

3430 Series

Key Features

AEC-Q200

Compliance

Highly reliable
multilayer
electrode
construction

Compatible
with all
soldering
process

100% CCD
inspection



TE is pleased to introduce this new Automotive Grade High Power Wide Terminal chip resistor. The Ruthenium based Thick Film element, along with the wide terminals allow a greater power capability than previously possible with traditional methods, and highly reliable multilayer electrode construction and 100% CCD inspection improve long term stability and reliability.

Characteristics – Electrical

Applications

Automotive
Industry

Telecommuni-
cation
Equipment

Radio and
Tape
Recorders, TV
Tuners

Digital
Cameras,
Watches,
Pocket
Calculators

Computers,
Instruments

Medical
Equipment

Item Size	Size Code	Power rating @70°C	Max Operating Voltage	Max Overload Voltage	Resistance Range	Resistance Tolerance	TCR (PPM/°C)
		Jumper Rated Current					
0508	A2	1W	200V	400V	1R ~ 9R76	1%	±150
					10R ~ 1M		±100
		Jumper 5A			0R <10mΩ	-	-
0612	B2	1.5W	200V	400V	1R ~ 1M	1%	±100
		Jumper 6A			0R <10mΩ		-
1020	H2	2W	200V	400V	1R ~ 9R76	1%	±150
					10R ~ 1M		±100
		Jumper 10A			0R <10mΩ	-	-
1225	A3	3W	200V	400V	1R ~ 29R4	1%	±200
					30R ~ 1M		±100
		Jumper 12A			0R <10mΩ	-	-

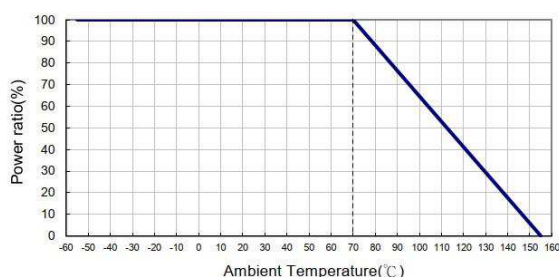
Operating Temperature Range: -55 ~ 155°C

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

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

Tighter tolerances may be available on application

Derating Curve



Environmental Characteristics

Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	AS Spec	JIS-C-5201-1 4.8 IEC-60115-1 4.8 At 25°C/-55°C and 25°C/+125°C, 25°C is the reference temperature
Short Time Overload	$\pm(1.0\%+0.05\Omega)$	JIS-C-5201-1 4.13 IEC-60115-1 4.13 RCWV*2.5 or Max. Overload Voltage whichever is lower for 5 seconds
Insulation Resistance	$\geq 10G$	JIS-C-5201-1 4.6 IEC-60115-1 4.6 Max. Overload Voltage for 1 minute
Operational Life	$\pm(1.0\%+0.10\Omega)$	MIL-STD-202 Method 108 Condition D Steady State TA=125°C at derated power. Measurement at 24±4 hours after test conclusion.
Biased Humidity	$\pm(1.0\%+0.10\Omega)$	MIL-STD-202 Method 103 1000 hrs 85°C/85%RH 10% of operating power. ($\leq 100V$)
High Temperature Exposure	$\pm(1.0\%+0.05\Omega)$	MIL-STD-202 Method 108 at +155°C for 1000 hrs
Board Flex	$\pm(1.0\%+0.05\Omega)$	AEC-Q200-005 Bending once for 60 seconds 3mm
Solderability	95% min. coverage	JIS-C-5201-1 4.17 IEC-60115-1 4.17 J-STD-002 245±5°C for 3 seconds
Resistance to Soldering Heat	$\pm(0.5\%+0.05\Omega)$	MIL-STD-202 Method 210 260±5°C for 10 seconds
Voltage Proof	No breakdown or flashover	JIS-C-5201-1 4.7 IEC-60115-1 4.7 1.42 times Max. Operating Voltage for 1 minute
Leaching	Individual leaching area $\leq 5\%$ Total leaching area $\leq 10\%$	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1 260±5°C for 30 seconds
Temperature Cycling	$\pm(0.5\%+0.05\Omega)$	JESD22 Method JA-104 -55°C to +125°C, 1000 cycles
Mechanical Shock	$\pm(0.25\%+0.05\Omega)$	MIL-STD-202 Method 213 Wave Form: Tolerance for half sine shock pulse. Peak value is 100g's. Normal duration (D) is 6.
Vibration	$\pm(0.5\%+0.05\Omega)$	MIL-STD-202 Method 204 5 g's for 20 min., 12 cycles each of 3 orientations, 10-2000 Hz
ESD	$\pm(3\%+0.05\Omega)$	AEC-Q200-002 Human body model: 2KV
Resistance to Solvents	No visible damage on appearance and marking.	MIL-STD-202 Method 215 Add Aqueous wash chemical - OKEM Clean or equivalent. Do not use banned solvents.
Terminal Strength	Not broken	AEC-Q200-006 Force of 1.8kg for 60 seconds.

