Vitreous Wirewound Power Resistors

FEATURES

- High dissipation
- Applicable standard: NFC 93214
- 3 models:
  - VNF traction lug
  - VNB rings
  - VNN collars
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	POWER RATING W	RESISTANCE RANGE Ω	TOLERANCE ± %	$U_{LIM.}$ V
VN 42 x 362	600	8.2 to 470K	5	4500
VN 30 x 250	320	4.7 to 390K	5	3000
VN 30 x 153	200	3.3 to 270K	5	1700
VN 25 x 168	180	2.7 to 270K	5	1900
VN 25 x 138	145	2.7 to 180K	5	1400
VN 25 x 110	120	2.7 to 120K	5	1000
VN 25 x 84	85	2.2 to 82K	5	650
VN 20 x 117	90	2.2 to 120K	5	1100
VN 16 x 94	55	2.2 to 68K	5	900
VN 13 x 70	35	2.2 to 56K	5	650
VN 10 x 52	22	1.0 to 33K	5	450

NFC 93214 CHARACTERISTICS

GLOBAL MODEL	P_n W	RESISTANCE RANGE Ω	
		Ø 63µ (1)	Ø 38µ
VN 30 x 250 (RB 30 x 250)	240	4.7 to 56K	4.7 to 180K
VN 25 x 168 (RB 25 x 168)	140	2.7 to 33K	2.7 to 100K
VN 20 x 117 (RB 20 x 117)	72	2.7 to 15K	2.7 to 47K
VN 13 x 70 (RB 13 x 70)	28	2.2 to 4.7K	2.2 to 15K

Note

(1) Wire diameter set by standard

TECHNICAL SPECIFICATIONS

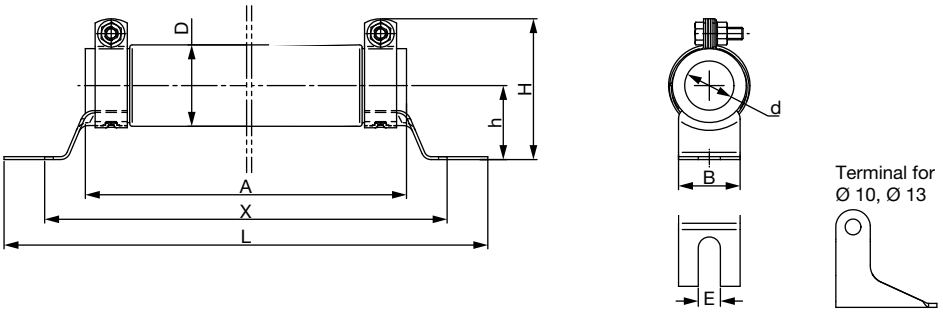
PARAMETER	UNIT	RESISTOR CHARACTERISTICS
Temperature coefficient	ppm/°C	75 ppm/°C (typical)
Operating temperature range	°C	-55 to +450

GENERAL CHARACTERISTICS

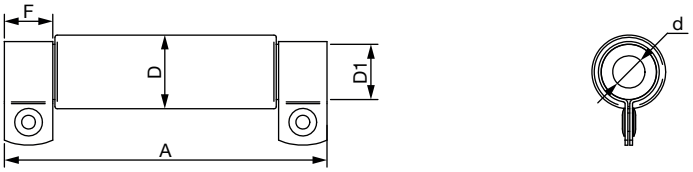
Core	Ceramic
Winding	NiCr alloy
Coating	Vitreous
Ohmic values	E12

