
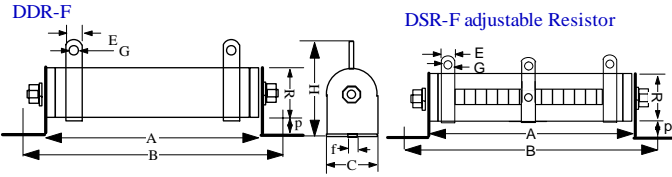
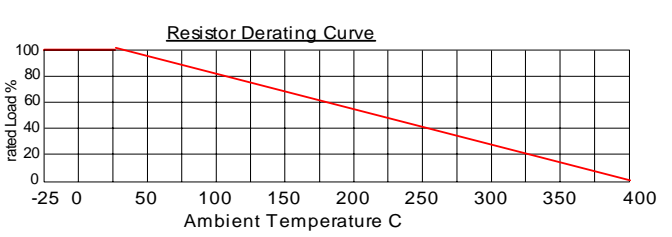


Silicon Coated Wire-Wound Power Resistors with mounting fixture

- These resistors are suitable as loading resistor, braking resistor, capacitor discharge, Resistive Load simulation, Machinery, Machinery and Equipment higher power application.
- mounting fixture is available
- Resistance Adjustable version is available : DSR-F series
- Resistance Box and Load Bank available with power up to 2000kW.
- support Precision Resistance Tolerance requirement







DDR-F / DSR-F Type – Wire Wound Resistors

Dimension in mm :	R	A	B	C	H	p	E	G	f
Tolerance : +/- mm	1	5	5	1	3	3	1	1	1
15W	15	45	66	15	40	13	6	3.5	4.5
20W	15	50	71	15	40	13	6	3.5	4.5
25W	20	50	80	20	50	15	6	3.5	5
30W	20	70	100	20	50	15	6	3.5	5
40W	20	87	115	20	50	15	6	3.5	5
50W	28	90	122	28	68	20	9	4.5	6
80W	28	90	122	28	68	20	9	4.5	6
100W	28	170	202	28	68	20	9	4.5	6
150W	28	215	247	28	68	20	9	4.5	6
200W	28	267	299	28	68	20	9	4.5	6
250W	28	267	299	28	68	20	9	4.5	6
300W	40	267	305	40	90	20	10	4.5	6
400W	40	330	367	40	90	20	10	4.5	6
500W	50	330	370	50	98	20	10	6	8
600W	50	330	370	50	98	20	10	6	8
700W	50	400	440	50	95	20	10	6	8
800W	70	300	331	70	135	30	15	8	8
1000W	70	300	331	70	135	30	15	8	8
1500W	70	415	446	70	135	30	15	8	8
2000W	70	510	541	70	135	30	15	8	8
2500W	70	600	631	70	135	30	15	8	8
3000W	70	600	631	70	135	30	15	8	8
4000W	100	430	468	100	185	35	15	8	8
5000W	100	500	538	100	185	35	15	8	8
6000W	100	600	638	100	185	35	15	8	8
10,000W	150	600	640	152	260	43	30	8	10
12,000W	150	660	700	152	260	43	30	8	10
15,000W	150	660	700	152	260	43	30	8	10
20,000W	150	1000	1040	152	260	43	30	8	10

DNR-F Type – Low Inductance Wire Wound Resistors

Dimension in mm :	R	A	B	C	H	p	E	G	f
Tolerance : +/- mm	1	5	5	1	3	3	1	1	1
15W	15	45	66	15	40	13	6	3.5	4.5
20W	15	50	71	15	40	13	6	3.5	4.5
25W	20	50	80	20	50	15	6	3.5	5
30W	20	70	100	20	50	15	6	3.5	5
40W	20	87	115	20	50	15	6	3.5	5
50W	28	90	122	28	68	20	9	4.5	6
80W	28	90	122	28	68	20	9	4.5	6
100W	28	170	202	28	68	20	9	4.5	6
150W	28	215	247	28	68	20	9	4.5	6
200W	28	267	299	28	68	20	9	4.5	6
250W	28	267	299	28	68	20	9	4.5	6
300W	40	267	305	40	90	20	10	4.5	6
400W	40	330	367	40	90	20	10	4.5	6
500W	50	330	370	50	98	20	10	6	8
600W	50	330	370	50	98	20	10	6	8
700W	50	400	440	50	95	20	10	6	8
800W	70	300	331	70	135	30	15	8	8
1000W	70	300	331	70	135	30	15	8	8
1500W	70	415	446	70	135	30	15	8	8
2000W	70	510	541	70	135	30	15	8	8
2500W	70	600	631	70	135	30	15	8	8
3000W	70	600	631	70	135	30	15	8	8
4000W	100	430	468	100	185	35	15	8	8
5000W	100	500	538	100	185	35	15	8	8
6000W	100	600	638	100	185	35	15	8	8
10,000W	150	600	640	152	260	43	30	8	10
12,000W	150	660	700	152	260	43	30	8	10
15,000W	150	660	700	152	260	43	30	8	10
20,000W	150	1000	1040	152	260	43	30	8	10

Electrical Characteristics :

Testings	Testing Conditions	Testing Results
Resistance Tolerance	JIS-C-5202 5-1 testing voltage<3V 25C	Standard +/-5%
Temperature Coefficient	JIS-C-5202 5-2	+/- 200 - 400ppm/C max.
Rated Load	JIS-C-5202 5-4 40C at rated voltage 1hour	$R \leq \pm(1\% + 0.1\text{ohm})$ surface temperature $\leq 400\text{C}$
Insulation Resistance	JIS-C-5202 5-6 500Vdc	100M ohm min.
Dielectric Withstand voltage	JIS-C-5202 5-7 1000Vdc 1min. between Terminal and body	$R \leq \pm(0.1\% + 0.05\text{ohm})$
Short Time Overload	JIS-C-5202 5-5 5*rated power in 5 seconds	$R \leq \pm(2\%R_o + 0.1\text{ohm})$
Flammability	1 - 6 times rated power 5min.	without combustion
Load Life	JIS-C-5202 7-10 90min.-ON 30min.-OFF 500hours	Free of appearance or structural irregularity, Surface coating crack $R/R \leq \pm(5\% + 0.1\text{ohm})$

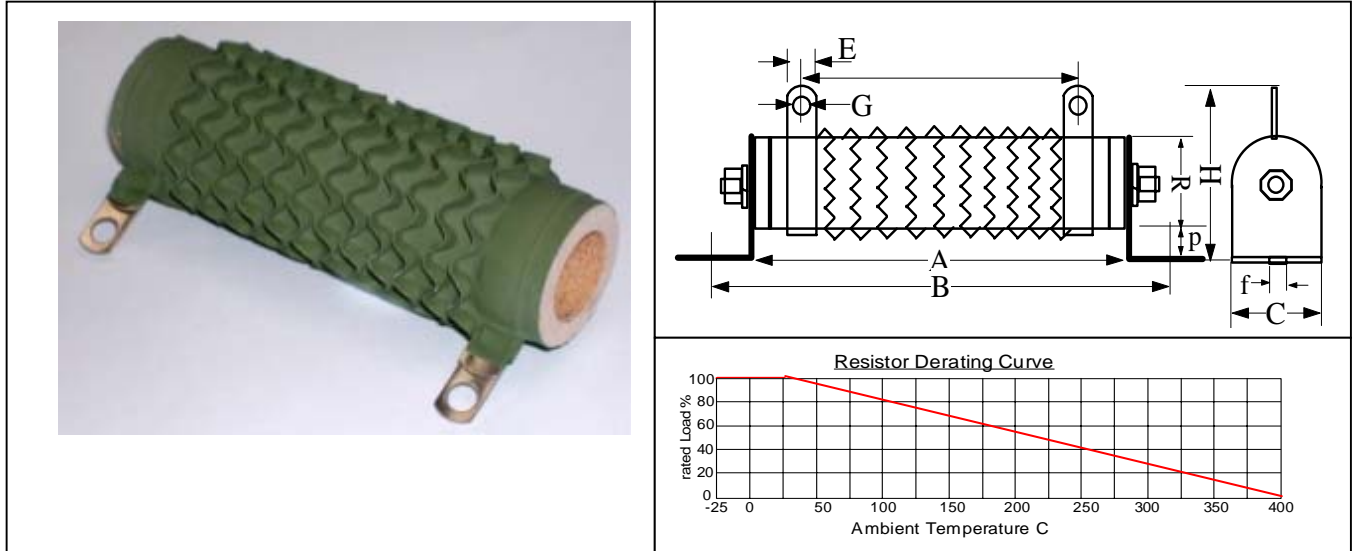
Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Drawing Number

DDR 15 – 20,000W 0.1 ohm = R1 B= +/-0.1% F : mounting fixture
DSR 15 – 20,000W 1 ohm = 1R C= +/-0.5%
DNR 10 ohm = 10R F = +/-1%
100 ohm = 101R G = +/-2%
1k ohm = 102R J = +/-5%
K= +/-10%
M= +/-20%

Silicon Coated Wave Ribbon Wire-Wound Power Resistors

- These resistors are suitable as Resistive Load simulation, Electric power distribution, Machinery, Power / Industrial Machinery, Instrument and Equipment higher power application; Automation control, particularly useful where high energy is to be dissipated in the lower ohmic ranges.
- Higher Current and better heat convection
- Resistance Adjustable version is available – DQS-F series
- Resistance Box and Load Bank available with power up to 2000KW.
- support Precision Resistance Tolerance requirement



