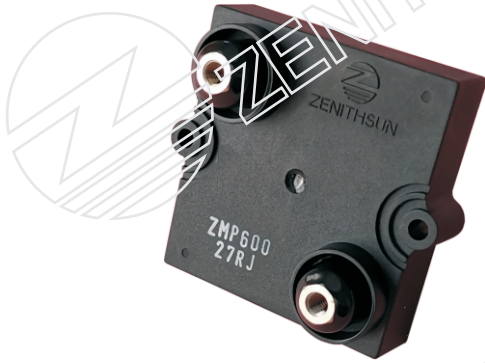


无感厚膜电阻(Non-inductive Thick Film Resistor)ZMP 250W-800W

无感耐高压,大功率,小体积,大大节省安装空间,必须安装在水冷散热器上使用并保持底板中心温度为85°C
Non-inductive,High power ,Small size,mounting onto a water-cooled heatsink, at 85°C bottom case center temperature



■ 特点(Features)

- 1.无感厚膜电阻一般都是贴在系统散热器上的,以增强电阻器的散热。这里由于是电阻器底板贴合在系统散热器上,电阻器通过底板和散热器之间的热交换而把热量散出去,这里的环境温度指的是电阻器的底板温度,一般以底板中心的温度为参考。
Recommendations for mounting onto a heatsink to enhance the heat dissipation. The bottom case is attached to the system heatsink, and the resistor dissipates the heat through the heat exchange between the bottom case and the heatsink. The ambient temperature here refers to the bottom case temperature of the resistor, which is generally referred to as the temperature in the center of the bottom case.
- 2.功率等级:250W-800W
Power Range:250W-800W
- 3.具有无感、耐高压、小体积大功率、寿命长、耐潮湿性好、电性能稳定。
Non-Inductive,Resistance-high voltage,small size,high power,long life, Moisture Resistance ,High Stability.
- 4.引出端采用M5螺柱引出。
Connection screw thread M5(Standard M5,M4 on request) ;

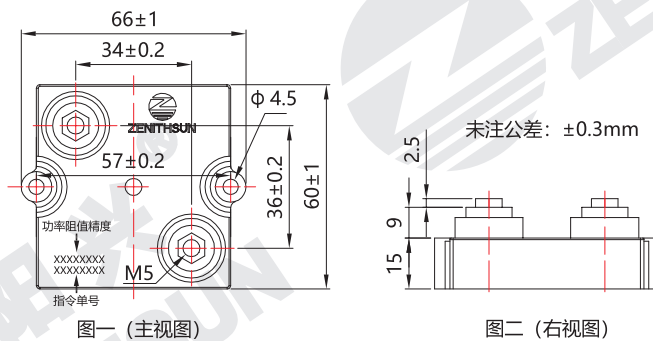
■ 结构 (Structure)

- 1.采用丝网印刷方式,印刷层几十微米厚的电阻膜,经高温烧结而成。基体为96%三氧化二铝陶瓷,导热系数好,机械强度高,电阻膜层采用贵金属钌系浆料,电性能稳定。
Screen printing, resistor film printed layer with thickness of tens of microns, sintered at high temperature. The matrix is 96% aluminum oxide ceramic, with good thermal conductivity and high mechanical strength. The resistor film with precious metal ruthenium slurry, with stable electrical properties.
- 2.工艺流程一般是电极印制→电极烧结→电阻印制→电阻烧结→介质印制→介质烧结,然后再经调阻、焊接、封装等工序制作而成。
Technological Process: electrode printing → electrode sintering → resistor printing → resistor sintering → medium printing → medium sintering, then resistance adjustment, welding, encapsulation and other processes.

■ 适用范围 (Application)

深圳市正阳兴电子的系列厚膜电阻生产周期为2-3周,厚膜电阻的应用场合相当广泛,例如变速驱动器、供电、控制设备、通讯、自动控制、发动机控制,电力电子,医疗器械,电力传输,电容均压,电容泄放,功率负载,汽车电子,感应加热,电源设备,电气传动,无功补偿,RC吸收泄放,等电力电子行业。风力发电,光伏发电等新能源领域。
Production Time : 2-3 weeks .Widely used in Variable speed drive, power supply, control equipment, communication, automatic control, engine control, power electronics, medical devices, power transmission, capacitor voltage equalization, capacitor discharge, power load, automotive electronics, induction heating, power supply equipment, electrical transmission, reactive power compensation, RC absorption and discharge, and other power electronics industries. Wind power generation, photovoltaic power generation and other new energy fields.

