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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**

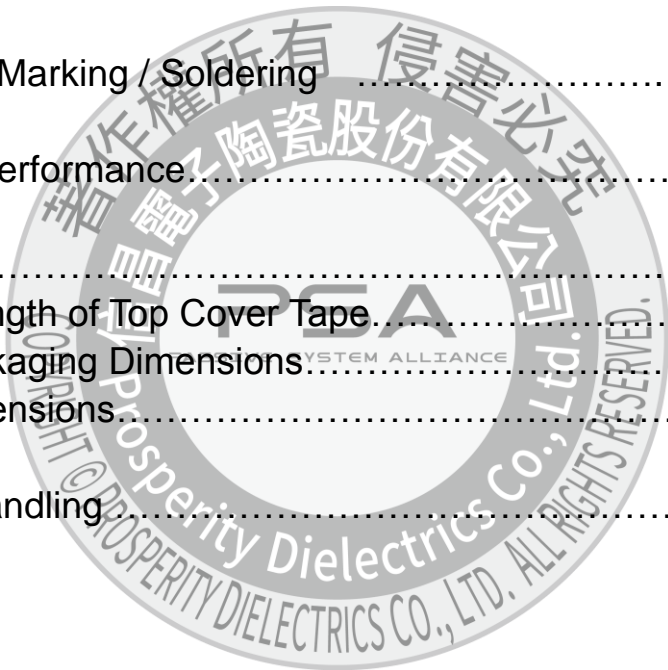
DESCRIPTION : _____

RESULT	ACTION	CUSTOMER'S SIGNATURE	NOTE
FULL APPROVED	"V"		
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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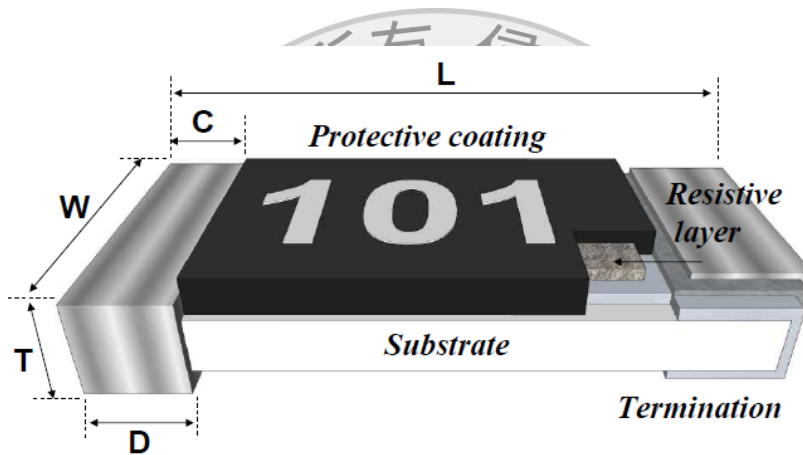
1. Features

- 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

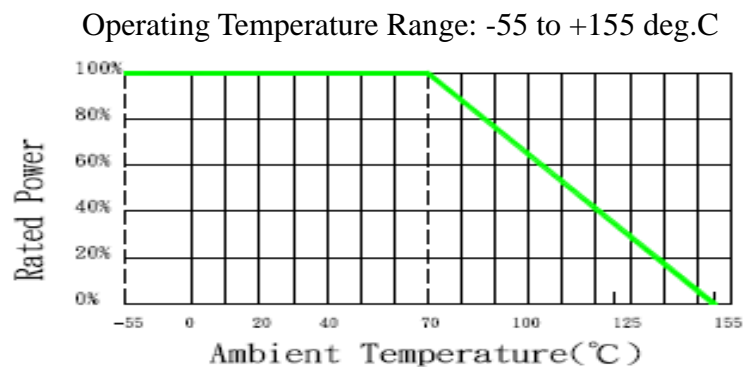
- Power supply.
- Automotive industry.
- Digital meter, Consumer electronics, M/B.
- LED Lighting.
- Industry control board.

3. Dimension and Construction



Type	L	W	C	D	T	Unit : mm
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% F :±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.

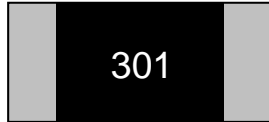
FPF25FQKR390N

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

7. Marking/Soldering

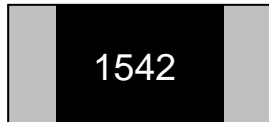
Resistance value identify :

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



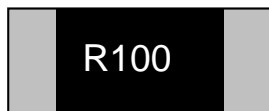
$$301 \rightarrow 30 \times 10^1 = 300\Omega$$

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



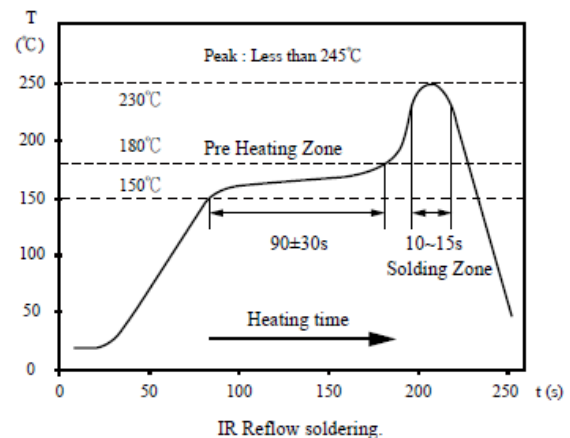
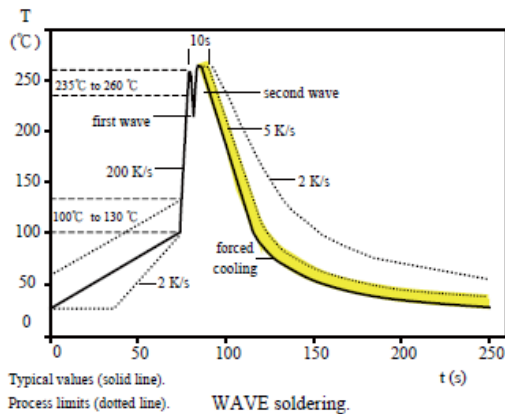
$$1542 \rightarrow 154 \times 10^2 = 15.4 \text{ K}\Omega$$

