Innovative Service Around the Globe YAGEO

DATA SHEET

MOLDED RESISTORS

High Power, TO-220

NPM Series

±0.5%, ±1%, ±5%

30W to 100W

RoHS compliant & Halogen Free

YAGEO

Product specification – December 8, 2023 V.3

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°C while heatsink mounted
- TO-220 molded type
- Molded case provides protection and easily to mount.
- Non- inductive design
- RoHS compliant & halogen free

ORDERING INFORMATION

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

PART NUMBER

NPM	35A	F	T	F	100R
(1)	(2)	(3)	(4)	(5)	(6)

(1) SERIES NAME

NPM Series

(2) POWER RATING

30A = 30W	50V = 50W
35A = 35W	10B= 100W
50A = 50W	

(3) TOLERANCE

D = ±0.5%	J = ±5%
F = ±1%	

(4) PACKAGING

T = Box Pack

(5) TEMPERATURE COEFFICIENT OF RESISTANCE

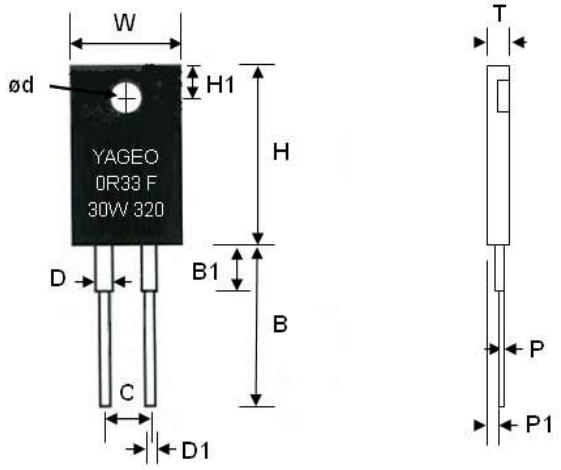
E=±50ppm/°C	- = Based on spec
F=±100ppm/°C	

(6) RESISTANCE VALUE

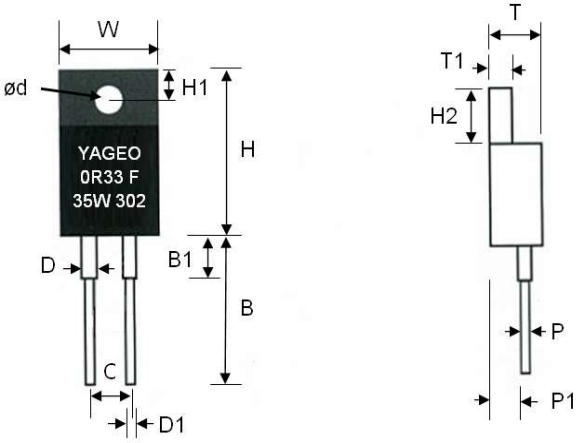
E24 & E96 & E192 Series
Example:
10R = 10Ω, 100R= 100Ω, 10K = 10,000Ω

