



KTY81 series

Silicon temperature sensors

Rev. 05 — 25 April 2008

Product data sheet

1. Product profile

1.1 General description

The temperature sensors in the KTY81 series have a positive temperature coefficient of resistance and are suitable for use in measurement and control systems. The sensors are encapsulated in the SOD70 2 in-line leads plastic package.

Other special selections are available on request.

CAUTION



This device is sensitive to ElectroStatic Discharge (ESD). Therefore care should be taken during transport and handling.

1.2 Features

- High accuracy and reliability
- Positive temperature coefficient; fail-safe behavior
- Long-term stability
- Virtually linear characteristics

1.3 Quick reference data

Table 1. Quick reference data

$T_{amb} = 25\text{ }^{\circ}\text{C}$; in liquid; unless otherwise specified.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------|-------------------|-------------------------------|------|-----|------|----------|
| R_{25} | sensor resistance | $I_{sen(cont)} = 1\text{ mA}$ | | | | |
| | | KTY81/110 | 990 | - | 1010 | Ω |
| | | KTY81/120 | 980 | - | 1020 | Ω |
| | | KTY81/121 | 980 | - | 1000 | Ω |
| | | KTY81/122 | 1000 | - | 1020 | Ω |
| | | KTY81/150 | 950 | - | 1050 | Ω |
| | | KTY81/210 | 1980 | - | 2020 | Ω |
| | | KTY81/220 | 1960 | - | 2040 | Ω |
| | | KTY81/221 | 1960 | - | 2000 | Ω |
| | | KTY81/222 | 2000 | - | 2040 | Ω |
| | | KTY81/250 | 1900 | - | 2100 | Ω |

2. Pinning information

Table 2. Pinning

| Pin | Description | Simplified outline |
|-----|--------------------|---|
| 1 | electrical contact |  |
| 2 | electrical contact | |

3. Ordering information

Table 3. Ordering information

| Type number | Package | | |
|-------------|---------|--|---------|
| | Name | Description | Version |
| KTY81/110 | - | plastic near cylindrical single-ended package; | SOD70 |
| KTY81/120 | | 2 in-line leads | |
| KTY81/121 | | | |
| KTY81/122 | | | |
| KTY81/150 | | | |
| KTY81/210 | | | |
| KTY81/220 | | | |
| KTY81/221 | | | |
| KTY81/222 | | | |
| KTY81/250 | | | |

4. Marking

Table 4. Marking codes

| Type number | Marking code |
|-------------|--------------|
| KTY81/110 | 110 |
| KTY81/120 | 120 |
| KTY81/121 | 121 |
| KTY81/122 | 122 |
| KTY81/150 | 150 |
| KTY81/210 | 210 |
| KTY81/220 | 220 |
| KTY81/221 | 221 |
| KTY81/222 | 222 |
| KTY81/250 | 250 |

5. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol | Parameter | Conditions | Min | Max | Unit |
|------------------------|---------------------------|---|-----|------|------|
| $I_{\text{sen(cont)}}$ | continuous sensor current | in free air; $T_{\text{amb}} = 25\text{ °C}$ | - | 10 | mA |
| | | in free air; $T_{\text{amb}} = 150\text{ °C}$ | - | 2 | mA |
| T_{amb} | ambient temperature | | -55 | +150 | °C |

