

SINLOON®

AEC-Q200 低阻值貼片電阻
Resistance Range: 10m - 990m Ω

AQLR Series
AEC-Q200 Low Ohm Chip Resistor

□ FEATURE

- ◆ AEC-Q200 rev. D compliant
- ◆ RoHS compliant version available
- ◆ Leadless surface mount construction
- ◆ Reliability high quality and fast delivery
- ◆ Reduction of assembly costs matching with placement machines
- ◆ Tolerance: ±1% , ±5%; Rated power 1W - 2512.

□ Application

- ◆ Automotive electronic
- ◆ Appliance: Air conditioner, Refrigerator
- ◆ Entertainment: Stereo, TV tuners, Tape recorder.
- ◆ Indoor lighting, Central door locking, Wiper module
- ◆ Communication equipment: Cell phone, Fax machine
- ◆ Power equipment: Power supply, illumination equipment.
- ◆ Measuring instrument: Electric meter, Navigation equipment.

□ Ordering Information

Example: AQLR02FJR005

Power	Size	Type	Tolerance	TCR/°C	E24	E96	Package
1/16W	0402	AQLR02	F = ±1% G = ±2% J = ±5%	ppm	Resistance (IEC-63)		10K Reel
1/10W	0603	AQLR03		G = ±300	m5=R0005	5K Reel	
1/8W	0805	AQLR05		H = ±400	5m=R005	5K Reel	
1/4W	1206	AQLR06		I = ±500	10m=R010	5K Reel	
1/3W	1210	AQLR10		J = ±600	100m=R100	5K Reel	
1/2W	1812	AQLR12		U = ±700	1000m=1R0	5K Reel	
1/2W	2010	AQLR20		V = ±800		5K Reel	
1W	1218	AQLR18		Y = ±1000		4K Reel	
1W	2512	AQLR25				4K Reel	

□ Dimension

Unit: mm

Power	Size	Type	L	W	H	D1	D2	Figure
1/16W	0402	AQLR02	1.0±0.10	0.50±0.05	0.35±0.05	0.20±0.10	0.25±0.10	Fig-1
1/10W	0603	AQLR03	1.6±0.15	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20	Fig-1
1/8W	0805	AQLR05	2.0±0.15	1.25±0.10	0.50±0.10	0.35±0.20	0.40±0.20	Fig-1
1/4W	1206	AQLR06	3.1±0.10	1.55±0.10	0.55±0.10	0.45±0.20	0.40±0.20	Fig-1
1/3W	1210	AQLR10	3.1±0.10	2.55±0.10	0.55±0.10	0.50±0.20	0.50±0.20	Fig-1
1/2W	1812	AQLR12	4.50 ±0.20	3.00 ±0.20	0.55 ±0.10	0.45±0.20	0.40±0.20	Fig-1
1/2W	2010	AQLR20	5.0±0.20	2.50±0.20	0.55±0.10	0.60±0.20	0.50±0.20	Fig-1
1W	2512	AQLR18	3.1±0.10	4.60±0.20	0.55±0.10	0.45±0.20	0.40±0.20	Fig-1
1W	1218	AQLR25	6.3±0.20	3.20±0.20	0.55±0.10	0.60±0.20	0.50±0.20	Fig-2

Fig-1

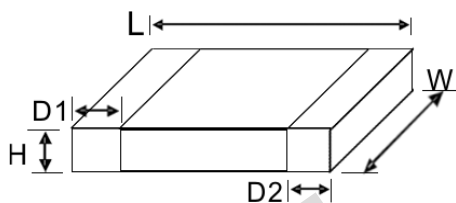


Fig-2

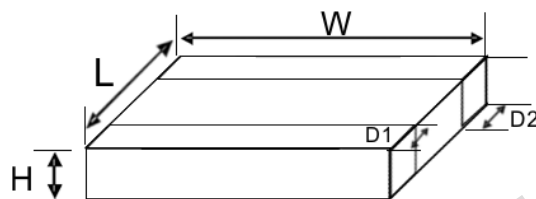
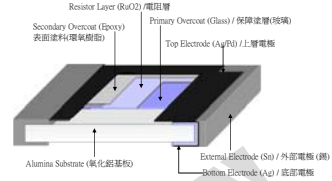


Figure:



Construction



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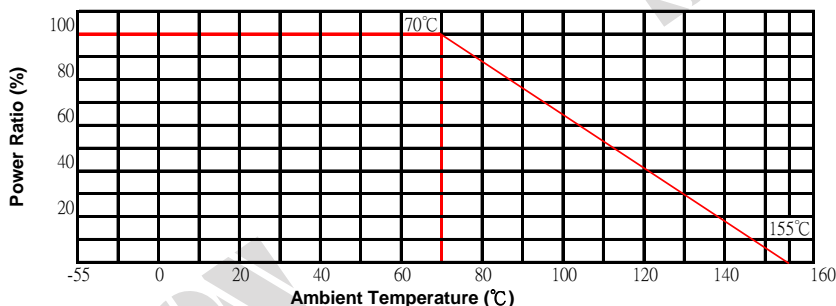
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□ Standard General Electrical Specification

Rated at 70°C	Case	Type	Rated Voltage(V)	Max. Voltage		Resistance Range (mΩ)	Tolerance	T.C.R (ppm/°C)
				Working	Overload			
1/16W	0402	AQLR02	0.17-0.25	0.25V	0.624V	470~990	±1%;±5%	±800
1/10W	0603	AQLR03	0.1-0.31	0.31V	0.775V	100~330	±1%;±5%	±800
						331~510		±600
						511~990		±400
1/8W	0805	AQLR05	0.04-0.35	0.35V	0.875V	10~50	±1%;±5%	±1000
						51~100		±800
						101~330		±600
						331~990		±400
1/4W	1206	AQLR06	0.05-0.5	0.5V	1.25V	10~50	±1%;±5%	±800
						51~100		±600
						101~330		±500
						331~990		±400
1/3W	1210	AQLR10	0.06-0.57	0.57V	1.425V	10~50	±1%;±5%	±800
						51~100		±600
						101~330		±500
						331~990		±400
1/2W	1812	AQLR12	0.07-0.7	0.7V	1.75V	10~50	±1%;±5%	±800
						51~100		±600
						101~330		±500
						331~990		±400
1/2W	2010	AQLR20	0.07-0.7	0.7V	1.75V	10~50	±1%;±5%	±800
						51~100		±600
						101~330		±500
						331~990		±400
1W	1812	AQLR18	0.1-0.99	0.99V	2.475V	10~50	±1%;±5%	±800
						51~100		±600
						101~330		±500
						331~990		±400
1W	2512	AQLR25	0.1-0.99	0.99V	2.475V	10~50	±1%;±5%	±800
						51~100		±600
						101~330		±500
						331~990		±400
Jumper Resistance Value:				50m Ω Maximum				
Operating Temperature Range:				-55°C ~ +155°C				

◆ POWER DERATING CURVE



Others data not in the specification of data, please contact us.

如果你要求的規格不在本規格書裡請與我們聯絡。

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□ Test Procedures and Requirements

Test Item	Procedue	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R)	-55°C ~ +155°C, 20°C is the reference temperature	Refer to Rating	JIS C 5201-1 clause 4.8
Short Time Overload	General: 2.5 time RCWV or Max. Overload voltage for 5 seconds. Hifh Power: 2.5 times RCWV of Mac. Overload voltage for 2 seconds.	±1=±(1.0% +0.05Ω) ±5=±(2.0% +0.1Ω)	JIS C 5201-1 clause 4.13
IR Reflow	<p>The graph shows a temperature profile for IR reflow. The y-axis represents temperature in degrees Celsius, ranging from 50 to 250. The x-axis represents time. Key parameters include: a peak temperature of 250 ± 5 °C (or 230°C or higher), a pre-heating zone at 180°C, a heating time to 150°C, a dwell time of 90 ± 30 s at 150°C, and a soldering zone with a dwell time of 30 ± 10 s.</p>	±1=±(1.0% +0.05Ω) ±5=±(1.0% +0.05Ω)	SONY SS-00254
Leaching	260±5°C for 30 seconds	>95% Coverge	SONY SS-00254-9
Soldering Heat	260±5°C for 10 seconds	±1=±(1.0% +0.05Ω) ±5=±(1.0% +0.05Ω)	JIS C 5201-2 clause 4.18
Temperature Cycling	-55°C to +155°C 5 cycles	0.10%,0.50%,1% : ±(0.1%+0.05Ω) 2%,5%: ±(0.1%+0.01Ω)	JIS C 5201-2 clause 4.19
Electric Iron	Preheating temperature : 350±5°C Electric iron preheating time: 3+1/-0 second	±1=±(1.0% +0.05Ω) ±5=±(1.0% +0.05Ω)	SONY SS-00254-5
Resistance Solcent	The tested resistor be immersed into isproply alcohol of 20 ~ 25°C for 60 secs. Then the resistor is left in the room for 48 hours.	±1=±(1.0% +0.05Ω) ±5=±(1.0% +0.05Ω)	JIS C 5201-1 clause 4.29
Load life in Humidity	40±2°C, 90-95% R.H. or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"	0.10%,0.50%,1% : ±(0.1%+0.05Ω) 2%,5%: ±(2%+0.05Ω)	JIS C 5201-1 clause 4.24
Load life (Endurance)	70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"	0.10%,0.50%,1% : ±(0.1%+0.05Ω) 2%,5%: ±(2%+0.05Ω)	JIS C 5201-1 clause 4.24
Insulation Resistance	Max. Overload voltage for 1 mimute	≥ 10G Ω	JIS C 5201-1 clause 4.6

