



Lead-Free Current Sensing Resistors
EBR Series
(Halogen-Free)
AEC-Q 200-Ver D qualified

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1. Scope :

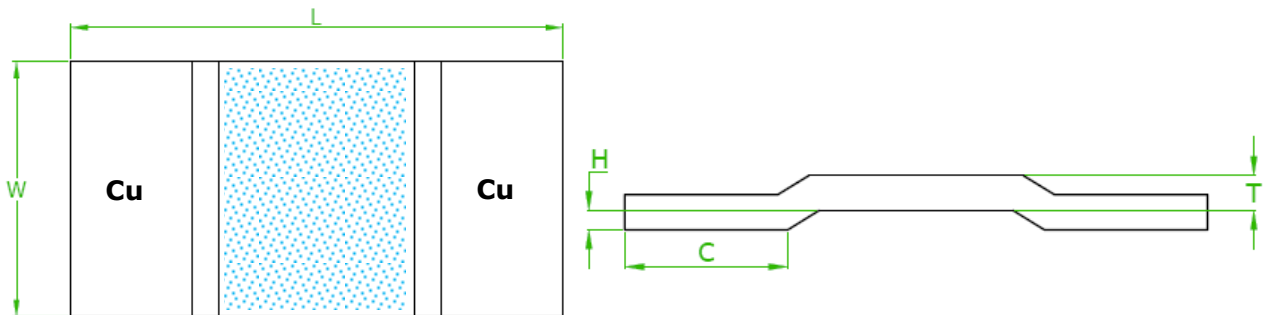
This specification applied to the products of Lead-Free current sensing resistor of metal alloy for Lead-Free EBR series manufactured by TA-I TECHNOLOGY CO.,LTD.

2. Type Designation :

EBR59	F	E	R001
Series No.	Tolerance	Package	Resistance
39→3920 59→5930	F = ± 1% G = ± 2% J = ± 5%	E= Embossed	R001=1 mΩ R50M=0.5 mΩ

Note: Load capacity (Power) refer 4.0 on page 2

3. Dimension :



Series	L	W	C	H	T
EBR59	15.00±0.20	7.6±0.40	4.2±0.3	0.5±0.1	Refer 4.0 on page 2
EBR39	10.00±0.30	5.2±0.30	2.2±0.2	0.5±0.1	Refer 4.0 on page 2

UNIT : mm



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4. Features:

Series	Size	Resistance Value (mΩ)	T Thickness (mm)	P ₇₀ Power (W)	Operation Temperature Range	TCR (ppm/°C)	Tolerance
EBR39	3920	0.2	1.50±0.1	5	-55°C~+170°C	±50	±1% ±2% ±5%
		0.3	1.35±0.1	5			
		0.5	0.81±0.1	5			
		1	1.22±0.1	4			
		2	0.62±0.1	4			
		3	0.41±0.1	4			
EBR59	5930	0.2	1.5±0.1	6			
		0.5	0.6±0.1	6			
		1	0.94±0.1	6			
		2	0.46±0.1	5			
		3	0.31±0.1	5			



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5. Reliability Tests:

Test Items	Reference	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1 4.8	+25 ~ 125°C	Refer 4.0
High Temperature Exposure(Storage)	MIL-STD-202 Method 108	T=125°C ,1000hrs,Measurement at 24hrs after test conclusion.	< ±1%
Low temperature operation	IEC60115-1 4.23.4	-55 °C for 45 min	< ±1%
Temperature Cycling	JESD22 Method JA-104	1000Cycle (-55°C to 125 °C),Measurement at 24hrs after test conclusion.	< ±1%
Short time overload	IEC60115-1 4.13	5 X rated power for 5s	< ±0.5%
Biased Humidity	MIL-STD-202 Method 103	10% Rated voltage at 85 °C ,RH:85% ,1000Hrs, Measurement at 24hrs after test conclusion.	< ±0.5%
Operation life	MIL-STD-202 Method 108	1000 h at +70 °C, 1.5 h "ON", 0.5 h "OFF"	< ±1%
Resistance to Soldering Heat	IEC60115-1 4.18	T=260+/-5°C solder,10+/-1 sec dwell	< ±0.5%
Mechanical Shock	MIL-STD-202 Method 213	100g's , Normal duration is 6ms , half sine shock pulse	< ±0.5%
Resistance to vibration	MIL-STD-202 Method 204	5g's for 20min.12cycles, 10-2000Hz	<±0.5%
Board Flex	AEC-Q200-005	Min 2mm deflection ,60sec.	< ±0.5%
Flammability	UL-94	V-0 or V-1are acceptable, Electrical test not required	

5.1 Rated Current & Voltage

The rated Current and Voltage are calculated by the following formula:

$$I = \sqrt{P \div R}$$

I: Rated Current (A)

P: Rated Power (W)

