

DATA SHEET

MOLDED RESISTORS

High Power, TO-220

NPM Series

$\pm 0.5\%$, $\pm 1\%$, $\pm 5\%$

30W to 100W

RoHS compliant & Halogen Free

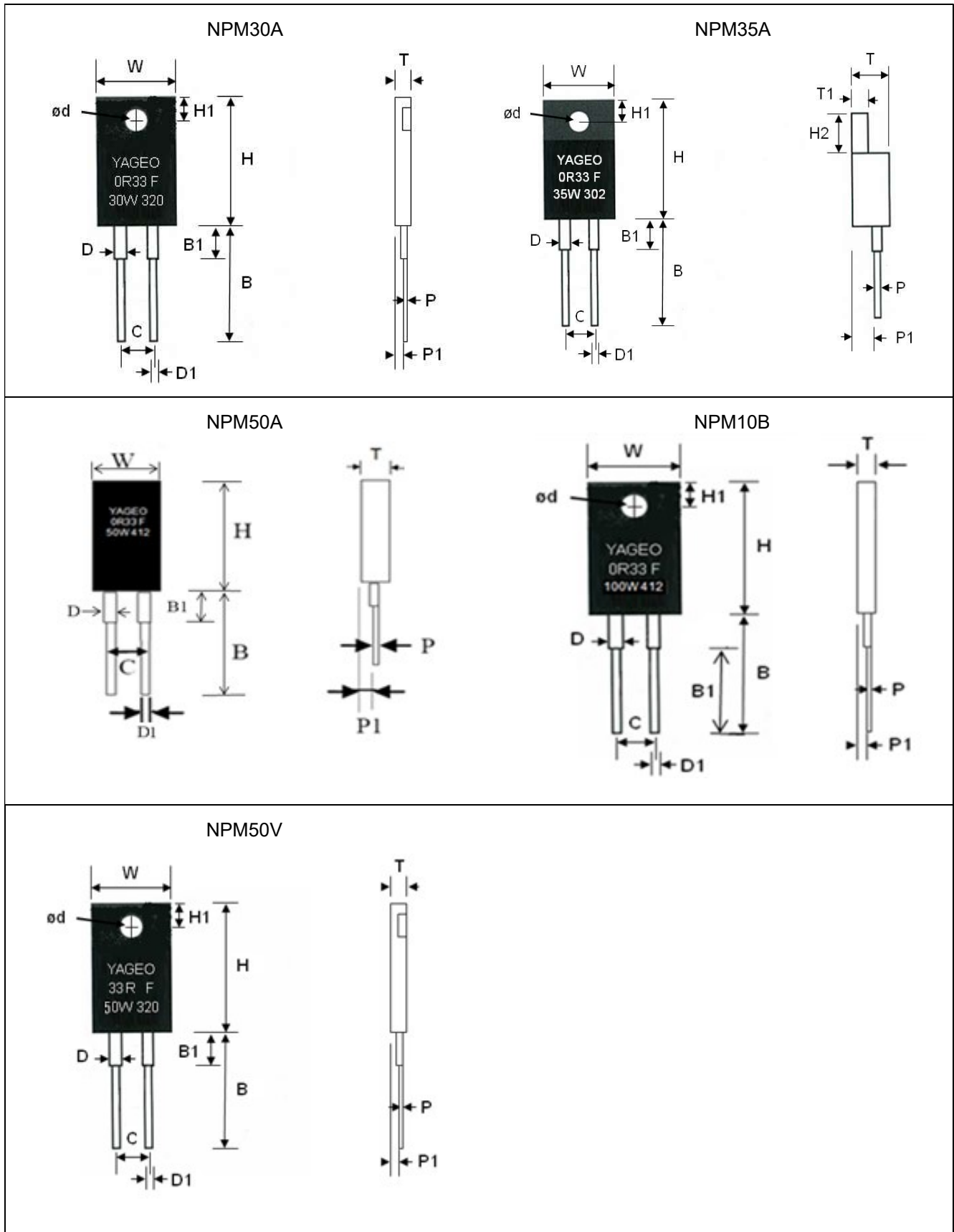


YAGEO

Product specification – December 8, 2023 V.3



DIMENSIONS



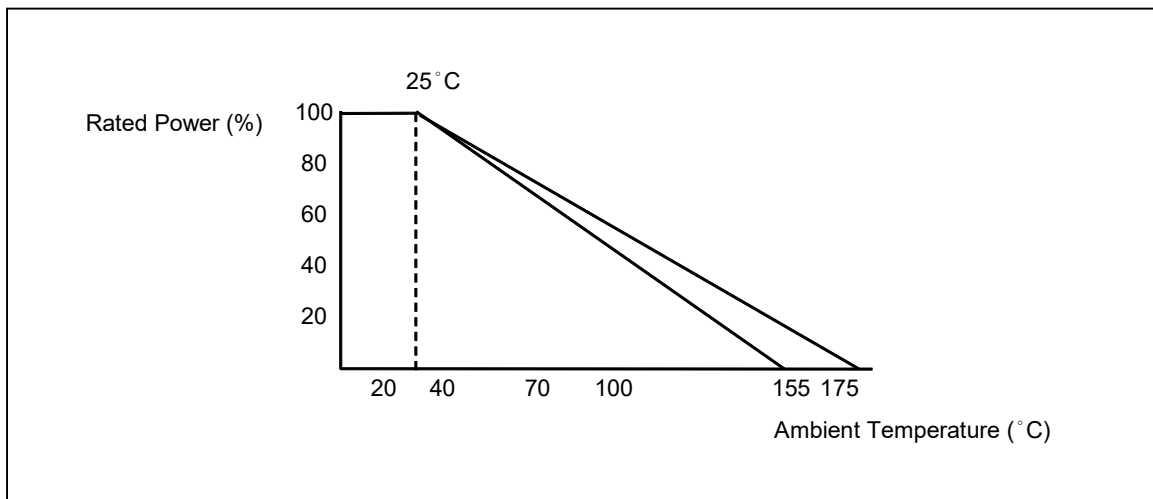
TYPE	DIMENSIONS												Unit: mm
Normal	W±0.5	H±0.5	H1±0.5	B±1.5	B1±1.0	D±0.3	D1±0.2	ψd±0.3	C±0.3	T±0.5	P±0.15	P1±0.3	
NPM30A	10.41	16.26	3.18	12.7	3.3	1.27	0.76	3.18	5.08	3.18	0.5	1.78	
NPM50A	10.41	16.26	-	12.7	3.3	1.27	0.76	-	5.08	3.18	0.5	1.78	

TYPE	DIMENSIONS												Unit: mm
Normal	W±0.5	H±0.5	H1±0.5	B±0.5	B1±0.5	D±0.3	D1±0.2	ψd±0.3	C±0.3	T±0.5	P±0.15	P1±0.3	
NPM10B	15.49	20.44	5.07	13.21	12.03	3.63	1.42	3.63	9.9	4.69	0.55	2.15	

TYPE	DIMENSIONS														Unit: mm
