermal Sensors (Small Heater Element)



Coating color : Black (Top)
Coating color : White (Bottom)

Construction



Features

- Small as quarter volume of conventional type.
3.2-second thermal time constant.
- Excellent heat-resistance.
- Applies axial lead type suitable to use as heater element.
- AEC-Q200 Tested.
- Products meet EU-RoHS requirements.

Applications

- Heater elements for thermal flowmeters of Industrial equipment, measuring instruments and automotive.
- Ultra-small thermal sensor of industrial equipment and measuring instrument.

Reference Standards

IEC 60751⁻²⁰⁰⁸
JIS C 1604⁻²⁰¹³

Dimensions

Type	Dimensions (mm)					Weight (g) (1000pcs)
	W ^{+0.15 -0.1}	L±0.1	t max.	d±0.05	ℓ±2	
SDT310VASP	0.4	2.0	0.65	0.15	10	5.4

Type Designation

Example

SDT310V	AS	P	K	20	F	25
Product Code	Style	Terminal Surface Material	Packaging	Nominal Resistance	Resistance Tolerance	T.C.R Tolerance
		P : Pt clad	K : Chip Tray B : Bulk	20 : 20Ω	F : ±1%	25 : ±25×10 ⁻⁶ /K

Ratings

Resistance (Ω at 0°C)	Resistance Tolerance (%)	T.C.R ^{※1} (×10 ⁻⁶ /K)	Thermal Time Constant ^{※2} (s)	Maximum Current (mA)	Power Rating (W)	Temperature Range ^{※3} (°C)	Tray (pcs)
20	±1	3850±25	3.2	90	0.5	-55~+600	50

※1 T.C.R. Measuring Temperature:0°C/+100°C

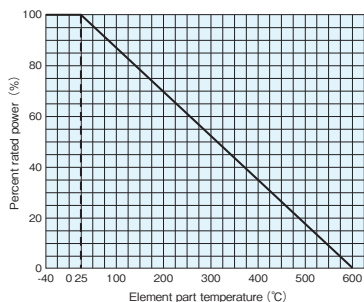
※2 Thermal time constant is value measured in stationary air and is typical value ,which are values of elements and vary with connecting or fixing methods.

※3 Temperature of the device including a self-heating.

Precautions for Use

- It is difficult to solder SDT310VASP because of using heat-resistant leads. Make use of welding to connect the leads wire.
- The sense warm part be careful of the treatment because there is fear to damage when giving a strong mechanical impact because it is using the glass courting.
- If SDT310VASP is used by being molded or placed in a metal protection tube filled with resin, the resistance value may occasionally vary slightly depending on the resin used.
- When forming a lead line, fix a lead line root and the load make not depend on the lead line root part.
- Part is intended to measure Air Flow Only - Not intended for Liquid Measurement.

Derating Curve



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

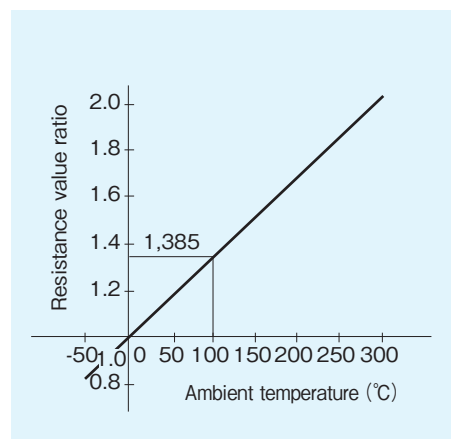
Performance

Test Items	Performance Requirements $\Delta R \pm$ (%+0.05 Ω)		Test Methods
	Limit	Typical	
Resistance	Within specified tolerance	—	0°C
T.C.R.	Within specified T.C.R.	—	0°C/+100°C
Rapid change of temperature	0.5	0.25	-55°C (30min) / +200°C (30min) 1000 cycles
Moisture resistance	0.5	0.1	85°C±2°C, 85%RH, 1000h, 10mA 1.5h ON/0.5h OFF cycles
Normal temperature load life	0.5	0.2	25°C±10°C, 1000h, 90mA 1.5h ON/0.5h OFF cycles
High temperature load life	0.5	0.2	125°C, 1000h 85mA Continuous turning on electricity
Mechanical Shock	0.5	0.1	100g's maximum, 6Dms (Standard), 12.3ft/s
Vibration	0.5	0.1	Test from 10-2000hz 20g's for 20min. 12cycles each of 3 orientations.
Component Strength	600g and more	—	Pull test

Pt20 Resistance-Temperature Characteristic 20 Ω 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
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
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	—	—	—	—	—	—	—	—	—

Temperature Characteristics



Approximate Expression for Resistance-Temperature Characteristics

$$-55^{\circ}\text{C} \sim 0^{\circ}\text{C} : R_t = R_0(1 + C_1 T + C_2 T^2 + C_3(T - 100)T^3)$$

$$0^{\circ}\text{C} \sim +400^{\circ}\text{C} : R_t = R_0(1 + C_1 T + C_2 T^2)$$

RT : Resistance value at T°C

R0 : Resistance value at 0°C

T : Ambient temperature (°C)

$$\text{Constants } C_1, C_2, C_3 : C_1 = 3.9083 \times 10^{-3} \text{ } ^{\circ}\text{C}^{-1}$$

$$C_2 = -5.775 \times 10^{-6} \text{ } ^{\circ}\text{C}^{-2}$$

$$C_3 = -4.183 \times 10^{-12} \text{ } ^{\circ}\text{C}^{-4}$$

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 28.08 Ω .