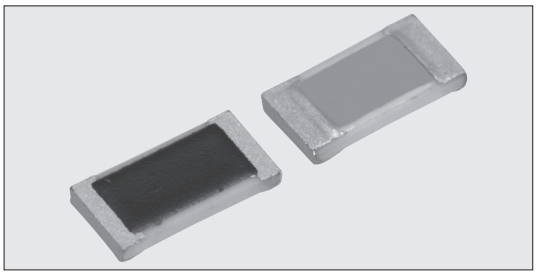
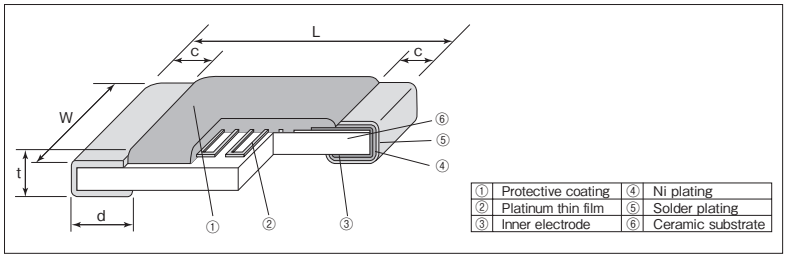
EU RoHS

SDT73H·SDT73S Platinum Thin Film Thermal Chip Sensors



Coating color : SDT73H Black SDT73S Milky white

■Construction



①	Protective coating	④	Ni plating
②	Platinum thin film	⑤	Solder plating
③	Inner electrode	⑥	Ceramic substrate

■Features

- SMD platinum thin film thermal sensors.
- T.C.R. is equivalent to JIS・IEC standards.
- Suitable for temperature control in various industrial equipment.
- Suitable for both flow and reflow solderings.
- Products meet EU-RoHS requirements.

■Applications

- Temperature compensation for various kinds of sensor drive circuits.
- Temperature compensation for telecommunication, measuring and medical equipment.
- Temperature compensation for ICs.

■Reference Standards

IEC 60751[-1995] JIS C 1604[-1997]

■Dimensions

Type (Inch Size Code)	Dimensions (mm)					Weight (g) (1000pcs)
	L±0.2	W±0.2	c±0.3	d±0.3	t±0.15	
SDT73H2B (1206)	3.2	1.6	0.5	0.5	0.5	9.0
SDT73S2B (1206)						

■Type Designation

Example

SDT73H	2B	T	TE	100	F	385
Product Code	Size	Terminal Surface Material	Taping	Nominal Resistance	Resistance Tolerance	T.C.R. (×10⁻⁶/K)
SDT73H SDT73S	2B : 3.2×1.6mm	T : Sn	TEK : 4mm pitch plastic embossed TE : 4mm pitch plastic embossed BK : Bulk	100 : 100Ω 500 : 500Ω ※SDT73S is only 100Ω	C : ±0.2% F : ±1% ※SDT73S is only F	385 : +3850

Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.
For further information on taping, please refer to APPENDIX C on the back pages.

■Ratings

Type	Resistance (Ω at 0℃)	Resistance Tolerance (%)	Thermal Time Constant※1 (s)	Thermal Dissipation Constant※1 (mW/℃)	T.C.R.※2 (×10⁻⁶/K)	T.C.R. Tolerance (×10⁻⁶/K)	Operating Temperature Range (℃)	Specified Current※4 (mA) max.	Taping & Q'ty/Reel (pcs)	
									TEK	TE
SDT73H 2B	100、500	C : ±0.2、F : ±1	6.5	2.4	3850	±50	−55～+155	100Ω : 1 500Ω : 0.1	1000	5000
SDT73S 2B	100	F : ±1					−55～+250※3			

※1 Thermal time constant and thermal dissipation constant are reference values, which are values of elements and vary with connecting or fixing methods.
Thermal dissipation constant is approx. 4mW/℃ under the surface mounting condition.
※2 T.C.R. Measuring Temperature:0℃/+100℃
※3 When always using a SDT73S, 200℃ or less is recommended.
※4 The electricity which it is charged with in the element is moved to the range that rise in temperature due to a self-heat generation can be ignored.
Oridinarily recommended measuring currents are 1mA for 100Ω and 0.1mA for 500Ω.