6. Characteristics

Table 6. Characteristics

$T_{\text{amb}} = 25\text{ °C}$; in liquid; unless otherwise specified.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------------------|--|--|-------|-------|-------|----------|
| R_{25} | sensor resistance | $I_{\text{sen(cont)}} = 1\text{ mA}$ | | | | |
| | | KTY81/110 | 990 | - | 1010 | Ω |
| | | KTY81/120 | 980 | - | 1020 | Ω |
| | | KTY81/121 | 980 | - | 1000 | Ω |
| | | KTY81/122 | 1000 | - | 1020 | Ω |
| | | KTY81/150 | 950 | - | 1050 | Ω |
| | | KTY81/210 | 1980 | - | 2020 | Ω |
| | | KTY81/220 | 1960 | - | 2040 | Ω |
| | | KTY81/221 | 1960 | - | 2000 | Ω |
| | | KTY81/222 | 2000 | - | 2040 | Ω |
| TC | temperature coefficient | | - | 0.79 | - | %/K |
| | | | | | | |
| R_{100}/R_{25} | resistance ratio | $T_{\text{amb}} = 100\text{ °C}$ and 25 °C | 1.676 | 1.696 | 1.716 | |
| R_{-55}/R_{25} | resistance ratio | $T_{\text{amb}} = -55\text{ °C}$ and 25 °C | 0.480 | 0.490 | 0.500 | |
| ΔR_{25} | drift of sensor resistance at 25 °C | 10000 h continuous operation; $T_{\text{amb}} = 150\text{ °C}$ | | | | |
| | | KTY81/1 series | - | 1.6 | - | Ω |
| | | KTY81/2 series | - | 3.2 | - | Ω |
| τ_{th} | thermal time constant | in still air | [1] - | 30 | - | s |
| | | in still liquid | [1] - | 5 | - | s |
| | | in flowing liquid | [1] - | 3 | - | s |

- [1] The thermal time constant is the time taken for the sensor to reach 63.2 % of the total temperature difference. For example, if a sensor with a temperature of 25 °C is moved to an environment with an ambient temperature of 100 °C , the time for the sensor to reach a temperature of 72.4 °C is the thermal time constant.

Table 7. Ambient temperature, corresponding resistance, temperature coefficient and maximum expected temperature error for KTY81/110 and KTY81/120 $I_{sen(cont)} = 1 \text{ mA}$.

| Ambient temperature | | Temperature coefficient (%/K) | KTY81/110 | | | | KTY81/120 | | | |
|---------------------|------|-------------------------------|----------------|------|------|-----------------------|----------------|------|------|-----------------------|
| (°C) | (°F) | | Resistance (Ω) | | | Temperature error (K) | Resistance (Ω) | | | Temperature error (K) |
| | | | Min | Typ | Max | | Min | Typ | Max | |
| -55 | -67 | 0.99 | 475 | 490 | 505 | ±3.02 | 470 | 490 | 510 | ±4.02 |
| -50 | -58 | 0.98 | 500 | 515 | 530 | ±2.92 | 495 | 515 | 535 | ±3.94 |
| -40 | -40 | 0.96 | 552 | 567 | 582 | ±2.74 | 547 | 567 | 588 | ±3.78 |
| -30 | -22 | 0.93 | 609 | 624 | 638 | ±2.55 | 603 | 624 | 645 | ±3.62 |
| -20 | -4 | 0.91 | 669 | 684 | 698 | ±2.35 | 662 | 684 | 705 | ±3.45 |
| -10 | 14 | 0.88 | 733 | 747 | 761 | ±2.14 | 726 | 747 | 769 | ±3.27 |
| 0 | 32 | 0.85 | 802 | 815 | 828 | ±1.91 | 793 | 815 | 836 | ±3.08 |
| 10 | 50 | 0.83 | 874 | 886 | 898 | ±1.67 | 865 | 886 | 907 | ±2.88 |
| 20 | 68 | 0.80 | 950 | 961 | 972 | ±1.41 | 941 | 961 | 982 | ±2.66 |
| 25 | 77 | 0.79 | 990 | 1000 | 1010 | ±1.27 | 980 | 1000 | 1020 | ±2.54 |
| 30 | 86 | 0.78 | 1029 | 1040 | 1051 | ±1.39 | 1018 | 1040 | 1061 | ±2.68 |
| 40 | 104 | 0.75 | 1108 | 1122 | 1136 | ±1.64 | 1097 | 1122 | 1147 | ±2.97 |
| 50 | 122 | 0.73 | 1192 | 1209 | 1225 | ±1.91 | 1180 | 1209 | 1237 | ±3.28 |
| 60 | 140 | 0.71 | 1278 | 1299 | 1319 | ±2.19 | 1265 | 1299 | 1332 | ±3.61 |
| 70 | 158 | 0.69 | 1369 | 1392 | 1416 | ±2.49 | 1355 | 1392 | 1430 | ±3.94 |
| 80 | 176 | 0.67 | 1462 | 1490 | 1518 | ±2.8 | 1447 | 1490 | 1532 | ±4.3 |
| 90 | 194 | 0.65 | 1559 | 1591 | 1623 | ±3.12 | 1543 | 1591 | 1639 | ±4.66 |
| 100 | 212 | 0.63 | 1659 | 1696 | 1733 | ±3.46 | 1642 | 1696 | 1750 | ±5.05 |
| 110 | 230 | 0.61 | 1762 | 1805 | 1847 | ±3.83 | 1744 | 1805 | 1865 | ±5.48 |
| 120 | 248 | 0.58 | 1867 | 1915 | 1963 | ±4.33 | 1848 | 1915 | 1982 | ±6.07 |
| 125 | 257 | 0.55 | 1919 | 1970 | 2020 | ±4.66 | 1899 | 1970 | 2040 | ±6.47 |
| 130 | 266 | 0.52 | 1970 | 2023 | 2077 | ±5.07 | 1950 | 2023 | 2097 | ±6.98 |
| 140 | 284 | 0.45 | 2065 | 2124 | 2184 | ±6.28 | 2043 | 2124 | 2205 | ±8.51 |
| 150 | 302 | 0.35 | 2145 | 2211 | 2277 | ±8.55 | 2123 | 2211 | 2299 | ±11.43 |