Normal	W±0.5	H±0.5	H1±0.5	B±1.0	B1	D±0.3	D1±0.2	ψd±0.35	C±0.3	T±0.5	T1±0.1	H2±0.5	P±0.2	P1±0.3	
NPM35A	10.16	15.23	2.9	13.5	4 Max	1.26	0.78	3.83	5.08	4.6	1.3	6.25	0.51	2.27	

TYPE	DIMENSIONS												Unit: mm
Normal	W±0.5	H±0.5	H1±0.5	B±1.5	B1±1.0	D±0.3	D1±0.2	ψd±0.3	C±0.3	T±0.5	P±0.15	P1±0.3	
NPM50V	10.41	16.26	3.18	12.7	3.3	1.27	0.86	3.18	5.08	3.18	0.55	1.78	

DERATING CURVE



ELECTRICAL CHARACTERISTICS

CHARACTERISTICS	NPM30A	NPM35A	NPM50A	NPM50V	NPM10B
Power Rating at 25°C on heat sink	30W	35W	50W	50W	100W
Power Rating at 25°C without heat sink	2.25W	2.5W	3W	3W	3.5W
Maximum Working Voltage	350V	350V	350V	420V	350V
Voltage Proof on Insulation	1800Vrms				
Inductance	≤0.1μH				
Operating Temp. Rang	-65°C to +150°C			-55°C to +150°C	-65°C to +175°C
Temperature Coefficient	±50ppm/°C , ±100ppm/°C, ±200ppm/°C, ±300ppm/°C				

