

DATA SHEET

MOLDED RESISTORS

High Power, TO-220

NPM Series

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

30W to 100W

RoHS compliant & Halogen Free



YAGEO

Product specification – May 16, 2022 V.1





ORDERING INFORMATION

Part number of the high power, molded resistor are identified by the series, power rating, tolerance, packing, temperature coefficient and resistance value.

PART NUMBER

<u>NPM</u>	<u>35A</u>	<u>F</u>	<u>T</u>	<u>F</u>	<u>100R</u>
(1)	(2)	(3)	(4)	(5)	(6)

(1) SERIES NAME

NPM Series

(2) POWER RATING

30A = 30W

50A = 50W

35A = 35W

10B= 100W

(3) TOLERANCE

F = $\pm 1\%$

J = $\pm 5\%$

(4) PACKAGING

T = Box Pack

(5) TEMPERATURE COEFFICIENT OF RESISTANCE

E= $\pm 50\text{ppm}/^\circ\text{C}$

- = Based on spec

F= $\pm 100\text{ppm}/^\circ\text{C}$

(6) RESISTANCE VALUE

E24 & E96 & E192 Series

Example:

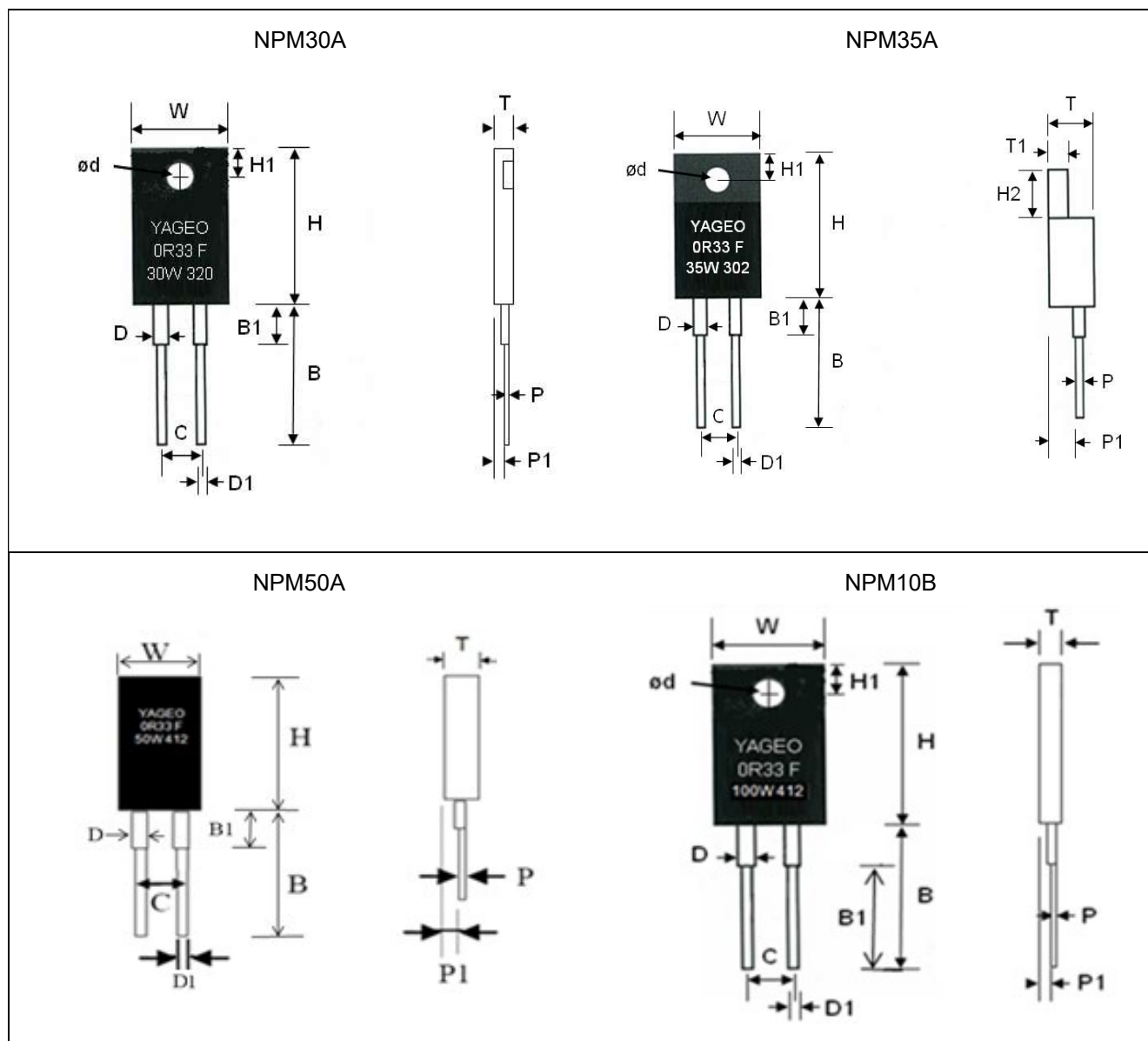
10R = 10 Ω , 100R= 100 Ω , 10K = 10,000 Ω