Table 8. Ambient temperature, corresponding resistance, temperature coefficient and maximum expected temperature error for KTY81/121 and KTY81/122 $I_{sen(cont)} = 1 \text{ mA}$.

| Ambient temperature | | Temperature coefficient (%/K) | KTY81/121 | | | | KTY81/122 | | | |
|---------------------|------|-------------------------------|----------------|------|------|-----------------------|----------------|------|------|-----------------------|
| (°C) | (°F) | | Resistance (Ω) | | | Temperature error (K) | Resistance (Ω) | | | Temperature error (K) |
| | | | Min | Typ | Max | | Min | Typ | Max | |
| -55 | -67 | 0.99 | 471 | 485 | 500 | ±3.02 | 480 | 495 | 510 | ±3.02 |
| -50 | -58 | 0.98 | 495 | 510 | 524 | ±2.92 | 505 | 520 | 535 | ±2.92 |
| -40 | -40 | 0.96 | 547 | 562 | 576 | ±2.74 | 558 | 573 | 588 | ±2.74 |
| -30 | -22 | 0.93 | 603 | 617 | 632 | ±2.55 | 615 | 630 | 645 | ±2.55 |
| -20 | -4 | 0.91 | 662 | 677 | 691 | ±2.35 | 676 | 690 | 705 | ±2.35 |
| -10 | 14 | 0.88 | 726 | 740 | 754 | ±2.14 | 741 | 755 | 769 | ±2.14 |
| 0 | 32 | 0.85 | 794 | 807 | 820 | ±1.91 | 810 | 823 | 836 | ±1.91 |
| 10 | 50 | 0.83 | 865 | 877 | 889 | ±1.67 | 883 | 895 | 907 | ±1.67 |
| 20 | 68 | 0.80 | 941 | 951 | 962 | ±1.41 | 960 | 971 | 982 | ±1.41 |
| 25 | 77 | 0.79 | 980 | 990 | 1000 | ±1.27 | 1000 | 1010 | 1020 | ±1.27 |
| 30 | 86 | 0.78 | 1018 | 1029 | 1041 | ±1.39 | 1039 | 1050 | 1062 | ±1.39 |
| 40 | 104 | 0.75 | 1097 | 1111 | 1125 | ±1.64 | 1120 | 1134 | 1148 | ±1.64 |
| 50 | 122 | 0.73 | 1180 | 1196 | 1213 | ±1.91 | 1204 | 1221 | 1238 | ±1.91 |
| 60 | 140 | 0.71 | 1266 | 1286 | 1305 | ±2.19 | 1291 | 1312 | 1332 | ±2.19 |
| 70 | 158 | 0.69 | 1355 | 1378 | 1402 | ±2.49 | 1382 | 1406 | 1430 | ±2.49 |
| 80 | 176 | 0.67 | 1447 | 1475 | 1502 | ±2.8 | 1477 | 1505 | 1533 | ±2.8 |
| 90 | 194 | 0.65 | 1543 | 1575 | 1607 | ±3.12 | 1574 | 1607 | 1639 | ±3.12 |
| 100 | 212 | 0.63 | 1642 | 1679 | 1716 | ±3.46 | 1676 | 1713 | 1750 | ±3.46 |
| 110 | 230 | 0.61 | 1745 | 1786 | 1828 | ±3.83 | 1780 | 1823 | 1865 | ±3.83 |
| 120 | 248 | 0.58 | 1849 | 1896 | 1943 | ±4.33 | 1886 | 1934 | 1982 | ±4.33 |
| 125 | 257 | 0.55 | 1900 | 1950 | 2000 | ±4.66 | 1938 | 1989 | 2041 | ±4.66 |
| 130 | 266 | 0.52 | 1950 | 2003 | 2056 | ±5.07 | 1989 | 2044 | 2098 | ±5.07 |
| 140 | 284 | 0.45 | 2044 | 2103 | 2162 | ±6.28 | 2085 | 2146 | 2206 | ±6.28 |
| 150 | 302 | 0.35 | 2124 | 2189 | 2254 | ±8.55 | 2167 | 2233 | 2299 | ±8.55 |

