

东莞市旭良电子有限公司
XULIANG ENTERPRISE CO., LTD

承認書
(APPROVAL SHEET)

客戶名稱 Client	
品 名 Description	METAL FILM RESISTORS
規 格 Specification	1/6W-5W ±1%
料 號 Part No	
備 注 Remark	金属膜电阻全系列

制造廠商: 东莞市旭良电子有限公司

使用廠商: _____

核 準 Approval	校 對 Check By	主 辦 Prepared By
刘冰波	熊玉梅	黄进展

核 準 Approval	校 對 Check By	主 辦 Prepared By

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厂址: 东莞市大岭山镇大沙村门田.

XLMETAL FILM RESISTORS DATE: 2008-8-4

1. GENERAL INSTRUCTION:

1-1 SCOPE

This specification applies to the Metal Film Resistor made by LGE ELECTRONICS IND.CORP.

1-2 CLASSIFICATION

Type	number	is	described	as	follows:	
MF	1/4W		T	I50K	OHM	F(±1%)
<u>CLASS</u>	<u>POWER RATING</u>		<u>SHAPE</u>	<u>NOMINAL</u>		<u>TOLERANCE</u>
				RESISTANCE		
				VALUE		

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%),K(±10%).

4 .RATING:

MF (METAL FILM FIXED RESISTORS)

STYLE	MAX WORKING	MAX OVERLOAD	DIELECTRIC WITHSTANDING	RESISTANCE VALUE RANGE
MF1/6W.1/8W. 1/16W	200V	400V	300V	1 Ω — 10M Ω
MF1/4W / I/4WS	250V	500V	500V	1 Ω — 10M Ω
MF1/2W / 1/2WS	350V	700V	700V	1 Ω — 10M Ω
MF1W / 1WS	500V	1000V	1000V	1 Ω — 10M Ω
MF2W / 2WS	500V	1000V	1000V	1 Ω — 10M Ω
MF3W / 3WS	500V	1000V	1000V	1 Ω — 10M Ω
MF5W / 5WS	500V	1000V	1000V	1 Ω — 10M Ω

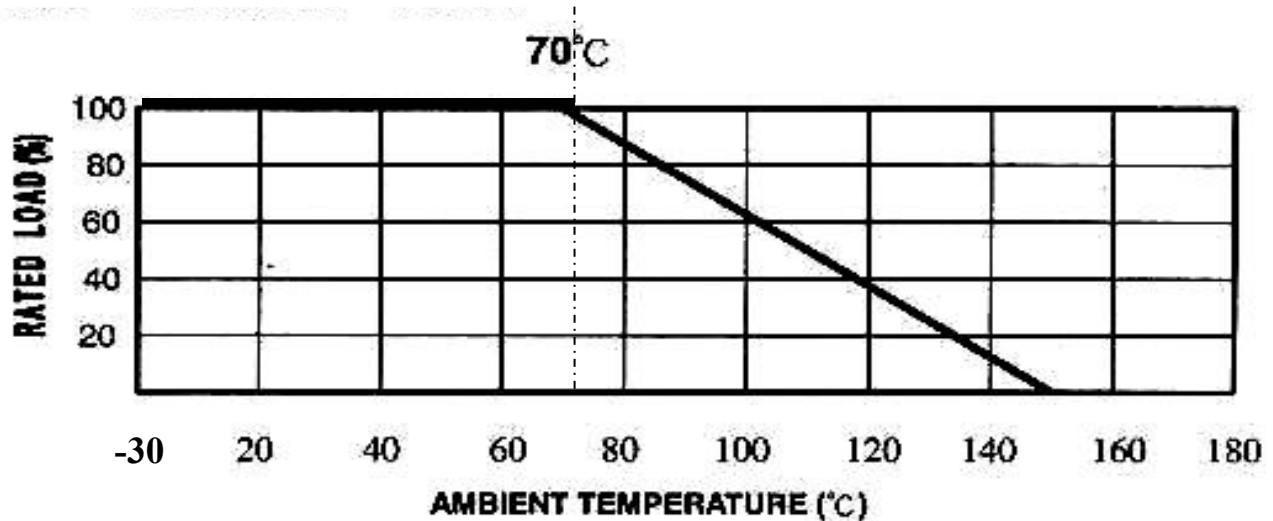
4 – 1.POWER RATING

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

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temperature at 70°C. when the ambient temperature exceeds 70°C ,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 QUALITY ACCEPTANCE	TEST METHOD
Resistance value Vs Temperature Characteristics	$\pm 100\text{PPM}/^{\circ}\text{C}$	JIS-C-5202 5.2 Measure resistance (R_o ohm) at room Temperature(T_o °C) Measure again the same at 100°C Higher then room temperature $\text{PPM} = \frac{R - R_o}{R_o} * \frac{10^6}{100 - T_o}$

