

Data sheet

Title: METAL-FOIL CHIP RESISTOR; LOW OHM

Style: DLP20,32

AEC-Q200 qualified

RoHS COMPLIANCE ITEM
Halogen and Antimony Free

- Note:
- Stock conditions
Temperature: +5°C ~ +35°C
Relative humidity: 25% ~ 75%
The period of guarantee: Within 2 year from shipment by the company.
Solderability shall be satisfied.
 - Product specification contained in this data sheet are subject to change at any time without notice
 - If you have any questions or a Purchasing Specification for any quality Agreement is necessary, please contact our sales staff.



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1. Scope

1.1 This data sheet covers the detail requirements for metal-foil chip resistor ; low ohm, style of DLP20,32.

1.2 Applicable documents

JIS C 5201-1: 2011, IEC60115-1: 2008

2. Classification

Type designation shall be the following form.

(Example)

DLP	32	K	R020	F	TE
1	2	3	4	5	6

Style

1 Mmetal-foil chip resistor ; low ohm Style

2 Size

3 Characteristics

K	±100x10 ⁻⁶ /°C
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4 Rated resistance

R020	R020-->20mΩ
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5 Tolerance on rated resistance

F	±1%
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6 Packaging form

TP	Paper taping
TE	Embossed taping

3. Rating

3.1 The ratings shall be in accordance with Table-1.

Table-1

Style	Rated dissipation (W)	Temperature coefficient of resistance (10 ⁻⁶ /°C)		Rated resistance range(mΩ)	Tolerance on rated resistance
DLP20	0.5	K	±100	15 to 50	F(±1%)
DLP32	1.0	K	±100	15 to 40	F(±1%)

Style	Category temperature range (°C)
DLP20	-55~+155
DLP32	

* Standard resistance value: 15 mΩ, 20 mΩ, 25 mΩ, 30 mΩ, 35 mΩ, 40 mΩ, 45 mΩ, 50 mΩ

3.2 Derating

The derated values of dissipation at temperature in excess of 70 °C shall be as indicated by the following curve.

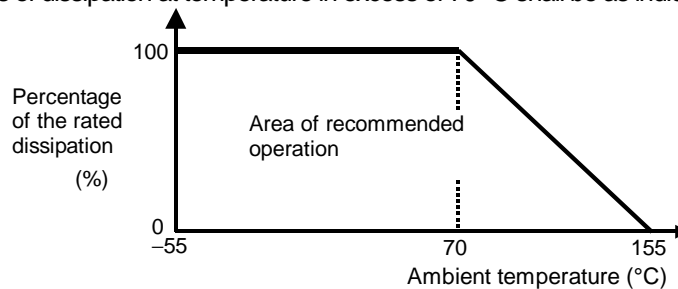


Figure-1 Derating curve

3.3 Rated voltage(RCWV)

d.c. or a.c. r.m.s. voltage calculated from the square root of the product of the rated resistance and the rated dissipation.

$$E = \sqrt{P \cdot R}$$

E: Rated voltage (V)
P: Rated dissipation (W)
R: Rated resistance (Ω)

4. Packaging form

The standard packaging form shall be in accordance with Table-2.

Table-2

Symbol	Packaging form		Standard packaging quantity / units	Application
TP	Paper taping	8mm width, 4mm pitches	5,000 pcs.	DLP20
TE	Embossed taping	12mm width, 4mm pitches	5,000 pcs.	DLP32

