



Product Service

# CERTIFICATE

No. B 103063 0002 Rev. 00

**Holder of Certificate:** Guangdong Fenghua Advanced Technology Holding Co.,Ltd. Xianhua New Sensitive Components Branch Company

1st & 2nd Floor, 3rd Building,  
Fenghua Electronic Industrial City, 18th Fenghua Road,  
526020 Zhaoqing, Guangdong  
PEOPLE'S REPUBLIC OF CHINA

**Certification Mark:**



**Product:**

Surge Protective Device  
**(TMOV)**

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition, the certification holder must not transfer the certificate to third parties. This certificate is valid until the listed date, unless it is cancelled earlier. All applicable requirements of the testing and certification regulations of TÜV SÜD Group have to be complied. For details see: [www.tuvsud.com/ps-cert](http://www.tuvsud.com/ps-cert)

**Test report no.:** 6810022015901

**Valid until:** 2028-04-11

**Date,** 2023-04-21

( Richard Xu )

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**Model(s):**

**FNR-14RaaaKX, FNR-20RaaaKX**

Description the rule of the designation:

<u>FNR</u>	-	<u>14 / 20</u>	<u>R</u>	<u>aaa</u>	<u>K</u>	<u>X</u>
I		II	III	IV	V	VI

I – FNR series

II – Represents the size of the varistor chip: 14 or 20

III – R: Thermally Protected Varistor

IV – Nominal varistor voltage:

aaa can be 181, 201, 221, 241, 271, 301, 331, 361, 391, 431, 471, 511, 561, 621, 681, 751, 781, 821, 911, 102 and 112. For example, 101 stands for  $10 \times 10^1 = 100V$ ; 112 stands for  $11 \times 10^2 = 1100V$ .

V – Tolerance of Nominal varistor voltage: K =  $\pm 10\%$

VI – X can be D or T or blank

D: Represents 2 pins of varistor

T: Represents 3 pins of varistor

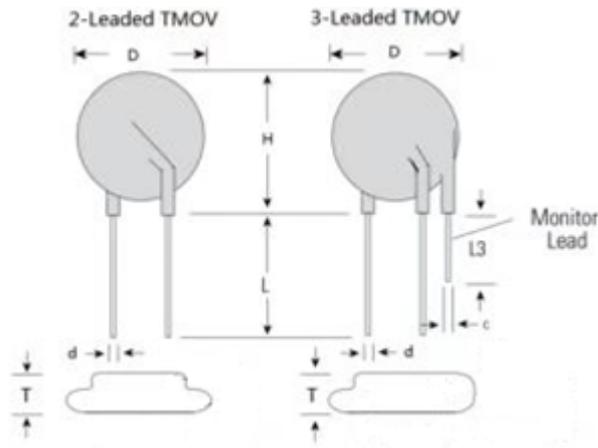
## Parameters:

Maximum continuous voltage $V_M$ /	
Maximum continuous operating voltage $U_c$ :	See below table for details
Standby current $I_{DC}$ :	<20 $\mu$ A
Varistor voltage $V_V$ @1mA:	See below table for details
Specified peak pulse current $I_P$ :	14R: 50A, 20R:100A
Clamping voltage @ $I_P$ :	See below table for details
Nominal discharge current $I_n$ :	See below table for details
Limiting voltage @ $I_n$ :	See below table for details
Single-impulse [transient] maximum current $I_{TM}$ /	
Maximum discharge current $I_{max}$ :	See below table for details
Operating range:	Extend (-40°C to + 85°C)

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Dimension:



Sizes	D (mm)		H(mm)		T (mm)		L(mm)	L3(mm)	d ±0.1 (mm)	c ±0.1 (mm)
	Max.	Min.	Max.	Min.	Max.	Min.	Min.	Min.		
14R	18.0	13.0	24.0	15.0	13.0	3.0	2.0	2.0	Φ0.5mm to Φ1.5mm	Φ0.5mm to Φ1.5mm
20R	24.0	18.0	30.0	21.0	14.0	3.0	2.0	2.0	Φ0.5mm to Φ1.5mm	Φ0.5mm to Φ1.5mm

**Tested according to:** IEC 61643-331:2020  
 EN IEC 61643-331:2020  
 IEC 62368-1:2018 Annex G.8.1

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## Electrical rating:

