

# DATA SHEET

## WIREWOUND RESISTORS

Fusible, Flameproof

FKN Series

$\pm 1\%$ ,  $\pm 5\%$

1/2W to 7W

RoHS compliant & Halogen Free





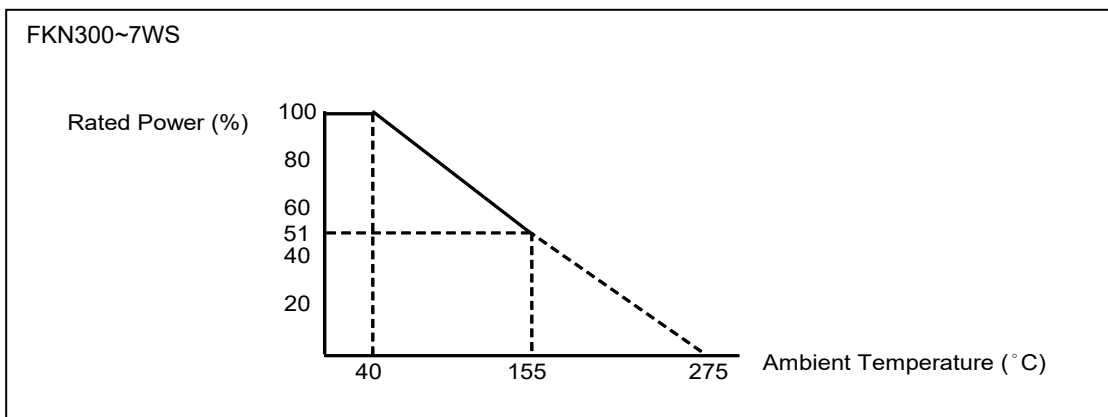
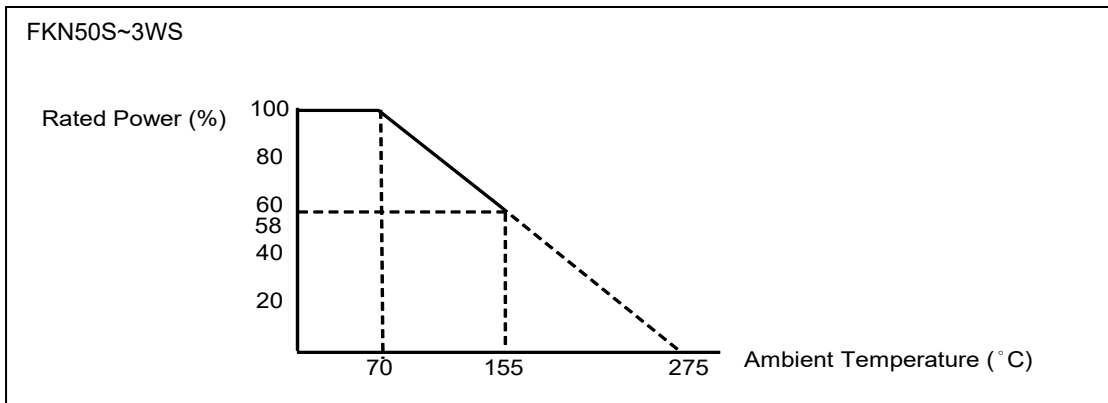
**DIMENSIONS**

Unit: mm



Normal	Miniature	L	$\psi D$	H	$\psi d$
-	FKN50S FKN1SS	$6.3 \pm 0.5$	$2.5 \pm 0.3$	$28 \pm 2.0$	$0.55 \pm 0.05$
FKN-50	FKN1WS FKN2SS	$9.0 \pm 0.5$	$3.5 \pm 0.3$	$26 \pm 2.0$	$0.55 \pm 0.05$ $0.8 \pm 0.05$
FKN100	FKN2WS	$11.5 \pm 1.0$	$4.6 \pm 0.5$	$35 \pm 2.0$	$0.8 \pm 0.05$
FKN200	FKN3WS	$15.5 \pm 1.0$	$5.2 \pm 0.5$	$33 \pm 2.0$	$0.8 \pm 0.05$
FKN300 FKN400	FKN5WS	$17.5 \pm 1.0$	$6.5 \pm 0.5$	$32 \pm 2.0$	$0.8 \pm 0.05$
FKN500	FKN7WS	$24.5 \pm 1.0$	$8.5 \pm 0.5$	$38 \pm 2.0$	$0.8 \pm 0.05$

**DERATING CURVE**



**ELECTRICAL CHARACTERISTICS**

CHARACTERISTICS	FKN-50	FKN100	FKN200	FKN300	FKN400	FKN500
Power Rating at 40°C				3W	4W	5W
Power Rating at 70°C	1/2W	1W	2W			
Resistance Range (±1%)		0.5Ω~100Ω	0.47Ω~150Ω	0.56Ω~330Ω	0.56Ω~330Ω	1Ω~620Ω
Resistance Range (±5%)	0.5Ω~47Ω	0.5Ω~100Ω	0.47Ω~150Ω	0.56Ω~330Ω	0.56Ω~330Ω	1Ω~620Ω
Voltage Proof on Insulation	300V					
Maximum working voltage	$\sqrt{P \times R}$					
Operating Temp. Range	- 40°C to + 155°C					
Temperature Coefficient	±350ppm/°C					

CHARACTERISTICS	FKN50S	FKN1WS	FKN1SS	FKN2WS	FKN2SS	FKN3WS	FKN5WS	FKN7WS
Power Rating at 40 °C							5W	7W
Power Rating at 70 °C	1/2W	1W	1W	2W	2W	3W		
Resistance Range (±1%)		0.47Ω - 100Ω	0.47Ω - 100Ω	0.47Ω - 150Ω	0.47Ω - 150Ω	0.47Ω - 240Ω	0.56Ω - 330Ω	1Ω - 620Ω
Resistance Range (±5%)	2.5Ω~22Ω	0.47Ω - 100Ω	0.47Ω - 100Ω	0.47Ω - 150Ω	0.47Ω - 150Ω	0.47Ω - 240Ω	0.56Ω - 330Ω	1Ω - 620Ω
Voltage Proof on Insulation	200V	300V	300V	300V	300V	300V	300V	300V
Maximum working voltage	$\sqrt{P \times R}$							
Operating Temp. Range	- 40°C to + 155°C							
Temperature Coefficient	±350ppm/°C							

Note: For resistance value out of above range is by request.

