

[製品案内]

English

TAMAOHM

PRODUCTS CATALOG



ALL FOR ONE >

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04-05

TRH / RWH



06-07

TRH-A / TRH-HH



08-09

TRR / TWC



10-11

TRV / connected with TRV



12-13

TRF / SG·M



14-15

SH / SHP



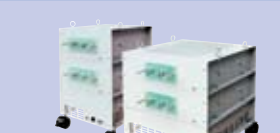
16-17

RHA



18-19

IRH / IRV



20-21

LOAD UNIT



Cautions for use / Standards

Cautions for use

- Using power type wire wound resistor at the rated power specified in the catalog may accelerate deterioration of material due to the raise of surface temperature. The load rate should be less than 50% under favourable circumstances of use.
- Mount resistor carefully and reduce the load power in order to avoid the damage to the wiring material, panel or other electric parts.
- Using resistor where transient load is applied to may be a risk of local degradation, short circuit, breakage, melting etc.
- Take measures for safety to prevent anybody touching it with hands as resistor is a heating unit.
- Handle resistor carefully to avoid dropping or applying impact received from the outside. Broken resistor and broken pieces may cause injury.
- Do not put excessive torque when power type wire wound resistor is fixed by screw.
- Use crimp terminal to connect to the resistor terminal as resistor body is a heating unit.
- Avoid injuring or scratching the surface of paint coated resistor when using.
- Do not apply excessive force to the lead wire terminal when the lead wire is bent for use.
- It may cause loosened wire and a crack in exterior.
- Non-inductive winding is applied for the improvement of high-frequency waves, but it does not mean inductive component is zero. Also the winding method and special characteristics vary depending on the type of resistor and resistance values.
- Metal clad resistor with chassis should be used at smooth and in good adhesive conditions.
- Metal clad resistor may not achieve enough heat radiation against chassis while application time of such a single-engine pulse load is short. In this case, use resistor based on normal rated power in outer space use.
- While washing some board mounting types (cement resistor, metal clad resistor), they may have problems of quality degradation and display peeling off caused by the type of organic solvents or by washing conditions.
- Do not use or store resistors at high temperature and high humidity conditions, in the water, at the corrosive gases or condensing atmosphere.
- It should be tested and evaluated on actual unit in the actual use conditions for uses requiring high reliability.
- For further information about basic precautions and above mentioned caution of uses, the technical report guideline 『EIAJ RCR-2121(Guidelines of notabilia for fixed resistors for use in electronic equipment)』is also available at the the Japan Electronic Machinery Industrial Association.
- The content of this catalog may be changed without prior notice.
- Please visit and check the official web-site for the latest information (<http://www.tamaohm.co.jp/en/>).

If you have any questions or unclear points, please send your request through fax or e-mail in order to avoid the troubles. >> 【FAX: 044-944-8081 E-mail: info@tamaohm.co.jp】

Ceramic Bobbin Resistors Attention & Information

TRH / RWH

TRH-A / TRH-HH

TRR / TWC

TRV /
connected with TRV

TRF / SG-M

SH / SHP

RHA

IRH / IRV

LOAD UNIT

ELECTRICAL CHARACTERISTICS

in accordance with JIS

	Test conditions	Standard values
Resistance values / Resistance tolerance	—	Refer to the resistance range in specifications list
Temperature coefficient of resistance	—	+100~+400 ppm/°C max
Power rating load	Apply 100% rated electric power for 30 minutes. After applying, leave for another 2 hours.	Surface temperature is below 350°C. Resistance values variations $\pm(0.5\%+0.05\Omega)$
Short time overload	Apply 10 times $\pm 5\%$ of rated electric power for 5 seconds. After applying, leave for 30 seconds.	No evidence of arc or other abnormalities. Resistance values variations $\pm(2\%+0.05\Omega)$
Insulation resistance	Apply DC500V between terminal and angle for 1 minute.	More than 20 Ω
Dielectric Strength	Apply below voltage between terminal and angle for 1 minute. OS/EO type : AC2000V (5W/E10W : AC 1500V)S type : AC1000V	No evidence of burnout or other abnormalities. Resistance values variationst $\pm(0.1\%+0.05\Omega)$

MECHANICAL CHARACTERISTICS

in accordance with JIS

	Test conditions	Standard values
Terminal Strength	Apply 4.5 kg weight to the feed direction of terminal for 30 minutes	No evidence of abnormalities of resistor.
Resistor strength	Apply 20 kg weight to the center of resistor body for 10 seconds	No evidence of breakage of resistor.
Vibration Proof	Repeat 1 minute vibration cycle (up-down, front-back, left-right) of 1.5mm length at 10-55Hz frequency for 2 hours	No evidence of mechanical damage. Resistance values variations $\pm(1\%+0.05\Omega)$
Solderability	Solder temperature 325°C $\pm 5^\circ\text{C}$ Immersion time 10 ± 0.5 sec	Over 3/4 of terminal surface is covered by new soldering.

ENVIRONMENTAL CHARACTERISTICS

in accordance with JIS

	Test conditions	Standard values
Flame resistance	Leave resistor at 350°C $\pm 5^\circ\text{C}$ temperature for 2 hours	No evidence of remarkable change of color or damages. Displayed values are readable.
Thermal Shock	Apply rated electric power $\pm 5\%$ for 30 minutes, then leave resistor at -55°C temperature for 15 minutes. After applying the mentioned process, leave it at normal temperature for 2 hours.	No evidence of remarkable change of color or damages at resistor. Displayed values are readable. Resistance values variations $\pm(3\%+0.05\Omega)$
Humidity resistance	Apply 1/10 of rated electric power at 40°C 95%Rh atmosphere for 500 hours. After applying the mentioned process, leave it for 30 minutes.	No evidence of remarkable change of color or damages. Displayed values are readable.
Load Life	Leave resistor at 350°C $\pm 5^\circ\text{C}$ temperature for 2 hours	No evidence of remarkable breakage, fragmentation or terminal looseness. Resistance values variations $\pm(5\%+0.05\Omega)$



TRH

Power Type Flame Proof Wire Wound Resistor

TAMAOHM

RoHS対応

Features

- Equivalent of JS RWH
- Same specifications as traditional enamel coated resistor (RWH type)
- Current standard product with improvements to details.
- Without deterioration of resistance wire during manufacturing process at high temperature processing, TRH type can be manufactured with wider resistance range than RWH type.
- The terminal strength is higher than of RWH type due to application of screw clamp (band terminal).

Standard

- Resistance value range See below specifications table
- Resistance value tolerance 5-400W: J = $\pm 5\%$ ($\geq 1\Omega$)
K = $\pm 10\%$ ($< 1\Omega$)
500W: J ($\geq 3\Omega$) K ($< 3\Omega$)
750W: J ($\geq 4\Omega$) K ($< 4\Omega$)
1000W: J ($\geq 5.5\Omega$) K ($< 5.5\Omega$)
+100 - 400 ppm/ $^{\circ}\text{C}$ max
Combination of type O·S/
Type O - AC2000V 1min (5W·10W, AC 1500V)
Type S - AC 1000V 1min
 $\geq 20\text{M}\Omega$ (DC 1000V mega)
- Temperature coefficient of resistance 340 $^{\circ}\text{C}$
- Dielectric strength
- Insulation resistance
- Maximum use temperature

Product designation (reference)

— TRH 100 G 50 Ω J — OS

no mark: induction winding
 N-: non-inductive winding

Wattage

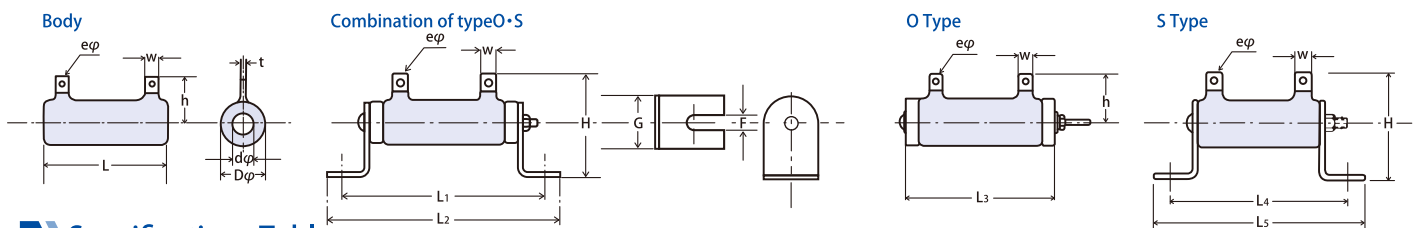
Characteristics
 G: standard
 V

Resistance value

Tolerance
 J ($\pm 5\%$)
 K ($\pm 10\%$)

Part fitting
 no mark: no fitting
 — OS
 — O
 — S

Dimensional drawing



Specifications Table

Model (rated power/w)	Resistance value range (Ω)		Dimenstions (mm)															Weight
	G characteristics (standard)	V characteristics	Body	OS		O	S											Body+OS
			L±2	L1±2	L2±2	L3±2	L4±2	L5±2	Dφ	dφ	H±3	h±2	G	F	W	t	εφ	/g
5	0.1 ~ 3.5K	0.2 ~ 3.5K	30	53	71	37	47	63	≤15	≤5	30	19	12	3.2	≥5	≥0.5	≥3	18
10	0.1 ~ 7K	0.3 ~ 7K	45	68	85	53	62	77	≤15	≤5	30	19	12	3.2	≥5	≥0.5	≥3	21
15	0.1 ~ 7K	0.3 ~ 7K	45	68	85	53	62	77	≤15	≤5	30	19	12	3.2	≥5	≥0.8	≥3	25
20	0.1 ~ 15K	0.5 ~ 15K	50	76	92	60	66	83	≤22	≤8.5	36	20	16	4.2	≥5	≥0.5	≥3	50
30	0.1 ~ 20K	0.5 ~ 20K	75	101	117	85	91	108	≤22	≤8.5	36	20	16	4.2	≥5	≥0.5	≥3	65
40	0.1 ~ 30K	0.5 ~ 30K	90	117	133	101	106	122	≤22	≤8.5	36	20	16	4.2	≥5	≥0.5	≥3	75
50	0.2 ~ 30K	0.5 ~ 30K	75	114	140	87	101	128	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	155
60	0.2 ~ 40K	0.5 ~ 40K	90	128	154	102	124	145	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	175
80	0.2 ~ 55K	0.5 ~ 55K	115	154	180	127	138	168	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	200
100	0.2 ~ 70K	0.7 ~ 70K	140	179	205	151	164	191	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	240
120	0.3 ~ 80K	0.8 ~ 80K	165	204	230	176	191	218	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	260
150	0.3 ~ 100K	1 ~ 100K	195	234	260	208	222	248	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	285
200	0.4 ~ 130K	1.3 ~ 130K	254	294	320	267	281	306	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	365
250	0.5 ~ 160K	1.7 ~ 160K	305	344	370	—	331	358	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	430
300	0.2 ~ 100K	2 ~ 100K	254	315	345	—	—	—	≤45	≤25	91	48	38	10	≥13	≥1.2	≥5	825
400	0.3 ~ 100K	3 ~ 100K	330	390	420	—	—	—	≤45	≤25	91	48	38	10	≥13	≥1.2	≥5	915
500	0.3 ~ 100K	3 ~ 100K	300	350	385	—	—	—	≤55	≤30	100	51	48	10	≥13	≥1.2	≥5	1360
750	0.5 ~ 5K	4 ~ 5K	300	360	395	—	—	—	≤76	≤50	120	60	48	10	≥13	≥1.2	≥5	2100
1000	0.6 ~ 5K	5.5 ~ 5K	300	389	440	—	—	—	≤120	≤70	163	78	100	8.5	≥13	≥1.2	≥5	4700

Supplementary information

- In accordance with JIS standards, more reliable wire is used for V characteristics comparing with G.
- For safety reason, it is recommended to be used under 50% of rated power and under favourable circumstances.
- Use crimp terminal to connect to the resistor terminal as resistor body is a heating unit.

