

■ 压敏电阻器

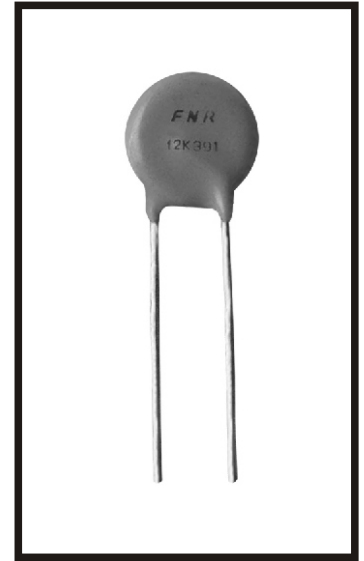
ZINC OXIDE VARISTOR

● 特性

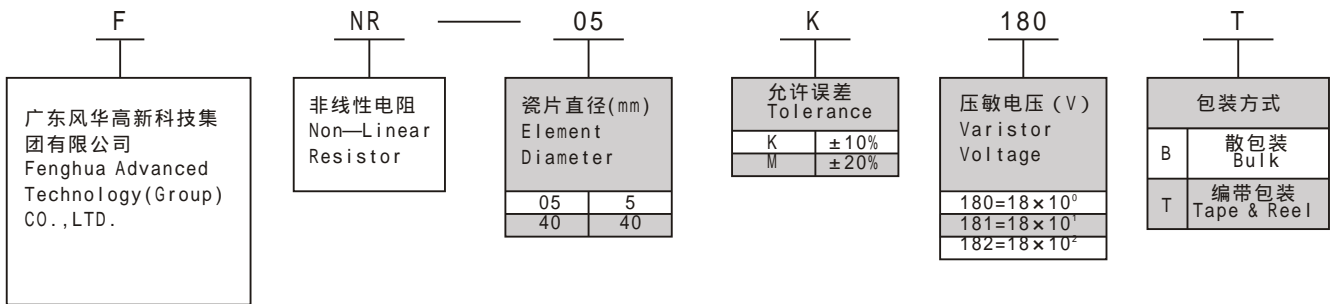
- * 电压范围宽 (18V—1.8KV)
- * 反应速度快 (毫微秒级)
- * 非线性指数大
- * 无极性
- * 通流量大 (2000A/cm²)
- * 无续流
- * 寿命长

● FEATURES

- * Widely voltage range 18v-1.8kv
- * Fast response to the rapidly increase Voltage(Musec.)
- * Excellent non-linearity voltage
- * Symmetric V-I characteristics
- * Great withstanding surge current (2000A/cm²)
- * No follow-on current
- * Long life
- *



● 订货方式 HOW TO ORDER



● 特性曲线 CHARACTERISTICS

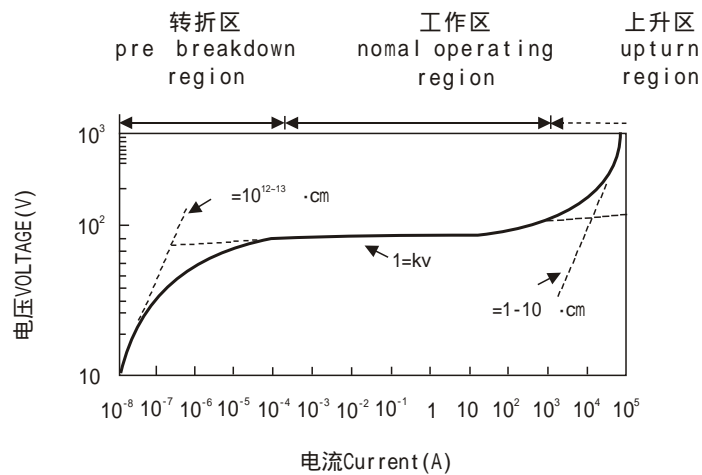


图 Fig1
Voltage Current Characteristic



■ 压敏电阻器

ZINC OXIDE VARISTOR

● 测试条件 TEST CONDITIONS

| 项目 Item | 试验方法 Test Methods |
|---|--|
| 使用环境温度 Operating Temperature Range | - 40 ~ +85 |
| 保存温度 Storage Temperature Range | - 40 ~ +85 |
| 压敏电压 Varistor Voltage | 除 5以下元件试验电流为DC0.1mA(V0.1mA) 外它作均为DC1mA(V1mA) Element Diameter 5mm Test Currentv (DC) 0.1mA(V0.1mA) others DC1mA(V1mA) |
| 最大限制电压 Max Clamping Voltage | 测试电流波形为8×20μs Current Waveshape8×20μs |
| 能量耐量 Emergv | 测试电流波形为2ms方波或10/1000μs Current input of Rectangular Wave 2ms or 10/1000μs |
| 最大通流量 Max Withstanding Surge Current | 测试电流波形为8×20μs Current Waveshape8×20μs |

● 压敏电阻器选用方法(参数)

压敏电阻选取

对于过压保护方面的应用，压敏电压值应大于实际电路的电压值，一般用

$$V_{1mA} = a \cdot v / b \cdot c$$

- a—电源电压波动系数：一般取1.2
- v—电路直流工作电压(交流时为有效值)
- b—压敏电压误差，一般取0.85
- c—元件的老化系数，一般取0.9

这样计算到的V_{1mA}实际数值是直流工作电压的1.5倍，在交流状态下要考虑电压峰值，因此计算结果应扩大 $\sqrt{2}$ 倍，在应用中可参考此公式通过实际来确定。

通流量的选取

通常产品给出的通流量是按产品标准给定的波形、冲击次数和间隙时间进行脉冲试验时产品压敏电压变化率小于初值的±10%所能承受的最大电流值，产品所能承受的冲击数是波形、幅值和间隙时间的函数，当电流波形幅值降低50%时冲击次数可增加一倍，所以在实际应用中，压敏电阻器所吸收的浪涌电流应小于产品的最大通流量，以使产品有较长的工作寿命，

ZINC OXIDE VARISTOR SELECTION(ONLY REFERENCE)

Varistor voltage

Varistor voltage should be more than the operating voltage in over - protective circuit, The formula is shown as the following.

$$V_{1mA} = a \cdot v / b \cdot c$$

- a-power Voltage ripple coefficient usually take 1.2
- v-DC Voltage(significant value only AC power)
- b-Tolerance usually take 0.85
- c-Ageing coefficient usually take 0.9

The calibrated Value is 1.5 times of DC voltage, the face value should be $\sqrt{2}$ time of the calibrated value because of the peak voltage in alternating current power, Withstanding surge current
In general, withstanding surge current is max, Pulse current value which determined by test conditions such as wave - shape, amplitude and internal time, when the amplitude decrease to 50% of the initial, it should be increased to 2 times of the initial in order to keep the life longer, the surge current which is absorbed by the varistor should be less than max. withstanding surge current.