**FUSING CHARACTERISTICS**

R≤2.0 Ω Fusing time within 60 seconds at 36 times of rated power;  
R>2.0 Ω Fusing time within 60 seconds at 25 times of rated power;  
Fusing residual resistive value at least 100 times rated resistance.

**Specific fusing characteristic(time VS. power) and surge withstanding capacity on request.**

**TEST AND REQUIRMENTS**

TEST	TEST METHOD	PROCEDURE	APPRAISE
Short Time Overload	IEC 60115-1 4.13	10 times rated power for 5 sec.	±2.0%+0.05Ω
Voltage Proof on Insulation	IEC 60115-1 4.7	In V-Block for 60 sec. test voltage as above table	No Breakdown
Temperature Coefficient	IEC 60115-1 4.8	Between -40°C to +155°C	By Type
Insulation Resistance	IEC 60115-1 4.6	In V-Block for 60 sec.	>100MΩ
Solderability	IEC 60115-1 4.17	245±5°C for 3±0.5 Sec.	95% Min. coverage
Solvent Resistance of Marking	IEC 60115-1 4.30	IPA for 5±0.5 Min. with ultrasonic	No deterioration of coatings and markings
Robustness of Terminations	IEC 60115-1 4.16	Direct load for 10 Sec. in the direction of the terminal leads	≥2.5Kg(24.5N)
Damp Heat Steady State	IEC 60115-1 4.24	40±2°C,90-95% RH for 56 days, loaded with 0.1 times RCWV(or Umax., whichever less)	±5.0%+0.05Ω
Endurance at 70°C	IEC 60115-1 4.25	70±2°C at RCWV(or Umax., whichever less) for 1,000 Hr.(1.5 Hr.on,0.5 Hr. off)	±5.0%+0.05Ω
Temperature Cycling	IEC 60115-1 4.19	-55°C → Room Temp. → +155°C → Room Temp.(5 cycles)	±1.0%+0.05Ω
Resistance to Soldering Heat	IEC 60115-1 4.18	260±3°C for 10±1 Sec., immersed to a point 3±0.5mm from the body	±1.0%+0.05Ω
Accidental Overload Test	IEC 60115-1 4.26	4 times RCWV for 1 Min.	No evidence of Flaming or arcing

Note:.

**RCWV (Rated Continuous Working Voltage):**

The DC or AC (rms) continuous working voltage corresponding to the rated power is determined by the following formula:

$$V=\sqrt{(P \times R)}$$

or max. working voltage whichever is less

Where

V=Continuous rated DC or  
AC (rms) working voltage (V)

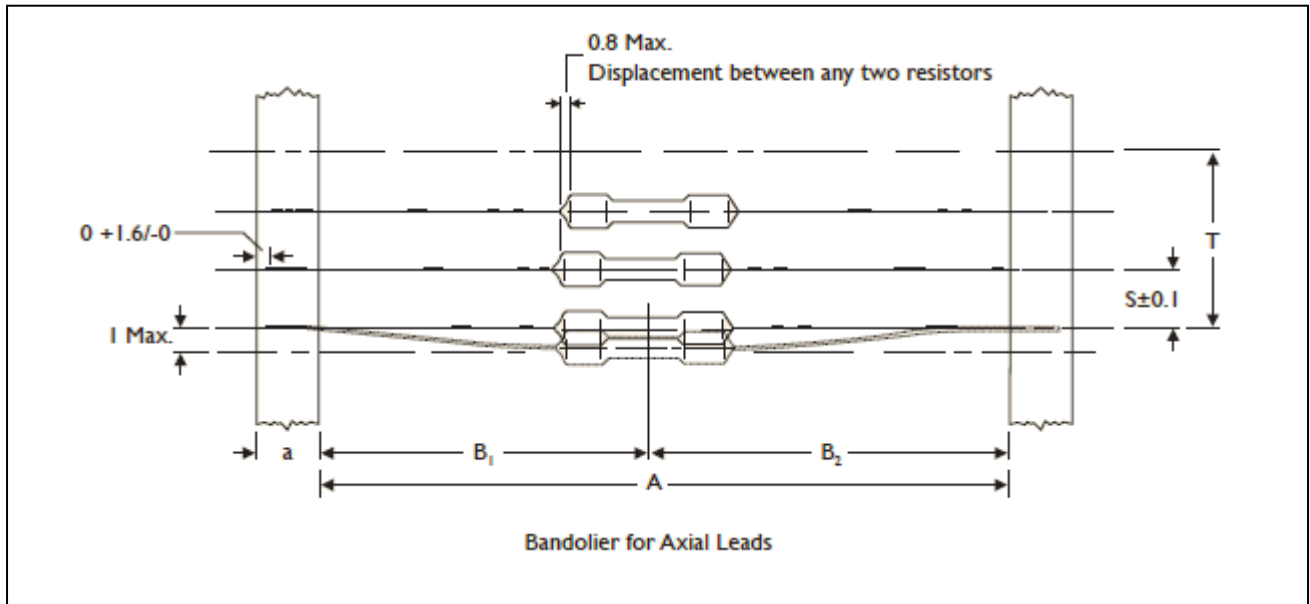
P=Rated power (W)

R=Resistance value (Ω)

**1.2/50us PULSE VOLTAGE**

<b>YAGEO PN</b>	<b>1.2/50us pulse voltage test for a total of 10 pulses, 30 seconds between each pulse</b>
FKN50SJT-52-22R	500V
FKN1SSJT-52-22R	500V
FKN1WSJT-52-1R5	700V
FKN1WSJT-52-6R8	1000V
FKN1WSJT-52-10R	800V
FKN3WSJT-73-22R	1800V