DIMENSIONS

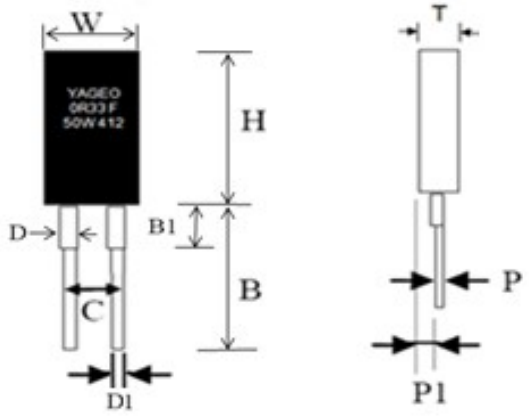
NPM30A



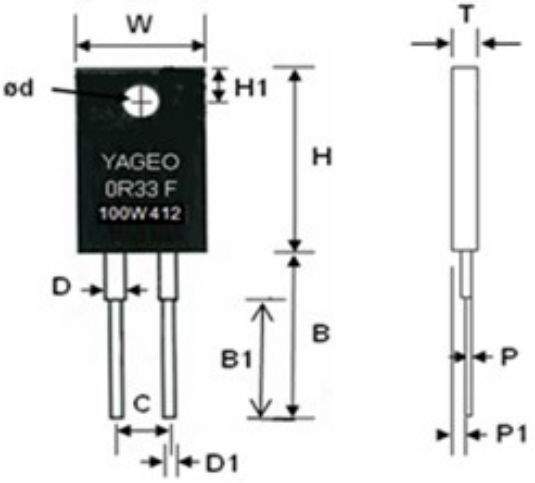
NPM35A



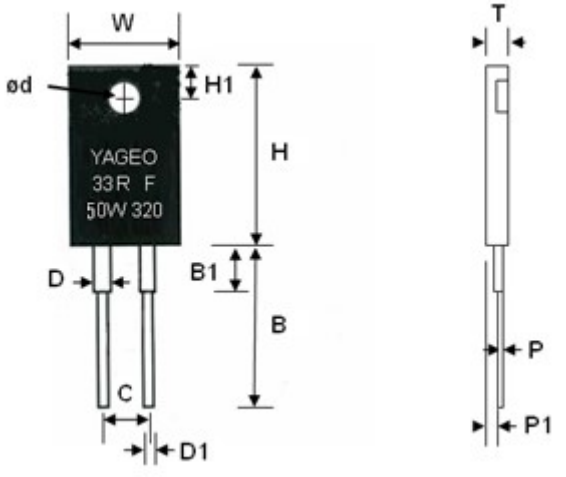
NPM50A



NPM10B



NPM50V



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

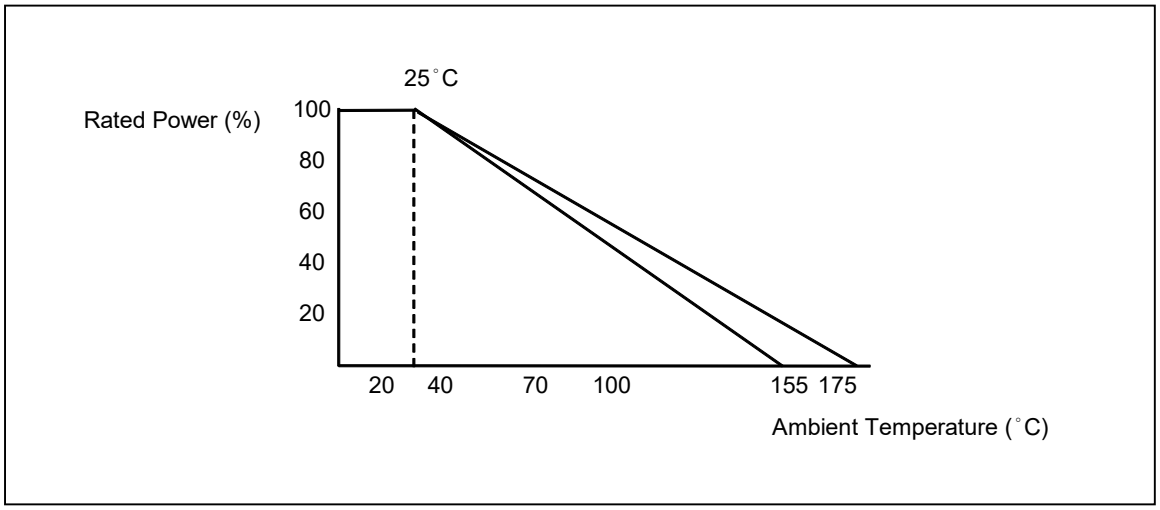
TYPE DIMENSIONS Unit: mm

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

