HOW TO ORDER

KMF	25	B	J	2	100
Product Code	RATED POWER	PACKING	Toleranc	No. ofTotal Character	Resistance Value
KCF: CARBON FILM RESISTOR **KMF:**METALFILM RESISTOR **KRSF:**METAL OXIDE FILM RESISTOR **FKNP:**KNP WIRE WOUND FUSIBLE RESISTOR **NKNP:**WIREWOUND RESISTORS(Non-Inductive） **KFR :**FUSIBLE RESISTOR **CR-M:**SQM CEMENT RESISTORS **CR-L:**SQP CEMENT RESISTORS	12 1/6W 25 1/4W 50 1/2W 12 1/6W 125 1/8W 100 1W 200 2W 1WS 1WS 2WS 2WS 500 5W 700 7W	T52 :TAPE/BOX T73: TAPE/BOX B: BULK R: TAPE REEL	F +-1% J+-5%	100=10R=2 100R=101=3 10K=1000=4	100=10R 100R=101 10K = 10,000

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Product Code

KCF: CARBON FILM RESISTOR
KMF:METALFILM RESISTOR
KRSF:METAL OXIDE FILM RESISTOR
FKNP:KNP WIRE WOUND FUSIBLE RESISTOR
NKNP:WIREWOUND RESISTORS(Non-Inductive）
KFR :FUSIBLE RESISTOR
CR-M:SQM CEMENT RESISTORS
CR-L:SQP CEMENT RESISTORS

RATED POWER

12	1/6W
25	1/4W
50	1/2W
12	1/6W
125	1/8W
100	1W
200	2W
1WS	1WS
2WS	2WS
500	5W
700	7W

PACKING

T52 :TAPE/BOX
T73: TAPE/BOX
B: BULK
R: TAPE REEL

Toleranc

F +-1%
J+-5%

No. ofTotal Character

100=10R=2
100R=101=3
10K=1000=4

Resistance Value

100=10R
100R=101
10K = 10,000

1. GENERAL INSTRUCTION:

1-1 SCOPE

This specification applies to the Metal Film Resistor made by PROAN Electronics Co., Ltd

2.NOMINAL RESISTANCE:

The nominal resistance shall be the resistance marked on the resistor body and identified, as a Rule, in units , Ω K Ω ,M Ω .

3.NOMINAL RESISTANCE TOLERANCE.

The nominal resistance tolerance is represented in one capital letter selected from F(±1%), D(±0.5%),C(±0.25%), B(±0.1%).

4 .RATING:

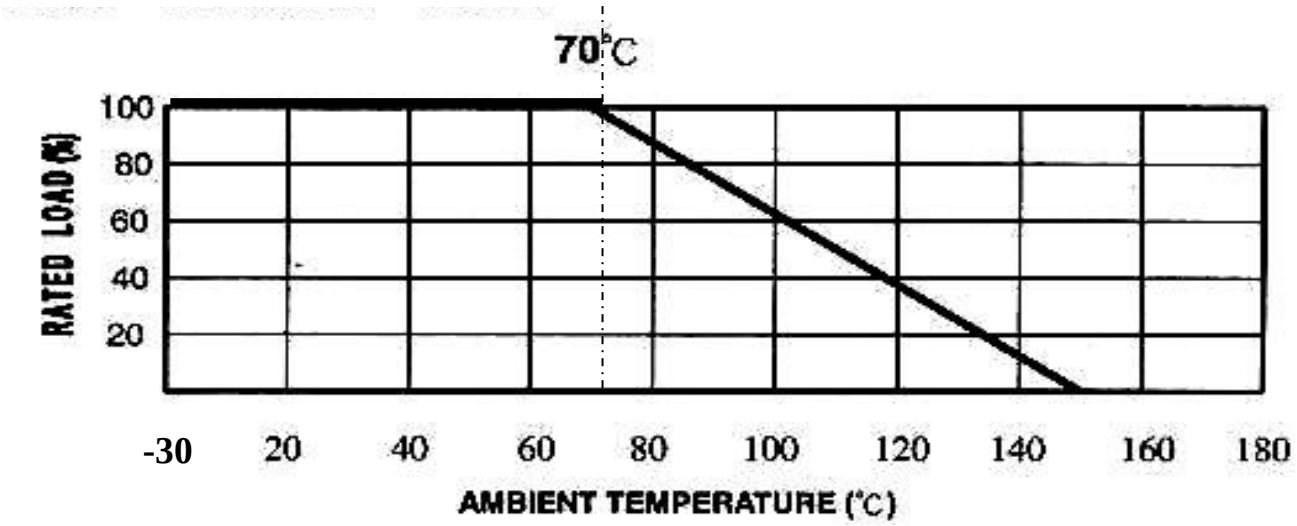
MF (METAL FILM FIXED RESISTORS)

