ROYALOHM

C O N F I D E N T I A L D O C U M E N T

SPECIFICATION FOR APPROVAL

TRELIK

Description: Power Dissipation Mount Fixed Resistors

Royalohm Part no.:

PDM025FxxxxB00 (PDM 25W +/-1% B/B)

Approved by

Parts corresponding to RoHS Compliant: 2005-Apr.-1

Royal Electronic Factory (Thailand) Co., Ltd.

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Approved	Checked	Prepared
Mr. Jack Lin	Mr. S. Polthanasan	Ms. P. Supatta

Issue Date: 2013/10/11

CHANGE NOTIFICATION HISTORY

Version	Date of Version	History	Remark
1	2013/10/11	1. Resistance Range: 1Ω ~ 5Ω	
		2. Plastic molding compound	

Customer: TRELIK **Part No.: PDM025FxxxxB00**

1. Scope:

This specification for approval relates to Power Dissipation Mount Fixed Resistors manufactured by ROYALOHM 's specifications.

2. Type designation:

The type designation shall be in the following form:

(Ex.) PDM	25 W	F	1Ω
Type	Power Rating	Resistance Tolerance	Nominal Resistance

3. Ratings:

Ratings shall be shown in the table 1.

Table 1

Type	PDM
Rated Power at 70℃	25W
Rated Ambient Temp.	25 ℃
Operating Temp. Range	-55℃ --- +275℃
Resistance Range	1Ω ~ 5Ω

3.1 Power rating:

Resistors shall have a power rating based on continuous full load operation at an ambient temperature of 70 ℃

3.2 Voltage rating:

Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating , as determined from the following formula:

$$RCWV = \sqrt{P \times R}$$

Where : RCWV = Rated DC or RMS AC continuous working voltage at commercial-line frequency and waveform (volt)

P = Power Rating (watt)

R = Nominal Resistance (ohm)

3.3 Storage Condition

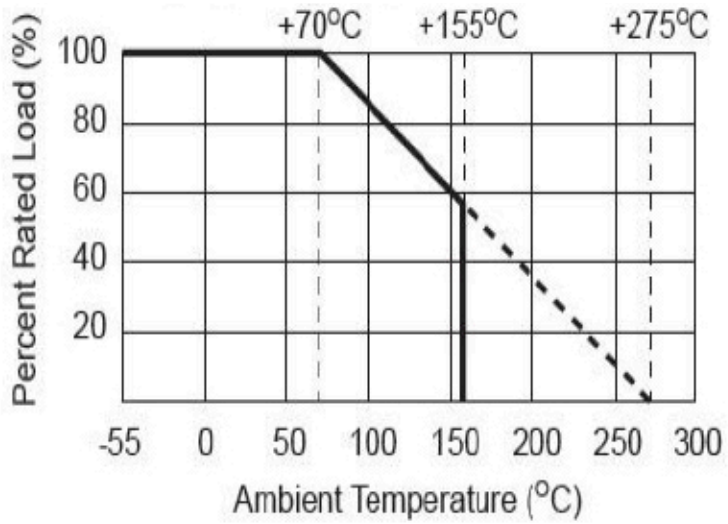
The performance of these products, including the solderability, is guaranteed for a year from the date of arrival at your company, provided that they remain packed as they were when delivered and stored at a temperature of 25°C ± 5°C and a relative humidity of 60%RH ± 10%RH

Even within the above guarantee periods, do not store these products in the following conditions. Otherwise, their electrical performance and/or solderability may be deteriorated, and the packaging materials (e.g. taping materials) may be deformed or deteriorated, resulting in mounting failures.

