

# WORJ系列 精密采样电阻器

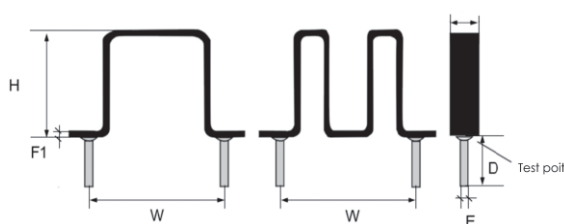
## Series WORJ Precision Sampling Resistors

### 产品特点 FEATURES

- ▶ 功率1~7 瓦1to7watt
- ▶ 精度  $\pm 1\%$ 、 $\pm 2\%$ 和 $\pm 5\%$ Tolerance  $\pm 1\%$ 、 $\pm 2\%$ and  $\pm 5\%$
- ▶ 温度系数TCR:  $\pm 40\text{ppm}/^\circ\text{C}$  resistance wire TCR  $\pm 40\text{ppm}/^\circ\text{C}$
- ▶ 低电感Low Inductance
- ▶ 引脚镀锡易于锡焊Solderable copper leads



### 外形尺寸 DIMENSION



| 型号 Type                    | W $\pm 0.3$<br>(跨距) | H $\pm 2$<br>(标高) | D $\pm 0.5$<br>(脚长) | E $\pm 0.1$<br>(引脚直径) | F1 $\pm 0.1$<br>(线厚) | F $\pm 0.2$<br>(线宽) |
|----------------------------|---------------------|-------------------|---------------------|-----------------------|----------------------|---------------------|
| WORJ-1W-20-R007-F          | 20                  | Max7              | 3.7                 | 0.8                   | 0.7                  | 2.5                 |
| WORJ-1W-10-R100-F          | 10                  | 32                | 3.7                 | 0.8                   | 0.31                 | 2.5                 |
| WORJ-2W-10-R010-F          | 10                  | 10                | 3.7                 | 0.8                   | 0.4                  | 3.0                 |
| WORJ-2W-10-R010-F 板高8      | 10                  | Max8              | 3.5                 | 0.8                   | 0.7                  | 3.0                 |
| WORJ-2W-10-R010-F 板高9.5    | 10                  | Max9.5            | 3.7                 | 1.0                   | 1.0                  | 3.1                 |
| WORJ-2W-15-R010-F-M        | 15                  | Max20             | 3.7                 | 1.0                   | 1.0                  | 3.0                 |
| WORJ-2W-10-R012-F          | 10                  | 9                 | 3.7                 | 0.8                   | 0.7                  | 3.0                 |
| WORJ-2W-10-R015-F 0.4*3    | 10                  | 14                | 4.0                 | 0.8                   | 0.4                  | 3.0                 |
| WORJ-2W-10-R015-F          | 10                  | 10                | 4.0                 | 0.8                   | 0.7                  | 2.5                 |
| WORJ-2W-8-R020-F           | 8                   | Max7.5            | 3.5                 | 0.8                   | 0.39                 | 2.5                 |
| WORJ-2W-9-R020-F           | 9                   | Max14             | 3.7                 | 0.8                   | 0.7                  | 2.5                 |
| WORJ-2W-10-R020-F          | 10                  | 6                 | 4.0                 | 0.8                   | 0.39                 | 2.5                 |
| WORJ-2W-15-R020-F          | 15                  | 12                | 4.0                 | 0.8                   | 0.7                  | 2.5                 |
| WORJ-2W-10-R025-D          | 10                  | Max14             | 4.0                 | 0.8                   | 0.48                 | 2.5                 |
| WORJ-2W-10-R047-F          | 10                  | 15                | 4.0                 | 0.8                   | 0.31                 | 2.5                 |
| WORJ-2W-10-R050-F          | 10                  | Max16             | 4.0                 | 0.8                   | 0.31                 | 2.5                 |
| WORJ-3W-15-R002-F-0.8 (编带) | 15                  | 6                 | 2.0                 | 0.8                   | 1.0                  | 3.3                 |
| WORJ-3W-15-R003-F          | 15                  | 12                | 3.7                 | 1.0                   | 1.0                  | 3.3                 |
| WORJ-3W-10-R003-F 高度低      | 10                  | 8                 | 4.0                 | 0.8                   | 1.0                  | 3.3                 |