氧化锌压敏电阻 ZINC OXIDE VARISTOR

防浪涌通用型压敏电阻器 GENERAL TYPE

防浪涌通用型压敏电阻器。广泛用于IC、二极管、可控硅元件，民用、军用、工业电器通讯、计测控制装置的保护。

General type is widely used in surge protection for IC, Diode, Triac semiconductor, Thyristor, Consumer, Military industry telecommunication measuring & controlling instrument, etc.

通用型压敏电阻器结构尺寸 (mm)

GENERAL TYPE DIMENSIONS (mm)

| 直径 Φ | 电压范围 V Varistor Voltage | 椭圆片 直径 D Max | 引脚直 径 d± 0.1 | 引脚间 距 W± 1.0 | 椭圆片 高度 H Max | 椭圆片 厚度 T Max | 示意图 |
|---------|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----|
| 05 | 18~82 | 7.0 | 0.6 | 5.0 | 10.0 | 3.5 | |
| | 100~470 | 7.5 | 0.6 | 5.0 | 10.0 | 6.0 | |
| 07 | 18~470 | 9.0 | 0.6 | 5.0 | 12.0 | 6.0 | |
| 10 | 18~330 | 13.5 | 0.8 | 7.5 | 16.5 | 5.4 | |
| | 360~1100 | 14.0 | 0.8 | 7.5 | 17.0 | 8.5 | |
| 14 | 18~330 | 17.0 | 0.8 | 7.5 | 20.0 | 5.4 | |
| | 360~1100 | 17.5 | 0.8 | 7.5 | 20.5 | 8.5 | |
| | 1800 | 25.0 | 0.8 | 7.5 | 30.0 | 12.0 | |
| 20 | 18~330 | 23.0 | 1.0 | 10.0 | 27.0 | 5.5 | |
| | 360~1100 | 24.0 | 1.0 | 10.0 | 28.0 | 9.0 | |
| | 1800 | 25.0 | 1.0 | 10.0 | 30.0 | 12.0 | |

防雷型压敏电阻器 LIGHTNING ARRESTER TYPE

防雷型压敏电阻器，该产品具有通流容量大，电压范围宽、保护速度快，残压低等特点，广泛应用于半导体元件、铁路信号、通信、计测装置、通讯中转站、低压配电盘等各电气设备的浪涌吸收和防雷保卫。

Lightning arrester type is ideal for semiconductor, signal relay, telecommunication, calibrating equipment, communication intermediate station, distribution board, surge absorption and lightning-protection of all sorts of electric equipment because of the properties, with the Great withstanding surge current, wide voltage range, quick responding speed and low residual voltage etc.

防雷型产品结构尺寸 (mm)

LIGHTNING ARRESER TYPE DIMENSIONS

| 规格 P/N | 产品尺寸 Dimensions (mm) | | | | |
|--------|----------------------|-------|-------|-------|--|
| | D Max | T Max | W±1.0 | d±0.1 | |
| FNR-25 | 30 | 12 | 15 | 1.2 | |
| FNR-32 | 38 | 13 | 18 | 1.5 | |
| FNR-40 | 45 | 13 | 20 | 1.5 | |