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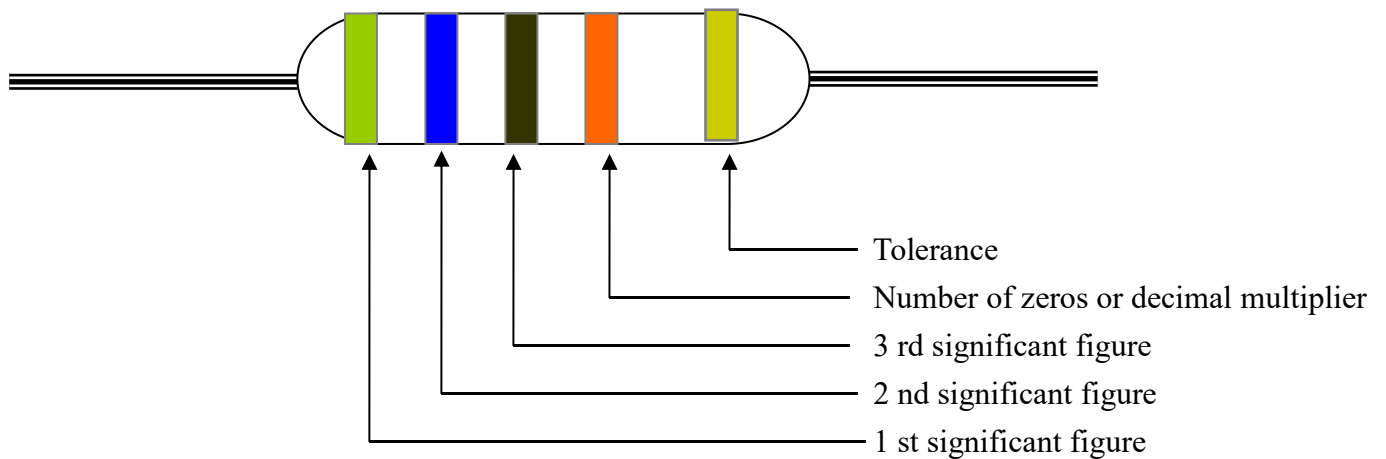
		R_0 (T ₀ +100) – T ₀
ITEM (STANDARD)	PERFORMANCE AND/OR QUALITY ACCEPTANCE	TEST METHOD
Short time overload	The resistance variation shall be within $\pm(0.5\% + 0.05\text{ohm})$ and there shall be no mechanical breakage	JIS-C-5202 5.5 Apply DC voltage 2.5times the rated Voltage for 5 seconds The leave 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 $\pm(0.5\% + 0.05\text{ohm})$ 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 $\pm(0.50\% + 0.05\text{ohm})$	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 $\pm$ 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 $\pm(0.5\% + 0.05\text{ohm})$ also there shall be on mechanical breakage	Pull test apply 2.5kg force to the lead in the direction of lead axisfor30 $\pm$ 5 seconds.
Heat resistively Against soldering	Resistance variation shall be within $\pm(0.25\%+0.05\text{ohm})$ 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°C $\pm$ 10°C up to 4 $\pm$ 0.8mm from the body of the resistor and hold it for 3 $\pm$ 0.5seconds leave the resistor at room temperature 3 hours after ,then Measure
Load life test	The variation of the resistance Shall be within $\pm(1.5\%+0.05\text{ohm})$ Also there shall be no mechanical	JIS-C-5202 7.10 In the constant temperature chamber having Temperature70°C $\pm$ 2°C,apply

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	Breakage	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 $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ up to $4 \pm 0.8\text{mm}$ from the body of the resistor and hold it for $5 \pm 0.5\text{seconds}$ then inspect
Humidity load test	Resistance variation be Within $\pm (1.5\% + 0.05\text{ohm})$ Also there shall be no mechanical breakage	JIS-C-5202 7.9 In temperature chamber having temperature $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$,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



