

# Resistors TAISEI OHM



**MKT-TAISEI Co.,Ltd.**



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# THICK FILM CHIP RESISTORS



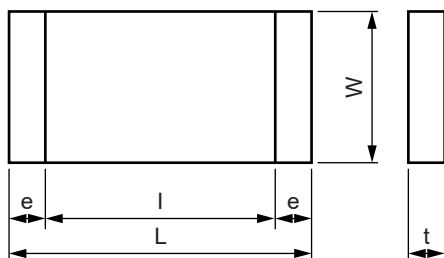
## Thick Film Chip Resistors

### Features

TSR is very reliable chip resistor used metal glaze and is assured of superior excellence in solderability and no migration to be caused due to this electrode made in triple layer composition.

### Dimensions

Unit : mm



Style	L	W	t	l	e
TSR40	1.0±0.05	0.5±0.05	0.35±0.05	0.6	0.2±0.1
TSR45	1.6±0.15	0.8±0.15	0.45±1.0	1.0±0.2	0.3±0.2
TSR50	2.0±0.2	1.25±0.2	0.5±0.1	1.3±0.2	0.3±0.2
TSR55S					
TSR55	3.2±0.2	1.6±0.2	0.6±0.1	2.2±0.2	0.5±0.3
TSR60S					
TSR60	3.2±0.2	2.6±0.2	0.6±0.1	2.2±0.2	0.5±0.3
TSR65	5.0±0.2	2.5±0.2	0.6±0.1	3.8±0.2	0.6±0.2
TSR70	6.4±0.2	3.2±0.2	0.6±0.1	5.0±0.2	0.7±0.2

### Rating

Style	T.C.R. [ppm/°C]	Resistance Tolerance and Value Range [Ω]				Max. Working V.	Max. Overload V.	Rated Power	Rated Ambient Temp.	Working Temp. Range
		F : ± 1%	G : ± 2%	J : ± 5%	K : ± 10%					
TSR40 G	± 250	—	—	10 ~ 1M	—	25 V	50 V	1/16 W	70°C	-55 ~ 125°C
TSR45 G	± 200	100 ~ 100K	10 ~ 1M	10 ~ 1M	—	50 V	100 V			
	± 350	—	1 ~ 9.1 1.1M ~ 5.6M	1 ~ 9.1	1.1M ~ 5.6M					
TSR50 G	± 200	10 ~ 1M	10 ~ 1M	10 ~ 1M	—	150 V	300 V	1/10 W		
	± 250	—	2.2 ~ 9.1 1.1M ~ 5.1M	2.2 ~ 9.1 1.1M ~ 5.1M	2.2 ~ 9.1 1.1M ~ 5.1M					
	± 350	—	—	1.0 ~ 3.6 5.6 ~ 10M	1.0 ~ 3.6 5.6 ~ 10M					
TSR55 S	± 100	10 ~ 1M	10 ~ 1M	10 ~ 1M	—	200 V	400 V	1/8 W		
	± 200	10 ~ 1M	10 ~ 1M	10 ~ 1M	—					
TSR55 G	± 250	—	2.2 ~ 9.1	2.2 ~ 9.1	—					
	± 350	—	—	1.0 ~ 3.6 5.6M ~ 10M	0.3 ~ 3.6 5.6M ~ 22M					
TSR60 S	± 100	10 ~ 1M	10 ~ 1M	10 ~ 1M	—	1/4 W				
TSR60 G	± 200	10 ~ 1M	10 ~ 1M	10 ~ 1M	—					
	± 250	—	—	2.2 ~ 9.1	—					
TSR65 G	± 200	100 ~ 1M	100 ~ 1M	100 ~ 1M	—	1/2 W				
TSR70 G	± 200	—	—	10 ~ 160k	—	1 W				

### Characteristics

Requirements	TSR
Short Time Overload	± (2%+0.1Ω)
Resistance to Soldering Heat	± (1%+0.1Ω)
Solderability	Over 95%
Thermal Shock	± (1%+0.1Ω)
High Temperature Loading	± (3%+0.1Ω)
Load Life	± (3%+0.1Ω)

### How to Code

TSR50	G	102	J	TR
Style	T.C.R. ppm/°C	Resistance	Resistance Tolerance %	Packaging
40	S ± 100	Please specify 102.	F ± 1	Quantity 10,000 Punch Tape
45	± 200		G ± 2	
50	G ± 250		J ± 5	Quantity 5,000 Punch Tape
55S	± 350		K ± 10	
55			O Jumper	
60S				Quantity 4,000 Emboss Tape
60				
65				
70				

Specifications of products are subject to change without notice.

