ATE ELECTRONICS

Every one that works with electronics components knows the problems like reliability the integration systems and the custom products.

This problems are solved from the ATE Electronics s.r.l. till 30 years and this hard work let the company into a view of leader in production of components with high quality system and great technologies.

We give attention to the special quality problems of our customers, and we always work to give a warranty to the customer, that can found on our products quality controls and specific quality design: To be able to give these options, we cannot work without the upgrade to the new rules unified all over the world, so ATE Electronics s.r.l. is now certified UNI EN ISO 9001:2000. We took this upgrade on date 30 november 2001 and we received the certificate n° 9170.ATEE.

It is important to remember that many products are maden under supervision of MIL and CECC rules.

We are sure to be able to satisfy all problems of our customes in minor times and minimum costs.

We produce:

-Resistors named CS (from 2W to 15 W)

-Resistors named RB (from 5W to 250W) aluminium housed.

-Special resistors derived from CS and RB series.

-Resistors for SMD application named SM, the power is 3W, with this new kind of components you can change normal types CS with the same functions.

-Planar thick film resistors named PR100 (150W) and PR250 (500W).

-Anti moisture devices

ATE uppfyller RoHS-direktivet (2002/95/EG) dvs. inga miljöskadliga ämnen i process eller tillverkning

MODELS CS WIREWOUND RESISTORS - SILICONE COATED

FEATURES

Easy replacement of vitreous enamel resistors with no cost increase and no performance loss.
The whole assemly is coated with multi-layer silicone coating to give maximum wire protection from -55 °C to +350 °C.
Performance improvement is obtained by close tolerance, very low temperature coefficient and excellent stability in operation under severe environmetal conditions.
High level reliability due to ceramic core chemically inert and centerless ground for uniformity, selected wire element and completely welded construction terminal to terminal.

SPECIFICATIONS

These resistors meet or exceed the requirements of MIL-R-26E specification.

ELECTRICAL

Resistance range
See table. Consult factory for values lower (up to R01) and higher than indicated.
Tolerance
Standard 5% - Avaliable on request up to 1%
Temperature coefficient
Typical values: 100 to 30 ppm from R10 to Rmax.
Consult factory for special applications.
Dielectric strenght
500 Vdc from 2CS to 6CS.
700 Vdc from 7CS to 12CS.
Insulation resistance
1.000 MOhms minimum dry.
100 MOhms after moisture test.
Overload
5 sec. at 10 times rated power.
5 sec. at 5 times rated power 2CS and 3CS.
Non inductive
Models of equivalent physical and electrical specifications are available with non inductive Ayrton-Perry winding.

MECHANICAL

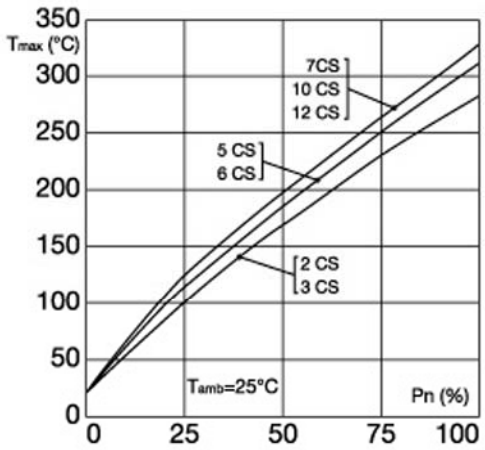
Terminal strenght
10 lb. pull test.
Solderabilty
Continuos, satisfactory coverage when tested in accordance to MIL-R-26E.

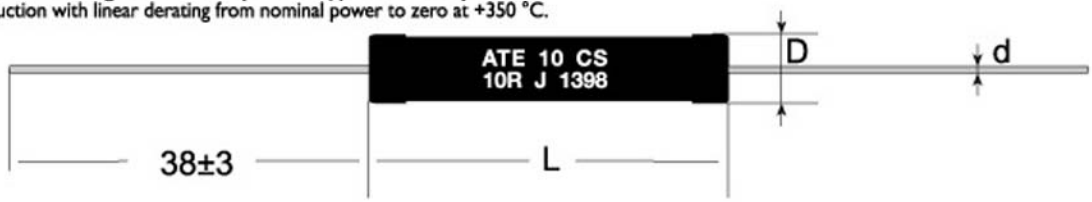
MATERIAL

Core
Ceramic steatite or alumina centerless ground.
Resistive element
Copper-nichel alloy or nickel-chrome alloy at specified temperature coefficient.
End caps
Stainless steel.
Coating
Special high temperature silicone.
Standard terminals
Tinned copper or tinned copperweld.

DERATING

These resistors could be used in a temperature range from -55 °C to +350 °C.
To use these components in settings with base temperature upper to +25 °C you have to made a power reduction with linear derating from nominal power to zero at +350 °C.





ATE type	Type Mil-R-26E	Rated power (W)	Resistance range (Ohm)	Max volt. working (V)	Temperature rise (°C/W)	Weight (Gr)	Dimensions D (mm)	Dimensions L (mm)	Dimensions d (mm)
2CS	RW69V	3	0.01-5K6	130	91	1.2	5.2±0.5	12±0.8	0.8
3CS		4	0.01-10K	200	74	1.8	6±0.5	13.5±0.8	0.8
5CS	RW74U	6	0.01-24K	380	52	3.2	8±0.5	22±1.6	0.8
6CS	RW67V	7	0.01-27K	435	45	3.8	8±0.5	25±1.6	0.8
7CS	RW55V	10	0.01-47K	685	30	7	9.5±0.5	35±1.6	0.9
10CS	RW68V	13	0.01-68K	940	24	9	9.5±0.5	46±1.6	0.9
12CS	RW56V	15	0.01-82K	1.100	21	10	9.5±0.5	51±1.6	0.9

SERIE SR SYMMETRY RESISTORS AND/OR CAPACITORS DISCHARGE

SPECIFICATION

Standard tolerance:	5% (±1% on request)
Ohmic values:	Serie E12
TC:	From 100 to 30 ppm from R10 to Rmax
Dieletric strenght:	1.000 Vac
Packing:	Strip of 10 pcs
Vibrations test:	According IEC571

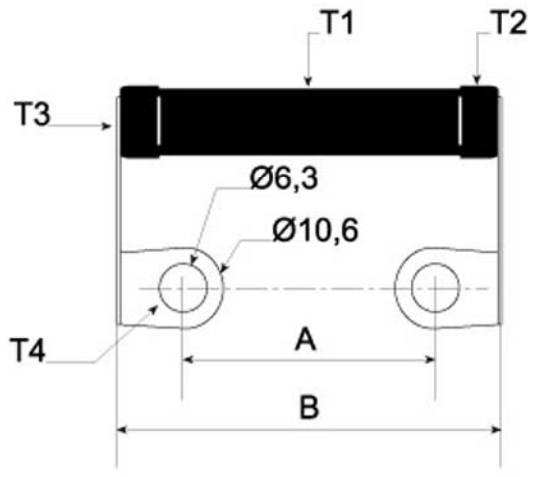
More technical data as 7CS and 10CS standard models.

