Matel Type-current Shunt Resistors – ESRC Series

◆ General

- Scope

  This specification is available for Alloy Shunt Resistors manufactured by ELLON Electro-Mechanics Co., Ltd.

- Quality

  The resistor is manufactured by highly quality-controlled process and guaranteed high reliability, it meets RoHS & Halogen-Free requirement.

- Standard measuring conditions

  Temperature 20±2℃, Humidity 65±5%.Being no doubt about the judgment, measurements can be made within the following Temperature 5～35℃, Humidity 45～85%.

◆ Applications

- Current sensor for power hybrid applications
- Vacuum Electron-beam welding craf , pure copper electrode, Ideal solution for current detection applications.
- Bridge-shaped structure, conducive to heat dissipation, high power, superb pulse load capability.
- Frequency converters
- Power modules
- Ultra-low EMF
- Communication system
- Automatic control power supply
- High current applications for the automotive

◆ Specification

- Resistance Value: 1mΩ~20mΩ
- Value accuracy: ±1%(F), ±5%(J)
- Resistance temperature coefficient : MIN 50PPM/℃
- Working temperature range: -55℃+170℃
- Inductors:<3n H.
- EMV(0-100℃):<1μV/℃
- Power(P70℃):MAX7W
- AEC-Q200 Reliability Testing Passed

◆ Part Number System

ESRC	42	F	7W0	R001	M	02	G
ESRC	42=4320 41=4312	F = ±1% G=± 2% J=± 5%	7W0=7Watt 4W0=4Watt 12W=12Watt	R001=1mΩ --- R005=5mΩ	F:FeCrAl M:MnCu K:Karma	01=1000 02=2000	S=standard G=High power

(1): ESR Series

(2): Size Code: 41=4312, 42=4320

(3): Tolerance Code: F = ±1%,G=± 2%, J=± 5%

(4): Power Rating: Ex. 7W0=7Watt; 4W0=4Watt;

(5): Resistance Code: R001=1mΩ, R002=2mΩ; R005=5mΩ

(6): Materials: F:FeCrAl; M:MnCu; K:Karma

(7): Optional Piece reel quantity： 02=2000PCS; 01=1000PCS; 04=4000PCS;

(8): Remarks: Interior code

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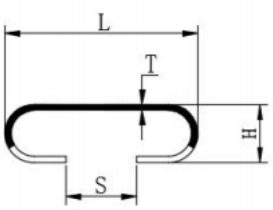
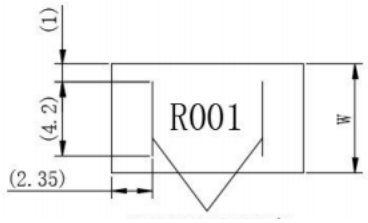
Standard Electrical Specifications

Item / Type	Rated Power at 70℃	Materials	T.C.R. (PPM/℃)	Resistance Range F(±1%) G(+2%)J(±5%)	T(mm)
ESRC41	4W	M	±100	2mΩ	0.85±0.1
	4W	M	±100	3mΩ	0.60±0.1
	4W	M	±100	5mΩ	0.35±0.1
	4W	K	±50	10mΩ	0.6±0.1
	4W	K	±50	5mΩ	0.3±0.1
ESRC42	12W	M	±100	1mΩ	0.85±0.1
	10W	M	±100	2mΩ	0.43±0.1
	9W	K	±50	5mΩ	0.60±0.1
	9W	K	±50	6mΩ	0.50±0.1
	8W	K	±50	8mΩ	0.38±0.1
	7W	K	±50	10mR	0.30±0.1

- For non-standard parts, please contact our sales dept.
- Power rating is guaranteed for use an aluminum substrate.
- Operating Temperature Range :-55℃~+170℃