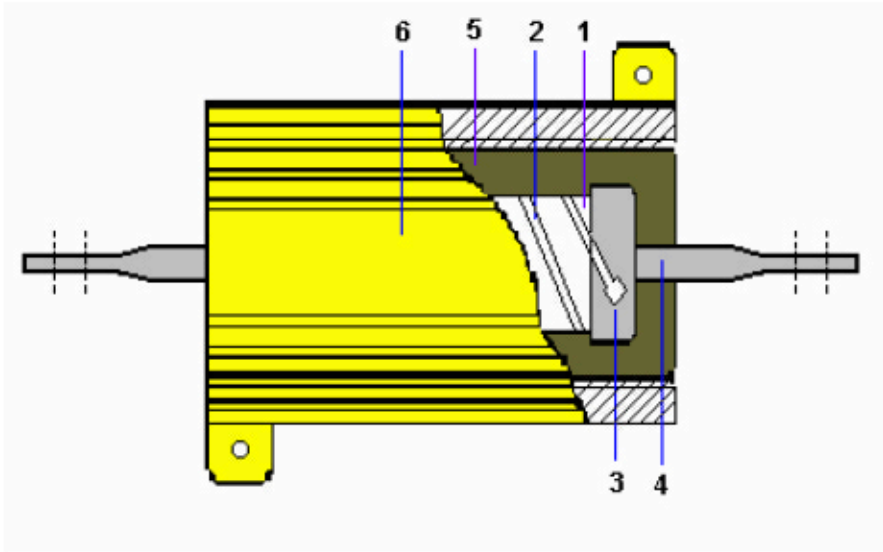
1. In salty air or in air with a high concentration of corrosive gas, such as Cl_2, H_2S, NH_3, SO_2, or NO_2
2. In direct sunlight

Power Dissipation Mount Fixed Resistors

Derating Curve:



4. Construction:



Confirmation List of Material

No.	Material Generic Name
1	Ceramic Rod
2	Resistance Wire
3	Cap
4	Terminal Lead
5	Plastic Molding Compound
6	Aluminium Shell

Power Dissipation Mount Fixed Resistors		
5. Characteristic :		
Characteristics	Limits	Test Methods (JIS C 5201-1)
Dielectric withstanding voltage	No evidence of flashover, mechanical damage, arcing or insulation break down.	4.7 Resistors shall be clamped in the trough of a 90° metallic V-block and shall be tested at AC potential respectively for 60 +10/ -0 secs.
Temperature coefficient	<20Ω ± 400 PPM/℃	4.8 Natural resistance change per temp. degree centigrade. $\frac{R2-R1}{R1(t2-t1)} \times 10^6$ (PPM/℃) R1: Resistance value at room temperature (t1) R2: Resistance value at room temp. plus 100 ℃ (t2)
Short time overload	Resistance change rate is ± (5.0% + 0.05Ω) Max. with no evidence of mechanical damage	4.13 Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds.
Terminal strength	No evidence of mechanical damage	4.16 **Direct load** : Resistance to a 2.5 kgs direct load for 10 secs. in the direction of the longitudinal axis of the terminal leads **Twist test :** Terminal leads shall be bent through 90 ° at a point of about 6mm from the body of the resistor and shall be rotated through 360° about the original axis of the bent terminal in alternating direction for a total of 3 rotations
Solderability	95 % coverage Min.	4.17 The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Test temp. of solder : 245℃ ± 3℃ Dwell time in solder : 2 ~ 3 seconds
Resistance to soldering heat	Resistance change rate is ± (1.0% + 0.05Ω) Max. with no evidence of mechanical damage	4.18 Permanent resistance change when leads immersed to 2.0 - 2.5 mm from the body in 260℃ ± 5 ℃ solder for 10 ± 1 seconds