■ 产品尺寸图表ZMP250W-800W (Dimension Chart)



型号 Type	功率 Power	阻值范围 Resistance Range	精度 Tolerance	引出端 Contacts	电阻安装 Mounting	电感 Inductance	绝缘耐压 (KV) Insulation Voltage	净重(g) N.W	温度系数 T.C.R
ZMP	250W	0.5Ω-1MΩ	K(±10%)	M5	M4	无感(N)	6-10KVdc	120	±50PPM ~ ±260PPM
ZMP	300W	0.5Ω-1MΩ	J(±5%)	M5	M4	无感(N)	6-10KVdc	120	
ZMP	600W	0.5Ω-1MΩ	G(±2%)	M5	M4	无感(N)	6-10KVdc	120	
ZMP	800W	0.5Ω-1MΩ	F(±1%)	M5	M4	无感(N)	6-10KVdc	120	

备注: 如有特殊要求或者参数超出以上标准可协商供货
Note: other on requests are available

■ 定货示例 (How to order)

ZMP	600W	20M	J
↓	↓	↓	↓
型号 Type	功率 Power	标称阻值 Nominal value	精度 (K:±10%,J: ±5%, G:±2%, F:±1%) Tolerance(K:±10%,J: ±5%, G:±2%, F:±1%)

无感厚膜电阻(Non-inductive Thick Film Resistor) ZMP 200W

无感耐高压,大功率,小体积,大大节省安装空间,必须安装在散热器上使用
Non-inductive, High power, Small size, Easy mounting, mounting onto a heatsink.



■ 结构 (Structure)

1. 采用丝网印刷方式，印刷层几十微米厚的电阻膜，经高温烧结而成。基体为96%三氧化二铝陶瓷，导热系数好，机械强度高，电阻膜层采用贵金属钌系浆料，电性能稳定。
Screen printing, resistor film printed layer with thickness of tens of microns, sintered at high temperature. The matrix is 96% aluminum oxide ceramic, with good thermal conductivity and high mechanical strength. The resistor film with precious metal ruthenium slurry, with stable electrical properties.

2. 工艺流程一般是电极印制→电极烧结→电阻印制→电阻烧结→介质印制→介质烧结，然后再经调阻、焊接、封装等工序制作而成。

Technological Process: electrode printing → electrode sintering → resistor printing → resistor sintering → medium printing → medium sintering, then resistance adjustment, welding, encapsulation and other processes.

■ 特点 (Features)

1. 无感厚膜电阻一般都是贴在系统散热器上的，以增强电阻器的散热。这里由于是电阻器底板贴合在系统散热器上，电阻器通过底板和散热器之间的热交换而把热量散出去，这里的环境温度指的是电阻器的底板温度，一般以底板中心的温度为参考。Recommendations for mounting onto a heatsink to enhance the heat dissipation. The bottom case is attached to the system heatsink, and the resistor dissipates the heat through the heat exchange between the bottom case and the heatsink. The ambient temperature here refers to the bottom case temperature of the resistor, which is generally referred to as the temperature in the center of the bottom case.

2. 功率等级: 200W

Power Range: 200W

3. 具有无感、耐高压、小体积大功率、寿命长、耐潮性好、电性能稳定。

Non-Inductive, Resistance-high voltage, small size, high power, long life, Moisture Resistance, High Stability.

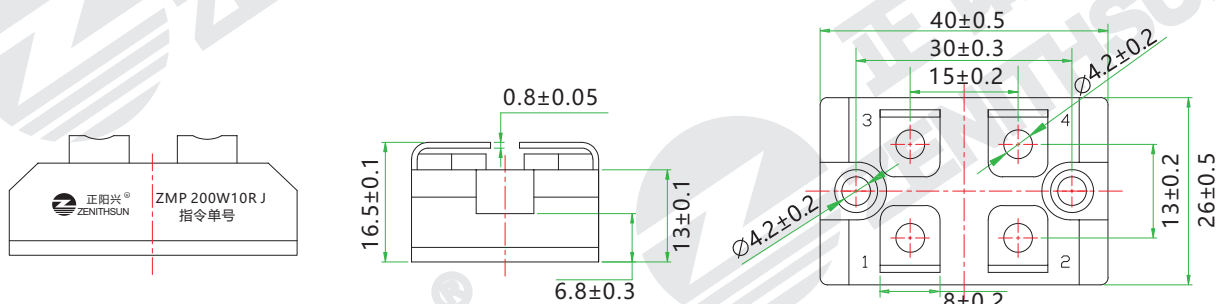
4. 引出端采用M4螺柱引出 (Connection screw thread M4).