Table 9. Ambient temperature, corresponding resistance, temperature coefficient and maximum expected temperature error for KTY81/150 $I_{sen(cont)} = 1\text{ mA}$.

| Ambient temperature | | Temperature coefficient (%/K) | KTY81/150 | | | |
|---------------------|------|-------------------------------|-------------------------|------|------|-----------------------|
| (°C) | (°F) | | Resistance (Ω) | | | Temperature error (K) |
| | | | Min | Typ | Max | |
| -55 | -67 | 0.99 | 456 | 490 | 524 | ± 7.04 |
| -50 | -58 | 0.98 | 479 | 515 | 550 | ± 6.99 |
| -40 | -40 | 0.96 | 530 | 567 | 605 | ± 6.91 |
| -30 | -22 | 0.93 | 584 | 624 | 663 | ± 6.84 |
| -20 | -4 | 0.91 | 642 | 684 | 725 | ± 6.77 |
| -10 | 14 | 0.88 | 703 | 747 | 791 | ± 6.69 |
| 0 | 32 | 0.85 | 769 | 815 | 861 | ± 6.61 |
| 10 | 50 | 0.83 | 838 | 886 | 934 | ± 6.51 |
| 20 | 68 | 0.80 | 912 | 961 | 1010 | ± 6.41 |
| 25 | 77 | 0.79 | 950 | 1000 | 1050 | ± 6.35 |
| 30 | 86 | 0.78 | 987 | 1040 | 1093 | ± 6.55 |
| 40 | 104 | 0.75 | 1064 | 1122 | 1181 | ± 6.97 |
| 50 | 122 | 0.73 | 1143 | 1209 | 1274 | ± 7.4 |
| 60 | 140 | 0.71 | 1226 | 1299 | 1371 | ± 7.85 |
| 70 | 158 | 0.69 | 1313 | 1392 | 1472 | ± 8.31 |
| 80 | 176 | 0.67 | 1402 | 1490 | 1577 | ± 8.79 |
| 90 | 194 | 0.65 | 1495 | 1591 | 1687 | ± 9.29 |
| 100 | 212 | 0.63 | 1591 | 1696 | 1801 | ± 9.81 |
| 110 | 230 | 0.61 | 1690 | 1805 | 1919 | ± 10.4 |
| 120 | 248 | 0.58 | 1791 | 1915 | 2039 | ± 11.28 |
| 125 | 257 | 0.55 | 1840 | 1970 | 2099 | ± 11.91 |
| 130 | 266 | 0.52 | 1889 | 2023 | 2158 | ± 12.72 |
| 140 | 284 | 0.45 | 1980 | 2124 | 2269 | ± 15.21 |
| 150 | 302 | 0.35 | 2057 | 2211 | 2365 | ± 20.09 |

