

SINLOON®

AEC-Q200 貼片電阻
Resistance Range: 10R-10M Ω

AQCR Series
AEC-Q200 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
- ◆ High precision tolerance: ±0.1% ; High power 2W - 2030.

□ 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: AQCR02FF1001

Power	Size	Type	Tolerance	TCR/°C	Resistance (IEC-63)		Package
					E24	E96	
1/16W	0402	AQCR02	B = ±0.1% D = ±0.5% F = ±1% G = ±2% J = ±5% K = ±10%	ppm E = ±100 F = ±200 G = ±300 H = ±400 I = ±500	1R=1R0	1R=1R00	10K Reel
1/10W	0603	AQCR03			10R=100	10R=10R0	5K Reel
1/8W	0805	AQCR05			100R=101	100R=100R	5K Reel
1/4W	1206	AQCR06			1K=102	1K=1001	5K Reel
1/3W	1210	AQCR10			10K=103	10K=1002	5K Reel
1/2W	1812	AQCR12			100K=104	100K=1003	5K Reel
1W	1218	AQCR18			1M=105	1M=1004	4K Reel
1W	2512	AQCR25			10M=106	10M=1005	4K Reel
2W	2030	AQCR30					4K Reel

□ Dimension

Unit: mm

Power	Size	Type	L	W	H	D1	D2	Figure
1/16W	0402	AQCR02	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	AQCR03	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	AQCR05	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	AQCR06	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	AQCR10	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	AQCR12	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	AQCR20	5.0±0.20	2.50±0.20	0.55±0.10	0.60±0.20	0.50±0.20	Fig-1
1W	2512	AQCR25	3.1±0.10	4.60±0.20	0.55±0.10	0.45±0.20	0.40±0.20	Fig-1
1W	1218	AQCR18	6.3±0.20	3.20±0.20	0.55±0.10	0.60±0.20	0.50±0.20	Fig-2
2W	2030	AQCR30	5.1±0.10	7.60±0.20	0.60±0.10	0.80±0.20	0.80±0.20	Fig-2

Fig-1

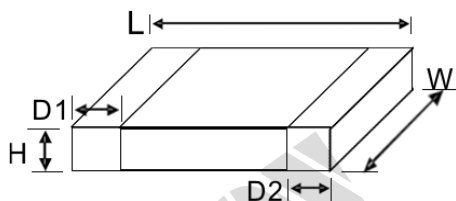


Fig-2

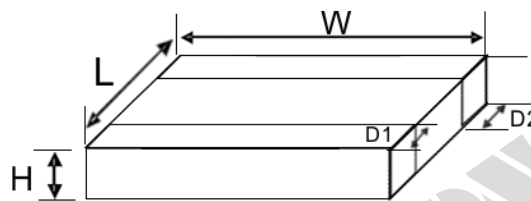
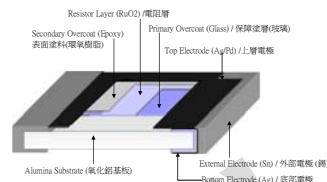


Figure:



Construction



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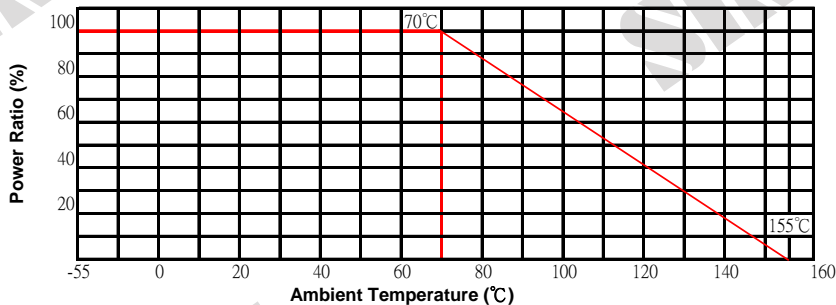
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AQCR Series
AEC-Q200 Chip Resistor