STYLE	MAX WORKING	MAX OVERLOAD	RESISTANCE VALUE RANGE
MF1/6W.1/8W. 1/16W	200V	400V	10E——1M
MF1/4W / I/4WS	250V	500V	
MF1/2W / 1/2WS	350V	700V	
MF1W / 1WS	500V	1000V	
MF2W / 2WS	500V	1000V	
MF3W / 3WS	500V	1000V	
MF5W/5WS	500V	1000V	

4 – 1.POWER RATING

Power rating is defined as maximum power rating continuously applied under ambient

temperature at 70℃.when the ambient temperature exceeds 70℃ ,use chart 1.



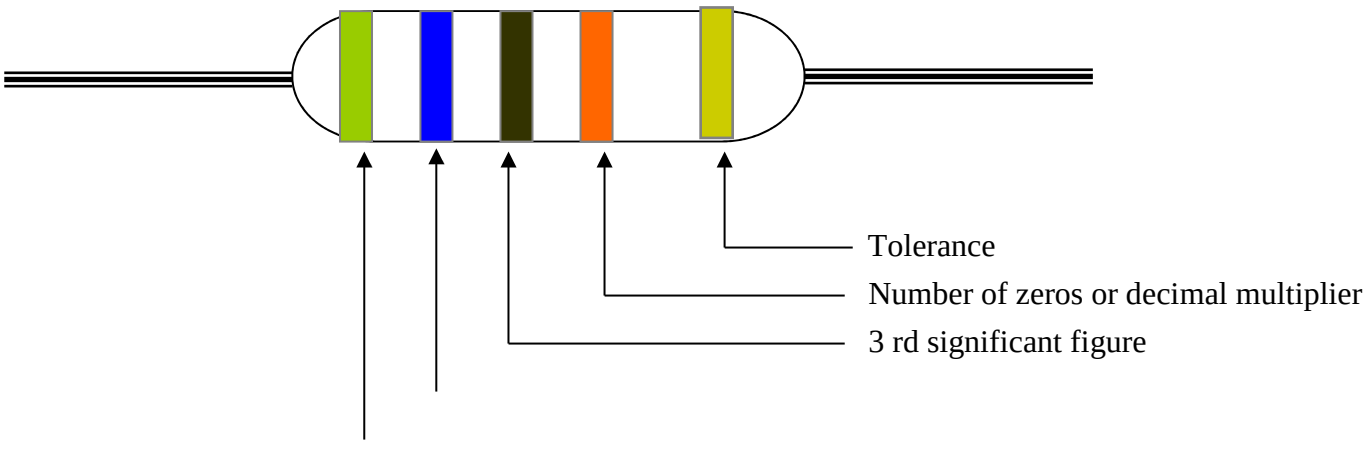
4 – 2 RATED VOLTAGE

Rated voltage is defined as the DC or AC (effective
Value at commercial frequency example 50 C/S,60 C/S)
Voltage when rated power is applied and can be calculated
By the following EQUATION $E = \sqrt{PR}$
E=RATED VOLTAGE
P=RATED POWER (WATTS)
R=NOMINAL RESISTANCE VALUE (OHM)
When the calculated rated voltage exceeds the
Maximum usable voltage flue shown in CHART 1,the
Maximum usable voltage is defined as the voltage
According to the power-decreasing curve shown in CHART1.