氧化锌压敏电阻 ZINC OXIDE VARISTOR

通用型产品系列一览表 Surge Protection Type Series

| Symbol | 压敏电压 Varistor Voltage V_s | 最大允许使用电压 Maximum Operating Voltage V_M | | 最大限制电压 Maximum Clamping Voltage @8×20μs V_C I_P | | 最大通流容量 Maximum Withstanding surge Current @8×20μs I_{PP} | | 最大能量耐量 Maximum Energy E | 功率 Rated Wattage P_M | 最大静态电容量 Junction Capacitance C_J |
|-------------|-----------------------------------|--|----|--|-----|--|-------|-------------------------------|------------------------------|--|
| | | VAC | V | V | A | 2Ts A | 1Ts A | | | |
| FNR-05K180B | 18 | 11 | 14 | 40 | 1 | 50 | 100 | 0.3 | 0.01 | 1600 |
| FNR-07K180B | 18 | 11 | 14 | 36 | 2.5 | 125 | 250 | 0.8 | 0.02 | 3500 |
| FNR-10K180B | 18 | 11 | 14 | 36 | 5 | 250 | 500 | 1.7 | 0.05 | 7500 |
| FNR-14K180B | 18 | 11 | 14 | 36 | 10 | 500 | 1000 | 3.5 | 0.1 | 18000 |
| FNR-20K180B | 18 | 11 | 14 | 36 | 20 | 1000 | 2000 | 10 | 0.2 | 37000 |
| FNR-05K220B | 22 | 14 | 18 | 48 | 1 | 50 | 100 | 0.4 | 0.01 | 1300 |
| FNR-07K220B | 22 | 14 | 18 | 43 | 2.5 | 125 | 250 | 0.9 | 0.02 | 2800 |
| FNR-10K220B | 22 | 14 | 18 | 43 | 5 | 250 | 500 | 2 | 0.05 | 6000 |
| FNR-14K220B | 22 | 14 | 18 | 43 | 10 | 500 | 1000 | 4 | 0.1 | 15000 |
| FNR-20K220B | 22 | 14 | 18 | 43 | 20 | 1000 | 2000 | 13 | 0.2 | 30000 |
| FNR-05K270B | 27 | 17 | 22 | 60 | 1 | 50 | 100 | 0.5 | 0.01 | 1050 |
| FNR-07K270B | 27 | 17 | 22 | 53 | 2.5 | 125 | 250 | 1.1 | 0.02 | 2000 |
| FNR-10K270B | 27 | 17 | 22 | 53 | 5 | 250 | 500 | 2.5 | 0.05 | 4000 |
| FNR-14K270B | 27 | 17 | 22 | 53 | 10 | 500 | 1000 | 5 | 0.1 | 10000 |
| FNR-20K270B | 27 | 17 | 22 | 53 | 20 | 1000 | 2000 | 15 | 0.2 | 20000 |
| FNR-05K330B | 33 | 20 | 26 | 73 | 1 | 50 | 100 | 0.6 | 0.01 | 900 |
| FNR-07K330B | 33 | 20 | 26 | 65 | 2.5 | 125 | 250 | 1.3 | 0.02 | 1500 |
| FNR-10K330B | 33 | 20 | 26 | 65 | 5 | 250 | 500 | 3.1 | 0.05 | 3000 |
| FNR-14K330B | 33 | 20 | 26 | 65 | 10 | 500 | 1000 | 6 | 0.1 | 7500 |
| FNR-20K330B | 33 | 20 | 26 | 65 | 20 | 1000 | 2000 | 20 | 0.2 | 17000 |
| FNR-05K390B | 39 | 25 | 31 | 86 | 1 | 50 | 100 | 0.8 | 0.01 | 500 |
| FNR-07K390B | 39 | 25 | 31 | 77 | 2.5 | 125 | 250 | 1.6 | 0.02 | 1350 |
| FNR-10K390B | 39 | 25 | 31 | 77 | 5 | 250 | 500 | 3.7 | 0.05 | 2600 |
| FNR-14K390B | 39 | 25 | 31 | 77 | 10 | 500 | 1000 | 7 | 0.1 | 6500 |
| FNR-20K390B | 39 | 25 | 31 | 77 | 20 | 1000 | 2000 | 24 | 0.2 | 15000 |
| FNR-05K470B | 47 | 30 | 38 | 104 | 1 | 50 | 100 | 1 | 0.01 | 450 |
| FNR-07K470B | 47 | 30 | 38 | 93 | 2.5 | 125 | 250 | 2 | 0.02 | 1150 |
| FNR-10K470B | 47 | 30 | 38 | 93 | 5 | 250 | 500 | 4.5 | 0.05 | 2200 |
| FNR-14K470B | 47 | 30 | 38 | 93 | 10 | 500 | 1000 | 9 | 0.1 | 5500 |
| FNR-20K470B | 47 | 30 | 38 | 93 | 20 | 1000 | 2000 | 30 | 0.2 | 13000 |
| FNR-05K560B | 56 | 35 | 45 | 123 | 1 | 50 | 100 | 1.1 | 0.01 | 400 |
| FNR-07K560B | 56 | 35 | 45 | 110 | 2.5 | 125 | 250 | 2.5 | 0.02 | 950 |
| FNR-10K560B | 56 | 35 | 45 | 110 | 5 | 250 | 500 | 5.5 | 0.05 | 1800 |
| FNR-14K560B | 56 | 35 | 45 | 110 | 10 | 500 | 1000 | 10 | 0.1 | 4500 |
| FNR-20K560B | 56 | 35 | 45 | 110 | 20 | 1000 | 2000 | 35 | 0.2 | 11000 |
| FNR-05K680B | 68 | 40 | 56 | 150 | 1 | 50 | 100 | 1.3 | 0.01 | 350 |
| FNR-07K680B | 68 | 40 | 56 | 135 | 2.5 | 125 | 250 | 3 | 0.02 | 700 |
| FNR-10K680B | 68 | 40 | 56 | 135 | 5 | 250 | 500 | 6.5 | 0.05 | 1300 |
| FNR-14K680B | 68 | 40 | 56 | 135 | 10 | 500 | 1000 | 13 | 0.1 | 3300 |
| FNR-20K680B | 68 | 40 | 56 | 135 | 20 | 1000 | 2000 | 40 | 0.2 | 7000 |

氧化锌压敏电阻 ZINC OXIDE VARISTOR

通用型产品系列一览表 Surge Protection Type Series (Ctn. 1)