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	$\pm 1.00\%$
Red	2	2	2	10^2	
Orange	3	3	3	10^3	
Yellow	4	4	4	10^4	
Green	5	5	5	10^5	$\pm 0.50\%$
Blue	6	6	6	10^6	$\pm 0.25\%$

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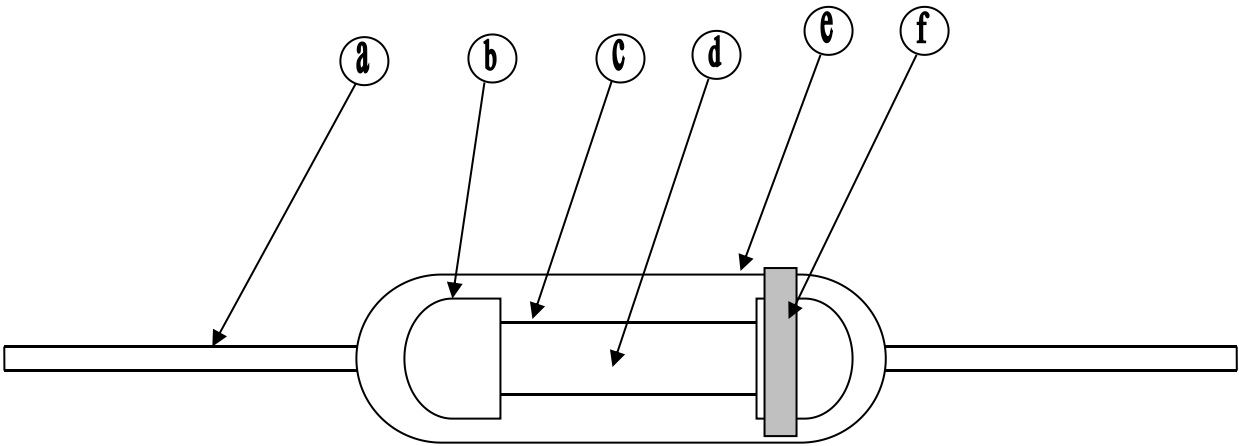
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Violet	7	7	7	10^7	$\pm 0.10\%$
Grey	8	8	8	10^8	
White	9	9	9	10^9	
Gold				10^{-1}	
Silver				10^{-2}	

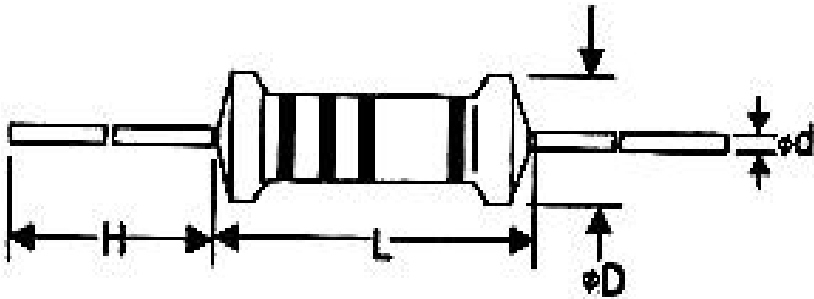
6. Construction and Dimension

6-1. Construction

- a. Tinned Copper Wire .Tinned iron wire
- b. Tinned Iron Caps.
- c. Metal Film
- d. Ceramic Rod
- e. Epoxy Resin.
- f. Color Code



6-2 Outline Dimensions



TABLE

Unit:m/m

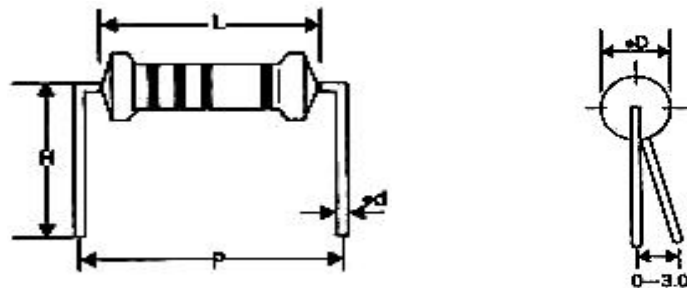
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WATTS	L	D	H	d ± 0.02 m	PULLING (Kg)
MF1/6W 1/8W 1/4WS	3.2 ± 0.3	1.8 ± 0.3	28 ± 2.0	0.33	2.5Kg-30S
MF1/4W / 1/2WS	6.0 ± 0.5	2.3 ± 0.3 s	27 ± 2.0	0.35	2.5Kg-30S
MF1/2W / 1WS	9.0 ± 1.0	3.5 ± 0.5	26 ± 2.0	0.4	2.5Kg-30S
MF1W / 2WS	11.0 ± 1.0	3.5 ± 0.5	35 ± 2.0	0.45	3Kg-30S
MF2W / 3WS	15.0 ± 1.0	5.0 ± 0.5	33 ± 2.0	0.56	5Kg-30S
MF3W / 5WS	17.0 ± 1.0	6.0 ± 0.5	32 ± 2.0	0.65	5Kg-30S
MF5W	24.0 ± 1.0	8.0 ± 1.0	28 ± 2.0	0.7	5Kg-30S