Power Dissipation Mount Fixed Resistors

<table>
<tr><td>Characteristics</td><td>Limits</td><td>Test Methods
(JIS C 5201-1)</td></tr>
<tr><td>Temperature cycling</td><td>Resistance change rate is ± (5.0% + 0.05Ω) Max.</td><td>4.19 Resistance change after continuous 5 cycles for duty shown below:
<table>
<tr><th>Step</th><th>Temperature</th><th>Time</th></tr>
<tr><td>1</td><td>-55℃ ± 3℃</td><td>30 mins</td></tr>
<tr><td>2</td><td>Room temp.</td><td>10～15 mins</td></tr>
<tr><td>3</td><td>+155℃ ± 2℃</td><td>30 mins</td></tr>
<tr><td>4</td><td>Room temp.</td><td>10～15 mins</td></tr>
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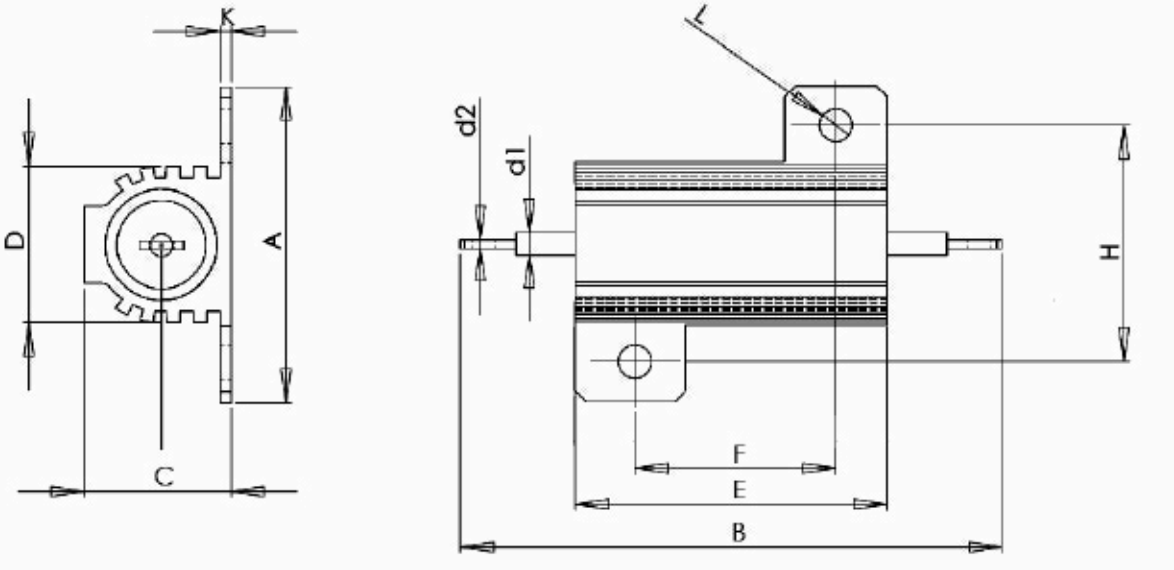
<tr><td>Humidity (Steady state)</td><td>Resistance change rate is ± (3.0% + 0.05Ω) Max. with no evidence of mechanical damage</td><td>4.24 Temporary resistance change after a 240 hours exposure in a humidity test chamber controlled at 40℃ ± 2℃ and 90 to 95% relative humidity.</td></tr>
<tr><td>Load life</td><td>Resistance change rate is ± (5.0% + 0.05Ω) Max. with no evidence of mechanical damage</td><td>4.25.1 Permanent resistance change after 1,000 hours operating at RCWV with duty cycle of (1.5 hours "on", 0.5 hour "off") at 70℃ ± 2℃ ambient.</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

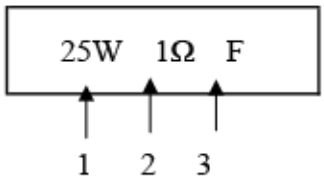
Power Dissipation Mount Fixed Resistors

6. Dimension : Unit : mm



Type	A±0.5	B±1	C±0.5	D±2	E±0.5	F±0.2	H±0.2	K max	L±0.5	D1 ±0.05	D2 ±0.2
PDM 25W	30.3	45.5	16.3	14	27.5	18.2	20.2	3.2	3	2	0.8

7.1 Marking :



Code description and regulation

1. Wattage rating.
2. Nominal resistance value.
3. Resistance tolerance.

F : ± 1 % J : ± 5 % K : ± 10 % M : ± 20%

Color of marking: Black ink

Power Dissipation Mount Fixed Resistors

7.2 Label :

Label shall be marked with following items:

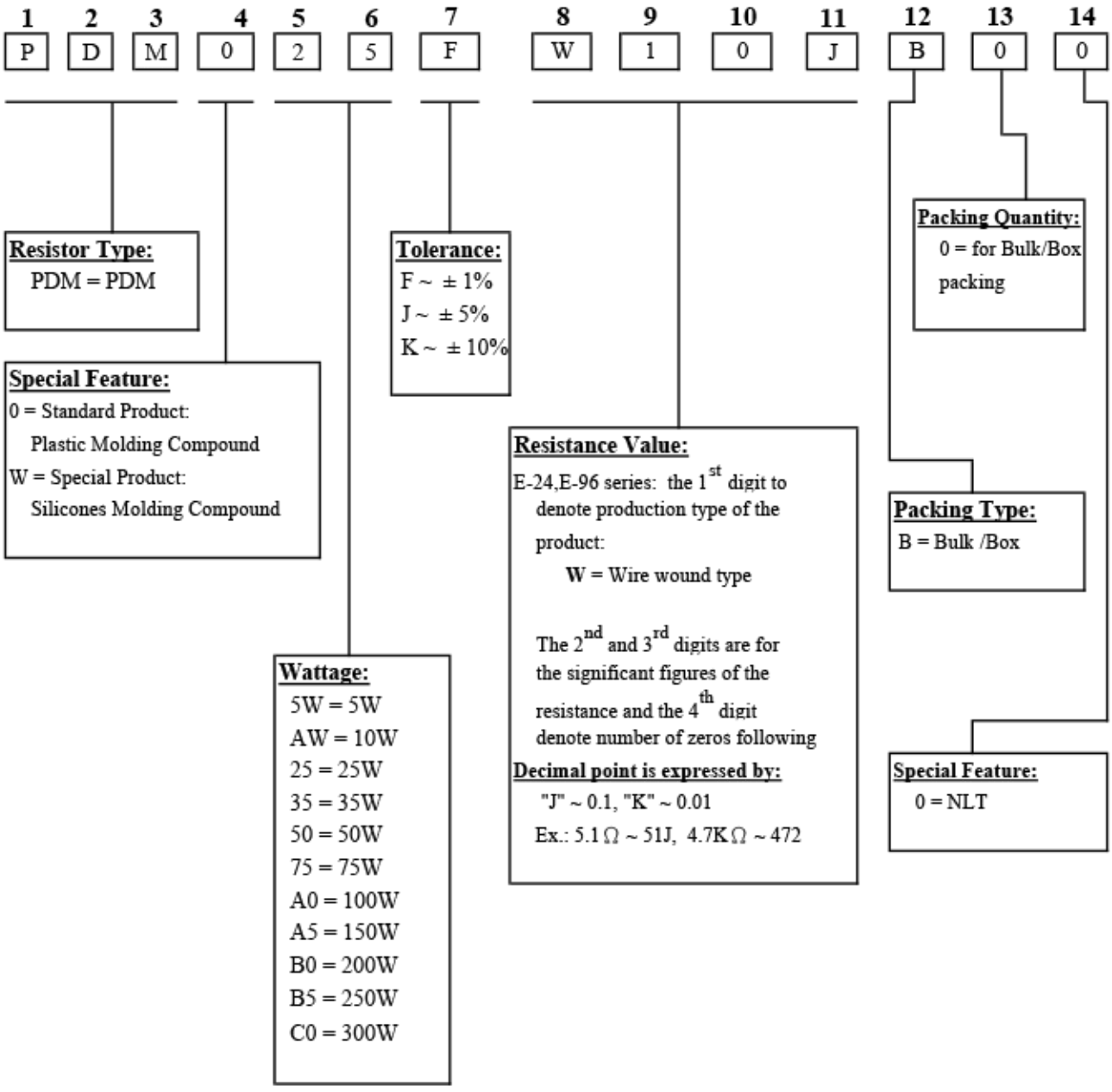
(1) P/NO:
(2) Wattage
(3) Nominal resistance
(4) Quantity
(5) Resistance tolerance
(6) Lot number
(7) PPM

Example :

Power Dissipation Mount Fixed Resistors	
Watt : 25W	Val 1E
Q'TY : 400	Tol 1%
Lot : 319022	PPM :
ROYALOHM	Pb Free