| Symbol | 压敏电压 Varistor Voltage V_s | 最大允许使用电压 Maximum Operating Voltage V_M | | 最大限制电压 Maximum Clamping Voltage @8×20 μs V_C | | 最大通流容量 Maximum Withstanding surge Current @8×20 μs I_{PP} | | 最大能量耐量 Maximum Energy E | 功率 Rated Wattage P_M | 最大静态电容量 Junction Capacitance C_J |
|-------------|-----------------------------------|--|-----|---|-----|---|-------|-------------------------------|------------------------------|--|
| | | VAC | V | V | A | 2Ts A | 1Ts A | | | |
| FNR-05K820B | 82 | 50 | 65 | 145 | 5 | 200 | 400 | 1.8 | 0.1 | 250 |
| FNR-07K820B | 82 | 50 | 65 | 135 | 10 | 600 | 1200 | 4.2 | 0.25 | 550 |
| FNR-10K820B | 82 | 50 | 65 | 135 | 25 | 1250 | 2500 | 8.4 | 0.4 | 1800 |
| FNR-14K820B | 82 | 50 | 65 | 135 | 50 | 2500 | 4500 | 15 | 0.6 | 2900 |
| FNR-20K820B | 82 | 50 | 65 | 135 | 100 | 4000 | 6500 | 27 | 1 | 5500 |
| FNR-05K101B | 100 | 60 | 85 | 175 | 5 | 200 | 400 | 2.2 | 0.1 | 200 |
| FNR-07K101B | 100 | 60 | 85 | 165 | 10 | 600 | 1200 | 4.8 | 0.25 | 500 |
| FNR-10K101B | 100 | 60 | 85 | 165 | 25 | 1250 | 2500 | 10 | 0.4 | 1400 |
| FNR-14K101B | 100 | 60 | 85 | 165 | 50 | 2500 | 4500 | 18 | 0.5 | 2400 |
| FNR-20K101B | 100 | 60 | 85 | 165 | 100 | 4000 | 6500 | 33 | 1 | 4800 |
| FNR-05K121B | 120 | 75 | 100 | 210 | 5 | 200 | 400 | 2.5 | 0.1 | 170 |
| FNR-07K121B | 120 | 75 | 100 | 200 | 10 | 600 | 1200 | 5.9 | 0.25 | 450 |
| FNR-10K121B | 120 | 75 | 100 | 200 | 25 | 1250 | 2500 | 15 | 0.4 | 1100 |
| FNR-14K121B | 120 | 75 | 100 | 200 | 50 | 2500 | 4500 | 26 | 0.6 | 1900 |
| FNR-20K121B | 120 | 75 | 100 | 200 | 100 | 4000 | 6500 | 52 | 1 | 3800 |
| FNR-05K151B | 150 | 95 | 125 | 260 | 5 | 200 | 400 | 4 | 0.1 | 140 |
| FNR-07K151B | 150 | 95 | 125 | 250 | 10 | 600 | 1200 | 8 | 0.25 | 350 |
| FNR-10K151B | 150 | 95 | 125 | 250 | 25 | 1250 | 2500 | 20 | 0.4 | 900 |
| FNR-14K151B | 150 | 95 | 125 | 250 | 50 | 2500 | 4500 | 32 | 0.6 | 1500 |
| FNR-20K151B | 150 | 95 | 125 | 250 | 100 | 4000 | 6500 | 65 | 1 | 3000 |
| FNR-05K181B | 180 | 115 | 150 | 315 | 5 | 200 | 400 | 4.5 | 0.1 | 110 |
| FNR-07K181B | 180 | 115 | 150 | 300 | 10 | 600 | 1200 | 10 | 0.25 | 300 |
| FNR-10K181B | 180 | 115 | 150 | 300 | 25 | 1250 | 2500 | 23 | 0.4 | 700 |
| FNR-14K181B | 180 | 115 | 150 | 300 | 50 | 2500 | 4500 | 39 | 0.6 | 1250 |
| FNR-20K181B | 180 | 115 | 150 | 300 | 100 | 4000 | 6500 | 78 | 1 | 2500 |
| FNR-05K201B | 200 | 130 | 170 | 355 | 5 | 200 | 400 | 5 | 0.1 | 80 |
| FNR-07K201B | 200 | 130 | 170 | 340 | 10 | 600 | 1200 | 13 | 0.25 | 250 |
| FNR-10K201B | 200 | 130 | 170 | 340 | 25 | 1250 | 2500 | 26 | 0.4 | 500 |
| FNR-14K201B | 200 | 130 | 170 | 340 | 50 | 2500 | 4500 | 45 | 0.6 | 1000 |
| FNR-20K201B | 200 | 130 | 170 | 340 | 100 | 4000 | 6500 | 91 | 1 | 2000 |
| FNR-05K221B | 220 | 140 | 180 | 380 | 5 | 200 | 400 | 6 | 0.1 | 70 |
| FNR-07K221B | 220 | 140 | 180 | 360 | 10 | 600 | 1200 | 13 | 0.25 | 250 |
| FNR-10K221B | 220 | 140 | 180 | 360 | 25 | 1250 | 2500 | 30 | 0.4 | 450 |
| FNR-14K221B | 220 | 140 | 180 | 360 | 50 | 2500 | 4500 | 52 | 0.6 | 1000 |
| FNR-20K221B | 220 | 140 | 180 | 360 | 100 | 4000 | 6500 | 97 | 1 | 2000 |
| FNR-05K241B | 240 | 150 | 200 | 415 | 5 | 200 | 400 | 6.5 | 0.1 | 70 |
| FNR-07K241B | 240 | 150 | 200 | 395 | 10 | 600 | 1200 | 13 | 0.25 | 2000 |
| FNR-10K241B | 240 | 150 | 200 | 395 | 25 | 1250 | 2500 | 32 | 0.4 | 400 |
| FNR-14K241B | 240 | 150 | 200 | 395 | 50 | 2500 | 4500 | 52 | 0.6 | 900 |
| FNR-20K241B | 240 | 150 | 200 | 395 | 100 | 4000 | 6500 | 100 | 1 | 1800 |

氧化锌压敏电阻 ZINC OXIDE VARISTOR

通用型产品系列一览表 Surge Protection Type Series (Ctn. 2)