DQR-F Type – Wave Ribbon Wire Wound Resistors

Dimension in mm :	R	A	B	C	H	p	E	G	f
Tolerance : +/- mm	1	5	5	1	3	3	1	1	1
30W	20	70	100	20	50	15	6	3.5	5
40W	20	87	115	20	50	15	6	3.5	5
50W	28	90	122	28	68	20	9	4.5	6
80W	28	90	122	28	68	20	9	4.5	6
100W	28	170	202	28	68	20	9	4.5	6
150W	28	215	247	28	68	20	9	4.5	6
200W	28	267	300	28	68	20	9	4.5	6
250W	28	267	300	28	68	20	9	4.5	6
300W	40	267	305	40	90	20	10	4.5	6
400W	40	330	367	40	90	20	10	4.5	6
500W	50	330	370	50	98	20	10	6	8
600W	50	330	370	50	98	20	10	6	8
700W	50	400	440	50	95	20	10	6	8
800W	70	300	331	70	135	30	15	8	8
1000W	70	300	331	70	135	30	15	8	8
1500W	70	415	446	70	135	30	15	8	8
2000W	70	510	541	70	135	30	15	8	8
2500W	70	600	631	70	135	30	15	8	8
3000W	70	600	631	70	135	30	15	8	8
4000W	100	430	468	100	185	35	15	8	8
5000W	100	500	538	100	185	35	15	8	8
6000W	100	600	638	100	185	35	15	8	8
10,000W	150	600	640	152	260	43	30	8	10
12,000W	150	660	700	152	260	43	30	8	10
15,000W	150	660	700	152	260	43	30	8	10
20,000W	150	1000	1040	152	260	43	30	8	10

DQN-F Type – Wave-Shape Low Inductance Wire Wound Resistors

Dimension in mm :	R	A	B	C	H	p	E	G	f
Tolerance : +/- mm	1	5	5	1	3	3	1	1	1
30W	20	70	100	20	50	15	6	3.5	5
40W	20	87	115	20	50	15	6	3.5	5
50W	28	90	122	28	68	20	9	4.5	6
80W	28	90	122	28	68	20	9	4.5	6
100W	28	170	202	28	68	20	9	4.5	6
150W	28	215	247	28	68	20	9	4.5	6
200W	28	267	300	28	68	20	9	4.5	6
250W	28	267	300	28	68	20	9	4.5	6
300W	40	267	305	40	90	20	10	4.5	6
400W	40	330	367	40	90	20	10	4.5	6
500W	50	330	370	50	98	20	10	6	8
600W	50	330	370	50	98	20	10	6	8
700W	50	400	440	50	95	20	10	6	8
800W	70	300	331	70	135	30	15	8	8
1000W	70	300	331	70	135	30	15	8	8
1500W	70	415	446	70	135	30	15	8	8
2000W	70	510	541	70	135	30	15	8	8
2500W	70	600	631	70	135	30	15	8	8
3000W	70	600	631	70	135	30	15	8	8
4000W	100	430	468	100	185	35	15	8	8
5000W	100	500	538	100	185	35	15	8	8
6000W	100	600	638	100	185	35	15	8	8
10,000W	150	600	640	152	260	43	30	8	10
12,000W	150	660	700	152	260	43	30	8	10
15,000W	150	660	700	152	260	43	30	8	10
20,000W	150	1000	1040	152	260	43	30	8	10

Electrical Characteristics :

Testings	Testing Conditions	Testing Results
Resistance Tolerance	JIS-C-5202 5-1 testing voltage<3V 25C	+/-5%
Temperature Coefficient	JIS-C-5202 5-2	+/- 200 - 350ppm/C max.
Rated Load	JIS-C-5202 5-4 40C at rated voltage 1hour	R<=+/- (1%+0.1ohm) surface temperature < 400C
Insulation Resistance	JIS-C-5202 5-6 500Vdc	100M ohm min.
Dielectric Withstand voltage	JIS-C-5202 5-7 1000Vdc 1min.	R<=+/- (0.1%+0.05ohm)
Short Time Overload	JIS-C-5202 5-5 5*rated power in 5 seconds	R <= +/- (2%Ro + 0.1ohm)
Flammability	1 - 6 times rated power 5min.	without combustion

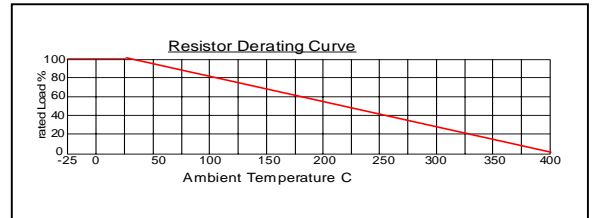
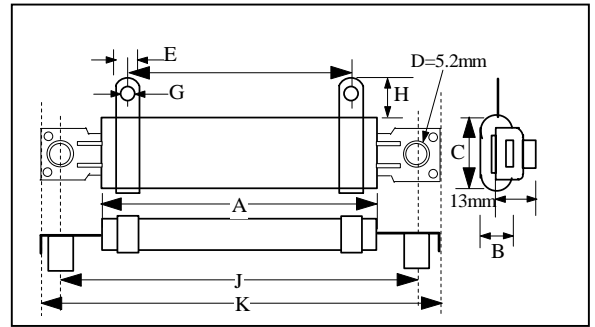
Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Drawing Number

DQR 30 - 20000W 0.1 ohm = R1 F = +/-1% / G = +/-2% F : mounting fixture
DQN 30 - 20000W 1 ohm = 1R H= +/-3%
DQS 10 ohm = 10R J = +/-5%
100 ohm = 101R K= +/-10%

Silicon Coated Oval / Flat Type Wire-Wound Power Resistors

- These resistors are suitable as loading resistor, braking resistor, capacitor discharge, Resistive Load simulation, Machinery, Machinery and Equipment higher power application.
- Space saving
- Low Inductance and Waved Ribbon type available
- support Precision Resistance Tolerance requirement
- mounting fixture is available, allow stacking into compact unit
- Electrical Tab Terminal can be customized according to customer's need.



ZZR-F : Oval / Flat Wire Wound Resistors

Power Rating	Dimensions in mm +/-1mm								Resistance Range ohm
	A	B	C	E	G	H	J	K	
40W	50	9	27	6.5	4.1	12	70	103	0.1 – 4k
50W	90	9	27	6.5	4.1	12	110	123	0.1 – 5k
60W	90	9	27	6.5	4.1	12	110	123	0.1 – 7k
80W	120	9	27	6.5	4.1	12	140	153	0.1 – 9k
100W	150	9	27	6.5	4.1	12	170	183	0.1 – 10k
120W	160	9	27	6.5	4.1	12	180	193	0.1 – 12k
150W	185	11	27	6.5	4.1	12	205	218	0.1 – 15k
200W	210	11	35	9	5.2	13	230	243	0.1 – 20k
250W	254	11	35	9	5.2	13	274	287	0.1 – 25k
300W	300	11	35	9	5.2	13	320	333	0.1 – 30k

Electrical Characteristics :

Testings	Testing Conditions	Testing Results
Resistance Tolerance	JIS-C-5202 5-1 testing voltage<3V 25C	+/-5%
Temperature Coefficient	+/- 400ppm/C max.	
Rated Load	JIS-C-5202 5-4 40C at rated voltage 1hour	R<=+/- (1%+0.1ohm) surface temperature < 400C
Insulation Resistance	JIS-C-5202 5-6 500Vdc	100M ohm min.
Dielectric Withstand voltage	JIS-C-5202 5-7 1000Vdc 1min.	R<=+/- (0.1%+0.05ohm)
Short Time Overload	JIS-C-5202 5-5 5*rated power in 5 seconds	R <= +/- (2%Ro + 0.1ohm)
Flammability	1 - 6 times rated power 5min.	without combustion

Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Drawing Number

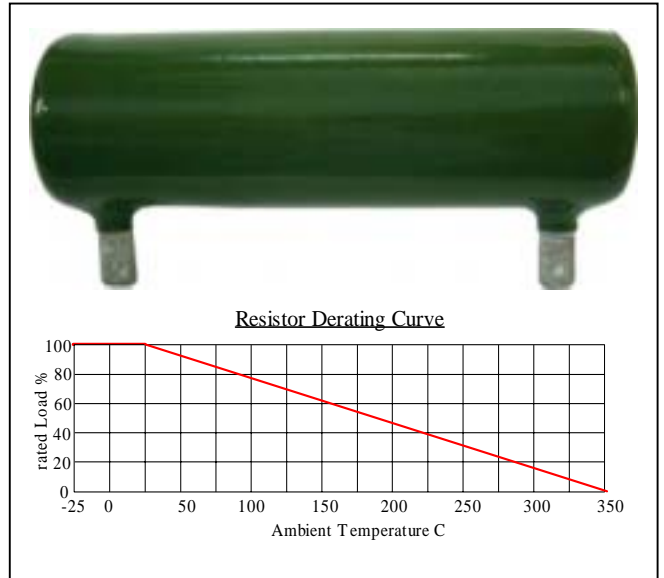
ZZR	40 - 300W	0.1 ohm = R1	F = +/-1%	F : mounting fixture
ZNR	40 - 300W	1 ohm = 1R	G = +/-2%	
		10 ohm = 10R	J = +/-5%	
		100 ohm = 101R	K = +/-10%	
		1k ohm = 102R		

Vitreous Enamel Power Resistors - DVR

This series of resistors is suitable as loading application, more stable, withstand humidity and higher temperature

- low Inductance version is available
- small resistor body size
- withstand harsh working conditions
- mounting fixture is available like DDR-F series
- adjustable version is available **DVSR**
- support multi tab terminals

We support other resistance value that not listed above.