Type	Maximum continuous voltage $V_M$ (V)		Standby Current ( $\mu A$ )	Nominal varistor voltage (V)	Clamping Voltage @50A (Max. V)	Nominal discharge current $I_n$ (KA)	Limiting voltage @ $I_n$ (V)	Maximum Peak Current $I_{max}$ (KA)	Energy (J)	Capacitance (pF)
	AC	DC	$I_{DC}$	$V_N$	$V_C$	8/20 $\mu s$	$U_p$	8/20 $\mu s$	10/1000 $\mu s$	$C_v$
FNR-14R181K	115	150	<20	180	300	3	650	6	56	2000
FNR-14R201K	130	170	<20	200	340	3	700	6	70	1800
FNR-14R221K	140	180	<20	220	360	3	750	6	78	1600
FNR-14R241K	150	200	<20	240	395	3	820	6	84	1500
FNR-14R271K	175	225	<20	270	455	3	900	6	99	1200
FNR-14R301K	195	250	<20	300	500	3	990	6	108	1100
FNR-14R331K	210	275	<20	330	550	3	1080	6	115	1000
FNR-14R361K	230	300	<20	360	595	3	1150	6	130	900
FNR-14R391K	250	320	<20	390	650	3	1240	6	140	850
FNR-14R431K	275	350	<20	430	710	3	1340	6	155	850
FNR-14R471K	300	385	<20	470	775	3	1450	6	175	800
FNR-14R511K	320	410	<20	510	840	3	1540	6	180	700

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Type	Maximum continuous voltage $V_M$ (V)		Standby Current ( $\mu A$ )	Nominal varistor voltage (V)	Clamping Voltage @50A (Max. V)	Nominal discharge current $I_n$ (KA)	Limiting voltage @ $I_r$ (V)	Maximum Peak Current $I_{max}$ (KA)	Energy (J)	Capacitance (pF)
	AC	DC	$I_{DC}$	$V_N$	$V_C$	8/20 $\mu s$	$U_p$	8/20 $\mu s$	10/1000 $\mu s$	$C_v$
FNR-14R561K	350	455	<20	560	925	3	1670	6	185	650
FNR-14R621K	385	505	<20	620	1025	3	1820	6	190	580
FNR-14R681K	420	560	<20	680	1120	3	1970	6	200	550
FNR-14R751K	460	615	<20	750	1240	3	2150	6	210	500
FNR-14R781K	485	640	<20	780	1290	3	2200	6	220	480
FNR-14R821K	510	670	<20	820	1355	3	2280	6	235	450
FNR-14R911K	550	745	<20	910	1500	3	2500	6	255	400
FNR-14R102K	625	825	<20	1000	1650	3	2680	6	280	380
FNR-14R112K	680	895	<20	1100	1815	3	2900	6	310	360
FNR-14R181KD	115	150	<20	180	300	3	650	6	56	2000
FNR-14R201KD	130	170	<20	200	340	3	700	6	70	1800
FNR-14R221KD	140	180	<20	220	360	3	750	6	78	1600
FNR-14R241KD	150	200	<20	240	395	3	820	6	84	1500

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	AC	DC	$I_{DC}$	$V_N$	$V_C$	8/20 $\mu s$	$U_p$	8/20 $\mu s$	10/1000 $\mu s$	$C_v$
FNR-14R271KD	175	225	<20	270	455	3	900	6	99	1200
FNR-14R301KD	195	250	<20	300	500	3	990	6	108	1100
FNR-14R331KD	210	275	<20	330	550	3	1080	6	115	1000
FNR-14R361KD	230	300	<20	360	595	3	1150	6	130	900
FNR-14R391KD	250	320	<20	390	650	3	1240	6	140	850
FNR-14R431KD	275	350	<20	430	710	3	1340	6	155	850
FNR-14R471KD	300	385	<20	470	775	3	1450	6	175	800
FNR-14R511KD	320	410	<20	510	840	3	1540	6	180	700
FNR-14R561KD	350	455	<20	560	925	3	1670	6	185	650
FNR-14R621KD	385	505	<20	620	1025	3	1820	6	190	580
FNR-14R681KD	420	560	<20	680	1120	3	1970	6	200	550
FNR-14R751KD	460	615	<20	750	1240	3	2150	6	210	500