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

RESISTANCE RANGE AND TEMPERATURE COEFFICIENT

Series	Resistance range		T.C.R (ppm/°C)
	±1%	±5%	
NPM	-0.1Ω~1Ω	0.1Ω~1Ω	No Specified
	>1Ω~3Ω	>1Ω~3Ω	±300
	>3Ω~10Ω	>3Ω~10Ω	±100, ±200
	>10Ω~10KΩ	>10Ω~10KΩ	±50, ±100, ±200

Series	Resistance range			T.C.R (ppm/°C)
	±0.5%	±1%	±5%	
NPM50V	-	-	0.05Ω~1Ω	No Specified
	-	>1Ω~3Ω	>1Ω~3Ω	±300
	-	>3Ω~10Ω	>3Ω~10Ω	±100, ±200
	>10Ω~10KΩ	>10Ω~10KΩ	>10Ω~10KΩ	±50, ±100, ±200

TEST AND REQUIRMENTS

TEST	TEST METHOD	PROCEDURE	APPRAISE
Short Time Overload	IEC 60115-1 4.13	2 times of the rated power not to exceed 1.5 times maximum continuous. working voltage for 5 seconds.	±0.5%
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 -55°C to +155°C	By Type
Insulation Resistance	IEC 60115-1 4.6	In V-Block for 60 sec.	>10,000MΩ
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. the load of weight is 2.4N	±0.2%
Damp Heat Steady State	IEC 60115-1 4.24	40±2°C,90-95% RH at RCWV(or Umax., whichever less) for 1,000 Hr.(1.5 Hr.on,0.5 Hr. off)	±0.5%
Endurance at 25°C	IEC 60115-1 4.25	25±2°C at RCWV(or Umax., whichever less) for 1,000 Hr.(1.5 Hr.on,0.5 Hr. off)	±1.0%
Temperature Cycling	IEC 60115-1 4.19	➔ -65°C ➔ Room Temp. ➔ +150°C Room Temp.(5 cycles)	±0.5%
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%