● Low-resistance value over 50W → TRR (P8) is recommended



OBSOLETE
RWH

→ Substitute : TRH
see p4 : TRH for a substitute of RWH

TAMAGOHM

RoHS対応

Power Ttype Enamel Wire Wound Resistor

TRH / RWH

TRH-A / TRH-HH

TRR / TWC

TRV /
connected with TRV

TRF / SG · M

SH / SHP

RHA

IRH / IRV

LOAD UNIT

Features

- Enamel resistor with good supply records
- Use of in-house developed lead-free enamel

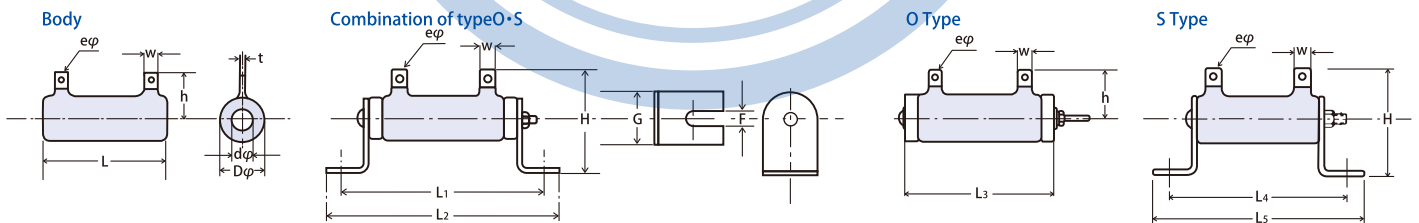
Standard

- Resistance value range See below specifications table
- Resistance value tolerance 5-400W: J=±5% (≥1Ω)
K=±10% (<1Ω)
500W~100W: J=±5%
+100 - 400 ppm/°C max
Combination of type O·S/
Type O - AC2000V 1min (5W·
10W, AC 1500V)
Type S - AC 1000V 1min
≥20MΩ (DC 1000V mega)
- Temperature coefficient of resistance 340°C
- Dielectric strength
- Insulation resistance
- Maximum use temperature

Product designation (reference)



Dimensional drawing



Specifications Table

Model (rated power/w)	Resistance value range (Ω)		Dimenstions (mm)															Weight	
	G characteristics (standard)	V characteristics	Body	OS			S												Body+OS
			L±2	L1±2	L2±2	L3±2	L4±2	L5±2	Dφ	dφ	H±3	h±2	G	F	W	t	eφ	/g	
5	0.2 ~ 1.2K	0.5 ~ 1.2K	30	53	71	37	47	63	≤15	≤5	30	16	12	3.2	≧5	≧0.8	≧3	19	
10	0.3 ~ 2.1K	1 ~ 2.1K	45	68	85	53	62	77	≤15	≤5	30	16	12	3.2	≧5	≧0.8	≧3	24	
15	0.3 ~ 2.2K	1 ~ 2.2K	45	68	85	53	62	77	≤15	≤5	30	16	12	3.2	≧5	≧0.8	≧3	28	
20	0.6 ~ 3.9K	2 ~ 3.9K	50	76	92	60	66	83	≤22	≤8.5	36	20	16	4.2	≧5	≧0.8	≧3	50	
30	0.9 ~ 6.3K	3 ~ 6.3K	75	101	117	85	91	108	≤22	≤8.5	36	20	16	4.2	≧5	≧0.8	≧3	70	
40	1.2 ~ 8.2K	3.5 ~ 8.2K	90	117	133	101	106	122	≤22	≤8.5	36	20	16	4.2	≧5	≧0.8	≧3	75	
50	1.2 ~ 8.2K	3.5 ~ 8.2K	75	114	140	87	101	128	≤32	≤15	55	30	26	6	≧6	≧0.8	≧3.2	145	
60	2 ~ 12K	5 ~ 12K	90	128	154	102	124	145	≤32	≤15	55	30	26	6	≧6	≧0.8	≧3.2	165	
80	3 ~ 15K	7 ~ 15K	115	154	180	127	138	168	≤32	≤15	55	30	26	6	≧6	≧0.8	≧3.2	190	
100	3 ~ 20K	9 ~ 20K	140	179	205	151	164	191	≤32	≤15	55	30	26	6	≧6	≧0.8	≧3.2	225	
120	4 ~ 23K	11 ~ 23K	165	204	230	176	191	218	≤32	≤15	55	30	26	6	≧6	≧0.8	≧3.2	255	
150	4 ~ 30K	13 ~ 30K	195	234	260	208	222	248	≤32	≤15	55	30	26	6	≧6	≧0.8	≧3.2	290	
200	6 ~ 38K	17 ~ 38K	254	294	320	267	281	306	≤32	≤15	55	30	26	6	≧6	≧0.8	≧3.2	365	
250	7 ~ 46K	21 ~ 46K	305	344	370	—	331	358	≤32	≤15	55	30	26	6	≧6	≧0.8	≧3.2	440	

※over 300W → TRH (P4) is recommendable.

300	8 ~ 57K	26 ~ 57K	254	315	345	—	—	—	≤45	≤25	87	44	38	10	≥10	≥1.5	≥5	780
400	10 ~ 77K	35 ~ 77K	330	390	420	—	—	—	≤45	≤25	87	44	38	10	≥10	≥1.5	≥5	970
500	11 ~ 83K	38 ~ 83K	300	350	385	—	—	—	≤55	≤30	99	50	48	10	≥10	≥1.5	≥5	1470
750	16 ~ 5K	50 ~ 5K	300	360	395	—	—	—	≤76	≤50	120	60	48	10	≥15	≥2	≥6.5	2300
1000	22 ~ 5K	70 ~ 5K	300	389	440	—	—	—	≤120	≤70	163	78	100	8.5	≥15	≥2	≥6.5	4950

Supplementary information

- In accordance with JIS standards, more reliable wire is used for V characteristics comparing with G. ● For quality maintenance, it is recommended to be used under 50% of rated power and under favourable circumstances. ● Use crimp terminal to connect to the resistor terminal as resistor body is a heating unit.
- RWH is the same specifications product with TRH except difference of coating method.

● Resistance value not stated on the specifications table → TRH (P4) is recommendable. ● Low-resistance value over 50W → TRR (P8) is recommended



TRH-A

Nonflammable coating

Adjustable Resistor (by sliding method)

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RoHS対応

Features

- Resistance values are resistable by adjusting/sliding screw clamp (band terminal)
- Suitable for testing use due to capability of resistance value adjustment

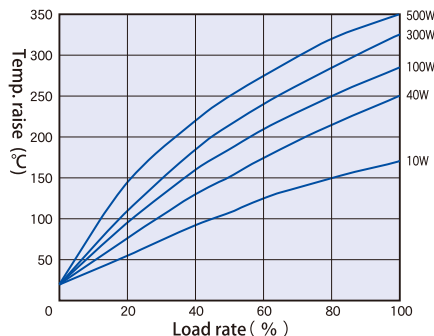
Standard

- Resistance value range See below specifications table
- Resistance value tolerance 5-400W: J=±5% ($\geq 1\Omega$)
K=±10% ($< 10\Omega$)
500W: J
750W: J ($\geq 4\Omega$) K ($< 4\Omega$)
1000W: J ($\geq 6\Omega$) K ($< 6\Omega$)
+100 - 400 ppm/°C max
- Temperature coefficient of resistance
- Dielectric strength Combination of type O·S/ Type O - AC2000V 1min
(5W·10W, AC 1500V) Type S - AC 1000V 1min
 $\geq 20M\Omega$ (DC 1000V mega)
- Insulation resistance
- Maximum use temperature 340°C
- Maximum adjustment range 5-20W = $\geq 75\%$ / $\geq 30W = \geq 80\%$
of resistance value

Caution

- Using this resistor in high humid surroundings may cause corrosion or wire breaking to exposed resistance wire.
- To avoid damaging exposed part of resistor, loosen the screw clamp enough before adjustment.
- The rated power may change by variability of resistance values.

Surface temperature raise curve



Options

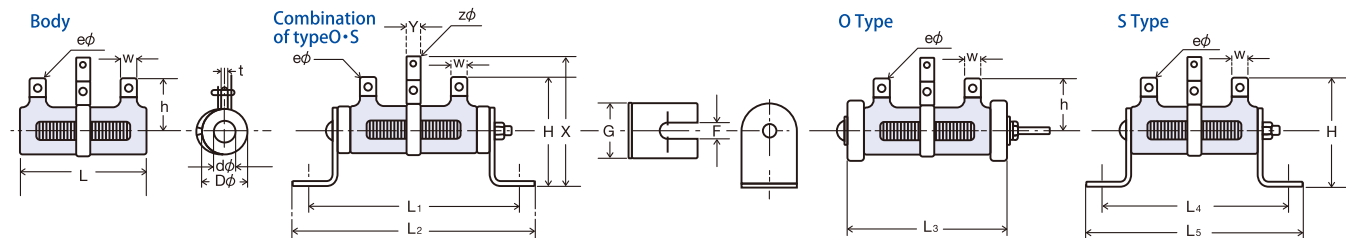
☐ Ribbon type :
Refer to P8 (TRR-A)

☐ Non-inductive wire : X

Product designation (reference)

TRH	100	A	1	G	50	Ω	J	- OS
	Wattage		No. of adjustable sliding band	Characteristics G: standard V	Resistance value		Tolerance J (= ±5%) K (= ±10%)	Part fitting no mark : no fitting OS O S

Dimensional drawing



Specifications Table

Model (rated power/w)	Resistance value range (Ω)		Dimenstions (mm)																	
			Body	OS		O	S													
	G characteristics (standard)	V characteristics	L±2	L1±2	L2±2	L3±2	L4±2	L5±2	Dφ	dφ	H±3	h±2	G	F	W	t	eφ	X±3	Y	Zφ
5	0.5 ~ 200	0.5 ~ 200	30	53	71	37	47	63	≤15	≤5	30	19	12	3.2	≥5	≥0.5	≥3	36	≥6	≥3.2
10	0.5 ~ 400	0.5 ~ 400	45	68	85	53	62	77	≤15	≤5	30	19	12	3.2	≥5	≥0.5	≥3	36	≥6	≥3.2
20	0.5 ~ 800	0.5 ~ 800	50	76	92	60	66	83	≤22	≤8.5	36	20	16	4.2	≥5	≥0.5	≥3	40	≥6	≥3.3
30	0.5 ~ 1K	0.5 ~ 1K	75	101	117	85	91	108	≤22	≤8.5	36	20	16	4.2	≥5	≥0.5	≥3	40	≥6	≥3.3
40	0.5 ~ 1.5K	0.5 ~ 1.5K	90	117	133	101	106	122	≤22	≤8.5	36	20	16	4.2	≥5	≥0.5	≥3	40	≥6	≥3.3
50	0.3 ~ 1.8K	0.3 ~ 1.8K	75	114	140	87	101	128	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	58	≥8	≥4.1
60	0.4 ~ 2K	0.4 ~ 2K	90	128	154	102	124	145	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	58	≥8	≥4.1
80	0.5 ~ 2.5K	0.6 ~ 2.5K	115	154	180	127	138	168	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	58	≥8	≥4.1
100	0.7 ~ 3K	0.7 ~ 3K	140	179	205	151	164	191	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	58	≥8	≥4.1
120	0.8 ~ 4K	0.8 ~ 4K	165	204	230	176	191	218	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	58	≥8	≥4.1
150	1 ~ 4K	1 ~ 4K	195	234	260	208	222	248	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	58	≥8	≥4.1
200	1 ~ 6K	1.5 ~ 6K	254	294	320	267	281	306	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	58	≥8	≥4.1
250	2 ~ 6K	2 ~ 6K	305	344	370	—	331	358	≤32	≤15	59	33	26	6	≥8	≥1.6	≥3.5	58	≥8	≥4.1
300	2 ~ 7K	2 ~ 7K	254	315	345	—	—	—	≤45	≤25	91	48	38	10	≥13	≥1.2	≥5	90	≥12	≥5.5
400	3 ~ 8K	3 ~ 8K	330	390	420	—	—	—	≤45	≤25	91	48	38	10	≥13	≥1.2	≥5	90	≥12	≥5.5
500	3 ~ 10K	3 ~ 10K	300	350	385	—	—	—	≤55	≤30	100	51	48	10	≥13	≥1.2	≥5	120	≥12	≥5.2
750	3 ~ 4K	4 ~ 4K	300	360	395	—	—	—	≤76	≤50	120	60	48	10	≥13	≥1.2	≥5	125	≥15	≥4.5
1000	3 ~ 2K	6 ~ 2K	300	389	440	—	—	—	≤120	≤70	163	78	100	8.5	≥13	≥1.2	≥5	170	≥15	≥4.5

Supplementary information

- In accordance with JIS standards, more reliable wire is used for V characteristics comparing with G.
- For safety reason, it is recommended to be used under 50% of rated power and under favourable circumstances.
- Use crimp terminal to connect to the resistor terminal as resistor body is a heating unit.



