

L4T Four Terminal High Precision Current Sense Resistor



Available in two sizes ARCOL's. Four Terminal High Precision Current Sense Resistor offers High Power in a small package utilising advanced thick film technology.

Applications

- Power Management Applications
- Switching Power Supply
- Over current Protection
- Portable Devices



Characteristics

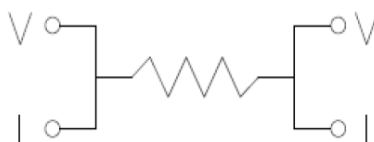
Item	Requirement	Test Method
TCR	As Spec	+25/-55/+25/+125/25°C
Short Time Overload	$\pm(0.5\%+0.0005\Omega)$	RCWV*2.5 or Max. Overload voltage whichever is lower for 5 seconds
Insulation Resistance	>1000M Ω	Apply 100Vdc for 1 minute
Endurance	$\pm(0.5\%+0.0005\Omega)$	70 $\pm$ 2°,RCWV for 1000hrs with 1.5 hrs ON and 0.5hrs OFF
Damp Heat with Load	$\pm(0.5\%+0.0005\Omega)$	40 $\pm$ 2°,90~95% R.H. RCWV for 1000 hrs with 1.5 hrs ON and 0.5 hrs OFF
Bending Strength	$\pm(0.5\%+0.0005\Omega)$	Bending amplitude 3mm for 10 seconds
Solderability		245 $\pm$ 5°C for 3 seconds
Dielectric Withstand Voltage		Apply Max. Overload Voltage for 1 minute
Resistance to Soldering Heat	$\pm(0.5\%+0.0005\Omega)$	260 $\pm$ 5°C for 10seconds
Rapid change of temperature	$\pm(0.5\%+0.0005\Omega)$	-55°C ~ 155°C, 5 cycles

RCWV(Rated continuous working voltage)= $\sqrt{(P \cdot R)}$ or Max. Operating voltage whichever is lower.

- Reference Standards: MIL-STD-202, JIS-C 5201
- Storage Temperature: 15 ~ 28°C; Humidity <80% RH

Schematic Diagram

- V = Voltage Terminal
- I = Current Terminal



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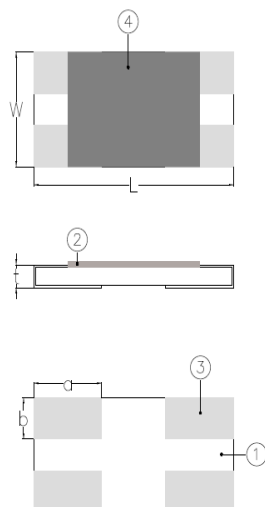
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Construction



1	Alumina Substrate	4	Protection Coat
2	Resistor Layer	5	Barrier Layer
3	Electrode		

Dimensions(mm)

Type	Size (Inch)	L	W	T	a	b	Weight (g) (1000 pcs)
L4T12	1206	3.0±0.2	1.6±0.2	0.5±0.15	1.0±0.2	0.55±0.2	10
L4T20	2010	5.0±0.2	2.5±0.2	0.5±0.15	1.7±0.2	0.9±0.2	29

Item Type	Power Rating at 70°C	Operating Temp Range	Resistance Range (mΩ)				TCR(PPM/°C)
			±0.5%	±1%	±2%	±5%	
L4T12 (1206)	1/2W	-55 ~ + 155°C	10 - 20				±50 (E) ±75 (F)
L4T20 (2010)	3/4W	-55 ~ + 155°C	10 - 20				±50 (E) ±75 (F)

Operating Voltage = $\sqrt{P \cdot R}$ or Max operating voltage listed above, whichever is lower.

Overload Voltage = $2.5\sqrt{P \cdot R}$ or Max overload voltage listed above, whichever is lower.

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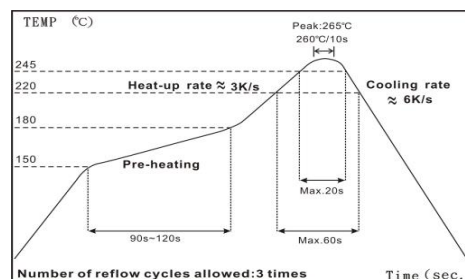
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Reflow Soldering Profile

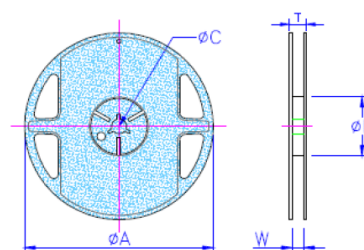
IR Reflow Soldering

Time of IR reflow soldering at maximum temperature point 260°C:10s

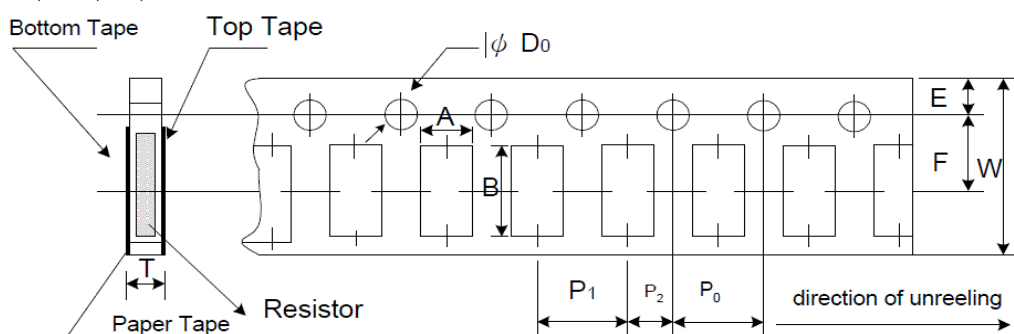


Packing Quantity & Reel Specifications(mm)

