

## ■ Features

- Small size and light weight
- Reliability, high quality
- Chip resistor of the wide terminal type

## ■ Application

- Navigation equipment
- Power equipment: Power supply, Illumination equipment
- Indoor lighting, Central door locking

## ■ Standard Electrical Specifications

Item Type	Rated Power at 70°C	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/°C)	Resistance Range	
					F(±1%)	J(±1%)
ETRW62(0612)	0.75W	200V	400V	±400	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 10MΩ	
ETRW02(1020)	1W	200V	400V	±400	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 10MΩ	
ETRW82(1218)	1W	200V	400V	±400	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 10MΩ	
ETRW15(1225)	2W	200V	400V	±400	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 10MΩ	
ETRW23(2030)	3W	200V	400V	±400	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 10MΩ	

- For non-standard parts, please contact our sales dept.
- Operating Temperature Range :-55°C + 155°C

## ■ Low Ohm Chip Resistor Electrical Specifications

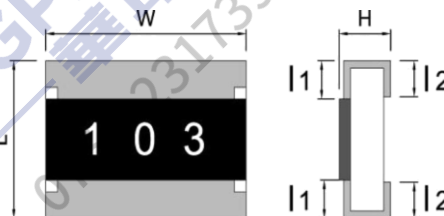
Item Type	Rated Power at 70°C	Max Working Voltage	Max Overload Voltage	T.C.R. (PPM/°C)	Resistance Range(Ω)	
					F(±1%)	J(±1%)
ETRW62(0612)	0.75W	0.087V- 0.86V	2.154V	±1800	10mΩ ≤ R < 50mΩ	
				±800	50mΩ ≤ R < 100mΩ	
				±500	100mΩ ≤ R < 1Ω	
ETRW02(1020)	1W	0.10V-0.99V	2.475V	±1800	10mΩ ≤ R < 50mΩ	
				±800	50mΩ ≤ R < 100mΩ	
				±500	100mΩ ≤ R < 1Ω	
ETRW82(1218)	1W	0.1V-0.99V	2.475V	±1800	10mΩ ≤ R < 50mΩ	
				±800	50mΩ ≤ R < 100mΩ	
				±500	100mΩ ≤ R < 1Ω	
ETRW15(1225)	2W	0.14V-1.41V	3.518V	±1800	10mΩ ≤ R < 50mΩ	
				±800	50mΩ ≤ R < 100mΩ	
				±500	100mΩ ≤ R < 1Ω	

- For non-standard parts, please contact our sales dept.
- Operating Temperature Range :-55°C+ 155°C

## ■ Jumper Electrical Specifications

Type	ETRW62(0612)	ETRW02(1020)	ETRW82(1218)	ETRW15(1225)	ETRW23(2030)
Jumper Resistance Value	20mΩMax				
Jumper Rated Current	4A	6A	6A	8A	10A
Max. Over Load Current<1 Second and 1 times	15A	22A	22A	30A	35A

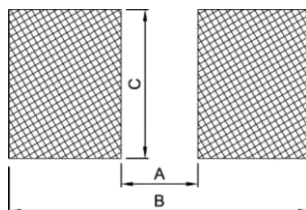
## ■ Type Dimension



## ■ Dimension(Unit: mm)

Type	L	W	H	I1	I2
ETRW62(0612)	1.60±0.20	3.20±0.20	0.55±0.10	0.30±0.20	0.50±0.20
ETRW02(1020)	2.50±0.20	5.00±0.20	0.55±0.10	0.40±0.20	0.75±0.20
ETRW82(1218)	3.10±0.10	4.60±0.10	0.55±0.05	0.40±0.20	0.40±0.20
ETRW15(1225)	3.20±0.20	6.50±0.20	0.55±0.20	0.40±0.20	0.75±0.20
ETRW23(2030)	5.10±0.10	7.60±0.10	1.06±0.10	0.80±0.20	0.80±0.20

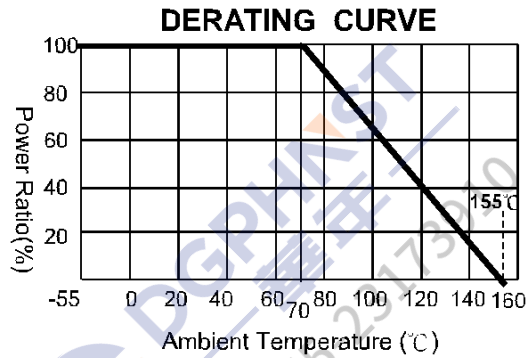
## ■ Recommend Land Pattern Design



## ■ Dimension

Type	ETRW62(0612)	ETRW02(1020)	ETRW82(1218)	ETRW15(1225)	ETRW23(2030)
A	0.60	0.75	2.04	0.85	3.50
B	2.90	3.40	4.24	3.70	7.50
C	3.20	5.00	4.80	6.40	7.80

## ■ Power Derating Curve



Power rating or current rating is in the case based on continuous full-load at ambient temperature of 70°C . For operation at ambient temperature in excess of 70°C , the load should be derated in accordance with figure of derating Curve.

