

信昌電子陶瓷股份有限公司
Prosperity Dielectrics Co., Ltd.

SPECIFICATION FOR APPROVAL

DATE :

CUSTOMER :

PART NAME :

Thick-Film Type High-Power Lead Free & Halogen Free Chip Resistors

CUSTOMER'S DWG. NO. :

CUSTOMER'S PART NO. :

PDC PART NO. :

FPF25 Triple SERIES APPROVED

DESCRIPTION. :

RESULT \ ACTION	ACTION	" V "	CUSTOMER'S SIGNATURE	NOTE
FULL APPROVED				
CONDITIONAL APPROVED				
REJECTED				

OUR ACTION	SIGNATURE
PREPARED By	<i>Jenny Tseng</i>
CHECKED By	<i>Tony Chou</i>
APPROVED By	<i>Byron Tsai</i>

CUSTOMER SIGNATURE FOR ACCEPTANCE

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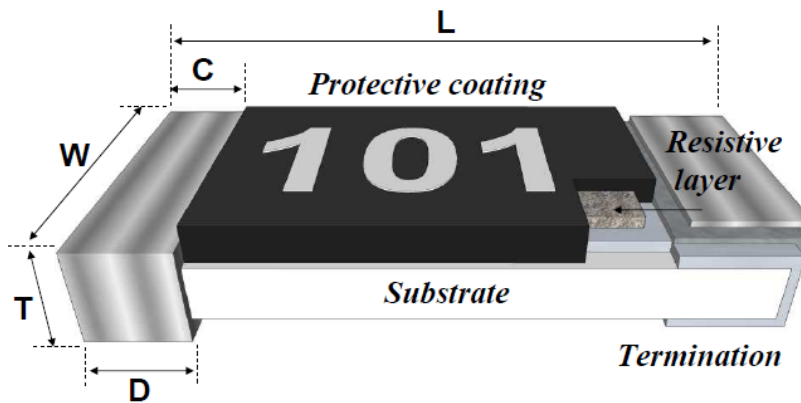
1. Features

- High power rating to 3W and compact size.
- High reliability and high precision (1%).
- Suitable for lead free soldering.
- RoHS compliant & Halogen Free.

2. Applications

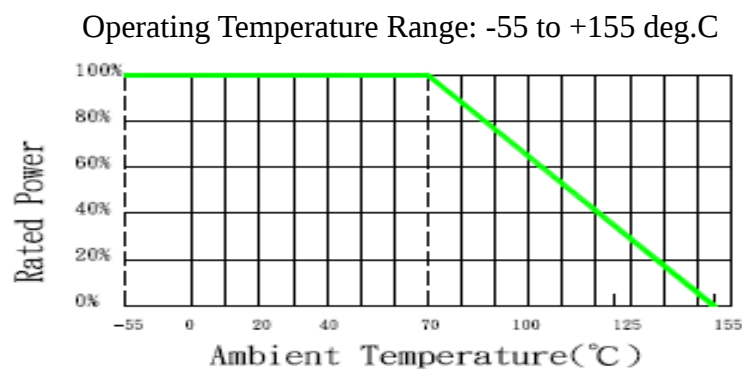
- Power supply.
- Automotive industry.
- Digital meter, Consumer electronics, M/B.
- LED Lighting.
- Industry control board.

3. Dimension and Construction



Unit : mm					
Type	L	W	C	D	T
FPF25...3W	6.40±0.20	3.10±0.20	0.45±0.25	1.80±0.25	1.10±0.20

4. Power Derating Curve



5. Rating

Type	Size	Power Rating at 70°C	Max. RCWV	Max. Overload Voltage	Resistance Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range		Standard Resistance Values
							Min.	Max.	
FPF25 3W	2512	3W	250V	500V	±1%(F)	±100ppm	1Ω	1MΩ	E96
FPF25 3W	2512	3W	250V	500V	±5%(J)	±200ppm	1Ω	10MΩ	E24
FPF25 3W	2512	3W	1652 mV	3695 mV	±1%(F)	±100ppm	0.1Ω	0.91Ω	E24
FPF25 3W	2512	3W	1652 mV	3695 mV	±5%(J)	±200ppm	0.1Ω	0.91Ω	E24

Type	Size	Description	Max. Rated Current	Resistance
FPF25 3W	2512	Zero Ohm , Jumper	≤ 12A	< 20mΩ

Note : $RCWV = (P \times R)^{1/2}$ or Max. RCWV listed above, whichever is lower.