5. Dimensions

5.1 The resistor shall be of the design and physical dimensions in accordance with Figure-2 and Table-3.

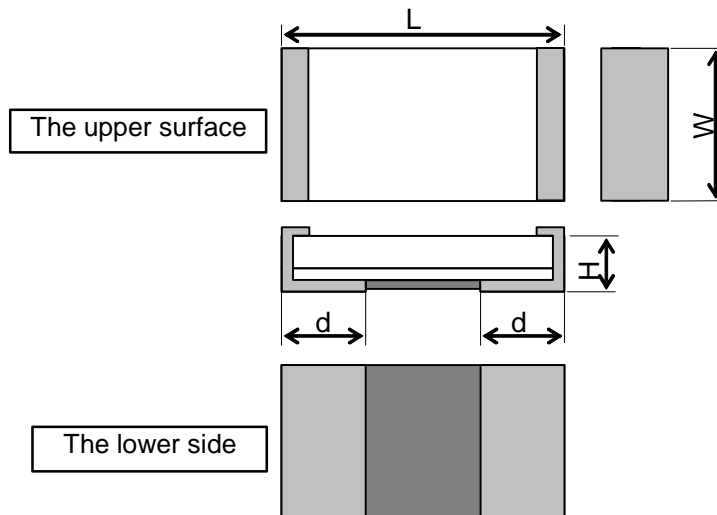
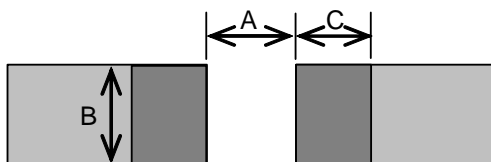


Figure-2
Table-3

Unit: mm

Style	Rated resistance range (m Ω)	L	W	H	d
DLP20	15 to 50	2.1 \pm 0.2	1.35 \pm 0.2	0.65 \pm 0.20	0.5 \pm 0.2
DLP32	15 to 40	3.3 \pm 0.2	1.7 \pm 0.2	0.65 \pm 0.20	0.68 \pm 0.30

5.2 Recommended Solder Pad Dimensions



Unit : mm

Style	A	B	C	*t
DLP20	0.8	1.44	1.4	0.105
DLP32	1.2	1.84	1.8	0.105

* t: Thickness of pad metal

6. Marking

The nominal resistance shall be marked in 3 characters or 4 characters and marked on over coat side.

Marking example	Contents	Application
020	0.2 [Ω] \rightarrow 20[m Ω]	DLP20
R020	0.2 [Ω] \rightarrow 20[m Ω]	DLP32

7. Performance

7.1 The standard condition for tests shall be in accordance with Sub-clause 4.2, JIS C 5201-1: 2011

7.2 The performance shall be satisfied in Table-4.

Table- 4(1)

No.	Test items	Condition of test (JIS C 5201-1)	Performance requirements
1	Resistance	Sub-clause 4.5 Resistance shall be measured with 25°C in the 4-wire resistance test.	The resistance of the test device shall be within the limits specified.
2	Temperature characteristic of resistance	4.8 Getting the sampling device resistance values measured in 25°C and 125°C and put them in to the following equation to calculate the TCR. $TCR = (R_b - R_a) / R_a \times 1 / (T_b - T_a) \times 10^6$ ta : 25°C, tb: 125°C Ra : Resistance at ta temperature Rb : Resistance at tb temperature	See Table-1.
3	Short time overload	4.13 2.5 × Rated power for 5 sec.	ΔR/R: Within ±(1%+0.5mΩ)
4	High temperature exposure	4.25 Test condition: 155±2°C Test period: 1,000h	ΔR/R: Within ±(1%+0.5mΩ)
5	Low temperature storage	4.25 Test condition: -55±2°C Test period: 1,000h	ΔR/R: Within ±(1%+0.5mΩ)
6	Moisture load life	4.25 Test condition: 60±2°C, 95%RH Test period: 1,000h loaded with RCWV or Vmax 90 min ON and 30 min OFF.	ΔR/R: Within ±(2%+0.5mΩ)
7	Thermal Shock	4.19 -55°C 30min. ---> Room temp 3 min. ---> +150°C 30min. ---> Room temp 3 min. 100 cycles	ΔR/R: Within ±(1%+0.5mΩ)
8	Load life at 70 °C	4.25 Test condition: 70±2°C Test period: 1,000h loaded with RCWV or Vmax 90 min ON and 30 min OFF.	ΔR/R: Within ±(2%+0.5mΩ)
9	Solderability	4.17 Dip into solder at 245°C±5°C for 3±0.5 s	The covered area > 95%
10	Resistance to soldering heat	4.18 Through reflow-265°C±5°C for 10±1 s	ΔR/R: Within ±(1%+0.5mΩ)
11	Mechanical Shock	4.21 Acceleration: 100g Amplitude: 11 ms 5 times shock	ΔR/R: Within ±(1%+0.5mΩ)

