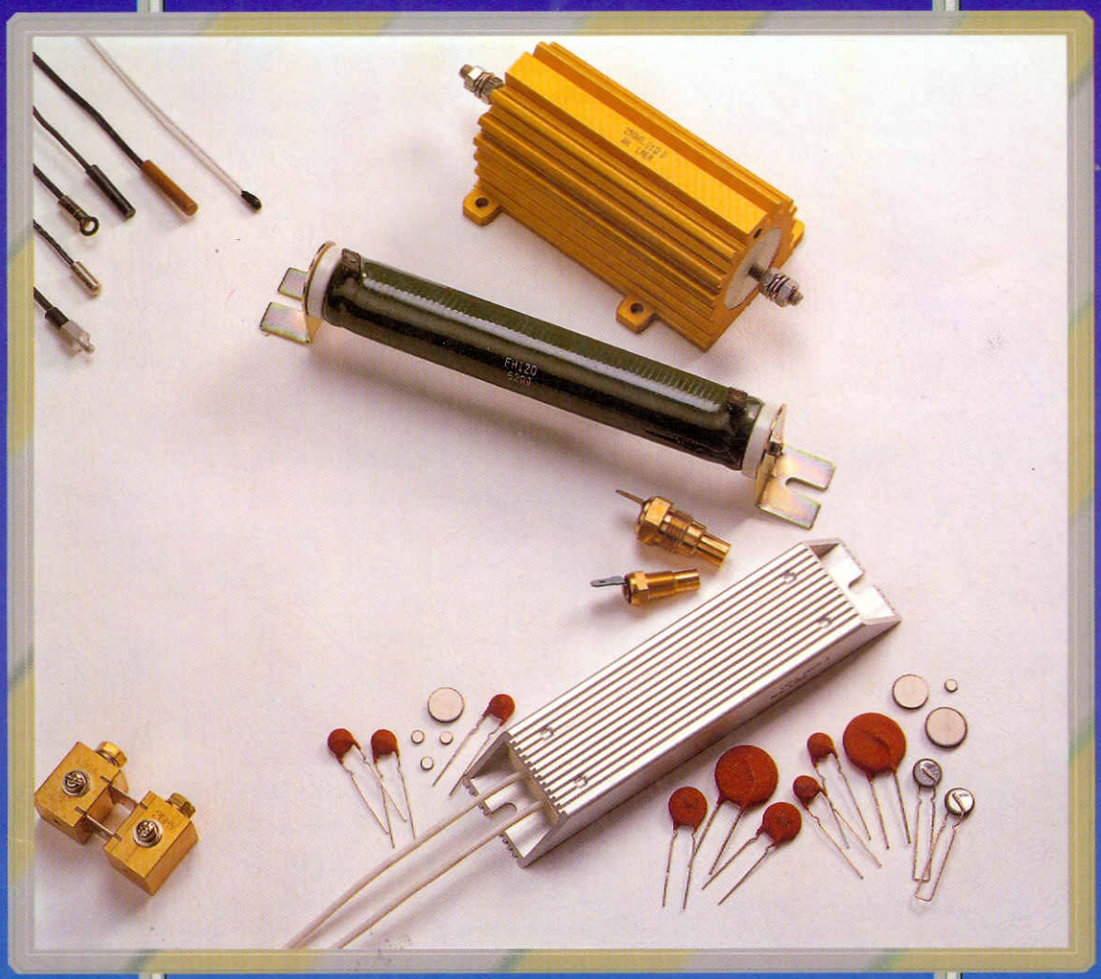
LMEM



THERMISTORS
HI-POWER WIREWOUND RESISTORS
AL-HOUSED WIREWOUND RESISTORS

Loyal Machinery & Electronic Co., Ltd.

PROFILE

LOYAL has been engaging in manufacturing THERMISTORS, SPECIAL WIREWOUND RESISTORS and AL-HOUSED RESISTORS since 1978, enjoying a good reputation from the leading companies. Besides, our products had passed DEFENSE DEPT 's and UL's approval.

LOYAL's production procedure is entirely in-housed from materials to finished products, Q.C. systems use AQL level, so we supply customers with the excellent quality,rapid delivery, and competitive price. Moreover, well-professional R&D TEAMs could meet any request.

LOYAL's products are varietal and cover ultra specs. as follows:

1. NTC and PTC THERMISTORS

Rromoted in 1987 and gotten UL's recognition.

1) Controlling inrush current, temp. sensing and compensation
2) Disc size; 2.5ϕ, 5ϕ, 8ϕ, 10ϕ, 13ϕ, 15ϕ, 22ϕ, 30ϕ
3) Resistance: 0.5 Ω to 10M Ω
4) Current 0.5A to 20A
5) Operating temp: -40 to 200 ℃
6) ASSEMBLIES IS AVAILABLE

2. AL-HOUSED WIREWOUND RESISTORS

Firstly researched and promoted by LOYAL in Taiwan

1) Resisting shock, strong construction and low inductive
2) Watt range: 5, 10, 25, 50, 60, 80, 100, 200, 250, 500 & 1000W
3) Tolerance: ± 0.1%, ± 1%, ± 3%, ± 5%, & ± 10%
4) Operating temp: -40 to 300 ℃
5) Special specs. is welcome

3. HIGH-POWER WIREWOUND RESISTORS

Promoted in 1978 and passed DEFENSE DEPT' sapproval.

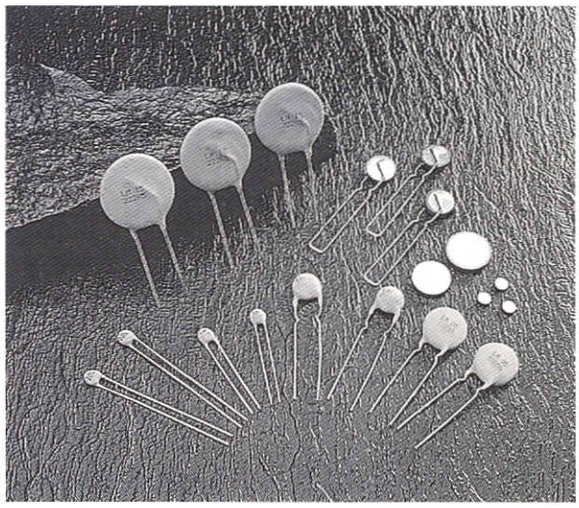
1) Special coating: ceramic (1200 ℃), silicone (350 ℃) enamel (500 ℃)
2) Adopt JIS standard for Q.C.
3) High power rating: 0.5 to 5 million watts
4) Tolerance: ± 0.1%, ± 1%, ± 5%, & ± 10%
5) Specifications custom made

DISC-TYPE NTC POWER THERMISTOR

LMEM RUSH CURRENT SUPPRESSOR

LMEM rush current suppressor is a NTC THERMISTOR which exhibits a large decrease in resistance when AC/DC current starts flowing at loop. For a negative temperature coefficient, the devices provide prevention against high peak inrush current at turn-on, temperature compensation and temperature sensing, especially in power supplies where charging capacitors initially present extremely low impedance.

LMEM rush current suppressor can effectively limit surge currents for several seconds through an initial high resistance, therefore, critical components extend their life. The products are manufactured of a specially-formulated metal oxide ceramic material and coated with silicone for insulation.

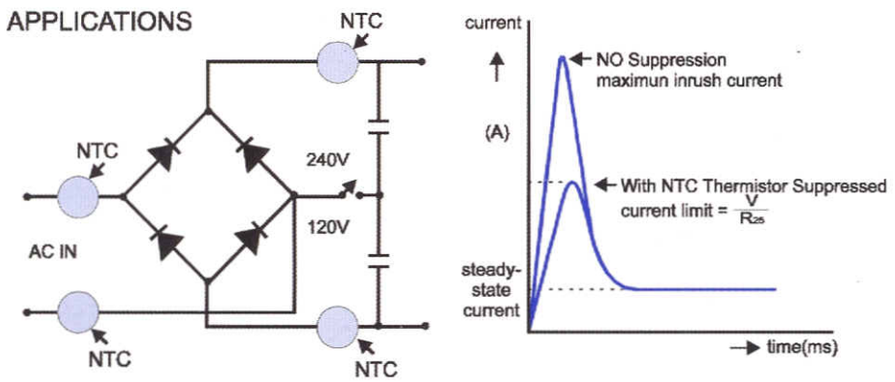


FEATURES:

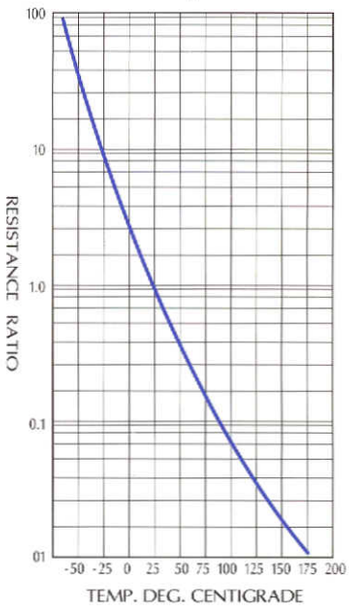
- Special applications is available upon request.
- Special kink leads are available upon requirement.
- Special marking to customer's need.
- Special coating material: 350 ℃ Silicone.

APPLICATIONS EXAMPLE .