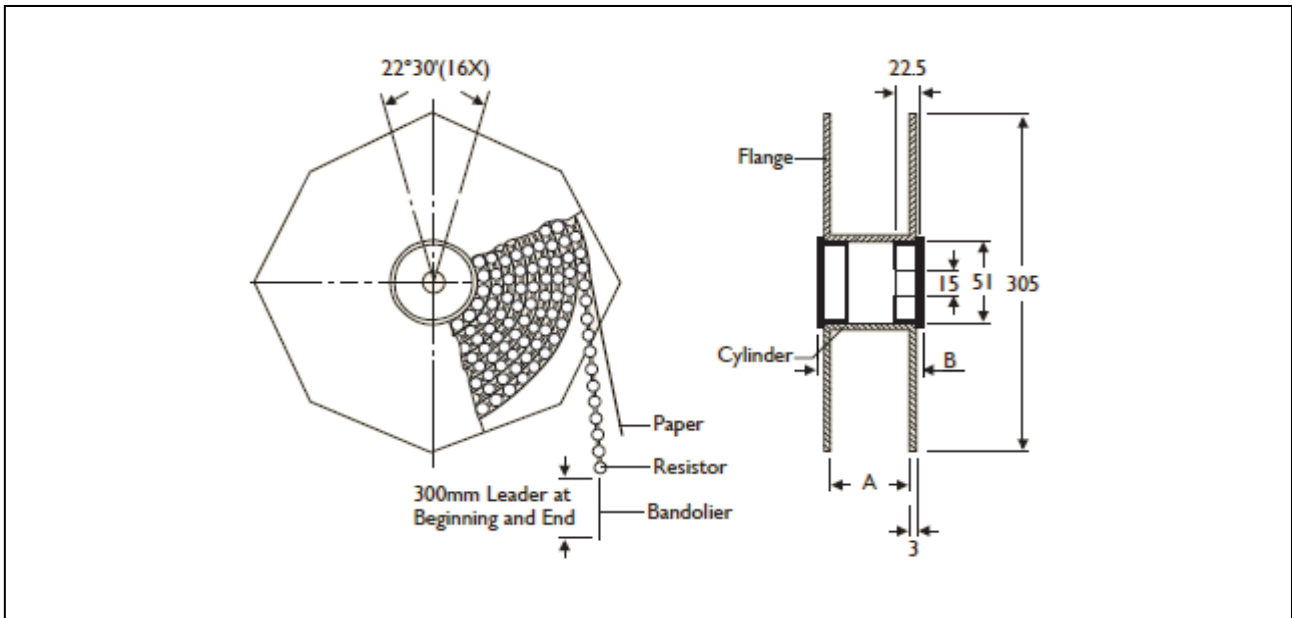
**AXIAL / REEL TAPE SPECIFICATION**



Unit: mm

Normal	Miniature	a	A	B1-B2 (Max.)	S (spacing)	T (max. deviation of spacing)
-	FKN50S	$6 \pm 0.5$	$52.4 \pm 1.5$	1.2	5	1 mm per 10 spacing, 0.5 mm per 5 spacing
-	FKN1SS		$26.0 \pm 1.5$	1.0		
FKN-50	FKN1WS	$6 \pm 0.5$	$52.4 \pm 1.5$	1.2	5	
	FKN2SS		$63.0 \pm 1.5$	1.5		
FKN100	FKN2WS	$6 \pm 0.5$	$73.0 \pm 1.5$	1.5	5	
			$63.0 \pm 1.5$	1.5		
			$52.4 \pm 1.5$	1.2		
FKN200	FKN3WS FKN5WS	$6 \pm 0.5$	$73.0 \pm 1.5$	1.5	10	
FKN300			$52.4 \pm 1.5$	1.2		
FKN400	FKN7WS	$6 \pm 0.5$	$91.0 \pm 1.5$	1.5	10	
FKN500						

**TAPE ON REEL PACKING**

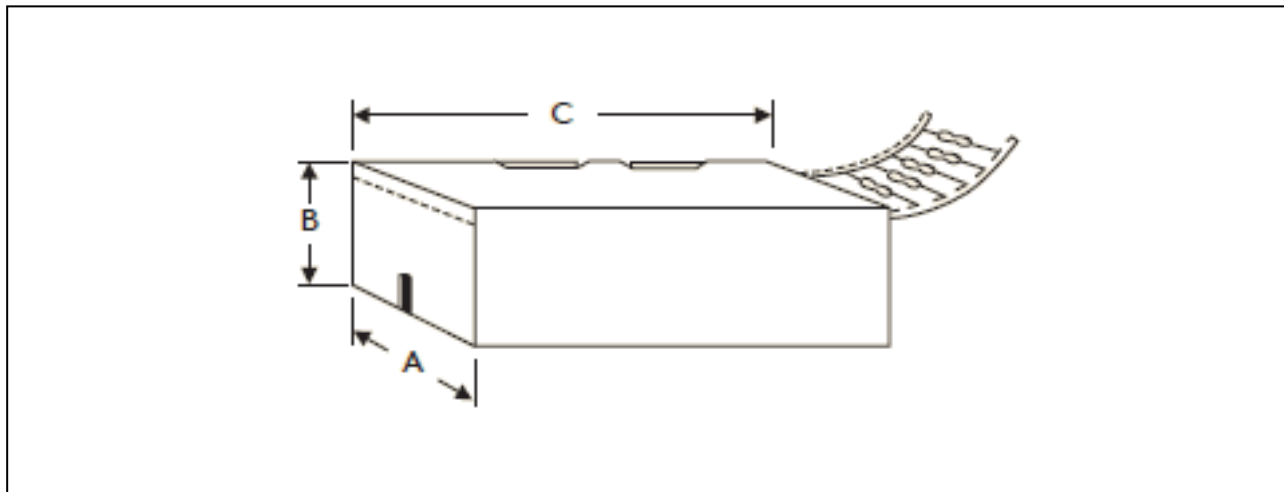


TYPE

Unit: mm/piece

Normal	Miniature	Across Flange(A)	B	Quantity Per Reel
-	FKN50S FKN1SS	66.5	75.5	5,000
FKN-50	FKN1WS FKN2SS	66.5	75.5	2,500
FKN100	FKN2WS	87	96	2,000
FKN200	FKN3WS	87	96	1,000
FKN300 FKN400	FKN5WS	87	96	1,000