| 型号 Type                    | W ± 0.3<br>( 跨距 ) | H ± 2<br>( 标高 ) | D ± 0.5<br>( 脚长 ) | E ± 0.1<br>( 引脚直径 ) | F1 ± 0.1<br>( 线厚 ) | F ± 0.2<br>( 线宽 ) |
|----------------------------|-------------------|-----------------|-------------------|---------------------|--------------------|-------------------|
| WORJ-3W-10-R003-F 高14      | 10                | 14.3            | 3.7               | 0.8                 | 1.0                | 3.3               |
| WORJ-3W-10-R003-F 高7.5     | 10                | Max7.5          | 3.5               | 0.8                 | 0.8                | 3.3               |
| WORJ-3W-10-R004-F          | 10                | 12              | 4.0               | 0.8                 | 1.0                | 3.3               |
| WORJ-3W-10-R004-F 板高8      | 10                | Max8            | 3.5               | 0.8                 | 0.8                | 3.3               |
| WORJ-3W-20-R004-F          | 20                | 7               | 4.0               | 0.8                 | 1.0                | 3.3               |
| WORJ-2W-10-R010-F 板高9.5    | 10                | Max9.5          | 3.7               | 1.0                 | 1.0                | 3.1               |
| WORJ-3W-10-R005-F          | 10                | 11              | 4.0               | 0.8                 | 0.9                | 2.9               |
| WORJ-3W-10-R005-F 高12.5    | 10                | Max9.5          | 3.5               | 0.8                 | 0.8                | 3.3               |
| WORJ-3W-15-R005-F          | 15                | 10              | 4.0               | 0.8                 | 1.0                | 3.0               |
| WORJ-3W-15-R0055-F         | 15                | 7               | 4.0               | 0.8                 | 0.85               | 2.4               |
| WORJ-3W-10-R0055-F         | 10                | 9               | 4.0               | 0.8                 | 0.85               | 2.4               |
| WORJ-3W-10-R006-F          | 10                | 10              | 3.7               | 0.8                 | 0.85               | 2.4               |
| WORJ-3W-10-R006-F-1.0      | 10                | 13              | 4.0               | 1.0                 | 0.9                | 2.7               |
| WORJ-3W-15-R006-F          | 15                | 10              | 4.0               | 1.0                 | 1.0                | 3.1               |
| WORJ-3W-10-R006-F-0.8 板高14 | 10                | 14              | 4.0               | 0.8                 | 0.8                | 3.3               |
| WORJ-3W-7-R006-F           | 7                 | 10              | 4.0               | 0.8                 | 0.7                | 2.5               |
| WORJ-3W-10-R008-F 高度高      | 10                | 17              | 4.0               | 0.8                 | 0.9                | 2.7               |
| WORJ-3W-10-R008-F 高度低      | 10                | 9               | 3.7               | 0.8                 | 1.0                | 3.1               |
| WORJ-3W-10-R008-F 长脚4.5    | 10                | 13.5            | 4.5               | 0.8                 | 0.85               | 3.1               |
| WORJ-3W-10-R008-F 高度8.5    | 10                | 8.5             | 3.7               | 0.8                 | 1.0                | 3.1               |
| WORJ-3W-10-R008-F-1.0      | 10                | 17.5            | 4.0               | 1.0                 | 0.9                | 2.7               |
| WORJ-3W-10-R010-F-1.0      | 10                | 12              | 4.0               | 1.0                 | 1.0                | 3.1               |
| WORJ-3W-10-R010-F 长脚       | 10                | 12              | 4.5               | 0.8                 | 1.0                | 3.1               |
| WORJ-3W-15-R010-F          | 15                | 10              | 4.0               | 1.0                 | 1.0                | 3.1               |
| WORJ-3W-10-R010-F-0.8      | 10                | 12              | 3.7               | 0.8                 | 1.0                | 3.1               |
| WORJ-3W-10-R012-F          | 10                | 9               | 4.0               | 0.8                 | 0.7                | 3.0               |
| WORJ-3W-10-R015-F          | 10                | 10              | 3.7               | 0.8                 | 0.7                | 2.5               |
| WORJ-3W-10-R020-F          | 10                | 14              | 4.0               | 0.8                 | 0.7                | 2.5               |
| WORJ-3W-15-R025-F          | 15                | Max18           | 3.7               | 0.8                 | 0.7                | 2.5               |
| WORJ-3W-15.5-R025-F        | 15.5              | 15.5            | 3.7               | 0.8                 | 0.7                | 2.5               |
| WORJ-3W-10-R030-F          | 10                | 14              | 4.0               | 0.8                 | 0.5                | 2.5               |
| WORJ-3W-15-R050-F-M-1.0    | 15                | Max19           | 4.0               | 1.0                 | 0.39               | 2.5               |
| WORJ-3W-10-R050-F-0.3*2.5  | 10                | Max15           | 4.0               | 0.8                 | 0.3                | 2.5               |
| WORJ-3W-10-R100-F          | 10                | Max36           | 3.7               | 0.8                 | 0.31               | 2.5               |