Table-4(2)

No	Test items	Condition of test (JIS C 5201-1)	Performance requirements
12	Bending strength	4.33 Span between fulcrums: 90mm Bend width: 2mm, Test board: Glass-Epoxy Board, Thickness: 1.6mm	$\Delta R/R$: Within $\pm(1\%+0.5m\Omega)$
13	Insulation resistance	4.6 between protective layer and resistive shall be measured by high ohm meter	The resistance of the test device shall over 100M Ω

8. Taping

8.1 Paper taping (8mm width, 4mm pitches)

Taping dimensions shall be in accordance with Figure-3 and Table-5.

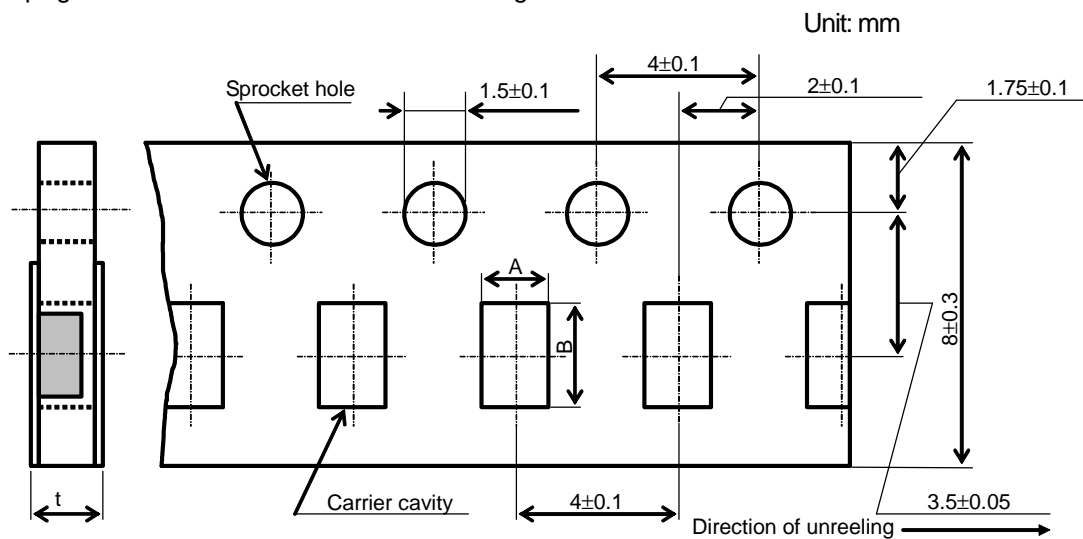


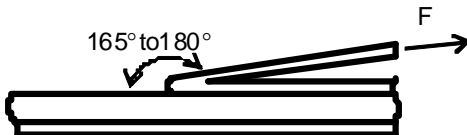
Figure-3

Table-5

Unit: mm

Style	A	B	t
DLP20	1.68±0.15	2.38 ± 0.15	0.8±0.2

* F: Peeling Strength: 0.1 – 1.0N



8.2 Embossed taping (8mm width, 4mm pitches)

Taping dimensions shall be in accordance with Figure-4 and Table-6.