■ 适用范围 (Application)

深圳市正阳兴电子的系列厚膜电阻生产周期为2-3周，厚膜电阻的应用场合相当广泛，例如变速驱动器、供电、控制设备、通讯、自动控制、发动机控制，电力电子，医疗器械，电力传输，电容均压，电容泄放，功率负载，汽车电子，感应加热，电源设备，电气传动，无功补偿，RC吸收泄放，等电力电子行业。风力发电，光伏发电等新能源领域。

Production Time: 2-3 weeks. Widely used in Variable speed drive, power supply, control equipment, communication, automatic control, engine control, power electronics, medical devices, power transmission, capacitor voltage equalization, capacitor discharge, power load, automotive electronics, induction heating, power supply equipment, electrical transmission, reactive power compensation, RC absorption and discharge, and other power electronics industries. Wind power generation, photovoltaic power generation and other new energy fields.

■ 产品尺寸图表ZMP200W (Dimension Chart)

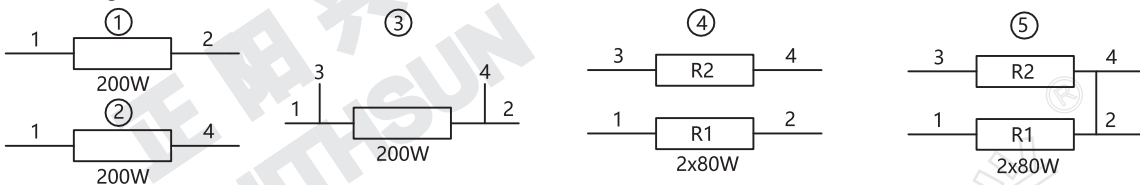


图一 (主视图)

图二 (右视图)

图三 (俯视图)

结构Configurations(standard version)



型号 Type	功率 Power	阻值范围 Resistance Range	精度 Tolerance	引出端 Leading	电阻安装 Mounting	电感 Inductance	极限电压(KV) Max Voltage	绝缘耐压 (KV) Insulation Voltage	净重(g) N.W	温度系数 T.C.R
ZMP	200W	0.5Ω-1MΩ	K(±10%) ~ F(±1%)	端片 Terminals	M4	无感 N	1KVdc	5KVac	50	±50PPM ~ ±260PPM

备注：如有特殊要求或者参数超出以上标准可协商供货
Note: other on requests are available

■ 定货示例 (How to order)

ZMP	200W	20M	J	1
↓	↓	↓	↓	↓
型号 Type	功率 Power	标称阻值 Nominal value	精度 (K:±10%, J: ±5%, G:±2%, F:±1%) Tolerance(K:±10%, J: ±5%, G:±2%, F:±1%)	结构 (1-2-3-4-5) Configuration (1-2-3-4-5)

无感厚膜电阻(Non-inductive Thick Film Resistor)ZMP 120W-150W

无感耐高压,大功率,小体积,大大节省安装空间,必须安装在散热器上使用
Non-inductive,High power,Small size,Easy mounting, mounting onto a heatsink.



■特点(Features)

- 1.无感厚膜电阻一般都是贴在系统散热器上的，以增强电阻器的散热。这里由于是电阻器底板贴合在系统散热器上，电阻器通过底板和散热器之间的热交换而把热量散出去，这里的环境温度指的是电阻器的底板温度，一般以底板中心的温度为参考。
Recommendations for mounting onto a heatsink to enhance the heat dissipation. The bottom case is attached to the system heatsink, and the resistor dissipates the heat through the heat exchange between the bottom case and the heatsink. The ambient temperature here refers to the bottom case temperature of the resistor, which is generally referred to as the temperature in the center of the bottom case.
- 2.功率等级:120W-150W
Power Range:120W-150W
- 3.具有无感、耐高压、小体积大功率、寿命长、耐潮性好、电性能稳定。
Non-Inductive,Resistance-high voltage,small size,high power,long life,Moisture Resistance,High Stability.
- 4.引出端采用高温线引出或M4螺栓引出。
Leading out end : high-temperature wire or Connection screw thread M4;