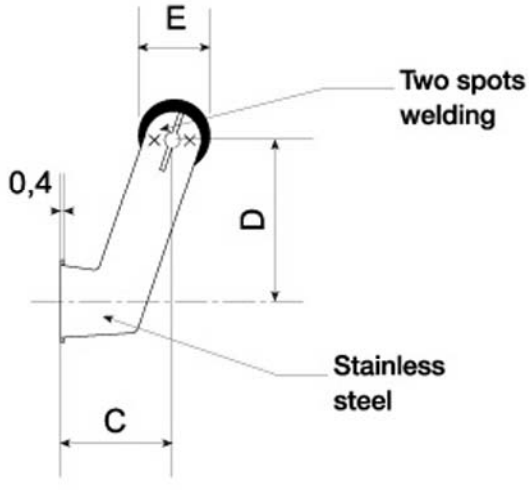
Test point	Temp. Rise at Rated Power 7SR-7SR/B	Temp. Rise at Rated Power 10SR-10SR/B
T1	ΔT = 26 °C/W	ΔT = 21.5 °C/W
T2	ΔT = 16 °C/W	ΔT = 12.3 °C/W
T3	ΔT = 15 °C/W	ΔT = 11.5 °C/W
T4*	ΔT = 1.2 °C/W	ΔT = 1 °C/W

* Capacitor mounted - Depending on the shape and dimension of the capacitor connecting nut/cable system.

ATE type	Type MIL-R-26E	Power (W)	Resistance range (Ohm)	V limit (Vrms)
7SR	RW55	10	0.1-47K/82K	685
10SR	RW68	13	0.1-68K/120k	940

ATE type	Resistor type	A (mm) tol.: ±1	B (mm) tol.: max	C (mm) tol.: ±1	D (mm) tol.: ±1	E (mm) tol.: ±1	Weight (Gr)
7SR	7CS	22.2	40	15	21	9.5	9
7SR/B	7CS	22.2	40	10	16	9.5	9
10SR	10CS	31.8	50	15	21	9.5	11
10SR/B	10CS	31.8	50	10	16	9.5	11





MODELS RB FIXED POWER WIREWOUND RESISTORS ALUMINIUM HOUSED

FEATURES

Extruded aluminium housing provides superior heat conduction.
Housing deep finned for maximum heat dissipation at natural or forced air convection.
Gold anodized finish for maximum resistance to environmetal conditions.
Special thermosetting compound with high thermal conducivity
Winding designed to give maximum core coverage and uniformity for even heat dissipation.
Core centerless ground for maximum winding uniformity.
Marking at top surface for easy identification after mounting.
Complete welded construction terminal to terminal.

SPECIFICATION

These resistors meet or exceed the requirements of MIL-R-18546 E specification.

ELECTRICAL

For **Power ratings** and **Resistance values:** see table.
Tolerance
the following tolerances are available: 1%, 3%, 5%
Temperature coefficient
30 ppm R > 20 Ohm
50 ppm 1 Ohm < R < 20 Ohm
100 ppm 0.1 Ohm < R < 1 Ohm.
Dieletric strenght
1.500 Vac for RB5 / RB10
2.500 Vac for RB25 / RB50
3.500 Vac for RB75 / RB101 / RB150
4.500 Vac for RB100 / RB 250.
Insulation resistance
10.000 MOhms minimum
1.000 MOhms after moisture test.
Overload
5 sec. at 5 times rated power.
Non inductive
Models of equivalent physical and electrical specifications are available with non inductive Ayrton-Perry winding.

MECHANICAL

Terminal strength
10 lb, pull test.
Solderability
Satisfactory when tested in accordance with method 208 of MIL-STD-202
The use of high temperature solder is recommended when resistors are operated near the maximum specified ratings.

MATERIAL

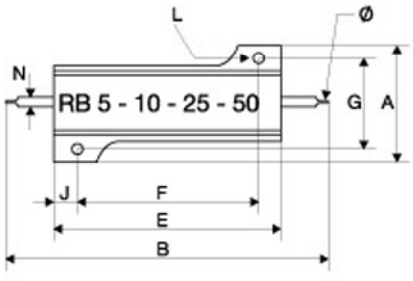
Core
Ceramic steatite or alumina centerless ground.
Element
Copper-nickel alloy or nickel-chrome alloy of determined temperature coefficient.
End caps
Stainless steel.
Encapsulant
High temperature thermosetting compound.
Housing
Aluminium with hard anodic coating
Standard terminals
Copperweld RB5 to RB150.
Stainless steel for RB100 and RB250.

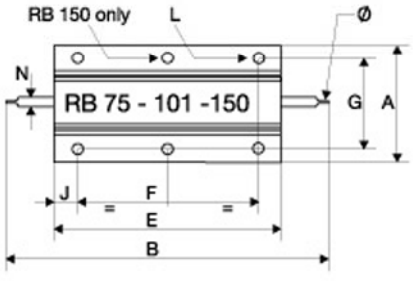
DERATING

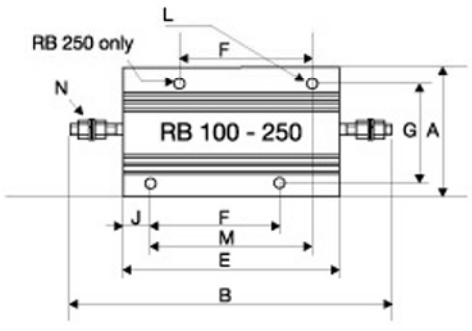
ATE RB resistors have an operative temperature range of -55 °C to +250 °C.
Derating is required for reduced chassis area and for high ambient temperature.