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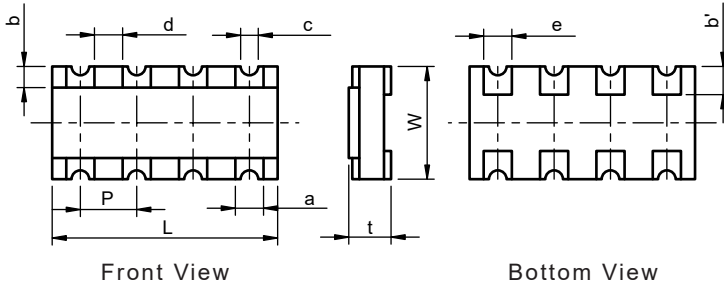


## ◆◆ TSR-N&W ◆◆ Thick Film Chip Resistor Networks

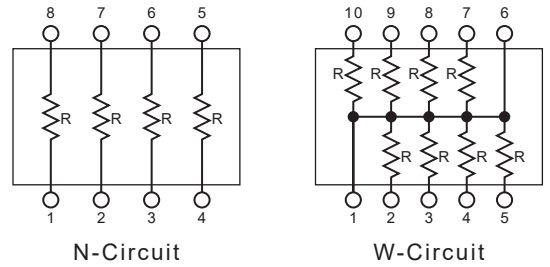
### Features

Smaller size by providing one unit from four chip resistors.

### Dimensions



### Schematics



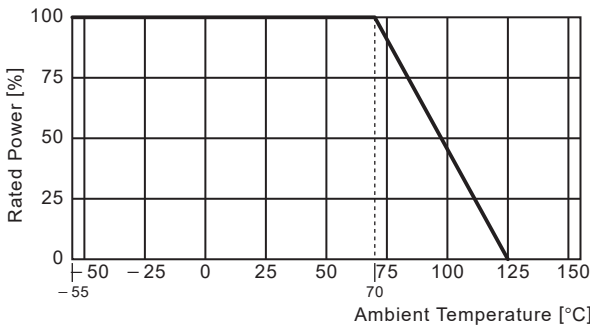
Style	L	W	P	t	a	b	b'	c	d	e
TSR45N	3.2	1.6	0.8	0.6	0.4	0.3	0.4	0.25	0.3 min.	0.4
TSR55N	5.08	3.0	1.27	0.6	0.8	0.55	0.5	0.5	0.4 min.	0.7
TSR45W	6.4	3.1	1.27	0.6	1.0	0.6	0.6	0.5	0.4 min.	0.7

Unit : mm

### Elements

Style	Resistors	Rated Power	Max. Working V.	Max. Overload V.	Resistance Range	Resistance Tolerance
TSR45N	4 elements	1 / 16 W	50 V	100 V	47 Ω ~ 1 MΩ	± 2 % (G)
					10 Ω ~ 1 MΩ	± 5 % (J)
TSR55N	4 elements	1 / 8 W	50 V	100 V	47 Ω ~ 1 MΩ	± 2 % (G)
					10 Ω ~ 1 MΩ	± 5 % (J)
TSR45W	8 elements	1 / 16 W	50 V	100 V	22 Ω ~ 470 MΩ	± 5 % (J)

### Derating Curve



### How to Code

TSR45N	101	G	TR
Style	Resistance	Resistance Tolerance [%]	Packaging
TSR45N	1 / 16 W × 4 elements	G ± 2%	TR Tape Reel
TSR55N	1 / 8 W × 4 elements	J ± 5%	
TSR45W	1 / 16 W × 8 elements		

⚠ Specifications of products are subject to change without notice.