the underside diagram is a means to limit surge current



TYPICAL R/T CURVES

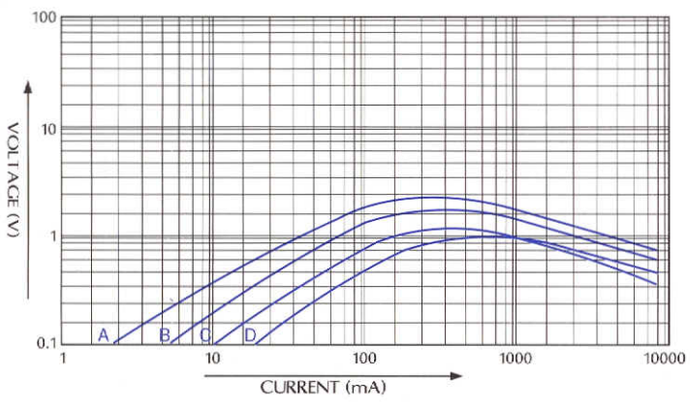


V-I CHARACTERISTIC CHART

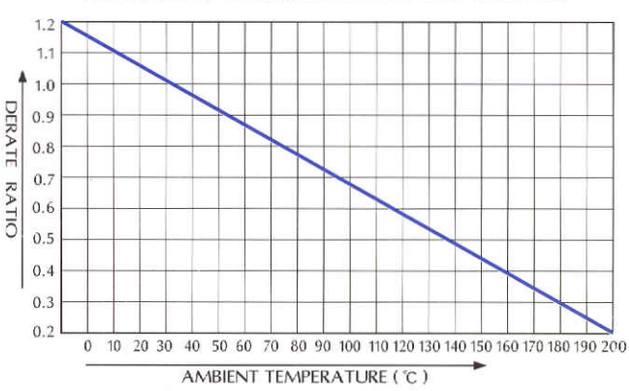
Model

A:15 ϕ 50 Ω B:15ϕ 20 Ω

C:13ϕ 5 Ω D:10ϕ 10 Ω



AMBLENT TEMP. DERATING CURVE



LMEM RUSH CURRENT SUPPRESSOR LEAD TYPE 5φ~30φ SERIES SPECIFICATION

Disc	Part No.	No Load Resistance at 25 ℃ (Ω)	Max Steady state Current (A)	(25 ℃ Ambient) Approx. Resistance at Max. Current (Ω)	Thermal Dissipation Constant (mW/ ℃)	Thermal Time Constant (Sec)	CUL	DIMENSION (UNIT:mm) D MAX	T MAX	P ± 1	d ± 0.02
5φ	LM 02-05050	5	2	0.360	13	12		6.5	5.0	3.5	0.8
	LM 1A5-05070	7	1.5	0.523	12	11					
	LM 01-05100	10	1	1.004	12	9					
	LM 0A8-05150	15	0.8	1.257	11	11					
	LM 0A7-05200	20	0.7	1.281	11	10					
	LM 0A6-05400	40	0.6	1.593	11	10					
	LM 0A5-05500	50	0.5	1.652	11	10					
8φ	LM 03-08050	5	3	0.200	10	35	Y	9.8	5.0	5.0	0.8
	LM 4A5-08050	5	4.5	0.150	10	36 *					
	LM 03-08060	6	3	0.210	11	35	Y				
	LM 04-08060	6	4	0.167	11	36 *					
	LM 03-08080	8	3	0.220	11	32					
	LM 3A5-08080	8	3.5	0.204	11	33 *					
	LM 03-08100	10	3	0.230	12	31					
	LM 3A5-08100	10	3.5	0.215	12	33 *					
10φ	LM 5A5-102R5	2.5	5.5	0.095	12	40 *		11.8	5.0	5.0	0.8
	LM 04-10040	4	4	0.150	12	43					
	LM 04-10050	5	4	0.155	12	43	Y				
	LM 05-10050	5	5	0.127	12	45 *					
	LM 03-10060	6	3	0.168	12.5	45	Y				
	LM 03-10080	8	3	0.240	12.5	45					
	LM 04-10080	8	4	0.197	12	46 *					
	LM 03-10100	10	3	0.290	12.5	50					
	LM 4A5-10100	10	4.5	0.245	12.5	52 *					
	LM 02-10120	12	2	0.500	12	52					
	LM 3A5-10120	12	3.5	0.230	12	53 *					
	LM 02-10160	16	2	0.520	12	50					
	LM 3A5-10160	16	3.5	0.235	12	53 *					
	LM 02-10200	20	2	0.500	12	50					
	LM 3A3-10200	20	3.3	0.271	12	53 *					
	LM 02-10250	25	2	0.500	12	53					
	LM 03-10250	25	3	0.302	12	54 *					
	LM 1A5-10500	50	1.5	0.700	13	53					
	LM 2A3-10500	50	2.3	0.437	13	55 *					
	LM 01-10800	80	1	1.700	10	42					
	LM 1A6-10800	80	1.6	1.515	10	45 *					
	LM 01-10121	120	1	2.200	10	42					
	LM 1A5-10121	120	1.5	1.820	10	45 *					
13φ	LM 08-131R3	1.3	8	0.051	15	70 *		14.8	6.0	7.5	0.8
	LM 06-132R5	2.5	6	0.088	15	72					
	LM 08-132R5	2.5	8	0.047	15	75 *					
	LM 05-13040	4	5	0.121	16	68					
	LM 07-13040	4	7	0.091	16	72 *					
	LM 05-13050	5	5	0.151	17	65	Y				
	LM 6A5-13050	5	6.5	0.120	17	72 *					
	LM 04-13060	6	4	0.165	15	65	Y				
	LM 06-13070	7	6	0.121	15	72 *					
	LM 04-13080	8	4	0.204	15	62	Y				
	LM 04-13100	10	4	0.211	15	62	Y				
	LM 05-13100	10	5	0.180	15	69 *					
	LM 03-13120	12	3	0.250	14	65	Y				
	LM 04-13120	12	4	0.213	14	72 *					
	LM 03-13160	16	3	0.367	15	68					
	LM 03-13200	20	3	0.382	14	68					

NOTE: THE SIGN* IS THE SYMBOL OF HIGH POWER.

LMEM RUSH CURRENT SUPPRESSOR LEAD TYPE 5φ~30φ SERIES SPECIFICATION

Disc	Part No.	No Load Resistance at 25 ℃ (Ω)	Max Steady state Current (A)	(25 ℃ Ambient) Approx. Resistance at Max. Current (Ω)	Thermal Dissipation Constant (mW/ ℃)	Thermal Time Constant (Sec)	CUL	DIMENSION (UNIT:mm) D MAX	T MAX	P ± 1	d ± 0.02
15φ	LM 11-15010	1	11	0.020	18	68 *		17.0	6	7.5	1.0
	LM 08-151R3	1.3	8	0.049	17	55					
	LM 08-151R5	1.5	8	0.060	17	58	Y				
	LM 08-152R5	2.5	8	0.064	18	60					
	LM 09-152R5	2.5	9	0.040	18	65 *					
	LM 07-15030	3	7	0.076	18	65	Y				
	LM 06-15040	4	6	0.100	20	70	Y				
	LM 08-15040	4	8	0.071	20	72 *					
	LM 06-15050	5	6	0.116	20	75	Y				
	LM 08-15050	5	8	0.079	20	76 *					
	LM 05-15060	6	5	0.159	20	75	Y				
	LM 05-15070	7	5	0.165	20	75	Y				
	LM 05-15100	10	5	0.178	20	75	Y				
	LM 06-15100	10	6	0.151	20	76 *					
	LM 04-15120	12	4	0.247	20	75					
	LM 04-15150	15	4	0.254	20	75					
	LM 04-15160	16	4	0.274	18	75					
	LM 04-15200	20	4	0.290	18	80					
	LM 03-15250	25	3	0.410	20	80					
	LM 03-15400	40	3	0.470	20	80					
	LM 3A5-15400	40	3.5	0.387	20	83 *					
	LM 03-15500	50	3	0.495	20	80					
	LM 3A5-15500	50	3.5	0.411	20	82 *					
	LM 2A5-15800	80	2.5	0.725	20	80					
	LM 02-15121	120	2	1.136	20	85					
	LM 1A5-15221	220	1.5	1.722	20	85					
22φ	LM 20-22010	1	20	0.015	28	125 *		23.0	7	7.5	1.0
	LM 18-22020	2	18	0.030	28	125 *					
	LM 15-222R5	2.5	15	0.032	26	120 *					
	LM 14-22040	4	14	0.052	27	125 *					
	LM 12-22050	5	12	0.068	28	125 *					
	LM 10-22070	7	10	0.072	29	125 *					
	LM 08-22100	10	8	0.110	29	125 *					
	LM 06-22250	25	6	0.225	26	120 *					
	LM 05-22500	50	5	0.376	25	120 *					
	LM 3A5-22121	120	3.5	1.130	29	125 *					
30φ	LM 30-300R5	0.5	30	0.015	35	162 *		33.0	7	7.5	1.0
	LM 28-30010	1	28	0.018	36	165 *					
	LM 23-30020	2	23	0.022	36	165 *					
	LM 18-30050	5	18	0.030	37	167 *					
	LM 12-30100	10	12	0.039	36	166 *					

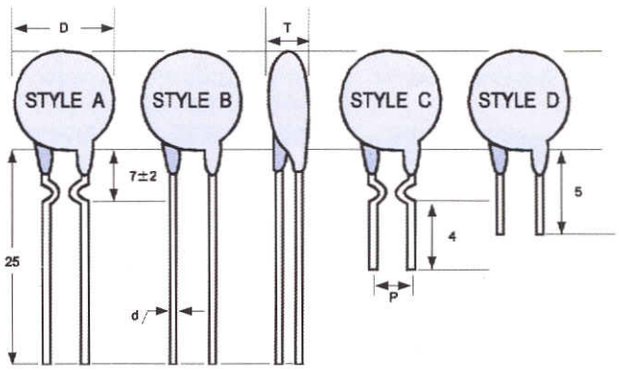
NOTE: THE SIGN* IS THE SYMBOL OF HIGH POWER.

HOW TO ORDER

LM	02	15	121
LMEN THERMISTOR	AMPERES	DISC DIAMETER	RESISTANCE CODE(Ω)

First 2 digits are significant figures. Last digit specifies unmber of zeros to follow.

SHAPE & DIMENSION:(UNIT:mm)



COLOR OF COATING: RED MATERIAL OF COATING: SILICONE
(LEAD SPACE CAN BE SPECIFIED BY CUSTOMER)

DIODE-TYPE NTC THERMISTOR

Features

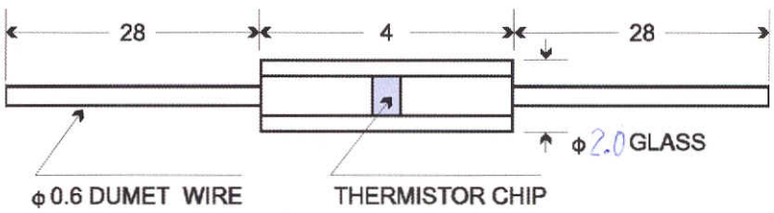
1. It can be used under severe conditions of oil vapor generated or high humidity circumstance, such as in oven.Intervals between lead wires are wide.
2. Changes in temperature are detected with high sesitivity due to its compactness, fast heat response.
3. Due to an automatic production line and mass-production, we offer competitive price, excellent quality and rapid delivery.
4. It can be automatically mounted onto printed circuit boards with its compactness and durability.

Application:

Temperature control of photosnsitive drums for laser beam printers and ovens, and temperature detection used in electronic cooking utensils, this product is the best choice as temperature detection unit or temperature compensation for home electronic appliance, OA equipment as well as industrial application.

RESISTANCE RANGE OFR25	2K Ω ~200K Ω	B CONSTANT 25 ℃ /85 ℃	± 3
TOLERANCE OF R25	± 1%~ ± 15%	DISSPATION CONSTANT	1.8mW/ ℃
OPERATING TEMP. RANGE	-30 ℃ ~+250 ℃	THERMAL TIME CONSTANT	LESS 8SEC (STILL AIR)
INSULATION RESISTANCE	DC500V,1000M Ω MIN	DIELECTRIC STRENGTH	AC 1000V 1 SEC
TEMPERATURE CIRCLE	(-25 ℃ ⇔ 200 ℃) X500 HOURS	HEAT RESISTING	250 ℃ X1000 HOURS
HUMIDITY RESISTANCE	(40 ℃ ,93%RH)X MORE THAN 30 DAYS CONTINUALLY		

Appearance and Dimensions(mm)



HOW TO ORDER

GD-A	103	J
TYPE	RESISTANCE CODE (Ohms)	TOLERANCE

First 2 digits are significant figures Last digit specifies unmber of zeros to follow.