DVR- Vitreous Enamel Power Resistors

Rated Power	Dimensions in mm		Resistance Range ohm	
	Length	Diameter	DVR	Resistance adjustable DVSR
8	35 +/- 1.5	14 +/- 2	5.1 - 3.3k	-
10	41 +/- 1.5		5.1 - 3.3k	5.1 - 200
16	51 +/- 2	17 +/- 2	5.1 - 3.3k	5.1 - 220
20	51 +/- 2		5.1 - 4k	10 - 430
25	51 +/- 2	21 +/- 2.5	10 - 4k	10 - 510
30	71 +/- 2.5		10 - 5k	10 - 1k
40	87 +/- 2.5		20 - 7.5k	20 - 1.2k
50	91 +/- 2.5		20 - 10k	20 - 1.5k
80	140 +/- 3.5	29 +/- 3	24 - 12k	24 - 2k
100	170 +/- 3.5		24 - 15k	24 - 2.7k
150	215 +/- 4		20 - 30k	20 - 4.3k
200	215 +/- 4	38 +/- 3	4.7 - 12k	5.1 - 3k
300	266 +/- 4	36 +/- 2	4.7 - 12k	5.1 - 3k
400	250 +/- 4	54 +/- 2	5.1 - 10k	6.2 - 3k
500	300 +/- 4		5.1 - 10k	6.2 - 3k

Electrical Characteristics :

Testings	Testing Conditions	Testing Results
Resistance Tolerance	JIS-C-5202 5-1 testing voltage<3V 25C	+/-5%, +/-10%
Temperature Coefficient	+/- 250ppm/C max.	
Short Time Overload	10*rated power in 5 seconds	$R \leq +/- (2\%R_o + 0.05 \text{ ohm})$
Surface temperature	$\leq 350C$	At maximum rated power

Part Number :

Series

DVR : normal

DVR-F : with mounting fixture

DVSR : resistance adjustable

DVSR-F : resistance adjustable with mounting fixture

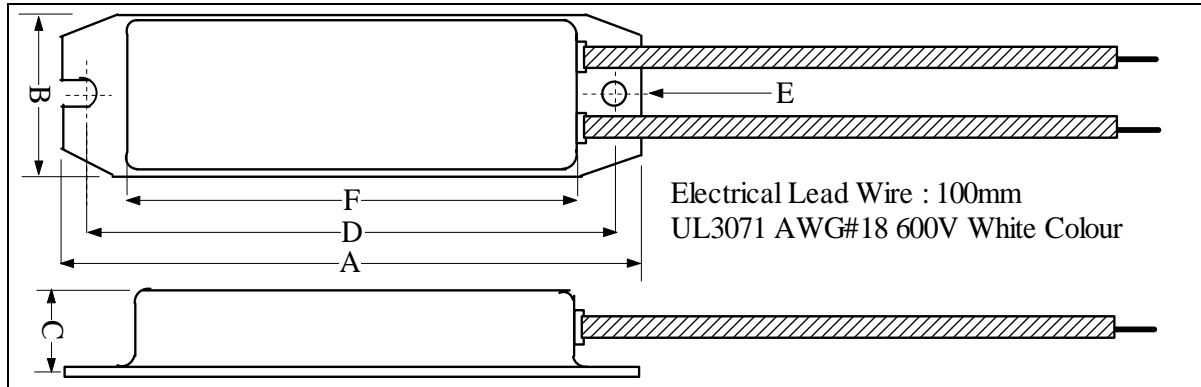
DVRN : low inductance

DVRN-F : low inductance with mounting fixture

Aluminum Housing Wire Wound Power Resistors

- Internal wire wound resistor is protected by external Aluminum Case from external mechanical force, humidity and dusty.
- Suitable for industrial machinery and equipment, electric power distribution.
- Durable and can withstand stronger vibration.
- Low temperature coefficient and better heat conduction.
- support Low Inductance requirement
- Precision Resistance Tolerance $\pm 0.1\%$ $\pm 0.5\%$ $\pm 1\%$ $\pm 5\%$ $\pm 10\%$
- support Low Ohmic Resistance and high Resistance value
- support Resistor size other than listed below

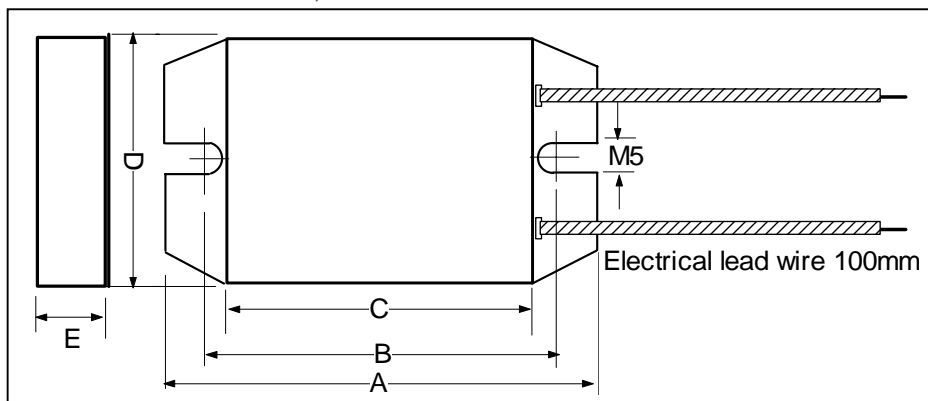
ASQ type :



Power Rating	Dimensions in mm ± 1 mm						Resistance Range ohm
	A	B	C	D	E	F	
60W	100	30	13	90	4.5	75	0.01 – 100k
80W	130	42	19	116	5	103	0.01 – 100k
100W	130	42	19	116	5	103	0.01 – 100k
120W	182	42	19	172	6	152	0.01 – 100k

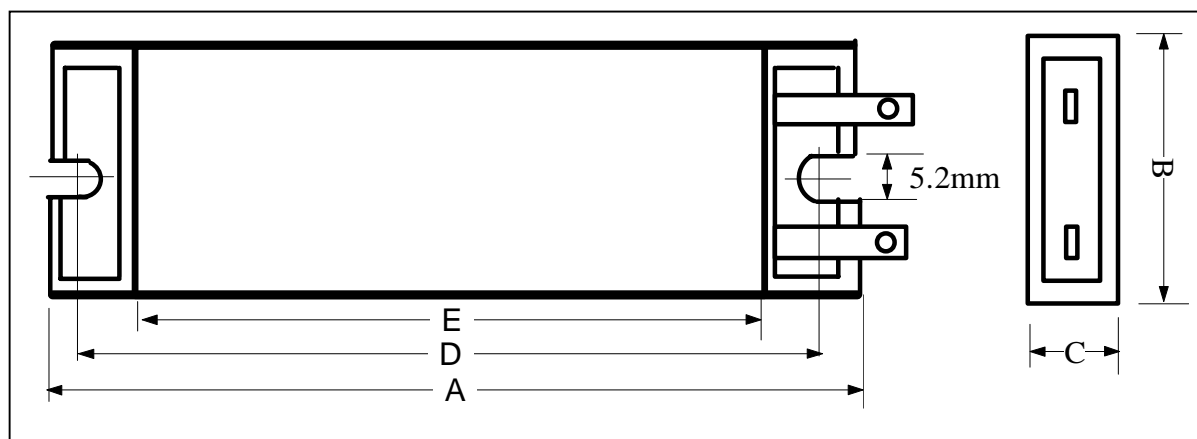
ASQM type : Low Profile Metal Clad Resistors – the resistor thickness can even as thin as 5mm.

For more details, e-mail us.