Type	ϕA	ϕB	ϕC	W	T	Paper Tape (EA)	Emboss Plastic Tape (EA)
L4T12	178.0 $\pm$ 1.0	60.0 $\pm$ 1.0	13.5 $\pm$ 0.7	9.5 $\pm$ 1.0	11.5 $\pm$ 1.0	5,000	
L4T20	178.0 $\pm$ 1.0	60.0 $\pm$ 1.0	13.5 $\pm$ 0.7	13.5 $\pm$ 1.0	15.5 $\pm$ 1.0		4,000

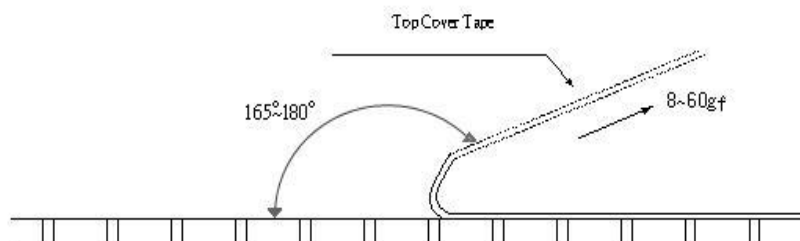


Paper Tape Specifications(mm)



Type	A	B	W	E	F	P ₀	P ₁	P ₂	ϕD_0	T
L4T12	2.00 $\pm$ 0.05	3.55 $\pm$ 0.05	8.00 $\pm$ 0.10	1.75 $\pm$ 0.05	3.5 $\pm$ 0.05	4.00 $\pm$ 0.10	4.00 $\pm$ 0.10	2.00 $\pm$ 0.05	1.55 $\pm$ 0.05	0.75 $\pm$ 0.05

- Peel force of top cover tape
- The peel speed shall be about 300mm/min $\pm$ 5%
- The peel force of top cover tape shall be between 8gf to 80gf



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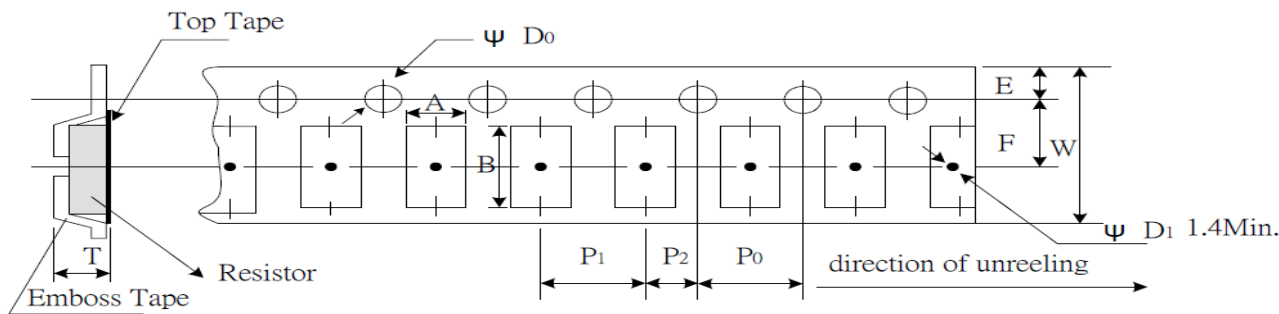
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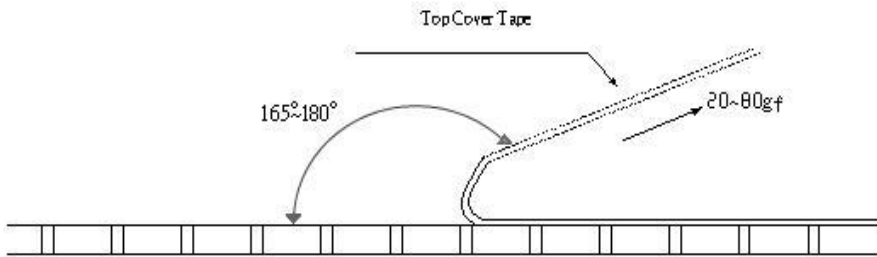


Emboss Plastic Tape Specifications(mm)



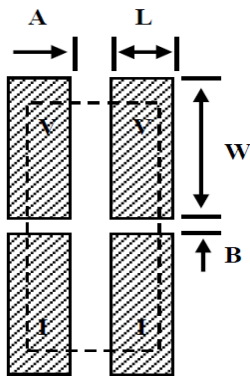
Type	A	B	W	E	F	P0	P1	P2	øD0	T
L4T20	2.85±0.10	5.45±0.10	12.0±0.10	1.75±0.05	5.5±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50±0.10	1.00±0.20

- Peel force of top cover tape
- The peel speed shall be about 300mm/min±5%
- The peel force of top cover tape shall be between 20gf to 80gf



Recommended Pad layout(mm)

Type	L	W	A	B
L4T12	1.75	1.10	1.00	0.30
L4T20	2.55	1.55	1.40	0.50



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Ordering Procedure

Standard Resistor: Series(L4T12/L4T20), TCR (50PPM (E), 75PPM (F)), Resistance Value(10mΩ - 20mΩ), Tolerance,RoHs (E),Tape(R)

Standard Part Numbers

1%	0.5%
L4T12FR010FER	L4T12FR010DER
L4T12FR015FER	L4T12FR015DER
L4T12FR020FER	L4T12FR020DER
L4T20FR010FER	L4T20FR010DER
L4T20FR015FER	L4T20FR015DER
L4T20FR020FER	L4T20FR020DER

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