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	AC	DC	$I_{DC}$	$V_N$	$V_C$	8/20 $\mu s$	$U_p$	8/20 $\mu s$	10/1000 $\mu s$	$C_v$
FNR-14R781KD	485	640	<20	780	1290	3	2200	6	220	480
FNR-14R821KD	510	670	<20	820	1355	3	2280	6	235	450
FNR-14R911KD	550	745	<20	910	1500	3	2500	6	255	400
FNR-14R102KD	625	825	<20	1000	1650	3	2680	6	280	380
FNR-14R112KD	680	895	<20	1100	1815	3	2900	6	310	360
FNR-14R181KT	115	150	<20	180	300	3	650	6	56	2000
FNR-14R201KT	130	170	<20	200	340	3	700	6	70	1800
FNR-14R221KT	140	180	<20	220	360	3	750	6	78	1600
FNR-14R241KT	150	200	<20	240	395	3	820	6	84	1500
FNR-14R271KT	175	225	<20	270	455	3	900	6	99	1200
FNR-14R301KT	195	250	<20	300	500	3	990	6	108	1100
FNR-14R331KT	210	275	<20	330	550	3	1080	6	115	1000

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	AC	DC	$I_{DC}$	$V_N$	$V_C$	8/20 $\mu s$	$U_p$	8/20 $\mu s$	10/1000 $\mu s$	$C_v$
FNR-14R361KT	230	300	<20	360	595	3	1150	6	130	900
FNR-14R391KT	250	320	<20	390	650	3	1240	6	140	850
FNR-14R431KT	275	350	<20	430	710	3	1340	6	155	850
FNR-14R471KT	300	385	<20	470	775	3	1450	6	175	800
FNR-14R511KT	320	410	<20	510	840	3	1540	6	180	700
FNR-14R561KT	350	455	<20	560	925	3	1670	6	185	650
FNR-14R621KT	385	505	<20	620	1025	3	1820	6	190	580
FNR-14R681KT	420	560	<20	680	1120	3	1970	6	200	550
FNR-14R751KT	460	615	<20	750	1240	3	2150	6	210	500
FNR-14R781KT	485	640	<20	780	1290	3	2200	6	220	480
FNR-14R821KT	510	670	<20	820	1355	3	2280	6	235	450
FNR-14R911KT	550	745	<20	910	1500	3	2500	6	255	400

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	AC	DC								
FNR-14R102KT	625	825	<20	1000	1650	3	2680	6	280	380
FNR-14R112KT	680	895	<20	1100	1815	3	2900	6	310	360

Type	Maximum continuous voltage $V_M$ (V)		Standby Current ( $\mu A$ )	Nominal varistor voltage (V)	Clamping Voltage @100A: (Max. V)	Nominal discharge current $I_n$ (KA)	Limiting voltage @ $I_n$ (V)	Maximum Peak Current $I_{max}$ (KA)	Energy (J)	Capacitance (pF)
	AC	DC								
FNR-20R181K	115	150	<20	180	300	5	750	10	110	5000
FNR-20R201K	130	170	<20	200	340	5	800	10	140	4500
FNR-20R221K	140	180	<20	220	360	5	850	10	155	3500
FNR-20R241K	150	200	<20	240	395	5	900	10	170	3000
FNR-20R271K	175	225	<20	270	455	5	950	10	190	2800
FNR-20R301K	195	250	<20	300	500	5	1000	10	205	2600
FNR-20R331K	210	275	<20	330	550	5	1050	10	215	2500

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	AC	DC	$I_{DC}$	$V_N$	$V_C$	8/20 $\mu s$	$U_p$	8/20 $\mu s$	0/1000 $\mu s$	$C_v$
FNR-20R361K	230	300	<20	360	595	5	1100	10	225	2300
FNR-20R391K	250	320	<20	390	650	5	1180	10	240	2000
FNR-20R431K	275	350	<20	430	710	5	1250	10	270	1800
FNR-20R471K	300	385	<20	470	775	5	1300	10	350	1500
FNR-20R511K	320	410	<20	510	840	5	1450	10	380	1300
FNR-20R561K	350	455	<20	560	925	5	1620	10	400	1200
FNR-20R621K	385	505	<20	620	1025	5	1800	10	425	1100
FNR-20R681K	420	560	<20	680	1120	5	1980	10	435	1000
FNR-20R751K	460	615	<20	750	1240	5	2150	10	455	950
FNR-20R781K	485	640	<20	780	1290	5	2260	10	461	950
FNR-20R821K	510	670	<20	820	1355	5	2380	10	475	900
FNR-20R911K	550	745	<20	910	1500	5	2650	10	500	880
FNR-20R102K	625	825	<20	1000	1650	5	2860	10	560	800