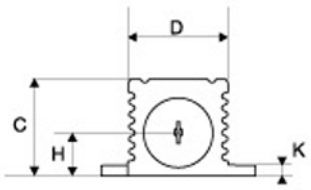
ATE type	Type MIL-R-18546E	Nominal power (W)	Max power no heatsink (W)	Res. range (Ohm)	V limit (V)	Temp. rise with heatsink (°C/W)	Weight (Gr)	Heatsink dim. (cm² x mm)
RB5	RE 60	7.5	4	0.01/6K8	160	4,5	3.5	415x1
RB10	RE 65	12	6	0.01/10K	265	5,1	6	415x1
RB25	RE 70	25	12,5	0.01/18K	550	3	14	535x1
RB50	RE 75	50	20	0.01/68K	1250	1,9	35	930x1.5
RB75	-	75	35	0.1/50K	1400	1,1	85	995x3
RB101	-	100	40	0.1/70K	1900	1	115	995x3
RB150	-	150	55	0.1/100K	2500	1	165	995x3
RB100	RE 77	150	75	0.1/100K	1900	0,84	500	930x3
RB250	RE 80	250	100	0.1/120K	2300	0,66	900	930x3

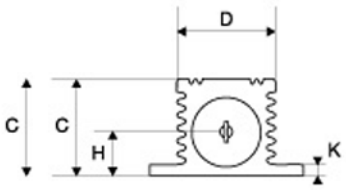
ATE type	DIMENSIONS (mm)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	Ø
RB5	16.5	28.6	8.2	8.5	15.3	11.3	12.4	4	2	1.6	2.4	-	1.5	1.3
RB10	20.4	35	10	11	19	14.3	15.9	5	2.4	2	2.4	-	2	2.2
RB25	27.2	49	14	14	27	18.3	19.8	6.5	4.4	2	3.2	-	2	2.2
RB50	29.2	71	16	16	50	39.7	21.5	7	5.2	2	3.2	-	2	2.2
RB75	47.5	73	24	27	48	29	37	11.5	9.5	3.5	4.4	-	3	3.2
RB101	47.5	89	24	27	64	35	37	11.5	14.5	3.5	4.4	-	3	3.2
RB150	47.5	122	24	27	97	58	37	11.5	19.5	3.5	4.4	-	3	3.2
RB100	71.5	139	44.5	46	89	-	57.1	20	9.6	5	4.8	69.8	M5	-
RB250	76	178	55.6	54	114	98.4	63.5	25.5	7.8	6.3	4.8	98.4	M6	-
Tol.	±0.2	±1	±0.2	±0.2	±0.5	±0.2	±0.2	±0.2	±0.5	±0.2	±0.2	±0.2	±0.2	±0.2

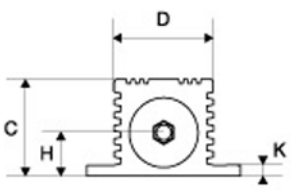




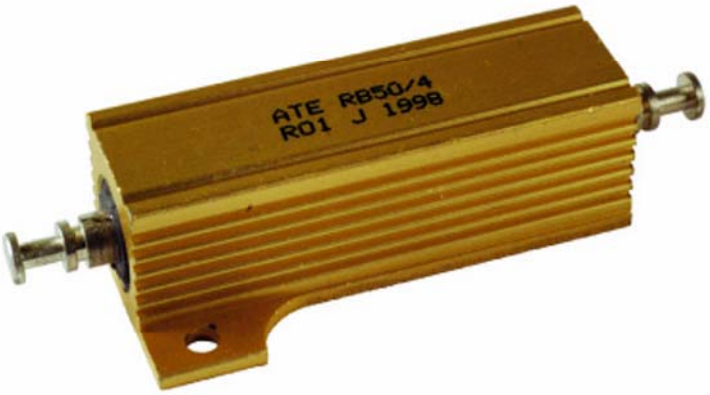








RB25/4-RB50/4 FIXED POWER WIREWOUND RESISTORS ALUMINIUM HOUSED WITH KELVIN LEAD



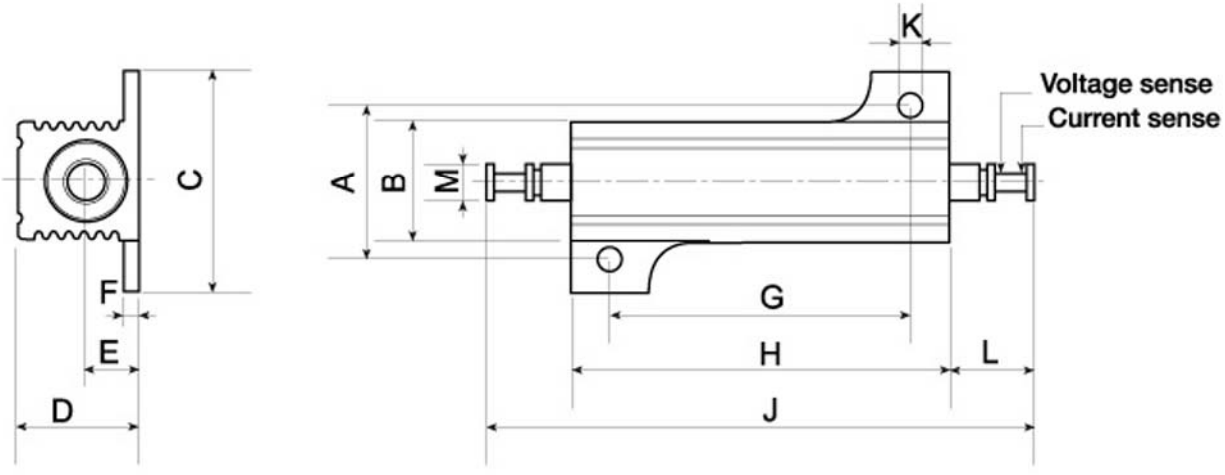
SPECIFICATIONS

Standard tolerance:	5% (±1% on request)
Ohmic Values:	Serie E12
Temperature Coefficient:	From 200 to 100 ppm from R01 to R10
Insulation resistance:	10.000 MOhm minimum 1.000 MOhm after moisture test
Dieletric Strenght:	2.000 Vac / 2.800 Vac peak
Max terminal current:	RB25/4 50 A RB50/4 70 A

More technical data as RB25/RB50 standard models.