ITEM (STANDARD)	PERFORMANCE AND/OR QUALIITY ACCEPTANCE	TEST METHOD
Resistance value Vs Temperature Characteristics	±100PPM/℃	JIS-C-5202 5.2 Measure resistance (Ro ohm) at room Temperature(To ℃) Measure again the same at 100℃ Higher then room temperature $PPM = \frac{R - R_O}{R_O} * \frac{10^6}{(T_0+100) - T_0}$
ITEM (STANDARD)	PERFORMANCE AND/OR QUALIITY ACCEPTANCE	TEST ME THOD
Short time overload	The resistance variation shall be within±(0.5% + 0.05ohm) and there Shall be no mechanical breakage	JIS-C-5202 5.5 Apply DC voltage 2.5times the rated Voltage for 5 seconds The leave at room temperature for 30 Minutes then measure MAX overload Voltage 0.50W – 700V (DC)
Insulation resistance	10,000M ohm or more	JIS-C-5202 5.6 in V-BLOCK Lay the resistor on 90° angle metal V Block apply 500VDC between resistor Lead and V block for one Minute And Measure
Voltage endurance	The resistance variation shall be within±(0.5% + 0.05ohm) and there shall Be no mechanical breakage	JIS-C-5202 5.7 Icy the resistor on the 90° angle metal V Block and apply reamed AC voltage for One Minute. Test voltage 0.25W – 500V (AC) 0.50W –700V(AC)
Intermittent overload	Resistance variation shall be Within ±(0.50% + 0.05ohm)	JIS-C-5202 5.8 Apply AC voltage 4 times the rated voltage for 1 second and rest for 25 seconds and Repeat this cycle for 10000±200times leave resistor 30 minutes at room temperature after test and measure Maximum voltage for intermittent Overload.0.50W – 700V(AC)

Terminal strength	Resistance variation shall be within ±(0.5% + 0.05ohm) also there Shall be on mechanical breakage	Pull test apply 2.5kg force to the lead in the direction of lead axisfor30±5 seconds.
Heat resistively Against soldering	Resistance variation shall be within ± (0.25%+0.05ohm) also there Shall be on mechanical breakage	JIS-C-5202 7.10 Dip the lead in to a solder bath having a Temperature of 350℃ ± 10℃ up to 4±0.8mm from the body of the resistor and hold it for 3±0.5seconds leave the resistor at room temperature 3 hours after ,then Measure
Load life test	The variation of the resistance Shall be within ± (1.5%+0.05ohm) Also there shall be no mechanical Breakage	JIS-C-5202 7.10 In the constant temperature chamber having Temperature70℃ ± 2℃,apply rated Dc voltage for 1.5hour and shut voltage for 0.5 hour and repeat this cycle for 1000 hours,leave in room temperature hour after test, then measure
EM (STANDARD)	PERFORMANCE AND/OR QUALITY ACCEPTANCE	TEST METHOK
Solder ability	More than 95% of the surface of the lead shall be covered by new solder after the leads are dipped in the Solder	JIS-C-5202 6.5 Dip the lead in to a solder bath having a Temperature of 260℃±5℃ up to 4±0.8mm from the body of the resistor and hold it for 5± 0.5seconds then inspect
Humidity load test	Resistance variation be Within ± (1.5% + 0.05ohm) Also there shall be no mechanical breakage	JIS-C-5202 7.9 In temperature chamber having temperature 40℃±2℃,relative humidity 90 – 95%,Apply rated voltage 1.5hour and shut voltage 0.5 hour repeat this cycle for 1000 hours, leave in room temperature for hour after test, then measure