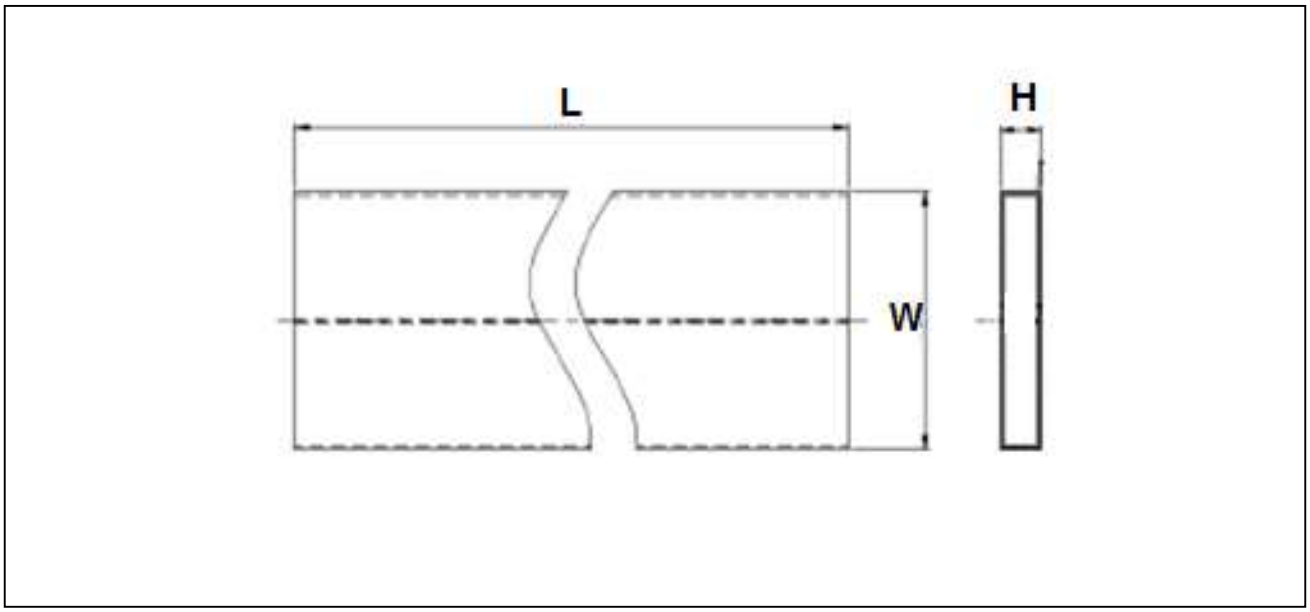
Where

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

P=Rated power (W)

R=Resistance value (Ω)

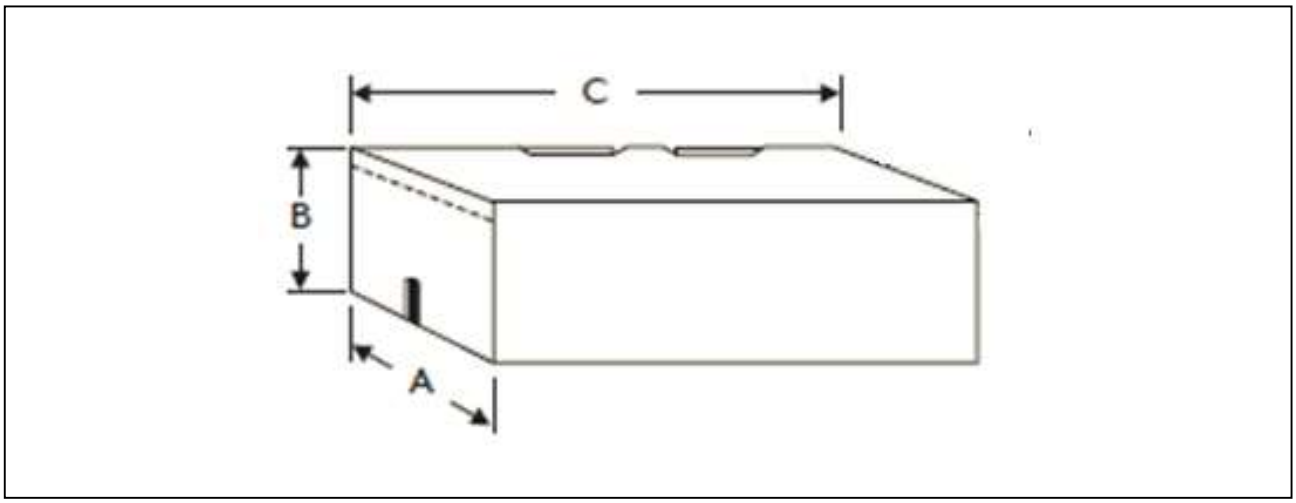
TAPE SPECIFICATION



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

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