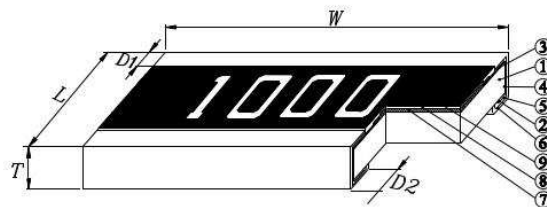
Item	Requirement	Test Method
Flammability	No ignition of the tissue paper or scorching or the pinewood board	UL-94 V-0 or V-1 are acceptable. Electrical test not required.
Sulfur Test	$\Delta R \pm 1\%$	EIA-977 (Condition A) 60 $\pm$ 2°C, no power rating for 500 hrs.

RCWV(Rated Continuous Working Voltage)= $V(P \cdot R)$ or Max. Operating Voltage whichever is lower. * not include Jumper(0 Ω)

Storage Temperature: 15~28°C; Humidity < 80%RH

Shelf Life: 2 years from production date.

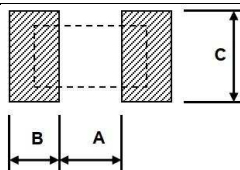
Construction and Dimensions



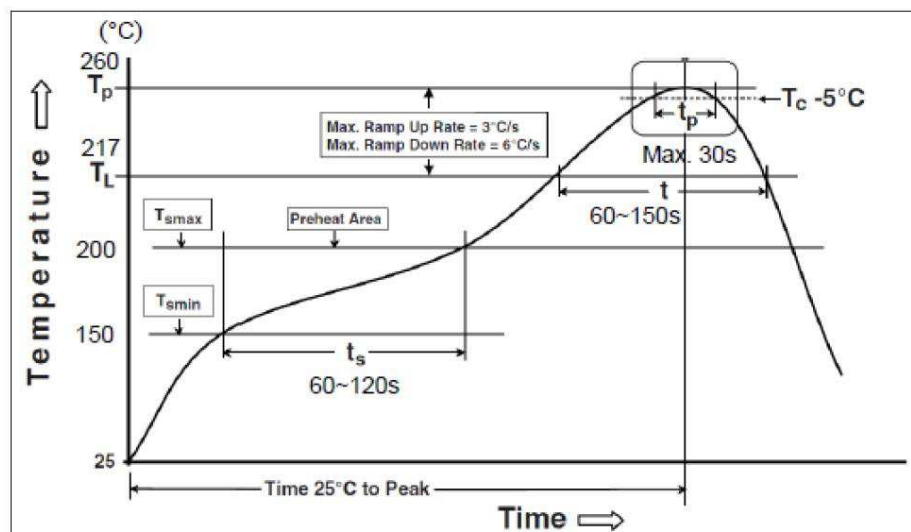
① Alumina Substrate	④ Edge Electrode	⑦ Resistor Layer
② Bottom Electrode	⑤ Barrier Layer	⑧ Primary Overcoat
③ Top Electrode	⑥ External Electrode	⑨ Secondary Overcoat