5.Marking



2 nd significant figure

1 st significant figure

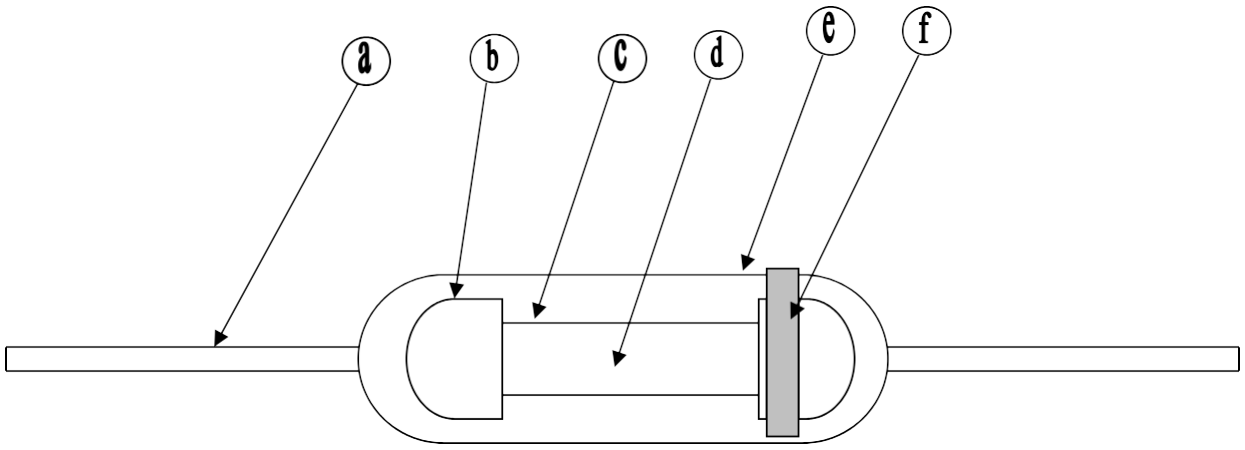
Color refer

Color	1 st Band	2 nd Band	3 rd Band	4 th Band	Tolerance
Black	0	0	0	10^0	
Brown	1	1	1	10^1	±1.00 %
Red	2	2	2	10^2	
Orange	3	3	3	10^3	
Yellow	4	4	4	10^4	
Green	5	5	5	10^5	±0.50 %
Blue	6	6	6	10^6	±0.25 %
Violet	7	7	7	10^7	±0.10 %
Grey	8	8	8	10^8	
White	9	9	9	10^9	
Gold				10^{-1}	
Silver				10^{-2}	

6. Construction and Dimension

6-1.Construction

a. Lead Wire .
b. End Cap.
c. Metal Film
d. Ceramic Rod
e. Epoxy Resin.
f. Color Code



6-2 Dimensions

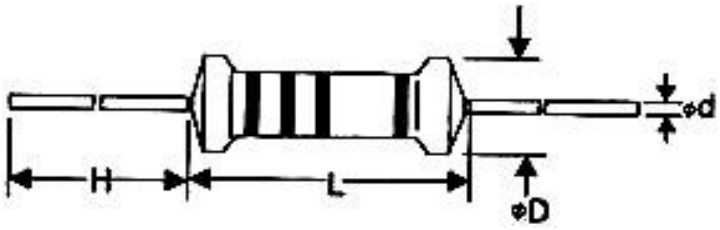
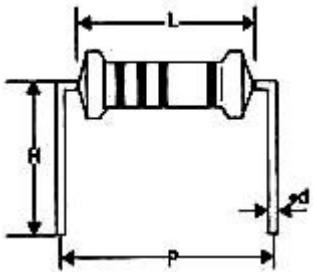


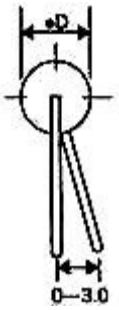
TABLE:

WATTS	L	D	H	d ± 0.05mm
1/6W 1/8W 1/16W	3.2±0.3	1.8±0.3	28±2.0	0.4
1/4WS				
1/4W	6.0±0.5	2.3±0.3	28.0±2.0	0.45
1/2WS				
1/2W	9.0±0.5	3.2±0.3	26.0±2.0	0.52
1WS				
1W	11.0±1.0	3.7±0.5	25.0±2.0	0.65
2WS				
1W	11.0±1.0	4.2±0.5	35.0±3.0	0.65
2WS				
2W	15.0±1.0	5.0±0.5	33.0±3.0	0.72
3WS				
3W	17.0±1.0	6.0±0.5	36.0±3.0	0.72
5WS				
5W	24.0±1.0	8.0±1.0	33.0±3.0	0.72

7. FORMED DIMENSIONS

7-1. M – TYPE

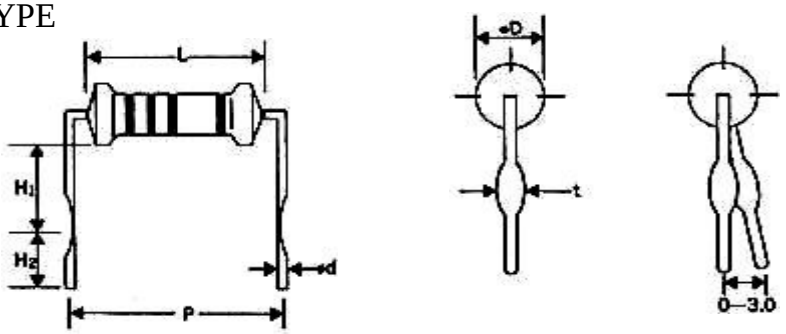




WATTS	DIMENSIONS (mm)				
	L	P±1.0	D	d±0.05	H±1.0
1/6W/1/8W/1/16W /1/4WS	3.2±0.3	6	1.8±0.3	0.40	8.0
1/4W/1/2WS	6.0±0.5	10	2.3±0.3	0.45	8.0
1/2W/1WS	9.0±0.5	12.5/15	3.2±0.3	0.52	8.0
1W/2WS	11.0±1.0	15	4.2±0.5	0.65	10
2W/3WS	15.0±1.0	20	5.0±0.5	0.72	10