Resistance Tolerance

F	± 1%
G	± 2%
H	± 3%
J	± 5%
K	± 10%
L	± 15%

CYLINDRICAL CHIP THERMISTOR

Features

- Autmatic placement compatibility
- Refiow and wave solderable
- Solderable end cap construction
- Cylindrical, leadiess body style (MELF)
- Maximum operating voltage is 200V
- Power rating is 0.25W
- 8mm tape width reel bulk packaging

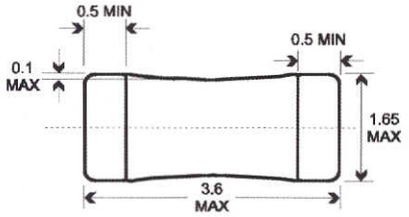
RESISTANCE RANGE OFR25	5K Ω ~500K Ω	B CONSTANT 25 ℃ /85 ℃	± 3
TOLERANCE OF R25	± 1%~ ± 15%	DISSPATION CONSTANT	1.5mW/ ℃
OPERATING TEMP. RANGE	-30 ℃ ~+125 ℃	THERMAL TIME CONSTANT	LESS 8SEC (STILL AIR)
INSULATION RESISTANCE	DC500V,1000M Ω MIN	DIELECTRIC STRENGTH	AC 1000V 1 SEC
TEMPERATURE CIRCLE	(-25 ℃ ⇔ 200 ℃) X500 HOURS	HEAT RESISTING	100 ℃ X1000 HOURS
HUMIDITY RESISTANCE	(40 ℃ ,93%RH)X MORE THAN 4 DAYS CONTINUALLY		

HOW TO ORDER

CY-A	103	J	TAPE AND REEL
TYPE	RESISTANCE CODE (Ohms)	TOLERANCE	PACKAGING

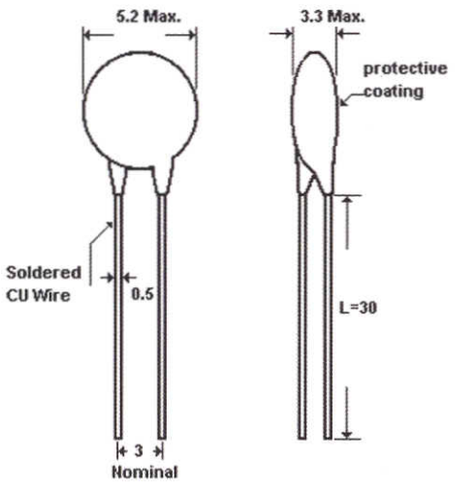
DIMENSIONAL CONFIGURATIONS

(Numbers in brackets indicate millimeters)



LMEM NTC THERMISTOR SENSOR

FOR TEMPERATURE COMPENSATION
$5\,^{m}/_{m}\ \phi$ NTC SERIES



- B-Constant deviation: ± 3% (Calulated by R25 and R50)
- Thermal dissipation factor: 6.5mw/ ℃
- Operation temp. range: -30--+130 ℃
- Thermal time constant: 20 sec.
- Max. Allowance power (25 ℃): 0.55W

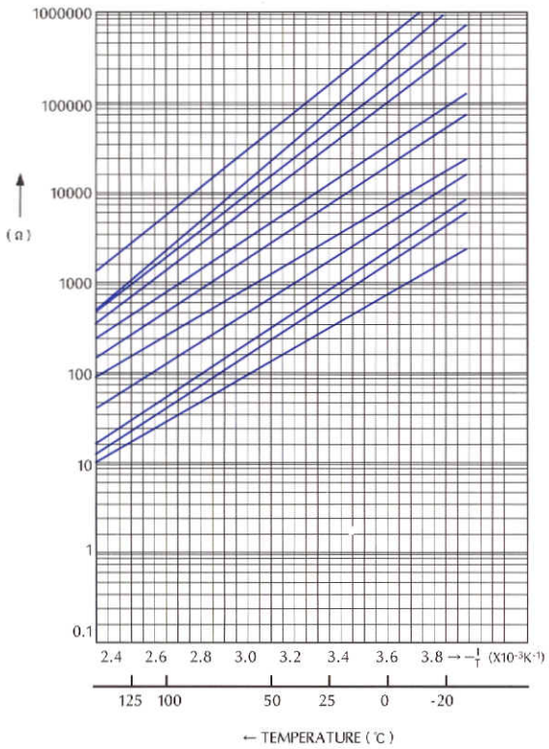
HOW TO ORDER

LM	05	103	J
LMEM THERMISTOR	DIAMETER 5ϕ	RESISTANCE CODE (Ω)	TOLERANCE

Resistance Tolerance

F	± 1%
G	± 2%
H	± 3%
J	± 5%
K	± 10%
L	± 15%

R/T CHARACTERISTICS



PART NO.	RESIST ANCE AT 25 ℃ (Ω)	B CONSTANT 25/50 ℃ (K)	RESISTANCE TEMP. COEFF25 ℃ (%/ ℃)
LM 05050	5	2900	-3.2
LM 05150	15	2900	-3.2
LM 05450	45	3100	-3.5
LM 05700	70	3100	-3.5
LM 05900	90	3100	-3.5
LM 05101	100	3100	-3.5
LM 05121	120	3100	-3.5
LM 05151	150	3100	-3.5
LM 05201	200	3100	-3.5
LM 05221	220	3100	-3.5
LM 05251	250	3100	-3.5
LM 05271	270	3100	-3.5
LM 05301	300	3100	-3.5
LM 05401	400	3100	-3.5
LM 05501	500	3100	-3.5
LM 05681	680	3500	-3.9
LM 05102	1000	3800	-4.3
LM 05152	1500	3800	-4.3
LM 05202	2000	3800	-4.3
LM 05252	2500	3900	-4.4
LM 05302	3000	3900	-4.4
LM 05402	4000	3900	-4.4
LM 05502	5000	3900	-4.4
LM 05682	6800	3900	-4.4
LM 05103	10000	4100	-4.6
LM 05153	15000	4100	-4.6
LM 05203	20000	4200	-4.7
LM 05303	30000	4200	-4.7
LM 05503	50000	4200	-4.7
LM 05683	68000	4400	-4.9
LM 05104	100000	4400	-4.9
LM 05154	150000	4400	-4.9
LM 05204	200000	4500	-5.1
LM 05304	300000	4500	-5.1
LM 05504	500000	4600	-5.2

PHYSICAL PROPERTIES

***RESISTANCE-TEMPERATURE CHARACTERISTICS**
of the thermistors is the relation between resistance & temperature, the expression as follows:
(1)$R1=R2\ \exp B(1/T1-1/T2)$
WHERE:R1 is the resistance value at absolute temperature T1
R2 is the resistance value at absolate temperature T2
B is a constant depending on each thermistor
(2)According to the above formula,B can be expressed by :$B=Ln(R1/R2)/(1/T1-1/T2)$

***TEMPERATURE COEFFCIENT OF RESISTANCE**
(α)originates from the above formula (1) the expressioned as follows: $\alpha = -B/T^2$

***DISSIPATION CONSTANT(δ) is defined for power**
in milliwatts necessary for raising temperature of the thermistor by 1 ℃ as follows:
$\delta = P/\Delta t$(mW/ ℃) (P:POWR, Δ t:raise temperature)

***TIME CONSTANT(T.C.) is regard as the time required**
for a thermistor to change 63% of the difference its initial and find temperature.

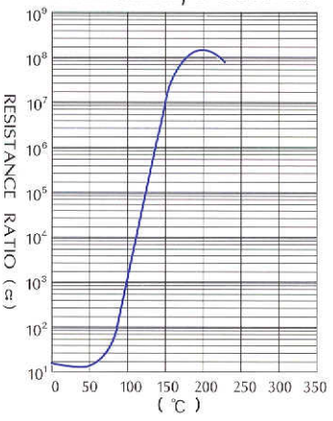
LMEM PTC CIRCUIT PROTECTION THERMISTOR SERIES SPECIFCATION

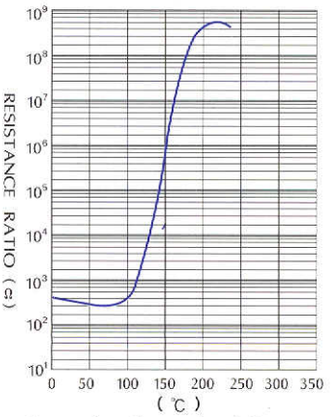
Part No	Reference Temperature Tc (℃)	Rated (V)	Resistance at 25 ℃ (Ω)	Non-operating Current (mA)	Switching Current (mA)	Dimensions (mm) D Max	T Max	P ± 1	d ± 0.02
LMP80-16V0R5	80 ± 10	16	0.5 ± 25%	800	1500	22	3.5	10	0.6
LMP80-16V1R5	80 ± 10	16	1.5 ± 25%	400	900	17	3.5		
LMP80-24V2R3	80 ± 10	24	2.3 ± 25%	250	600	17	3.5		
LMP80-24V3R7	80 ± 10	24	3.7 ± 25%	170	400	15	4.0		
LMP80-24V5R6	80 ± 10	24	5.6 ± 25%	130	320	11	4.0	5	0.5
LMP80-32V100	80 ± 10	32	10 ± 25%	100	250	10	4.0		
LMP80-48V150	80 ± 10	48	15 ± 25%	70	180	10	4.5		
LMP80-110V250	80 ± 10	110	25 ± 25%	50	120	8	4.5		
LMP80-110V400	80 ± 10	110	40 ± 25%	40	100	8	4.5		
LMP80-110V700	80 ± 10	110	70 ± 25%	30	75	8	4.5		
LMP80-220V151	80 ± 10	220	150 ± 25%	15	40	6.5	4.5		
LMP80-220V301	80 ± 10	220	300 ± 25%	10	25	6.5	4.5		
LMP80-380V102	80 ± 10	380	1000 ± 25%	5	15	6.5	4.5		
*LMP80-500V182	80 ± 10	500	1800 ± 25%	2	10	6.5	4.5		
LMP120-16V0R5	120 ± 10	16	0.5 ± 25%	1000	2500	22	3.5	10	0.6
LMP120-16V1R5	120 ± 10	16	1.5 ± 25%	500	1200	17	3.5		
LMP120-24V2R3	120 ± 10	24	2.3 ± 25%	400	1000	17	3.5		
LMP120-24V3R7	120 ± 10	24	3.7 ± 25%	320	800	15	4.0		
LMP120-24V5R6	120 ± 10	24	5.6 ± 25%	250	600	11	4.0	5	0.5
LMP120-32V100	120 ± 10	32	10 ± 25%	150	400	10	4.5		
LMP120-48V150	120 ± 10	48	15 ± 25%	120	300	10	4.5		
LMP120-110V250	120 ± 10	110	25 ± 25%	85	200	8	4.5		
LMP120-110V400	120 ± 10	110	40 ± 25%	60	150	8	4.5		
LMP120-110V700	120 ± 10	110	70 ± 25%	50	120	8	4.5		
LMP120-220V151	120 ± 10	220	150 ± 25%	35	90	6.5	4.5		
LMP120-220V301	120 ± 10	220	300 ± 25%	30	75	6.5	4.5		
LMP120-220V501	120 ± 10	220	500 ± 25%	25	65	6.5	4.5		
LMP120-380V102	120 ± 10	380	1000 ± 25%	10	25	6.5	4.5		
LMP120-380V152	120 ± 10	380	1500 ± 25%	8	20	6.5	4.5		
LMP120-500V252	120 ± 10	500	2500 ± 25%	4	15	6.5	4.5		

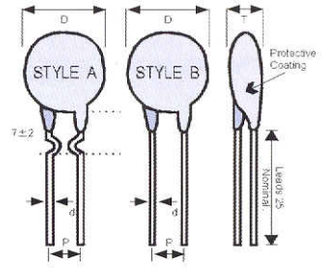
LMP80-220V700	80 ± 10	220	70 ± 25%	30	75	8	4.5	5	0.5
LMP80-220V101	80 ± 10	220	100 ± 25%	20	50	8	4.5		
LMP80-220V301	80 ± 10	220	300 ± 25%	8	20	8	4.5		
LMP80-220V501	80 ± 10	220	500 ± 25%	6	15	8	4.5		
LMP120-220V900	120 ± 10	220	90 ± 25%	45	120	6.5	4.5		
LMP120-220V201	120 ± 10	220	200 ± 25%	35	90	6.5	4.5		
LMP120-220V801	120 ± 10	220	800 ± 25%	18	45	6.5	4.5		
LMP120-220V152	120 ± 10	220	1500 ± 25%	8	20	6.5	4.5		