TRR

Nonflammable coating

Options TRR-A / TRR-HH High power ribbon wire wound resistor

TAMAGOHM

RoHS対応

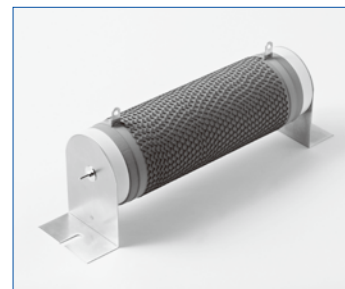
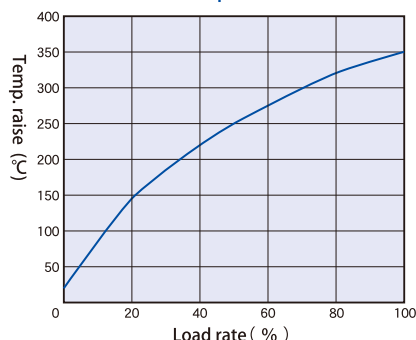
Features

- Good heat radiating effect by adopting ribbon-shaped (tenioid) resistor line.
- Suitable for large current and low resistance value despite of its small body.

Standard

- Resistance value range See below specifications table
- Resistance value tolerance K=±10% M=±20%
- Temperature coefficient of resistance +100 - 400 ppm/°Cmax
- Dielectric strength Combination of type O·S/
Type O - AC2000V 1min
Type S - AC 1000V 1min
- Insulation resistance ≥ 20MΩ (DC 1000V mega)
- Maximum use temperature 340°C

Surface temperature raise curve



Product designation (reference)

(Example) Standard product

TRR 100 G 5 Ω K - OS

Model Resistance value Tolerance J (= ±5%) K (= ±10%) Part fitting no mark : no fitting
- OS
- O
- S

(Example) With options

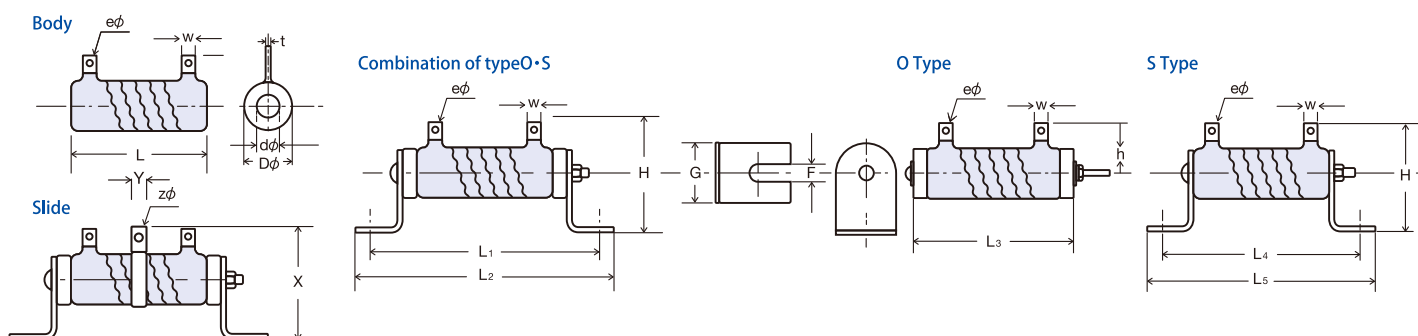
TRR 100 A 1 G 5 Ω K - OS

Model A : slide HH : with intermediate terminal Number of slide band Number of intermediate terminal Resistance value Tolerance J (= ±5%) K (= ±10%) Part fitting no mark : no fitting
- OS
- O
- S

※Specify resistance values in between taps for intermediate terminal

(Ω + Ω + Ω)
case of more than 2 taps

Dimensional drawing



Specifications Table

Model	Reted power (w)	Resistance value range (Ω)		Dimenstions (mm)																		Weight
				Body		OS		O	S												Body+OS	
		Standard	Slide/Tap	L±2	L1±2	L2±2	L3±2	L4±2	L5±2	Dφ	dφ	H±3	h±2	G	F	W	t	eφ	X±3	Y	Zφ	/g
50	80	0.05 ~ 4	0.1 ~ 4	75	114	140	87	101	128	≤40	≤15	59	33	26	6	≥8	≥1.6	≥3.5	66	≥11	≥4.1	165
60	100	0.05 ~ 5	0.1 ~ 5	90	128	154	102	124	145	≤40	≤15	59	33	26	6	≥8	≥1.6	≥3.5	66	≥11	≥4.1	190
80	120	0.05 ~ 6	0.1 ~ 5	115	154	180	127	138	168	≤40	≤15	59	33	26	6	≥8	≥1.6	≥3.5	66	≥11	≥4.1	225
100	150	0.05 ~ 8	0.1 ~ 6	140	179	205	151	164	191	≤40	≤15	59	33	26	6	≥8	≥1.6	≥3.5	66	≥11	≥4.1	260
120	180	0.05 ~ 10	0.1 ~ 7	165	204	230	176	191	218	≤40	≤15	59	33	26	6	≥8	≥1.6	≥3.5	66	≥11	≥4.1	285
150	220	0.1 ~ 12	0.2 ~ 9	195	234	260	208	222	248	≤40	≤15	59	33	26	6	≥8	≥1.6	≥3.5	66	≥11	≥4.1	315
200	300	0.1 ~ 15	0.2 ~ 12	254	294	320	267	281	306	≤40	≤15	59	33	26	6	≥8	≥1.6	≥3.5	66	≥11	≥4.1	405
250	370	0.1 ~ 20	0.2 ~ 15	305	344	370	—	331	358	≤40	≤15	59	33	26	6	≥8	≥1.6	≥3.5	66	≥11	≥4.1	480
300	450	0.1 ~ 20	0.2 ~ 18	254	315	345	—	—	—	≤55	≤25	91	48	38	10	≥13	≥1.2	≥5	95	≥11	≥4.2	875
400	600	0.2 ~ 30	0.4 ~ 23	330	390	420	—	—	—	≤55	≤25	91	48	38	10	≥13	≥1.2	≥5	95	≥11	≥4.2	1000
500	750	0.2 ~ 40	0.4 ~ 25	300	350	385	—	—	—	≤65	≤30	100	51	48	10	≥13	≥1.2	≥5	105	≥15	≥5.5	1460
750	1100	0.3 ~ 45	0.6 ~ 35	300	360	395	—	—	—	≤85	≤50	120	60	48	10	≥13	≥1.2	≥5	128	≥15	≥4.5	2250
1000	1500	0.5 ~ 30	1 ~ 28	300	389	440	—	—	—	≤120	≤70	163	78	100	8.5	≥13	≥1.2	≥5	173	≥15	≥4.5	4900

Supplementary information

- For quality maintenance, it is recommended to be used under 50% of power rating and under favourable circumstances.
- Use crimp terminal to connect to the resistor terminal as resistor body is a heating unit.
- TRR is the reference standard since TRR and R are the same specifications product of different colors.
- The rated power of TRR-A may be changed by variability of resistance values.



TWC

Nonflammable coating
Resistor with metal end caps

TAMA OHM

RoHS対応



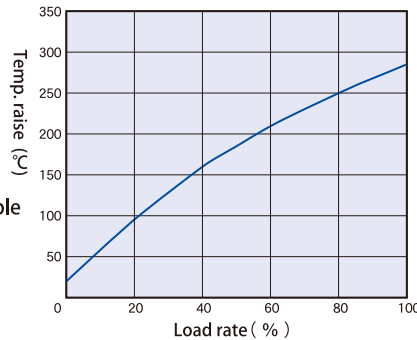
Features

- Equivalent of JIS RWC
- Metal caps are attached to the terminal part by using C-shaped holder (shaft not used)

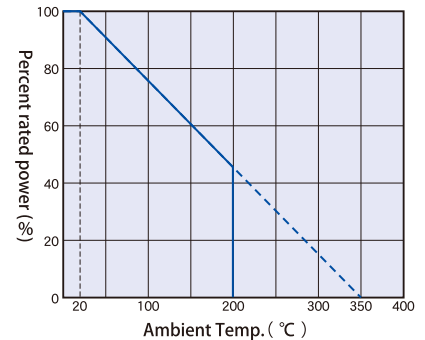
Standard

- Resistance value range See below specifications table
- Resistance value tolerance J=±5% K=±10%
- Temperature coefficient of resistance +100 - 400 ppm/°C max
- Insulation resistance ≥ 20MΩ (DC 1000V mega)
- Maximum use temperature 340°C

Surface temperature raise curve



Rated power reduction curve



Product designation (reference)

(Example) Standard product

— **TWC**
100
G
50 Ω
 J
— CH

no mark: induction winding
 N-: non-inductive winding

Wattage
 Characteristics G: standard V

Resistance value

Tolerance J (= ±5%)
 K (= ±10%) - CH (with C-shaped holder)

Part fitting
 no mark: no fitting

(Example) With options

— **TWC**
100
A
1
G
50 Ω
 J
— CH

no mark: induction winding
 N-: non-inductive winding (without slide)

Wattage
 A: slide
 HH: with intermediate terminal

Number of slide band
 Number of intermediate terminal

Characteristics G: standard V

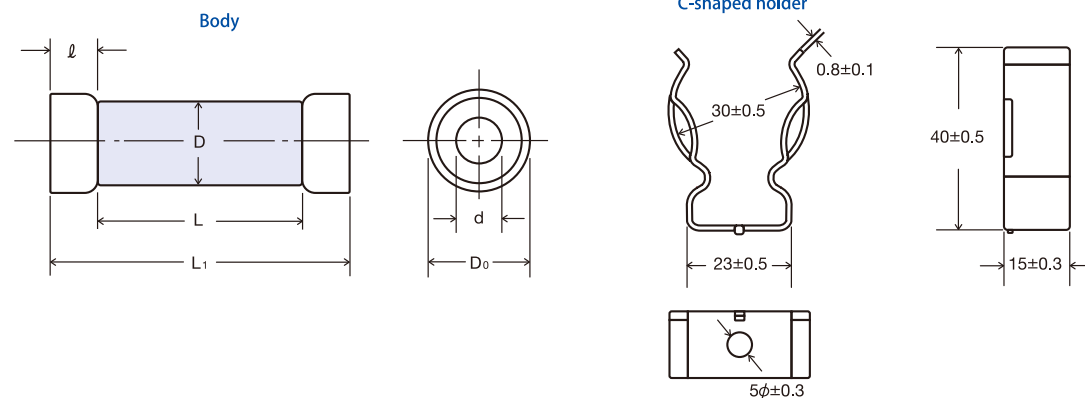
Resistance value

Tolerance J (= ±5%)
 K (= ±10%) - CH (with C-shaped holder)

Part fitting
 no mark: no fitting

※Specify resistance values in between taps for intermediate terminal

Dimensional drawing



Specifications Table

Model (rated power/w)	Resistance value range (Ω)		Dimensions (mm)					
	G characteristics (standard)	V characteristics	L±2	L1±2	Dφ	Do φ±1	d φ±1	ℓ±1
50	1 ~ 20K	3 ~ 20K	75	100	≤32	30	13	12
60	1.5 ~ 25K	4 ~ 25K	90	115	≤32	30	13	12
80	2 ~ 30K	6 ~ 30K	115	140	≤32	30	13	12
100	2.5 ~ 40K	7 ~ 40K	140	165	≤32	30	13	12
120	3 ~ 50K	9 ~ 50K	165	190	≤32	30	13	12
150	3 ~ 60K	10 ~ 60K	195	220	≤32	30	13	12
200	5 ~ 70K	14 ~ 70K	254	280	≤32	30	13	12
250	5 ~ 80K	17 ~ 80K	305	330	≤32	30	13	12

Supplementary information

- In accordance with JIS standards, more reliable wire is used for V characteristics comparing with G.
- For quality maintenance, it is recommended to be used under 50% of rated power and under favourable circumstances.

TRH / RWH

TRH-A / TRH-HH

TRR / TWC

TRV /
connected with TRV

TRF / SG · M

SH / SHP

RHA

IRH / IRV

LOAD UNIT

TRV

Nonflammable coating

Power type wire wound variable resistor

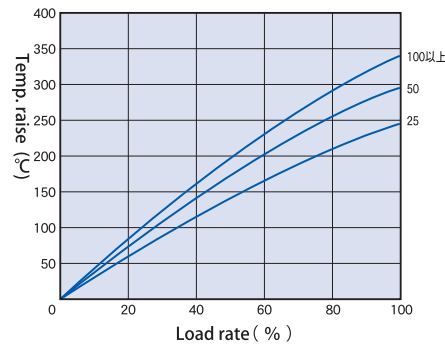
Features

- Equivalent of JIS RPC
- Resistance values are changeable by rotating brush.

