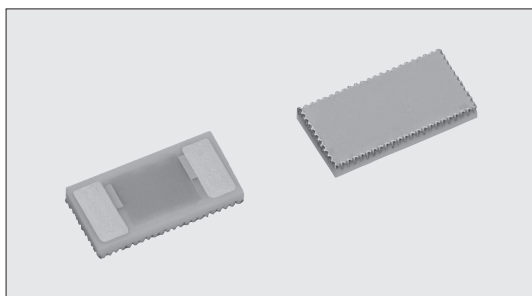
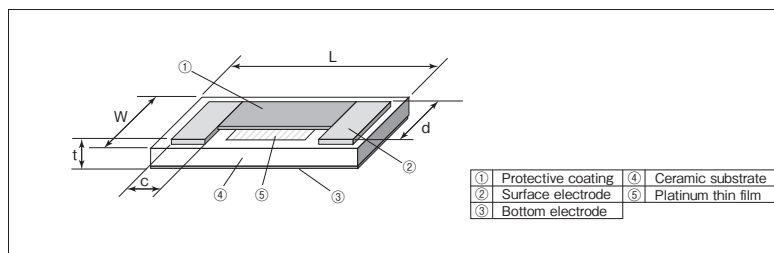


WTP ■ Platinum Thin Film Thermal Sensors for Wire bonding



■ Construction



■ Features

- Electrode structure suitable for Al wire bonding of thick lines (Max. $\phi 300 \mu\text{m}$).
- Soldering and sintering can be mounted by metallization on the back side.
- Products meet EU-RoHS requirements.
- AEC-Q200 Qualified.

■ Applications

- Temperature monitoring of power modules.
- High-precision temperature compensation for various sensors.

■ Reference Standards

IEC 60751⁻²⁰⁰⁸
JIS C 1604⁻²⁰¹³

■ Dimensions

Type (Inch Size Code)	Dimensions (mm)					Weight (g) (1000pcs)
	L ± 0.2	W ± 0.2	c ± 0.1	d ± 0.1	t ± 0.1	
WTP3216 (1206)	3.2	1.6	0.6	1.4	0.42	8.6

■ Type Designation

Example

WTP	3216	G	S	TE	1K	Y	40
Type	Size	Terminal Bottom Material	Terminal Surface Material	Bottom	Nominal Resistance	Resistance Tolerance	T.C.R. Tolerance
	3.2×1.6mm	G : Au	S : AgPt	PT : Tray TE : 4mm pitch plastic embossed BK : Bulk	1K : 1000Ω	Y : $\pm 0.3\%$	40 : $\pm 40 \times 10^{-6}/\text{K}$

■ Ratings

Resistance (Ω at 0°C)	Resistance Tolerance (%)	Thermal Time Constant ^{※1} (s)	T.C.R. ^{※2} ($\times 10^{-6}/\text{K}$)	T.C.R. Tolerance ($\times 10^{-6}/\text{K}$)	Operating Temperature Range (°C)	Specified current ^{※3} (mA)	Tray (pcs)	Taping & Q'ty / Reel (pcs)
1000	Y : ± 0.3	8.3	3850	± 40	-55~+200	2	PT : 100 TE : 5000	

※1 Thermal time constant is reference values, which are values of elements and vary with connecting or fixing methods.

※2 T.C.R Measurement Temperature 0° C/+100° C

※3 Recommended measuring current is 0.1 mA.

· Please contact us regarding Thermal dissipation constant.

■ Precautions for Use

- Recommended measuring current is 0.1 mA. If it exceeds the recommended measuring current, calculate a rise in temperature by self-heating and evaluate before use.
- Since the temperature-sensitive section uses glass coating, it may be damaged if strong mechanical impact is applied. Handle with care.
- When WTP is molded or filled with resin in a metal protective pipe, a slight change in resistance value may occur depending on the resin used.
- Do not use this product in liquid phase.
- 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 leadfree 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.
- 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°C/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 $\Delta R \pm$ (%)		Test Methods
	Limit	Typical	
Resistance	Within the specified tolerance	—	0°C
T.C.R.	Within the specified tolerance	—	0°C/100°C
Rapid change of temperature	0.3	-0.014	-55°C (30min) / +200°C (30min) 1000cycles
Moisture resistance	0.3	0.021	85°C±2°C, 85%RH, 1000h, 2 mA continuous current
High temperature load life	0.3	0.018	200°C, 1000h, 2 mA Continuous turning on electricity
High temperature exposure	0.3	0.014	200°C, 1000h
Low temperature exposure	0.3	0.008	-55°C, 1000h