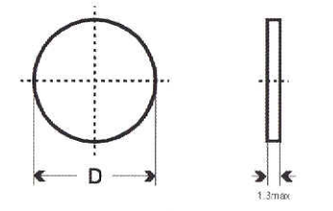
Part No	Reference Temperature Tc (℃)		Resistance at 25 ℃ (Ω)	Non-operating Current (mA)	Action Characteristics	Dimensions (mm) D max	T max
LMP80-TE150	80 ± 10		15 ± 20%	110	4A → 110mA<0.8sec	8	2.5
LMP80-TE200	80 ± 10		20 ± 20%	110	3A → 500mA<0.3sec	6	2.2
LMP100-TE200	100 ± 10		20 ~ 35	110	2A → 500mA<0.5sec	6	2.2
LMP120-TE100	120 ± 10		10 ± 25%	170	500mA Switching	7.5	3.5

TYPICAL R/T CURVES





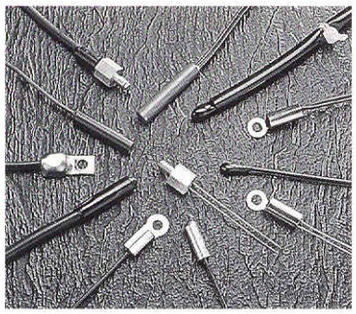




HOW TO ORDER

LMP	80	—	500V	182
LMEM-PTC THERMISTOR	REFERENCE TEMPERATURE Tc (℃)		RATED VOLTAGE (v)	RESISTANCE CODE (Ω)

LMEM NTC SENSOR THERMISTOR ASSEMBLES



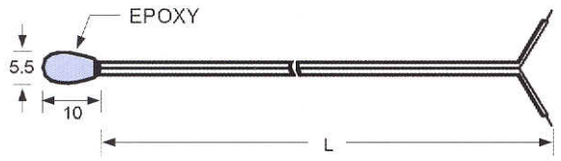
Typical Applications

- Electronic thermometers
- Air Conditioners
- Refrigerators
- Copy Machines
- Thermostats
- Smoke Detectors
- Bearing Overtemp Protection
- Chiller Sensors
- Heat Pump Sensors
- Fan Motor Speed Control
- Energy Efficient Monitors
- Differential Temperature Control
- Ambient Temperature Compensation
- Thermocouple Cold-junction Compensation
- Gain Stabilization
- Transistor Temperature Compensation
- Thermal Printer Head Control
- Oscillator Stabilization

LOYAL well-experienced engineers could design varietal assemblies according to customer's request. The designs could be ultra miniature chip probes or large units with special leads and cable assemblies or standard screw mount fixtures.

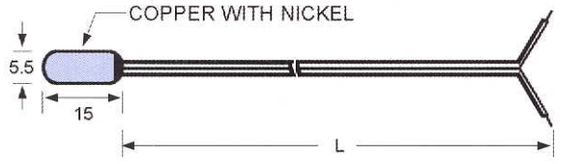
DIMENSION:(mm)

TYPE - 5E10



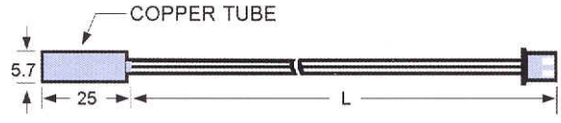
OPERATING TEMP. RANGE	-2 5 ℃ ~ +90 ℃	THERMAL TIME CONS.	LESS 25 SEC. (STILL AIR)
INSULATION RESISTANCE	DC500V,100MΩ MIN	DIELECTRIC STRENGTH	AC 1000V 1SEC.
TEMPERATURE CIRCLE	(-25 ℃ ↔70 ℃)X500 HOURS	HEAT RESISTING	95 ℃ X500 HOURS
HUMIDITY RESISTANCE	(40 ℃ ,93%RH)X MORE THAN 4 DAYS CONTINUALLY		

TYPE - 5CN15



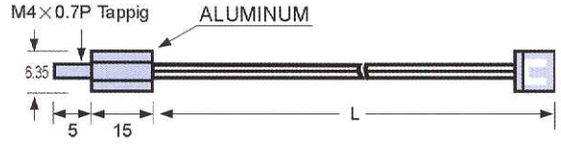
OPERATING TEMP. RANGE	-25 ℃ ~ +90 ℃	THERMAL TIME CONS.	ABOUT 8 SEC. (UNDER WATER)
INSULATION RESISTANCE	DC500V,100MΩ MIN	DIELECTRIC STRENGTH	AC1000V 1 SEC.
TEMPERATURE CIRCLE	(-25 ℃ ↔100 ℃) X1000 HOURS	HEAT RESISTING	95 ℃ X500 HOURS
HUMIDITY RESISTANCE	GENERAL WATER-PROOF (UNDER 25 ℃ WATER X 24 HOURS)		

TYPE - 5C25



OPERATING TEMP. RANGE	-30 ℃ ~ +105 ℃	THERMAL TIME CONS.	ABOUT 10SEC. (UNDER WATER)
INSULATION RESISTANCE	DC500V,100MΩ MIN	DIELECTRIC STRENGTH	AC 1000V 1 SEC.
TEMPERATURE CIRCLE	(-25 ℃ ↔100 ℃) X1000 HOURS	HEAT RESISTING	100 ℃ X1000 HOURS
HUMIDITY RESISTANCE	GENERAL WATER-PROOF(UNDER 25 ℃ WATER X 24 HOURS)		

TYPE - 5CT15

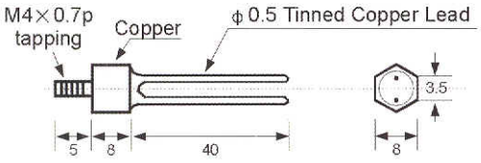


OPERATING TEMP.RANGE	-30 ℃ ~ +115 ℃	THERMAL TIME CONS.	ABOUT 10SEC. (UNDER WATER)
INSULATION RESISTANCE	DC500V,100MΩ MIN	DIELECTRIC STRENGTH	AC 1000V 1 SEC.
TEMPERATURE CIRCLE	(-25 ℃ ↔100 ℃) X1000 HOURS	HEAT RESISTING	100 ℃ X1000 HOURS
HUMIDITY RESISTANCE	GENERAL WATER-PROOF (UNDER 25 ℃ WATER X 24 HOURS)		

LMEM NTC SENSOR THERMISTOR ASSEMBLES

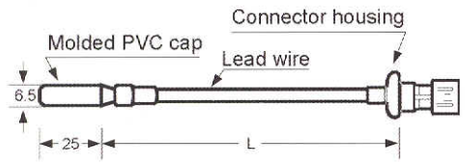
DIMENSION:(mm)

TYPE - 5CT8



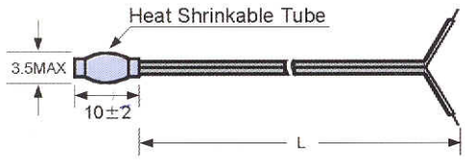
OPERATING TEMP. RANGE	-40 ℃ ~ +125 ℃	THERMAL TIME CONS.	ABOUT 18 SEC. (UNDER WATER)
INSULATION RESISTANCE	DC500V,100MΩ MIN	DIELECTRIC STRENGTH	AC 2500V 1 SEC.
TEMPERATURE CIRCLE	(-25 ℃ ⁰100 ℃) X1000 HOURS	HEAT RESISTING	95 ℃ X1000 HOURS
HUMIDITY RESISTANCE	(40 ℃ ,93%RH)X MORE THAN 4 DAYS CONTINUALLY		

TYPE - 5P25



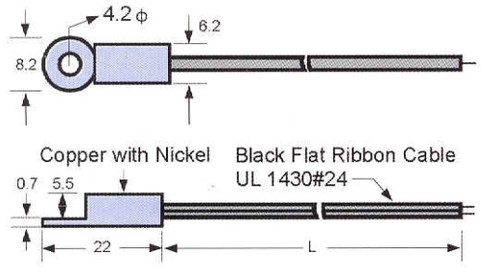
OPERATING TEMP. RANGE	-40 ℃ ~ +65 ℃	THERMAL TIME CONS.	ABOUT 20 SEC. (UNDER WATER)
INSULATION RESISTANCE	DC500V,100MΩ MIN	DIELECTRIC STRENGTH	AC 4500V 1 SEC.
TEMPERATURE CIRCLE	(-0 ℃ ⁰100 ℃) X1000 HOURS	HEAT RESISTING	95 ℃ X1000 HOURS
HUMIDITY RESISTANCE	UNDER 25 ℃ WATER (25 ℃ X5MIN.<->BOILING WATER X 5 MIN.)X5 HOURS		

TYPE - 5HST



OPERATING TEMP. RANGE	-30 ℃ ~ +115 ℃	THERMAL TIME CONS.	LESS 28 SEC. (STILL AIR)
INSULATION RESISTANCE	DC500V,100MΩ MIN	DIELECTRIC STRENGTH	AC 1000V 1 SEC
TEMPERATURE CIRCLE	(-25 ℃ ⁰100 ℃) X500 HOURS	HEAT RESISTING	95 ℃ X1000 HOURS
HUMIDITY RESISTANCE	(40 ℃ ,93%RH)X MORE THAN 4 DAYS CONTINUALLY		

TYPE - 5CR22



OPERATING TEMP. RANGE	-30 ℃ ~ +115 ℃	THERMAL TIME CONS.	LESS 28 SEC. (STILL AIR)
INSULATION RESISTANCE	DC500V,100MΩ MIN	DIELECTRIC STRENGTH	AC 1000V 1 SEC.
TEMPERATURE CIRCLE	(-25 ℃ ⁰100 ℃) X500 HOURS	HEAT RESISTING	95 ℃ X1000 HOURS
HUMIDITY RESISTANCE	(40 ℃ ,93%RH)X MORE THAN 4 DAYS CONTINUALLY		

HOW TO ORDER

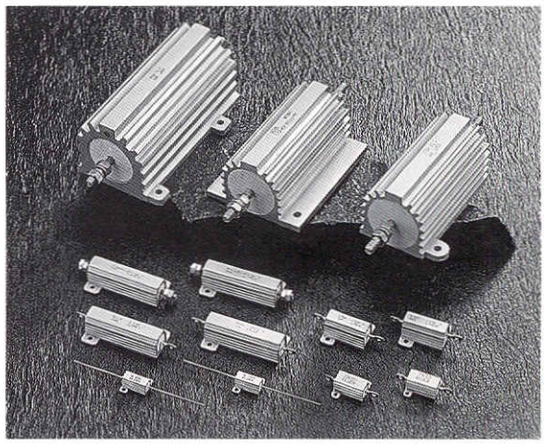
5	C25	103	J	200
NTC DIAMETER	MATERIAL AND LENGTH	RESISTANCES	TOLERANCE	LENGTH OF CABLE

F	± 1%
G	± 2%
H	± 3%
J	± 5%
K	± 10%

*LENGTH OF CABLE AND HOUSING UPON THE CUSTOMER'S INQUIRY.

ALUMINUM HOUSED. WIREWOUND RESISTORS

PRECISION POWR RESISTORS
Aluminum Housed (Chassis Mount)

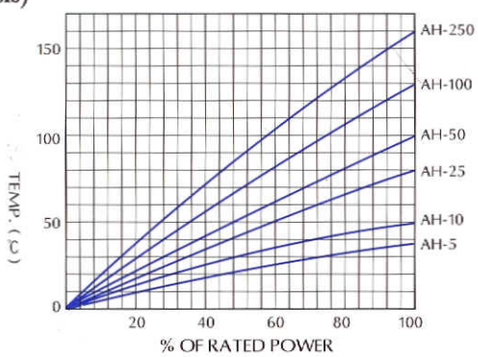


FEATURE:
- High power rating, small size and ultra precision.
- Standard winding & non-inductive winding types.
- High stability, strong construction.