■Precautions for Use

- When measuring current higher than rated current (100Ω : 1mA, 500Ω : 0.1mA) is used, calculate a rise in temperature by self-heating and confirm the error range.
- Ionic impurities such as flux etc. that are attached to these products or those mounted onto a PCB, negatively affect their moisture resistance, corrosion resistance, etc. The flux may contain ionic substances like chlorine, acid, etc. Please wash them to get rid of these ionic substances especially when using lead-free solder that may contain much of the said substances for improving a wetting characteristic. Using RMA solder or RMA flux, or well-washing is needed. Also, attaching ionic substances such as perspiration, salt etc. by storage environments or mounting conditions/environments negatively affects their moisture resistance, corrosion resistance etc. Please wash them to remove the ionic substances when they are polluted.
- When the components are polluted by ionic impurities like sodium(Na^+), chlorine(Cl^-) etc. included in perspiration and saliva, it leads to electrolytic corrosion. Avoid the pollution when storage, mounting and using. Consider not to remain ionic substances on the components. Wash by pure water etc. and dry them when you find pollution.
- Please pay attention that the top of an iron does not direct touch to the components. There is a risk that may cause a change in resistance. Take care that another risk may happen that the protecting coat is carbonized in an instant when touched directly by the top of the iron, also climatic-proof for electrolytic corrosion or insulation of protecting coat may be dropped down. Be sure not to give high temperature on the top of the iron as it will degrade the protecting coat.
- Avoid storing components under direct sun rays, high temperature/humidity. Direct sun rays will cause quality change of taping and difficulty of keeping appropriate peeling strength. 5～35℃/35～75%RH, there is no deterioration of solderability for 12 months, but take special care for storing, because condensation, dust, and toxic gas like hydrogen sulfide, sulfurous acid gas, hydrogen chloride, etc. may drop solderability.

■Performance

Test Items	Performance Requirements ΔR±(%+0.05Ω)		Test Methods
	Limit	Typical	
Resistance	Within specified tolerance	—	0℃
T.C.R.	3850±50(×10⁻⁶/K)	—	0℃/+100℃
Insulation resistance	100MΩ or more	—	d.c.100V
Dielectric withstanding voltage	0.5	−0.019	a.c.100V 60s~70s
Resistance to soldering heat	0.5	−0.004	260℃, 10s
Rapid change of temperature	0.5	−0.033(SDT73H) −0.048(SDT73S)	−55℃ (30min) /+25℃ (2~3min) /+155℃ (30min) /+25℃ (2~3min) 10 cycles (SDT73H, SDT73S) +25℃(30min)/+250℃(30min) 10 cycles(SDT73S)
Moisture resistance	0.5	−0.016	40℃, 90%~95%RH, 1000h, 1mA 1.5h ON/0.5h OFF cycle
Normal temperature load life	0.5	−0.010	20℃±10℃, 1000h 1mA Continuous turning on electricity
High temperature load life	0.5	−0.017(SDT73H) −0.020(SDT73S)	+155℃, 1000h(SDT73H), +250℃, 1000h(SDT73S) 1mA Continuous turning on electricity
High temperature exposure	0.5	−0.022(SDT73H) −0.023(SDT73S)	+155℃, 1000h(SDT73H), +250℃, 1000h(SDT73S)
Low temperature exposure	0.5	−0.029	−55℃, 1000h

■Pt100 Resistance-Temperature Characteristic (IEC 60751-1995)