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	AC	DC	$I_{DC}$	$V_N$	$V_C$	8/20 $\mu s$	$U_p$	8/20 $\mu s$	0/1000 $\mu s$	$C_v$
FNR-20R112K	680	895	<20	1100	1815	5	3120	10	610	780
FNR-20R181KD	115	150	<20	180	300	5	750	10	110	5000
FNR-20R201KD	130	170	<20	200	340	5	800	10	140	4500
FNR-20R221KD	140	180	<20	220	360	5	850	10	155	3500
FNR-20R241KD	150	200	<20	240	395	5	900	10	170	3000
FNR-20R271KD	175	225	<20	270	455	5	950	10	190	2800
FNR-20R301KD	195	250	<20	300	500	5	1000	10	205	2600
FNR-20R331KD	210	275	<20	330	550	5	1050	10	215	2500
FNR-20R361KD	230	300	<20	360	595	5	1100	10	225	2300
FNR-20R391KD	250	320	<20	390	650	5	1180	10	240	2000
FNR-20R431KD	275	350	<20	430	710	5	1250	10	270	1800
FNR-20R471KD	300	385	<20	470	775	5	1300	10	350	1500
FNR-20R511KD	320	410	<20	510	840	5	1450	10	380	1300

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	AC	DC	$I_{DC}$	$V_N$	$V_C$	8/20 $\mu s$	$U_p$	8/20 $\mu s$	0/1000 $\mu s$	$C_v$
FNR-20R561KD	350	455	<20	560	925	5	1620	10	400	1200
FNR-20R621KD	385	505	<20	620	1025	5	1800	10	425	1100
FNR-20R681KD	420	560	<20	680	1120	5	1980	10	435	1000
FNR-20R751KD	460	615	<20	750	1240	5	2150	10	455	950
FNR-20R781KD	485	640	<20	780	1290	5	2260	10	461	950
FNR-20R821KD	510	670	<20	820	1355	5	2380	10	475	900
FNR-20R911KD	550	745	<20	910	1500	5	2650	10	500	880
FNR-20R102KD	625	825	<20	1000	1650	5	2860	10	560	800
FNR-20R112KD	680	895	<20	1100	1815	5	3120	10	610	780
FNR-20R181KT	115	150	<20	180	300	5	750	10	110	5000
FNR-20R201KT	130	170	<20	200	340	5	800	10	140	4500
FNR-20R221KT	140	180	<20	220	360	5	850	10	155	3500

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	AC	DC	$I_{DC}$	$V_N$	$V_C$	8/20 $\mu s$	$U_p$	8/20 $\mu s$	0/1000 $\mu s$	$C_v$
FNR-20R241KT	150	200	<20	240	395	5	900	10	170	3000
FNR-20R271KT	175	225	<20	270	455	5	950	10	190	2800
FNR-20R301KT	195	250	<20	300	500	5	1000	10	205	2600
FNR-20R331KT	210	275	<20	330	550	5	1050	10	215	2500
FNR-20R361KT	230	300	<20	360	595	5	1100	10	225	2300
FNR-20R391KT	250	320	<20	390	650	5	1180	10	240	2000
FNR-20R431KT	275	350	<20	430	710	5	1250	10	270	1800
FNR-20R471KT	300	385	<20	470	775	5	1300	10	350	1500
FNR-20R511KT	320	410	<20	510	840	5	1450	10	380	1300
FNR-20R561KT	350	455	<20	560	925	5	1620	10	400	1200
FNR-20R621KT	385	505	<20	620	1025	5	1800	10	425	1100
FNR-20R681KT	420	560	<20	680	1120	5	1980	10	435	1000

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	AC	DC	$I_{DC}$	$V_N$	$V_C$	8/20 $\mu s$	$U_p$	8/20 $\mu s$	10/1000 $\mu s$	$C_v$
FNR-20R751KT	460	615	<20	750	1240	5	2150	10	455	950
FNR-20R781KT	485	640	<20	780	1290	5	2260	10	461	950
FNR-20R821KT	510	670	<20	820	1355	5	2380	10	475	900
FNR-20R911KT	550	745	<20	910	1500	5	2650	10	500	880
FNR-20R102KT	625	825	<20	1000	1650	5	2860	10	560	800
FNR-20R112KT	680	895	<20	1100	1815	5	3120	10	610	780