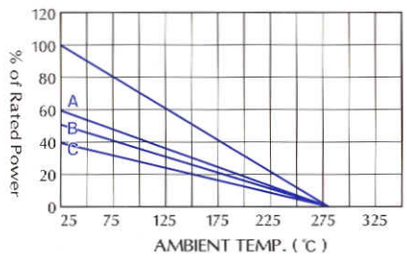
GENERAL SPEC:
Wattage Range: 6 styles to choose ranging from 5 to 250 watts.
Resistance Tolerance: 10%, 5%, 3%, 2%, 1%, 0.5%
Operating Temperature Range: -55% to +275 ℃
Dielectric Strength: AH-5 AH-10 AH-25 1000V AH-50 1500V AH-100 AH-250 2500V

Temperature Coefficient of Resistance: Standard T.C.:
± 30PPM/ ℃ =10 Ω and up, ± 50PPM/ ℃ =1 to 9.99 Ω
± 90PPM/ ℃ =below 1 Ω

SURFACE TEMPERATURE VERSUS POWER LOAD (on Chassis)



DERATING



Derating is required to reduce chassis mounting area and for high ambient temperatures.
Curves
A=5 & 10 watt units, unmounted.
B=25 watt units, unmounted.
C=50, 100 & 250 watt units, unmounted.

HOW TO ORDER

AH50	20 Ω	D
Type	Resistance	Tolerance

Resistance Tolerance	
D	± 0.5%
F	± 1 %
G	± 2 %
H	± 3 %
J	± 5 %
K	±10 %

STANDARD ELECTRICAL SPEC.

Type	MIL Style	Wattage Rating	Resistance Range (Ω) AH Inductive	Resistance Range (Ω) AHN Non-inductive	MAX Working (V) AH	MAX Working (V) AHN	(g) MAX Weight	proper heat sink (aluminum chassis)
AH- 5	RE60	5	0.05 ~ 3K	0.1 ~1 K	120	70	3	152X102X51X1t
AH- 10	RE65	10	0.02 ~ 6K	0.03~2.3K	245	180	7	152X102X51X1t
AH- 25	RE70	25	0.012~15K	0.02~5.5K	500	300	15	178X127X51X1t
AH- 50	RE75	50	0.01 ~40K	0.02~12 K	1300	600	33	305X305X1.5t
AH-100	RE77	100	0.4 ~50K	0.12~25 K	1900	1340	450	305X305X3t
AH-250	RE80	250	0.6 ~80K	0.15~40 K	2500	1750	800	305X305X3t

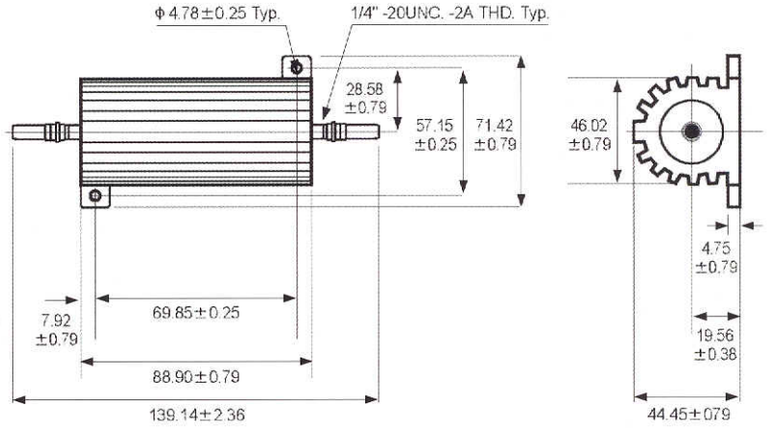
PERFORMANCE

Parameters	Test Conditions	Specifications
Short Time Over Load	5X wattage rating-5sec.	△R±(0.5%+0.05Ω) MAX
Moisture Resistance	temp 40 ℃ moisture 95% DC 100v500Hr	△R±(0.5%+0.05Ω) MAX
Moisture Load Life	temp 40 ℃ moisture 95% 1/10 X wattage rating (1.5Hr ON-0.5Hr OFF) - Repeat 1000Hr	△R±(0.5%+0.05Ω) MAX
Load Life	Load Rating (chassis mounted) (1.5Hr ON 0.5Hr OFF) Repeat 1000Hr	△R±(1.5%+0.05Ω) MAX
Vibration	10c/s~50c/s~10c/s (1min)-2Hr each of paralleled and right angle	△R±(0.2%+0.05Ω) MAX
Heat Resistance	275 ℃ 2Hr	△R±(0.5%+0.05Ω) MAX
Dielectric Strength	AH-5 AH-10 AH-25 1000V AH-50 1500V AH-100 AH-250 2500V	△R±(0.2%+0.05Ω) MAX
Insulation Resistance	Under the same test condition of Dielectric Strength, load DC500V and measure the Insulation R.	1000MΩ min
Terminal Strength	(1) Pull Test (30 sec Min) AH-5 1kg, AH-10 2.3kg, AH-25, AH-50 4.5kg (2)Torque Test (5~15sec) AH-100 27kg-cm, AH-250 36kg-cm	△R±(0.2%+0.05Ω) MAX

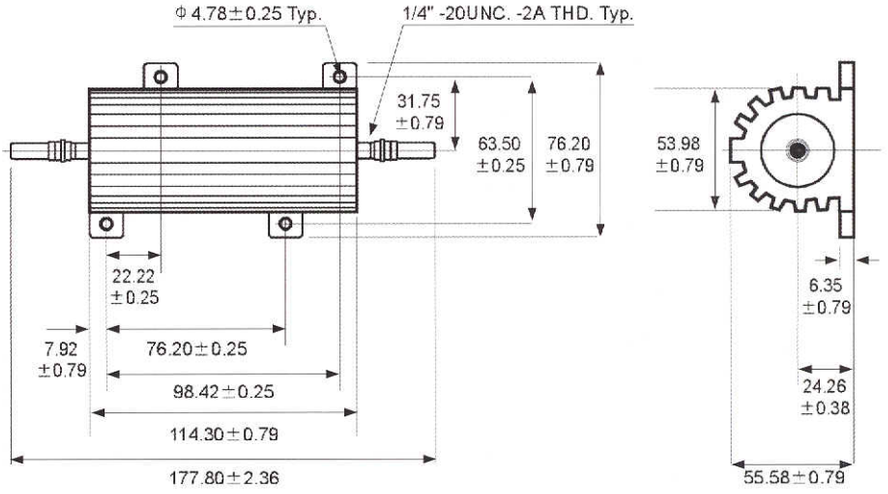
Materials:
Encapsulant: Silicone
End caps: Stainless steel
Core: Ceramic steatite or alumina
Housing: Aluminum with hard anodic coating
Element: Copper-nickel alloy, nickel-chrome alloy or manganese copper
Standard Terminals: 5~50W Tinned terminals
100~250W Threaded terminals

PRECISION POWER RESISTORS DIMENSIONS – 5~50W. 100W. 250W

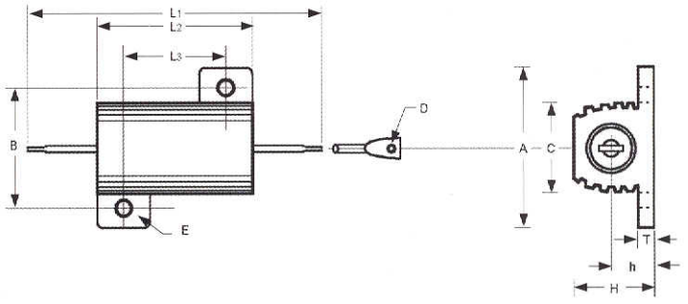
DIMENSIONS
AH-100
AHN-100



DIMENSIONS
AH-250
AHN-250



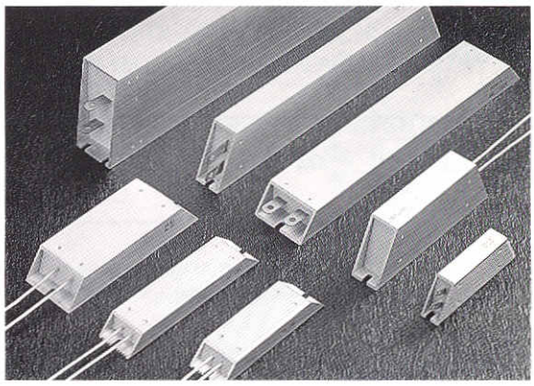
DIMENSIONS
AH-5 AH-10
AHN-5 AHN-10
AH-25 AH-50
AHN-25 AHN-50



TYPE	Dimensions (mm)										
	L1	L2 ±1	L3 ±0.8	A ±1	B ±0.8	C ±1	D ±0.1	E ±0.3	H ±1	h ±1	T ±0.2
AH-5 AHN-5	28.6	15.3	11.3	16.5	12.4	8.5	1.3	2.4	8.2	4	1.6
AH-10 AHN-10	35	19	14.3	20.4	15.9	11	2.2	2.4	10	5	2
AH-25 AHN-25	49	27	18.3	27.2	19.8	14	2.2	3.2	14	6.5	2
AH-50 AHN-50	70	50	39.7	29.2	21.5	16	2.2	3.2	16	7	2

HIGH-POWER METAL-CLAD WIREWOUND RESISTORS

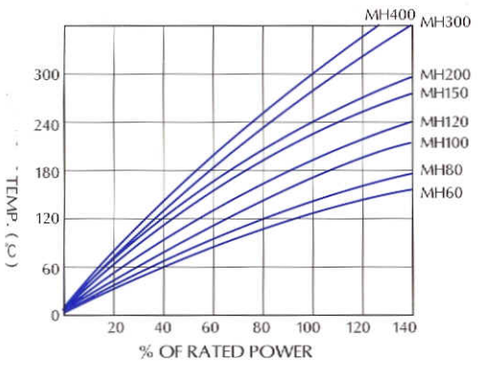
LARGE-CAPACITY TYPE RESISTORS
Aluminum Cased (Economy type)



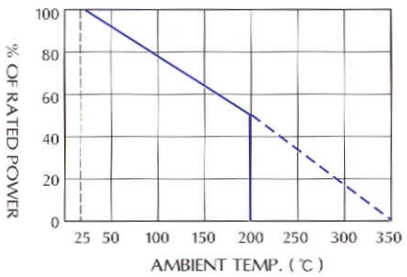
FEATURES:

- Low price Small size.
- High power and Excellent load life stability.
- Excellent short time over load.
- Strongly resistant to moisture, solvent and insulation.
- Self-extinguish material is used in molding.
- both standard winding type and non-inductive winding type are available.
- Terminal arrangements should be separately specified.
- High-surge-resistant items are also available.
- Items with the thermal switches are also available.