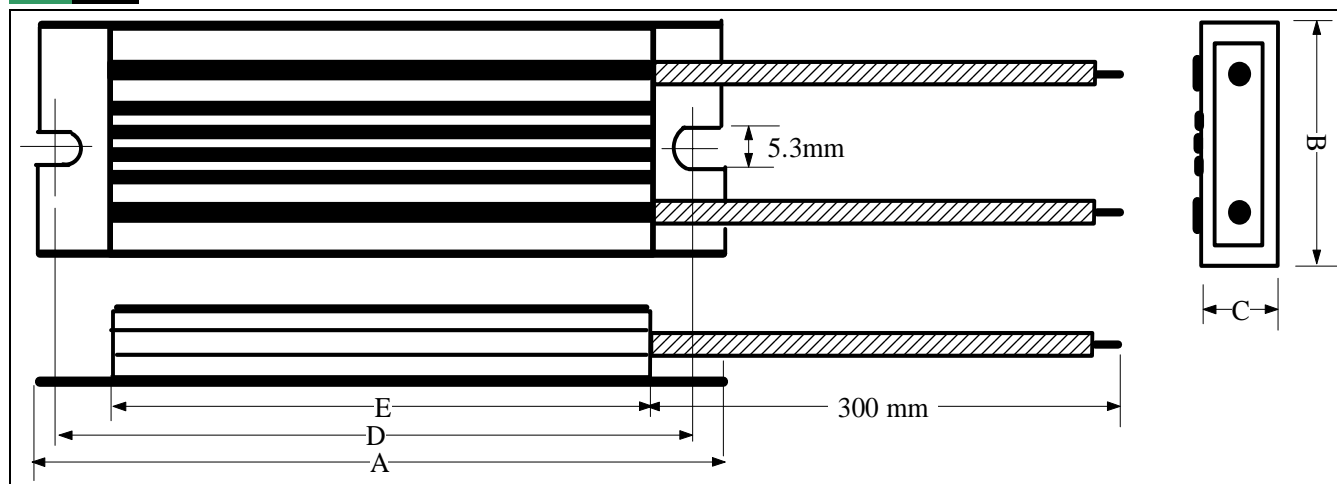
Power Rating	Resistance Range ohm					
	A	B	C	D	E	Resistance range ohm
60W	100	86	70	45	8	0.1 – 10k
80W	120	106	95	45	8	0.1 – 10k
100W	120	106	95	45	8	0.1 – 10k
120W	150	135	125	45	8	0.1 – 10k
150W	216	200	190	45	8	0.1 – 10k
200W	265	250	240	45	12	0.1 – 10k

ASZ type : 1000W - 3000W



Power Rating	Dimensions in mm +/-1mm					Resistance Range ohm
	A +/-2	B +/-1	C +/-1	D +/-2	E +/-2	
1000 W	335	70	45	320	300	0.01 – 20k
1200 W	400	70	45	385	365	0.01 – 20k
1500 W	450	70	45	435	415	0.01 – 20k
2000 W	500	70	45	485	465	0.01 – 20k
2500 W	550	70	45	535	515	0.01 – 20k
3000 W	600	70	45	585	565	0.01 – 20k

ASZ type : 40W - 1000W

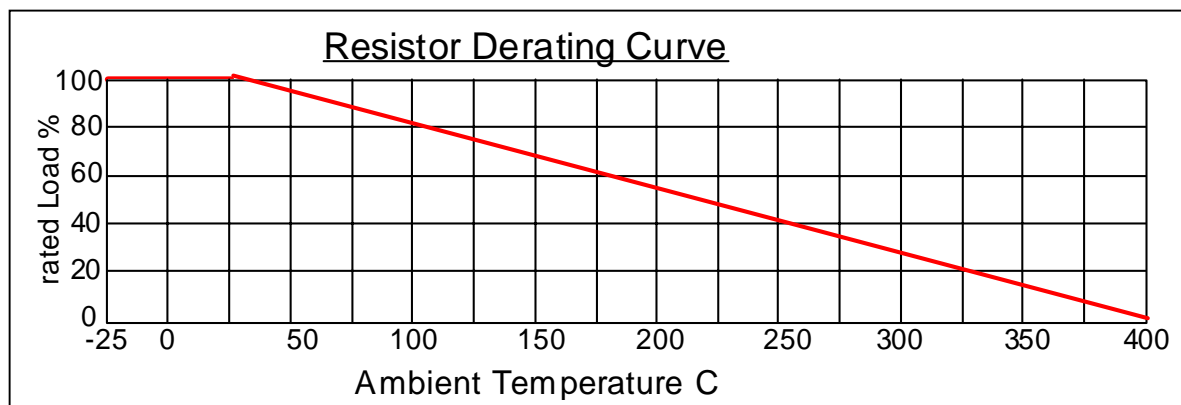


Power Rating	Dimensions in mm +/-1mm					Resistance Range ohm
	A +/-2	B +/-1	C +/-1	D +/-2	E +/-2	
40W	90	40	20	75	60	0.01 – 100k
60W	115	40	20	100	85	0.01 – 100k
80W	140	40	20	125	115	0.01 – 100k
100W	140	40	20	125	115	0.01 – 100k
120W	185	40	20	170	155	0.01 – 100k
150W	185	40	20	170	155	0.01 – 100k
200W	165	60	30	150	130	0.01 – 100k
250W	165	60	30	150	130	0.01 – 100k
300W	215	60	30	200	180	0.01 – 100k
400W	265	60	30	250	230	0.01 – 100k
500W	335	60	30	320	300	0.01 – 100k
600W	335	60	30	320	300	0.01 – 100k
800W	365	60	30	350	330	0.01 – 100k
1000W	335	70	45	320	300	0.01 – 20k

We support other resistance value that not listed above.

Electrical Characteristics :

Testing	Testing Conditions	Testing Results
Resistance Tolerance	JIS-C-5202 5-1 testing voltage<3V 25C	+/-5%
Temperature Coefficient	+/- 400ppm/C max.	
Rated Load	JIS-C-5202 5-4 40C at rated voltage 1hour	R<=+/--(1%+0.1ohm) surface temperature <= 400C
Insulation Resistance	JIS-C-5202 5-6 1000Vdc	100M ohm min.
Dielectric Withstand voltage	JIS-C-5202 5-7 2000Vdc 1min.	R<=+/- (0.1%+0.05ohm)
Short Time Overload	JIS-C-5202 5-5 5*rated power in 5 seconds	R <= +/--(2% + 0.1ohm)
Operating Temperature range	- 55C - +400C	
Power Derate to Zero	At 400C	



Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Drawing Number

ASQ 60 - 120W 0.01 ohm = R01 B= +/-0.1% C=+/-0.5%

ASQM 60 - 200W 0.1 ohm = R1 F = +/-1% J = +/-5%

ASZ 60 - 3000W 1 ohm = 1R K= +/-10%

10 ohm = 10R

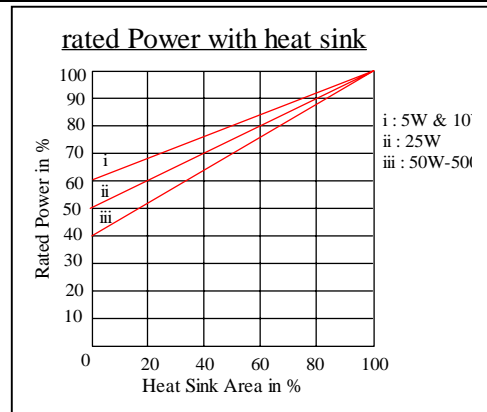
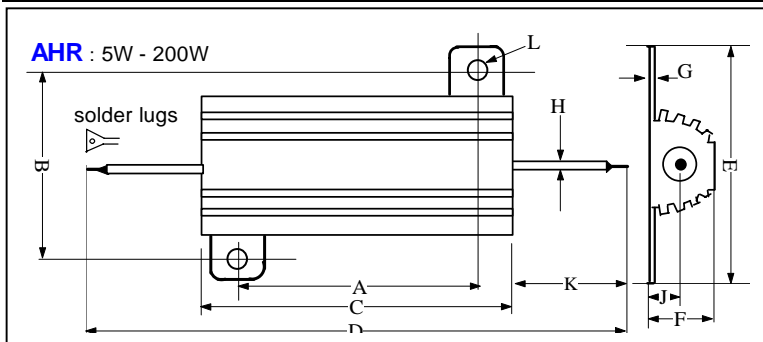
AHR type :

- Aluminium housed Resistors are wound with Nickel Copper or Nickel Chromium wire on ceramic core fitted with end caps.
- The wound assembly is then encapsulated in a anodized Heat sink using high temperature moulding compound.
- Low Inductance type is available
- Resistance range : 0.01 ohm – 100k ohm
- It is low cost, light weight and compact

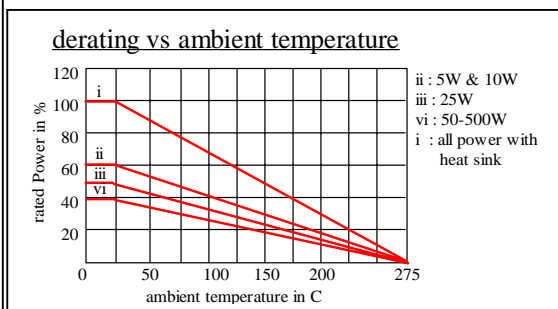
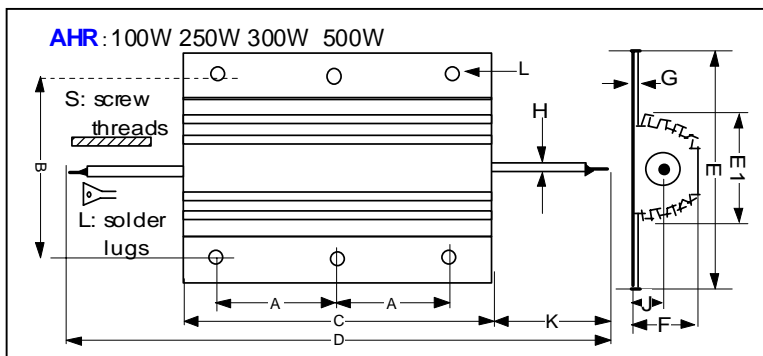


Electrical Specifications :

Rated Power	5Watts to 500Watts
Terminals	Soldering Lugs : 5 – 50W; Screw Threads : 75 – 500W
Temperature Coefficient	+/-20ppm/C, +/-50ppm/C, +/-100ppm/C, +/-200ppm/C, +/-250ppm/C,
Tolerance	+/-0.1%, +/-0.5%, +/-1%, +/-5%, +/-10%
Dielectric Voltage	1000Vac : 5 – 25W, 1500Vac : 50 – 500W
Operating Temperature	-55 to 250C
Overload – short time	5 time of rated power in 5 seconds
Derating	Deratings is needed to reduce chassis mounted area and for high ambient temperatures. Derate to zero Power Linearly at 250C ambient. Derating necessary for unmounted resistors at ambient temperatures of 25C, 5W & 10W - 40%, 25W-50% 50W & above 60%.