| Symbol | 压敏电压 Varistor Voltage V_s | 最大允许使用电压 Maximum Operating Voltage V_M | | 最大限制电压 Maximum Clamping Voltage @8×20 μs V_C | | 最大通流容量 Maximum Withstanding surge Current @8×20 μs I_{PP} | | 最大能量耐量 Maximum Energy E | 功率 Rated Wattage P_M | 最大静态电容量 Junction Capacitance C_J |
|-------------|-----------------------------------|--|-----|---|-----|---|-------|-------------------------------|------------------------------|--|
| | | VAC | V | V | A | 2Ts A | 1Ts A | | | |
| FNR-05K271B | 270 | 175 | 225 | 475 | 5 | 200 | 400 | 8 | 0.1 | 65 |
| FNR-07K271B | 270 | 175 | 225 | 455 | 10 | 600 | 1200 | 15 | 0.25 | 170 |
| FNR-10K271B | 270 | 175 | 225 | 455 | 25 | 1250 | 2500 | 40 | 0.4 | 350 |
| FNR-14K271B | 270 | 175 | 225 | 455 | 50 | 2500 | 4500 | 65 | 0.6 | 750 |
| FNR-20K271B | 270 | 175 | 225 | 455 | 100 | 4000 | 6500 | 117 | 1 | 1600 |
| FNR-05K301B | 300 | 200 | 250 | 525 | 5 | 200 | 400 | 8 | 0.1 | 55 |
| FNR-07K301B | 300 | 200 | 250 | 500 | 10 | 600 | 1200 | 17 | 0.25 | 150 |
| FNR-10K301B | 300 | 200 | 250 | 500 | 25 | 1250 | 2500 | 35 | 0.4 | 325 |
| FNR-14K301B | 300 | 200 | 250 | 500 | 50 | 2500 | 4500 | 71 | 0.6 | 650 |
| FNR-20K301B | 300 | 200 | 250 | 500 | 100 | 4000 | 6500 | 136 | 1 | 1400 |
| FNR-05K331B | 330 | 210 | 275 | 580 | 5 | 200 | 400 | 8.5 | 0.1 | 60 |
| FNR-07K331B | 330 | 210 | 275 | 550 | 10 | 600 | 1200 | 20 | 0.25 | 150 |
| FNR-10K331B | 330 | 210 | 275 | 550 | 25 | 1250 | 2500 | 39 | 0.4 | 325 |
| FNR-14K331B | 330 | 210 | 275 | 550 | 50 | 2500 | 4500 | 78 | 0.6 | 650 |
| FNR-20K331B | 330 | 210 | 275 | 550 | 100 | 4000 | 6500 | 136 | 1 | 1400 |
| FNR-05K361B | 360 | 230 | 300 | 620 | 5 | 200 | 400 | 10 | 0.1 | 50 |
| FNR-07K361B | 360 | 230 | 300 | 595 | 10 | 600 | 1200 | 20 | 0.25 | 1300 |
| FNR-10K361B | 360 | 230 | 300 | 595 | 25 | 1250 | 2500 | 32 | 0.4 | 300 |
| FNR-14K361B | 360 | 230 | 300 | 595 | 50 | 2500 | 4500 | 84 | 0.6 | 550 |
| FNR-20K361B | 360 | 230 | 300 | 595 | 100 | 4000 | 6500 | 156 | 1 | 1200 |
| FNR-05K391B | 390 | 250 | 320 | 675 | 5 | 200 | 400 | 10 | 0.1 | 50 |
| FNR-07K391B | 390 | 250 | 320 | 650 | 10 | 600 | 1200 | 22 | 0.25 | 130 |
| FNR-10K391B | 390 | 250 | 320 | 650 | 25 | 1250 | 2500 | 52 | 0.4 | 270 |
| FNR-14K391B | 390 | 250 | 320 | 650 | 50 | 2500 | 4500 | 91 | 0.6 | 500 |
| FNR-20K391B | 390 | 250 | 320 | 650 | 100 | 4000 | 6500 | 169 | 1 | 1000 |
| FNR-05K431B | 430 | 275 | 350 | 745 | 5 | 200 | 400 | 12 | 0.1 | 45 |
| FNR-07K431B | 430 | 275 | 350 | 710 | 10 | 600 | 1200 | 26 | 0.25 | 110 |
| FNR-10K431B | 430 | 275 | 350 | 710 | 25 | 1250 | 2500 | 58 | 0.4 | 250 |
| FNR-14K431B | 430 | 275 | 350 | 710 | 50 | 2500 | 4500 | 97 | 0.6 | 450 |
| FNR-20K431B | 430 | 275 | 350 | 710 | 100 | 4000 | 6500 | 182 | 1 | 900 |
| FNR-05K471B | 470 | 300 | 385 | 810 | 5 | 200 | 400 | 13 | 0.1 | 40 |
| FNR-07K471B | 470 | 300 | 385 | 775 | 10 | 600 | 1200 | 26 | 0.25 | 100 |
| FNR-10K471B | 470 | 300 | 385 | 775 | 25 | 1250 | 2500 | 58 | 0.4 | 230 |
| FNR-14K471B | 470 | 300 | 385 | 775 | 50 | 2500 | 4500 | 104 | 0.6 | 440 |
| FNR-20K471B | 470 | 300 | 385 | 775 | 100 | 4000 | 6500 | 195 | 1 | 900 |
| FNR-10K511B | 510 | 318 | 415 | 840 | 25 | 1250 | 2500 | 58 | 0.4 | 200 |
| FNR-14K511B | 510 | 318 | 415 | 840 | 50 | 2500 | 4500 | 104 | 0.6 | 380 |
| FNR-20K511B | 510 | 318 | 415 | 840 | 100 | 4000 | 6500 | 195 | 1 | 800 |
| FNR-10K561B | 560 | 350 | 455 | 925 | 25 | 1250 | 2500 | 58 | 0.4 | 180 |
| FNR-14K561B | 560 | 350 | 455 | 925 | 50 | 2500 | 4500 | 104 | 0.6 | 345 |

氧化锌压敏电阻 ZINC OXIDE VARISTOR

通用型产品系列一览表 Surge Protection Type Series (Ctn. 3)