Part Number System

Explanation of Part Number System
(Power Dissipation Mount Fixed Resistors)



Sample: PDM 25W +/- 1% 1Ω B/B → PDM025FW10JB00

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Royalohm Part no.:

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CHANGE NOTIFICATION HISTORY			
Version	**Date of Version**	**History**	**Remark**
1	2013/10/11	1. Resistance Range: 5.1Ω ~ 8.2KΩ	
		2. Plastic molding compound	

Customer: TRELIK **Part No.: PDM025FxxxxB00**

1. Scope:

This specification for approval relates to Power Dissipation Mount Fixed Resistors manufactured by ROYALOHM 's specifications.

2. Type designation:

The type designation shall be in the following form:

(Ex.)	PDM	25 W	F	8.2KΩ
	Type	Power Rating	Resistance Tolerance	Nominal Resistance

3. Ratings:

Ratings shall be shown in the table 1.

Table 1

Type	PDM
Rated Power at 70℃	25W
Rated Ambient Temp.	25 ℃
Operating Temp. Range	-55℃ --- +275℃
Resistance Range	5.1Ω ~ 8.2KΩ

3.1 Power rating:

Resistors shall have a power rating based on continuous full load operation at an ambient temperature of 70 ℃

3.2 Voltage rating:

Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating , as determined from the following formula:

$$RCWV = \sqrt{P \times R}$$

Where : RCWV = Rated DC or RMS AC continuous working voltage at commercial-line frequency and waveform (volt)

P = Power Rating (watt)

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3.3 Storage Condition

The performance of these products, including the solderability, is guaranteed for a year from the date of arrival at your company, provided that they remain packed as they were when delivered and stored at a temperature of 25°C ± 5°C and a relative humidity of 60%RH ± 10%RH

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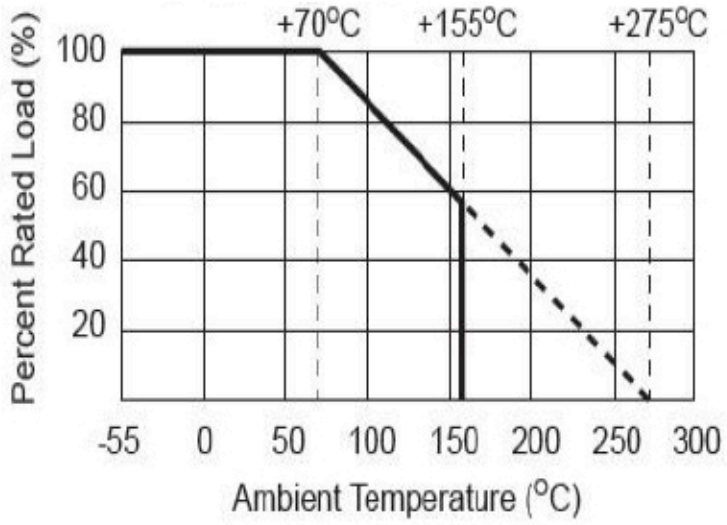
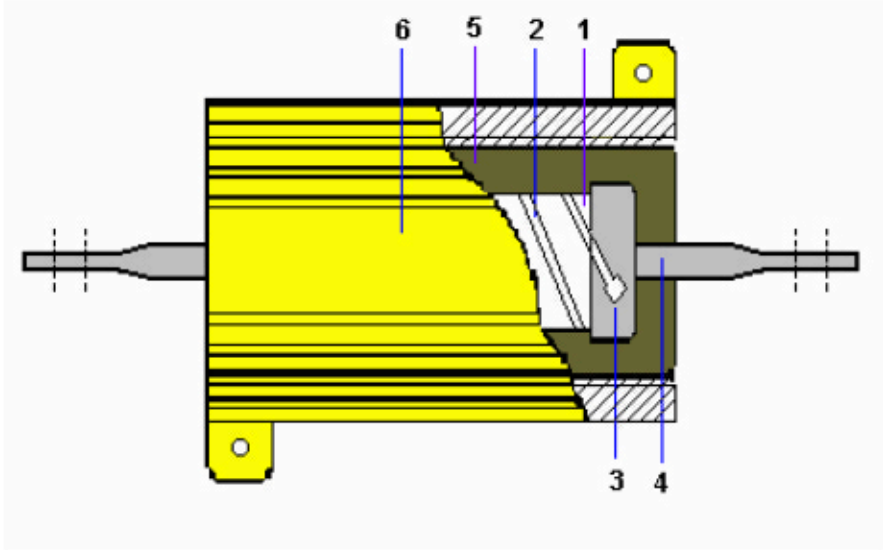
1. In salty air or in air with a high concentration of corrosive gas, such as Cl_2, H_2S, NH_3, SO_2, or NO_2
2. In direct sunlight

