

APPROVAL SHEET

Product Name : Thin Film Precision AEC-Q200 Chip Resistor
Part No. : TAR
Description : Size 0402~1206

For more contact information, please refer to our website: www.rideetech.com

Thin Film Precision AEC-Q200 Chip Resistor — TAR Series

Applications

- Industrial electronics
- Communication devices
- Measuring instrument
- Converters



Features

- Low TCR to ± 10 ppm/°C
- Tolerance to ± 0.05 %
- AEC-Q200 Compliant
- Halogen free and lead free
- RoHS compliant

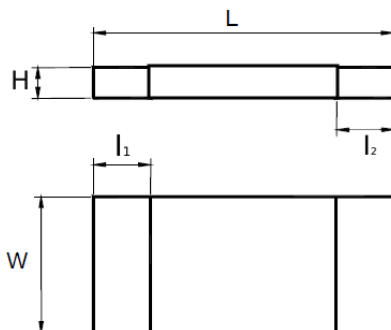
Parts Number Explanation

TAR	1206	B	10R0	T	15	S
Product Type	Size (Inch)	Tolerance	Resistance	Packaging	TCR (ppm/°C)	Functional
Thin Film Precision AEC-Q200 Chip Resistor	0402 0603 0805 1206	A : $\pm 0.05\%$ B : $\pm 0.10\%$ C : $\pm 0.25\%$ D : $\pm 0.50\%$ F : $\pm 1.00\%$	22R0 = 22 Ω 100R = 100 Ω 2201 = 2.2 K Ω 2202 = 22 K Ω 1003 = 100 K Ω	T=Tape & Reel	10 : ± 10 15 : ± 15 25 : ± 25 50 : ± 50	M = Meet AEC-Q200

Standard Electrical Specifications

Type	Rated Power at 70°C	Max RCWV	Max Overload Voltage	T.C.R. (PPM/°C)	Resistance Range				
					A ±0.05%	B ±0.1%	C ±0.25%	D ±0.5%	F ±1.0%
TAR0402	0.063W	50V	100V	±10, ±15	49.9 Ω ~ 12 KΩ	10 Ω ~ 68 KΩ			
				±25, ±50		4.7 Ω ~ 220 KΩ			
TAR0603	0.1W	75V	150V	±10, ±15	49.9 Ω ~ 30 KΩ	10 Ω ~ 332 KΩ			
				±25, ±50		4.7 Ω ~ 680 KΩ			
TAR0805	0.125W	150V	300V	±10, ±15	49.9 Ω ~ 50 KΩ	10 Ω ~ 680 KΩ			
				±25, ±50		4.7 Ω ~ 1 MΩ			
TAR1206	0.25W	200V	400V	±10, ±15	49.9 Ω ~ 100 KΩ	10 Ω ~ 1 MΩ			
				±25, ±50		4.7 Ω ~ 1.5 MΩ			

Dimensions

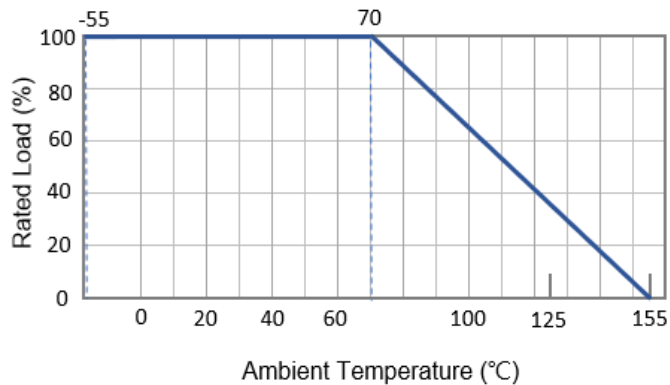


Unit : mm

TYPE	L	W	H	l ₁	l ₂
TAR0402	1.00 ± 0.10	0.50 ± 0.05	0.30 ± 0.05	0.20 ± 0.10	0.20 ± 0.10
TAR0603	1.60 ± 0.15	0.80 ± 0.10	0.45 ± 0.10	0.30 ± 0.20	0.30 ± 0.20
TAR0805	2.00 ± 0.15	1.25 ± 0.15	0.55 ± 0.10	0.35 ± 0.20	0.40 ± 0.20
TAR1206	3.10 ± 0.15	1.60 ± 0.15	0.55 ± 0.10	0.45 ± 0.20	0.50 ± 0.20

Derating Curve

Operating Temperature Range: -55 to +155°C



Voltage Rating or Current Rating

The direct or alternating voltage for the rated power can be calculated from the following formula but must not exceed the maximum voltage.

$$V = \sqrt{P \times R}$$

V=Rated Voltage(V)
P=Rated Power(W)
R=Rated Resistance(Ω)

Recommended Customer Soldering Parameters

Recommended IR Reflow Soldering Conditions

Preliminary heating: 150°C~180°C, 120s max
Soldering: 220°C, 60s max
Peak temperature: 245°C, 15s max