| Symbol | 压敏电压 Varistor Voltage V_s | 最大允许使用电压 Maximum Operating Voltage V_M | | 最大限制电压 Maximum Clamping Voltage @ $8 \times 20 \mu s$ V_C | | 最大通流容量 Maximum Withstanding surge Current @ $8 \times 20 \mu s$ I_{PP} | | 最大能量耐量 Maximum Energy E | 功率 Rated Wattage P_M | 最大静态电容量 Junction Capacitance C_J |
|-------------|-----------------------------------|--|------|---|-----|--|-------|-------------------------------|------------------------------|--|
| | | VAC | V | V | A | 2Ts A | 1Ts A | | | |
| FNR-20K561B | 560 | 350 | 455 | 925 | 100 | 4000 | 6500 | 195 | 1 | 700 |
| FNR-10K621B | 620 | 380 | 505 | 1025 | 25 | 1250 | 2500 | 58 | 0.4 | 130 |
| FNR-14K621B | 620 | 380 | 505 | 1025 | 50 | 2500 | 4500 | 110 | 0.6 | 250 |
| FNR-20K621B | 620 | 380 | 505 | 1025 | 100 | 4000 | 6500 | 195 | 1 | 500 |
| FNR-10K681B | 680 | 420 | 560 | 1120 | 25 | 1250 | 2500 | 60 | 0.4 | 130 |
| FNR-14K681B | 680 | 420 | 560 | 1120 | 50 | 2500 | 4500 | 117 | 0.6 | 250 |
| FNR-20K681B | 680 | 420 | 560 | 1120 | 100 | 4000 | 6500 | 208 | 1 | 460 |
| FNR-10K751B | 750 | 460 | 615 | 1240 | 25 | 1250 | 2500 | 65 | 0.4 | 120 |
| FNR-14K751B | 750 | 460 | 615 | 1240 | 50 | 2500 | 4500 | 130 | 0.6 | 230 |
| FNR-20K751B | 750 | 460 | 615 | 1240 | 100 | 4000 | 6500 | 227 | 1 | 420 |
| FNR-10K781B | 780 | 485 | 640 | 1290 | 25 | 1250 | 2500 | 65 | 0.4 | 120 |
| FNR-14K781B | 780 | 485 | 640 | 1290 | 50 | 2500 | 4500 | 136 | 0.6 | 230 |
| FNR-20K781B | 780 | 485 | 640 | 1290 | 100 | 4000 | 6500 | 234 | 1 | 420 |
| FNR-10K821B | 820 | 510 | 670 | 1355 | 25 | 1250 | 2500 | 71 | 0.4 | 110 |
| FNR-14K821B | 820 | 510 | 670 | 1355 | 50 | 2500 | 4500 | 143 | 0.6 | 200 |
| FNR-20K821B | 820 | 510 | 670 | 1355 | 100 | 4000 | 6500 | 247 | 1 | 400 |
| FNR-10K911B | 910 | 550 | 745 | 1500 | 25 | 1250 | 2500 | 78 | 0.4 | 100 |
| FNR-14K911B | 910 | 550 | 755 | 1500 | 50 | 2500 | 4500 | 156 | 0.6 | 180 |
| FNR-20K911B | 910 | 550 | 755 | 1500 | 100 | 4000 | 6500 | 280 | 1 | 350 |
| FNR-10K102B | 1000 | 625 | 825 | 1650 | 25 | 1250 | 2500 | 84 | 0.4 | 90 |
| FNR-14K102B | 1000 | 625 | 825 | 1650 | 50 | 2500 | 4500 | 169 | 0.6 | 150 |
| FNR-20K102B | 1000 | 625 | 825 | 1650 | 100 | 4000 | 6500 | 299 | 1 | 320 |
| FNR-10K112B | 1100 | 680 | 895 | 1815 | 25 | 1250 | 2500 | 91 | 0.4 | 80 |
| FNR-14K112B | 1100 | 680 | 895 | 1815 | 50 | 2500 | 4500 | 182 | 0.6 | 150 |
| FNR-20K112B | 1100 | 680 | 895 | 1815 | 100 | 4000 | 6500 | 325 | 1 | 300 |
| FNR-14K182B | 1800 | 1000 | 1465 | 2970 | 50 | 2500 | 4500 | 312 | 0.6 | 100 |
| FNR-20K182B | 1800 | 1000 | 1465 | 2970 | 100 | 4000 | 6500 | 400 | 1 | 200 |

氧化锌压敏电阻 ZINC OXIDE VARISTOR

防雷型产品系列一览表 LIGHTNING ARRESER TYPE Series List

| Symbol | 压敏电压 Varistor Voltage V_s | 最大允许使用电压 Maximum Operating Voltage V_M | | 最大限制电压 Maximum Clamping Voltage @8 $\times 20 \mu s$ V_C I_P | | 最大通流容量 Maximum Withstanding surge Current @8 $\times 20 \mu s$ I_{PP} | | 最大能量耐量 Maximum Energy E | 功率 Rated Wattage P_M | 最大静态电容量 Junction Capacitance C_J |
|-------------|-----------------------------------|--|-----|---|-----|---|-------|-------------------------------|------------------------------|--|
| | | VAC | V | V | A | 2Ts A | 1Ts A | | | |
| FNR-25K470B | 47 | 30 | 38 | 89 | 40 | 1250 | | 15 | 1 | 10000 |
| FNR-32K470B | 47 | 30 | 38 | 89 | 40 | 2500 | | 25 | 1.2 | 11000 |
| FNR-40K470B | 47 | 30 | 38 | 89 | 40 | 5000 | | 40 | 1.4 | 15000 |
| FNR-25K560B | 56 | 35 | 45 | 106 | 40 | 1250 | | 18 | 1 | 8000 |
| FNR-32K560B | 56 | 35 | 45 | 106 | 40 | 2500 | | 30 | 1.2 | 10000 |
| FNR-40K560B | 56 | 35 | 45 | 106 | 40 | 5000 | | 45 | 1.4 | 14000 |
| FNR-25K680B | 68 | 40 | 56 | 129 | 40 | 1250 | | 21 | 1 | 7000 |
| FNR-32K680B | 68 | 40 | 56 | 129 | 40 | 2500 | | 32 | 1.2 | 9000 |
| FNR-40K680B | 68 | 40 | 56 | 129 | 40 | 5000 | | 50 | 1.4 | 13000 |
| FNR-25K820B | 82 | 50 | 65 | 156 | 200 | 5000 | | 23 | 1 | 6000 |
| FNR-32K820B | 82 | 50 | 65 | 156 | 200 | 10000 | | 35 | 1.2 | 8000 |
| FNR-40K820B | 82 | 50 | 65 | 156 | 200 | 20000 | | 60 | 1.4 | 12000 |
| FNR-25K101B | 100 | 60 | 85 | 190 | 200 | 5000 | | 32 | 1 | 5000 |
| FNR-32K101B | 100 | 60 | 85 | 190 | 200 | 10000 | | 49 | 1.2 | 7000 |
| FNR-40K101B | 100 | 60 | 85 | 190 | 200 | 20000 | | 90 | 1.4 | 11500 |
| FNR-25K121B | 120 | 75 | 100 | 216 | 200 | 5000 | | 36 | 1 | 4000 |
| FNR-32K121B | 120 | 75 | 100 | 216 | 200 | 10000 | | 54 | 1.2 | 6000 |
| FNR-40K121B | 120 | 75 | 100 | 216 | 200 | 20000 | | 117 | 1.4 | 11000 |
| FNR-25K151B | 150 | 95 | 125 | 270 | 200 | 5000 | | 39 | 1 | 3000 |
| FNR-32K151B | 150 | 95 | 125 | 270 | 200 | 10000 | | 65 | 1.2 | 5000 |
| FNR-40K151B | 150 | 95 | 125 | 270 | 200 | 20000 | | 156 | 1.4 | 10500 |
| FNR-25K201B | 200 | 130 | 170 | 360 | 200 | 5000 | | 45 | 1 | 2400 |
| FNR-32K201B | 200 | 130 | 170 | 360 | 200 | 10000 | | 91 | 1.2 | 4700 |
| FNR-40K201B | 200 | 130 | 170 | 360 | 200 | 20000 | | 208 | 1.4 | 10000 |
| FNR-25K221B | 220 | 140 | 180 | 385 | 200 | 5000 | | 52 | 1 | 2200 |
| FNR-32K221B | 220 | 140 | 180 | 385 | 200 | 10000 | | 117 | 1.2 | 4300 |
| FNR-40K221B | 220 | 140 | 180 | 385 | 200 | 20000 | | 234 | 1.4 | 9500 |
| FNR-25K241B | 240 | 150 | 200 | 420 | 200 | 5000 | | 78 | 1 | 2000 |
| FNR-32K241B | 240 | 150 | 200 | 420 | 200 | 10000 | | 156 | 1.2 | 4000 |
| FNR-40K241B | 240 | 150 | 200 | 420 | 200 | 20000 | | 286 | 1.4 | 9000 |
| FNR-25K271B | 270 | 175 | 225 | 473 | 200 | 5000 | | 117 | 1 | 1700 |
| FNR-32K271B | 270 | 175 | 225 | 473 | 200 | 10000 | | 195 | 1.2 | 3500 |
| FNR-40K271B | 270 | 175 | 225 | 473 | 200 | 20000 | | 308 | 1.4 | 750 |
| FNR-25K361B | 360 | 230 | 300 | 612 | 200 | 5000 | | 156 | 1 | 1400 |
| FNR-32K361B | 360 | 230 | 300 | 612 | 200 | 10000 | | 234 | 1.2 | 3000 |
| FNR-40K361B | 360 | 230 | 300 | 612 | 200 | 20000 | | 390 | 1.4 | 6000 |
| FNR-25K391B | 390 | 250 | 320 | 663 | 200 | 5000 | | 195 | 1 | 1200 |
| FNR-32K391B | 390 | 250 | 320 | 663 | 200 | 10000 | | 286 | 1.2 | 2500 |
| FNR-40K391B | 390 | 250 | 320 | 663 | 200 | 20000 | | 442 | 1.4 | 5000 |
| FNR-25K431B | 430 | 275 | 350 | 731 | 200 | 5000 | | 234 | 1 | 1100 |