Type	Size	L (mm)	W (mm)	T (mm)	D1 (mm)	D2 (mm)	Weight (g) 1000 pcs
3430A2	0508	1.25 $\pm$ 0.1	2.00 $\pm$ 0.1	0.55 $\pm$ 0.1	0.30 $\pm$ 0.15	0.30 $\pm$ 0.15	5
Jumper					0.20 $\pm$ 0.15		
3430B2	0612	1.55 $\pm$ 0.1	3.00 $\pm$ 0.15	0.55 $\pm$ 0.1	0.25 $\pm$ 0.15	0.40 $\pm$ 0.15	8
Jumper							
3430H2	1020	2.45 $\pm$ 0.15	5.00 $\pm$ 0.1	0.60 $\pm$ 0.15	0.35 $\pm$ 0.20	0.70 $\pm$ 0.20	26
Jumper					0.45 $\pm$ 0.20		
3430A3	1225	3.20 $\pm$ 0.20	6.40 $\pm$ 0.15	0.65 $\pm$ 0.15	0.40 $\pm$ 0.20	1.10 $\pm$ 0.20	41
Jumper					0.50 $\pm$ 0.20	0.70 $\pm$ 0.20	

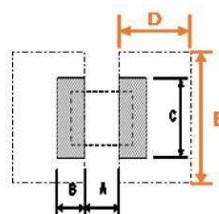
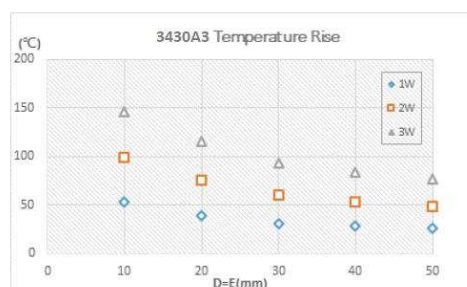
Recommended Land Pattern

	Size	A (mm)	B (mm)	C (mm)
	0508	0.55	0.90	2.00
	0612	0.70	0.80	3.20
	1020	1.00	1.20	5.00
	1225	1.00	2.00	7.00

Soldering Condition (Ref. IPC/JEDEC J-STD-020 & J-STD-002)



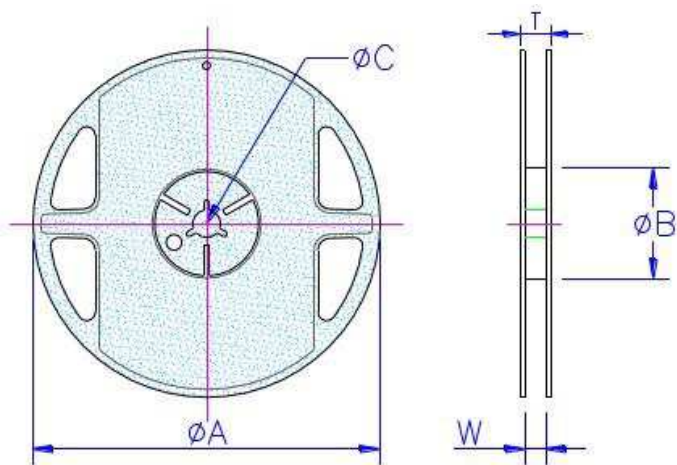
Reflow Profiles	
Profile Feature	Pb free assembly
Preheat	
Min. Temperature (T _{smin})	150 °C
Max Temperature (T _{smax})	200 °C
Preheating time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Ramp-up rate (T _L to T _P)	3 °C/second max.
Liquidous temperature (T _L) Time (t _L) maintained above T _L	217 °C 60-150 seconds
Min. Peak temperature (T _{P min})	235°C
Max. Peak temperature (T _{P max})	260°C
Time (t _p) within 5 °C of the specified classification temperature (T _c)	30 seconds max.
Ramp-down rate (T _P to T _L)	6 °C/second max.
Time 25 °C to peak temperature	8 minutes max.