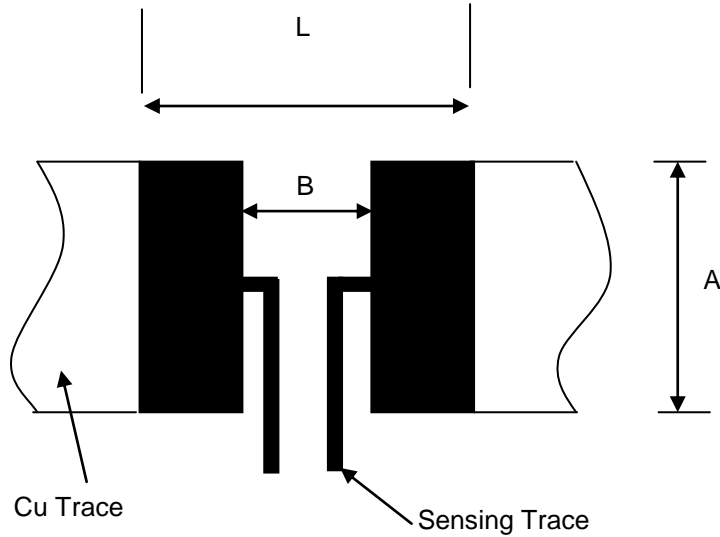
R: Resistance Value(Ω)



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6. Recommended Solder Pad Dimension