Rated Power	Dimensions in mm												Weight gram
	A +/-0.2	B +/-0.2	C +/-0.2	D +/-2	E +/-0.5	F +/-0.4	G +/-0.2	H +/-0.1	J +/-0.5	K +/-2	L +/-0.2		
5W	11.2	12.5	15.2	28.5	16.5	8.0	1.7	1.2	3.8	7.0	2.2	3	
10W	14.3	15.8	19.5	35.0	20.3	10.0	1.9	2.0	4.2	8.0	2.2	11	
25W	18.3	19.8	27.5	49.0	27.4	14.0	2.2	2.0	6.0	11.0	3.2	18	
50W	40.0	21.5	50.0	72.0	29.2	15.5	2.2	2.0	6.6	13.0	3.2	30	



Rated Power	Dimensions in mm												Weight gram
	A +/-0.5	B +/-0.5	C +/-1	D +/-2	E +/-1	E1 +/-0.5	F +/-0.5	G +/-0.2	H +/-0.2	J +/-0.3	K +/-2	L +/-0.3	
75W	23.5	38.0	65.5	105	48	27	26	3.3	2.8	11.5	20	4.2	90
100W	35.5	38.0	98.0	138	48	27	26	3.3	2.8	11.5	20	4.2	160
150W	52.0	38.0	135.0	175	48	27	26	3.3	2.8	11.5	20	4.2	240
200W	70.0	38.0	165.0	205	48	27	26	3.3	2.8	11.5	20	4.2	420
250W	45.5	58.0	112.0	152	73	46.5	45	5.0	6.0	21.0	20	5.3	480
300W	51.5	58.0	130.0	170	73	46.5	45	5.0	6.0	21.0	20	5.3	580
500W	87.0	58.0	204.0	244	73	46.5	45	5.0	6.0	21.0	20	5.3	970

Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Terminals + Drawing Number

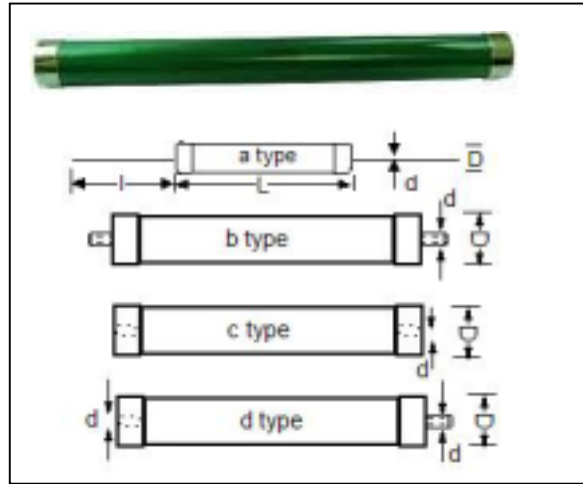
AHR 5 - 50W 0.1 ohm = R1 F = +/-1% G = +/-2% S / L
 75 - 500W 1 ohm = 1R J = +/-5% K = +/-10%

High Voltage Resistors DHVR

- it is vitreous Enamel coating for better resistor protection
- can withstand 3-5 times the rated power for short time
- standard resistor rated power : 1W - 400W
- standard resistance range : 100 ohm - 100G ohm
- surge voltage up to 150kV
- rated temperature range : -55C - 70C

Applications :

- High Voltage divider
- Measuring resistor
- Electrostatics
- Over voltage protection
- Capacitor Discharge



Please provide following working condition for quotation and delivery lead time :

- Resistance value and Resistor Power
- AC or DC voltage, if there is Surge Voltage, please tell the peak to peak voltage range, duty cycle and repetition rate.
- Surge Voltage is very important, if it is larger than the rated voltage according to resistor rated Power and Resistance condition.
- for AC and Surge Voltage, can you tell the estimated duty cycle, repetition rate or frequency

The above condition can help us offer suitable High Voltage Resistor for your application.

DHVR type :

Rated Power Wattage	Resistor package type	Dimensions in mm				Resistance range ohm	Temperature Coefficient ppm/C	Resistance Tolerance	Surge Voltage KV					
		Length L	Diameter D	Lead length	Lead diameter									
1W	a	30+/-1	9	30+/-1	1mm	100 ohm - 100G ohm	+/-200	+/-1% +/-2% +/-5% +/-10%	10					
2W	a	50+/-1							15					
3W	a	65+/-1							20					
5W	a	100+/-1							25					
8W	a b c	147+/-1	11	-	M4	100 ohm - 100G ohm	+/-400	+/-1% +/-2% +/-5% +/-10%	30					
10W	a b c								35					
20W	b c d	116+/-2	17	-	M6	100 ohm - 100G ohm	+/-400	+/-1% +/-2% +/-5% +/-10%	30					
30W			19						30					
50W			21						30					
80W		130+/-2	28						30					
100W		160+/-2							35					
150W		210+/-2							60					
200W		260+/-2							60					
300W		310+/-3	33						-	-	10K ohm - 200M ohm	+/-400	+/-1% +/-2% +/-5% +/-10%	80
400W														80

For Resistor power that not listed above, please contact us for details.

Part Number :

Series + type + Rated Power + Resistance Value (ohm) + Resistance Tolerance

DHVR	a	1 - 400W	10k ohm= 10KR	J = +/-5%
	b		100k ohm= 100kR	K= +/-10%
	c		1M ohm = 1MR	
	d		100G ohm = 100GR	

Resistor Boxes / Resistor Banks

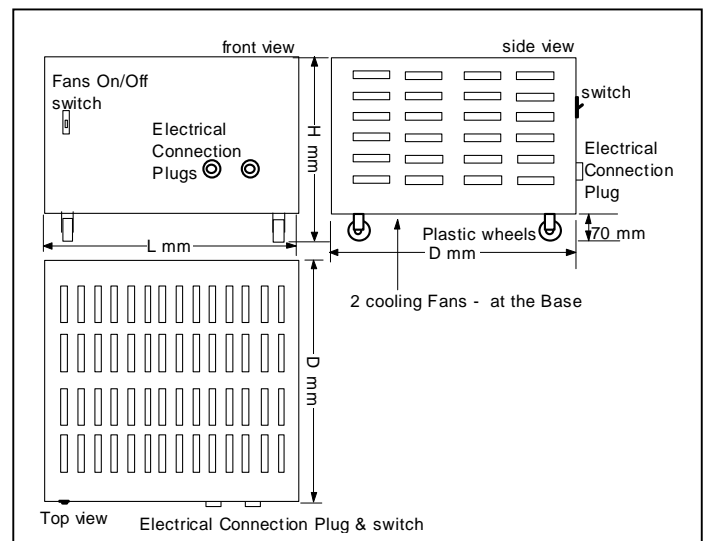
- Internal wire wound resistors are protected by external metal case from external mechanical force.
- single or/and 3 phase – WYE+Neutral or Delta
- Resistance and Wattage can be adjustable
- options : Voltage, Current and Wattage meter
 build in cooling system : Fans / Water Cooling
 thermal protection device
 Power Switch
 Plastic Wheels (so that Cabinet can be moved around)
- rated Power range : 2KW - 1500KW
- support very lower ohmic value, very high current up to 1500A and high voltage requirement
- support both indoor and outdoor application
- Size can be made according to customer's requirement



Resistor Boxes - RB

Dimensions :

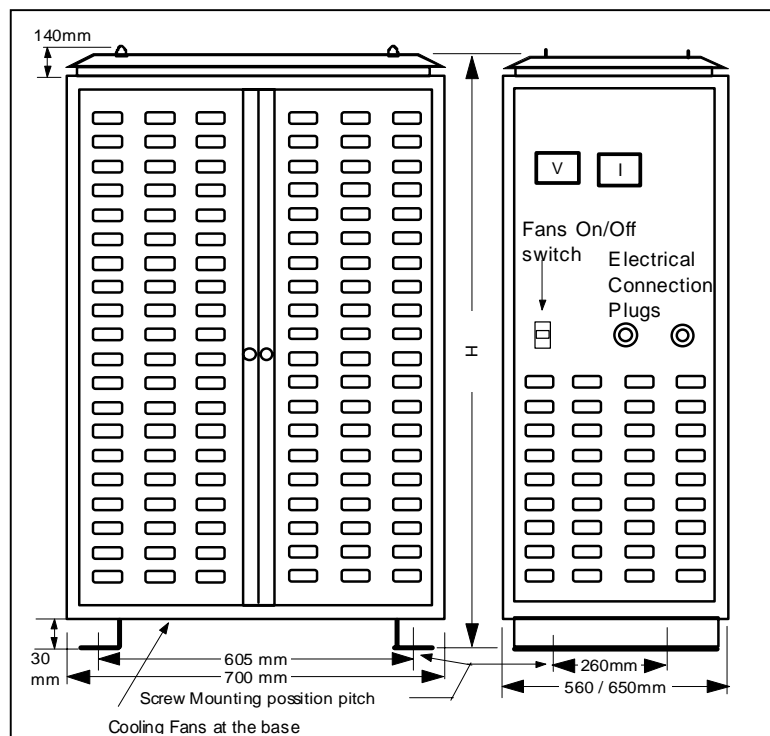
Rated Power	L +/-5mm	D +/-5mm	H +/15mm
2KW	380	200	210
5KW	500	290	210
6KW	590	290	210
8KW	590	400	210
10KW	680	400	210
12KW	680	400	210
15KW	680	500	210