Standard

- Resistance value range See below specifications table
- Resistance value tolerance $K = \pm 10\%$
- Temperature coefficient of resistance $+100 - 400 \text{ ppm}/^\circ\text{Cmax}$
- Dielectric strength 25W - 50W AC 1000V 1 min
 $\leq 100\text{W AC } 2000\text{V } 1 \text{ min}$
 $\geq 20\text{M}\Omega$ (DC 1000V mega)
- Insulation resistance $\geq 20\text{M}\Omega$ (DC 1000V mega)
- Maximum use temperature 340°C

Surface temperature raise curve



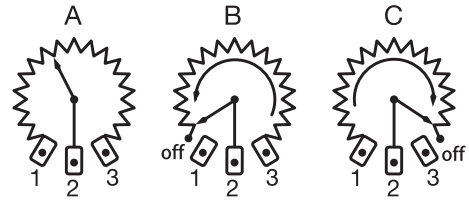
Shaft head

Round R	
With ditch S	

Standard

Positions of breakers

Shape viewed from the shaft side ▶



A	Standard	No electrical breakage
B	Breaker B	There is a breaker position when the shaft is fully rotated counterclockwise
C	Breaker C	There is a breaker position when the shaft is fully rotated clockwise

Product designation (reference)

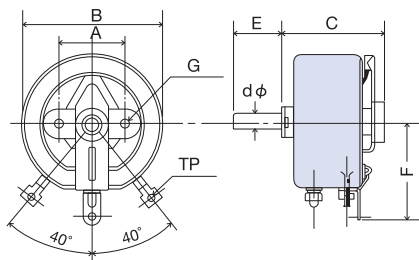
TRV 100 A 45 R 50 Ω KK

Wattage A - no breaker Shaft dimension B - breaker B standard : Refer to value [E] in specifications table
C - breaker C Shaft head R:round (standard)
S:with ditch

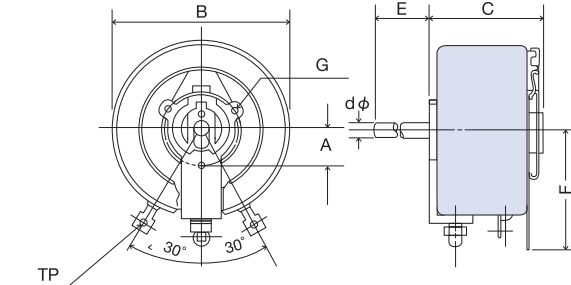
※Specify the necessary maximum resistance value from [resistance value range] in specification table. (range from 0 Ω -specified maximum value)

Dimensional drawing

25W · 50W



100W~1000W



Specifications Table

Model	Rated power (W)	Resistance value range (Ω) ※	Dimensions (mm)								Rotation angle	Weight (g)
			A ± 0.5	B	C	d ϕ	E ± 5	F ± 5	G ϕ tap	TP (ϕ)		
TRV 25	25	1 ~ 5K	25	42 ± 5	35 ± 5	6	20	30	M3	3.2	280	150
TRV 50	50	1 ~ 5K	25	57 ± 5	42 ± 5	6	20	40	M3	3.2	280	250
TRV 100	100	1 ~ 10K	18	85 ± 5	55 ± 5	6	45	55	M4	4.2	300	700
TRV 200	200	1 ~ 10K	18	105 ± 5	70 ± 5	8	60	65	M4	4.2	300	1300
TRV 300	300	1 ~ 10K	18	105 ± 5	95 ± 5	8	50	65	M4	4.2	300	1800
TRV 500	500	1 ~ 3K	38	155 ± 5	105 ± 5	12	65	115	M6	5.2	300	3000
TRV 750	750	1.5 ~ 2K	38	205 ± 10	135 ± 10	12	65	140	M6	6.2	300	6000
TRV 1000	1000	3 ~ 1K	60	260 ± 10	165 ± 10	14	65	190	M6	6.2	300	12000

Supplementary information

● For quality maintenance, it is recommended to be used under 50% of rated power and under favourable circumstances. ● Use crimp terminal to connect to the resistor terminal as resistor body is a heating unit. ● The rated power of TRR-A may be changed by variability of resistance values. ● Please send inquiries to technical support in case specified resistance value is beyond maximum resistance value.



TRV Connection

Nonflammable coating

Power type wire wound variable resistor

TAMAGOHM

TRH / RWH

TRH-A / TRH-HH

TRR / TWC

TRV /
connected with TRV

TRF / SG · M

SH / SHP

RHA

IRH / IRV

LOAD UNIT

Features

- Equivalent of JIS RPC
- TRV models are connected together on the same axis.

Standard

- Resistance value range See below specifications table
- Resistance value tolerance $K = \pm 10\%$
- Temperature coefficient of resistance $+100 - 400 \text{ ppm}/^\circ\text{Cmax}$
- Dielectric strength 25W - 50W AC 1000V 1 min
100W AC 2000V 1 min
 $\geq 20 \text{ M}\Omega$ (DC 1000V mega)
- Insulation resistance $\geq 20 \text{ M}\Omega$ (DC 1000V mega)
- Maximum use temperature 340°C



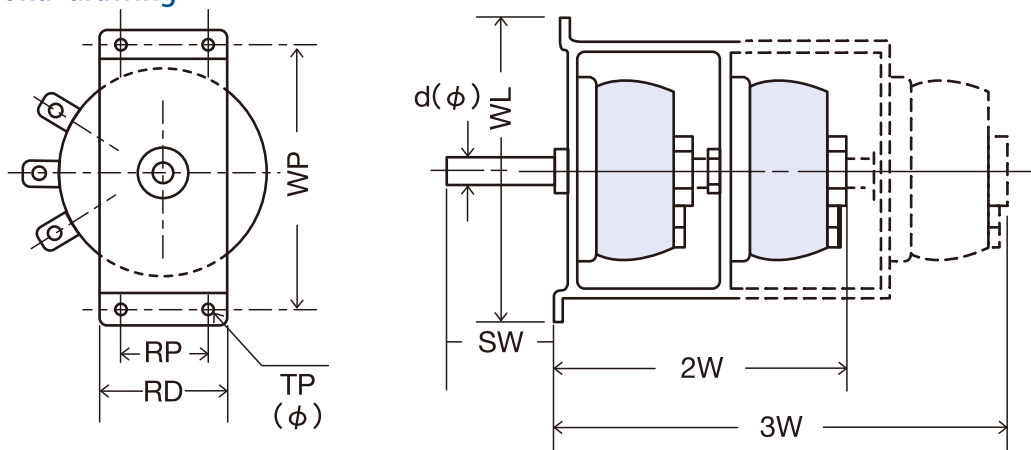
Product designation (reference)

TRV 100 A × 2 (50 Ω + 50 Ω) + Ω

Wattage A-no breaker
 B-breaker B
 C-breaker C Number of connection

resistance value resistance value ≥ 3 connections

Dimensional drawing



Specifications Table

Model	Dimensions (mm)								
	WL ± 3	RD ± 3	WP ± 3	RP ± 0.5	2W ± 3	3W ± 3	TP (ϕ) ± 0.3	SW	d ϕ
TRV 25	75	30	65	20	100	152	3.2	20	6
TRV 50	90	40	80	20	110	175	3.2	20	6
TRV 100	135	60	123	40	135	205	4.2	45	6
TRV 200	160	70	150	50	178	315	4.2	45	8
TRV 300	170	70	150	50	227	330	4.2	50	8
TRV 500	220	100	205	80	248	383	5.2	65	12
TRV 750	290	120	270	90	315	487	6.2	65	12
TRV 1000	370	180	340	140	400	585	6.2	65	14

Supplementary information

- For quality maintenance, it is recommended to be used under 50% of rated power and under favourable circumstances.
- Use crimp terminal to connect to the resistor terminal as resistor body is a heating unit.



TRF

Nonflammable coating

Flat resistor

TAMAGOHM

RoHS対応

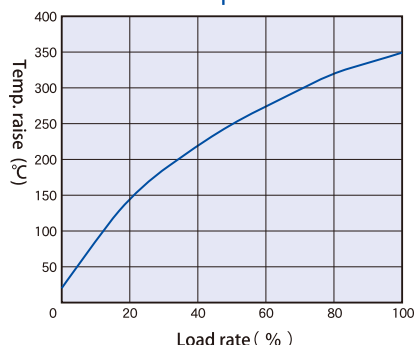
Features

- Space saving is achieved by its flat shape
- Suitable for non-inductive winding

Standard

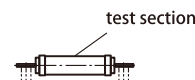
- Resistance value range See below specifications table
- Resistance value tolerance $J = \pm 5\%$ $K = \pm 10\%$
- Temperature coefficient of resistance $+100 - 400 \text{ ppm}/^\circ\text{Cmax}$
- Dielectric strength AC 1000V 1 min
- Insulation resistance $\geq 20 \text{ M}\Omega$ (DC 1000V mega)
- Maximum use temperature 340°C

Surface temperature raise curve



Options

- Intermediate terminal - 20-24W
- Non-inductive wire - provided depending on the resistance values



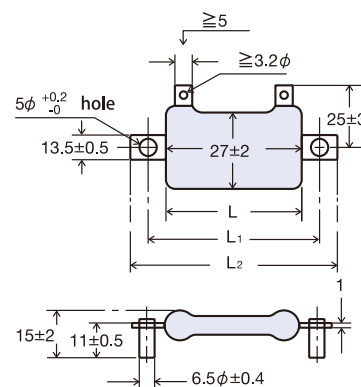
Product designation (reference)

-	TRF	150			G	50	Ω	J
no mark: induction winding (standard) N-: non-inductive winding	Wattage	no mark: no options HH-: intermediate terminal	no mark: no options Number of intermediate terminal	Characteristics G (standard) V	resistance value			Tolerance J K

※Specify resistance values in between taps for intermediate terminal



Dimensional drawing

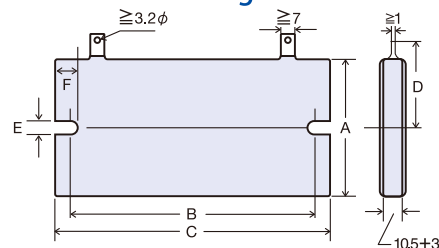


Specifications Table (TRF20~24)

Model	Rated power (w)		Resistance value range (Ω)				Dimenstions (mm)			Weight
	G characteristics (standard)	V characteristics	Inductive winding		Non-inductive winding		L±2	L1±2	L2±2	/g
			G characteristics (standard)	V characteristics	G characteristics (standard)	V characteristics				
20	15	21	0.3~1K	1~1K	0.1~1K	0.3~1K	32	51	64	22
21	22	31	0.6~2K	2~2K	0.2~2K	0.5~2K	51	70	83	27
22	37	53	1.2~3.5K	4~3.5K	0.3~3.5K	1~3.5K	89	108	120	45
23	47	68	2~5K	6~5K	0.4~5K	1.5~5K	120	140	153	53
24	63	91	2.5~7K	8~7K	0.5~7K	2~7K	152	171	184	69



Dimensional drawing



Specifications Table (TRF150,250)

Model	Rated power (w)		Resistance value range (Ω)				Dimenstions (mm)						Weight
	G characteristics (standard)	V characteristics	Inductive winding		Non-inductive winding		A±2	B±2	C±3	D±2	E±2	F±2	/g
			G characteristics (standard)	V characteristics	G characteristics (standard)	V characteristics							
150	110	110	2.5~20K	8~20K	0.5~20K	2~20K	75	135	150	50	13	14	200
250	180	180	5~30K	15~30K	1~30K	3~30K	100	180	200	63	18	19	340

Supplementary information

- In accordance with JIS standards, more reliable wire is used for V characteristics comparing with G.
- For quality maintainance, it is recommended to be used under 50% of rated power and under favourable circumstances.
- Use crimp terminal to connect to the resistor terminal as resistor body is a heating unit.



SG / M

Axial terminal cement resistor

TAMAOHM

RoHS対応



TRH / RWH

TRH-A / TRH-HH

TRR / TWC

TRV /

TRF / SG · M

SH / SHP

RHA

IRH / IRV

LOAD UNIT

Features

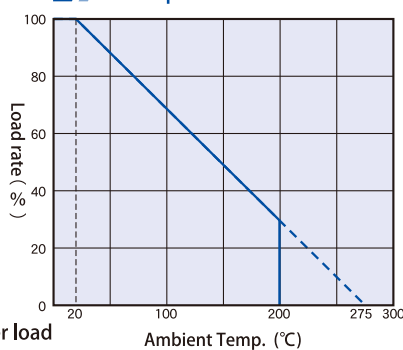
- Completely sealed high insulation case filled with special cement
- Capable of stable fitting and suitable for PCB mounting as it is excellent in flame retardancy and high temperature resistance.