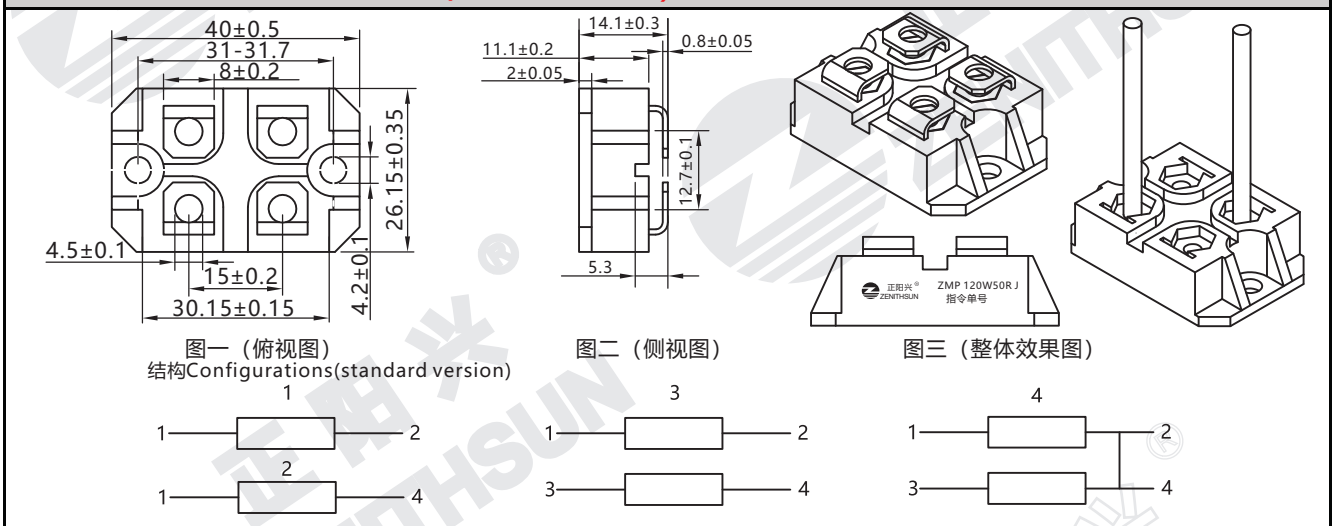
■结构 (Structure)

- 1.采用丝网印刷方式，印刷层几十微米厚的电阻膜，经高温烧结而成。基体为96%氧化铝陶瓷，导热系数好，机械强度高，电阻膜层采用贵金属钌系浆料，电性能稳定。
Screen printing ,resistor film printed layer with thickness of tens of microns, sintered at high temperature. The matrix is 96% aluminum oxide ceramic, with good thermal conductivity and high mechanical strength. The resistor film with precious metal ruthenium slurry, with stable electrical properties.
- 2.工艺流程一般是电极印制→电极烧结→电阻印制→电阻烧结→介质印制→介质烧结，然后再经调阻、焊接、封装等工序制作而成。
Technological Process: electrode printing → electrode sintering → resistor printing → resistor sintering → medium printing → medium sintering, then resistance adjustment, welding, encapsulation and other processes.

■适用范围 (Application)

深圳市正阳兴电子的系列厚膜电阻生产周期为2-3周，厚膜电阻的应用场合相当广泛,例如变速驱动器、供电、控制设备、通讯、自动控制、发动机控制，电力电子，医疗器械，电力传输，电容均压，电容泄放，功率负载，汽车电子，感应加热，电源设备，电气传动，无功补偿，RC吸收泄放，等电力电子行业。风力发电，光伏发电等新能源领域。
Production Time : 2-3 weeks .Widely used in Variable speed drive, power supply, control equipment, communication, automatic control, engine control, power electronics, medical devices, power transmission, capacitor voltage equalization, capacitor discharge, power load, automotive electronics, induction heating, power supply equipment, electrical transmission, reactive power compensation, RC absorption and discharge, and other power electronics industries. Wind power generation, photovoltaic power generation and other new energy fields.