ATE type	Type MIL-R-18546E	Nominal power (W)	Res. range (Ohm)	V limit (V)	Weight (Gr)	Heatsink dim. (cm² x mm)
RB25/4	RE70	25	0.01/0.10	550	16	535x1
RB50/4	RE75	50	0.01/0.10	1250	35	930x1.5

ATE type	DIMENSIONS (mm)											
	A	B	C	D	E	F	G	H	J	K	L	M
RB25/4	19.8	14	27.7	14	6.5	2	18.3	27	49	3.2	10.5	4
RB50/4	21.5	16	29.2	16	7	2	39.7	50	71	3.2	10.5	5
Tol.	±0.2	±0.2	±0.2	±0.2	±0.2	±0.2	±0.2	±0.5	±1	±0.1	±1	±0.2



RB25/6-RB50/6 FIXED POWER WIREWOUND RESISTORS ALUMINIUM HOUSED WITH LARGE CREEP DISTANCE

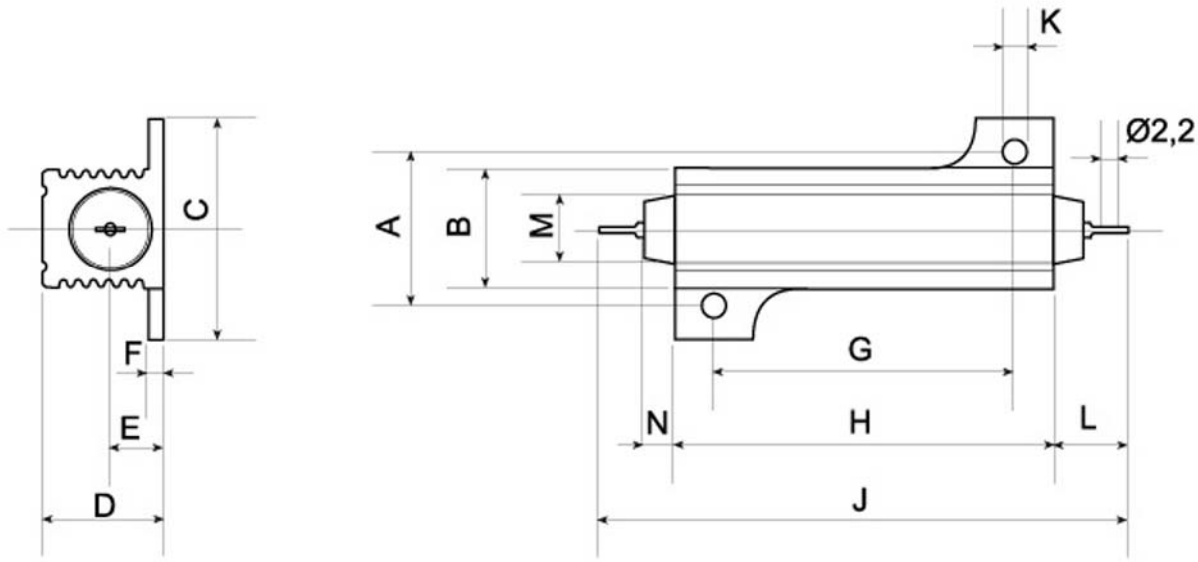
SPECIFICATIONS

Standard Tolerance:	5% (±1% on request)
Ohmic Values:	Serie E12
Temperature Coefficient:	From 100 to 30 ppm from R10 to Rmax
Insulation resistance:	10.000 MOhm minimum 1.000 MOhm after moisture test
Dieletric Strenght:	3.000 Vac / 4.200 Vac peak
Large creep distance:	RB25/6 >6.5 mm RB50/6 >10 mm

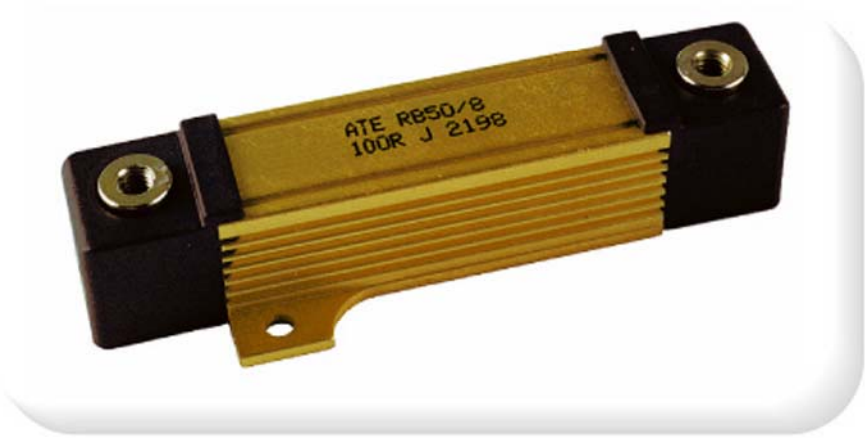
More technical data as RB25/RB50 standard models.

ATE type	Type MIL-R-18546D	Nominal power (W)	Res. range (Ohm)	V limit (V)	Weight (Gr)	Heatsink dim. (cm² x mm)
RB25/6	RE70	25	0.01-18K/33K	550	13	535x1
RB50/6	RE75	50	0.01-68K/100K	1250	32	930x1.5

ATE type	DIMENSIONS (mm)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
RB25/6	19.8	14	27.7	14	6.5	2	18.3	24	49	3.2	12.5	8	4
RB50/6	21.5	16	29.2	16	7	2	39.7	46	75	3.2	14.5	10	6.5
Tol.	±0.2	±0.2	±0.2	±0.2	±0.2	±0.2	±0.2	±0.5	±1	±0.1	±1	±0.5	±0.5



RB 50/8 FIXED POWER WIREWOUND RESISTORS ALUMINIUM HOUSED WITH SCREW LEADS (TOP)