氧化锌压敏电阻 ZINC OXIDE VARISTOR

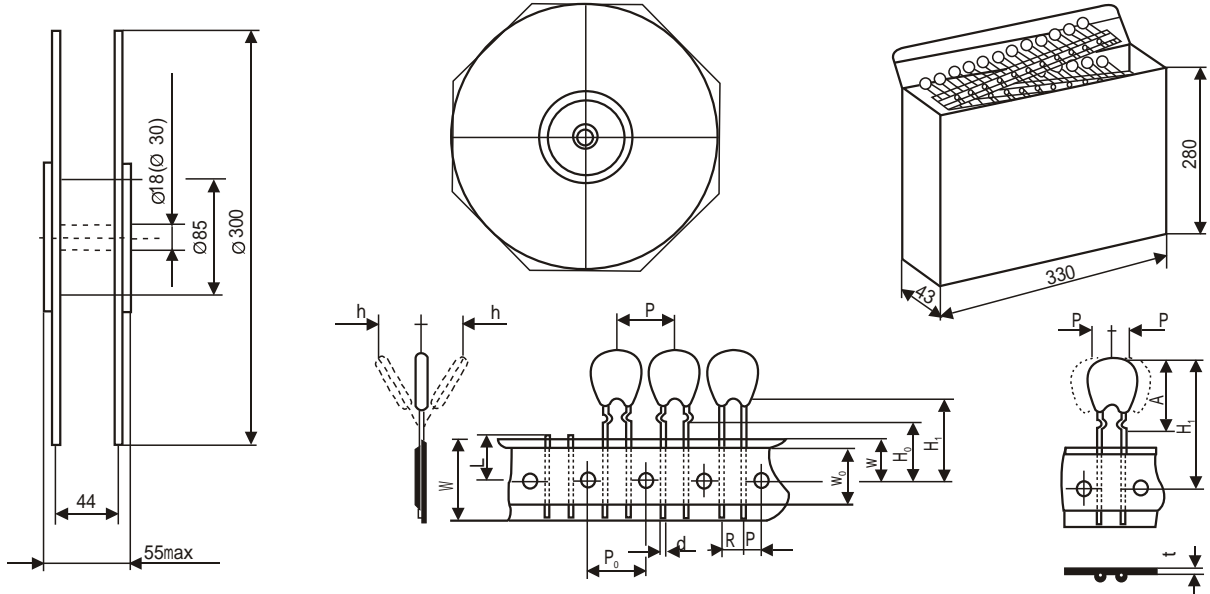
防雷型产品系列一览表 LIGHTNING ARRESER TYPE Series List (Ctn.)