■产品尺寸图表ZMP120W-150W (Dimension Chart)



型号 Type	功率 Power	阻值范围 Resistance Range	精度 Tolerance	引出端 Leading	电阻安装 Mounting	电感 Inductance	极限电压(KV) Max Voltage	绝缘耐压 (KV) Insulation Voltage	净重(g) N.W	温度系数 T.C.R
ZMP	120W 150W	4.7Ω-500MΩ	K(±10%) J(±5%) G(±2%) F(±1%)	M4螺栓 高温软线 长度随定 wire	M4	无感 N	1KVdc	3KV-5KVdc	20.00	±50PPM ~ ±260PPM

备注：如有特殊要求或者参数超出以上标准可协商供货。(Note:other on requests are available)

■定货示例 (How to order)

ZMP	120W	20M	J	1
↓	↓	↓	↓	↓
型号 Type	功率 Power	标称阻值 Nominal value	精度 (K:±10%,J:±5%,G:±2%,F:±1%) Tolerance(K:±10%,J:±5%,G:±2%,F:±1%)	结构 (1-2-3-4) Configuration (1-2-3-4)

无感厚膜电阻(Non-inductive Thick Film Resistor) ZMP 100W/50W/35W/30W

无感耐高压,大功率,小体积,大大节省安装空间,必须安装在散热器上使用
Non-inductive, High power, Small size, Easy mounting, mounting onto a heatsink.



■ 结构 (Structure)

1. 采用丝网印刷方式，印刷层几十微米厚的电阻膜，经高温烧结而成。基体为96%三氧化二铝陶瓷，导热系数好，机械强度高，电阻膜层采用贵金属钌系浆料，电性能稳定。
Screen printing, resistor film printed layer with thickness of tens of microns, sintered at high temperature. The matrix is 96% aluminum oxide ceramic, with good thermal conductivity and high mechanical strength. The resistor film with precious metal ruthenium slurry, with stable electrical properties.

2. 工艺流程一般是电极印制→电极烧结→电阻印制→电阻烧结→介质印制→介质烧结，然后再经调阻、焊接、封装等工序制作而成。
Technological Process: electrode printing → electrode sintering → resistor printing → resistor sintering → medium printing → medium sintering, then resistance adjustment, welding, encapsulation and other processes.

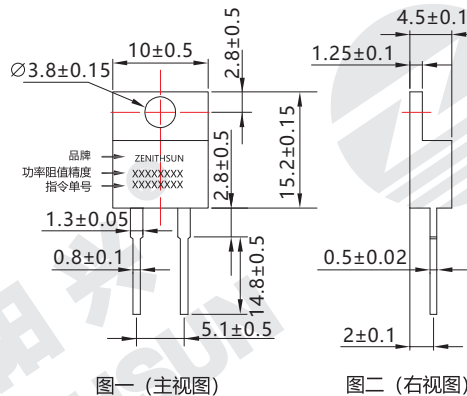
■ 特点 (Features)

1. 无感厚膜电阻一般都是贴在系统散热器上的，以增强电阻器的散热。这里由于是电阻器底板贴合在系统散热器上，电阻器通过底板和散热器之间的热交换而把热量散出去，这里的环境温度指的是电阻器的底板温度，一般以底板中心的温度为参考。Recommendations for mounting onto a heatsink to enhance the heat dissipation. The bottom case is attached to the system heatsink, and the resistor dissipates the heat through the heat exchange between the bottom case and the heatsink. The ambient temperature here refers to the bottom case temperature of the resistor, which is generally referred to as the temperature in the center of the bottom case.
2. 功率等级: 30W-100W
Power Range: 30W-100W
3. 具有无感、耐高压、小体积大功率、寿命长、耐潮性好、电性能稳定。
Non-Inductive, Resistance-high voltage, small size, high power, long life, Moisture Resistance, High Stability.
4. 引出端采用镀锡铜线引出。
Lead Material: copper, tin-plated.

■ 适用范围 (Application)

深圳市正阳兴电子的系列厚膜电阻生产周期为2-3周，厚膜电阻的应用场合相当广泛，例如变速驱动器、供电、控制设备、通讯、自动控制、发动机控制，电力电子，医疗器械，电力传输，电容均压，电容泄放，功率负载，汽车电子，感应加热，电源设备，电气传动，无功补偿，RC吸收泄放，等电力电子行业。风力发电，光伏发电等新能源领域。
Production Time: 2-3 weeks. Widely used in Variable speed drive, power supply, control equipment, communication, automatic control, engine control, power electronics, medical devices, power transmission, capacitor voltage equalization, capacitor discharge, power load, automotive electronics, induction heating, power supply equipment, electrical transmission, reactive power compensation, RC absorption and discharge, and other power electronics industries. Wind power generation, photovoltaic power generation and other new energy fields.