* In case resistors operating ambient temperature in excess of the temperature range -55°C ~+155°C power ratio will be derated in accordance with the figure as shown on the right.

□ VOLTAGE RATING OR CURRENT RATING

Resistance Range: ≥ 1Ω

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:

$$E = \text{Rated voltage (V)} \quad E = \sqrt{R \times P} \quad P = \text{Power rating (W)} \quad R = \text{Nominal resistance (Ω)}$$

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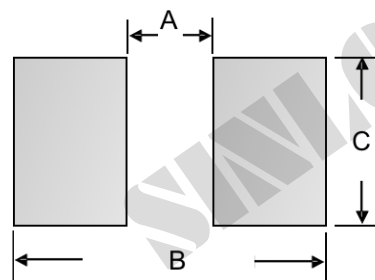
Reliability Test and Requirement

Test Item	Procedure	Requirement	Test Method
Temperature Cycling	1000 Cycles (-55°C ~ +125°C) Measurement at 24±4Hrs afted test conclusion.	0.1%, 0.5%, 1%: ± (0.5%+0.05Ω). 2%, 5%: ±(1.0%+0.1Ω)	JESD22 Method JA-104
Resistance to Solvent	Add. Aqueous wash chemical-OKEM clean or equivalent.	±1: ±(0.5% + 0.05Ω) ±5: ±(0.5% + 0.05Ω)	MIL-STD-202 Method 215
Biased Humidity	1000 hours 85°C/85%RH.	0.1%, 0.5%, 1%: ± (0.5%+0.05Ω). 2%, 5%: ±(2%+0.05Ω)	MIL-STD-202 Method 103
High Temperature Exposure (Storage)	1000 hours @T=125°C	0.1%, 0.5%, 1%: ± (0.5%+0.05Ω). 2%, 5%: ±(2%+0.05Ω)	MIL-STD-202 Method 108
Operation Life	125°C or Max. working voltage for 1000 hours with 1.5hrs [NO] and 0.5hrs [OFF]	0.1%, 0.5%, 1%: ± (0.5%+0.05Ω). 2%, 5%: ±(3%+0.1Ω)	MIL-STD-202 Method 108
External Visual	Electrical test not required. Inspect device construction, marking and workmanship.		MIL-STD-883 Method 2009
Mechanical Shock	Impact acceleration: 1500g Pulse duration: 0.5ms Number of shocks: 30 shocks (5 shocks for each face)	±1: ± (1.0%+0.05Ω) ±5: ± (2.0%+0.1Ω)	MIL-STD-202 Method 213
Vibration	5g's for 20min, 12 cycles each of 3 orientation	±1: ± (1.0%+0.05Ω) ±5: ± (2.0%+0.1Ω)	MIL-STD-202 Method 204
ESD	2000V	For the product %	AEC-Q200-002 or ISO/DIS 10605
Solderability	(1) 4hrs 155°C dry heat (2) 265± 5°C 10sec.	±1: ± (0.5%+0.05Ω) ±5: ± (1.0%+0.05Ω)	J-STD-002
Board Flex	Beading once for 60 seconds	±1: ± (1.0%+0.05Ω) ±5: ± (1.0%+0.05Ω)	AEC-Q200-005