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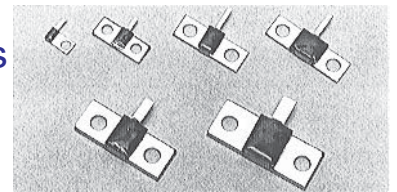
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## ◆ TDR-3 ◆ Applicable to MIL-R-11804 Microwave Terminations



### Features

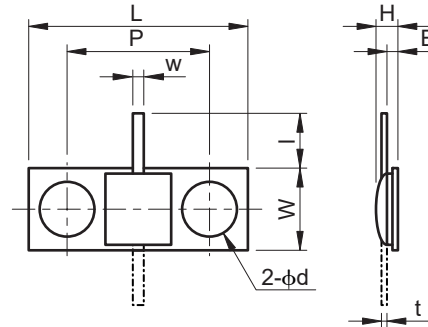
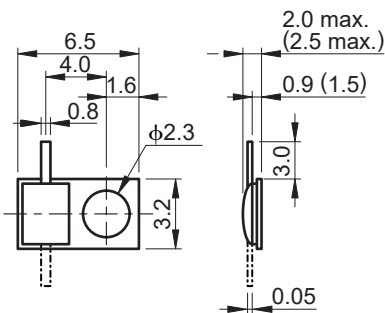
TDR-3 series provides small configurations, wide frequency range and low price by utilizing tantalum alloy with high heat resistance and also provides cost reduction because the thermal resistance is low.

3010 (10 W) · 3030 (30 W)  
3050 (50 W) · 3150 (150 W)

### Dimensions

3003 (3 W)

Unit : mm



Style	L $\pm 0.3$	W $\pm 0.5$	H max.	E	P $\pm 0.2$	$\phi d$	l $\pm 1$	w $\pm 0.3$	t
3010	13.0	5.0	2.5 (3.0)	1.6 (2.0)	8.0	2.6	3.0	0.8	0.05
3030	20.0	5.8	4.0 (4.5)	2.5 (3.0)	14.0	3.2	5.0	1.0	0.1
3050	22.0	8.0	4.5 (5.0)	2.5 (3.5)	14.0	3.6	5.0	2.0	0.1
3150	30.0	18.0	6.0	4.5	22.0	3.6	10.0	3.0	0.1

· The numbers in ( ) are the dimensions of 100  $\Omega$  type impedance.

### Electrical Specifications

Rated Power	3	10	30	50	150
Frequency Range	DC ~ 5 (3) GHz	DC ~ 4 (2) GHz	DC ~ 2 (1.5) GHz	DC ~ 5 (1) GHz	DC ~ 0.8 (0.5) GHz
V S W R	1.2 max.				
Impedance	50, 100 $\Omega$ (Type B only)				50 $\Omega$
Working Temp. Range	-55 ~ +155 $^{\circ}$ C				
Resistance Tolerance	$\pm 5\%$ (J) : Standard article, $\pm 2\%$ (G), $\pm 1\%$ (F)				
T.C.R.	$\pm 100$ ppm/ $^{\circ}$ C				$\pm 200$ ppm/ $^{\circ}$ C
Heat Resistance	4 <7> $^{\circ}$ C/W	2 <4> $^{\circ}$ C/W	1.8 <2.5> $^{\circ}$ C/W	1.3 <2> $^{\circ}$ C/W	0.5 $^{\circ}$ C/W

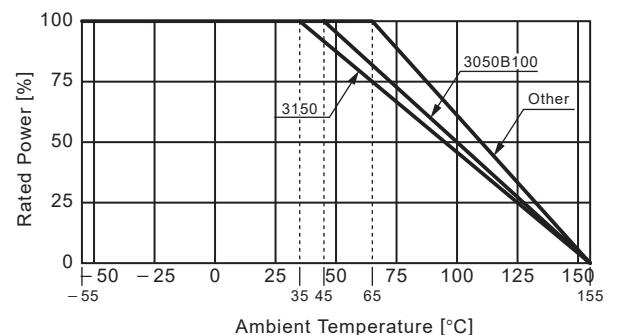
· The numbers in ( ) of Frequency Range are values of the B type.  
· The numbers in < > of Heat Resistance are values of 100 $\Omega$  impedance type.

· Impedance 100 $\Omega$  is only for the B type.  
· 300W is also available if required.