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



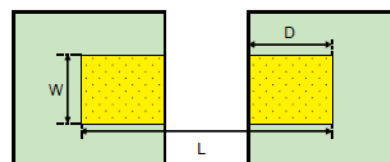
$$R100 = 100\text{m}\Omega, R390 = 390\text{m}\Omega$$

Soldering Reference :



Recommend Solder Pad Dimensions :

Type	W	D	L
FPF25	3.70	2.45	7.60



Unit:mm

8. Reliability Performance

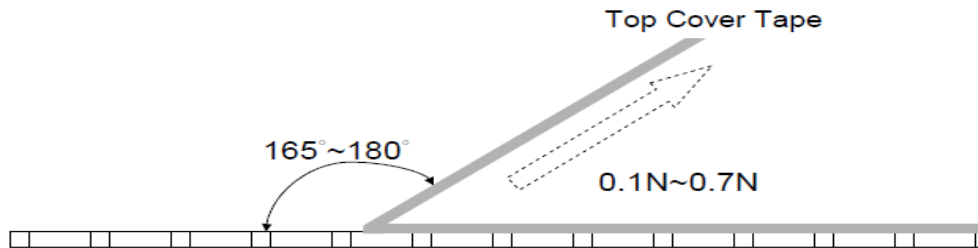
Test Item	Specification	Test Method
DC Resistance	F : ±1% J : ±5%	IEC 60115-1 / JIS C 5201-1 , Clause 4.5 Measure the resistance Value.
Resistance to Solder Heat	J: $\Delta R \leq \pm(1\% + 0.5m\Omega)$ F: $\Delta R \leq \pm(0.5\% + 0.5m\Omega)$ No mechanical damage	IEC 60115-1, Clause 4.18 Solder dipping @ 260°C ±5°C for 10sec. ±1sec.
Solder Ability	Over 95% of termination must be covered with solder.	IEC 60115-1, Clause 4.17 After immersing flux, dip in the 245±2°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 × Rated power for 5 seconds
Temperature Coefficient of Resistance (TCR)	Within the spec.	IEC 60115-1, Clause 4.8 T_1 T_2 Test temperature : - 25°C ~ 155°C $TCR(ppm/^{\circ}C) = (R_2 - R_1) / R_1 \times 1 / (T_2 - T_1) \times 10^6$
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±2°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±2°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.) → 25°C (2~3min.) → 155°C (30min.) → 25°C (2~3min.) Continue 5 cycles.
Insulation Resistance	Between termination and coating must over 1000MΩ	IEC 60115-1, Clause 4.6 Test voltage : 100±15V

9. PACKAGING

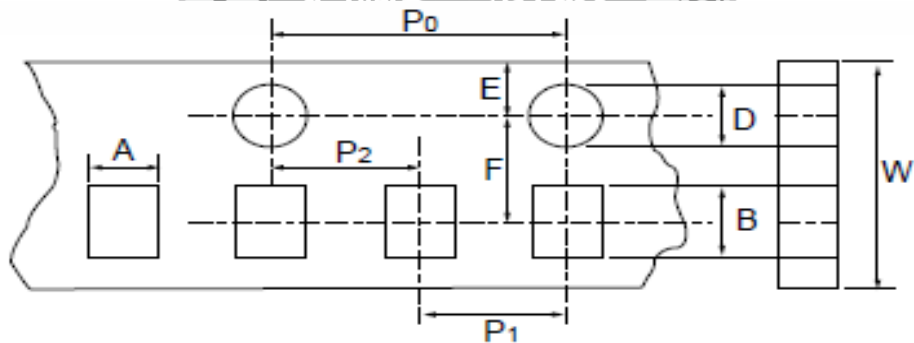
9.1 Peel Strength of Top Cover Tape

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

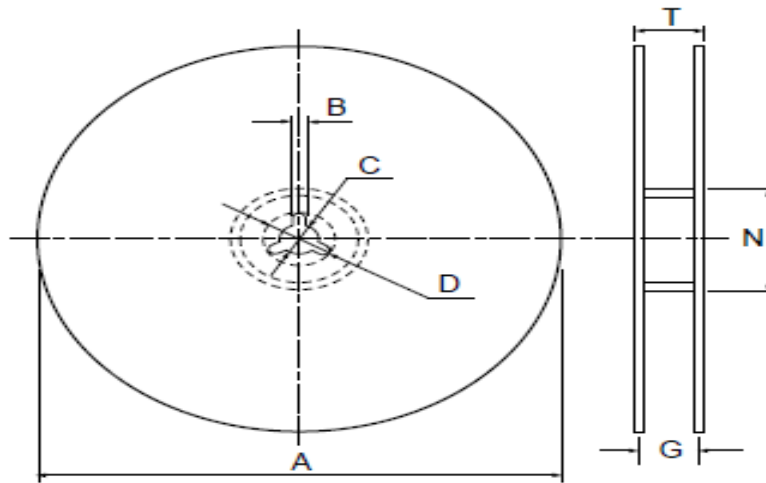


- Accumulated dimensional tolerance $40 \pm 0.2 \text{mm}$

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



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.

unit:mm

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.