**TAPE ON BOX PACKING**



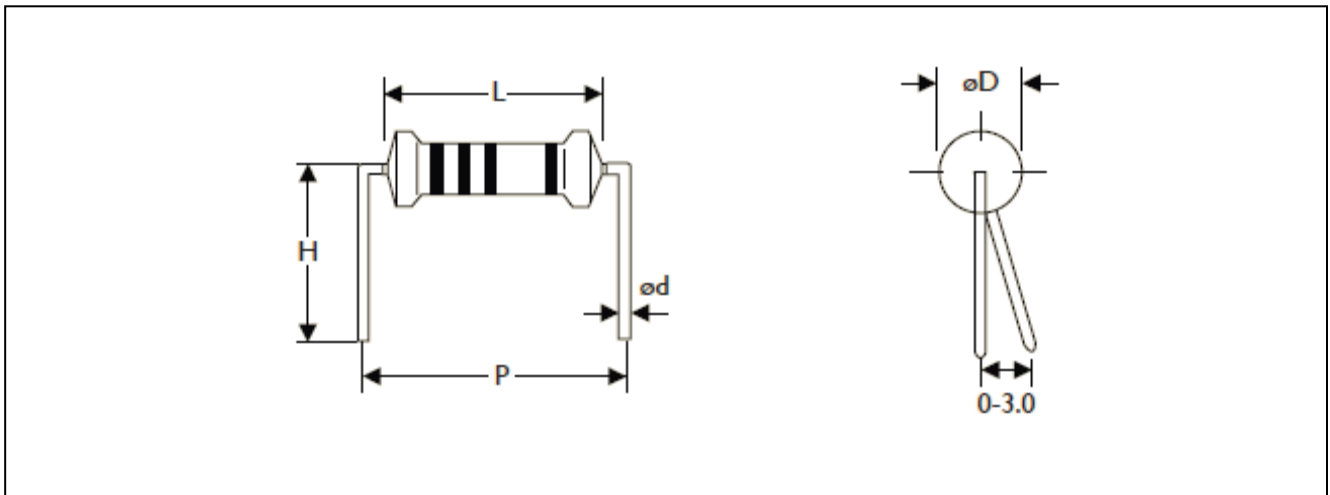
TYPE		DIMENSIONS			Unit: mm/piece
Normal	Miniature	A	B	C	Quantity Per Box
-	FKN50S FKN1SS	48	102	255	5,000
-	FKN50S FKN1SS	81	104	260	5,000
FKN-50	FKN1WS FKN2SS	73	45	255	1,000
FKN100	FKN2WS	81	91	260	1,000
FKN100	FKN2WS	103	78	260	1,000
FKN200	FKN3WS	81	91	260	1,000
FKN200	FKN3WS	103	94	260	1,000
FKN300 FKN400	FKN5WS	81	91	260	500
FKN300 FKN400	FKN5WS	103	78	260	500
FKN500	FKN7WS	116	79	255	250

**BULK PACKING**

Normal	Miniature	Piece/Per Inner Box	Bag/Per Inner Box	Piece Per Bag
-	FKN50S FKN1SS	10,000	10	1,000
FKN-50	FKN1WS FKN2SS	5,000	5	1,000
FKN100	FKN2WS	2,000	4	500
FKN200	FKN3WS	1,000	2	500
FKN300 FKN400	FKN5WS	1,000	2	500
FKN500	FKN7WS	500	10	50

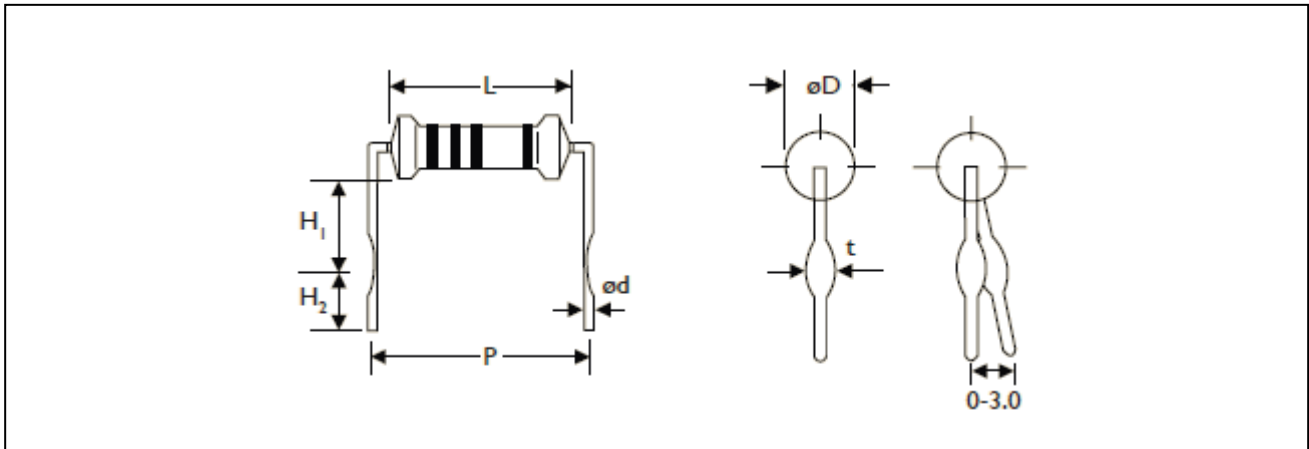
**FORMING**

**M TYPE**



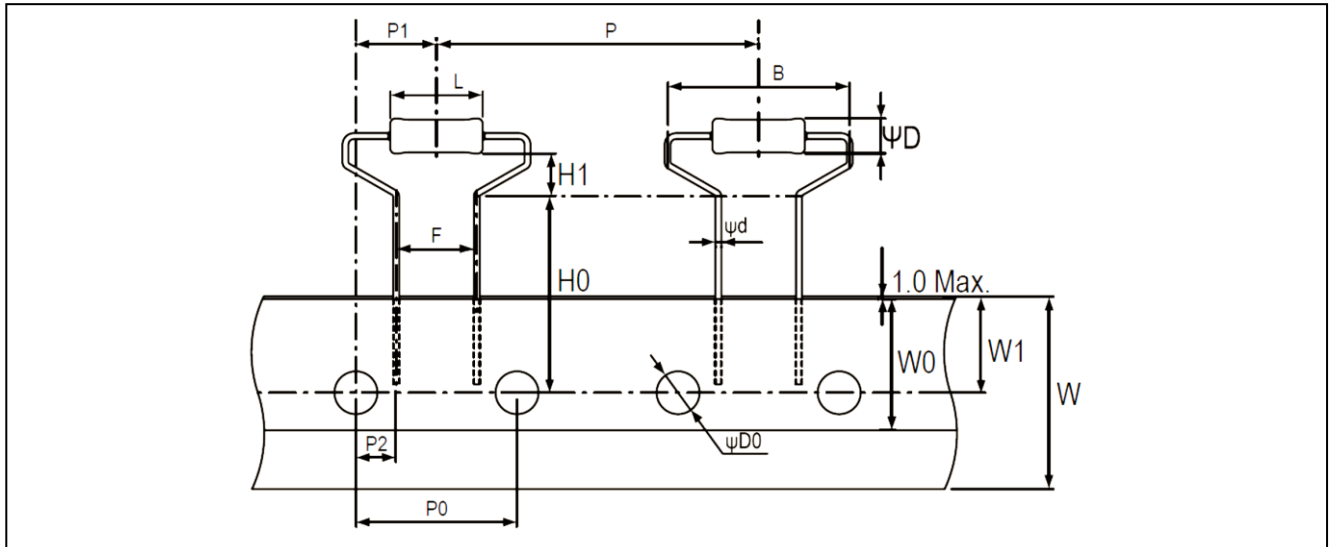
TYPE		DIMENSIONS					Unit: mm
Normal	Miniature	L	ψD	ψd	P	H	
-	FKN50S FKN1SS	6.3 ± 0.5	2.5 ± 0.3	0.55 ± 0.05	10.0 ± 1	10.0 ± 1	
FKN-50	FKN1WS FKN2SS	9.0 ± 0.5	3.5 ± 0.3	0.55 ± 0.05	12.5 ± 1	10.0 ± 1	
FKN100	FKN2WS	11.5 ± 1.0	4.5 ± 0.5	0.8 ± 0.05	15.0 ± 1	12.5 ± 1	
FKN200	FKN3WS	15.5 ± 1.0	5.2 ± 0.5	0.8 ± 0.05	20.0 ± 1	15.0 ± 1	
FKN300 FKN400	FKN5WS	17.5 ± 1.0	6.5 ± 0.5	0.8 ± 0.05	25.0 ± 1	15.0 ± 1	