### How to Code

TDR	3	010	S	50	J
Style	ID No.	Rated Power	Terminals	Impedance	Resistance Tolerance
003	3 W	S	Type S	50 50 $\Omega$	F $\pm 1\%$
010	10 W	S	Type S	100 100 $\Omega$	G $\pm 2\%$
030	30 W	B	Type B		J $\pm 5\%$
050	50 W				
150	150 W				

### Derating Curve



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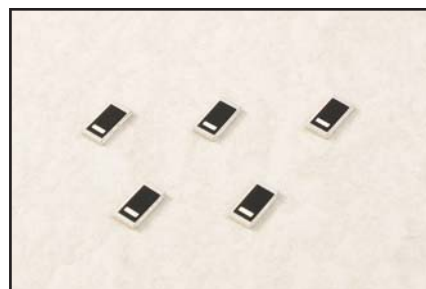
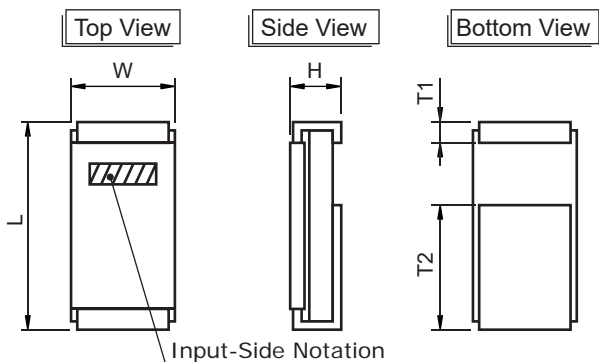
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## ◆ TCD-2 ◆ Chip Terminations

Applicable to MIL-R-11804E

### Dimensions



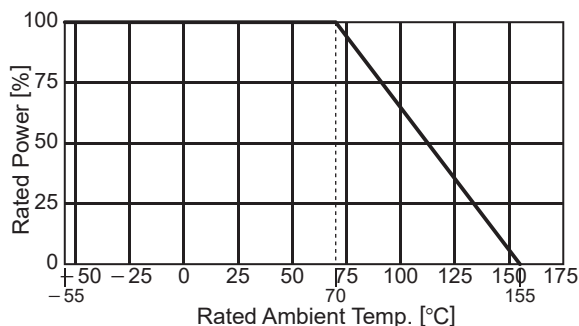
Unit : mm

L	W	H	T1	T2
5.0 ± 0.2	2.5 ± 0.2	0.8 max.	0.45 ± 0.2	3.0 ± 0.2

### Rating

Requirements	TCD-2008B50J
Frequency Range	DC ~ 2.5 GHz
VSWR	1.2 max.
Impedance	50 Ω
Resistance Tolerance	± 5 %
T.C.R.	± 100 ppm/°C
Rated Power	8 W
Working Temp. Range	- 55 °C ~ 155 °C

Derating Curve




### Materials

Part Name	Materials
Coating	Epoxy Resin
Resistance	Thin Film Tantalum Alloy
Electrode	Ni / Sn
Substrate	Almina

### How to Code

TCD	—	2	008	B	50	J	—	G
Style		No.	Rated Power	Electrode Structure	Resistance	Resistance Tolerance		Made with RoHS
			008 8W		50 50Ω	J ±5%		

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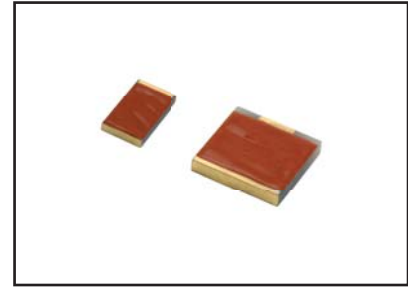
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## ◆ TCD-3 ◆ Chip Terminations