*FR4 copper board,
35 μ m of copper pad
thickness

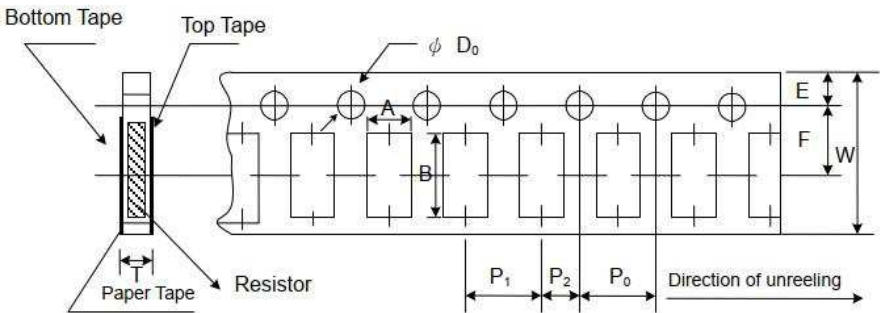
Packaging

Reel Dimensions and Quantity



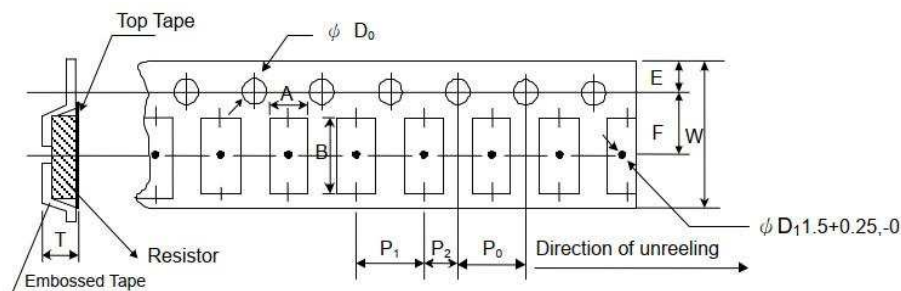
Size	Qty	Tape Width	Reel Diameter	ØA (mm)	ØB (mm)	ØC (mm)	W (mm)	T (mm)
0508	5K	8mm	7 Inch	178.5±1.5	60 ^{+1/-0}	13.0±0.2	9.0±0.5	12.5±0.5
0612	1K							
1020	4K	12mm	7 Inch	178.5±1.5	60 ^{+1/-0}	13.0±0.5	13.0±0.5	15.5±0.5
1225	1K							

Paper Tape Specification



Size	A ±0.10 (mm)	B ±0.20 (mm)	W ±0.20 (mm)	E ±0.10 (mm)	F ±0.05 (mm)	P ₀ ±0.10 (mm)	P ₁ ±0.05 (mm)	P ₂ ±0.05 (mm)	ØD ₀ +0.1 -0 (mm)	T ±0.10 (mm)
0508	1.60	2.40	8.0	1.75	3.5	4.0	4.0	2.0	1.5	0.85
0612	1.90	3.50	8.0	1.75	3.5	4.0	4.0	2.0	1.5	0.85

Embossed Plastic Tape Specification



Size	A (mm)	B (mm)	W ± 0.10 (mm)	E ± 0.10 (mm)	F ± 0.05 (mm)	P_0 ± 0.05 (mm)	P_1 ± 0.10 (mm)	P_2 ± 0.05 (mm)	ϕD_0 $+0.10$ (mm)	T ± 0.20 (mm)
1020	2.80 ± 0.15	5.40 ± 0.20	12.00	1.75	5.50	4.00	4.00	2.00	1.55	1.00
1225	3.50 ± 0.10	6.70 ± 0.10	12.00	1.75	5.50	4.00	4.00	2.00	1.55	1.00

Marking

All models – 4 digit marking

Resistance	22.6 Ω	487 Ω	499K Ω
Marking	22R6	4870	4993

How To Order

3430	H2	F	3K3	TE
Common Part	Size	Tolerance	Resistance Value	Packaging
3430 - Automotive Grade Wide Terminal Chip Resistor	A2 – 0508 B2 – 0612 H2 – 1020 A3 – 1225	F – 1%	1R0 – 1 Ω 100R – 100 Ω 1K0 – 1K Ω 100K – 100K Ω 1M0 – 1M Ω	TDF – 1K Reel TD – 5K Reel (0508 & 0612) TE – 4K Reel (1020 & 1225)