SURFACE TEMPERATURE VERSUS POWER LOAD (on Chassis 300X300X3t)



DERATING



NOMINAL RESISTANCE VALUES

Type	Wattage Rating (W)	Resistance Range (Ω)	
		Standard Type	Non-inductive Type
MH/MV(L) 60	60	0.001Ω ~ 5KΩ	0.1Ω ~ 2.5KΩ
MH/MV(L) 80	80	0.001Ω ~ 6KΩ	0.2Ω ~ 3 KΩ
MH/MV(L) 100	100	0.001Ω ~ 8KΩ	0.2Ω ~ 4 KΩ
MH/MV(L) 120	120	0.001Ω ~10KΩ	0.2Ω ~ 5 KΩ
MH/MV(L) 150	150	0.001Ω ~12KΩ	0.2Ω ~ 6 KΩ
MH/MV(L) 200	200	0.001Ω ~15KΩ	0.2Ω ~ 7 KΩ
MH/MV(L) 300	300	0.001Ω ~18KΩ	0.5Ω ~ 8 KΩ
MH/MV(L) 400	400	0.001Ω ~20KΩ	0.5Ω ~10 KΩ
MH/MV(L) 500	500	0.001Ω ~25KΩ	0.5Ω ~12 KΩ
MH/MV(L) 1000	1000	0.005Ω ~30KΩ	1 Ω ~15 KΩ

PERFORMANCE

Parameters	Test Conditions	Specifications
Short Time Over Load	5X wattage rating-5sec.	△R ± (2%+0.05Ω) MAX
Moisture Resistance	temp 40℃ moisture 95% DC 100v500Hr	△R ± (3%+0.05Ω) MAX
Moisture Load Life	temp 40℃ moisture 95% 1/10 X wattage rating (1.5Hr ON-0.5Hr OFF) - Repeat 1000Hr	△R ± (3%+0.05Ω) MAX
Load Life	Load Rating (chassis mounted) (1.5Hr ON 0.5Hr OFF) Repeat 1000Hr	△R ± (5%+0.05Ω) MAX
Vibration	10c/s~50c/s~10c/s (1min)-2Hr each of paralleled and right angle	△R ± (1%+0.05Ω) MAX
Heat Resistance	275℃ 2Hr	△R ± (0.5%+0.05Ω) MAX
Dielectric Strength	AC1500V	△R ± (0.2%+0.05Ω) MAX
Insulation Resistance	Under the same test condition of Dielectric Strength, load DC500V and measure the Insulation R.	100MΩ min
Temp. coefficient	± 260ppm/℃ MAX	
Operating Temp.	-55℃ ~+250℃	

HOW TO ORDER

MH100 (Type) — N — 80Ω (Resistance) — J (Tolerance)

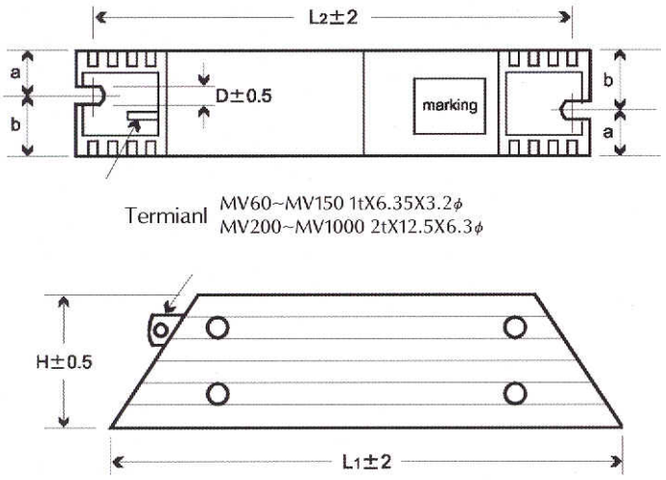
In case of Non-inductive type, use the N

Resistance Tolerance

D	± 0.5%
F	± 1 %
G	± 2 %
H	± 3 %
J	± 5 %
K	± 10 %

METAL-CLAD WIREWOUND RESISTORS DIMENSIONS – 60W~ 1000W

TYPE: MV



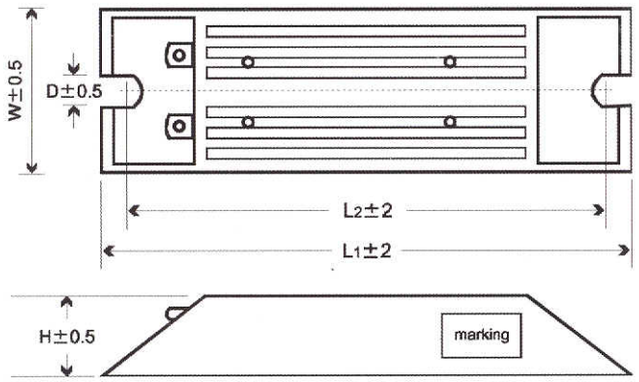
Termianl MV60~MV150 1tX6.35X3.2φ
MV200~MV1000 2tX12.5X6.3φ

EXTERNAL DIMENSIONS

Type	Dimensions (mm)							MAX Weight (g)
	L1	L2	W	H	D	a ±0.5	b ±0.5	
MV60	115	100	20	40	5.3	8.0	12.0	110
MV80	140	125	20	40	5.3	8.0	12.0	160
MV100	165	150	20	40	5.3	8.0	12.0	200
MV120	190	175	20	40	5.3	8.0	12.0	240
MV150	215	200	20	40	5.3	8.0	12.0	290
MV200	165	150	30	60	5.3	13.0	17.0	460
MV300	215	200	30	60	5.3	13.0	17.0	750
MV400	265	250	30	60	5.3	13.0	17.0	930
MV500	335	320	30	60	5.3	13.0	17.0	1100
MV1000	400	385	50	100	5.3X2			2800

TYPE: MH

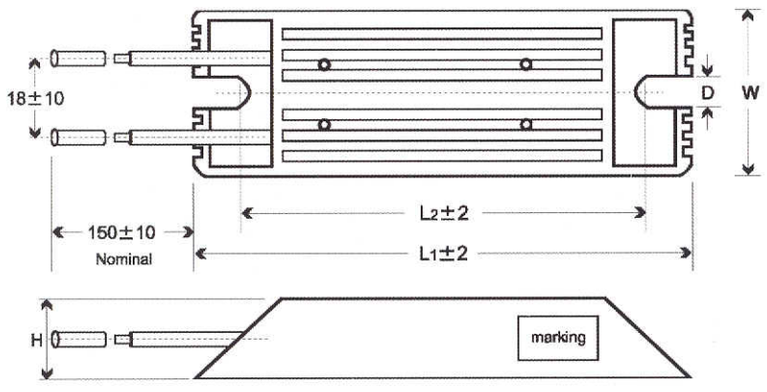
Termianl MH60~MH150 1tX6.35X3.2φ
MH200~MH1000 2tX12.5X6.3φ



EXTERNAL DIMENSIONS

Type	Dimensions (mm)					MAX Weight (g)
	L1	L2	W	H	D	
MH 60	115	100	40	20	5.3	110
MH 80	140	125	40	20	5.3	160
MH 100	165	150	40	20	5.3	200
MH 120	190	175	40	20	5.3	240
MH 150	215	200	40	20	5.3	290
MH 200	165	150	60	30	5.3	460
MH 300	215	200	60	30	5.3	750
MH 400	265	250	60	30	5.3	930
MH 500	335	320	60	30	5.3	1100
MH1000	400	385	100	50	5.3X2	2800

TYPE: MHL



* Dimensions are the same as MH type
* Lead's size to customers' request

LEAD WIRE CONDUCTOR CROSS-SECTION; WITHSTAND VOLTAGE

Conductor cross-sectional areas / Withstand voltage	1.25 mm²	2 mm²	3.5 mm²
2500V	○	–	–
3000V	○	○	○
3500V	–	○	○

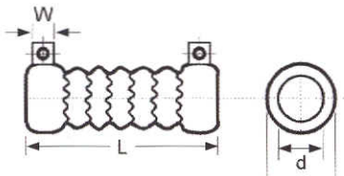
HIGH-POWER RIBBON TYPE WIREWOUND RESISTORS

PERFORMANCE:

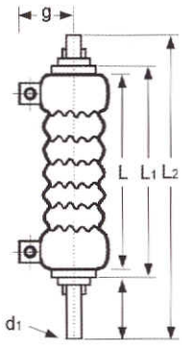
- RESISTING 400 ℃ MAX CONTINUOUSLY
- TERMINAL STRENGTH: 20KG MIN
- RESISTANCE TOLERANCE: BELOW 5 Ω ± 10%, 5 Ω AND ABOVE ± 5%
- HEAT DISSIPATION IS ULTRALLY EXCELLENT
- SMALL SIZE VERSUS LARGE CURRENTS

Special material coating (three types to choose from)
– Ceramic (1,200 ℃) – Silicone (350 ℃) – Enamel (500 ℃)

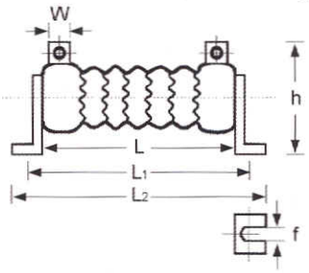
QH- TYPE



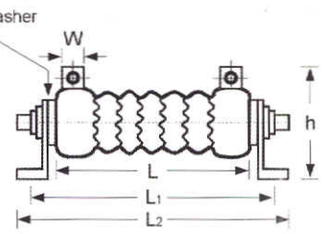
QH-O TYPE



QH-S TYPE



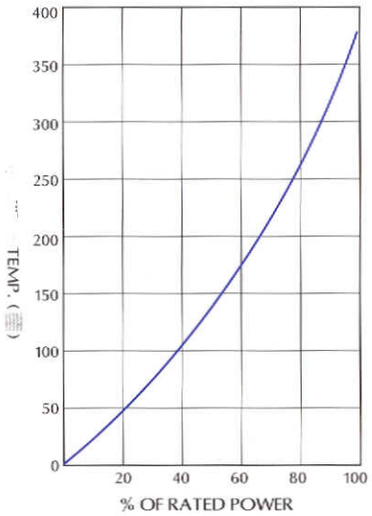
QH-OS TYPE



形式 TYPE	電阻值範圍(Ω) RESISTANT RANGE	寸法 DIMENSION (mm)							O TYPE		S TYPE			OS TYPE		
		L	D	d	g	W	d1	f	L1	L2	L1	L2	h	L1	L2	h
QH 120W	0.02 Ω ~ 4 Ω	115	33	16	32	8	5	5.2	129	150	133	157	58	145	171	58
QH 150W	0.03 Ω ~ 5 Ω	140	33	16	32	8	5	5.2	154	173	158	182	58	170	196	58
QH 180W	0.03 Ω ~ 6 Ω	165	33	16	32	8	5	5.2	179	200	183	207	58	195	221	58
QH 225W	0.04 Ω ~ 8 Ω	195	33	16	32	8	5	5.2	209	230	213	237	58	225	251	58
QH 300W	0.05 Ω ~ 10 Ω	254	33	16	32	8	5	5.2	268	288	272	296	58	285	310	58
QH 450W	0.06 Ω ~ 12 Ω	254	48	28	47	15		9.15	270		274	314	90	290	330	90
QH 600W	0.08 Ω ~ 15 Ω	330	48	28	47	15		9.15	345		349	390	90	365	406	90
QH 750W	0.1 Ω ~ 20 Ω	303	58	35	52	15		9.15						358	378	95
QH 850W	0.2 Ω ~ 25 Ω	330	58	35	52	15		9.15						385	405	95
QH 1000W	0.3 Ω ~ 30 Ω	390	58	35	52	15		9.15						445	465	95
QH 1500W	0.4 Ω ~ 35 Ω	500	58	35	52	15		9.15						555	575	95
QH 2250W	0.5 Ω ~ 40 Ω	500	72	40	52	15		9.15						584	608	130
QH 3000W	0.7 Ω ~ 50 Ω	650	72	40	52	15		9.15						734	758	130

* Spocifications Custont mads

SURFACE TEMP. VS POWER LOAD



HOW TO ORDER

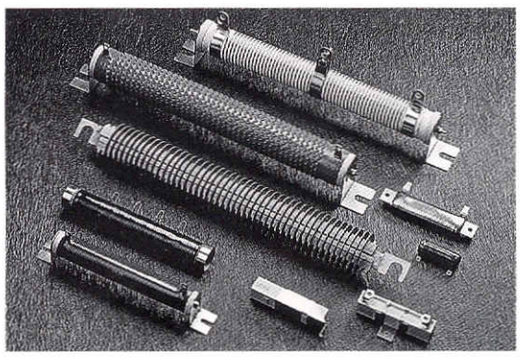
QH200W	OS	A	N	10 Ω	J
Type	With Fixed Stands Type			Resistance	Tolerance