Table 10. Ambient temperature, corresponding resistance, temperature coefficient and maximum expected temperature error for KTY81/210 and KTY81/220 $I_{sen(cont)} = 1 \text{ mA}$.

| Ambient temperature | | Temperature coefficient (%/K) | KTY81/210 | | | | KTY81/220 | | | |
|---------------------|------|-------------------------------|----------------|------|------|-----------------------|----------------|------|------|-----------------------|
| (°C) | (°F) | | Resistance (Ω) | | | Temperature error (K) | Resistance (Ω) | | | Temperature error (K) |
| | | | Min | Typ | Max | | Min | Typ | Max | |
| -55 | -67 | 0.99 | 951 | 980 | 1009 | ±3.02 | 941 | 980 | 1019 | ±4.02 |
| -50 | -58 | 0.98 | 1000 | 1030 | 1059 | ±2.92 | 990 | 1030 | 1070 | ±3.94 |
| -40 | -40 | 0.96 | 1105 | 1135 | 1165 | ±2.74 | 1094 | 1135 | 1176 | ±3.78 |
| -30 | -22 | 0.93 | 1218 | 1247 | 1277 | ±2.55 | 1205 | 1247 | 1289 | ±3.62 |
| -20 | -4 | 0.91 | 1338 | 1367 | 1396 | ±2.35 | 1325 | 1367 | 1410 | ±3.45 |
| -10 | 14 | 0.88 | 1467 | 1495 | 1523 | ±2.14 | 1452 | 1495 | 1538 | ±3.27 |
| 0 | 32 | 0.85 | 1603 | 1630 | 1656 | ±1.91 | 1587 | 1630 | 1673 | ±3.08 |
| 10 | 50 | 0.83 | 1748 | 1772 | 1797 | ±1.67 | 1730 | 1772 | 1814 | ±2.88 |
| 20 | 68 | 0.80 | 1901 | 1922 | 1944 | ±1.41 | 1881 | 1922 | 1963 | ±2.66 |
| 25 | 77 | 0.79 | 1980 | 2000 | 2020 | ±1.27 | 1960 | 2000 | 2040 | ±2.54 |
| 30 | 86 | 0.78 | 2057 | 2080 | 2102 | ±1.39 | 2036 | 2080 | 2123 | ±2.68 |
| 40 | 104 | 0.75 | 2217 | 2245 | 2272 | ±1.64 | 2194 | 2245 | 2295 | ±2.97 |
| 50 | 122 | 0.73 | 2383 | 2417 | 2451 | ±1.91 | 2359 | 2417 | 2475 | ±3.28 |
| 60 | 140 | 0.71 | 2557 | 2597 | 2637 | ±2.19 | 2531 | 2597 | 2663 | ±3.61 |
| 70 | 158 | 0.69 | 2737 | 2785 | 2832 | ±2.49 | 2709 | 2785 | 2860 | ±3.94 |
| 80 | 176 | 0.67 | 2924 | 2980 | 3035 | ±2.8 | 2894 | 2980 | 3065 | ±4.3 |
| 90 | 194 | 0.65 | 3118 | 3182 | 3246 | ±3.12 | 3086 | 3182 | 3278 | ±4.66 |
| 100 | 212 | 0.63 | 3318 | 3392 | 3466 | ±3.46 | 3284 | 3392 | 3500 | ±5.05 |
| 110 | 230 | 0.59 | 3523 | 3607 | 3691 | ±3.93 | 3487 | 3607 | 3728 | ±5.61 |
| 120 | 248 | 0.53 | 3722 | 3817 | 3912 | ±4.7 | 3683 | 3817 | 3950 | ±6.59 |
| 125 | 257 | 0.49 | 3815 | 3915 | 4016 | ±5.26 | 3775 | 3915 | 4055 | ±7.31 |
| 130 | 266 | 0.44 | 3901 | 4008 | 4114 | ±6 | 3861 | 4008 | 4154 | ±8.27 |
| 140 | 284 | 0.33 | 4049 | 4166 | 4283 | ±8.45 | 4008 | 4166 | 4325 | ±11.46 |
| 150 | 302 | 0.20 | 4153 | 4280 | 4407 | ±14.63 | 4110 | 4280 | 4450 | ±19.56 |