SG / SM

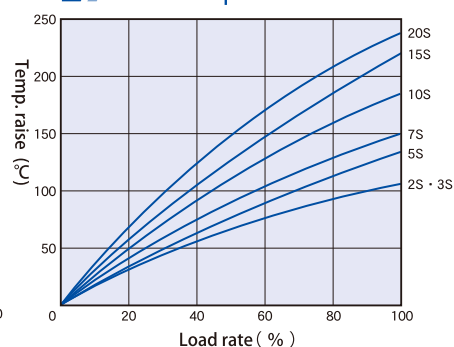
Standard

- Resistance value tolerance $J = \pm 5\%$ $K = \pm 10\%$
- Temperature coefficient of resistance $\pm 400 \text{ ppm}/^\circ\text{C}$ (max $< 20\Omega$) $\pm 260 \text{ ppm}/^\circ\text{C}$ ($\geq 20\Omega$)
- Withstand Voltage $\Delta R \pm (0.1\% + 0.05\Omega)$ AC 1000V 1 min $\geq 20M\Omega$ (DC 500V)
- Insulation resistance $\Delta R \pm (2\% + 0.05\Omega)$ 10 times more, than rated load voltage 5 sec
- Short-time overload $\Delta R \pm (2\% + 0.05\Omega)$ Rated power load - 90minutes ON 30minutes OFF 1000hours 230°C, immersing 5 seconds No evidence of flaming for 1 minute after 1000% rated power load -40°C +200°C
- Durability No evidence of abnormality after 3 minutes immersing into IPA
- Solderability
- Flame resistance
- Use temperature range
- Solvent resistance

Rated power reduction curve



Surface temperature raise curve



Specifications Table

Model	Rated power (W)	Resistance value range(Ω)				Dimensions (mm)			
		SG		SM					
SG	SM	Min (Ω)	Max (KΩ)	Min (Ω)	Max (KΩ)	L ^{±1.5}	H ^{±1}	W ^{±1}	dφ
2SG	2SM	2	0.1	0.22	240	13	18	6.3	0.8
3SG	3SM	3	0.1	0.27	300	22	22.4	8	0.8
5SG	5SM	5	0.1	0.33	360	27	22.4	9	0.8
7SG	7SM	7	0.1	0.68	750	30	35.5	9	0.8
10SG	10SM	10	0.1	1.5	1600	30	50	9	0.8
15SG	—	15	0.1	2.2	—	—	50	12.5	0.8
20SG	—	20	0.1	2.7	—	—	63	12.5	0.8



Product designation (reference)

2SG

Model
SG
SM

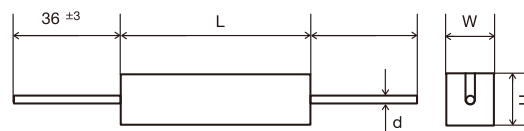
1K Ω

Resistance
value

J

Tolerance
 $J = \pm 5\%$
 $K = \pm 10\%$

Dimensional drawing



M / RFM

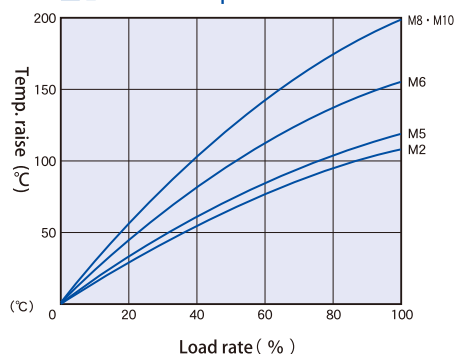
Standard

- Resistance value tolerance $F = \pm 1\%$ $J = \pm 5\%$ $K = \pm 10\%$
- Insulation resistance $\geq 100M\Omega$
- Withstand voltage AC 1000 V for 1 minute

RFM is non-inductive winding



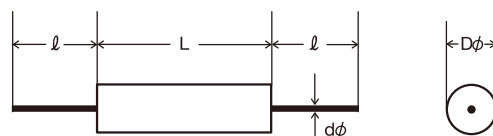
Surface temperature raise curve



Specifications Table

Model	Rated power (W)	Resistance value range (Ω ~ KΩ)	Dimensions (mm)			
			Dφ	L	ℓ ^{±3}	dφ
M 2	2	0.1 ~ 1	6	13	38	0.8
M 5	5	0.1 ~ 3	9	26	38	0.8
M 6	6	0.1 ~ 6	12	35	38	0.8
M 8	8	0.1 ~ 7	10	48	38	0.8
M10	10	0.1 ~ 13	12	51	38	0.8

Dimensional drawing



Product designation (reference)

M2

Model M : inductive winding (standard)
RFM : non-inductive winding

1K Ω

Resistance
value

J

Tolerance
 $F = \pm 1\%$ $J = \pm 5\%$ $K = \pm 10\%$



SH Hone type cement resistor

TAMAGOHM

RoHS対応

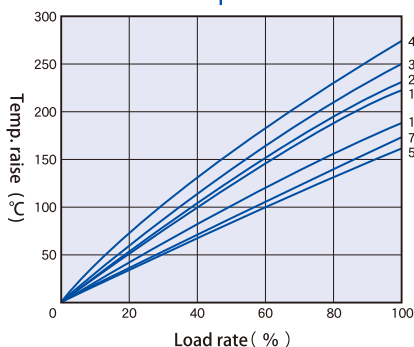
Features

- Resistor the body of which is completely sealed and filled with special cement
- Solderless terminal (faston terminal) is available for easier hard wiring
- Very low resistance product is manufacturable depending on applications.

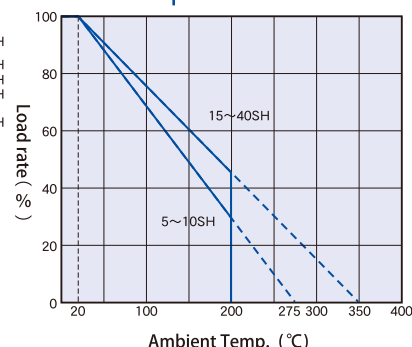
Standard

- Resistance value tolerance $J = \pm 5\%$ $K = \pm 10\%$ $F = \pm 1\%$ ($\geq 10\Omega$) $G = 2\%$ ($\geq 10\Omega$) $\pm 400 \text{ ppm}/^\circ\text{C}$ max ($< 20\Omega$) $\pm 260 \text{ ppm}/^\circ\text{C}$ ($\geq 20\Omega$) $\Delta R \pm (0.1\% + 0.05\Omega)$ AC 2000V 1 min $\geq 20M\Omega$ (DC 500V) 270°C, immersing 5 seconds 75% of this is covered by new soldering $\Delta R \pm (2\% + 0.05\Omega)$ 10 times more, than rated load voltage 5 sec $\Delta R \pm (2\% + 0.05\Omega)$ Rated load 90minutesON 30minutesOFF 1000 hours 270°C, immersing 5 seconds Over 75% should be covered by new soldering No evidence of flaming for 1 minute after 1000% rated power load -55°C +200°C No evidence of abnormality after 3 minutes immersing into IPA
- Temperature coefficient of resistance
- Withstand Voltage
- Insulation resistance
- Short-time overload
- Durability
- Solderability
- Flame resistance
- Use temperature range
- Solvent resistance

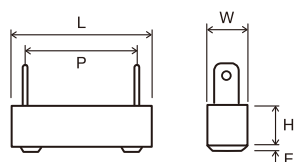
Surface temperature raise curve



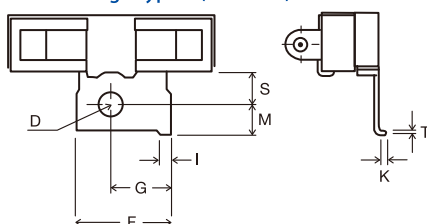
Rated power reduction curve



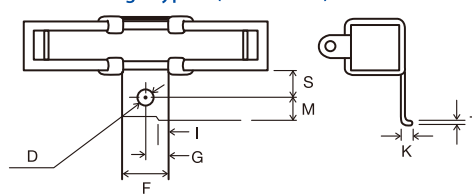
Dimensional drawing



Metal fitting : Type 1 (5W~7W)



Metal fitting : Type 2 (10W~40W)

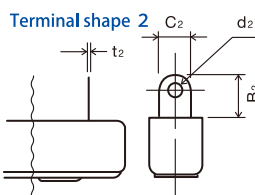
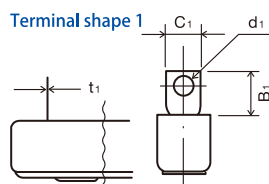


Specifications Table

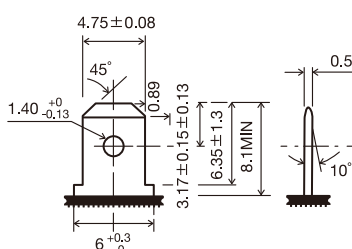
Model	Rated power (W)	Resistance value range		Dimenstions (mm)												
		Min(Ω)	Max(KΩ)	L	W ^{±1.5}	H ^{±1.5}	E ^{±0.3}	S ^{±2}	M ^{±0.5}	F ^{±0.5}	D ^{±0.3}	G ^{±0.3}	T ^{±0.1}	I ^{±0.3}	K ^{±0.3}	P
5 SH	5	0.001	3.6	27 ^{±1.5}	9.5	9.5	—	5.5	5	16	4.5	10	0.6	2	0.9	15
7 SH	7	0.001	5.6	35 ^{±1.5}	9.5	9.5	—	5.8	5	16	4.5	10	0.6	2	0.9	22.5
10 SH	10	0.001	8.2	48 ^{±1.5}	9.5	9.5	0.8	8	6	12	4	6	0.6	3	2.2	35
15 SH	15	0.001	10	48 ^{±1.5}	12.5	12.5	1	8	6	12	4.2	6	0.8	3	2.2	35
20 SH	20	0.001	16	63.5 ^{±2}	12.5	12.5	1	8	6	12	4.2	6	0.8	3	2.2	50
30 SH	30	0.001	20	75 ^{±2}	19	19	1	10	8	18	4.2	9	0.8	3	2.2	55
40 SH	40	0.001	24	90 ^{±2}	19	19	1	10	8	18	4.2	9	0.8	3	2.2	69

※ P : Terminal shape 1 ± 5 / Terminal shape 2 ± 1.5

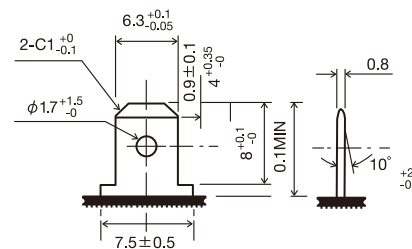
Dimensional drawing



187 solderless terminal (15W~20W)



250 solderless terminal (15W~40W)



Specifications Table

Model	Terminal shape 1 dimensions (mm)					Terminal shape 2 dimensions (mm)				
	Resistance value range	C1	B1	d 1	t 1	Resistance value range	C2	B2	d 2	t 2
5 SH	0.001Ω~0.009Ω	5	8	3	1	0.01Ω以上	5	6.5	2	0.4
7 SH ~ 10 SH	0.001Ω ~ 0.06Ω	5	8	3	1	0.07Ω以上	5	6.5	2	0.4
15 SH ~ 20 SH	0.001Ω ~ 0.09Ω	7.5	12	3.5	1.2	0.1Ω以上	6	7.5	2.5	0.5
30 SH ~ 40 SH	0.001Ω ~ 0.09Ω	7.5	12	4.5	1.2	0.1Ω以上	7.5	11	3	0.5

※ The resistance values of solderless terminal is the same as terminal shape 2.

Product designation (reference)

20SH

Model

10 Ω

Resistance Value

J

Tolerance J=±5% K=±10%

A

Metal fitting

Terminal shape 1&2=no mark (standard)
Solderless terminal No. :
15~40W (or specify 187 or 250)
30W~40W : 250



SHP

Cement resistor

TAMAOHM

RoHS対応



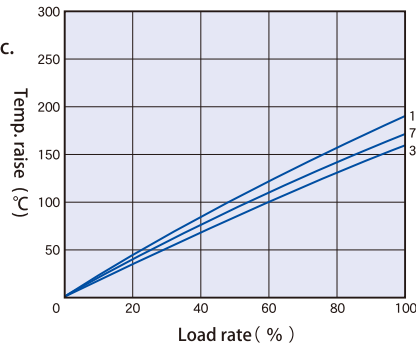
Features

- Easily mounted on printed circuit board
- Excellent safety achieved as the case material is of ceramic.
- The terminal shape changes for 3SHP.