RCWV : Working Voltage (V) , P : Rated Power (W) , R : Resistance Value (Ω)

2512 Solder-pad and trace size should be >300 mm² and board surface temperature should not exceed 105°C when applying full rated power.

6. Part Number

Type	Size	Tolerance	Packing	Watt	R Value	TCR	Special Code
FPF	25 :2512	J :±5% E :±1%	Q : Plastic Tape. 3Kpcs	K : 3W	5% : □□□_ 1% : □□□□	N : 100ppm L : 200ppm	" Null " : Standard

Example :

FPF25JQK473_L

→2512 size, tolerance 5%, plastic tape, 3W, 47KΩ , 200PPM, Standard.

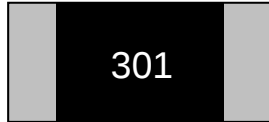
FPF25FQKR390N

→2512 size, tolerance 1%, plastic tape, 3W, 390mΩ , 100PPM, Standard.

7. Marking/Soldering

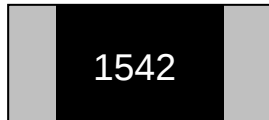
Resistance value identify :

E24 $\pm 5\%$: 3 Digits marking to identify the resistance value



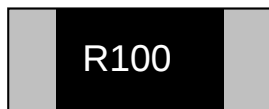
$$301 \rightarrow 30 \times 10^1 = 300\Omega$$

E24/E96 $\pm 1\%$: 4 Digits marking to identify the resistance value



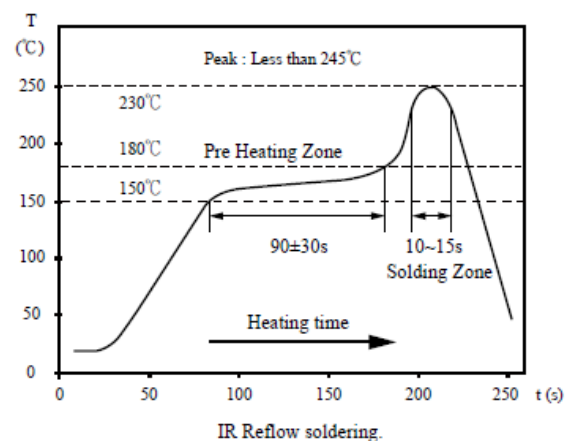
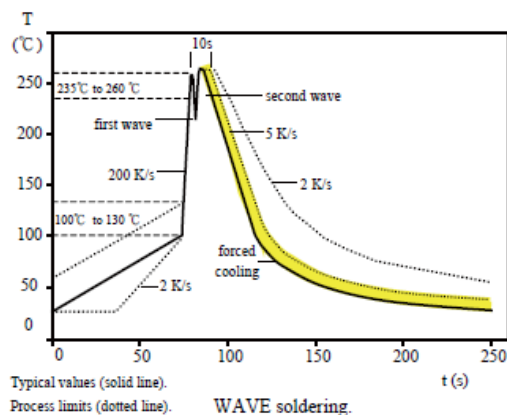
$$1542 \rightarrow 154 \times 10^2 = 15.4 \text{ K}\Omega$$