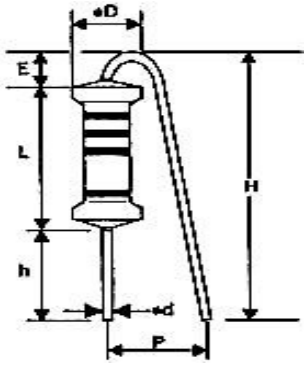
3W/5WS	17.0±1.0	25	6.0±0.5	0.72	10
5W	24.0±1.0	33	8.0±1.0	0.72	10

7-2 . MB – TYPE



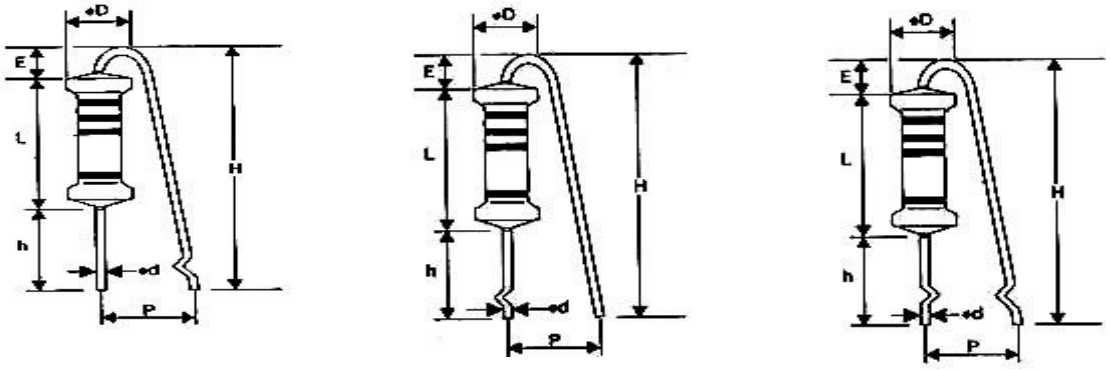
WATTS	DIMENSIONS (mm)						
	L	P±1.0	D	d±0.05	H1±1.0	H2±1.0	t±0.2
1/2W/1WS	9.0±0.5	12.5	3.2±0.3	0.52	10.5	5.0	1.20
1W/2WS	11.0±1.0	15	4.2±0.5	0.65	10.5	5.0	1.25
2W/3WS	15.0±1.0	20	5.0±0.5	0.72	10.5	5.0	1.25
3W/5WS	17.0±1.0	25	6.0±0.5	0.72	10.5	5.0	1.25
5W	24.0±1.0	30	8.0±1.0	0.72	10.5	5.0	1.25