| 型号 Type                   | W ± 0.3<br>( 跨距 ) | H ± 2<br>( 标高 ) | D ± 0.5<br>( 脚长 ) | E ± 0.1<br>( 引脚直径 ) | F1 ± 0.1<br>( 线厚 ) | F ± 0.2<br>( 线宽 ) |
|---------------------------|-------------------|-----------------|-------------------|---------------------|--------------------|-------------------|
| WORJ-3W-20-R100-F-M       | 20                | Max20           | 3.7               | 1.0                 | 0.3                | 2.5               |
| WORJ-4W-10-R006-F-1.0     | 10                | 12.5            | 3.7               | 1.0                 | 0.9                | 2.7               |
| WORJ-4W-10-R006-F-0.8     | 10                | 12.8            | 3.7               | 0.8                 | 0.9                | 2.7               |
| WORJ-5W-10-R002-F         | 10                | 6               | 3.7               | 1.0                 | 1.0                | 4.0               |
| WORJ-5W-10-R003-F 板高14    | 10                | 14              | 3.7               | 0.8                 | 1.0                | 3.3               |
| WORJ-5W-22-R003-F         | 22                | 7.5             | 3.7               | 0.8                 | 1.0                | 3.3               |
| WORJ-5W-10-R004-F-1.0     | 10                | 12              | 3.7               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-10-R005-F-1.0     | 10                | 16              | 3.7               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-20-R005-F         | 20                | Max15.5         | 4.5               | 1.0                 | 1.0                | 4.0               |
| WORJ-5W-9-R005-F-1.0      | 9                 | Max18           | 3.7               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-10-R006-F-0.8     | 10                | 17              | 4.0               | 0.8                 | 1.0                | 3.3               |
| WORJ-5W-10-R006-F-0.9*2.7 | 10                | Max16           | 4.0               | 0.8                 | 0.9                | 2.7               |
| WORJ-5W-10-R007-F 高度低     | 10                | Max12           | 4.0               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-10-R007-F 高度高     | 10                | Max22           | 3.7               | 1.0                 | 0.8                | 4.0               |
| WORJ-5W-15-R007-F         | 15                | 18              | 3.7               | 1.0                 | 0.8                | 4.0               |
| WORJ-5W-10-R008-F         | 10                | Max13.5         | 4.0               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-15-R008-F         | 15                | Max11           | 4.0               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-10-R009-F         | 15                | 13              | 4.0               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-10-R010-F         | 10                | 14              | 3.7               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-20-R010-F         | 20                | 10              | 4.0               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-15-R010-F         | 15                | Max14           | 4.0               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-21-R010-F         | 21                | Max10           | 4.0               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-10-R012-F-1.0     | 10                | 18              | 3.7               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-10-R015-F         | 10                | 21              | 4.0               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-15-R015-F         | 15                | 20              | 4.0               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-15-R020-F-M       | 15                | 16              | 3.7               | 1.0                 | 0.9                | 4.0               |
| WORJ-5W-10-R020-F         | 10                | 14              | 3.7               | 1.0                 | 0.7                | 2.5               |
| WORJ-5W-15-R025-F-M-1.0   | 15                | Max17           | 3.7               | 1.0                 | 0.8                | 4.0               |
| WORJ-5W-15-R025-F-1.5     | 15                | 25              | 3.5               | 1.5                 | 0.84               | 3.3               |
| WORJ-5W-15-R030-F-M       | 15                | 14              | 3.7               | 1.0                 | 0.7                | 3.0               |
| WORJ-5W-15-R040-F-M-1.0   | 15                | 18.5            | 4.0               | 1.0                 | 0.7                | 3.0               |
| WORJ-5W-15-R050-F-M-1.0   | 15                | 24              | 4.0               | 1.0                 | 0.7                | 3.0               |
| WORJ-6W-10-R006-F         | 10                | 20              | 4.0               | 1.0                 | 0.9                | 4.0               |