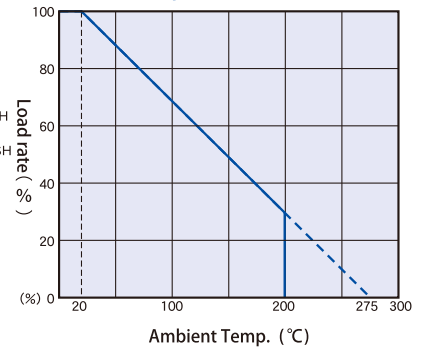
Standard

- Resistance value tolerance J= $\pm 5\%$ ($\geq 10\Omega$)
K= $\pm 10\%$ ($< 10\Omega$)
- Temperature coefficient of resistance ± 400 ppm/ $^{\circ}\text{C}$ max ($< 20\Omega$)
 ± 260 ppm/ $^{\circ}\text{C}$ ($\geq 20\Omega$)
- Withstand Voltage $\Delta R \pm (0.1\% + 0.05\Omega)$
AC 1000V 1 min
 $\geq 20M\Omega$ (DC 500V)
- Insulation resistance $\Delta R \pm (2\% + 0.05\Omega)$ 10 times more, than rated load voltage 5 sec
- Short-time overload $\Delta R \pm (2\% + 0.05\Omega)$
- Durability Rated power load - 90minutes ON 30minutesOFF 1000hours
270 $^{\circ}\text{C}$, immersing 5 seconds
Over 75% should be covered by new soldering
No evidence of flaming for 1 minute after 1000% rated power load
-40 $^{\circ}\text{C}$ +200 $^{\circ}\text{C}$
No evidence of abnormality after 3 minutes immersing into IPA
- Solderability
- Flame resistance
- Use temperature range
- Solvent resistance

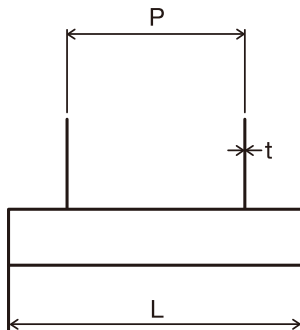
Surface temperature raise curve



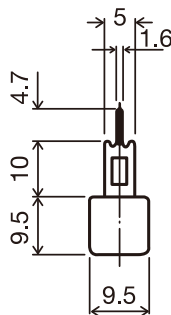
Rated power reduction curve



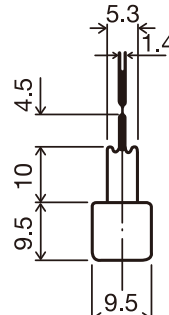
Dimensional drawing



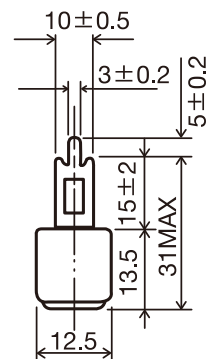
3SHP



5SHP~10SHP



15SHP~20SHP



Product designation (reference)

5SHP	100 Ω	J
Model	Resistance value	Tolerance J= $\pm 5\%$ K= $\pm 10\%$

Specifications Table

Model	Rated power (W)	Resistance value range		Dimensions (mm)		
		Min (Ω)	Max (K Ω)	L ± 1.5	P ± 1	t
3 SHP	3	0.1	0.39	24	12.5	0.4
5 SHP	5	0.1	0.5	27	15	0.4
7 SHP	7	0.1	1.2	35	22.5	0.4
10 SHP	10	0.1	1.5	48	35	0.4
15 SHP	15	0.1	2.2	48	35	0.5
20 SHP	20	0.1	2.7	63.5	50	0.5

TRH / RWH

TRH-A / TRH-HH

TRR / TWC

TRV / connected with TRV

TRF / SG-M

SH / SHP

RHA

IRH / IRV

LOAD UNIT



RHA

Power type metal clad wire wound resistor

TAMAGOHM

RoHS対応

This is minitureized power type wire wound resistor which radiates the heat generated inside efficiently by use of lead-free nonflammable silicon mould.

Features

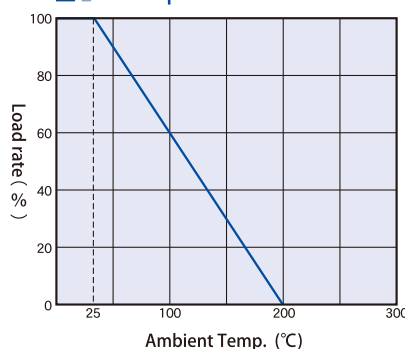
- Excellent performance in short time overload characteristics.
- Excellent temperature characteristics.
- Non-inductive wire with improved frequency characteristics is also available.

Characteristics

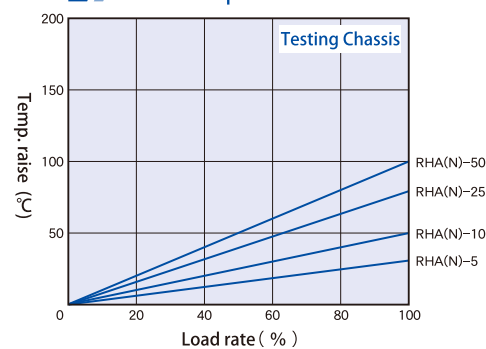
(the characteristics in the below table can not be applied to the resistance values less than 0.1Ω)

Item	Testing conditons	Standard values
Terminal strength	Full test 30sec MIN / RHA5 10N,RHA10 22N / RHA25 RHA50 44N	± (0.2%+0.05Ω)
Flame resistance	200°C, 2 hours	± (0.5%+0.05Ω)
Withstand voltage	Standard values (value of withstand voltage in the spec. table) 1minute	± (0.2%+0.05Ω)
Insulation resistance	DC500V	≥1000MΩ
Short-time overload	500% Rated voltage, 5 seconds, once	± (0.5%+0.05Ω)
Moisture resistance (in steady state)	Temp. 40°C, Humidity 95%, 1/10 rated voltage (1.5 hours ON, 30 min OFF) for 500 hours	± (0.5%+0.05Ω)
Durability (rated load)	Room temperature (with chassis), rated voltage, 1.5 hour ON, 30 min OFF - 1000 hours	± (1%+0.05Ω)
Anti-shock	10Hz?55Hz?10Hz (1min.) paralell and right-angled for 2 hours	± (0.2%+0.05Ω)

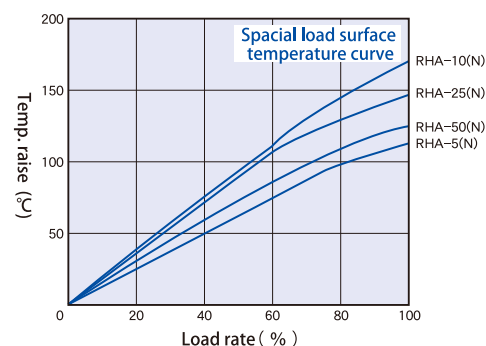
Rated power reduction curve



Surface temperature raise curve



Testing Chassis Dimensions (mm)	RHA(N)5 152×102×51×1t RHA(N)10 152×102×51×1t RHA(N)25 178×127×51×1t RHA(N)50 178×127×51×1t
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Product designation (reference)

RHA10	N	50 Ω	J
Model	Inductive winding : G (standard) Non-inductive winding : N	Resistance value	Tolerance D=±0.5% J=±5% (standard) F=±1% K=±10% G=±2% H=±3%

Specifications Table

Model	Rated power(W)		Resistance value range(Ω)		Resistance value tolerance(%)	Maximum use voltage (V) ※		Withstand voltage (V)	Use temperature range (°C)	Maximum weight (g)
	With chassis fitting	Space	Inductive winding	Non-inductive winding		Inductive winding	Non-inductive winding			
RHA 5	5	3	0.05~3K	0.1~1K	±0.5 (D) ≥10Ω ±1 (F) ≥0.1Ω ±2 (G) ±3 (H) ±5 (J) ±10 (K)	120	70	500	-55~+200	3
RHA 10	10	6	0.02~6K	0.03~2.3K		245	180	1000		7
RHA 25	20	8	0.012~15K	0.02~5.5K		500	300			15
RHA 50	30	10	0.01~40K	0.02~12K		1300	600	2000		33

※The maximum use limit voltage can be calculated from the rated voltage(=√Rated power x resistance value), or one of the smaller value of themaximum use voltages listed in the spec. table.

●Temperature characteristics (basic temperature 25°C, testing temperature - 55°C, +125°C, +200°C)

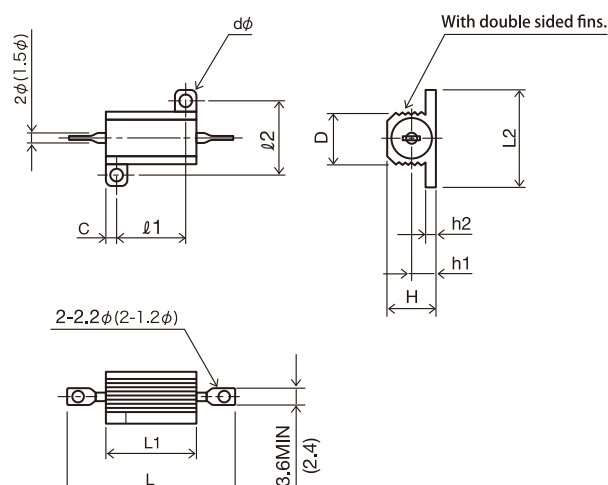
Model	Temperature coefficient (ppm/°C)			
	±30	±50	±100	±500
RHA 5	30Ω以上	0.1Ω~<30Ω	0.05Ω~<0.1Ω	—
RHA 10	50Ω以上	0.1Ω~<50Ω	0.05Ω~<0.1Ω	0.02Ω~<0.05Ω
RHA 25	200Ω以上	0.1Ω~<200Ω	0.05Ω~<0.1Ω	0.012Ω~<0.05Ω
RHA 50	400Ω以上	0.1Ω~<400Ω	0.05Ω~<0.1Ω	0.01Ω~<0.05Ω
RHA 5N	10Ω以上	0.1Ω~<10Ω	—	—
RHA 10N	30Ω以上	0.1Ω~<30Ω	0.05Ω~<0.1Ω	0.03Ω~<0.05Ω
RHA 25N	50Ω以上	0.1Ω~<50Ω	0.05Ω~<0.1Ω	0.02Ω~<0.05Ω
RHA 50N	100Ω以上	0.1Ω~<100Ω	0.05Ω~<0.1Ω	0.02Ω~<0.05Ω

Dimension table

Model	Dimensions (mm)											
	L±1.5	L1±1	L2±0.8	ℓ1±0.8	ℓ2±0.8	D±1	H±0.8	d±0.3	c±0.8	h1±1	h2±0.5	
RHA 5	28	15.3	16.4	11.3	12.5	8.5	8	2.3	2	4	1.6	
RHA 10	35	19	20	14.3	15.9	10.8	10	2.4	2.4	5.3	2.4	
RHA 25	49	27	28	18.3	19.8	13.5	14	3.2	4.4	7.1	2.4	
RHA 50	71	49.2	29.2	39.7	21.4	15.1	16	3.2	4.8	8	2.5	

Dimensional drawing

RHA5 (N) ~RHA50 (N) () 尺寸 RHA5 (N)



RHA | Power metal clad wire wound resistor

This is by heat-resistant cement sealed minitured power type wire wound resistor.

Features

- Excellent performance in short time overload characteristics.
- Excellent temperature characteristics.
- Non-inductive wire with improved frequency characteristics is also available.