DIMENSIONS in millimeters AND WEIGHT in g

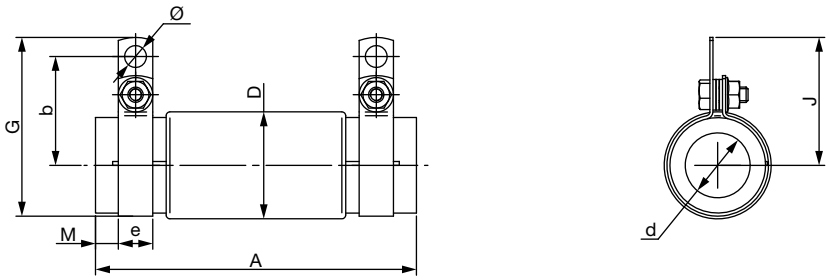
VNF



VNB



VNN



TYPE	42 x 362	30 x 250	30 x 153	25 x 168	25 x 138	25 x 110	25 x 84	20 x 117	16 x 94	13 x 70	10 x 52
A	362 ± 7	250 ± 2	152.5 ± 2	168 ± 2	138 ± 2	110 ± 2	84 ± 2	117 ± 2	94 ± 2	70 ± 2	52 ± 1
B + 0.5/- 0	30	25	25	24	24	24	24	-	-	13	6
b	43 ± 1.5	33 ± 1	33 ± 1	28.5 ± 1	28.5 ± 1	28.5 ± 1	28.5 ± 1	26 ± 0.7	22 ± 0.5	20 ± 0.5	18 ± 0.5
D max.	46	33	33	28	28	28	28	23	19	16	13
D1	-	31 ± 1	31 ± 1	26 ± 0.9	26 ± 0.9	26 ± 0.9	26 ± 0.9	21 ± 0.7	17 ± 0.6	13 ± 0.5	11 ± 0.6
d	26 ± 0.5	17 min.	17 min.	17 ± 0.35	17 ± 0.35	17 ± 0.35	17 ± 0.35	12 ± 0.5	10 ± 0.3	7 ± 0.21	6.2 + 0/- 2
E	9 ± 0.5	9 ± 0.5	9 ± 0.5	6.5 ± 0.2	6.5 ± 0.2	6.5 ± 0.2	6.5 ± 0.2	-	-	4.2 ± 0.2	3 ± 0.2
e ± 1	18	13	13	9	9	9	9	9	8	7	7
F	-	18 + 0.5/- 0	18 + 0.5/- 0	15 + 0.5/- 0	15 + 0.5/- 0	15 + 0.5/- 0	15 + 0.5/- 0	14 + 0.5/- 0	12 + 0.5/- 0	10.5 + 0.5/- 0	8 ± 0.5
g max.	88	63	63	55	55	55	55	48.5	40	37	34
H max.	72	62	62	53	53	53	53	-	-	20.5	18
h ± 2	45	30	30	27	27	27	27	-	-	7	6
J	52 ± 1.5	39 ± 1	39 ± 1	33.5 ± 1	33.5 ± 1	33.5 ± 1	33.5 ± 1	31 ± 0.7	26.5 ± 0.5	24 ± 0.5	22 ± 0.5
L max.	440	320	222.5	230	200	171	145	-	-	93	70
M	10 + 3/- 0	5 ± 1.5	5 ± 1.5	6 ± 1.5	6 ± 1.5	6 ± 1.5	6 ± 1.5	5 ± 1.5	4 ± 1.5	3.5 ± 1.5	2 ± 1.5
Ø	6.2 ± 0.5	5.7 ± 0.5	5.7 ± 0.5	5 ± 0.8	5 ± 0.8	5 ± 0.8	5 ± 0.8	5 ± 0.8	4.2 + 0.3/- 0.1	4.2 + 0.3/- 0.1	4.2 + 0.3/- 0.1
X ± 2	398	285	187.5	198	168	141	115	-	-	81	62
Mass	1300	380	250	250	200	160	75	85	40	25	16

SPECIFIC NON-INDUCTIVE "A" VN MODEL CHARACTERISTICS

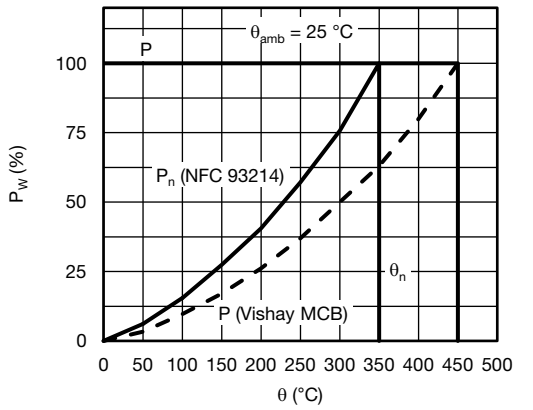
TYPE	42 x 362A	30 x 250A	30 x 153A	28 x 168A	25 x 138A	25 x 110A	25 x 84A	20 x 117A	16 x 94A	13 x 70A	10 x 52A
$R_{min.}$	8.2 Ω	4.7 Ω	3.3 Ω	2.7 Ω	2.7 Ω	2.7 Ω	2.2 Ω	2.2 Ω	2.2 Ω	2.2 Ω	1.0 Ω
$R_{max.}$	1.5 kΩ	820 Ω	560 Ω	680 Ω	470 Ω	330 Ω	180 Ω	390 Ω	270 Ω	220 Ω	150 Ω

PERFORMANCES				
TESTS	**CONDITIONS**	**NFC 93214 REQUIREMENTS**		**TYPICAL VALUES**
Overloads	10 P_n (temp. nom.), 5 s	2 % or 0.05 Ω (1)		0.5 %
Climatic	-55 °C, 5 cycles, +200 °C	3 % or 0.05 Ω (1)	Insulated mounting > 10^2 MΩ	0.2 %
Damp heat	56 days 95 % HR	2 % or 0.05 Ω (1)		0.1 %
Thermal shocks	P_n -55 °C	2 % or 0.05 Ω (1)		0.2 %
Shocks	Severity 50 A	0.5 % or 0.05 Ω (1)		0.25 %
Vibrations	Severity 55/10	0.5 % or 0.05 Ω (1)		0.25 %
Strength of terminals	40 N collar 60 Ncm rings	1 % or 0.05 Ω (1)		0.1 %
Endurance	500 cycles P_n 90 min / 30 min	5 %		1.5 %