SPECIFICATIONS

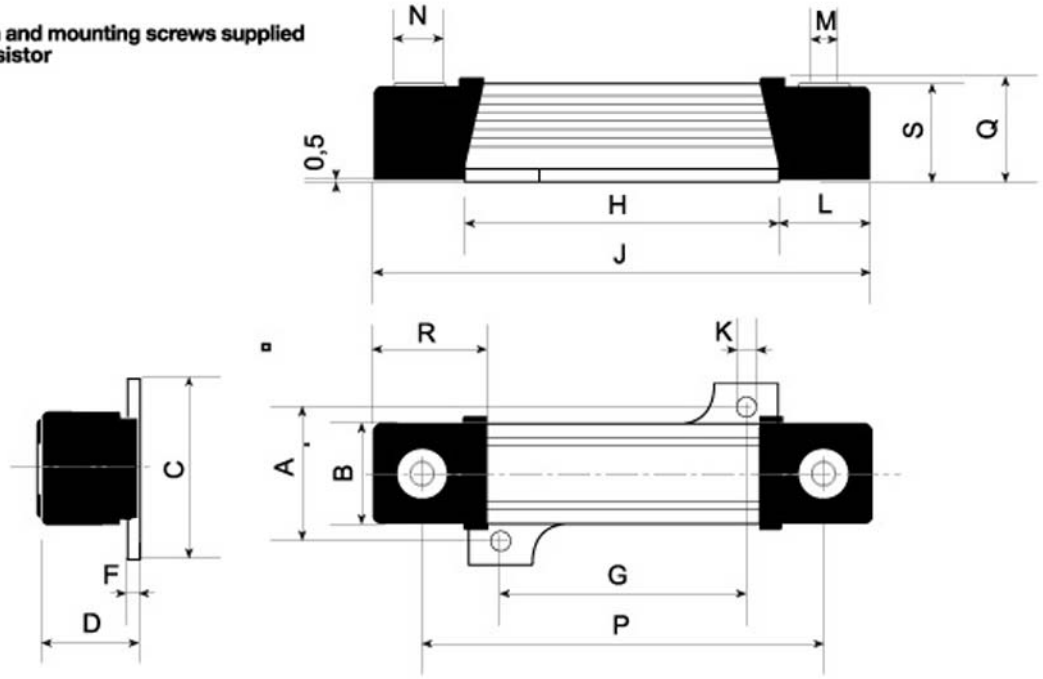
Standard Tolerance:	5% (±1% on request)
Ohmic values:	Serie E12
Temperature Coefficient:	from 100 to 30 ppm from R10 to Rmax
Insulation resistance:	10.000 MOhm minimum 1.000 MOhm after moisture test
Dieletric Strength:	2.500 Vac / 3.500 Vac peak
Max torque for contacts:	1.5 Nm (static)
Max torque for mounting:	1.5 Nm (static)

More technical data as RB50 standard models.

ATE type	Type MIL-R-18546D	Nominal Power (W)	Res. Range (Ohm)	V limit (V)	Weight (Gr)	Heatsink dim. (cm² x mm)
RB 50/8	RE75	50	0.1-68K/100K	1250	52	930 x1.5

ATE type	DIMENSIONS (mm)															
	A	B	C	D	F	G	H	J	K	L	M	N	P	Q	R	S
RB 50/8	21.5	16	29.2	16	2	39.7	50	79.5	3.2	14.5	M4	8	65	17.5	18.5	16.5
Tol.	±0.2	±0.2	±0.2	±0.2	±0.2	±0.2	±0.5	±2	±0.1	±0.5	-	-	±1	±0.5	±0.5	±0.5

Connection and mounting screws supplied with the resistor



RB106 - RB256 FIXED POWER WIREWOUND RESISTORS ALUMINIUM HOUSED WITH LARGE CREEP DISTANCE

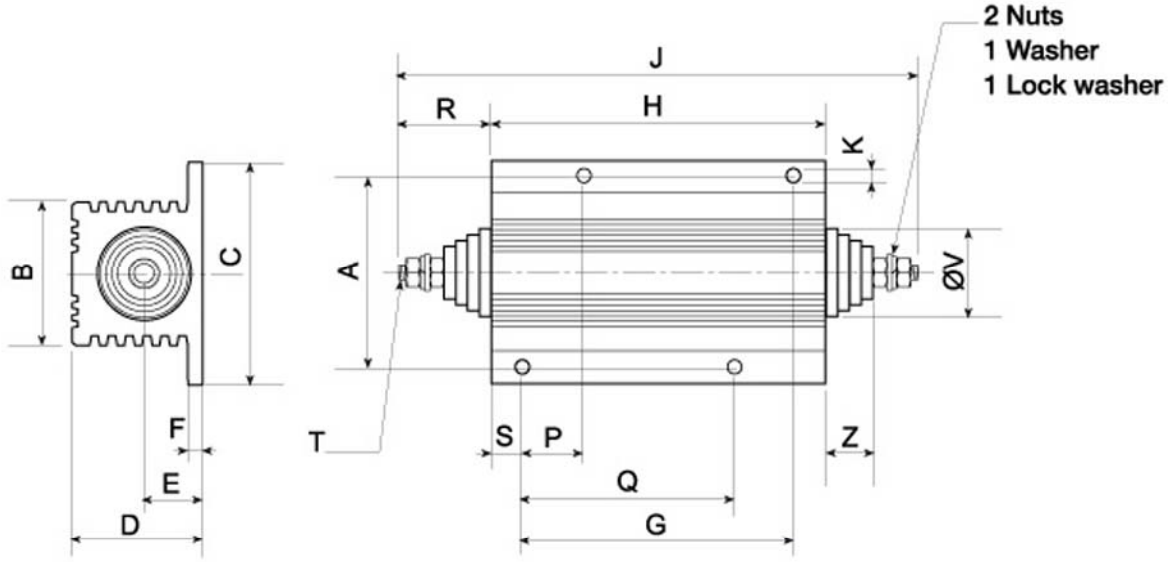
SPECIFICATIONS

Standard tolerance:	5% (±1% on request)
Ohmic Values:	Serie E12
Temperature Coefficient:	From 100 to 30 ppm from R10 to Rmax
Insulation resistance:	10.000 MOhm minimum. 1.000 MOhm after moisture test
Dieletric Strenght:	5.000 Vac / 7.000 Vac peak
Large Creep distance:	RB106 >22 mm RB256 >25 mm

More technical data as RB100/RB250 standard models.