■ 产品尺寸图表ZMP30W/35W (Dimension Chart)



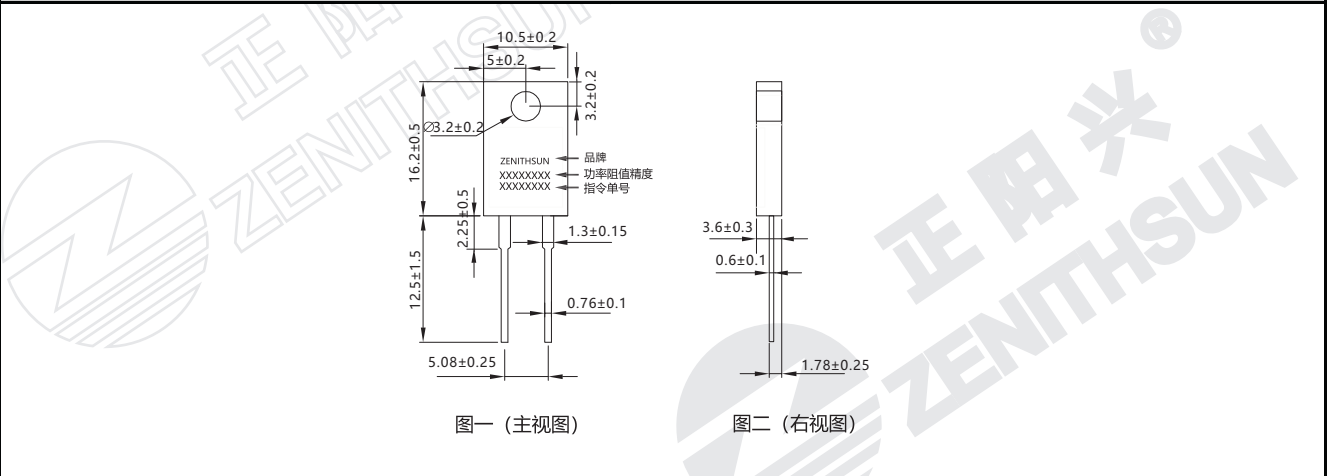
型号 Type	功率 Power	阻值范围 Resistance Range	精度 Tolerance	引出端 Leading	电阻安装 Mounting	电感 Inductance	极限电压(KV) Max Voltage	绝缘耐压 (KV) Insulation Voltage	净重(g) N.W	温度系数 T.C.R
ZMP	30W	2.2Ω-500MΩ	K(±10%)	镀锡线	M3	无感	350Vdc	1.8KVac	1.5	±50PPM ~ ±260PPM
ZMP	35W	2.2Ω-500MΩ	J(±5%) G(±2%) F(±1%)	tinned wire	M3	N	350Vdc	1.8KVac		

备注：如有特殊要求或者参数超出以上标准可协商供货
Note: other on requests are available

■ 定货示例 (How to order)

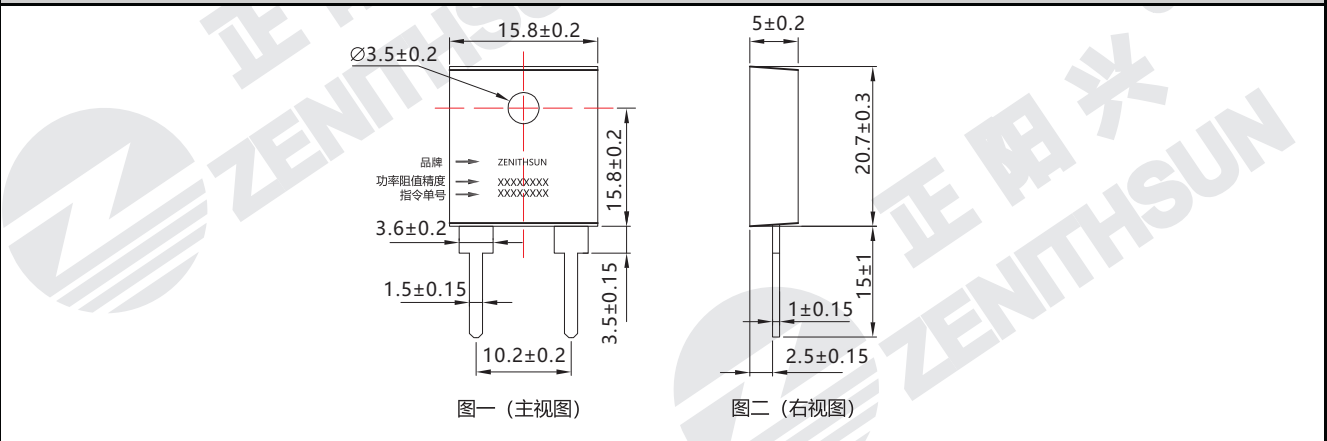
ZMP	100W	20M	J
↓	↓	↓	↓
型号	功率	标称阻值	精度 (K:±10%, J: ±5%, G: ±2%, F: ±1%)
Type	Power	Nominal value	Tolerance (K: ±10%, J: ±5%, G: ±2%, F: ±1%)