Table 11. Ambient temperature, corresponding resistance, temperature coefficient and maximum expected temperature error for KTY81/221 and KTY81/222 $I_{sen(cont)} = 1 \text{ mA}$.

| Ambient temperature | | Temperature coefficient (%/K) | KTY81/221 | | | | KTY81/222 | | | |
|---------------------|------|-------------------------------|----------------|------|------|-----------------------|----------------|------|------|-----------------------|
| (°C) | (°F) | | Resistance (Ω) | | | Temperature error (K) | Resistance (Ω) | | | Temperature error (K) |
| | | | Min | Typ | Max | | Min | Typ | Max | |
| -55 | -67 | 0.99 | 941 | 970 | 999 | ±3.02 | 960 | 990 | 1020 | ±3.02 |
| -50 | -58 | 0.98 | 990 | 1019 | 1049 | ±2.92 | 1010 | 1040 | 1070 | ±2.92 |
| -40 | -40 | 0.96 | 1094 | 1123 | 1153 | ±2.74 | 1116 | 1146 | 1176 | ±2.74 |
| -30 | -22 | 0.93 | 1205 | 1235 | 1264 | ±2.55 | 1230 | 1260 | 1290 | ±2.55 |
| -20 | -4 | 0.91 | 1325 | 1354 | 1382 | ±2.35 | 1352 | 1381 | 1410 | ±2.35 |
| -10 | 14 | 0.88 | 1452 | 1480 | 1508 | ±2.14 | 1481 | 1510 | 1538 | ±2.14 |
| 0 | 32 | 0.85 | 1587 | 1613 | 1640 | ±1.91 | 1619 | 1646 | 1673 | ±1.91 |
| 10 | 50 | 0.83 | 1730 | 1754 | 1779 | ±1.67 | 1765 | 1790 | 1815 | ±1.67 |
| 20 | 68 | 0.80 | 1882 | 1903 | 1924 | ±1.41 | 1920 | 1941 | 1963 | ±1.41 |
| 25 | 77 | 0.79 | 1960 | 1980 | 2000 | ±1.27 | 2000 | 2020 | 2040 | ±1.27 |
| 30 | 86 | 0.78 | 2037 | 2059 | 2081 | ±1.39 | 2078 | 2100 | 2123 | ±1.39 |
| 40 | 104 | 0.75 | 2195 | 2222 | 2250 | ±1.64 | 2239 | 2267 | 2295 | ±1.64 |
| 50 | 122 | 0.73 | 2360 | 2393 | 2426 | ±1.91 | 2407 | 2441 | 2475 | ±1.91 |
| 60 | 140 | 0.71 | 2531 | 2571 | 2611 | ±2.19 | 2582 | 2623 | 2664 | ±2.19 |
| 70 | 158 | 0.69 | 2710 | 2757 | 2804 | ±2.49 | 2764 | 2812 | 2860 | ±2.49 |
| 80 | 176 | 0.67 | 2895 | 2950 | 3005 | ±2.8 | 2953 | 3009 | 3065 | ±2.8 |
| 90 | 194 | 0.65 | 3086 | 3150 | 3214 | ±3.12 | 3149 | 3214 | 3279 | ±3.12 |
| 100 | 212 | 0.63 | 3285 | 3358 | 3431 | ±3.46 | 3351 | 3426 | 3501 | ±3.46 |
| 110 | 230 | 0.59 | 3488 | 3571 | 3655 | ±3.93 | 3558 | 3643 | 3728 | ±3.93 |
| 120 | 248 | 0.53 | 3684 | 3779 | 3873 | ±4.7 | 3759 | 3855 | 3951 | ±4.7 |
| 125 | 257 | 0.49 | 3776 | 3876 | 3976 | ±5.26 | 3853 | 3955 | 4056 | ±5.26 |
| 130 | 266 | 0.44 | 3862 | 3967 | 4073 | ±6 | 3940 | 4048 | 4155 | ±6 |
| 140 | 284 | 0.33 | 4009 | 4125 | 4241 | ±8.45 | 4090 | 4208 | 4326 | ±8.45 |
| 150 | 302 | 0.20 | 4112 | 4237 | 4363 | ±14.63 | 4195 | 4323 | 4451 | ±14.63 |