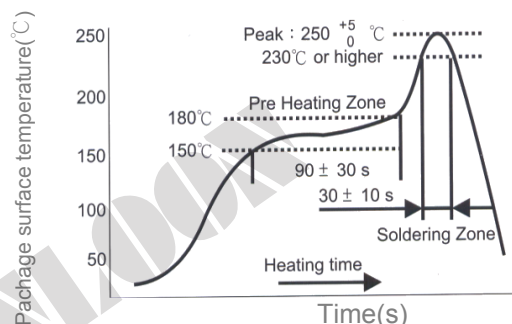
Recommend land pattern design (For reflow soldering)

Size	A	B	C
0402	0.60	1.60	0.70
0603	0.80	2.40	1.00
0805	1.30	2.90	1.45
1206	2.20	4.20	1.80
1210	2.00	4.40	2.70
1812	3.11	5.91	3.20
2010	3.80	6.60	2.70
1218	2.04	4.24	4.80
2512	4.90	8.10	3.40

unit: mm



Soldering Profile



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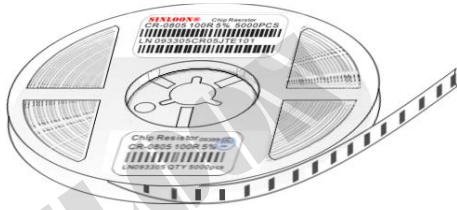
For Resistance According to IEC Publication 63

E24		E96							
10	33	100	133	178	237	316	422	562	750
11	36	102	137	182	243	324	432	576	768
12	39	105	140	187	249	332	442	590	787
13	43	107	143	191	255	340	453	604	806
15	47	110	147	196	261	348	464	619	825
16	51	113	150	200	267	357	475	634	845
18	56	115	154	205	274	365	487	649	866
20	62	118	158	210	280	374	499	665	887
22	68	121	162	215	287	383	511	681	909
24	75	124	165	221	294	392	523	698	931
27	82	127	169	226	301	402	536	715	953
30	91	130	174	232	309	412	549	732	976

PACKAGE SPECIFICATION

Power	Size	Type	Quantity(ea)			
			Paper Reel	Tape	Carton	
1/16W	0402	AQCR02	10,000 Pcs	7" Reel	100K pcs	600K pcs
1/10W	0603	AQCR03	5,000 Pcs	7" Reel	50K pcs	300K pcs
1/8W	0805	AQCR05	5,000 Pcs	7" Reel	50K pcs	300K pcs
1/4W	1206	AQCR06	5,000 Pcs	7" Reel	50K pcs	300K pcs
1/3W	1210	AQCR10	5,000 Pcs	7" Reel	50K pcs	300K pcs
1/2W	1812	AQCR12	5,000 Pcs	7" Reel	50K pcs	300K pcs
1/2W	2010	AQCR20	5,000 Pcs	7" Reel	50K pcs	300K pcs
1W	1218	AQCR18	5,000 Pcs	7" Reel	50K pcs	300K pcs
1W	2512	AQCR25	4,000 Pcs	7" Reel	40K pcs	240K pcs
2W	2030	AQCR30	2,000 Pcs	7" Reel	20K pcs	120K pcs

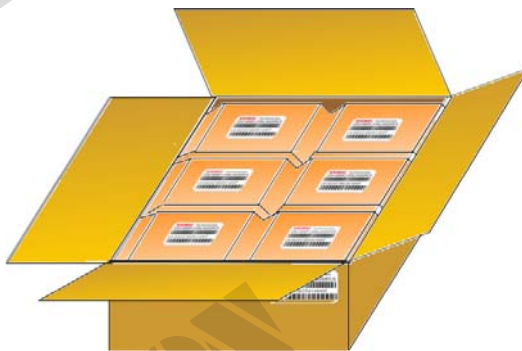
Plastic Reel



Inside box



Carton



※ 美隆電子產品規格特性參數的改變和更新不會另行通知。

※ Mayloon characteristic parameters of electronic product specification changes or updates without prior notice.