Resistor Load Banks - RC

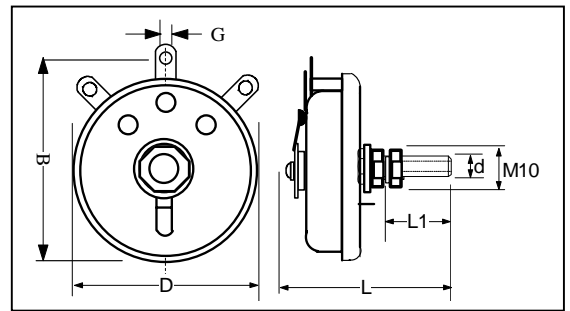
Dimensions :

Rated Power	High H mm	Weight
25KW	850	60kg
37KW	1100	70kg
50KW	1350	80kg
60KW	1600	90kg
70KW	1600	100kg
100KW	1820	110kg



Rheostat / Rotary Variable Power Wire Wound Resistors

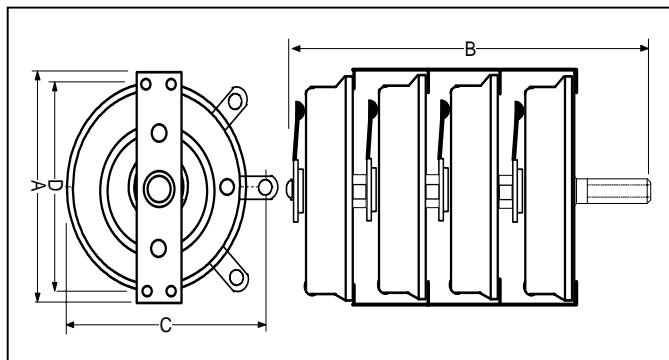
- Application : Resistive Load simulation, Heavy Duty application Machinery, Voltage and Current adjustment for Machinery & Equipment.
- support other Resistance range, according to customer application need.
- When the resistance value is decreased, the workable Rheostat power is also decreased. The workable power at the adjusted resistance value is the ratio of adjusted resistance value to the rated maximum value of the rheostat or adjustable power resistor.
- for more details, before refer to the application note on next page.



FVR : Rheostats / Rotary Power Wire Wound Resistors

Rated Power W	Max. Rated Resistance ohm	Tolerance +/- %	D mm	B mm	L mm	L1 mm	d mm	G mm
25	1 - 3k	5	<44	<50	<60	<25	6	2
50	1 - 5k		<64	<70	<64	<25	6	2
100	1 - 5k		<84	<93	<66	<35	6	4
150	1 - 5k	10	<104	<120	<73	<33	6	4
300	1 - 5k		<156	<170	<115	<55	10	4
500	1 - 5k		<206	<215	<122	<65	10	4

Tandem Mounted Rheostats



		Resistance Range			Dimensions			
		Min.-off	Max.		A	D	C	B
FVR-500W/2	1000	0	5000	350C	<215	<195	<218	<200
FVR-500W/3	1500	0	5000	350C	<215	<195	<218	<300
FVR-500W/4	2000	0	5000	350C	<215	<195	<218	<400
FVR-500W/5	2500	0	5000	350C	<215	<195	<218	<500
FVR-500W/6	3000	0	5000	350C	<215	<195	<218	<600

Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + No of Rheostat + Parallel/Serial connection

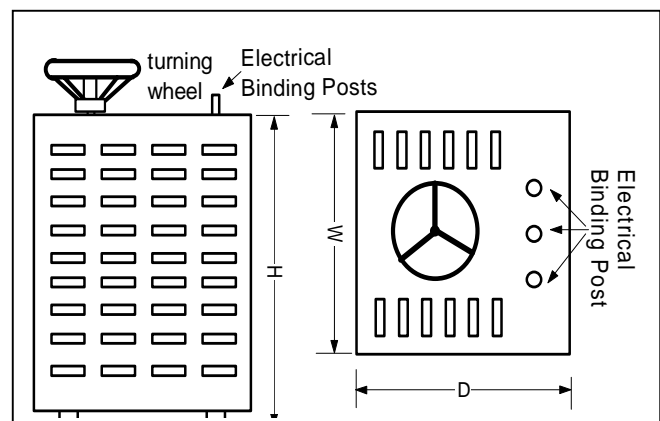
FVR 25W - 500W 0.1 ohm = R1 J= +/-5% Tandem mount P = parallel
 1 ohm = 1R K= +/-10% 1 - 5 S = Serial
 10 ohm = 10R
 1k ohm = 102R

For example : Tandem Mounted Rheostat 2500W 100R : FVR-500W501RJ/5P

FVRB : Rheostat Load Boxes : up to 4000W

for some applications, power range can be up to 20kW

Power	W / mm	D / mm	H / mm
300W	220	240	150
500W	260	280	150
1000W	260	280	280
1500W	260	280	320
2000W	260	280	450
2500W	260	280	530
3000W	260	280	610
3500W	260	280	690
4000W	260	280	770



Application Note for Power Wire Wound Resistors :

Choosing Power Wire Wound Resistor and determine Resistor Power :

1. resistor power is calculated by $W=I^2R$
2. W = Resistor Power
3. I = maximum loading current
4. R = rated resistance value or maximum resistance of adjustable resistor
5. Do not over load Resistor. Never over loading the resistor beyond the specify voltage, rated power and loading current.
6. For Resistor need to be worked continuously 100% duty cycle, choose Resistor with rated power at least 1.2 to 4 times higher than the actual loaded power. This can extend resistor service life and lower resistor surface temperature. We don't suggest loading resistor more than 80% of the rated power for continuous and long loading time application. Our power resistor can be worked at full load continuously. However resistor surface temperature can be very hot.
7. For maximum / surge power larger than the rated resistor power, please tell the actual working condition like peak / surge voltage, resistance value, duty cycle, loading time and repetition rate.
8. For Surge Voltage application, if loading Voltage larger than the rated Voltage according to resistor rated Power and Resistance value, please tell us the Peak to Peak Voltage range, Duty Cycle, Repetition Rate per unit time or Frequency and loading time.
9. For short period of time overload, resistor can withstand 5~10 times of the Rated Power in 5 seconds, depends on the current pulse width, resistor series and cooling system.
10. For very low ohmic Power Resistor, it is better to tell the working Voltage, Loading Time and Duty Cycle of your application. As different Voltage can induce different resistor current. In turn different raw materials and production process is needed to withstand the generated high current and temperature.
11. Maximum working voltage for a Resistor is limited by Ohm's Law, rated resistance and power, resistor dielectric and insulation.
12. In case of high frequency application, had better choose Low-Inductive Resistor.
13. We can customize Power Resistors according to customer's application need like Resistance, Rated Power, Resistor Size, Mounting Fixture and Inductive / Low Inductive, Pulse Voltage condition etc...

Adjustable Power Wire Wound Resistor DSR-F and Rheostat FVR / Rheostat Box FVRB application note :

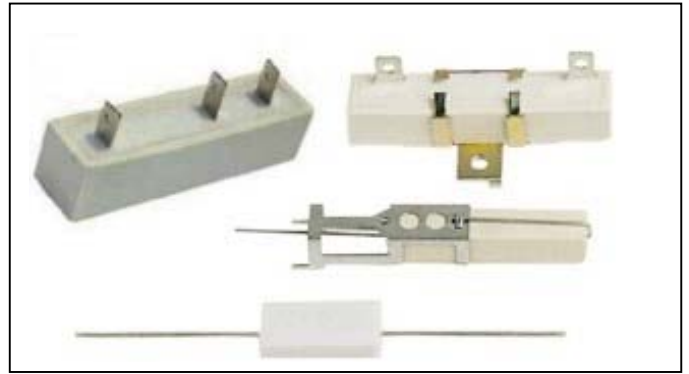
1. The maximum current to be determined is the current of the existing application before the Adjustable Power Resistor or Rheostat is inserted. This consideration is for Circuit Electrical Current adjustment.
2. When the resistance value is adjusted to the maximum resistance, maximum Resistor Power is occurred.
3. For a normal / uniform Adjustable Wire Wound Resistor and Rheostat, Power is designed by maximum Loading Current times the rated Resistance value. $Power=I^2R$.
4. The loading current is limited by the resistance wire's current carrying capacity. Loading Current beyond this can damage the adjustable resistor.
5. For Rheostat and Adjustable Power Resistor, when the resistance value is decreased, the workable Rheostat power is also decreased. The workable power at the adjusted resistance value is the ratio of adjusted resistance value to the rated maximum value of the rheostat or adjustable power resistor.
6. The main role of Adjustable Power Wire Wound Resistor DSR-F and Rheostat FVR / Rheostat Box FVRB is to decrease the electrical current in the circuit.
7. Maximum Loading Current capacity for a Rheostat / Adjustable Wire Wound Resistor can be calculated : $rated\ Power = I^2 \times rated\ Resistance$.
8. The above is for continuous adjustable load current or resistance application.
9. For other adjustable load current application, please refer to our Load Bank page.