A=Adjustable (Ω)
F=Fixed (Ω)

In case of Non-inductive type, use the N

Resistance Tolerance

D	± 0.5%
F	± 1 %
G	± 2 %
H	± 3 %
J	± 5 %
K	±10 %



FIXED TYPE & ADJUSTABLE TYPE WIREWOUND RESISTORS

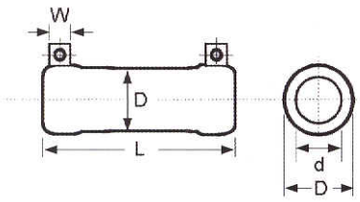
FEATURES:

- STRONG TERMINALS (4.5~20KG/30SEC)
- RESISTANCE VALUE UNCHANGED AFTER LONG-TERM USE
- MULTI-TERMINAL TYPES OR ADJUSTABLE TYPE IS AVAILABLE

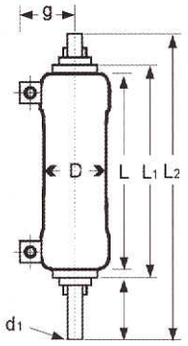
PERFORMANCE:

- RESISTANCE TEMP. COEFF ±400, 260, 100PPM/℃
- SHORT TIME OVER LOAD ±(2% ±0.05Ω)
- INSULATION RESISTANCE 500V 20MΩ MIN
- VOLTAGE WITHSTANDING 1000V for 1 min

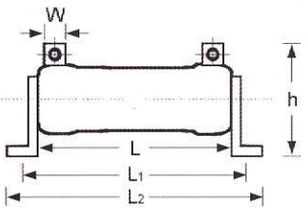
CH TYPE



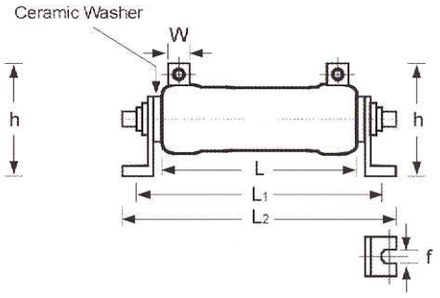
CH-0 TYPE



CH-S TYPE



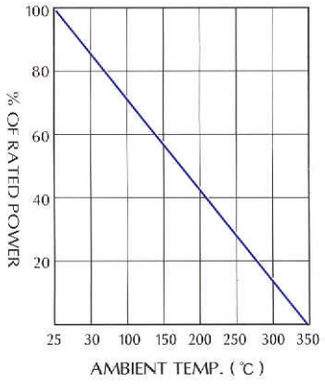
CH-0S TYPE



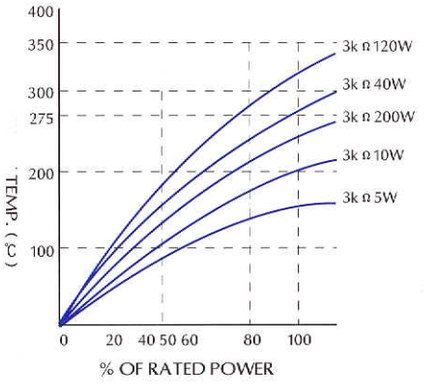
Silicone coating TYPE	電阻值範圍(Ω) RESISTANT RANGE ( )Adjustable type	寸法 DIMENSION (mm)							O TYPE		S TYPE			OS TYPE			Special Type with Ceramic coating
		L	D	d	g	W	d1	f	L1	L2	L1	L2	h	L1	L2	h	
CH 5W	0.1Ω~ 5K(650)	30	12	6	17	5			40	52	45						
CH 10W	0.1Ω~ 10K(1.2K)	45	12	6	17	5			55	67	60						
CH 15W	0.1Ω~ 15K(1.5k)	45	15	8	19	5		4.1	55	67	60						
CH 20W	0.1Ω~ 20K(2.2K)	50	19	10	20	5		4.1	60	77	68	76	38	76	86	38	
CH 30W	0.1Ω~ 30K(3.3K)	75	19	10	20	5		4.1	85	105	93	101	38	101	111	38	
CH 40W	0.1Ω~ 40K(4.9K)	90	19	10	20	5		4.1	100	115	108	116	38	116	126	38	
CH 50W	0.1Ω~ 50K(5.6K)	75	30	16	32	8	5	5.2	89	110	100	117	58	115	131	58	TH 75W
CH 60W	0.1Ω~ 60K(7k)	90	30	16	32	8	5	5.2	104	120	115	132	58	130	146	58	TH 90W
CH 80W	0.1Ω~ 80K(10K)	115	30	16	32	8	5	5.2	129	150	140	157	58	155	171	58	TH 120W
CH 100W	0.1Ω~100K(12K)	140	30	16	32	8	5	5.2	154	173	165	182	58	180	196	58	TH 150W
CH 120W	0.1Ω~120K(15K)	163	30	16	32	8	5	5.2	179	200	188	207	58	203	221	58	TH 180W
CH 150W	0.1Ω~150K(16K)	195	30	16	32	8	5	5.2	209	230	220	237	58	235	251	58	TH 225W
CH 200W	0.1Ω~200K(24K)	254	30	16	32	8	5	5.2	268	288	279	296	58	294	310	58	TH 300W
CH 250W	0.1Ω~250K(30K)	303	30	16	32	8	5	5.2	319	340	328	347	58	343	361	58	TH 375W
CH 300W	0.1Ω~300K(50K)	254	45	28	47	15		9.15	270		294	314	90	309	330	90	TH 450W
CH 400W	0.1Ω~400K(60k)	330	45	28	47	15		9.15	345		379	390	90	385	406	90	TH 600W
CH 500W	0.1Ω~500K(80K)	303	55	35	52	15		9.15	318		343	363	95	358	378	95	TH 750W
CH 600W	0.1Ω~600K(90K)	330	55	35	52	15		9.15						385	405	95	TH 850W
CH 750W	0.2Ω~750K(100K)	390	55	35	52	15		9.15						445	465	95	TH1000W
CH 1000W	0.2Ω~ 1M(120K)	500	55	35	52	15		9.15						555	575	95	TH1500W
CH 1500W	0.5Ω~1.5M(150K)	500	69	40	60	15		9.15						584	608	130	TH2250W
CH 2000W	0.5Ω~ 2M(200K)	650	69	40	60	15		9.15						734	758	130	TH3000W

- Specifications custom made
- Imductive/non-inductive are available

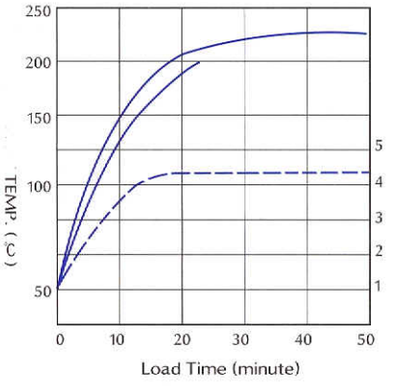
DERATING



SURFACE TEMP. VS POWER LOAD

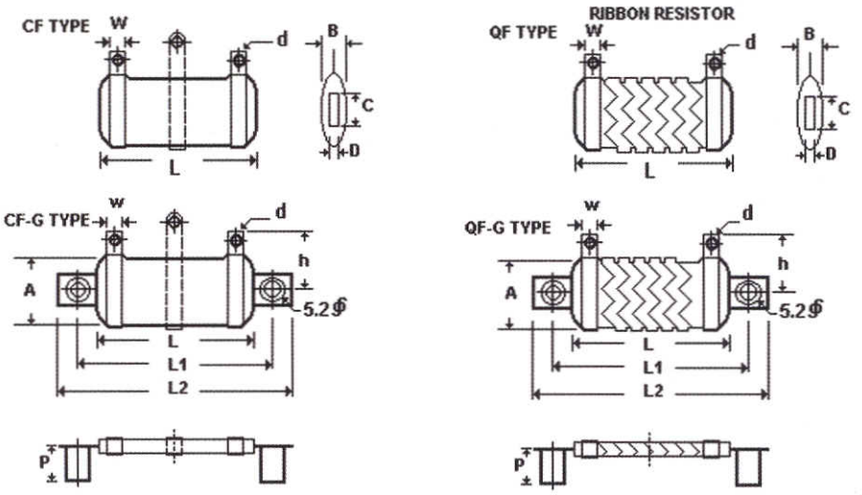


TEMP. VS TIME (100% LOAD)



FEATURES:

- High power-to-size ratio
- Withstands high vibration without loosening
- Self-stacking hardware for horizontal or vertical placement
- Mounting accommodations ideally suited to high density packaging

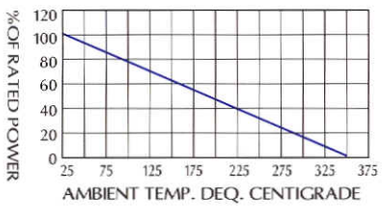


CF TYPE	RESISTANT RANGE ( ) ADJUSTABLE TYPE	DIMENSION(mm)											RIBBON QF TYPE	QF RESISTANT RANGE
		L	A	B	C	D	W	d ϕ	L1	L2	P	h		
CF 30W	0.1Ω~5K(650)	32	30	12	15	2	5	3.1	51	64	11.5	28	QF 50W	0.03~5 Ω
CF 40W	0.1Ω~10K(1.2K)	51	30	12	15	2	5	3.1	70	83	11.5	28	QF 60W	0.03~6 Ω
CF 55W	0.1Ω~15K(1.5K)	89	30	12	15	2	8	5.1	108	121	11.5	—	QF 80W	0.03~7 Ω
CF 70W	0.1Ω~20K(2.2K)	120	30	12	15	2	8	5.1	139	152	11.5	—	QF100W	0.03~7 Ω
CF 80W	0.1Ω~30K(3.3K)	140	30	12	15	2	8	5.1	159	172	11.5	—	QF120W	0.04~8 Ω
CF 95W	0.1Ω~40K(4.9K)	152	30	12	15	2	8	5.1	171	184	11.5	—	QF135W	0.04~8 Ω
CF100W	0.1Ω~50K(5.6K)	163	30	12	15	2	8	5.1	182	195	11.5	—	QF150W	0.04~10Ω
CF120W	0.1Ω~60K(7K)	185	30	12	15	2	8	5.1	204	217	11.5	—	QF180W	0.04~12Ω
CF150W	0.1Ω~80K(10K)	185	36	12	15	2	8	5.1	204	217	21	—	QF225W	0.04~15Ω
CF200W	1Ω~100K(12K)	210	36	12	15	2	8	5.1	229	242	21	—	QF300W	0.04~15Ω
CF250W	1Ω~120K(15K)	254	36	12	15	2	8	5.1	273	286	21	—	QF375W	0.04~18Ω
CF300W	1Ω~150K(16K)	300	36	12	15	2	8	5.1	319	332	21	—	QF450W	0.04~20Ω

DERATING STACK MOUNTED UNITS			
NO.OF RESISTORS IN STACK	PERCENT OF SINGLE UNIT RATING WITH6.35		
	MINIATURE	SPACER	STANDARD
2	72	80	70
3	61	73	60
4	51	64	50

DERATING

industrial wirewound resistors have an operating temperature range of-55℃ to+350℃.
They must be derated at high ambient temperatures according to the curve at the right.