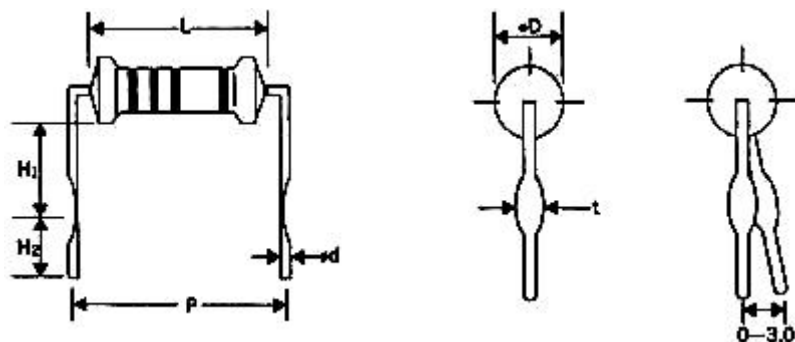
7.FORMED DIMENSIONS

7 – 1. M – TYPE



WATTS	DIMENSIONS(mm)				
	L	P ± 1.0	D	d ± 0.02	H ± 1.0
1/6W/1/8W/1/16W /1/4WS	3.3 ± 0.3	6	1.8 ± 0.3	0.33	6.0
1/4W / 1/2WS	6.0 ± 0.3	10	2.3 ± 0.3	0.35	10
1/2W / 1WS	9.0 ± 0.5	12.5	3.2 ± 0.3	0.4	10
1W / 2WS	11.0 ± 1.0	15	3.5 ± 0.5	0.45	12.5
2W / 3WS	15.0 ± 1.0	20	5.0 ± 0.5	0.56	15.0
3W / 5WS	17.0 ± 1.0	23	6.0 ± 0.5	0.65	15.0
5W	24.0 ± 1.0	33	8.0 ± 1.0	0.7	15.0

7 – 2 .MB – TYPE

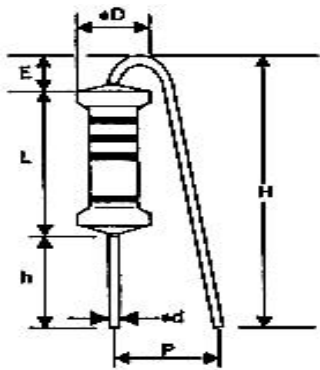


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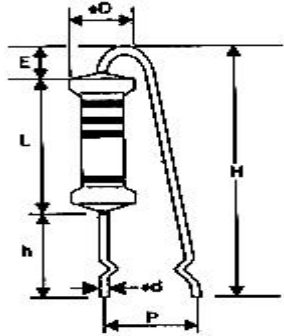
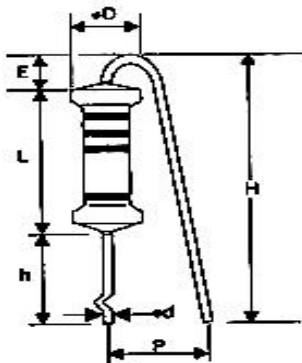
WATTS	DIMENSIONS (mm)						
	L	P±1.0	D	d±0.02	H1±1.0	H2±1.0	t±0.2
1/2W / 1WS	9.0±0.5	12.5	3.2±0.3	0.45	6.0	5.0	1.0
1W / 2WS	11.0±1.0	15	3±0.5	0.5	6.0	5.0	1.3
2W / 3WS	15.0±1.0	20	5.0±0.5	0.6	10.0	5.0	1.3
3W / 5WS	17.0±1.0	23	6.0±0.5	0.6	10.0	5.0	1.3
5W	24.0±1.0	33	8.0±1.0	0.7	10.0	5.0	1.3