Characteristics

(the characteristics in the below table can not be applied to the resistance values less than 0.1Ω)

Item	Testing conditons	Standard values
Terminal strength	Torque test 5~15sec/RHA75 2.7N・m, RHA100 RHA250 3.6N・m	± (0.2% + 0.05Ω)
Flame resistance	275°C, 2 hours	± (0.5% + 0.05Ω)
Withstand voltage	4500V 1 minute	± (0.2% + 0.05Ω)
Insulation resistance	DC500V	≥ 1000MΩ
Short-time overload	500% Rated voltage, 5 seconds, once	± (0.5% + 0.05Ω)
Moisture resistance (in steady state)	Temp. 40°C, Humidity 95%, 1/10 rated voltage (1.5 hours ON, 30 min OFF) for 500 hours	± (0.5% + 0.05Ω)
Durability (rated load)	Room temperature (with chassis), rated voltage, 1.5 hour ON, 30 min OFF - 1000 hours	± (3% + 0.05Ω)
Anti-shock	10Hz?55Hz?10Hz (1min.) parallel and right-angled for 2 hours	± (0.2% + 0.05Ω)

Product designation (reference)

RHA100

Model

N

Inductive winding
: G (standard)
Non-inductive winding : N

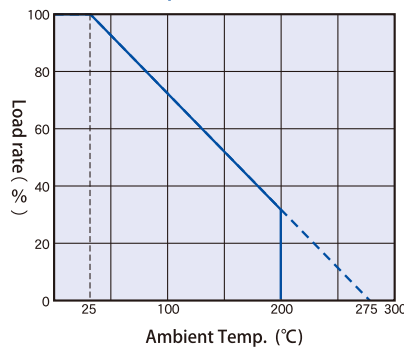
50 Ω

Resistance value

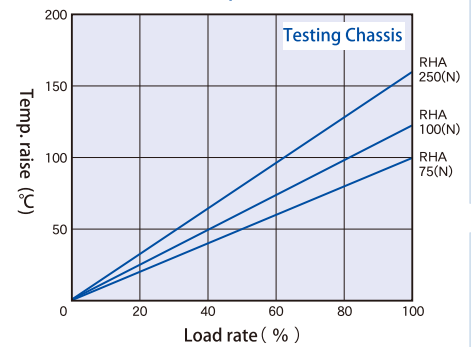
J

Tolerance
D=±0.5% J=±5% (standard)
F=±1% K=±10%
G=±2% H=±3%

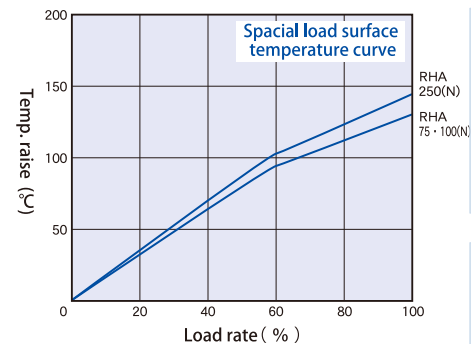
Rated power reduction curve



Surface temperature raise curve



Testing Chassis Dimensions (mm)	RHA75(N) 305×305×3t	RHA100(N) 305×305×3t	RHA250(N) 305×305×3t
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Specifications Table

Model	Rated power(W)		Resistance value range(Ω)		Resistance value tolerance (%)	Maximum use voltage (V) ※		Withstand voltage (V)	Use temeparature range (°C)	Maximum weight (g)
	With chassis fitting	Space	Inductive winding	Non-inductive winding		Inductive winding	Non-inductive winding			
RHA 75	75	30	0.2~20K	0.07~10K	±0.5 (D) ≥10Ω ±1 (F) ≥0.1Ω	1500	1050	4500	-55~+200	200
RHA 100	120	50	0.4~50K	0.12~25K	±2 (G) ±3 (H)	1900	1340			450
RHA 250	200	75	0.6~80K	0.1~40K	±5 (J) ±10 (K)	2500	1750			800

※The maximum use limit voltage can be calculated from the rated voltage(=√Rated power x resistance value), or one of the smaller value of themaximum use voltages listed in the spec. table.

Temperature characteristics (basic temperature 25°C, testing temperature - 55°C, +125°C, +200°C)

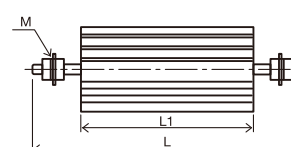
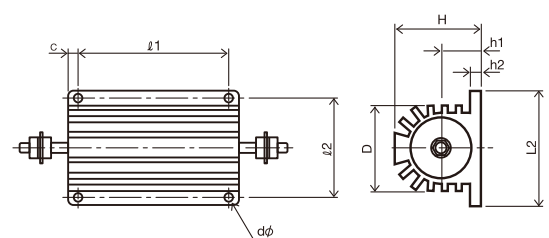
Model	Temperature coefficient (ppm/°C)		
	±30	±50	±100
RHA 75	≥2KΩ	0.3Ω~<2KΩ	0.2Ω~<0.3Ω
RHA 100	≥4KΩ	0.5Ω~<4KΩ	0.4Ω~<0.5Ω
RHA 250	≥6KΩ	0.8Ω~<6KΩ	0.6Ω~<0.8Ω
RHA 75N	≥1KΩ	0.5Ω~<1KΩ	0.07Ω~<0.5Ω
RHA 100N	≥2KΩ	0.7Ω~<2KΩ	0.12Ω~<0.7Ω
RHA 250N	≥3KΩ	1Ω~<3KΩ	0.1Ω~<1Ω

Dimension table

Model	Dimensions (mm)												
	L	L1±1	L2±0.8	ℓ ₁ ±0.8	ℓ ₂ ±0.8	D±1	H±0.8	d±0.3	c±0.8	h1±1	h2±0.5	M	
RHA 75	110	66	52	56	42	32	33	4.8	5	16	3.2	5	
RHA 100	140	88.9	71.4	69.9	57.2	46	44.5	4.8	9.5	19.5	4.8	6	
RHA 250	177.8	114.3	76.2	98.4	63.5	54	55.6	4.8	7.9	25.4	6.4	6	

Dimensional drawing

RHA75 (N) ~RHA250 (N)





IRH/IRV

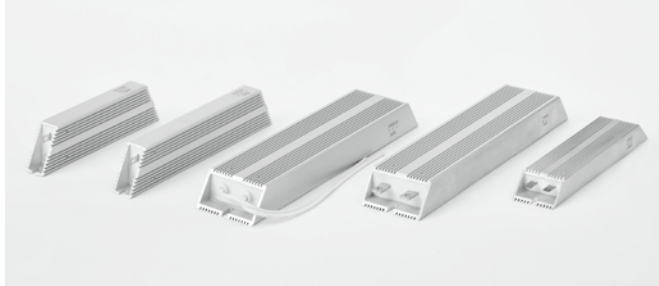
TAMAGOHM

RoHS対応

High power universal metal clad wire wound resistor

Features

Excellent heat-resistant cement sealed resistor.

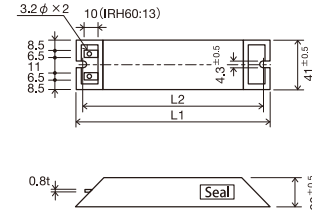


Specifications Table

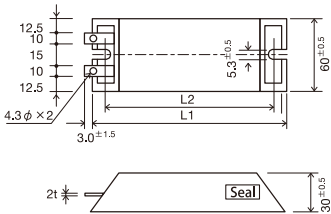
Model	Shape	Rated power (W)※	Resistance value range(Ω)		Resistance value tolerance(%) Use temperature range	Average weight (g)
			Inductive winding	Non-inductive winding		
IRH60 IRH60L IRH60W IRV60L IRV60W	A B C E F	60	0.1~400	0.1~180	±2(G) ±5(J) ±10(K) Use temperature range -55°C~ +200°C	115
IRH80 IRH80L IRH80W IRV80L IRV80W	A B C E F	80	0.1~910	0.1~110		200
IRH100 IRH100L IRH100W IRV100L IRV100W	A B C E F	100	0.1~1.1K	0.1~240		220
IRH120 IRH120L IRH120W IRV120L IRV120W	A B C E F	120	0.1~1.3K	0.1~300		250
IRH150 IRH150L IRH150W IRV150L IRV150W	A B C E F	150	0.1~1.6K	0.1~390		290
IRH200 IRH200L IRH200W IRV200L IRV200W	AA BB CC DD EE FF	200	0.1~2.2K	0.1~1.1K		490
IRH300 IRH300L IRH300W IRV300L IRV300W	AA BB CC DD EE FF	300	0.1~2.7K	0.1~1.5K		600
IRH400 IRH400L IRH400W IRV400L IRV400W	AA BB CC DD EE FF	400	0.1~4.3K	0.1~2.2K		800
IRH500 IRH500L IRH500W IRV500L IRV500W	AA BB CC DD EE FF	500	0.1~6.8K	0.1~3K		990

Shapes and dimensions

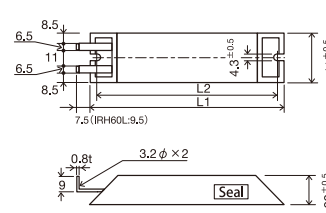
A IRH60~IRH150



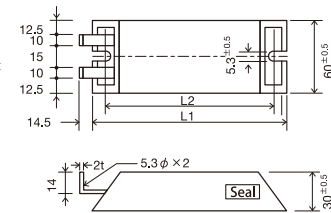
AA IRH200~IRH500



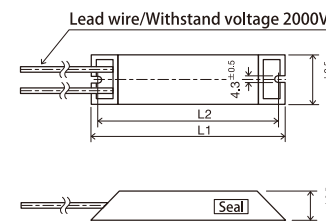
B IRH60L~IRH150L



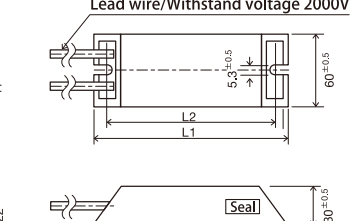
BB IRH200L~IRH500L



C IRH60W~IRH150W



CC IRH200W~IRH500W



Model	Dimensions (mm)		Lead wire/Withstand voltage 2000V (IRH/V 60W~500W applied)				
	L1±2	L2±2	1.25mm ² 0.18φx50 twisted wires finished outer diameter 2.9φ	2mm ² 0.26φx37 twisted wires finished outer diameter 3.33φ	5.5mm ² 0.45φx35 twisted wires finished outer diameter 6.3φ	8mm ² 0.45φx50 twisted wires finished outer diameter 6.9φ	Length (mm)
IRH / V60	100	87	1Ω~	0.1Ω~	—	—	300
IRH / V80	150	137	1Ω~	0.1Ω~	—	—	300
IRH / V100	165	152	1Ω~	0.1Ω~	—	—	300
IRH / V120	182	169	1Ω~	0.1Ω~	—	—	300
IRH / V150	210	197	1Ω~	0.1Ω~	—	—	300
IRH / V200	165	146	—	5Ω~	1Ω~	0.1Ω~	200
IRH / V300	215	196	—	5Ω~	1Ω~	0.1Ω~	200
IRH / V400	265	246	—	5Ω~	1Ω~	0.1Ω~	200
IRH / V500	335	316	—	5Ω~	1Ω~	0.1Ω~	200

Product designation (reference)

IRV150L	N	3 Ω	J
Model	Inductive winding : G (standard) Non-inductive winding : N	Resistance value	Tolerance D=±0.5% F=±1% G=±2%

Supplementary information

- The heat-resistant temperature of IRH W and IRV W is limited by the maximum use temperature of lead wire (silicon heat resistant wire) + 180°. Regardless of whether the load is within the range of rated power, the surface temperature raise curve chart should be considered as reference and the reduced load power should be applied for actual use.
- The heat radiation by resistor may cause warping of radiating chassis and may result in damaging adhesiveness between chassis and resistor. Metal fittings can be used for fixation to avoid this damage.

Standard electronic load unit / Switching-type standard electronic load unit

Our standard elec. load unit / switching-type standard elec. load unit is the extensible resistor which consists of combined several to dozens of resistors. The standard unit can apply safe and constant 1KW per box unit, and the switching-type one can apply up to 2KW per box unit by switching function.

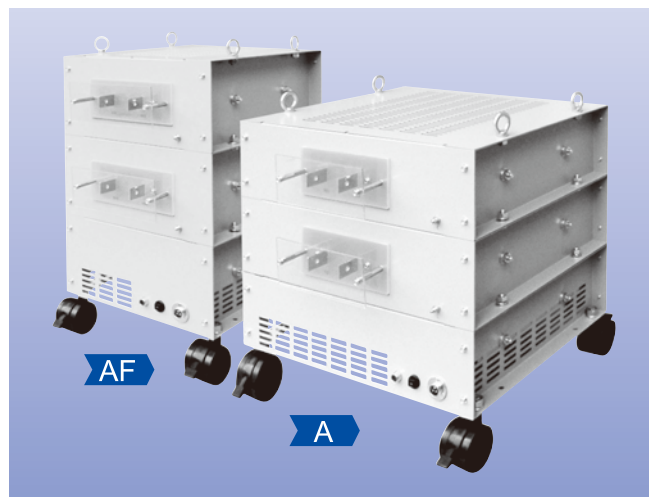
Features

Features

- Capable of 1KW application per box unit.
- Capable of maximum 4KW application by increasing up to 4 box units.
- In addition to the standard type, the flat type unit which saves installing area is also available.
- Optional cooling fans are available depending on purpose.

Specifications Table <reference>

Item	Product name	
	A : Standard elec. load unit	AF : Flat-type standard elec.load unit
Power applying	1KW per box unit	1KW per box unit
Working voltage	AC/DC 20V~250V	AC/DC 20V~250V
Working current	Min. 4A~max.50A per box unit	Min. 4A~max.50A per box unit
Working resistor	500W power type wire wound resistor x 4S	250W flat type flame proof wire wound resistor x 8P
Insulation resistance	No evidence of abnormality after applying AC2000V for 1 minute	No evidence of abnormality after applying AC2000V for 1 minute
Dielectric strength	$\geq 10\text{M}\Omega$ at DC1000V mega	$\geq 10\text{M}\Omega$ at DC1000V mega
Flame	With SPC coating (similar color to Marusen5Y7/1)	With SPC coating (similar color to Marusen5Y7/1)
Outer diameter	460W×360H×360D(mm)	310W×420H×180D(mm)



Product designation (reference)

A	2	F	—	10 Ω	J
A: Standard AF: Flat type standard	No. of extensible box unit up to 4	F: With fan unit		Resistance value	Tolerance J(=±5%) K(=±10%)

※Please consult with us in case additional works such as installation of terminals on each box unit are required.