ATE type	Type MIL-R-18546E	Nominal power (W)	Res. range (Ohm)	V limit (V)	Weight (Gr)	Heatsink dim. (cm² x mm)
RB 106	RE77	150	0.1-100K	1900	500	930 x3
RB 256	RE80	250	0.1-120K	2300	900	930 x 3

ATE type	DIMENSIONS (mm)																
	A	B	C	D	E	F	G	H	J	K	P	Q	R	S	T	V	Z
RB 106	57.1	46	71.5	44.5	20	5	69.8	89	139	4.8	-	-	25	9.6	M5	32	12
RB 256	63.5	54	76	55.6	25.5	6.3	98.4	114	178	4.8	22.2	76.2	32	7.8	M6	32	16
Tol.	±0.2	±0.5	±0.5	±0.5	±0.5	±0.5	±0.2	±0.5	±2	±0.2	±0.2	±0.2	±0.2	±0.5			



RB25/7-RB50/

ADS

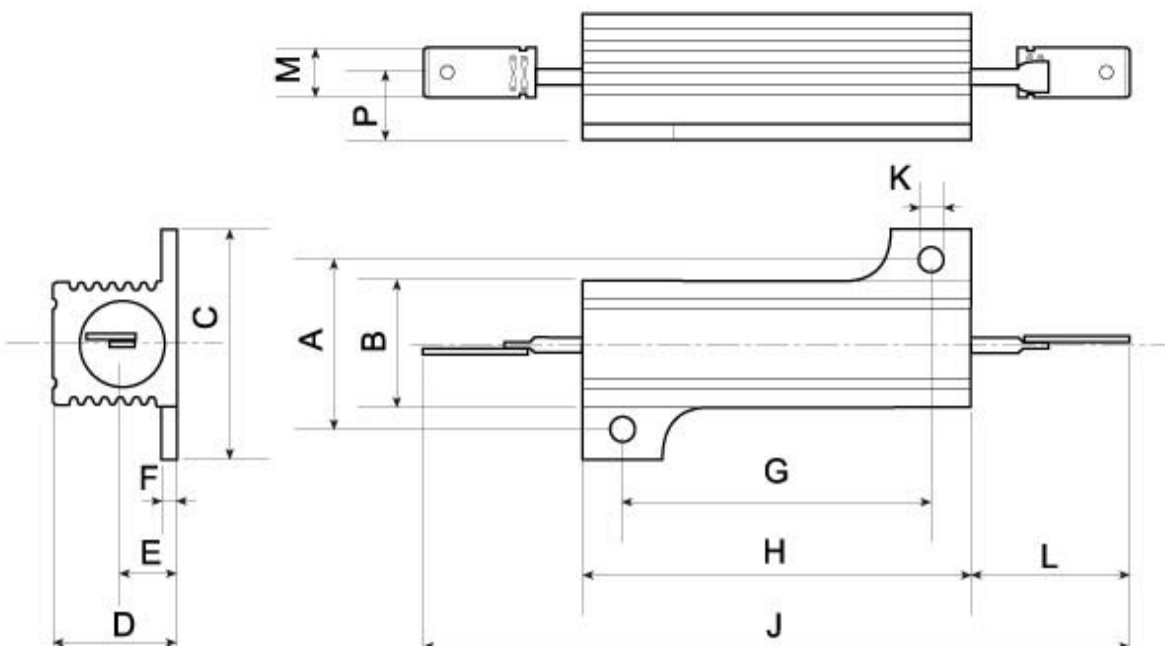
SPECIFICATIONS

Standard Tolerance: 5% (±1% on request)
Ohmic values: Serie E12
Temperature Coefficient: From 100 to 30 ppm from R10 to Rmax
Insulation resistance: 10.000 MOhm minimum
1.000 MOhm after moisture test
Dieletric Strength: 2.500 Vac / 3.500 Vac peak
Lead: 6.35 mm Faston nickel plated steel. Spot welding.

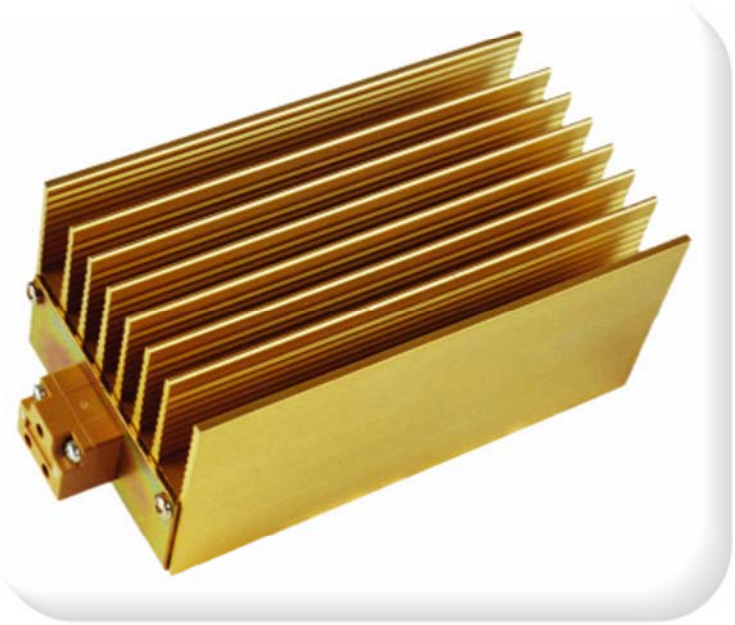
More technical data as RB25/RB50 standard models.

ATE type	Type MIL-R-18546E	Nominal power (W)	Res. range (Ohm)	V limit (V)	Weight (Gr)	Heatsink dim. (cm² x mm)
RB25/7	RE70	25	0.1-18K/33K	550	13	535x1
RB50/7	RE75	50	0.1-68K/100K	1250	32	930x1.5

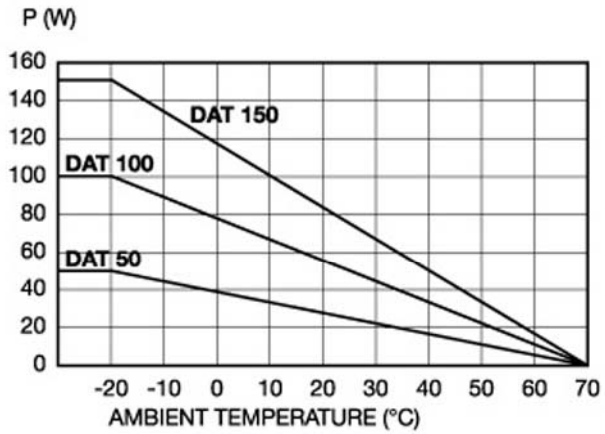
ATE type	DIMENSIONS (mm)												
	A	B	C	D	E	F	G	H	J	K	L	M	P
RB25/7	19.8	14	27.7	14	6.5	2	18.3	27	69	3.2	21	6.35	7.7
RB50/7	21.5	16	29.2	16	7	2	39.7	50	91	3.2	20.5	6.35	8.2
Tol.	±0.2	±0.2	±0.2	±0.2	±0.2	±0.2	±0.2	±0.5	±2	±0.1	±2	-	±1