## ■ Voltage Rating or Current Rating

**Resistance Range:**  $\geq 1\Omega$

**Rated Voltage:** The resistor shall have a DC continuous working voltage or a RMS AC continuous working voltage at commercial-line frequency and wave form corresponding to the power rating, as determined formula as following.

$$E(RCWV) = \sqrt{P * R}$$

E=Rated voltage(V)

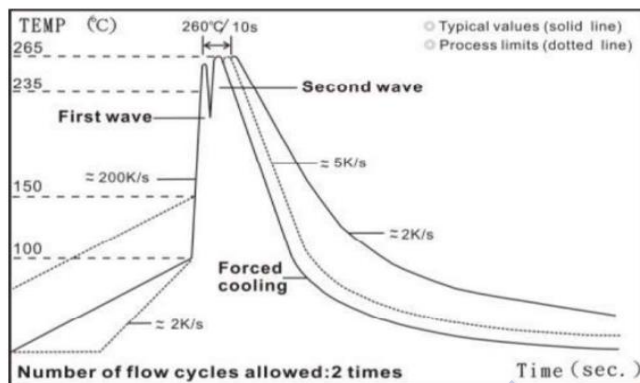
P=Power Rating(W)

R=Nominal Resistance( $\Omega$ )

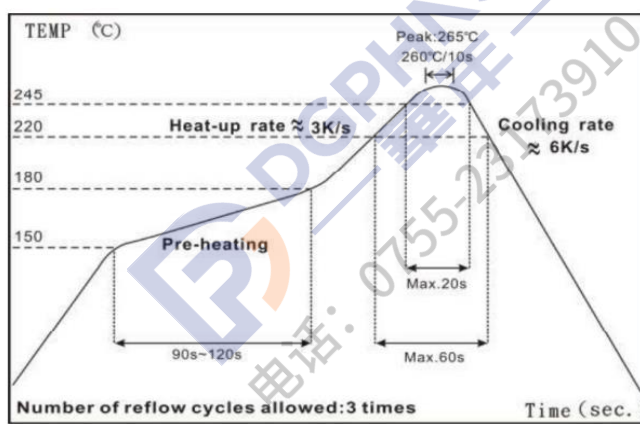
## ■ Reliability Test and Requirement

Test Item	Test Method	procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS-C-5201-1 4.8 IEC-60115-1 4.8	At 25°C/-55°C and 25°C/+155°C,25°C is the reference temperature	As spec
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	2.5 times RCWV or Max. Overload voltage whichever is less for 5 seconds. Jumper : Over Load Current for 5 seconds 0612=10A 1020=15 1218=15A 1225=20A 2030=25A	1% and below : ±(1.0%+0.05Ω) 2% 5% : ±(2.0%+0.10Ω) Jumper :Max 0.02Ω after test
Leaching	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1	260±5°C for 30 seconds.	Individual leaching area ≤5% Total leaching area≤10%
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5°C for 10 seconds.	1% and below : ±(0.5%+0.05Ω) 2% 5% : ±(1.0%+0.10Ω)
Rapid Change of Temperature	JIS-C-5201-1 4.19 IEC-60115-1 4.19	-55°C to +155°C,5 cycles	1% and below : ±(1.0%+0.05Ω) 2% 5% : ±(2.0%+0.10Ω)
Resistance to Solvent	JIS-C-5201-1 4.29	The tested resistor be immersed into isopropyl alcohol of 20-25°C for 60 secs. Then the resistor is left in the room for 48 hrs.	1% and below : ±(0.5%+0.05Ω) 2% 5% : ±(0.5%+0.05Ω) Jumper :Max 0.02Ω after test
Damp Heat with Load	JIS-C-5201-1 4.24 IEC-60115-1 4.24	40±2 °C , 90~95% R.H. RCWV or Max. working voltage whichever is less for 1000hrs with 1.5hrs "ON" and 0.5hr "OFF"	1% and below: ±(1.0%+0.05Ω) 2% 5%: ±(2.0%+0.05Ω) Value<1Ω: ±(2.0%+0.05Ω) Jumper: Max 0.05Ω after test
Load Life(Endurance)	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	70±2 °C ,RCWV or Max. working voltage whichever is Less for 1000hrs with 1.5hrs "ON" and 0.5hr "OFF"	1% and below: ±(1.0%+0.05Ω) 2% 5%: ±(3.0%+0.05Ω) Value<1Ω: ±(2.0%+0.05Ω) Jumper: Max 0.05Ω after test
Insulation Resistance	JIS-C-5201-1 4.6 IEC-60115-1 4.6	Apply 100VDC for 1 minute.	≥10GΩ
Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	Bending once for 5 seconds D:0612 1020 1218 1225 2030=2mm	1% and below : ±(1.0%+0.05Ω) 2% 5% : ±(1.0%+0.05Ω)

## ■ Wave Solder Temperature condition



## ■ Solder reflow Temperature Condition



## ■ Parts Number System



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①: ETRW Series

②: Size Code: 36=0603,58=0508, 62=0612,02=1020, 82=1218,15=1225, 23=2030

③: Power Rating:

N=1/20W,Y=1/16W,X=1/10W,W=1/8W,M=1/6W,P=1/5W,V=1/4W,O=1/3W;U=1/2W,Q=3/4W,L=3/10W  
T=1W,A=1.5W,S=2W,B=2.5W,R=3W,C=3.5W,H=4W,D=5W,G=6W,E=7W

④: Resistor Value: 10mΩ=R010; 100mΩ=R100; 1K=1K00; 1R=1R00; 1M=1M00

⑤: Tolerance Code: J = ± 5%, F = ± 1%

⑥: Tape & Reel Packing :P=Paper Taping(0612) E=Embossed Taping(1020-2030)

⑦: Reel quantity: 01=1000PCS ;04=4000PCS; 05=5000PCS

⑧: Other

## ■ Packaging Information

Type	Size	
ETRW62(0612)	7"	5000pcs/reel
ETRW02(1020)	7"	4000pcs/reel
ETRW82(1218)	7"	4000pcs/reel
ETRW15(1225)	7"	4000pcs/reel
ETRW23(2030)	7"	1000pcs/reel

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