| Symbol | 压敏电 压 Varistor Voltage V_s | 最大允许使 用电压 Maximum Operating Voltage V_M | | 最大限制电 压 Maximum Clamping Voltage @8 $\times 20 \mu s$ V_C | | 最大通流容量 Maximum Withstanding surge Current @8 $\times 20 \mu s$ I_{PP} | | 最大能 量耐量 Maximum Energy E | 功率 Rated Wattage P_M | 最大静态电 容量 Junction Capacitance C_J |
|-------------|--|--|------|--|-----|--|-------|--------------------------------------|---------------------------------|---|
| | | VAC | V | V | A | 2Ts A | 1Ts A | | | |
| FNR-32K431B | 430 | 275 | 350 | 731 | 200 | 10000 | | 338 | 1.2 | 2250 |
| FNR-40K431B | 430 | 275 | 350 | 731 | 200 | 20000 | | 494 | 1.4 | 4500 |
| FNR-25K471B | 470 | 300 | 380 | 799 | 200 | 5000 | | 286 | 1 | 1000 |
| FNR-32K471B | 470 | 300 | 380 | 799 | 200 | 10000 | | 390 | 1.2 | 1900 |
| FNR-40K471B | 470 | 300 | 380 | 799 | 200 | 20000 | | 546 | 1.4 | 3600 |
| FNR-25K621B | 620 | 385 | 505 | 1054 | 200 | 5000 | | 338 | 1 | 1500 |
| FNR-32K621B | 620 | 385 | 505 | 1054 | 200 | 10000 | | 442 | 1.2 | 3200 |
| FNR-40K621B | 620 | 385 | 505 | 1054 | 200 | 20000 | | 585 | 1.4 | 3300 |
| FNR-25K681B | 680 | 420 | 560 | 1160 | 200 | 5000 | | 390 | 1 | 1200 |
| FNR-32K681B | 680 | 420 | 560 | 1160 | 200 | 10000 | | 494 | 1.2 | 3000 |
| FNR-40K681B | 680 | 420 | 560 | 1160 | 200 | 20000 | | 650 | 1.4 | 3000 |
| FNR-25K751B | 750 | 460 | 615 | 1275 | 200 | 5000 | | 455 | 1 | 1100 |
| FNR-32K751B | 750 | 460 | 615 | 1275 | 200 | 10000 | | 559 | 1.2 | 2700 |
| FNR-40K751B | 750 | 460 | 615 | 1275 | 200 | 20000 | | 715 | 1.4 | 2500 |
| FNR-25K781B | 780 | 485 | 640 | 1326 | 200 | 5000 | | 481 | 1 | 1050 |
| FNR-32K781B | 780 | 485 | 640 | 1326 | 200 | 10000 | | 624 | 1.2 | 2600 |
| FNR-40K781B | 780 | 485 | 640 | 1326 | 200 | 20000 | | 780 | 1.4 | 2450 |
| FNR-25K821B | 820 | 510 | 670 | 1400 | 200 | 5000 | | 520 | 1 | 1000 |
| FNR-32K821B | 820 | 510 | 670 | 1400 | 200 | 10000 | | 689 | 1.2 | 2400 |
| FNR-40K821B | 820 | 510 | 670 | 1400 | 200 | 20000 | | 832 | 1.4 | 2400 |
| FNR-25K911B | 910 | 550 | 745 | 1550 | 200 | 5000 | | 546 | 1 | 900 |
| FNR-32K911B | 910 | 550 | 745 | 1550 | 200 | 10000 | | 754 | 1.2 | 2200 |
| FNR-40K911B | 910 | 550 | 745 | 1550 | 200 | 20000 | | 910 | 1.4 | 2200 |
| FNR-25K102B | 1000 | 625 | 825 | 1700 | 200 | 5000 | | 585 | 1 | 800 |
| FNR-32K102B | 1000 | 625 | 825 | 1700 | 200 | 10000 | | 819 | 1.2 | 1900 |
| FNR-40K102B | 1000 | 625 | 825 | 1700 | 200 | 20000 | | 1040 | 1.4 | 2000 |
| FNR-25K112B | 1100 | 680 | 895 | 1870 | 200 | 5000 | | 650 | 1 | 700 |
| FNR-32K112B | 1100 | 680 | 895 | 1870 | 200 | 10000 | | 910 | 1.2 | 1700 |
| FNR-40K112B | 1100 | 680 | 895 | 1870 | 200 | 20000 | | 1105 | 1.4 | 1800 |
| FNR-32K182B | 1800 | 1000 | 1465 | 3060 | 200 | 10000 | | 975 | 1.2 | 1600 |
| FNR-40K182B | 1800 | 1000 | 1465 | 3060 | 200 | 20000 | | 1300 | 1.4 | 1600 |

ZINC OXIDE VARISTOR

● 编带尺寸 REEL DIMENSIONS

盒装 Ammo Packaging



| 项目 Item | 符号 Code | 尺寸 Dimension (mm) | | | |
|---|----------------|----------------------|---------|------------|----------|
| | | 5 | 7 | 10 | 14 |
| 瓷片直径 Element Diameter | | | | | |
| 产品直径 Body Diameter | D | 7.5Max. | 9.0Max. | 13.5Max. | 16.5Max. |
| 引线直径 Lead Wire Diameter | d | 0.6 ± 0.1 | | 0.8 ± 0.1 | |
| 元件间距 Pitch of Component | P | 12.7 ± 1 | | 25.4 ± 1 | |
| 孔距 Feed Hole Pitch | P ₀ | 12.7 ± 3 | | 12.7 ± 0.3 | |
| 孔与引线距 Feed Hole Center to Lead | P ₁ | 3.85 ± 0.7 | | 7.5 ± 0.8 | |
| 引线间距 Lead to Lead Pitch | R | 5 ± 0.8 | | 7.5 ± 0.8 | |
| 元件垂直度 Component Alignment | h | 2.0Max. | | 2.0Max. | |
| 纸带宽度 Basepaper Tape Width | W | 18 | | 18 | |
| 胶带宽度 Adhesive Tape Width | W ₀ | 13Min. | | 13Min. | |
| 定位孔距 Hole Position | W _r | 9 ± 0.5 | | 9 ± 0.5 | |
| 元件高度 Component Height | H _i | 30Max. | | 40Max. | |
| 弯曲部到孔心距 Lead-Wire Clinch Height | H ₀ | 16 ± 0.5 | | 1.0Max. | |
| 孔直径 Feed Hole Diameter | D ₀ | 4 ± 0.2 | | 4 ± 0.2 | |
| 纸带厚度 Total Tape Thickness | t | 0.9Max. | | 0.9Max. | |
| 孔心到引线长度 Length of Clipped Lead | L | 11Max. | | 11Max. | |
| 从弯曲部分起元件高度 Component Height from Seating Plane | A | 13Max. | 15Max. | 19.5Max. | 22.5Max. |
| 元件位置偏差 Component Position Tolerance | P | ± 1.3Max. | | ± 2.0Max. | |

● 盒装 (卷装) 数量 AMMO AND REEL PACKING QUANTITY

| 瓷片 Element Diameter | 数量 Quantity (pcs) | |
|------------------------|-------------------|------------|
| | 18-270(V) | 300-470(V) |
| 05 | 2500 | 2000 |
| 07 | 1500 | 1500 |
| 10 | 1500 | 1500 |
| 14 | 1500 | 1000 |