Table 12. Ambient temperature, corresponding resistance, temperature coefficient and maximum expected temperature error for KTY81/250 $I_{sen(cont)} = 1\text{ mA}$.

| Ambient temperature | | Temperature coefficient (%/K) | KTY81/250 | | | |
|---------------------|------|-------------------------------|-------------------------|------|------|-----------------------|
| (°C) | (°F) | | Resistance (Ω) | | | Temperature error (K) |
| | | | Min | Typ | Max | |
| -55 | -67 | 0.99 | 911 | 980 | 1049 | ± 7.04 |
| -50 | -58 | 0.98 | 959 | 1030 | 1101 | ± 6.99 |
| -40 | -40 | 0.96 | 1060 | 1135 | 1210 | ± 6.91 |
| -30 | -22 | 0.93 | 1168 | 1247 | 1327 | ± 6.84 |
| -20 | -4 | 0.91 | 1283 | 1367 | 1451 | ± 6.77 |
| -10 | 14 | 0.88 | 1407 | 1495 | 1583 | ± 6.69 |
| 0 | 32 | 0.85 | 1538 | 1630 | 1721 | ± 6.61 |
| 10 | 50 | 0.83 | 1677 | 1772 | 1867 | ± 6.51 |
| 20 | 68 | 0.80 | 1824 | 1922 | 2021 | ± 6.41 |
| 25 | 77 | 0.79 | 1900 | 2000 | 2100 | ± 6.35 |
| 30 | 86 | 0.78 | 1974 | 2080 | 2185 | ± 6.55 |
| 40 | 104 | 0.75 | 2127 | 2245 | 2362 | ± 6.97 |
| 50 | 122 | 0.73 | 2287 | 2417 | 2547 | ± 7.4 |
| 60 | 140 | 0.71 | 2453 | 2597 | 2741 | ± 7.85 |
| 70 | 158 | 0.69 | 2626 | 2785 | 2943 | ± 8.31 |
| 80 | 176 | 0.67 | 2805 | 2980 | 3154 | ± 8.79 |
| 90 | 194 | 0.65 | 2990 | 3182 | 3374 | ± 9.29 |
| 100 | 212 | 0.63 | 3182 | 3392 | 3602 | ± 9.81 |
| 110 | 230 | 0.59 | 3379 | 3607 | 3836 | ± 10.65 |
| 120 | 248 | 0.53 | 3569 | 3817 | 4065 | ± 12.25 |
| 125 | 257 | 0.49 | 3658 | 3915 | 4173 | ± 13.45 |
| 130 | 266 | 0.44 | 3741 | 4008 | 4274 | ± 15.06 |
| 140 | 284 | 0.33 | 3883 | 4166 | 4450 | ± 20.49 |
| 150 | 302 | 0.20 | 3982 | 4280 | 4578 | ± 34.35 |



To keep the temperature error low, an operating current of $I_{sen(cont)} = 1 \text{ mA}$ is recommended for temperatures above 100 °C

a. KTY81/1 series

b. KTY81/2 series

Fig 1. Sensor resistance as a function of operating current



$T_{amb} = 25 \text{ °C}$

a. KTY81/1 series



$T_{amb} = 25 \text{ °C}$

b. KTY81/2 series

Fig 2. Deviation of sensor resistance as a function of operating current



Fig 3. Maximum operating current for safe operation

7. Package outline



Fig 4. Minimized package outline SOD70

8. Packing information



Fig 5. Configuration of bandolier: spread leads

Note: Types in bulk packaging have a lead-to-lead distance of 2.54 mm (see [Figure 4](#)). The lead-to-lead distance of types packaged on reel have a lead-to-lead distance of 5.08 mm, spread leads (see [Figure 5](#)).