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

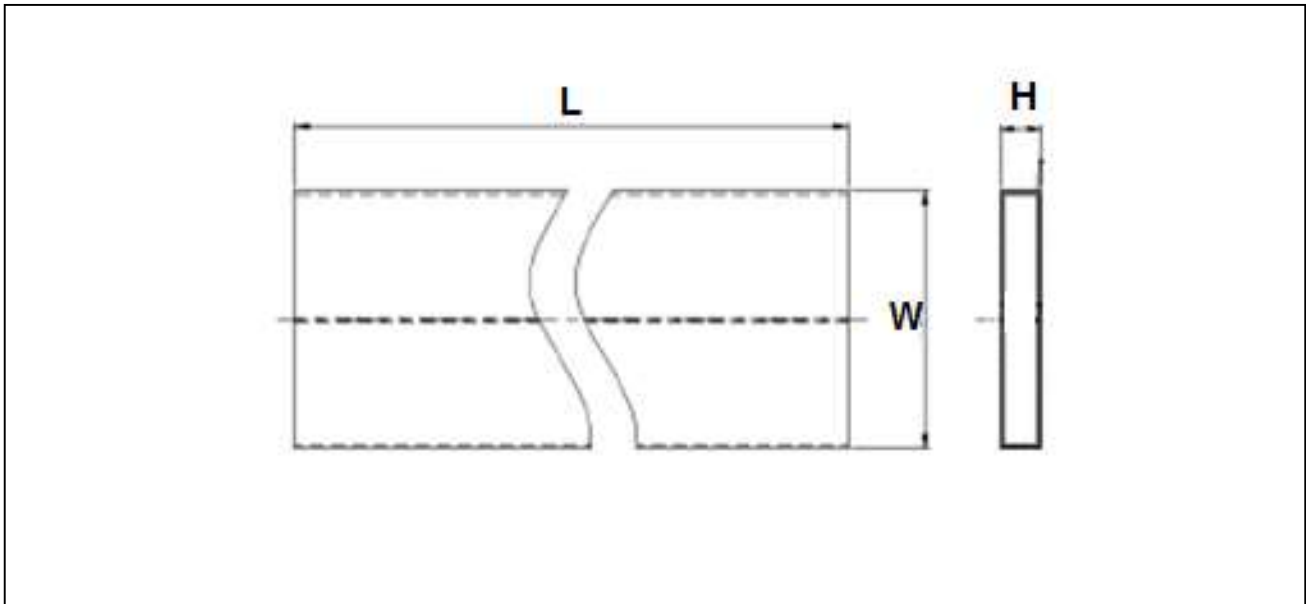
V=Continuous rated DC or

AC (rms) working voltage (V)

P=Rated power (W)

R=Resistance value (Ω)

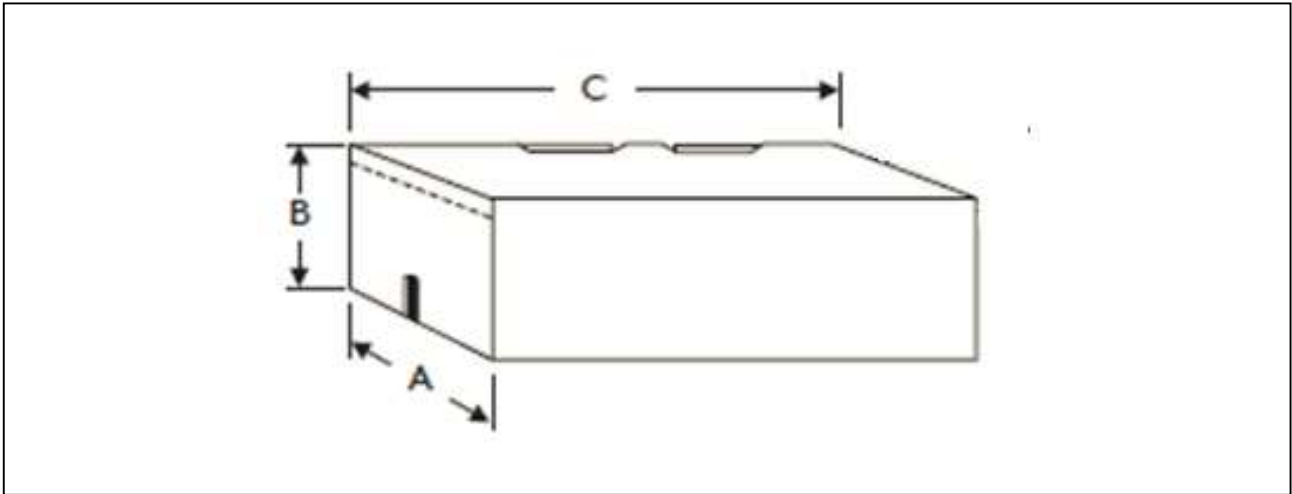
TAPE SPECIFICATION



Unit: mm

Normal	L	W	H	Qty per Tube (Max.)
NPM30A	529	32.6	7.2	50
NPM35A	529	32.6	7.2	50
NPM50A	529	32.6	7.2	50
NPM50V	529	32.6	7.2	50
NPM10B	590	45.5	8.5	35

TAPE ON BOX PACKING



TYPE	DIMENSIONS			Unit: mm/piece
Normal	A	B	C	Quantity Per Box (Max.)
NPM30A	80	90	540	1,000
NPM35A	80	90	540	1,000
NPM50A	80	90	540	1,000
NPM50V	80	90	540	1,000
NPM10B	100	95	600	700

MARKING



Example:

YAGEO	= Brand
302	= Date code
35W	= Power rating
0R33	= Resistance
F	= Tolerance

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 3	Dec.08, 2023	-	- NPM50V type is included.
Version 2	Sep.6, 2023	-	- Updated legal disclaimer and footer versions numbers
Version 1	May 16, 2022	-	- Deleted NPM20A type.
Version 0	Aug.2, 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.