**MB TYPE**



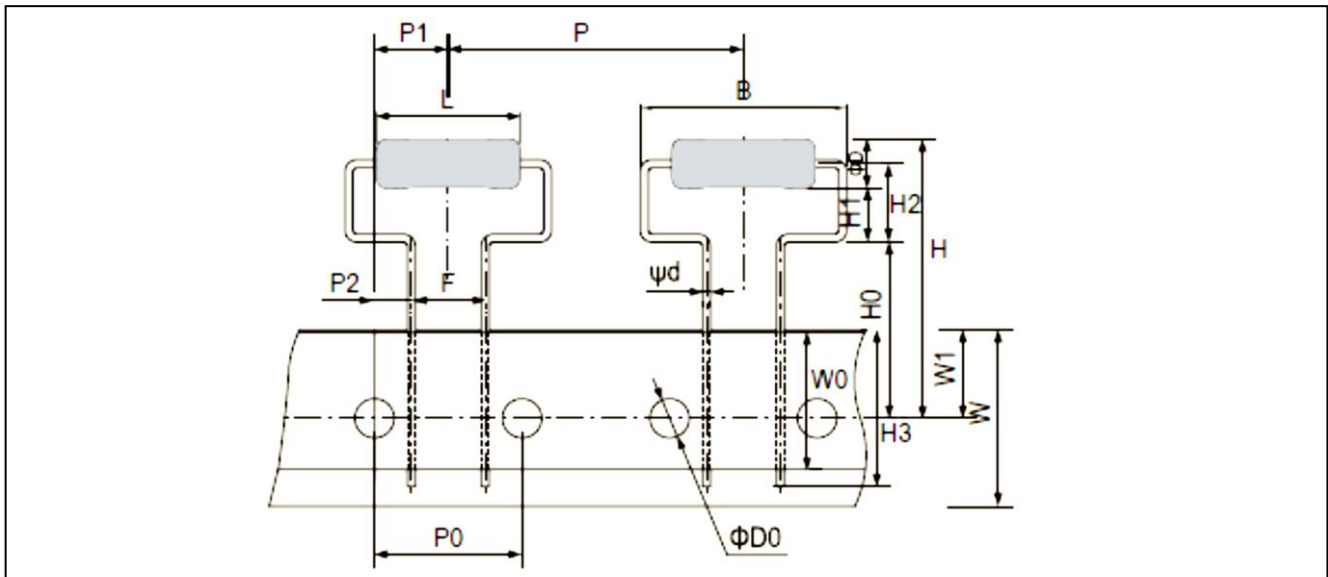
TYPE		DIMENSIONS							Unit: mm
Normal	Miniature	L	ψD	ψd	P	H1	H2	t	
-	FKN50S FKN1SS	6.3 ± 0.5	2.5 ± 0.3	0.55 ± 0.05	10.0 ± 1	6.0 ± 1	5.0 ± 1	1.2 ± 0.2	
FKN-50	-	9.0 ± 0.5	3.5 ± 0.3	0.55 ± 0.05	12.5 ± 1	6.0 ± 1	5.0 ± 1	1.2 ± 0.2	
-	FKN1WS FKN2SS	9.0 ± 0.5	3.5 ± 0.3	0.8 ± 0.05	12.5 ± 1	6.0 ± 1	5.0 ± 1	1.4 ± 0.2	
FKN100	FKN2WS	11.5 ± 1.0	4.5 ± 0.5	0.8 ± 0.05	15.0 ± 1	6.0 ± 1	5.0 ± 1	1.4 ± 0.2	
FKN200	FKN3WS	15.5 ± 1.0	5.2 ± 0.5	0.8 ± 0.05	20.0 ± 1	10.0 ± 1	5.0 ± 1	1.4 ± 0.2	
FKN300 FKN400	FKN5WS	17.5 ± 1.0	6.5 ± 0.5	0.8 ± 0.05	25.0 ± 1	10.0 ± 1	5.0 ± 1	1.4 ± 0.2	