MODELS DAT ANTI MOISTURE DEVICES
DAT 50 - DAT 100 - DAT 150 TYPES



POWER DISSIPATED IN FUNCTION OF THE EXTERNAL TEMPERATURE

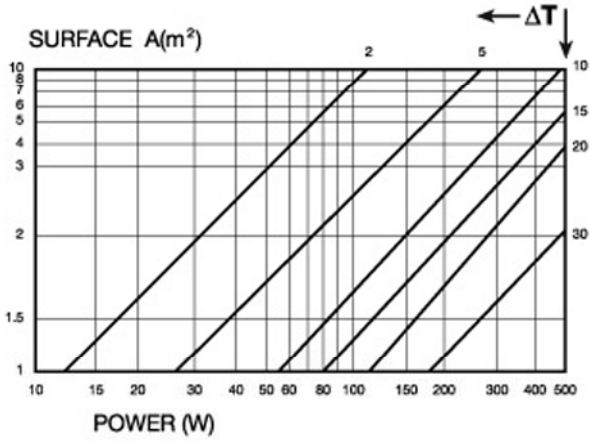


CHARACTERISTICS

One of the main causes for electrical troubles on electrical and electronic sets is due to the moisture which is formed on components during variation of the ambient temperature. A simple and economic way to avoid any trouble of this kind, consists on application of anti-condensation devices (Heaters) which maintain the temperature inside the enclusure some degrees higher than the ambient temperature in order to prevent moisture condensation.
The Heater DAT 50, DAT 100 and DAT 150 have been developed for this specific use.

Their main features are as follow:
Surface temperature limited to 70°C allows assembling without problems.
A thermoswitch permits maximum power at very low temperatures, then reduces the power dissipated till turn off the devices at +55°C.
The DAT models are provided with simple clip mounting for 35mm DIN rail.
Use of power wirewound resistors, under MIL-R-18546 E specs., increase reliability and suitable supply voltage.

POWER OF THE ANTI-MOISTURE DEVICES IN FUNCTION OF EXTERNAL SURFACE AND TEMPERATURE JUMP REQUESTED

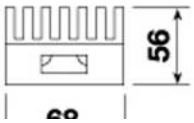


ELECTRICAL CHARACTERISTICS

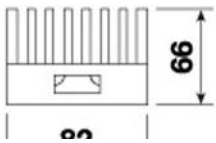
Max power ratings:	DAT 50 = 50 W DAT 100 = 100 W DAT 150 = 150 W
Voltage supplied:	Standard 220 Vac ±20%. on request any voltage supplied from 24 to 220 Vac
Dielectric strenght:	2.000 Vac for any type
Insulation resistance:	1.000 MOhm minimum at 500 Vdc.

DIMENSIONS (mm)

DAT 50



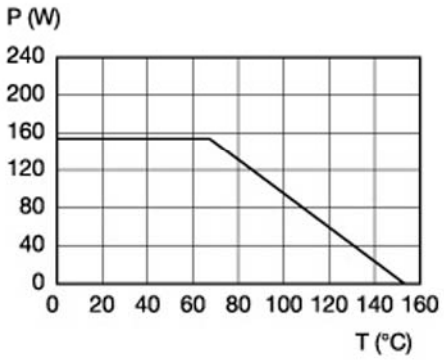
DAT 100/150



FEATURES

Very good ratio Power/Volume.
Easy mounting and wiring with significant cost advantages.
Non inductive performance for high frequency applications.
One model for power from 20W to 200W.
Suited to UL94-V0 application.
SOT227 configuration.

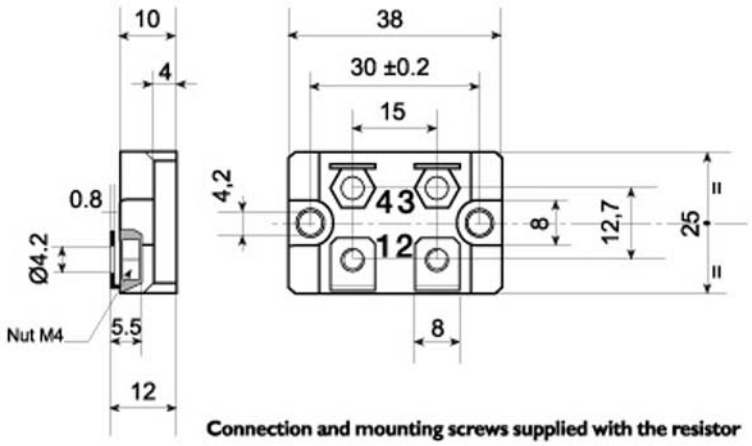
PERMISSIBLE POWER VERSUS HEATSINK TEMPERATURE



SPECIFICATIONS

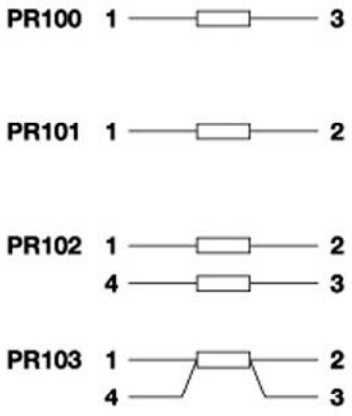
Power rating:	100 W (PR102 2x50W)
Max power not trimmed:	150 W (heatsink at 70 °C)
Resistance range:	From 1RO to 100K serie E6
Tolerance:	Standard ±10% up to 1% on request
Temperature coefficient:	100 ppm/°C
Max Work. Voltage:	1.500 Vac
Work Temp. Range:	-55 °C to +155 °C
Dielectric Strenght:	2.500 Vac
Insulation resistance:	> 10^5 MOhm at 500V
Partial discharge:	< 80 pC/2.000 Vac (only on request)
Self inductance:	40 nH
Capacitance/Mass:	< 45 pF
Overload:	2 Pn x 10 sec.
Thermal resistance:	0.5 °C/W
Heatsink flatness:	0.05 mm Max
Heatsink surface finish:	6.3 µm Max
Thermal grease:	Required
Max torque for contact:	1.2 Nm (static)
Max torque for mounting:	1.5 Nm (static)
Weight:	18 gr. (PR100/101) 24 gr. (PR102/103)

DIMENSIONS (mm)



Connection and mounting screws supplied with the resistor

TERMINAL CONFIGURATION



MODELS PR250 - PR250T THICK FILM POWER RESISTORS

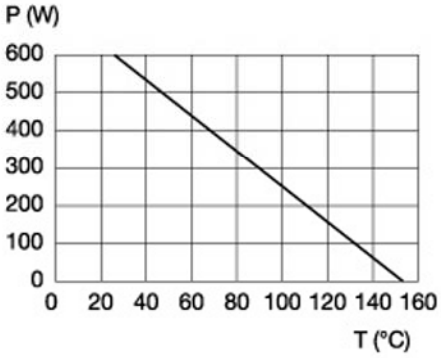
FEATURES

Very good ratio Power/Volume
Easy mounting and wiring with significant cost advantages
Non inductive performance for high frequency applications
One models for power applications from 100W to 500W
Suited to ULV94-V0 application.