HOW TO ORDER

CF100W / TYPE — G / STYLE — N — 100Ω / RESISTANCE — J / TOLERANCE

A=Adjustable (Ω)
F=Fixed (Ω)
G=with Fixed stands
GA=Adjustable (Ω) with Fixed stands

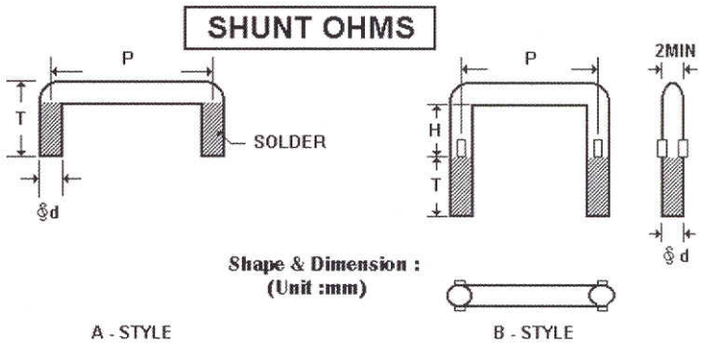
In case of Non-inductive type, use the N

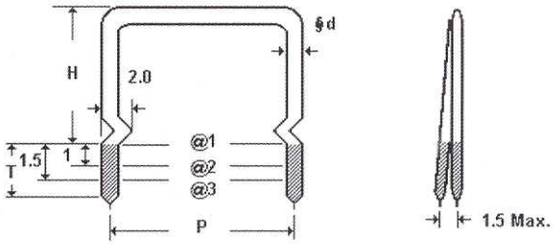
D	± 0.5%
F	± 1 %
G	± 2 %
H	± 3 %
J	± 5 %
K	±10 %

Dielectric Strength:1000VAC minimum.
Short Time Overload: In intermittent duty the applied power can greatly exceed the wattage rating.However,since each pulse application is somewhat unique, the factory should be contacted for specific requirements.
MATERIAL SPECIFICATIONS
Core: Steatite. Chemically inert-will withstands severe thermal shock and is impervious to moisture.
Element: Highest quality copper-nickel alloy or nickel-chrome alloy,depending on resistance value.
Coating:HL-special high temperature silicone, Cured at much lower temperatures than vitreous enamels.

WR-SHUNT OHMS

Shape & Dimension: (Unit:mm)





APPLICATIONS:

1. Current Inspection
2. Current Detection
   Upon Instability

ADVANTAGES:

1. Stable Resistance Value
2. Non-inductive

Temperature Range:

-55 ℃ ~ +155 ℃

Part No.	Max Current(A)	Resistances			Dimension(mm)			
		mΩ	Tolerance	Test Point	Φd	P	H	T
WR-01-C-08N-50	4.5	50	± 5	@1	0.8	12.5±1	19.5	5.0
WR-02-C-08N-50	4.5	50	± 5	@1	0.8	20.0±1	17.0	4.1
WR-03-C-09N-20	5	20	± 5	@1	0.9	10.0±1	10.0	5.0
WR-04-C-09N-27	5	27	±10	@3	0.9	7.5±0.5	12.4	2.6
WR-05-C-09N-20	5	20	± 5	@1	0.9	10.0±1	10.0	5.0
WR-06-C-09N-20	5	20	± 5	@1	0.9	10.0±1	10.0	5.0
WR-07-C-09N-27	5	27	±10	@3	0.9	7.5±0.5	12.4	2.6
WR-08-C-09N-25	5	25	± 5	@1	0.9	10.0±1	13.0	5.0
WR-09-C-10N-20	5.5	20	±10	@1	1.0	10.0±1.5	12.0	5.0
WR-10-C-13N-20	7.5	20	± 5	@1	1.3	30.0±1.5	12.0	5.0
WR-11-C-13N-20	7.5	20	± 5	@1	1.3	15.0±1.5	20.0	5.0
WR-12-C-13N-20	7.5	20	± 5	@1	1.3	10.0±1.5	23.5	5.0
WR-13-C-13N-10	7.5	10	± 5	@1	1.3	10.0±1	9.5	3.5
WR-14-C-13N-20	7.5	20	± 5	@3	1.3	30.0±1.5	12.0	5.0
WR-15-C-13N-20	7.5	20	± 5	@3	1.3	10.0±1	23.0	5.0
WR-16-C-13N-10	7.5	10	± 5	@2	1.3	15.0±1	7.0	3.0
WR-17-C-13N-40	7.5	40	± 5	@3	1.3	5.0±1.5	32.4	5.0
WR-18-B-14M-06	8.5	6	± 5	@1	1.4	10.0±1	4.0	4.2
WR-19-A-16M-03	10	3	± 5	@1	1.6	10.0±1		3.5

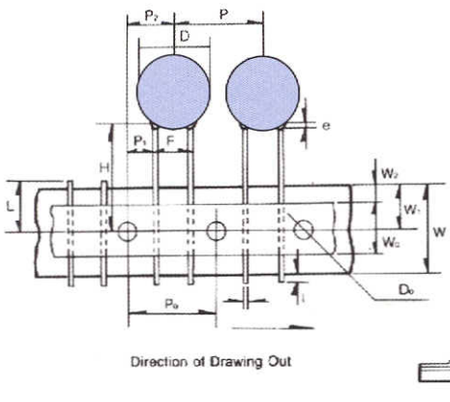
HOW TO ORDER

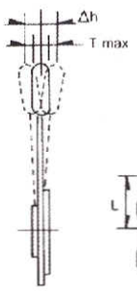
WR	—	19	—	A	—	16 M	—	03
TYPE		NO		STYLE		Φ MATERIAL		RESISTANCE

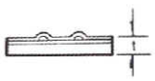
TAPING SPECIFICATIONS

TAPING(Radial)

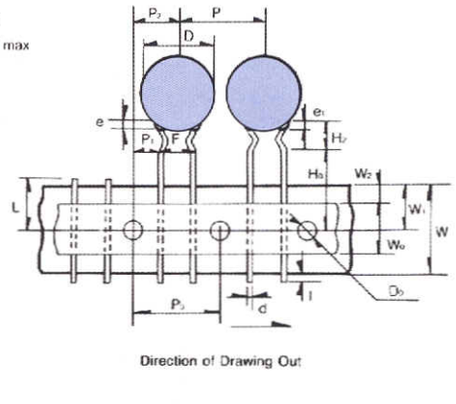
Type B







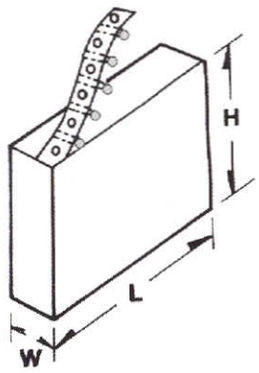
Type A



(Unit:mm)

Item		Code	Dimensions (mm)	Item	Code	Dimensions (mm)
Taping Pitch		P	12.7 ±1.0	Lead Protrusion	l	+0.5~1.0
Guide Pitch		PO	12.7 ±1.0	Diameter of Feed Hole	DO	4.0±0.3
Lead Spacing		F	5.0 ±0.8	Diameter of Lead	d	$0.6^{+0.06}_{-0.05}$
Feed Hole Position Capacitor Body		P2	6.35±1.3	Total Thickness of Tape	t	0.7±0.2
Feed Hole Position Capacitor Lead		P1	3.85±0.7	Thickness of Capacitor Body	T	3.5
Diameter of Diso		D	See table of each series	Alignment to F. R Direction	△h	0±2.0
				Length of Snipped Lead	L	11.0±1.0
Width of Base Tope		W	18.0 ±0.5	Width of Hold-down Tape	WO	12.5
Feed Hole Vertical Position		W1	$9.0^{+0.75}_{-0.05}$	Hold-down Tape Position	W2	1.5±1.5
Taping Height	For Straight	HO	16.0 ±0.5	Coating Extention	e	1.5
	For Crimp	H	$20^{+1.5}_{-1.0}$		e1	up to center of crimp

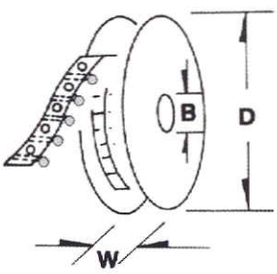
AMMO PACK



H ≤ 372 (14.64)
L ≤ 377 (14.84)
W ≥ 55 (2.16)

Acceptoble to standard radial type cartridge.

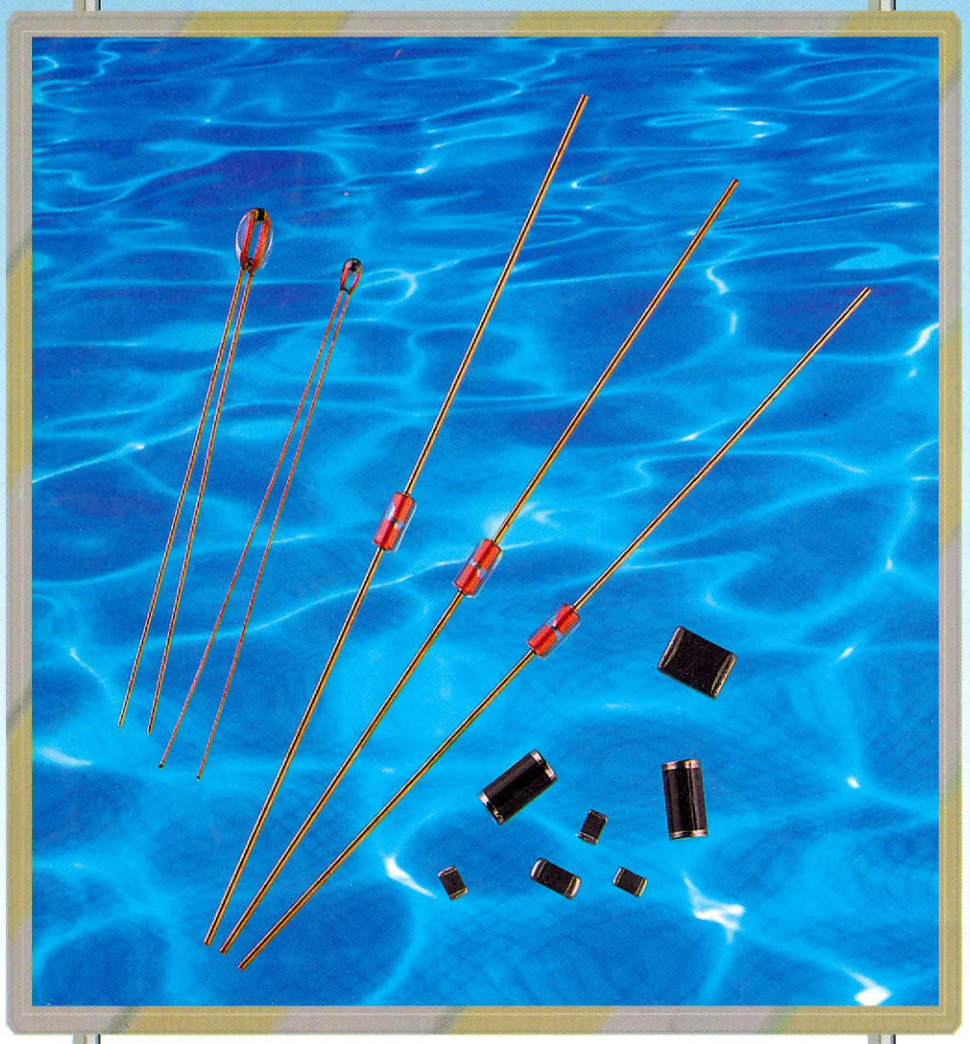
REEL



D ≤ 354 (13.93)
B ≥ 21 (83") but
≤ 30 (1.18")
W ≤ 55 (2.16)

Acceptable to standard radial type cartridge with a few extra accessories. Reeled axials are also acceptable to standard axial type cartridge with a few accessories.

LMEM



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