**MHA TYPE**



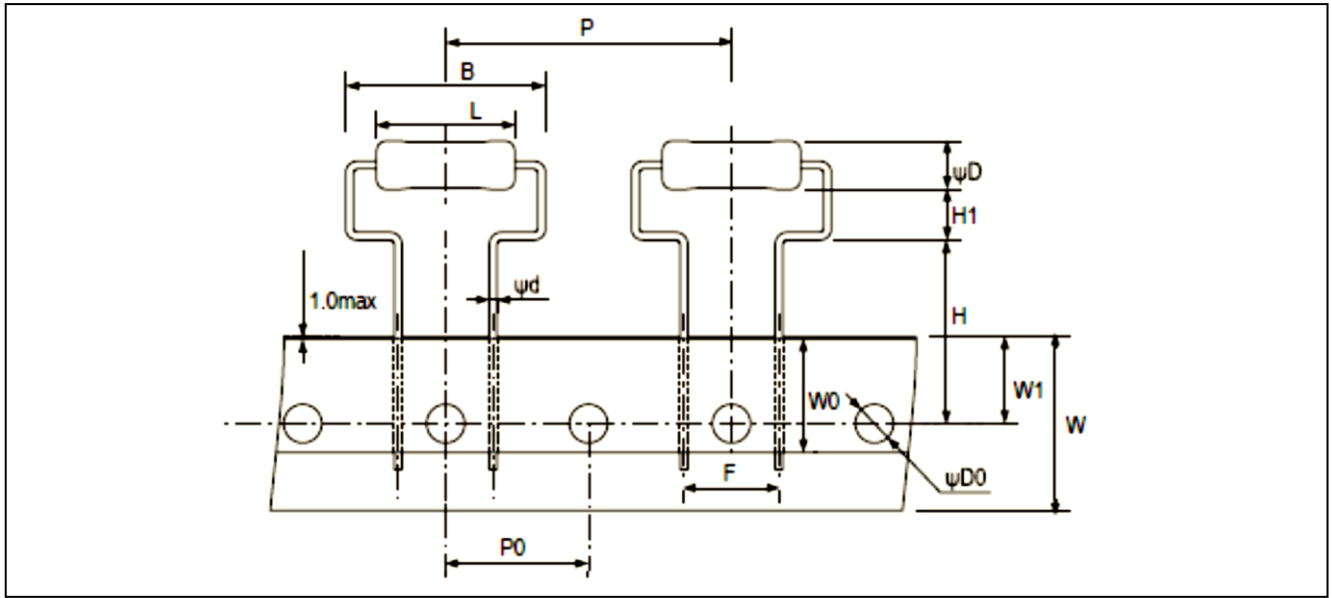
TYPE		DIMENSIONS								Unit: mm
<b>Normal</b>	<b>Miniature</b>	<b>L</b>	<b>ψD</b>	<b>ψd</b>	<b>B</b>	<b>H0</b>	<b>H1</b>	<b>P</b>	<b>P0</b>	
		9.0±0.5	3.5±0.3	0.55±0.05	17.5Max	19.0±1.0	4.0±1.0	30.0±1.0	15.0±0.3	
FKN-50	FKN 1WS FKN 2SS	<b>P1</b>	<b>P2</b>	<b>F</b>	<b>W</b>	<b>W0</b>	<b>W1</b>	<b>ψD0</b>		
		7.5±1.0	3.75±0.5	7.5±0.5	18.0±0.5	5.0Min	9.0±0.5	4.0±0.2		

**MHB TYPE**



TYPE		DIMENSIONS									Unit: mm
<b>Normal</b>	<b>Miniature</b>	<b>L</b>	<b>ψD</b>	<b>ψd</b>	<b>B</b>	<b>H</b>	<b>H0</b>	<b>H1</b>	<b>H2</b>	<b>H3</b>	
		15.5±1.0	5.2±0.5	0.8±0.05	21.0Max.	30Max.	18.0±1.0	5.5(Ref.)	8.0±1.5	16Max.	
FKN200	FKN3WS	<b>P</b>	<b>P0</b>	<b>P1</b>	<b>P2</b>	<b>F</b>	<b>W</b>	<b>W0</b>	<b>W1</b>	<b>ψD0</b>	
		30.0±1.0	15.0±0.3	7.5±1.0	3.75±0.8	7.5±0.5	18.0±0.5	5.0Min.	9.0±0.5	4.0±0.3	

**MHC TYPE**



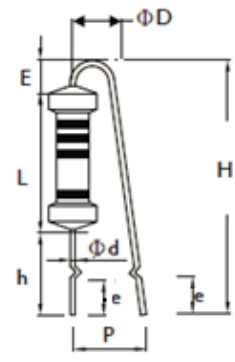
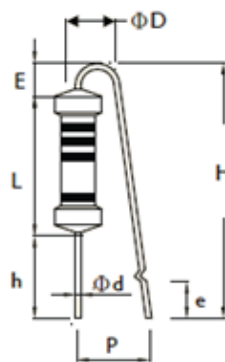
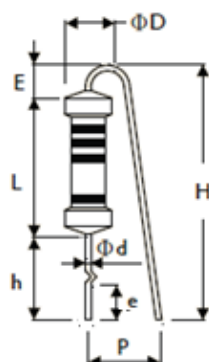
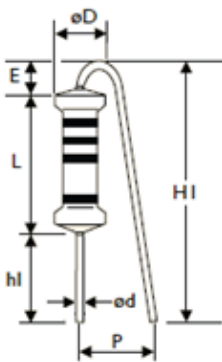
TYPE		DIMENSIONS								Unit: mm
<b>Normal</b>	<b>Miniature</b>	<b>L</b>	<b>ψD</b>	<b>ψd</b>	<b>B</b>	<b>H</b>	<b>HI</b>	<b>P</b>	<b>P0</b>	
		15.5±1.0	5.2±0.5	0.8±0.05	21.0Max.	19.0±1.0	5.25±1.0	30.0±1.0	15.0±0.3	
FKN200	FKN3WS	<b>F</b>	<b>W</b>	<b>W0</b>	<b>W1</b>	<b>ψD0</b>				
		10.0±0.5	18.0±0.5	5.0Min.	9.0±0.5	4.0±0.2				