Application :

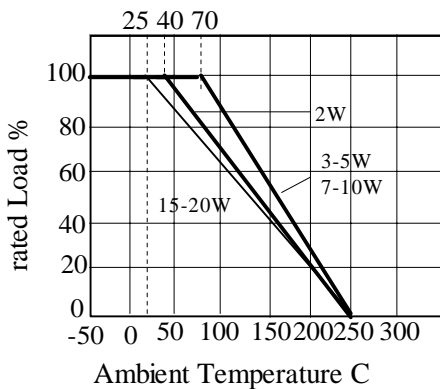
1. When resistor at full loading, resistor surface temperature can be up to 200C to 500C. This depends on which resistor series. If resistor surface temperature can be kept lower than 150C to 200C, resistor service life can be extended.
2. external force cooling fans or cooling system can lower resistor surface temperature.
3. Keeping all other components apart from Resistor, especially temperature sensitive component.
4. Do not touch the Resistor surface when it is connected to a power source due to high resistor surface temperature.
5. For individual power resistor's derating curve, please contact us.
6. Clean Resistor Tab Terminals before use. Cannot clean Resistor surface with organic solvents.
7. Do not scratch surface of Resistor with any hard or pointed object.
8. UL94-V0 class coating, provided Resistors should work within specification and should not be worked near any flammable material.
9. For Silicon Coated Resistors, smoke might be emitted during initial power loading. This is normal and the resistor is safe. It is a normal phenomenon for Silicon Coated Resistor. Assuming the initial loading is 100% for 1-3 hours, afterward there will not have any smoke emission.

Ceramic Encased Resistors – SQ series

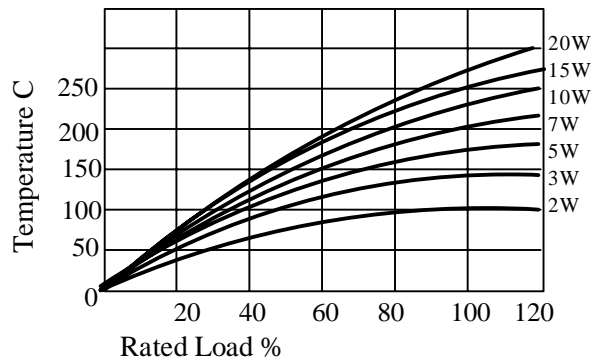
- excellent stability in high temperature, resistant to humidity and shock with economic price
- best suitable for heat dissipation; small linear temperature coefficient
- Instant overload capability; low noise figure
- Non Flammable Construction
- Low Inductance type available
- High Surge type available
- High Insulation Resistance
- Can be PCB mounted



Derating Curve



Temperature Rise

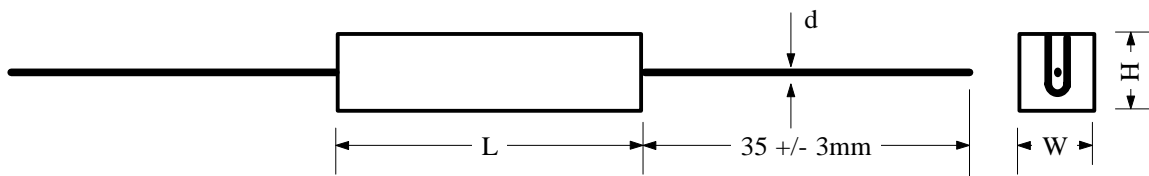


Test	Characteristics	
Resistance Temperature Coefficients	-55C - 155C	+/- 300ppm / C
Short Time Over Load	10 time of rated power 5seconds	+/-2%
Voltage withstanding	1000Vac 1min.	No change
Insulation Resistance	500V	1000M ohm
Temperature Cycle	-30 - 85C for 5 cycle	+/- 1%
Load Life	70C on / off cycle 1000 hours	+/- 5%
Moisture – proof Load Life	40C 95% RH on / off cycle 1000 hours	+/- 5%
Incombustibility	16 times of rated Power 5 minutes	No flamed
Rated Power	Rated Power 30 minutes	+/- 1%

Part Number :

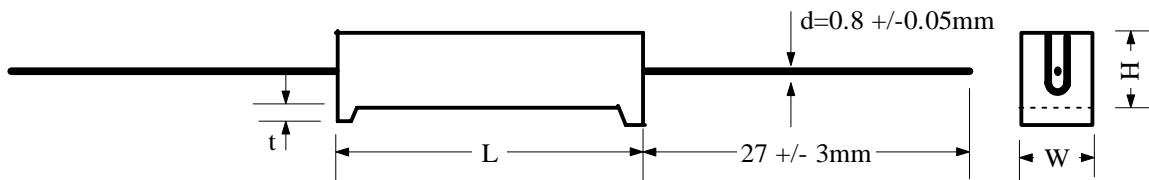
Series	Rated Power	Resistance Value (ohm)	+ Resistance Tolerance	+ Drawing Number
SQP	2 - 20W	0.1 ohm = R1	B=+/-0.1% C= +/-0.5%	
SQT	5 - 10W	1 ohm = 1R	F=+/-1% J=+/-5%	
SQM	5 - 10W	10 ohm = 10R	K=+/-10%	
SQH/SQH-G	10 - 40W			
SQZ	5 - 20W			

SQP type



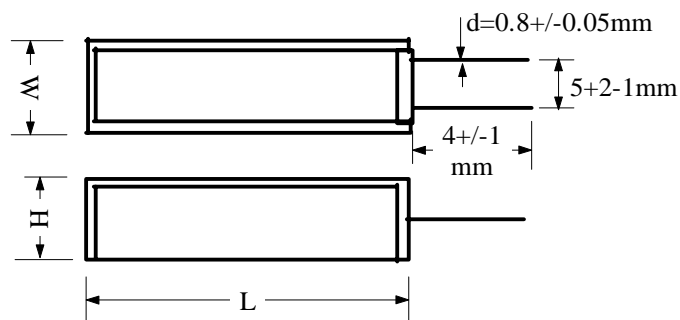
Rated Power	Dimensions in mm				Resistance ohm	
	L +/-1.5mm	W +/-1mm	H +/-3mm	D +/-0.05mm	SQP	MO+SQP
2W	18.0	7.0	7.0	0.65	0.1 - 50	50 - 20k
3W	22.0	8.0	8.0	0.80	0.1 - 50	50 - 33k
5W	22.0	10.0	9.0	0.80	0.1 - 50	50 - 50k
7W	35.0	10.0	9.0	0.80	0.1 - 500	500 - 50k
10W	48.0	10.0	9.0	0.80	0.1 - 500	500 - 50k
15W	48.0	12.0	12.0	0.90	0.5 - 500	500 - 150k
20W	60.0	13.0	13.0	0.90	0.5 - 500	500 - 150k

SQT type



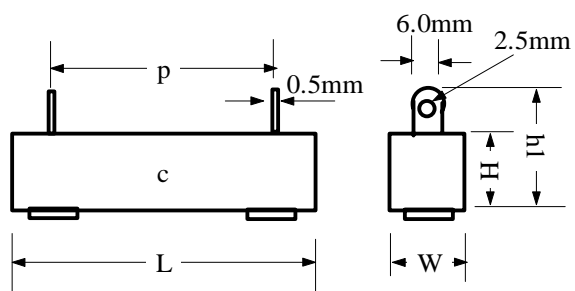
Rated Power	Dimensions in mm				Resistance ohm	
	L +/-1.5mm	W +/-1mm	H +/-3mm	t +/-1mm	SQT	MO+SQT
5W	22.0	10.0	9.0	1.5	0.1 - 50	50 - 50k
7W	35.0	10.0	9.0	3.0	0.1 - 500	500 - 47k
10W	48.0	10.0	9.0	3.0	0.1 - 500	500 - 47k

SQM type

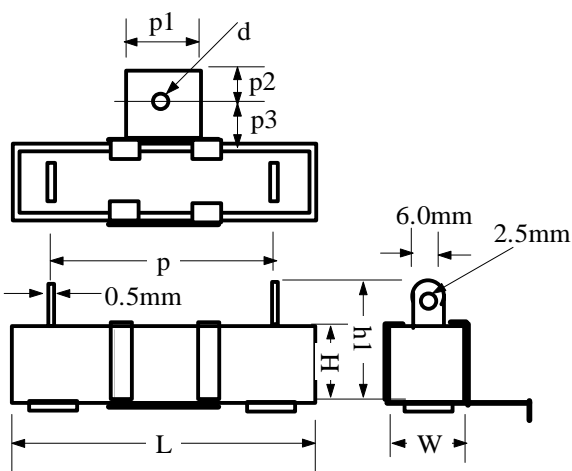


Rated Power	Dimensions in mm				Resistance ohm	
	L +/-1.5mm	W +/-1mm	H +/-3mm	d +/-0.05mm	SQM	MO+SQM
5W	25.0	13.0	9.0	0.8	0.1 - 50	50 - 50k
7W	39.0	13.0	9.0	0.8	0.1 - 500	500 - 47k
10W	51.0	13.0	9.0	0.8	0.1 - 500	500 - 47k