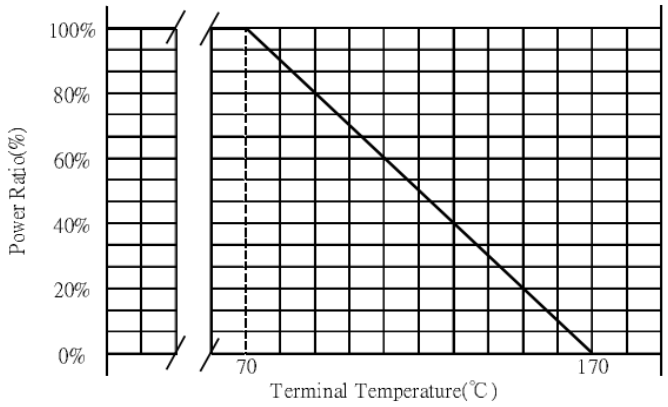
◆ **Type Dimension**

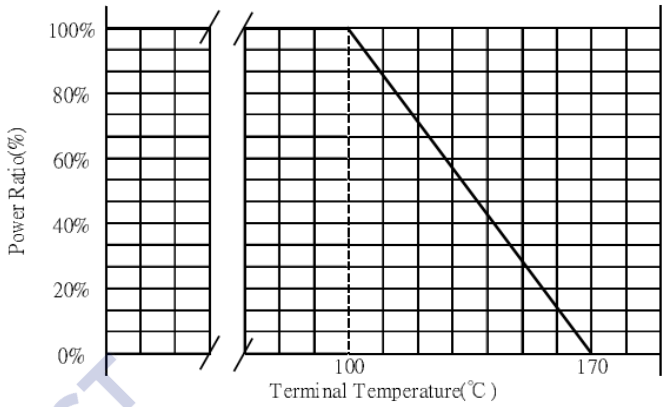




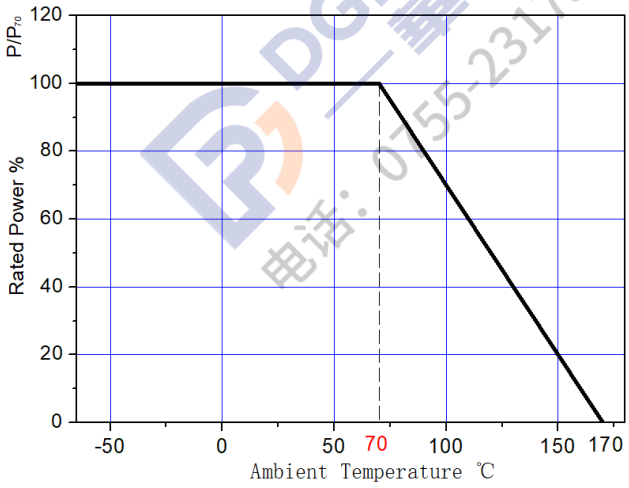
Type	Resistance	L(mm)	w(mm)	S(mm)	H(mm)
ESRC41	2mΩ~20mΩ	11±0.3	3.15±0.3	4.0±0.3	3.3.0±0.25
ESRC42	1mΩ~20mΩ	11±0.3	6.2±0.3	4.0±0.3	3.3.0±0.25

◆ Power Derating Curve

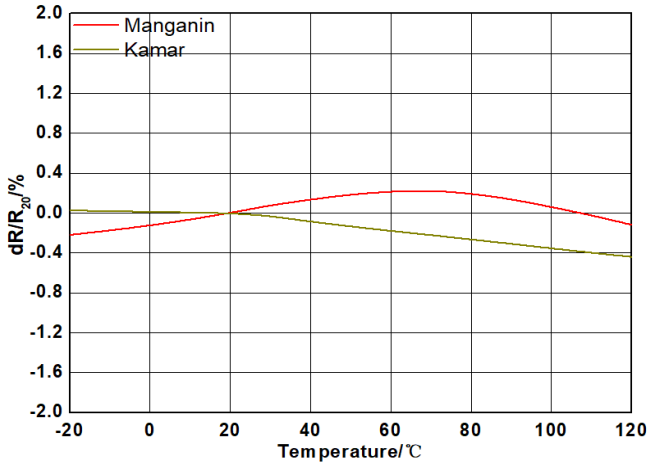




◆ Power Derating



◆ TCR Derating



◆ Rated Voltage:

The rated voltage is calculated by the following formula:

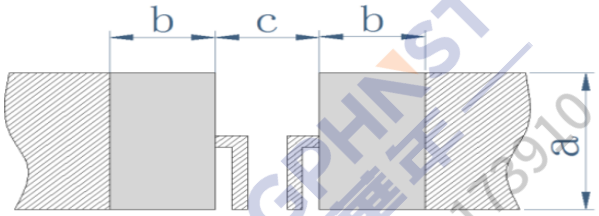
$$E(RCWV) = \sqrt{P * R}$$

E=Rated Voltage(V)

P=Rated Power(W)

R=Resistance Value(R)

◆ Recommended Solder Pad Layout



Unit: mm

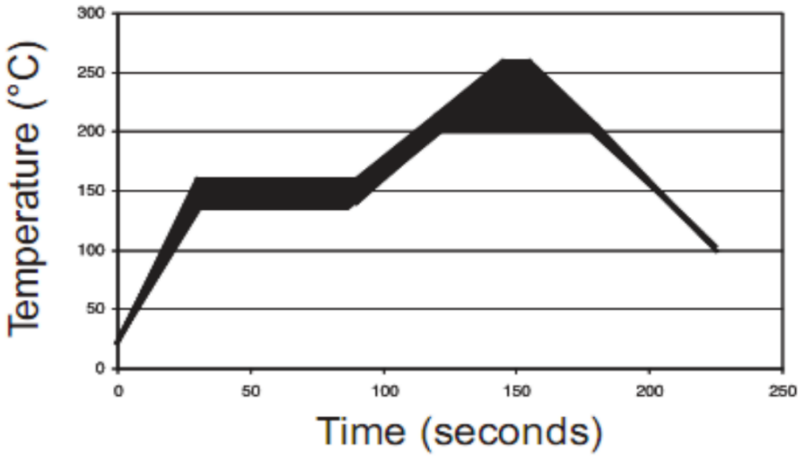
TYPE	Resistance	a	b	c
ESRC41	2mΩ~20mΩ	4.2	5	2
ESRC42	1mΩ~10mΩ	7.2	5	2

◆ Recommend Soldering Conditions:

Peaks reflow temperatures and durations

- Reflow Peak = 260 max for 10 sec
- Not suitable for wave soldering

Recommended IR Reflow Profile



◆ Storage Temperature

Temperature 20~30℃, Humidity 40~80%

◆ Packaging

Size EIA	ESRC41	ESRC42
Standard Packing Quantity (pcs /reel)	2000	1000