Features

Features

- Capable of 2KW application per box unit.
- Switching type standard load unit which is capable of varying electric current and voltage.
- Capable of maximum 4KW application by increasing up to 2 box units.
- Optional cooling fans are available depending on purpose.

Specifications Table <reference>

Item	Product name	
	Switching type standard electronic load unit	
Power applying	2KW per box unit	
Working voltage	AC/DC 20V~250V (possible to specify voltage)	
Working current	Min. 1A~max.10A (possible to specify current)	
Working resistor	250W power type wire wound resistor x 8P	
Insulation resistance	$\geq 10\text{M}\Omega$ at DC1000V mega	
Dielectric strength	No evidence of abnormality after applying AC2000V for 1 minute	
Flame	With SPC coating (similar color to Marusen5Y7/1)	
Outer diameter	460W×360H×360D(mm)	



Product designation (reference)

B	2	F	—	10 Ω	J
No. of extensible box unit up to 2	No. of extensible box unit	F: With fan unit		Resistance value	Tolerance J(=±5%) K(=±10%)

※Please consult with us in case varying electric current and voltage is required.

Multi-functional inductive load device / Adjustable electronic load unit

This inductive load device can conduct tests for verifying the authenticity of induction circuit easier than conventional devices. It enables operators easy and quick settings of induction circuit during evaluation of performance examination of electronic parts, relays, batteries or power supplies.

Features

Features

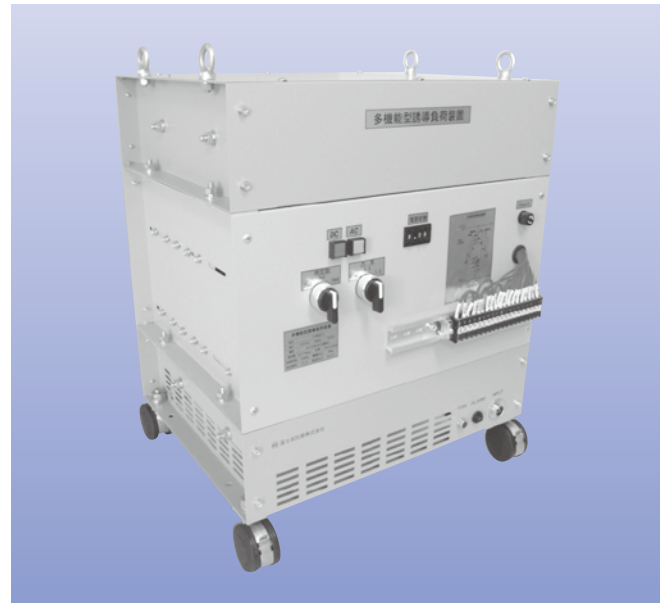
- Universal (AC/DC) inductive load (Possible to manufacture device either only for DC or for AC).
- Possible to switch voltage, electric current, power factor and time constant by using the front switch.
- It covers wider range of voltage and electric current values by custom fabricating.
- Achieved full control of electric current, power factor and time constant values by choosing appropriate element values.

Specifications Table <reference>

Item	Product name
	Multi-functional inductive load device
Power applying	125VAC(50Hz) / 24VDC
Working voltage	0.1A~5.0A (every 0.1A)
Working current	Set by thumb rotary switch
Working resistor	1.0 / 0.8 / 0.45
Insulation resistance	0msec / 7msec / 14msec
Dielectric strength	Selected by lighted push button switch (momentary type) with interlock
Flame	50% ED (1sec ON/OFF) max.
Outer diameter	steel sheet product (460W×360Dmm) standard rack

Supplementary information

- Changing voltage, power factor and time constant during carrying current is not allowed.
- Changing electricity is voluntary ● Cooling down of resistor is required.



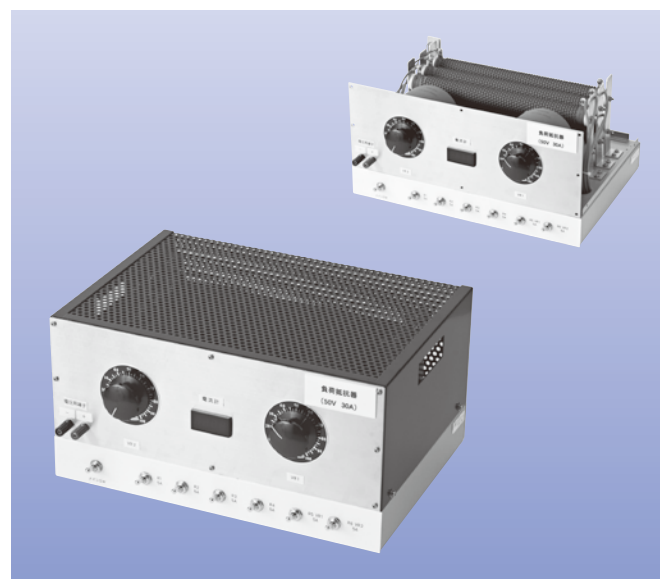
Features

Features

- Capable of maximum 1500W application
- Possible to control current at every 5A up to the limit of 30A
- Possible to trim current by using variable resistor
- It cuts off electric flow by a circuit protector when the temperature rises.
- Optional equipment/such as voltmeter is provided.

Specifications Table <reference>

Item	Product name
	Switching type standard electronic load unit
Power applying	2KW per box unit
Working voltage	AC/DC 20V~250V (possible to specify voltage)
Working current	Min. 1A~max.10A (possible to specify current)
Working resistor	250W power type wire wound resistor x 8P
Insulation resistance	≥ 10MΩ at DC1000V mega
Dielectric strength	No evidence of abnormality after applying AC2000V for 1 minute
Flame	With SPC coating (similar color to Marusen5Y7/1)
Outer diameter	460W×360H×360D(mm)





Service Information

All-in-One / Custom Loading Device

"All-in-One" Package Service

With its Quality policy of "All the best for every piece", TAMA OHM's "All-in-one" package service suggests you the most suitable resistor for customer's needs, totally including design, customize, and assembling. By reviewing the material sourcing, management cost and assembly time, "All-in-one" package service gives you the lower cost and shorter lead time. We always aimed to be a company that provide the resistors with customer's trust.

▶▶ TAMA OHM's "All-in-one" package service



The picture shown is a concept image

BASIC DESIGN

MATERIAL
SOURCING

ASSEMBLY

VERIFICATION OF
RESISTANCE VALUE

SUPPLY

▶▶ "All-in-one" <reference>

Cable Assembly



Soldering connectors and crimp type terminals by using over 200 kinds of applications at UL licensed subcontract factories.

Main manufacturers ; JST/Tyco
AMP/JAE/MOLEX
/HIROSE,etc

Resistor Assembly Processing



Assembling resistors with fittings, stay hinges and various components, then wiring process is proceeded. Custom-made metal fittings with either cutting or press processing can be applied for assembling. After cable assembly on finished resistor, it is supplied to customer as a complete product.

Busbar Manufacturing



"All-in-one" package service provide you various option, as well as manufacturing and assembly of high-power busbar and stand, wiring, etc.

Service Information



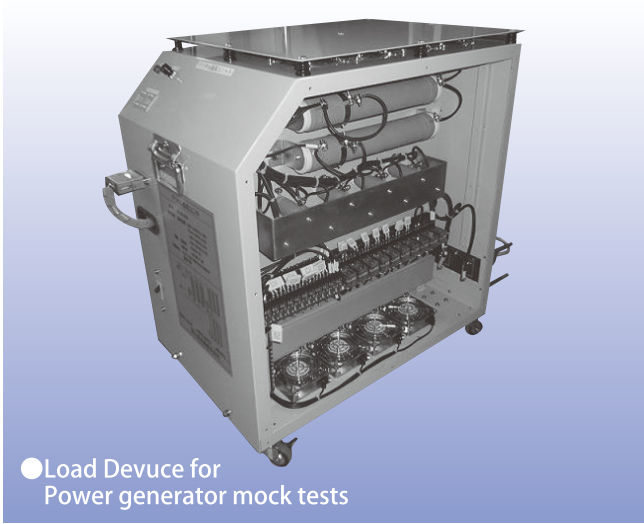
Custom Loading Device

Custom loading devices can be designed and manufactured according to our customers needs. We have an experience in manufacturing and selling different kinds of inspection equipment. For more information, please consult with us.

Supply Record • Reference Example



●Variable Load Device for hydrogen generator testing equipments



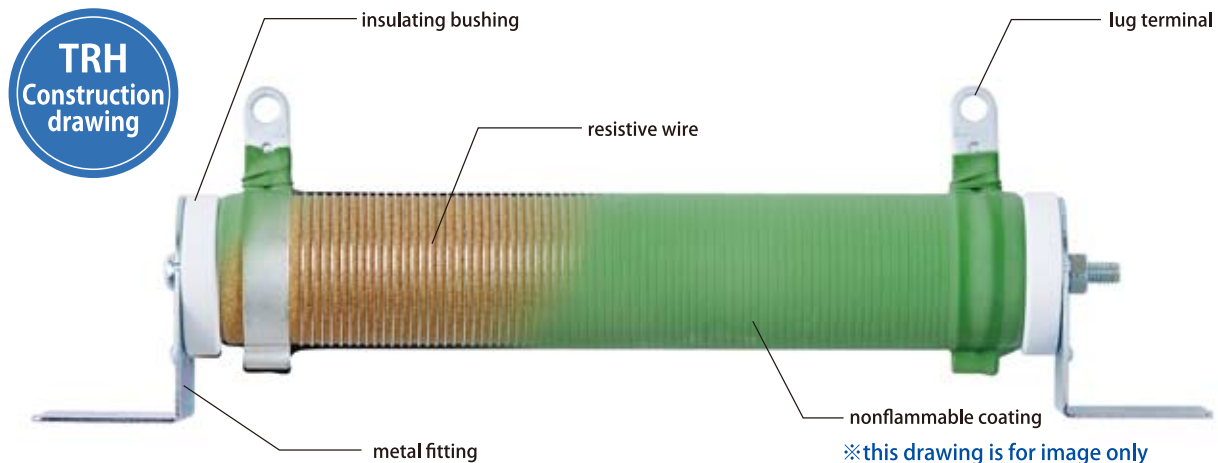
●Load Device for Power generator mock tests



●Load Device for high voltage relay inspection

High voltage relay inspection load device	Hydrogene generator testing equipment load device
Generator control load device	Generator elements testing load device
Transformer inspection load device	Sun generator testing device
Wind power generator testing device	Fuel batteries testing device
Lithium batteries discharge testing device	Generator controlling device
Electric power dummy load	Battery discharge testing device

ONE BY ONE



ONE BY ONE>> The trust to one product creates the solid bond and harmony

One resistor doesn't stand center stage in general parts. This is one of the electronic parts that composes a completed product and may look plain and inconspicuous. But please imagine our bodies. As every organ of our bodies has an important function to play and the aggregate of healthy organs can generate the harmony and beautiful performance in all human activities, so an electronic part takes exactly the same role and one resistor is no exception to this rule.

TAMA OHM'S resistors support every electrical product in the world and make contribution to human society - now and forever.

Support one product from inside

Quality management system for wire materials.

Various essential wires for resistor are stored and controlled in desiccator.

- The stored wires and wires in use are protected by rust-proof paper (CUBELIGHT)
- Strict check by the inspectors who have expert knowledge of wire nature and properties
- Wires whose storage term passes 1 year are re-inspected by their manufacturers.
- Silica gel is placed in the desiccator to keep the chamber dry.



► Wires in desiccator

Win the trust for one product

We have been keeping a close eye on the product reliability which is the most important matter for our management philosophy. We conduct many experimental tests by using our own testing power supply for resistor evaluation and also by the cooperation of public testing institutes. We try very hard to improve the quality. Also, if we use it for the need of high reliability, we get the evaluation test at the device, close to original.

Testing equipments

● Resistor evaluation device

Maximal electric power - 1500W/Maximal voltage - AC 600V/
Maximal electric flow - 30A
Load for small period of time (0.5 sec)/ ON-OFF intermittent load (0.5 sec)

● DC electric power (Takasago seisakusho ZX-400L)

Maximal electric power - 400W/Maximal voltage - DC80V/
Maximal electric flow - 40A
Fixed voltage load/Fixed flow voltage

● Memory high logger (Hioki electricity 8420-50)

It is possible to conduct the temperature raise test and record in chronological order
It is possible to measure the temperature simultaneously at max. 8ch for thermoelectric unit
Also, for pressure resistance tester or for isolation tester.



► Resistor evaluation device



www.tamaohm.co.jp