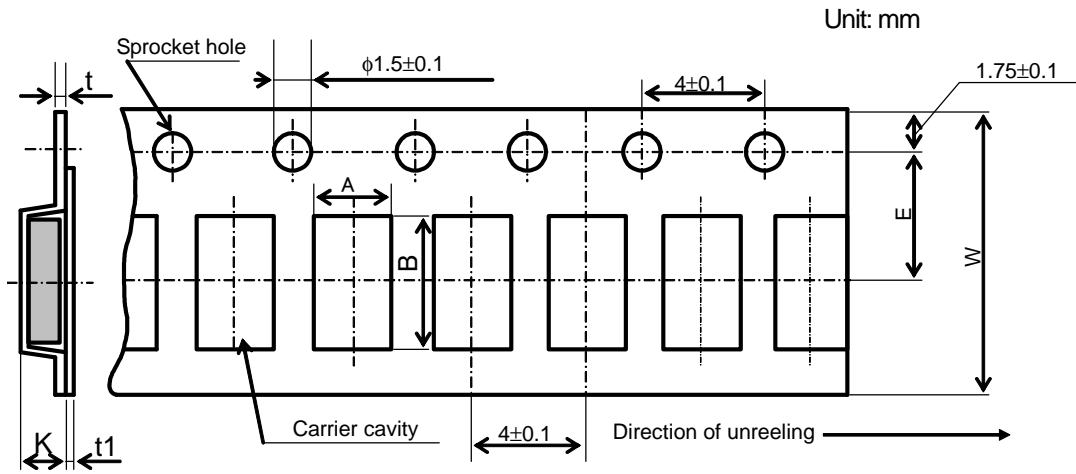
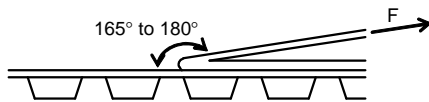


Figure-4
Table-6

Style	A	B	W	E	K	t	t1
DLP32	2.05±0.20	3.65±0.20	8.0±0.3	3.5±0.1	0.9±0.2	0.2±0.05	Max. 0.1

* F: Peeling Strength: 0.1 – 1.0N



8.3 Reel dimension

Reel dimensions shall be in accordance with the following Figure-5 and Table-7.

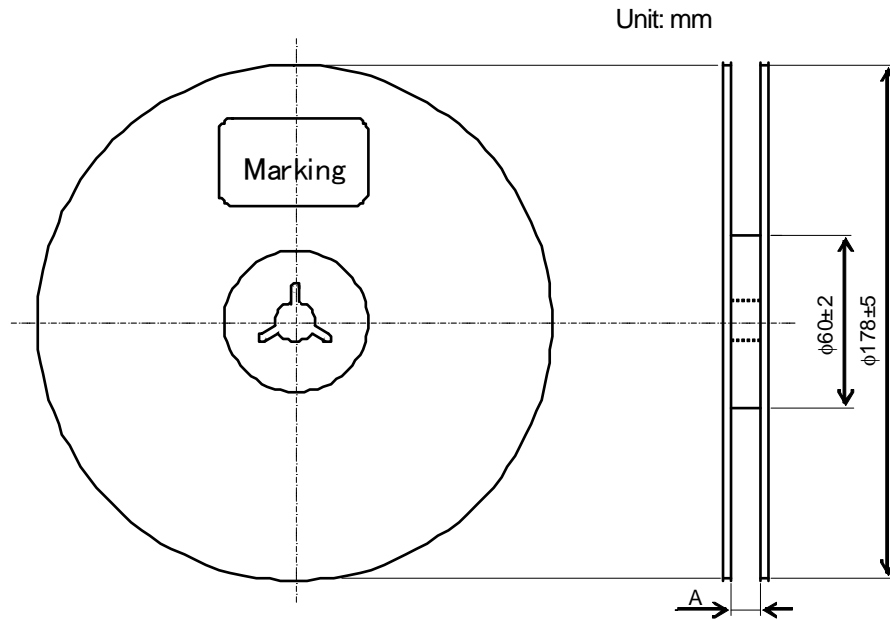


Figure-5

Table-7

Unit: mm

Style	A
DLP20, 32	9±0.6

9. Marking on package

The label of a minimum package shall be legibly marked with follows.

- (1) Classification (Style, Characteristics, Rated resistance, Tolerance on rated resistance, Packaging form)
- (2) Lot number (3) Quantity (4) Manufacturer's name or trade mark (5) Others