APPLICATIONS

- RF Power Amplifier, snubber circuit
- Switching mode power supply
- Automation control equipment
- Industrial power equipment
- UPS , voltage regulator
- Low power impulse loading

FEATURES

- Power rating up to 100W @ 25 $^\circ\text{C}$ while heatsink mounted
- TO-220 molded type
- Molded case provides protection and easily to mount.
- Non- inductive design
- RoHS compliant & halogen free

DIMENSIONS

TYPE	DIMENSIONS											Unit: mm
Normal	$W \pm 0.5$	$H \pm 0.5$	$H1 \pm 0.5$	$B \pm 1.5$	$B1 \pm 1.0$	$D \pm 0.3$	$D1 \pm 0.2$	$\varphi d \pm 0.3$	$C \pm 0.3$	$T \pm 0.5$	$P \pm 0.15$	$P1 \pm 0.3$
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

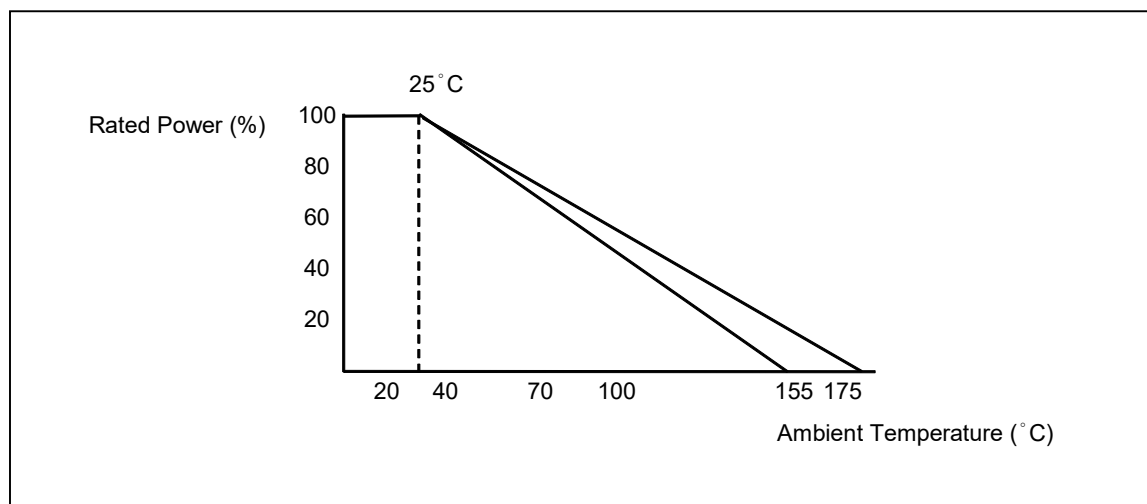
TYPE	DIMENSIONS											Unit: mm
Normal	$W \pm 0.5$	$H \pm 0.5$	$H1 \pm 0.5$	$B \pm 0.5$	$B1 \pm 0.5$	$D \pm 0.3$	$D1 \pm 0.2$	$\varphi d \pm 0.3$	$C \pm 0.3$	$T \pm 0.5$	$P \pm 0.15$	$P1 \pm 0.3$
NPM10B	15.49	20.44	5.07	13.21	12.03	3.63	1.42	3.63	9.9	4.69	0.55	2.15