**F TYPE**

**FK TYPE**

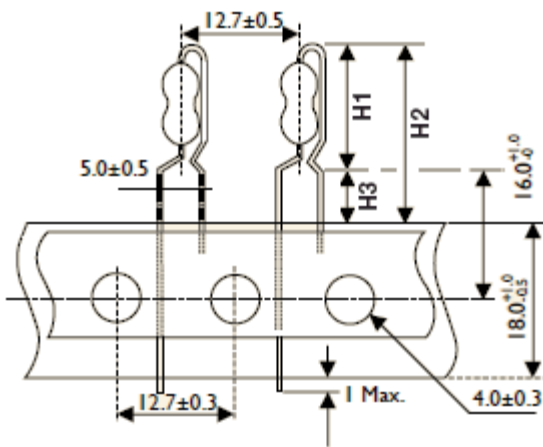
**FFK TYPE**

**FKK TYPE**

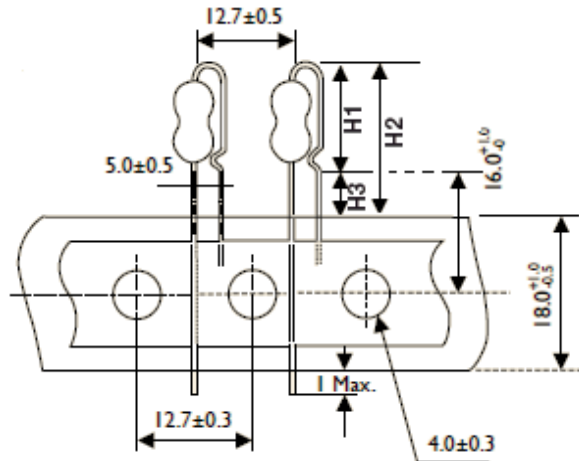


TYPE		DIMENSIONS										Unit: mm
<b>Normal</b>	<b>Miniature</b>	<b>L</b>	<b>ψD</b>	<b>ψd</b>	<b>P</b>	<b>h</b>	<b>H Max.</b>	<b>h1</b>	<b>HI Max.</b>	<b>E Max.</b>	<b>e</b>	
FKN-50	FKN1WS FKN2SS	9.0±0.5	3.5±0.3	0.55±0.05	6±1	8±1	22	5±1	18.5	3.5	3.5±1	
FKN100	FKN2WS	11.5±1	4.5±0.5	0.8±0.05	6±1	8±1	24	5±1	20	3.5	3.5±1	
FKN200	FKN3WS	15.5±1	5.2±0.5	0.8±0.05	8±1	8±1	28	5±1	25	3.5	3.5±1	

**PN TYPE (Taping Pack)**



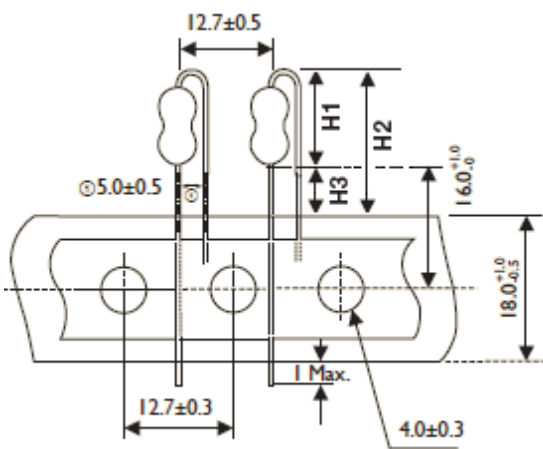
**AV TYPE (Taping Pack)**



TYPE		DIMENSIONS			Unit: mm
Normal	Miniature	H1 Max.	H2 Max.	H3 Max.	
-	FKN50S FKN1SS	13	21.5	8.5	
FKN-50	FKN1WS FKN2SS	17	25.5	8.5	
FKN100	FKN2WS	19	27.5	8.5	

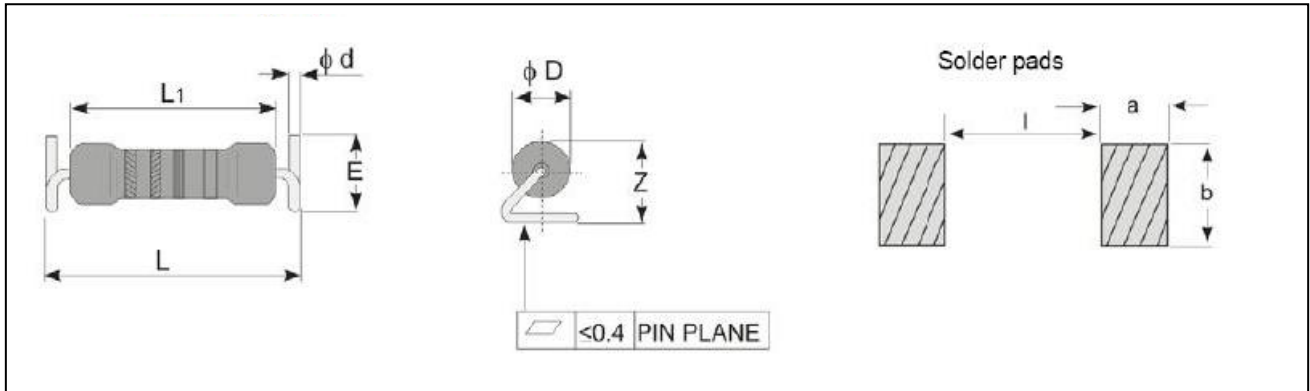
TYPE		DIMENSIONS			Unit: mm
Normal	Miniature	H1 Max.	H2 Max.	H3 Max.	
-	FKN50S FKN1SS	11.5	20	8.5	
FKN-50	FKN1WS FKN2SS	14.5	23	8.5	
FKN100	FKN2WS	17.5	26	8.5	

**FT TYPE (Taping Pack)**



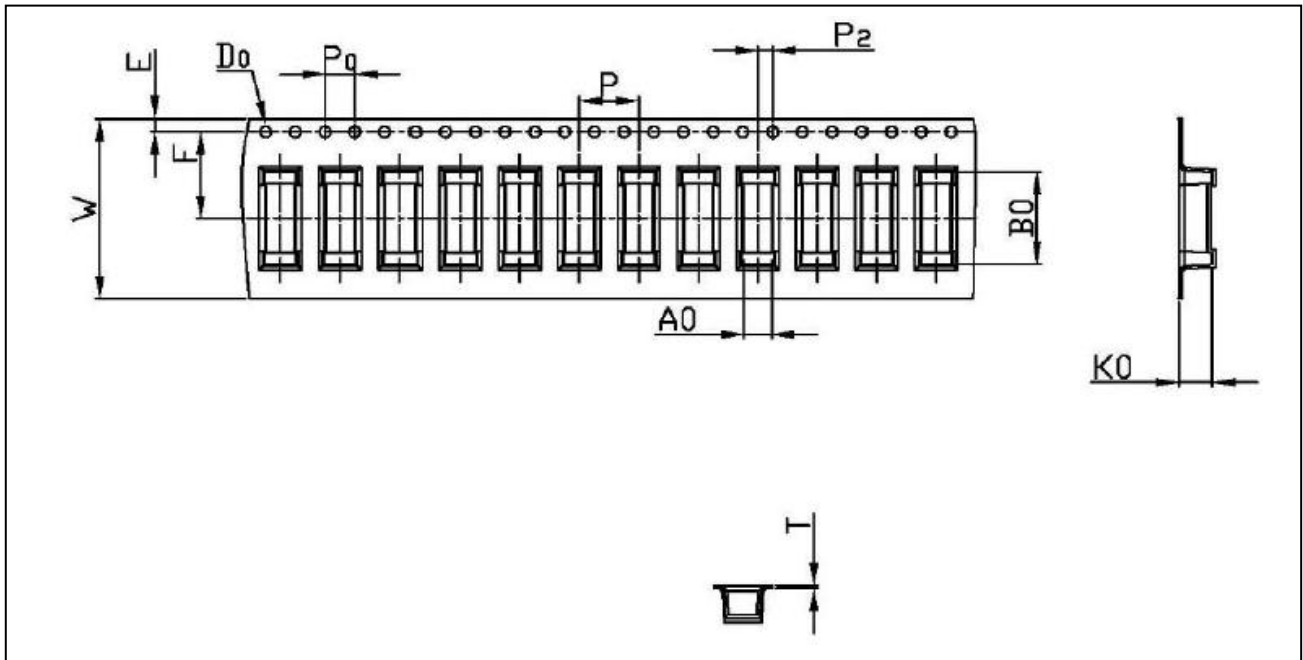
TYPE		DIMENSIONS			Unit: mm
Normal	Miniature	H1 Max.	H2 Max.	H3 Max.	
-	FKN50S FKN1SS	10	18.5	8.5	
FKN-50	FKN1WS FKN2SS	13	21.5	8.5	
FKN100	FKN2WS	16	24.5	8.5	