Below 1 Ω E24 $\pm 1\%, \pm 5\%$: 4 Digits marking to identify the resistance value



$$R100 = 100\text{m}\Omega, R390 = 390\text{m}\Omega$$

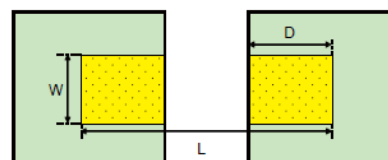
Soldering Reference :



Recommend Solder Pad Dimensions :

Type	W	D	L
FPF25	3.70	2.45	7.60

Unit:mm



8. Reliability Performance

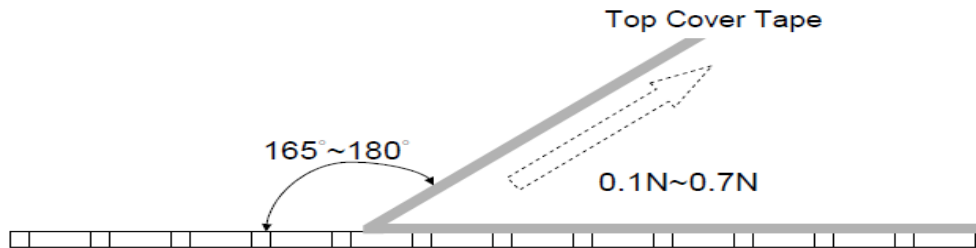
Test Item	Specification	Test Method
DC Resistance	F : $\pm 1\%$ J : $\pm 5\%$	IEC 60115-1 / JIS C 5201-1 , Clause 4.5 Measure the resistance Value.
Resistance to Solder Heat	J: $\Delta R \leq \pm(1\% + 0.5m\Omega)$ F: $\Delta R \leq \pm(0.5\% + 0.5m\Omega)$ No mechanical damage	IEC 60115-1, Clause 4.18 Solder dipping @ $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 10sec. ± 1 sec.
Solder Ability	Over 95% of termination must be covered with solder.	IEC 60115-1, Clause 4.17 After immersing flux, dip in the $245 \pm 2^{\circ}\text{C}$ molten solder bath for 3 ± 0.5 sec.
Board Flex	J : $\Delta R \leq \pm(1\% + 1m\Omega)$ F : $\Delta R \leq \pm(0.5\% + 1m\Omega)$ No mechanical damage	IEC 60115-1, Clause 4.33 Resistance change after bended on the 90mm PCB. Bending 2mm
Short Time Overload	J: $\Delta R \leq \pm(2\% + 0.5m\Omega)$ F: $\Delta R \leq \pm(1\% + 0.5m\Omega)$	IEC 60115-1, Clause 4.13 $5 \times$ Rated power for 5 seconds
Temperature Coefficient of Resistance (TCR)	Within the spec.	IEC 60115-1, Clause 4.8 $TCR(ppm/^{\circ}\text{C}) = \frac{(R_2 - R_1)/R_1 \times 1}{(T_2 - T_1)} \times 10^6$ Test temperature : $25^{\circ}\text{C} \sim 155^{\circ}\text{C}$
Load Life	J : $\Delta R \leq \pm(3\% + 0.5m\Omega)$ F : $\Delta R \leq \pm(1\% + 0.5m\Omega)$	IEC 60115-1, Clause 4.25 Rated voltage for 1.5 hours for followed by a pause 0.5 hour at $70 \pm 2^{\circ}\text{C}$. Cycle repeated 1000 hours.
Load Life Humidity	J : $\Delta R \leq \pm(3\% + 0.5m\Omega)$ F : $\Delta R \leq \pm(1\% + 0.5m\Omega)$	IEC 60115-1, Clause 4.24 $40 \pm 2^{\circ}\text{C}$ with relative humidity 90% ~ 95% D.C. rated voltage for 1.5 hours ON 30 minutes OFF. Cycle repeated 1000 hours.
Temperature Cycling	J : $\Delta R \leq \pm(1\% + 0.5m\Omega)$ F : $\Delta R \leq \pm(0.5\% + 0.5m\Omega)$ No mechanical damage.	IEC 60115-1 Clause 4.19 Repeat 5 cycles as follows -55°C (30min.) $\rightarrow$ 25°C (2~3min.) $\rightarrow$ 155°C (30min.) $\rightarrow$ 25°C (2~3min.) Continue 5 cycles.
Insulation Resistance	Between termination and coating must over 1000M Ω	IEC 60115-1, Clause 4.6 Test voltage : $100 \pm 15\text{V}$