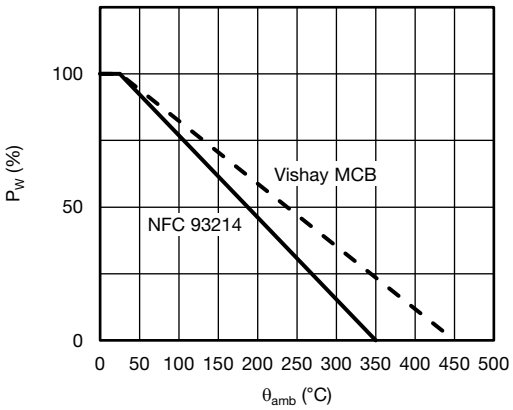
Note

(1) The higher of either value.

DISSIPATION

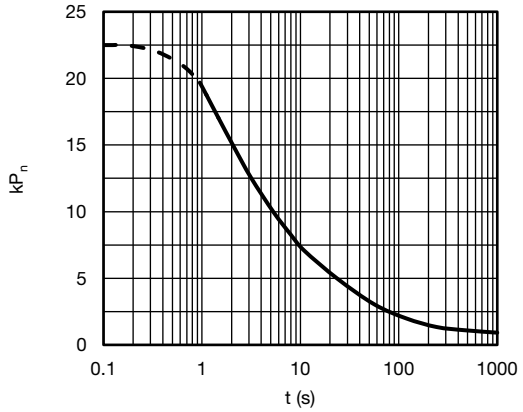


Power P_W as a Function of Surface Temperature
P(W) = f (Temperature Surface)



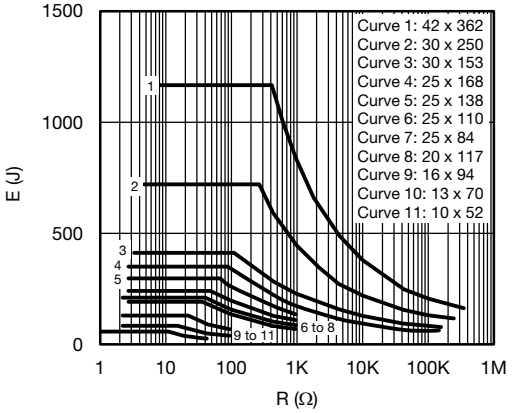
Derating in Power as a Function
of Ambient Temperature

OVERLOADS



Intermittent Overloads
Exceptional Operation
Initial Temperature < 70 °C
k x P_n = f(t)

PERMISSIBLE ENERGY



Repetitive Operation
Energy as a Function of R_n
Pulse Duration < 100 ms
E = f(R)

OPTIONS (Consult us)

- Other values than E12 series
- Intermediate terminals

ORDERING INFORMATION

VN	F	30 x 250	A	1K2	± 5 %	XXX	BO12
MODEL	CONNECTIONS	STYLE	NON-INDUCTIVE WINDING	RESISTANCE VALUE	TOLERANCE	CUSTOM DESIGN	PACKAGING
			Optional		± 5 % ± 10 % Other on request	Optional On request: special value, tolerance, terminals, etc.	

GLOBAL PART NUMBER INFORMATION

V	N	F	3	0	2	5	0	A	1	5	R	0	J	B	8	7	9
1		2	3					4	5				6	7	8		

1	2	3	4	5	6	7	8
PRODUCT TYPE	LEADS	SIZE	OPTION (if applicable)	RESISTANCE VALUE	TOLERANCE	PACKAGING	INDUSTRIALIZATION NUMBER
VN	**B**	**10052 13070 16070 16094 20117 25084 25110 25138 25168 30153 30250**	**A = non-inductive winding**	**The first three digits are significant figures and the last specifies the number of zeros to follow, R designates decimal point. 4702 = 47 kΩ 47R0 = 47 Ω**	**J = 5 % K = 10 %**	**B = box Box quantity depends of model and size**	**3 specific digits (if applicable)**
	F	**10052 13070 25084 25110 25138 25168 30153 30250 42362**					
	N	**10052 13070 16070 16094 20117 25084 25110 25138 25168 30153 42362**					

EXAMPLES

MODEL	DESCRIPTION	PART NUMBER
VNN	VNN 10X52 1K2 5 % BO100	VNN100521201JB
VNF	VNF 30X250 A 15U 5 % 879 BO1	VNF30250A15R0JB879

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