7 – 3. F – TYPE



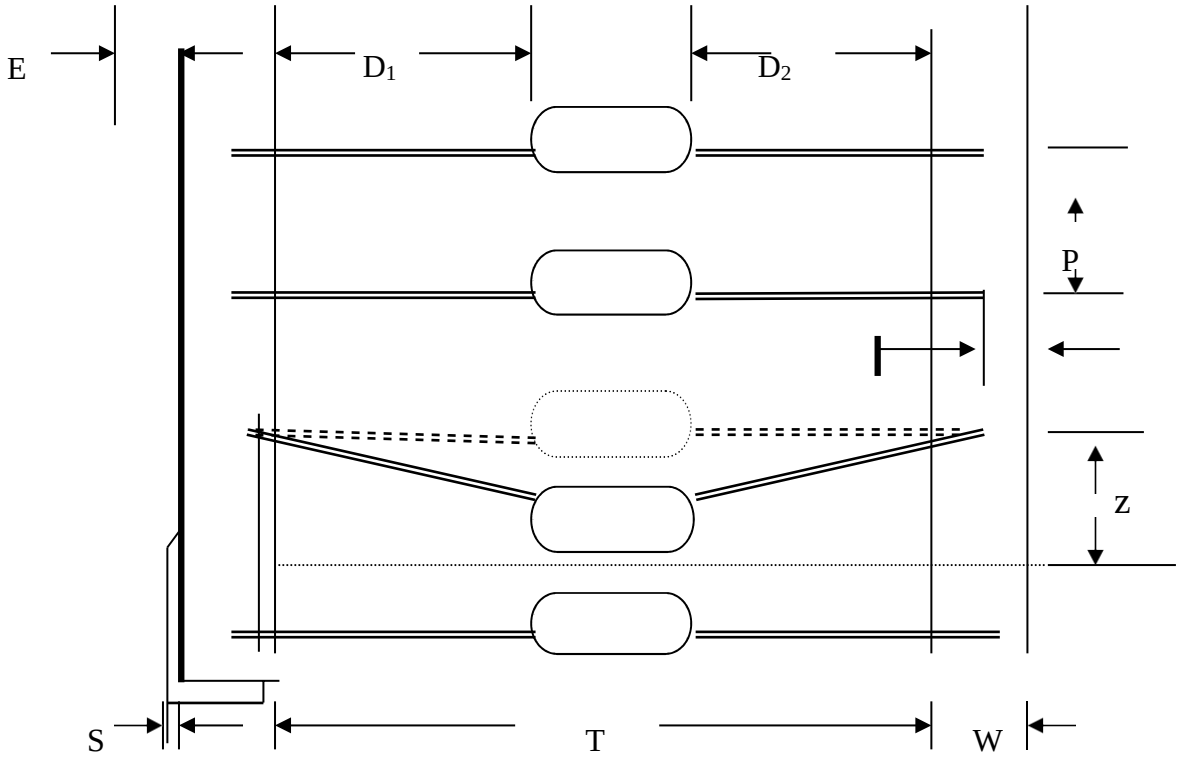
WATTS	DIMENSIONS (mm)						
	L	P±1.0	D	d±0.05	h±1.0	H±1.0	Emax
1/4W/1/2WS	6.0±0.5	6-8	2.3±0.3	0.45	8.0	14	3
1/2W/1WS	9.0±0.5	6-8	3.2±0.3	0.52	8.0	18	3.5
1W/2WS	11.0±1.0	6-8	4.2±0.5	0.65	8.0	20	3.5
2W/3WS	15.0±1.0	6-8	5.0±0.5	0.72	8.0	25	3.5
3W/5WS	17.0±1.0	6-8	6.0±0.5	0.72	8.0	30	3.5

7– 4. FK2-TYPE,FK1－TYPE AND FKK-TYPE



WATTS	DIMENSIONS(mm)						
	L	P±1.0	D	d±0.05	h+1/-0	H±1.0	Emax
1/2W/1WS	9.0±0.5	5-7	3.2±0.3	0.52	8	18	3.5
1W/2WS	11.0±1.0	5-9	4.2±0.5	0.65	8	20	3.5
2W/3WS	15.0±1.0	5-9	5.0±0.5	0.72	8	25	3.5
3W5WS	17.0±1.0	5-10	6.0±0.5	0.72	8	30	3.5