■ 产品尺寸图表ZMP50W (Dimension Chart)



型号 Type	功率 Power	阻值范围 Resistance Range	精度 Tolerance	引出端 Leading	电阻安装 Mounting	电感 Inductance	极限电压(KV) Max Voltage	绝缘耐压 (KV) Insulation Voltage	净重(g) N.W	温度系数 T.C.R
ZMP	50W	2.2Ω-500MΩ	K(±10%) J(±5%) G(±2%) F(±1%)	镀锡线 tinned wire	M3	无感 N	500Vdc	1.8KVac	1.5	±50PPM ~ ±260PPM

■ 产品尺寸图表ZMP100W (Dimension Chart)



型号 Type	功率 Power	阻值范围 Resistance Range	精度 Tolerance	引出端 Leading	电阻安装 Mounting	电感 Inductance	极限电压(KV) Max Voltage	绝缘耐压 (KV) Insulation Voltage	净重(g) N.W	温度系数 T.C.R
ZMP	100W	2.2Ω-500MΩ	K(±10%) J(±5%) G(±2%) F(±1%)	镀锡线 tinned wire	M3	无感 N	700Vdc	1.8KVac	3.6	±50PPM ~ ±260PPM

备注：如有特殊要求或者参数超出以上标准可协商供货
Note: other on requests are available

■ 定货示例 (How to order)

ZMP	100W	20M	J	
↓	↓	↓	↓	
型号 Type	功率 Power	标称阻值 Nominal value	精度 (K:±10%, J: ±5%, G:±2%, F:±1%) Tolerance(K:±10%, J: ±5%, G:±2%, F:±1%)	

■ 无感厚膜电阻性能实验参数 (Performance Characteristics)		
项目 (Test)	试验条件 (Conditions of Test)	性能要求 (Testing Results)
电阻值容许误差 Resistance Tolerance	测试电压≤3V,环境温度25°C Testing Voltage ≤3V, Ambient Temperature 25°C	F---G---J---K
温度系数 T.C.R	$\frac{R1-R0}{R0(T1-T0)} \times 10^6$ (PPM/°C) R0:常温(T0)下阻值 R0:Room Temperature(T0)Resistance R1:常温T0+100°C(T1)下阻值 R1:Room Temperature T0+100°C(T1)Resistance	±50PPM~ ±260PPM
短时间过负荷 Short Time Overload	1.5倍额定功率, 但不超过最大连续工作电压的1.5倍5秒钟 1.5 times rated power for 5 seconds, but not over 1.5 times continuous Umax	$\Delta R \leq \pm(0.2\%R + 0.1\Omega)$
绝缘电阻值 Insulation Resistance	1000Vdc	≥10GΩ1Min
室温耐久性 Load Life	额定电压, 通电90分钟, 停30分钟, 共1000小时 At rated voltage, 90 min "On", 30 min "Off", total 1000hours	$\Delta R \leq \pm(0.5\%R + 0.1\Omega)$
耐湿性 Humidity Resistance	温度: 40±2°C 湿度: 90%-95%.240小时 Temp: 40±2°C Humidity: 90%-95%.240hours	$\Delta R \leq \pm(0.4\%R + 0.1\Omega)$
耐高低温试验 High /Low Temp.	产品在-55°C~125°C环境条件下储存2H, 5次循环 Store at -55°C~125°C for 2H, cycle for 5 times	$\Delta R \leq \pm(0.2\%R + 0.1\Omega)$
工作环境温度 Operating Temperature	-55°C~150°C	/

■ 无感厚膜降功耗曲线图 (Derating Curve)