SQH type



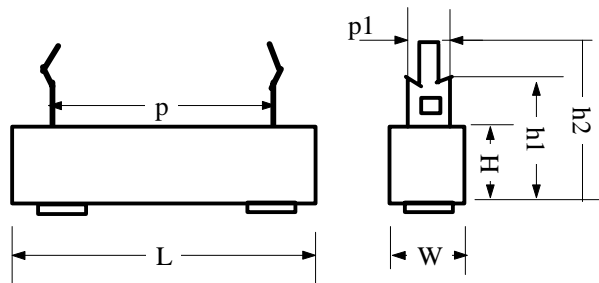
SQH-G type



SQH / SQH-G type

Rated Power	Resistance Range ohm		Dimensions in mm								
	SQH	MO+SQH	L +/-2	H +/-2	W +/-2	P +/-2	h1 +/-2	p1	p2	P3	D
10W	0.5 - 500	500 - 50K	48.0	10.0	10.0	32	21	12	6	8.0	4
15W	1 - 500	500 - 150K	48.0	12.0	12.0	32	21	12	6	8.0	4
20W	1 - 500	500 - 150K	63.5	12.0	12.0	42	24	12	6	8.0	4
30W	1 - 500		75.0	19.0	18.0	55	30	17	8	10.0	4
40W	1 - 50		90.0	19.0	18.0	68	30	17	8	10.0	4

SQZ type

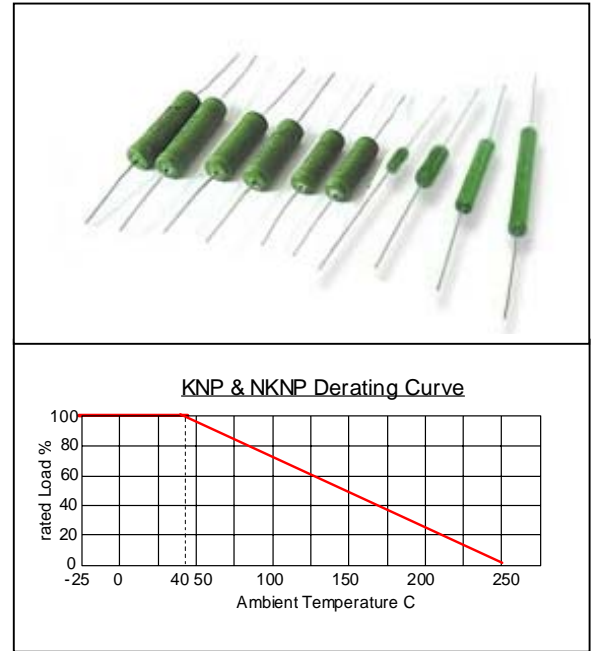
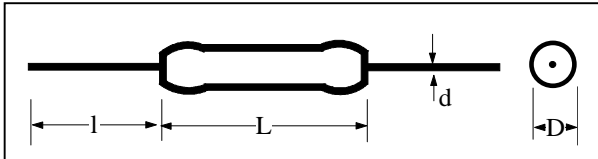


Rated Power	Resistance Range ohm		Dimensions in mm						
	SQZ	MO+SQZ	L +/-1	H +/-1	W +/-1	P +/-1	h1	h2	p1
5W	0.1 - 100	100 - 50k	27.0	9.5	9.5	15.0	9.5	24.0	5.0
7W	0.1 - 500	500 - 50k	35.0	9.5	9.5	22.5	9.5	24.0	5.0
10W	0.2 - 500	500 - 50k	48.0	9.5	9.5	35.0	9.5	24.0	5.0
15W	0.5 - 500	500 - 150k	48.0	12.5	12.5	32.5	15.0	36.5	10.0
20W	1 - 500	500 - 150k	63.50	12.5	12.5	45.0	15.0	36.5	10.0

Wire Wound Resistors – KNP series

- excellent stability in high temperature, resistant to humidity and shock with economic price
- Instant overload capability; low noise figure
- Non Flammable Construction
- Non Inductance type available – NKNP and NKNT
- High Surge type available
- with Power up to 30W
- Resistance range : 0.01 ohm – 100k ohm
- Precision tolerance : +/-0.1%, +/-0.5%, +/-1%, +/-5%, +/-10%
- Resistor Colour support : Green, Gray and Black
- Marking for 1/2W to 5W : standard colour code ring
- Marking for 5W to 30W : resistance value and power marking
- support non-standard resistance value

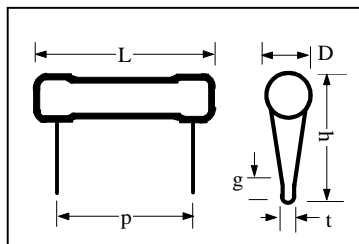
KNP series



KNP and NKNP type

Power range	KNP & NKNP dimension				Resistance range in ohm		Dielectric Voltage
	D +/-0.5mm	L+/-1mm	lead length (l) in mm	Lead wire diameter d / mm	KNP	NKNP	
1/2W	3.5	9	25	0.65	0.1 – 82	0.05 - 41	300V
1W	4.5	10.5	25	0.65	0.1 - 100	0.05 - 50	300V
1Ws	3.5	9	25	0.65	0.1 – 82	0.05 - 41	300V
2W	5	15	25	0.78	0.1 - 220	0.05 - 110	350V
2Ws	4.5	10.5	25	0.78	0.1 - 100	0.05 - 50	300V
3W	6	17	25	0.78	0.1 - 510	0.05 - 255	400V
3Ws	5	15	25	0.78	0.1 - 220	0.05 - 110	350V
5W	8	24	25	0.78	0.1 - 1.5K	0.05 - 750	500V
5Ws	6	17	25	0.78	0.1 - 510	0.05 - 255	400V
7W	8	31	25	0.78	0.1 - 3K	0.05 - 1.5K	500V
7Ws	8	24	25	0.78	0.1 - 1.5K	0.05 - 750	500V
8W	8	31	25	0.78	0.1 - 3K	0.05 - 1.5K	500V
8Ws	8	24	25	0.78	0.1 - 1.5k	0.05 - 750	500V
10W	8	41	25	0.78	0.1 - 8k	0.05 - 4K	500V
10Ws	8	31	25	0.78	0.1 - 3k	0.05 - 1.5K	500V
15W	8	52	25	0.78	0.1 - 10k	0.05 - 5K	500V
20W	8	61	25	0.78	0.1 - 12k	0.05 - 6K	500V
25W	8	61	25	0.78	0.1 - 12k	0.05 - 6K	500V
30W	8	70	25	0.78	0.1 - 15k	0.05 - 7.5K	500V

KNT series



KNT and NKNT type

Power range	KNT & NKNT dimension						Resistance range in ohm		Dielectric Voltage
	D +/- 0.5mm	L+/-1mm	Height h in mm	Pitch p in mm	g in mm	t in mm	KNT	NKNT	
2.5W	5	19	10	10	4	1	0.1 - 220	0.05 - 110	300V
4W	5	24	10	15	4	1	0.1 - 220	0.05 - 110	400V
5W	8	24	23	14	4.5	3	0.1 - 1.5K	0.05 - 750	500V
6W	8	24	23	14	4.5	3	0.1 - 1.5K	0.05 - 750	500V
7W	8	31	23	22	4.5	3	0.1 - 3K	0.05 - 1.5K	500V
8W	8	31	23	22	4.5	3	0.1 - 3K	0.05 - 1.5K	500V
10W	8	41	23	32	4.5	3	0.1 - 8K	0.05 - 4K	500V
15W	8	52	23	42	4.5	3	0.1 - 10K	0.05 - 5K	500V
20W	8	61	23	52	4.5	3	0.1 - 12K	0.05 - 6K	500V
25W	8	61	23	52	4.5	3	0.1 - 12K	0.05 - 6K	500V
30W	8	70	23	62	4.5	3	0.1 - 15K	0.05 - 7.5K	500V

Electrical Characteristics :

Testing	Test conditions	Specifications
Resistance tolerance	JIS-C-5202 5-1	Resistance Nominal Tolerance $1 \leq R$ $1 > R$ +/-5% (J), +/-10% (10)
Temperature coefficient	JIS-C-5202 5-2, -55C - 155C	+/-350 PPM/C Max
Short Time over load	JIS-C-5202 5-5 1000% rated power 5s for KN, 250% rate voltage 5s for MO	$R \leq \pm (2\% + 0.05)$
Rated Load	Rated wattage 30 min	$R \leq \pm (2\% + 0.05)$
Soldering	JIS-C-5202 6-4 235C 3s	$R \leq \pm (0.2\% + 0.05)$
Insulation Resistance	JIS-C-5202 5-6	Over 1000M
Moisture Resistance	JIS-C-5202 7-9 1000hr	$R \leq \pm (2\%R_0 + 0.05)$
Moisture-Proof Load Life	JIS-C-5202 7-10 40C 95% RH on - off cycle 1000hrs.	$R \leq \pm (5\%R_0 + 0.01)$
Flammability	500%, 1000%, 1600% power rating 5min	Not flamed

Part Number :

Series + Rated Power + Resistance Value (ohm) + Resistance Tolerance + Packaging + Drawing Number

KNP	60 - 120W	0.01 ohm = R01	B=+/-0.1% C=+/-0.5%	T = tape
NKNP	60 - 200W	0.1 ohm = R1	F = +/-1% J = +/-5%	B = bulk
KNT	60 - 3000W	1 ohm = 1R	K= +/-10%	
NKNT		10k ohm = 104R		

MF Power Resistor Ltd reserves the right to make changes without further notice to any products herein to improve reliability, function or design.