**ZFH TYPE**



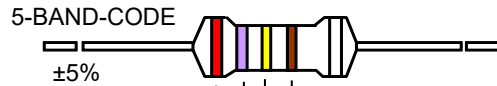
TYPE		DIMENSIONS								Unit:mm	
Normal	Miniature	L	L1	$\psi D$	$\psi d$	E	Z Max.	l(ref.)	a(ref.)	b(ref.)	
-	FKN50S FKN1SS	8.0±0.5	6.3±0.5	2.5±0.3	0.55±0.05	3.2±0.3	3.6	6	3	4	
FKN-50	FKN1WS FKN2SS	11±0.5	9.0±0.5	3.5±0.3	0.55±0.05	4.2±0.3	4.3	9	3	5	

**Packaging for ZFH TYPE**

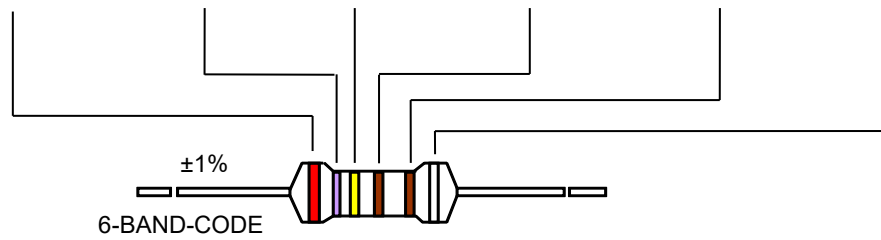


TYPE		DIMENSIONS										Unit:mm	
Normal	Miniature	W	A0	B0	K0	P	F	E	D0	P0	P2	T	
-	FKN50S FKN1SS	16.0±0.3	2.9±0.1	8.7±0.1	3.75±0.1	8.0±0.1	7.5±0.1	1.75±0.1	1.5±0.1	4±0.1	2±0.1	0.35±0.1	
FKN-50	FKN1WS FKN2SS	24.0±0.3	3.8±0.1	12.3±0.1	4.5±0.1	8.0±0.1	11.5±0.1	1.75±0.1	1.5±0.1	4±0.1	2±0.1	0.40±0.1	

**MARKING**



COLOR	1st BAND	2nd BAND	3rd BAND	MULTIPLIER	TOLERANCE
BLACK	0	0	0	1Ω	
BROWN	1	1	1	10Ω	± 1 % ( F )
RED	2	2	2	100Ω	
ORANGE	3	3	3	1KΩ	
YELLOW	4	4	4	10KΩ	
GREEN	5	5	5	100KΩ	
BLUE	6	6	6	1MΩ	
VIOLET	7	7	7	10MΩ	
GREY	8	8	8		
WHITE	9	9	9		<b>FKN Series</b>
GOLD				0.1Ω	± 5 % ( J )
SILVER				0.01Ω	



**REVISION HISTORY**

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 6	Dec.20, 2024	-	- Revised series name in bulk packing
Version 5	Apr.2, 2024	-	- Added forming code description for part number
Version 4	Mar.27, 2024	-	- Remove M type of FKN500&FKN7WS
Version 3	Nov.14, 2023	-	- Remove MB type of FKN500&FKN7WS
Version 2	Aug.31, 2023	-	- Update legal disclaimer and footer version numbers
Version 1	Nov.01, 2022	-	- Revised the resistance value example
Version 0	Aug.16, 2021	-	- First issue of this specification

*“ Yageo reserves all the rights for revising the content of this datasheet without further notification, as long as the products itse lf are unchanged. Any product change will be announced by PCN.”*

## LEGAL DISCLAIMER

YAGEO, its distributors and agents (collectively, "YAGEO"), hereby disclaims any and all liabilities for any errors, inaccuracies or incompleteness contained in any product related information, including but not limited to product specifications, datasheets, pictures and/or graphics. YAGEO may make changes, modifications and/or improvements to product related information at any time and without notice.

YAGEO makes no representation, warranty, and/or guarantee about the fitness of its products for any particular purpose or the continuing production of any of its products. To the maximum extent permitted by law, YAGEO disclaims (i) any and all liability arising out of the application or use of any YAGEO product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for a particular purpose, non-infringement and merchantability.

YAGEO products are designed for general purpose applications under normal operation and usage conditions. Please contact YAGEO for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property: Aerospace equipment (artificial satellite, rocket, etc.), Atomic energy-related equipment, Aviation equipment, Disaster prevention equipment, crime prevention equipment, Electric heating apparatus, burning equipment, Highly public information network equipment, data-processing equipment, Medical devices, Military equipment, Power generation control equipment, Safety equipment, Traffic signal equipment, Transportation equipment and Undersea equipment, or for any other application or use in which the failure of YAGEO products could result in personal injury or death, or serious property damage. Particularly **YAGEO Corporation and its affiliates do not recommend the use of commercial or automotive grade products for high reliability applications or manned space flight.**

Information provided here is intended to indicate product specifications only. YAGEO reserves all the rights for revising this content without further notification, as long as products are unchanged. Any product change will be announced by PCN.