## ● 技术说明 TECHNICAL SPECIFICATIONS

| 型号<br>Type | 额定功率<br>Power Rating<br>( W ) | 阻值范围<br>Resistance Value<br>( mΩ ) | 阻值允许偏差<br>Resistance Tolerance<br>( % )               | 温度系数<br>Temperature Coefficient<br>( $\times 10^{-6} / ^\circ\text{C}$ ) | 温度范围<br>Temperature Range<br>( $^\circ\text{C}$ ) |
|------------|-------------------------------|------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------|
| WORJ       | 1W~7W                         | 1mR~100mR                          | F ( $\pm 1\%$ )<br>G ( $\pm 2\%$ )<br>J ( $\pm 5\%$ ) | $\pm 40$                                                                 | -55~+170                                          |

## ● 特性 CHARACTERISTICS

| 试验项目<br>Test of item                     | 规格值<br>Performance                                                                 | 试验方法<br>Test of means                                                                                                                                                                                                                                                  |
|------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 短时间过负荷<br>Short time overload            | $\pm 0.5\%$ 以内。不得有机械损伤。<br>within $\pm 0.5\%$<br>No evidence of mechanical damage. | 额定电压X 2.5 倍，5 秒。<br>Rated voltage X 2.5 times, 5s                                                                                                                                                                                                                      |
| 端子强度<br>Terminal strength                | 不得有机械损伤。<br>No evidence of mechanical damage.                                      | 线径1.0mm 以上5kg/10sec..<br>线径 0.8mm 以下2kg/10sec.<br>Wire dimension over 1.0mm 5kg/10sec.<br>Wire dimension below 0.8mm 2kg/10sec.                                                                                                                                        |
| 焊锡耐热性<br>Resistance to<br>soldering heat | $\pm 0.5\%$ 以内。不得有机械损伤。<br>within $\pm 0.5\%$<br>No evidence of mechanical damage. | $350 \pm 10^\circ\text{C}$ ， $3.5 \pm 0.5$ 秒，试验后放置3 小时。<br>$350 \pm 10^\circ\text{C}$ ， $3.5 \pm 0.5\text{s}$ After test leave for 3h.                                                                                                                                 |
| 焊锡附着性<br>Solderability                   | 导线至少95%以上新锡覆盖。<br>Covered with new<br>solder by 95% at least.                      | 焊锡温度： $245 \pm 5^\circ\text{C}$ 。<br>浸锡时间： $3 \pm 0.5$ 秒。<br>Test temperature of solder: $245 \pm 5^\circ\text{C}$<br>Dipping time in solder: $3 \pm 0.5\text{s}$                                                                                                      |
| 温度循环<br>Temperature cycle                | $\pm 1\%$ 以内。不得有机械损伤。<br>within $\pm 1\%$<br>No evidence of mechanical damage.     | 低温侧 $-40 \pm 3^\circ\text{C}/30$ 分，室温10 ~ 15 分钟<br>高温侧 $200 \pm 2^\circ\text{C}/30$ 分，室温10~15 分钟5回<br>Low side: $-40 \pm 3^\circ\text{C}/30\text{min}$ ，Room temp.: 10 to 15min<br>High side: $200 \pm 2^\circ\text{C}/30\text{min}$ ，Room temp.: 10 to 15min 5 cycles |
| 耐湿负荷寿命<br>Load life in humidity          | $\pm 0.5\%$ 以内。<br>within $\pm 0.5\%$                                              | $40 \pm 2^\circ\text{C}$ ，湿度90 ~ 95%，1000 小时<br>定格电压（90 分钟ON，30 分钟OFF）<br>$40 \pm 2^\circ\text{C}$ ，90 to 95%RH，1000h<br>Rated voltage（90 min ON，30 min OFF）                                                                                                           |
| 负荷寿命<br>Load life                        | $\pm 1\%$ 以内。<br>within $\pm 1\%$                                                  | $70 \pm 2^\circ\text{C}$ ，1000 小时<br>定格电压（90 分钟ON，30 分钟OFF）<br>$70 \pm 2^\circ\text{C}$ ，1000h<br>Rated voltage（90 min ON，30 min OFF）                                                                                                                                  |