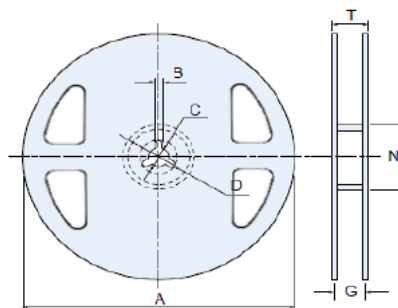
Recommended WAVE Soldering Conditions

Reservoir Temperature: 260°C, 10s max
Number of times: two times max

■ Reliability Tests and Requirements

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS-C-5201-1 4.8 IEC-60115-1 4.8	At 25 / -55°C and 25°C /+125°C, 25°C is the reference temperature	Refer to Standard Electrical Specifications
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	2.5 times RCWV or Max. Overload voltage whichever is less for 5 seconds.	±(0.3%+0.05Ω) No Visual damage
Leaching	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1	260±5°C for 30 seconds.	>95% Coverage No Visual damage
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5°C for 10 seconds.	±(0.3%+0.05Ω) No Visual damage
Insulation Resistance	JJIS-C-5201-1 4.6 IEC-60115-1 4.6	Apply 100VDC for 1 minute.	≥10GΩ
Temperature Cycling	JESD22 Method JA-104	1000 Cycles (-55°C to +125°C) Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme.	±(0.3%+0.05Ω) No Visual damage
Resistance to Solvent	MIL-STD-202 Method 215	Add Aqueous wash chemical - OKEM Clean or equivalent.	±(0.3%+0.05Ω) No Visual damage
Biased Humidity	MIL-STD-202 Method 103	1,000 hours; 85°C / 85% RH, 10% of operating power. Measurement at 24±4 hours after test conclusion.	±(0.3%+0.05Ω)
High Temperature Exposure (Storage)	MIL-STD-202 Method 108	1000 hrs. @ T=125°C. Unpowered. Measurement at 24±4 hours after test conclusion.	±(0.5%+0.05Ω)
Operational Life	MIL-STD-202 Method 108	Condition D Steady State TA=125°C at derated power. Measurement at 24±4 hours after test conclusion.	±(0.3%+0.05Ω)
External Visual	MIL-STD-883 Method 2009	Electrical test not required. Inspect device construction, marking and workmanship.	-
Mechanical Shock	MIL-STD-202 Method 213	)Test ½ Sine Pulse, Peak value: 100g, normal duration: 6ms, Velocity change:12.3ft/sec. 10 shocks in each direction, total30 shocks.	±(0.3%+0.05Ω)
Vibration	MIL-STD-202 Method 204	5 g's for 20 min., 12 cycles each of 3 orientations. Note: Test from 10-2000 H	±(0.3%+0.05Ω)
ESD	AEC-Q200- 002 or ISO/DIS 10605	Human body modelZ 0402 : 400 V / 0603 : 1000 V 0805 : 1500 V / 1206 : 2000 V	±(0.3%+0.05Ω)
Solderability	J-STD-002	(1) 4 hrs 155°C dry heat (2) 245±5°C 3 sec.	±(0.3%+0.05Ω)
Terminal Strength (SMD)	AEC Q200-006	Pressurizing force for 60 seconds 0402 / 0603 : 8N ; 0805 / 1206 : 17.7N	No broken
Board Flex	AEC Q200-005	Beading once for 60 seconds 3mm	±(0.3%+0.05Ω)
Sulfur Test (FoS)	ASTM B809-95 ANSI/EIA-977	60±2°C, no power rating for 1000 hrs.	±(1.0%+0.05Ω)
		105±2°C, no power rating for 1000 hrs.	±(4.0%+0.05Ω)

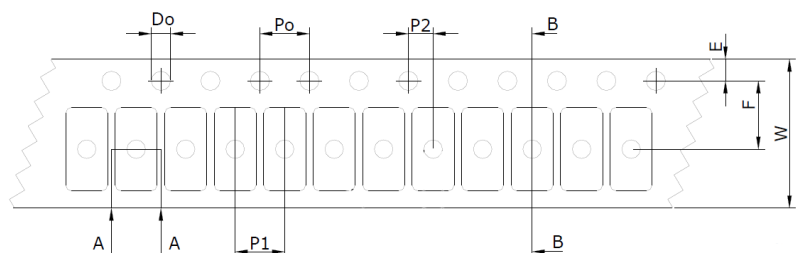
■ Packaging Information



Unit:mm

Size	Type		A	N	C	D	B	G	T
0402	7"	10K/Reel	178±2.0	60.0±0.5	13.0±0.5	20min	2.0±0.5	10.0±1.5	14.9 max
0603 / 0805 / 1206	7"	5K/Reel	178±2.0	60.0±0.5	13.0±0.5	20min	2.0±0.5	10.0±1.5	14.9 max

■ Tapping Specification



Unit:mm

Packaging	Size	A	B	W	E	F	P1	P2	D0	P0
Paper Type	0402	0.70±0.10	1.20±0.10	8.00±0.30	1.75±0.10	3.50±0.05	2.00±0.10	2.00±0.05	1.50+0.10/-0	4.00±0.10
	0603	1.10±0.20	1.90±0.20	8.00±0.30	1.75±0.10	3.50±0.05	4.00±0.10	2.00±0.05	1.50+0.10/-0	4.00±0.10
	0805	1.65±0.20	2.40±0.20	8.00±0.30	1.75±0.10	3.50±0.05	4.00±0.10	2.00±0.05	1.50+0.10/-0	4.00±0.10
	1206	2.00±0.20	3.60±0.20	8.00±0.30	1.75±0.10	3.50±0.05	4.00±0.10	2.00±0.05	1.50+0.10/-0	4.00±0.10

■ Marking

■ E24 Series

0805, 1206: 4 digits marking

Resistance	47K
4 digits code	4702

0603: 3 digits marking

Resistance	47K
3 digits code	473

■ E96 Series

0805, 1206 : 4 digits marking

Resistance	47.5K
4 digits code	472

0603: 3 digit included two numbers and one letter

Resistance	10.2K
3 digits code	02C

■ No marking code for 0402 size