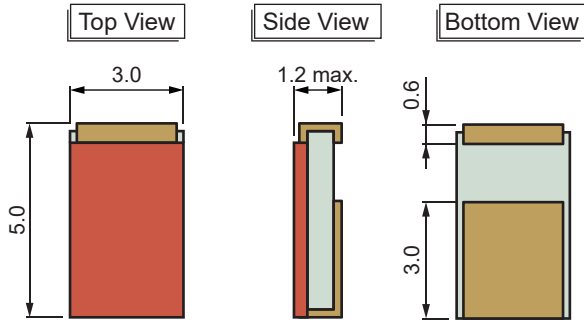
Applicable to MIL-R-11804E



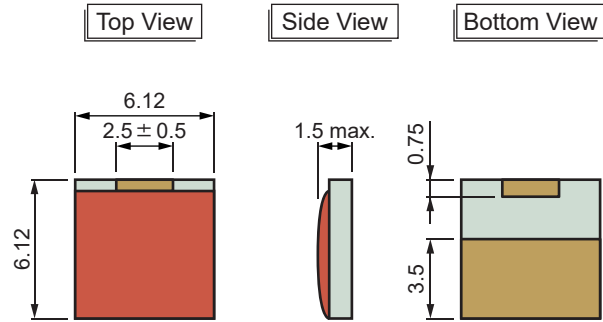
### Dimensions

Unit : mm

#### TCD-3010



#### TCD-3020

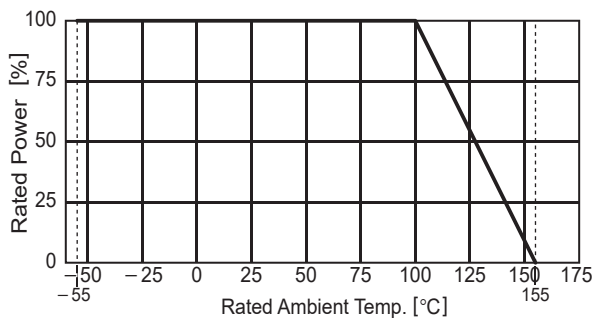


Tolerance : ± 0.2

### Rating

Requirements	TCD-3010B50	TCD-3020C50
Frequency Range	DC ~ 2.5 GHz	DC ~ 2.3 GHz
VSWR	1.2 max.	1.2 max.
Impedance	50 Ω	50 Ω
Resistance Tolerance	± 2 %, ± 5 %	± 2 %, ± 5 %
T.C.R.	± 200 ppm/°C	± 200 ppm/°C
Rated Power	10 W	20 W
Working Temp. Range	-45 °C ~ 150 °C	-55 °C ~ 155 °C

### Derating Curve




### Materials

Part Name	Materials
Coating	Silicone
Resistance	Thin Film Tantalum Alloy
Electrode	Ni / Au Flash
Substrate	Aluminum Nitride

### How to Code

TCD	3	010	B	50	G	G	TR
Style	No.	Rated Power	Electrode Structure	Resistance	Resistance Tolerance	Made with RoHS	Packaging
		010 10W 020 20W	B 3010 C 3020	50 50Ω	G ±2% J ±5%		- Bulk TR Tape Reel

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e-tcd3xxx-p01-08



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## Carrier Type

Capless and Chip Resistors (TSR)