Table 13. Tape specification

| Symbol | Dimension | Specifications | | | | | Remarks |
|---------------------------------|--------------------------------------|----------------|------|-------|-----------|------|------------------------------------|
| | | Min | Typ | Max | Tolerance | Unit | |
| A ₁ | body width | 4.4 | - | 4.8 | - | mm | |
| A | body height | 5 | - | 5.2 | - | mm | |
| T | body thickness | 3.6 | - | 4.2 | - | mm | |
| P | pitch of component | - | 12.7 | - | ±1 | mm | |
| P ₀ | feed hole pitch | - | 12.7 | - | ±0.3 | mm | |
| | cumulative pitch error | -1 | - | +1 | - | mm | measured over 20 devices |
| P ₂ | feed hole center to component center | - | 6.35 | - | ±0.4 | mm | to be measured at bottom of clinch |
| F | lead-to-lead distance | - | 5.08 | - | +0.6/-0.2 | mm | spread leads |
| Δh | component alignment | - | 0 | 1 | - | mm | at top of body |
| W | tape width | - | 18 | - | ±0.5 | mm | |
| W ₀ | hold-down tape width | - | 6 | - | ±0.2 | mm | |
| W ₁ | hole position | - | 9 | - | +0.7/-0.5 | mm | |
| W ₂ | hold-down tape position | - | 0.5 | - | ±0.2 | mm | |
| H ₀ | lead wire clinch height | - | 16.5 | - | ±0.5 | mm | |
| H ₁ | component height | - | - | 23.25 | - | mm | |
| L | length of snipped leads | - | - | 11 | - | mm | |
| D ₀ | feed hole diameter | - | 4 | - | ±0.2 | mm | |
| t | total tape thickness | - | - | 1.2 | - | mm | t ₁ = 0.3 mm to 0.6 mm |
| F ₁ , F ₂ | lead to snipped lead distance | - | 2.54 | - | +0.4/-0.2 | mm | spread leads |
| H ₂ | clinch height | - | 2.5 | - | +0.5/0 | mm | |
| (p) | pull-out force | 6 | - | - | - | N | |

9. Revision history

Table 14. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|-----------------|--------------|-----------------------|---------------|---|
| KTY81_SER_5 | 20080425 | Product data sheet | - | KTY81-2SERIES_4 KTY81-1SERIES_3 |
| Modifications: | | | | |
| | | | | <ul style="list-style-type: none"> The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. Legal texts have been adapted to the new company name where appropriate. |
| KTY81-2SERIES_4 | 20000825 | Product specification | - | - |
| KTY81-1SERIES_3 | 20000825 | Product specification | - | - |

10. Legal information

10.1 Data sheet status

| Document status ^{[1][2]} | Product status ^[3] | Definition |
|-----------------------------------|-------------------------------|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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12. Contents

| | | |
|-----------|-----------------------------------|-----------|
| 1 | Product profile | 1 |
| 1.1 | General description | 1 |
| 1.2 | Features | 1 |
| 1.3 | Quick reference data | 1 |
| 2 | Pinning information | 2 |
| 3 | Ordering information | 2 |
| 4 | Marking | 2 |
| 5 | Limiting values | 3 |
| 6 | Characteristics | 3 |
| 7 | Package outline | 11 |
| 8 | Packing information | 12 |
| 9 | Revision history | 13 |
| 10 | Legal information | 14 |
| 10.1 | Data sheet status | 14 |
| 10.2 | Definitions | 14 |
| 10.3 | Disclaimers | 14 |
| 10.4 | Trademarks | 14 |
| 11 | Contact information | 14 |
| 12 | Contents | 15 |



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