□ Standard General Electrical Specification

Size	Type	Rated at 70°C	Max. Voltage		T.C.R (ppm/°C)	Resistance Range (Ω) Tolerance		Jumper Current
			Working	Overload		0.1%,0.5%	±1%; ±2%; ±5%	
0402	AQCR02	1/16W	50V	100V	0~+400	---	1R-9.9R	1A
					±300	---	10R-990R	
					±200	10R-1M	1K~10M	
0603	AQCR03	1/10W	50V	100V	±400	---	1R-9.9R	1A
					±200	---	10R-10M	
					±100	10R-1M	10R-10M	
0805	AQCR05	1/8W	150V	300V	±400	---	1R-9.9R	1A
					±200	---	10R-10M	
					±100	10R-1M	10R-10M	
1206	AQCR06	1/4W	200V	400V	±400	---	1R-9.9R	2A
					±200	---	10R-10M	
					±100	10R-1M	10R-10M	
1210	AQCR10	1/3W	200V	400V	±400	---	1R-9.9R	2A
					±200	---	10R-10M	
					±100	10R-1M	10R-10M	
1812	AQCR12	1/2W	200V	400V	±400	---	1R-9.9R	2A
					±200	---	10R-10M	
					±100	10R-1M	10R-10M	
2010	AQCR20	1/2W	200V	400V	±400	---	1R-9.9R	2A
					±200	---	10R-10M	
					±100	10R-1M	10R-10M	
1218	AQCR18	1W	200V	400V	±400	---	1R-9.9R	2A
					±200	---	10R-10M	
					±100	10R-1M	10R-10M	
2512	AQCR25	1W	200V	400V	±400	---	1R-9.9R	2A
					±200	---	10R-10M	
					±100	10R-1M	10R-10M	
2030	AQCR30	2W	200V	400V	±400	---	1R-9.9R	2A
					±200	---	10R-10M	
					±100	10R-1M	10R-10M	
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.

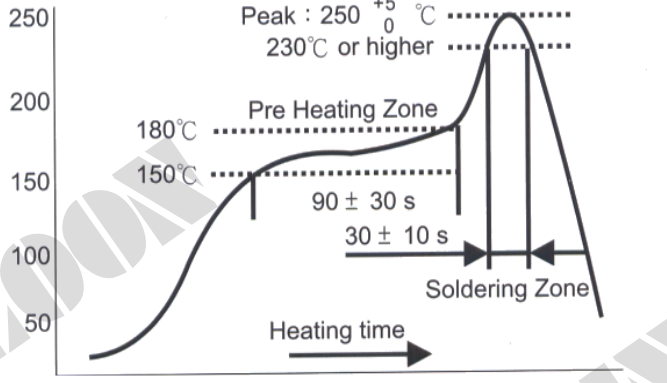
如果你要求的規格不在本規格書裡請與我們聯絡。

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Test Procedures and Requirements

Test Item	Procedure	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. High 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 °C (50 to 250), and the x-axis represents time. Key points include: a pre-heating zone starting at 150°C and reaching 180°C; a heating time of 90 ± 30 s; a soldering zone peaking at 250 ± 5 °C (or 230°C or higher) for 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% Coverage	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 Solvent	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 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 minute	≥ 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:

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

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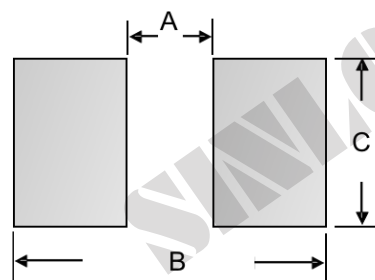
Reliability Test and Requirement

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 eath 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

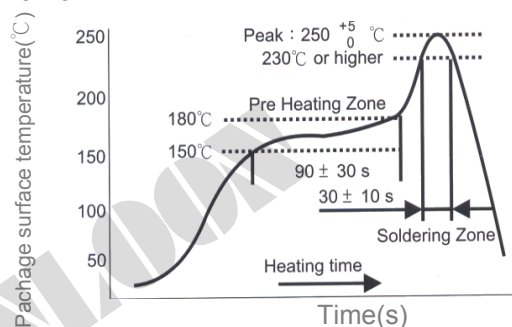
Recommend land pattern design (For reflow soldering)

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
2030	3.50	7.50	7.80

unit: mm



Soldering Profile



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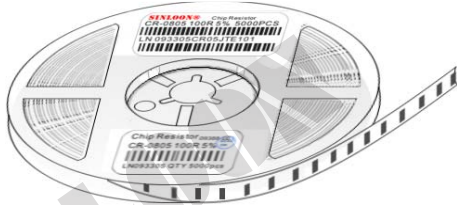
For Resistance According to IEC Publication 63

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

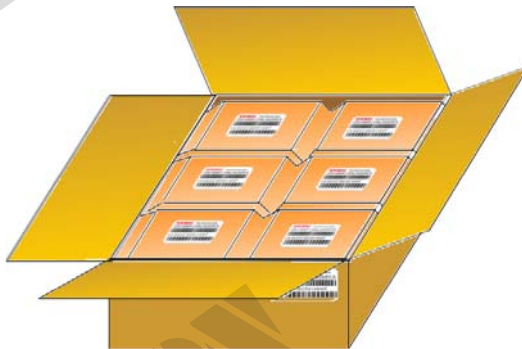
Plastic Reel



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.