7 – 3. F – TYPE

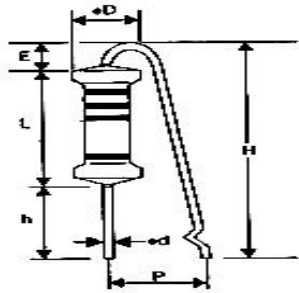


WATTS	DIMENSIONS(mm)						
	L	P±1.0	D	d±0.02	h±1.0	H±1.0	E _{max}
1/4W / 1/2WS	6.0±0.5	6	2.3±0.3	0.35	5.0	14	3
1/2W / 1WS	9.0±0.5	6	3.2±0.3	0.4	5.0	18	3.5
1W / 2WS	11.0±1.0	6	3.5±0.5	0.45	5.0	20	3.5
2W / 3WS	15.0±1.0	6	5.0±0.5	0.56	5.0	25	3.5
3W / 5WS	17.0±1.0	6	6.0±0.5	0.65	5.0	30	3.5

7 – 4. FK1- TYPE ,FK2 – TYPE AND FKK-TYPE

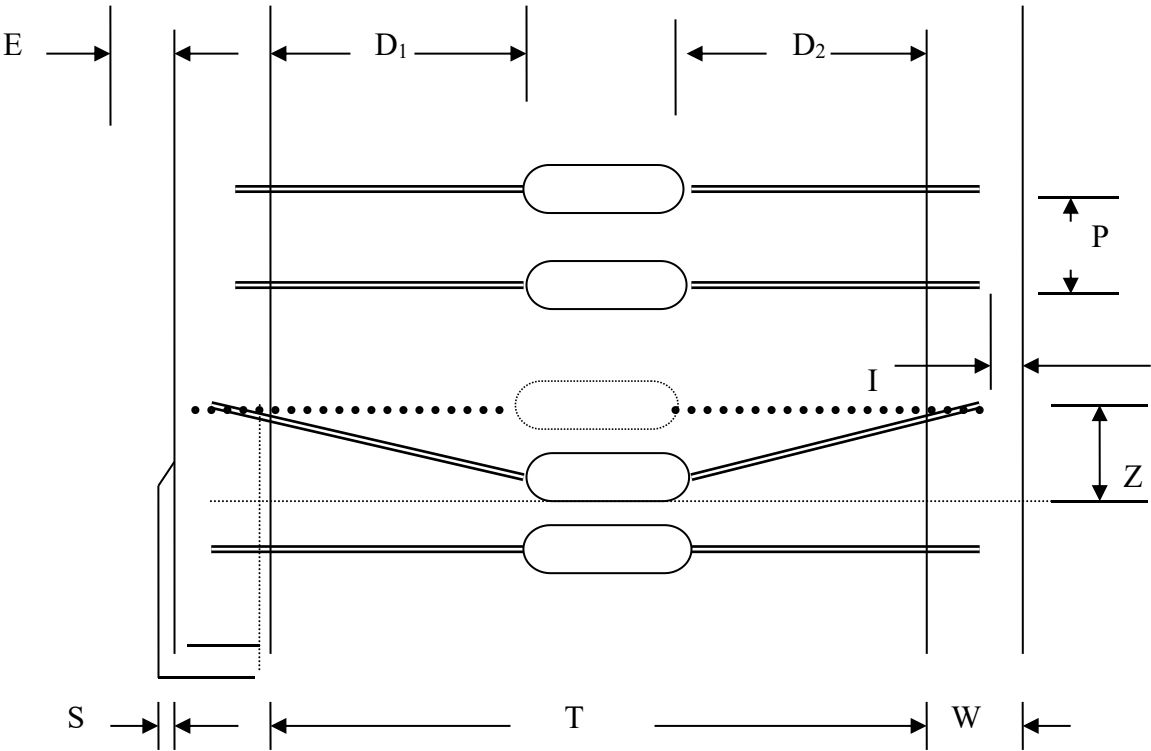


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WATTS	DIMENSIONS (mm)						
	L	P $\pm$ 1.0	D	d $\pm$ 0.02	h+1/-0	H $\pm$ 1.0	E _{max}
1/2W / 1WS	9.0 $\pm$ 0.5	6	3.2 $\pm$ 0.3	0.4	5	18	3.5
1W / 2WS	11.0 $\pm$ 1.0	6	3.5 $\pm$ 0.5	0.45	5	20	3.5
2W / 3WS	15.0 $\pm$ 1.0	6	5.0 $\pm$ 0.5	0.56	5	25	3.5
3W / 5WS	17.0 $\pm$ 1.0	6	6.0 $\pm$ 0.5	0.65	5	30	3.5