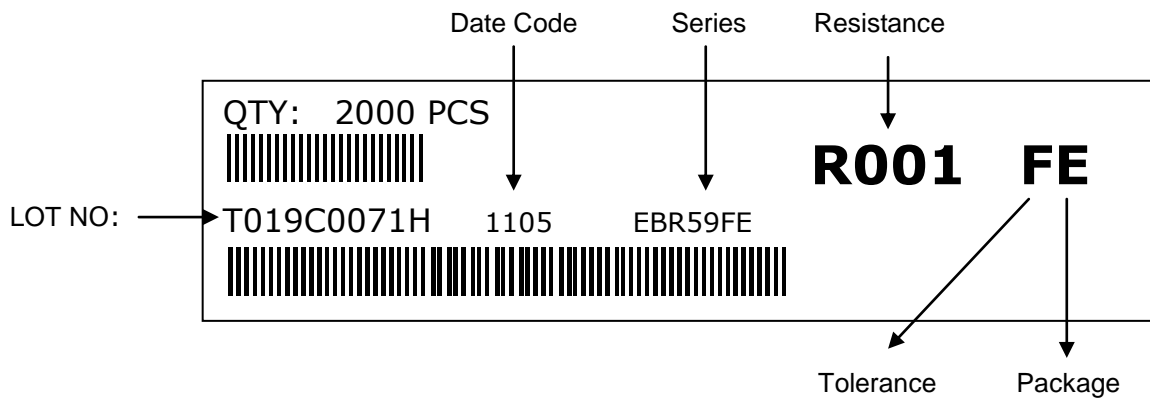


Unit: mm

Series	Resistance (mΩ)	A	L	B
EBR39	0.2 ~ 3	6.2	11	5.6
EBR59	0.2 ~ 3	8.75	16	5.6

Note: *The copper foil minimum thickness of PCB needs 3 oz

7. Label:

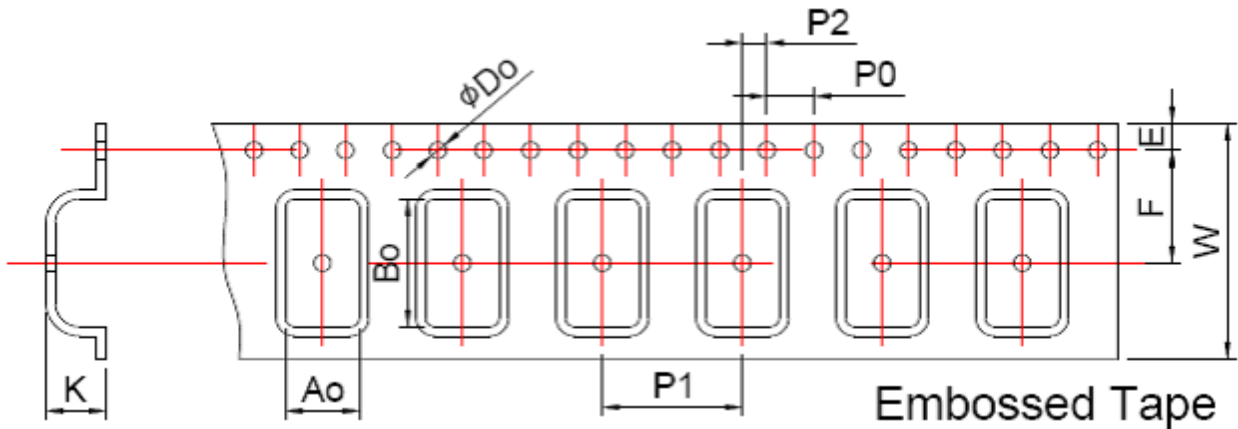




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8. Package



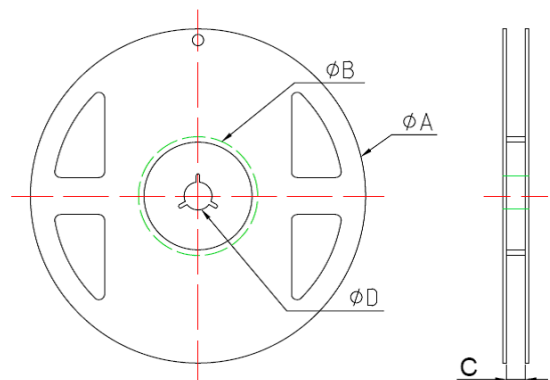
Tape packaging dimension											Unit: mm
Packing	Type	A0	B0	W	F	E	P1	P2	P0	D0	K
Embossed Tape	3920	6.0	11.0	24.0	11.2	1.55	12.0	6.0	12.0	1.5	2.0
	5930	8.3	15.6	24.0	10.8	1.55	12.0	6.0	12.0	1.5	2.4
Tolerance		± 0.2	± 0.20	± 0.20	± 0.10	± 0.10	± 0.10	± 0.10	± 0.10	± 0.10	± 0.10

9. Reel Specification

Number of Package		
Series	EBR39	EBR59
Pieces/Package	2500	2000

Unit: mm

Series	ϕA	ϕB	ϕC	D
5930	330 ± 2.0	100 ± 1.0	25.2 ± 0.5	13.0 ± 0.2



10. Storage Conditions:

Temperature: $5^{\circ}\text{C} \sim 35^{\circ}\text{C}$, Humidity: 40%~75%

11. Shelf Life:

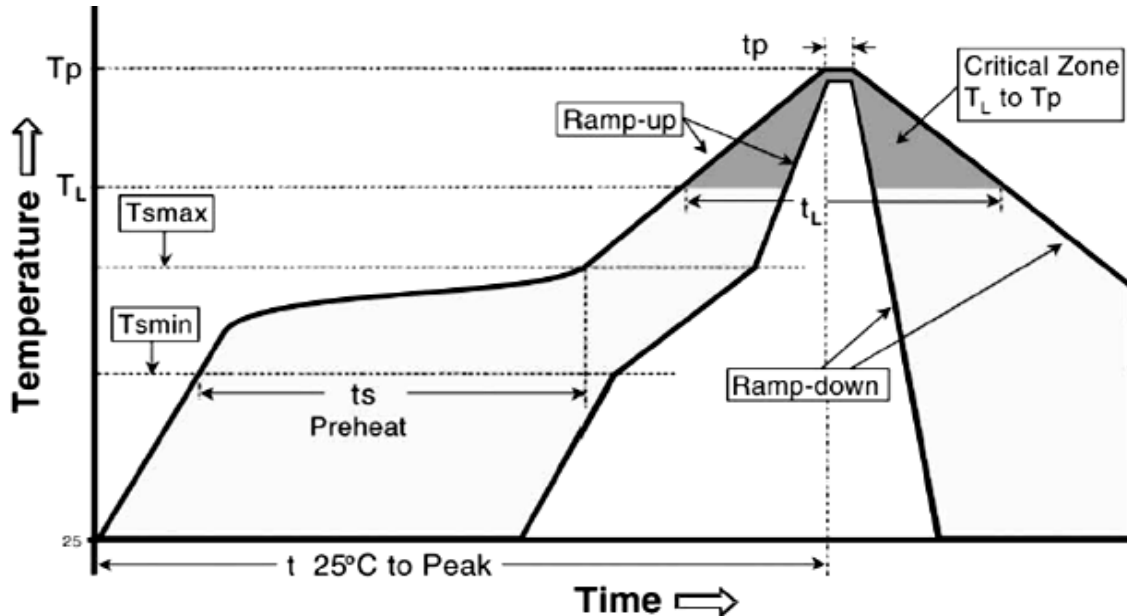
2 years from manufacturing date.



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12. Recommend IR – Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Alloyed Re-flow times : 3 times

Remark : To avoid discoloration phenomena of chip on terminal electrodes, please use N2 Re-flow furnace .

Iron Solder:350±10°C , 3+1/-0 sec, 1 time

Profile Feature	Lead (Pb)-Free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C / second max.
Preheat - Temperature Min (T _{smin}) - Temperature Max (T _{smax}) - Time (T _{smin} to T _{smax}) (ts)	150°C 200°C 60 -150 seconds
Time maintained above : - Temperature (T _L) - Time (T _L)	217°C 60-120 seconds
Peak Temperature (T _p)	260°C
Time within $\begin{matrix} +0 \\ -5 \end{matrix}$ °C of actual Peak Temperature (tp) ²	10 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8mimutes max.



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13. ECN

Engineering Change Notice: The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.