Power Dissipation Mount Fixed Resistors

Derating Curve:



4. Construction:



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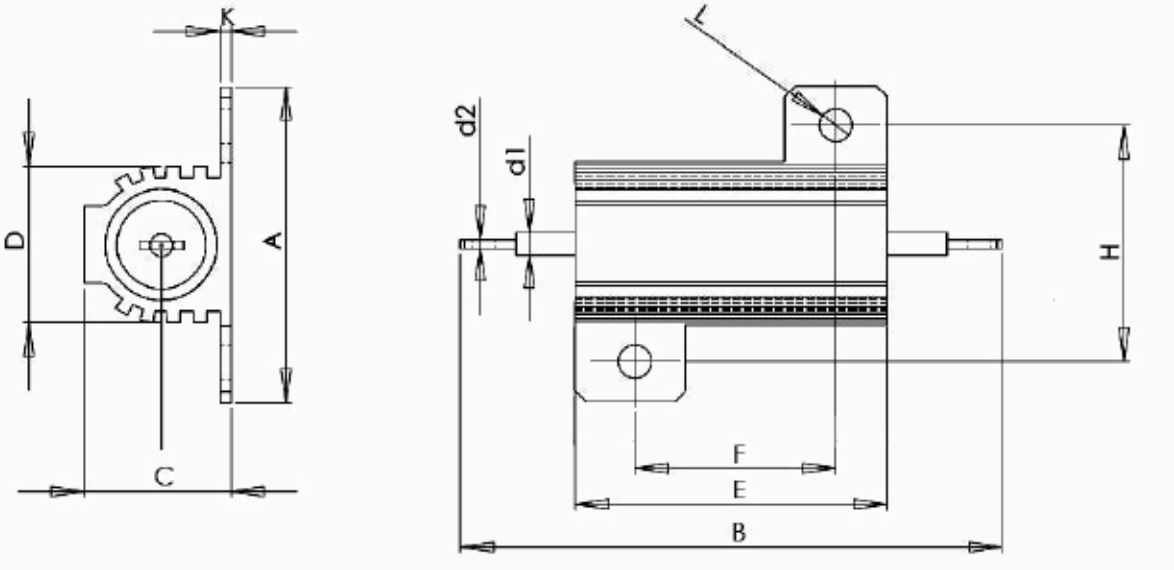
Power Dissipation Mount Fixed Resistors

6. Dimension : Unit : mm



Type	A±0.5	B±1	C±0.5	D±2	E±0.5	F±0.2	H±0.2	K max	L±0.5	D1 ±0.05	D2 ±0.2
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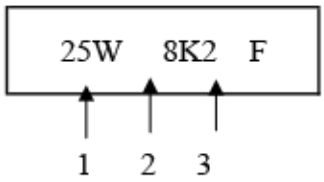

Code description and regulation

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Color of marking: Black ink

Power Dissipation Mount Fixed Resistors

7.2 Label :

Label shall be marked with following items:

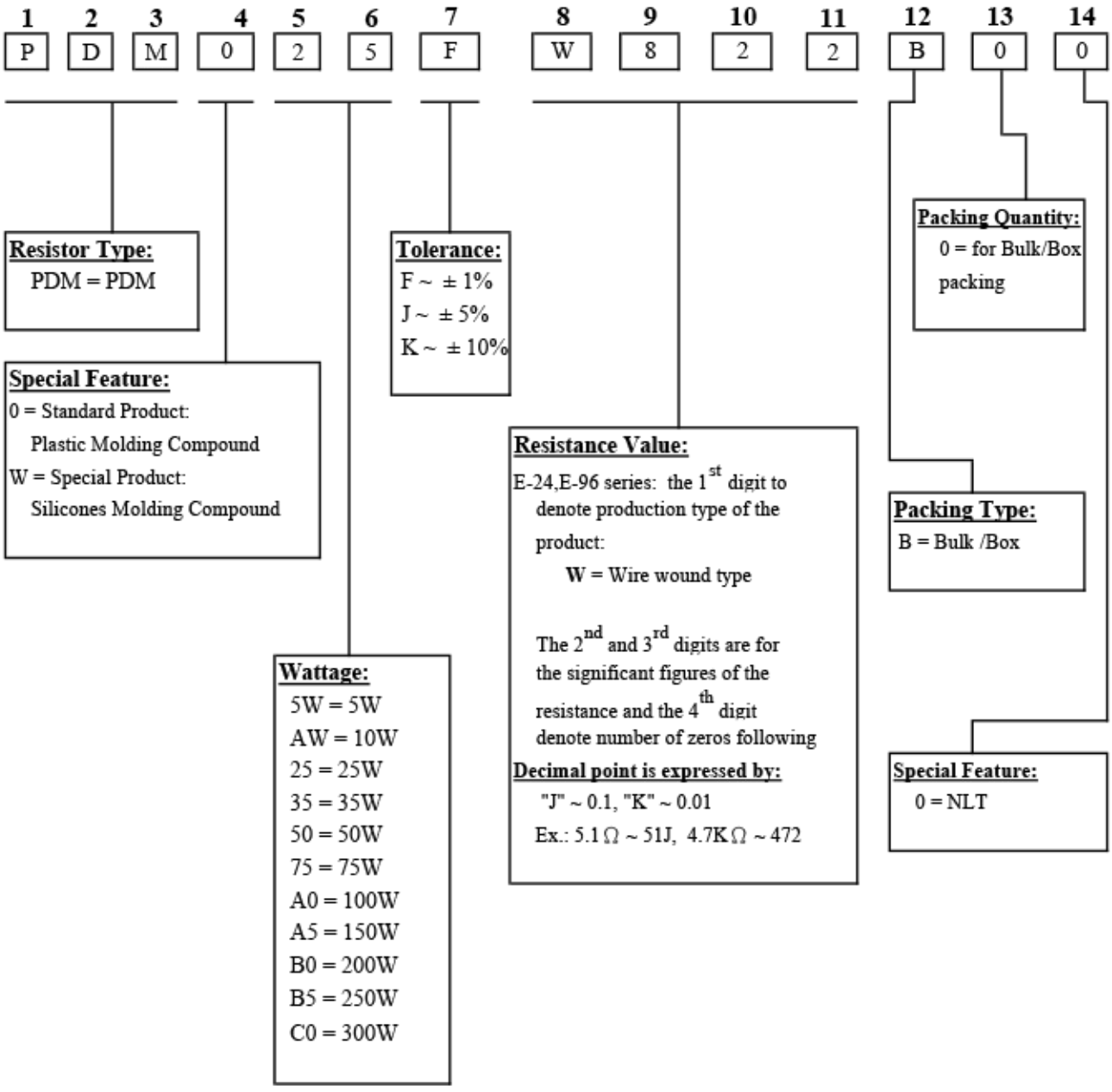
(1) P/NO:
(2) Wattage
(3) Nominal resistance
(4) Quantity
(5) Resistance tolerance
(6) Lot number
(7) PPM

Example :

Power Dissipation Mount Fixed Resistors			
Watt	:25W	Val	8K2
Q'TY	:400	Tol	1%
Lot	:319022	PPM	:
ROYALOHM		Pb Free	

Part Number System

Explanation of Part Number System
(Power Dissipation Mount Fixed Resistors)



Sample: PDM 25W +/- 1% 8.2KΩ B/B → PDM025FW822B00