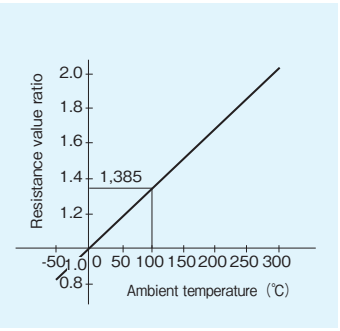
100Ω at 0℃

Temperature (℃)	0	−1	−2	−3	−4	−5	−6	−7	−8	−9
−50	80.31	79.91	79.51	79.11	78.72	78.32	—	—	—	—
−40	84.27	83.87	83.48	83.08	82.69	82.29	81.89	81.50	81.10	80.70
−30	88.22	87.83	87.43	87.04	86.64	86.25	85.85	85.46	85.06	84.67
−20	92.16	91.77	91.37	90.98	90.59	90.19	89.80	89.40	89.01	88.62
−10	96.09	95.69	95.30	94.91	94.52	94.12	93.73	93.34	92.95	92.55
0	100.00	99.61	99.22	98.83	98.44	98.04	97.65	97.26	96.87	96.48
	0	1	2	3	4	5	6	7	8	9
0	100.00	100.39	100.78	101.17	101.56	101.95	102.34	102.73	103.12	103.51
10	103.90	104.29	104.68	105.07	105.46	105.85	106.24	106.63	107.02	107.40
20	107.79	108.18	108.57	108.96	109.35	109.73	110.12	110.51	110.90	111.29
30	111.67	112.06	112.45	112.83	113.22	113.61	114.00	114.38	114.77	115.15
40	115.54	115.93	116.31	116.70	117.08	117.47	117.86	118.24	118.63	119.01
50	119.40	119.78	120.17	120.55	120.94	121.32	121.71	122.09	122.47	122.86
60	123.24	123.63	124.01	124.39	124.78	125.16	125.54	125.93	126.31	126.69
70	127.08	127.46	127.84	128.22	128.61	128.99	129.37	129.75	130.13	130.52
80	130.90	131.28	131.66	132.04	132.42	132.80	133.18	133.57	133.95	134.33
90	134.71	135.09	135.47	135.85	136.23	136.61	136.99	137.37	137.75	138.13
100	138.51	138.88	139.26	139.64	140.02	140.40	140.78	141.16	141.54	141.91
110	142.29	142.67	143.05	143.43	143.80	144.18	144.56	144.94	145.31	145.69
120	146.07	146.44	146.82	147.20	147.57	147.95	148.33	148.70	149.08	149.46
130	149.83	150.21	150.58	150.96	151.33	151.71	152.08	152.46	152.83	153.21
140	153.58	153.96	154.33	154.71	155.08	155.46	155.83	156.20	156.58	156.95
150	157.33	157.70	158.07	158.45	158.82	159.19	159.56	159.94	160.31	160.68
160	161.05	161.43	161.80	162.17	162.54	162.91	163.29	163.66	164.03	164.40
170	164.77	165.14	165.51	165.89	166.26	166.63	167.00	167.37	167.74	168.11
180	168.48	168.85	169.22	169.59	169.96	170.33	170.70	171.07	171.43	171.80
190	172.17	172.54	172.91	173.28	173.65	174.02	174.38	174.75	175.12	175.49
200	175.86	176.22	176.59	176.96	177.33	177.69	178.06	178.43	178.79	179.16
210	179.53	179.89	180.26	180.63	180.99	181.36	181.72	182.09	182.46	182.82
220	183.19	183.55	183.92	184.28	184.65	185.01	185.38	185.74	186.11	186.47
230	186.84	187.20	187.56	187.93	188.29	188.66	189.02	189.38	189.75	190.11
240	190.47	190.84	191.20	191.56	191.92	192.29	192.65	193.01	193.37	193.74
250	194.10	—	—	—	—	—	—	—	—	—

Note :

Desired temperature values are obtained by adding temperatures in the vertical and horizontal axes. When calculating a resistance value of 105℃, read the value in the column where 100℃ in the vertical axis and 5℃ in the horizontal axis cross. The value will be 140.40Ω. The value for 500Ω at 0℃ will be the value obtained by multiplying the resistance value in this table by 5.

■Temperature Characteristics



Approximate Expression for Resistance-Temperature Characteristics

−55℃~0℃ : $R_T = R_0 \{1 + C_1 T + C_2 T^2 + C_3 (T-100) T^3\}$

0℃~+250℃ : $R_T = R_0 (1 + C_1 T + C_2 T^2)$

R_T : Resistance value at T℃

R_0 : Resistance value at 0℃

T : Ambient temperature (℃)

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

$C_2 = -5.775 \times 10^{-7}$℃$^{-2}$

$C_3 = -4.183 \times 10^{-12}$℃$^{-4}$