### TAPE

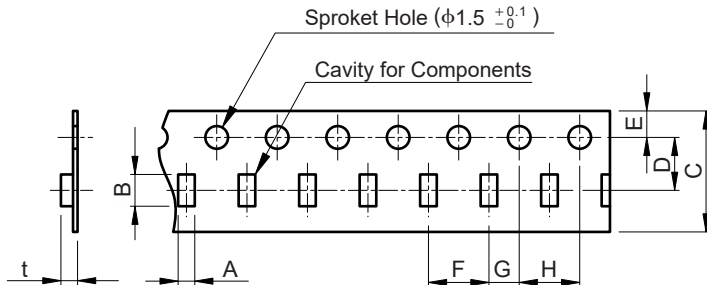


Fig. 1

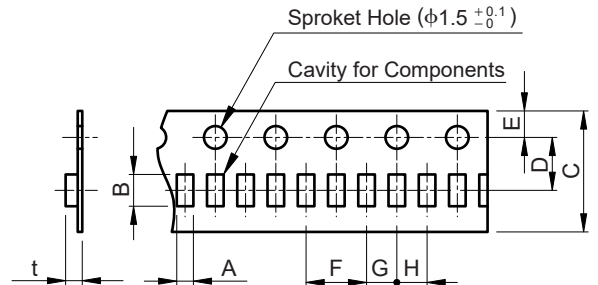


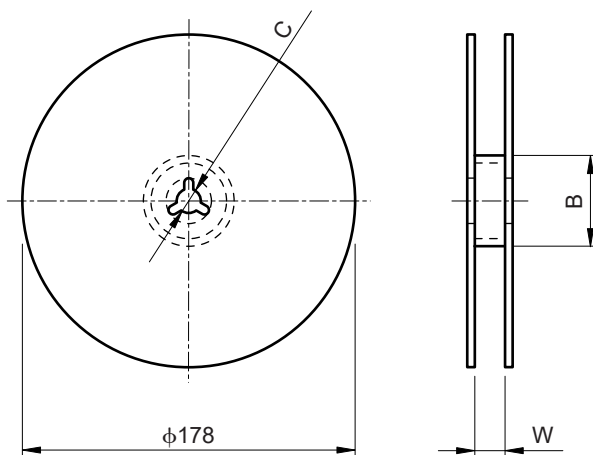
Fig. 2 : TSR40

Unit : mm

Style	A	B	C	D	E	F	G	H	t	Fig.
TSR40	0.65±0.1	1.15±0.1	8.0±0.2	3.5±0.05				2.0±0.05		Fig.2
TSR45	1.1±0.2	1.9±0.2								
TSR50S/50	1.65±0.2	2.4±0.2			1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	1.0 max.	Fig.1
TSR55/60S	2.0±0.2	3.6±0.2								
TSR60	2.9±0.1	3.5±0.1	12.0±0.2	5.5±0.05						
TSR65	2.8±0.1	5.3±0.1								
TSR70	3.5±0.1	6.75±0.1								

Available in embossed tape for Capless resistors and paper tape for chip resistors.

### REEL



Unit : mm

Style	B	C	W
TSR40	φ50 min.	φ13	13.5 ± 2.0
TSR45			
TSR50S/50			
TSR55/60S			
TSR60			
TSR65			
TSR70			

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e-tapereel-p01-06



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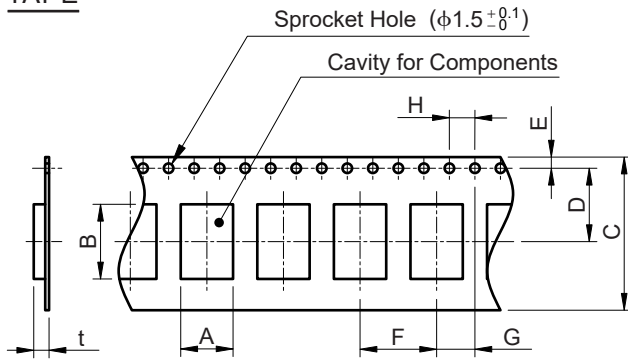




## Carrier Type

### Plastic Embossed Tape for SOP Resistor Networks

#### TAPE

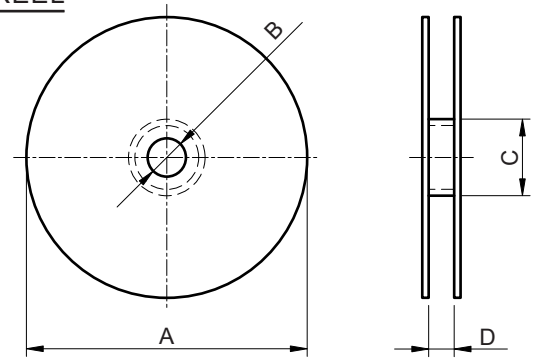


Unit:mm

A	B	C	D	E
$8.2 \pm 0.1$	$11.7 \pm 0.1$	$24.0 \pm 0.2$	$11.5 \pm 0.1$	$1.75 \pm 0.1$
F	G	H	t	
$12.0 \pm 0.1$	$2.0 \pm 0.1$	$4.0 \pm 0.1$	$2.4 \pm 0.1$	

First pin notch shows end-direction in placing a resistor on the tape.

#### REEL



Unit:mm

A	B	C	D
$330 \pm 3$	$13.0 \pm 0.2$	100 min.	$24.4 \begin{smallmatrix} +2 \\ -0 \end{smallmatrix}$



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