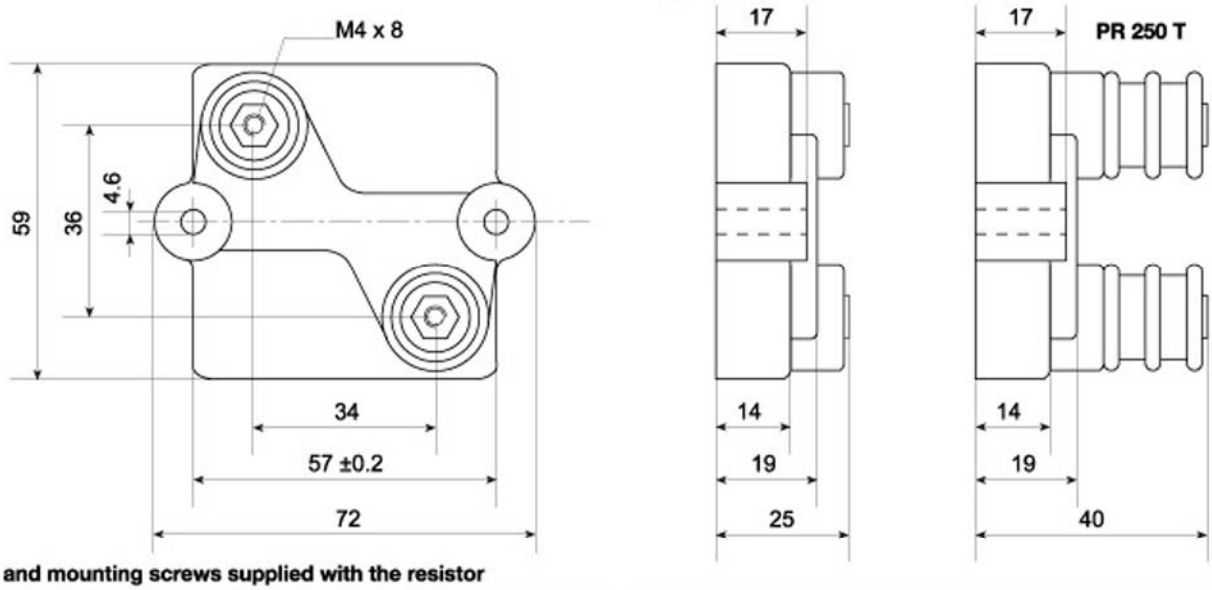
SPECIFICATION

Power rating:	250W (heatsink at 100 °C)
Resistance Range:	from 1R0 to 1MOhm serie E6
Tolerance:	Standard ±10% up to 1% on request
Temperature Coefficient:	100 ppm/°C
Max Work.Voltage:	5.000 Vac
Work Temp. Range:	-55° C to + 155 °C
Dieletric Strenght:	7.000 Vac (12.000 Vac PR250T)
Insulation resistance:	> 10^5 MOhm at 500V
Creep distance:	40 mm (60 mm PR250T)
Air gap distance:	14 mm (27 mm PR250T)
Partial discharge:	< 10 pC/5.000 Vac
Self Inductance:	80 nH
Parallel capacitance:	40 pF
Capacitance/Mass:	< 120 pF
Overload (not trimmed):	4 Pn x 10 sec.
Thermal resistance:	0.15 °C/W
Heatsink flatness:	0.05 mm Max
Heatsink surface finish:	6.3 µm Max
Thermal grease:	required
Max torque for contacts:	2 Nm (static)
Max torque for mounting:	2 Nm (static)
Weight:	110 gr (140 gr PR250T)

PERMISSIBLE POWER VERSUS HEATSINK TEMPERATURE



DIMENSIONS (mm)



connection and mounting screws supplied with the resistor

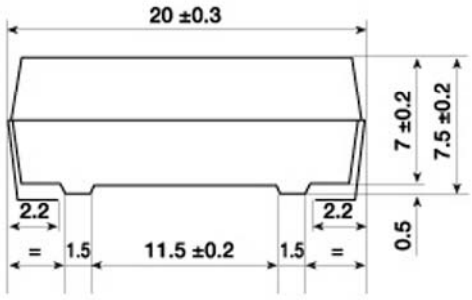
FEATURES

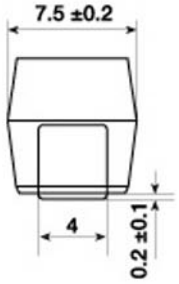
Easy replacement of axial power wirewound resistors without performance loss.
Performance improvement is obtaind by close tolerance, very low temperature coefficient and stability in operation under severe environmental conditions.
High level reliability due to ceramic core chemically inert and centerless ground, selected wire element and completely welded construction terminal to terminal.
The whole assembly is silicon coated and thermoplastic V-0, moulded to give maximum wire protection from -55°C to +220°C.

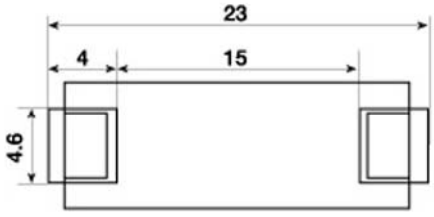
TECHNICAL SPECIFICATIONS

Power rating:	3 Watt a 70°C mounted on FR4 board 1.6mm
Resistance range:	R10 to 10K. Serie E12, others on request
Tolerances:	Standard 5% on request up to 1%
TCR:	Tipical values 100 to 30 ppm from R10 to 10K
Maximum continuous working voltage:	173 Vrms
Thermal resistance:	50°C/W
Derating:	linear from 70°C to 220°C
Insulation voltage:	1000 Vac
Insulation resistance:	1000 Mohm
Overload:	5 second at 5 times power rating
Non inductive:	Ayrton-Perry winding max. 4K7
Weight:	2.5 gr
Climatic category:	55/220/56
Packaging:	Reel 330mm, blister 32 mm, pitch 12mm, 750 pcs

DIMENSIONS (mm)







Recommended pad size