8. Taping Dimensions



WATTS	Type	T	p±0.5	W±0.5	D1－D2 MAX	E MAX	Z MAX	S MAX	I MAX

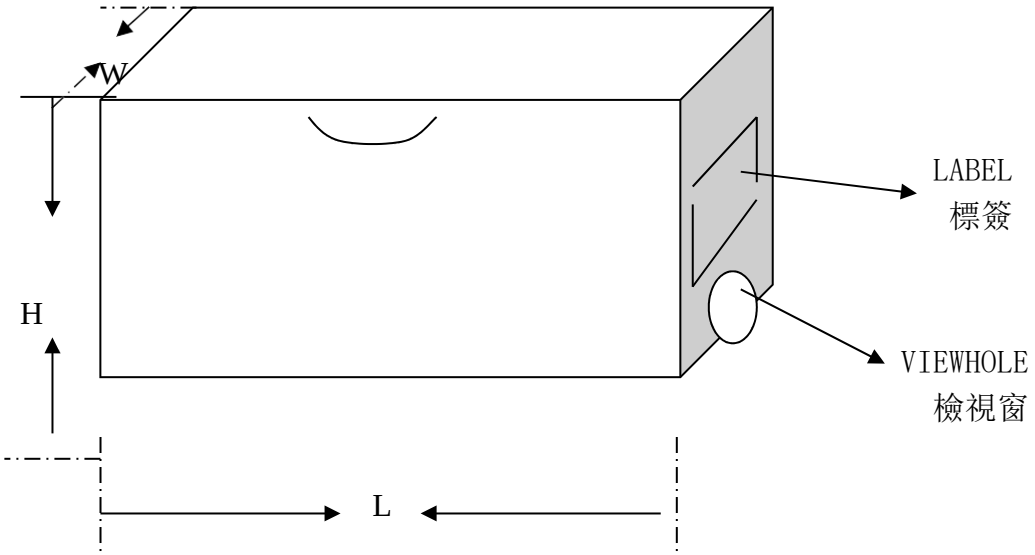
1/6W/1/8W 1/16W/1/4WS	T－ 26	26±1.5	5	6	0.8	0	1.2	0.8	3.2
	T－ 52	52±1.5	5	6	0.8	0	1.2	0.8	3.2
1/4W 1/2WS	T－ 26	26±1.5	5	6	0.8	0	1.2	0.8	3.2
	T－ 52	52±1.5	5	6	0.8	0	1.2	0.8	3.2
1/2W/1WS	T－ 52	52±1.5	5	6	0.8	0	1.2	0.8	3.2
1W/2WS	T－ 73	73±1.5	5	6	0.8	0	1.4	0.8	3.2
2W/3WS	T－ 73	73±1.5	10	6	0.8	0	1.4	0.8	3.2
3W/5WS	T－ 73	73±1.5	10	6	0.8	0	1.4	0.8	3.2

9 .PACKING

9 - 1. TAPING TYPE

LABEL SPECIFICATION

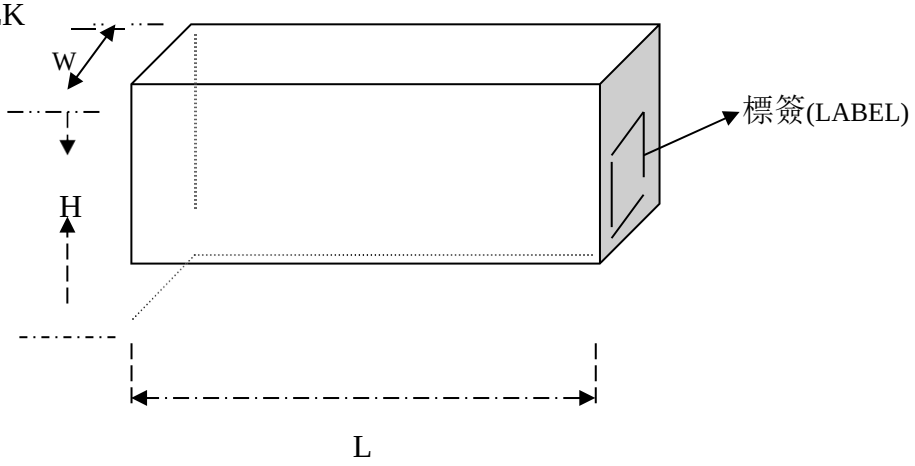
1. TYPE
2. WATTS TOLERANCE
3. RESISTANT QUANTITY
4. P/N
5. LOT NO.



TYPE	WATTS	W(mm)	H(mm)	L(mm)	Q'TY(pcs)
T－26	1/6W 1/8W 1/16W 1/4WS	50	67	260	5000
	1/4W/ 1/2WS	50	100	260	5000
T－52(60)	1/6W / 1/8W 1/16W 1/4WS	80	72	260	5000

	1/4W/ 1/2WS	80	100	260	5000
	1/2W/ 1WS	80	85	260	2000
T－73(81)	1W/ 2WS	90	77	260	1000
	2W/ 3WS	90	95	260	1000
	3W/5WS	90	77	260	500
T--84(94)	5W	110	92	260	250

9 – 2. BULK



WATTS		TYPE	L(mm)	W(mm)	H(mm)	POLY BOG	BOX(pcs)
1/6W 1/8W	1/16W 1/4WS	P	240	140	76	1000	20000
1/4W	1/2WS	P	240	140	76	500	10000
1/2W	1WS	P	240	140	76	500	5000
1W	2WS	P	240	140	76	200	2000
2W	3WS	P	240	140	76	100	1500
3W/5WS		P	240	140	76	100	1000