8. Taping Dimension



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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
5W	T- 73	73±1.5	10	6	0.8	0	1.4	0.8	3.2

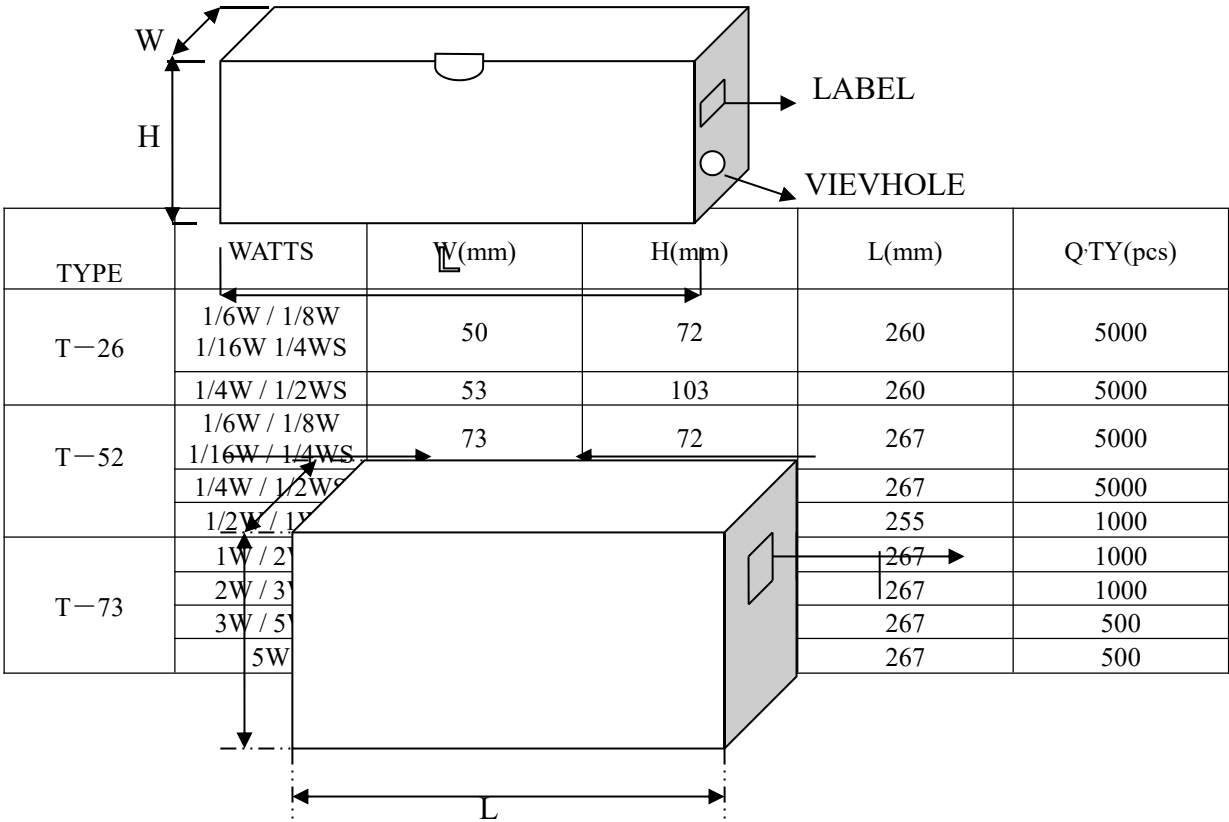
9. PACKING

9 – 1 TAPING TYPE

LABEL SPECIFICATION

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

9 – 2
BUL
K



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WATTS	TYPE	L(mm)	W(mm)	H(mm)	POLY BOG	BOX(pcs)
1/6W .1/8W.1/16W	P	250	140	67	1000	20000
	MOLDING					
1/4W	P	250	140	67	500	10000
	MOLDING					
1/2W	P	250	140	67	500	5000
	MOLDING					
1W	P	250	140	67	200	2000
	MOLDING					
2W	P	250	140	67	200	1000
	MOLDING					
3W	P	250	140	67	100	1000
	MOLDING					
5W	P	250	140	67	100	1000
	MOLDING					