9. PACKAGING

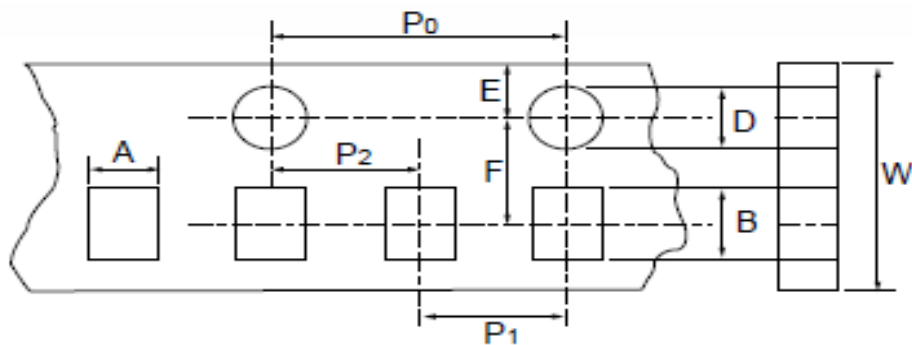
9.1 Peel Strength of Top Cover Tape

The peel speed shall be about 300 mm/min

The peel force of top cover tape shall between 0.1 to 0.7N



9.2 Tape Packaging Dimensions

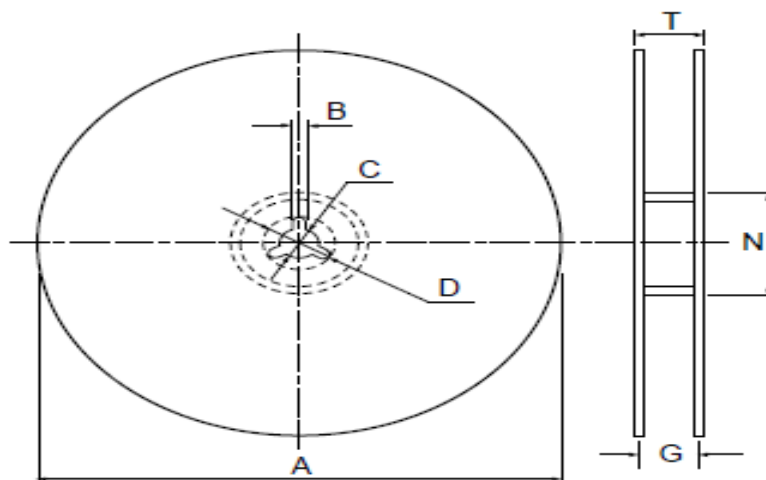


- Accumulated dimensional tolerance $40 \pm 0.2\text{mm}$

unit:mm									
Size	A	B	W	F	E	P1	P2	P0	D
2512	3.50 ± 0.20	6.70 ± 0.20	12.00 ± 0.30	5.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	$1.50 + 0.10 / - 0$

unit : mm

9.3 Reel Dimensions



unit:mm

Size	Packaging Q'ty per Reel	A	N	C	D	B	G	T
2512	3 kpcs	178.0±2.0	60.0±0.5	13.0±0.5	20(Min.)	2.0±0.5	13.8±1.5	16.7max.

10. Storage & Handling

... Products are recommended to be used up within one year as ensured shelf life.

Check solder ability in case shelf life extension is needed.

... To store products with following condition:

Temperature:5 to 40°C ; Humidity: 20 to 70% relative humidity.

※ All product specification and data are subject to change without notice.