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

DERATING CURVE**ELECTRICAL CHARACTERISTICS**

CHARACTERISTICS	NPM30A	NPM35A	NPM50A	NPM10B
Power Rating at 25°C on heat sink	30W	35W	50W	100W
Power Rating at 25°C without heat sink	2.25W	2.5W	3W	3.5W
Maximum Working Voltage	350V			
Voltage Proof on Insulation	1800Vrms			
Inductance	≤0.1μH			
Operating Temp. Rang	-65°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

TEST AND REQUIREMENTS

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 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)	±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

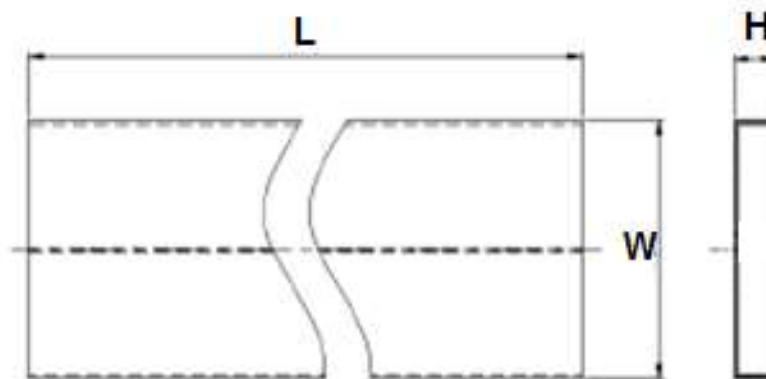
Where

V=Continuous rated DC or

AC (rms) working voltage (V)

P=Rated power (W)

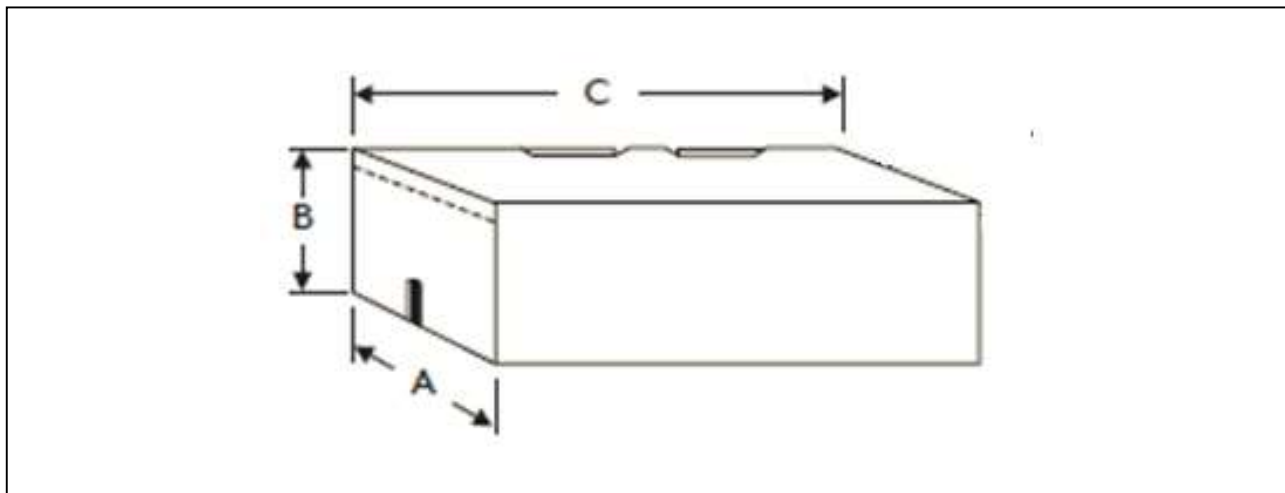
R=Resistance value (Ω)

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
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
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 0	Aug.2, 2021	-	- First issue of this specification
Version 1	May 16, 2022	-	- Deleted NPM20A type.

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