■ Resistance-Temperature Characteristic

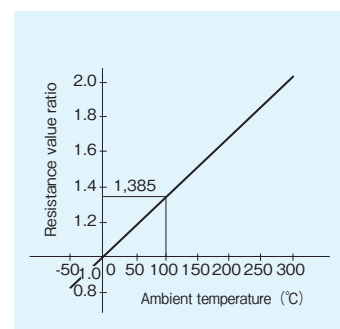
1000Ω at 0°C

Temperature (°C)	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-50	803.1	799.1	795.1	791.1	787.2	783.2	—	—	—	—
-40	842.7	838.7	834.8	830.8	826.9	822.9	818.9	815.0	811.0	807.0
-30	882.2	878.3	874.3	870.4	866.4	862.5	858.5	854.6	850.6	846.7
-20	921.6	917.7	913.7	909.8	905.9	901.9	898.0	894.0	890.1	886.2
-10	960.9	956.9	953.0	949.1	945.2	941.2	937.3	933.4	929.5	925.5
0	1000.0	996.1	992.2	988.3	984.4	980.4	976.5	972.6	968.7	964.8
0	0	1	2	3	4	5	6	7	8	9
0	1000.0	1003.9	1007.8	1011.7	1015.6	1019.5	1023.4	1027.3	1031.2	1035.1
10	1039.0	1042.9	1046.8	1050.7	1054.6	1058.5	1062.4	1066.3	1070.2	1074.0
20	1077.9	1081.8	1085.7	1089.6	1093.5	1097.3	1101.2	1105.1	1109.0	1112.9
30	1116.7	1120.6	1124.5	1128.3	1132.2	1136.1	1140.0	1143.8	1147.7	1151.5
40	1155.4	1159.3	1163.1	1167.0	1170.8	1174.7	1178.6	1182.4	1186.3	1190.1
50	1194.0	1197.8	1201.7	1205.5	1209.4	1213.2	1217.1	1220.9	1224.7	1228.6
60	1232.4	1236.3	1240.1	1243.9	1247.8	1251.6	1255.4	1259.3	1263.1	1266.9
70	1270.8	1274.6	1278.4	1282.2	1286.1	1289.9	1293.7	1297.5	1301.3	1305.2
80	1309.0	1312.8	1316.6	1320.4	1324.2	1328.0	1331.8	1335.7	1339.5	1343.3
90	1347.1	1350.9	1354.7	1358.5	1362.3	1366.1	1369.9	1373.7	1377.5	1381.3
100	1385.1	1388.8	1392.6	1396.4	1400.2	1404.0	1407.8	1411.6	1415.4	1419.1
110	1422.9	1426.7	1430.5	1434.3	1438.0	1441.8	1445.6	1449.4	1453.1	1456.9
120	1460.7	1464.4	1468.2	1472.0	1475.7	1479.5	1483.3	1487.0	1490.8	1494.6
130	1498.3	1502.1	1505.8	1509.6	1513.3	1517.1	1520.8	1524.6	1528.3	1532.1
140	1535.8	1539.6	1543.3	1547.1	1550.8	1554.6	1558.3	1562.0	1565.8	1569.5
150	1573.3	1577.0	1580.7	1584.5	1588.2	1591.9	1595.6	1599.4	1603.1	1606.8
160	1610.5	1614.3	1618.0	1621.7	1625.4	1629.1	1632.9	1636.6	1640.3	1644.0
170	1647.7	1651.4	1655.1	1658.9	1662.6	1666.3	1670.0	1673.7	1677.4	1681.1
180	1684.8	1688.5	1692.2	1695.9	1699.6	1703.3	1707.0	1710.7	1714.3	1718.0
190	1721.7	1725.4	1729.1	1732.8	1736.5	1740.2	1743.8	1747.5	1751.2	1754.9
200	1758.6	—	—	—	—	—	—	—	—	—

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 1404.0 Ω.

■ Temperature Characteristics



Resistance temperature characteristic approximate formula

-55°C ~ 0°C : $R_T = R_0 [1 + C_1 T + C_2 T^2 + C_3 (T-100) T^3]$ 0°C ~ +400°C : $R_T = R_0 (1 + C_1 T + C_2 T^2)$ R_T : Resistance value at T°C R_0 : Resistance value at 0°C

T : Ambient temperature (°C)

Constants C_1, C_2, C_3 : $C_1 = 3.908 \times 10^{-3} \text{ } ^\circ\text{C}^{-1}$ $C_2 = -5.775 \times 10^{-7} \text{ } ^\circ\text{C}^{-2}$ $C_3 = -4.183 \times 10^{-12} \text{ } ^\circ\text{C}^{-4}$