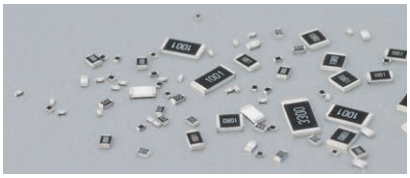
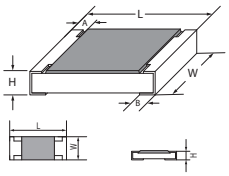
Automotive High Power Thick Film Chip Resistors - HQ

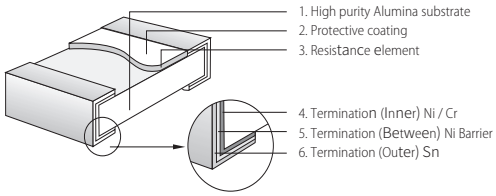
Feature

- AEC-Q200 Qualified
- Suitable for reflow & wave soldering.
- Application: Automotive

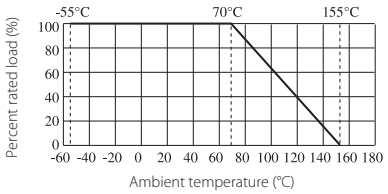


Figures





Derating Curve



Specification

Type	Max working voltage	Max Overload Voltage	Dielectric Withstanding Voltage	Resistance Value of Jumper	Rated Current Of Jumper	Max. Overload Current of Jumper	Operating Temperature
HQ02	50V	100V	100V	< 50mΩ	1A	2A	-55~+155°C
HQ03	75V	150V	300V		1A	2A	
HQ05	150V	300V	500V		2A	5A	
HQ06	200V	400V	500V		2A	10A	
HQ07	200V	500V	500V		2A	10A	
HQ10	200V	500V	500V		2A	10A	
HQ12	250V	500V	500V		2A	10A	

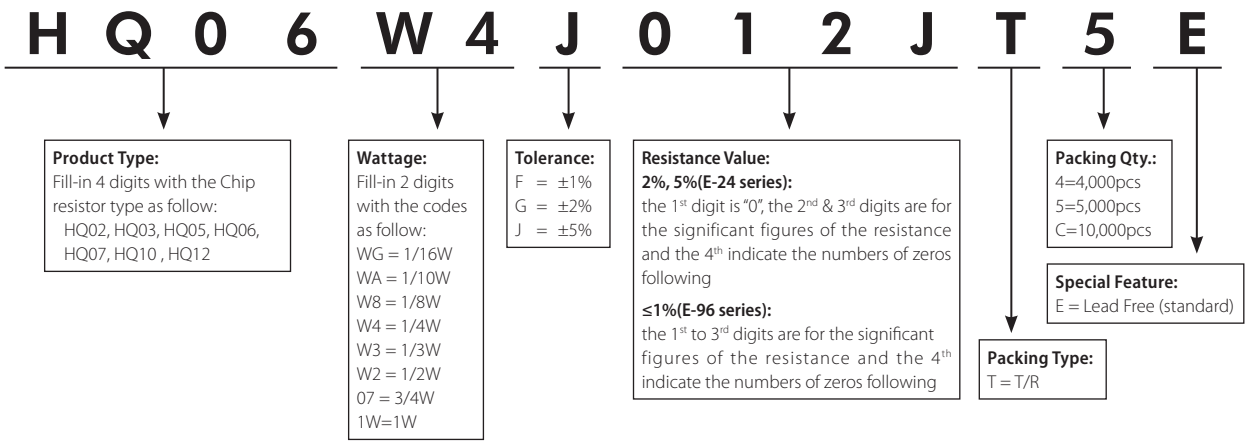
Type	Size	Power (70°C)	L (mm)	W (mm)	H (mm)	A (mm)	B (mm)	Resistance Range 1%(E96), 5%(E24)
HQ02	0402 (1005)	1/10W	1.00±0.10	0.50±0.05	0.35±0.05	0.20±0.10	0.25±0.10	1Ω~10M
HQ03	0603 (1608)	1/5W	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20	
HQ05	0805 (2012)	1/3W	2.00±0.15	$1.25^{+0.15}_{-0.10}$	0.55±0.10	0.40±0.20	0.40±0.20	
HQ06	1206 (3216)	1/2W	3.10±0.15	$1.55^{+0.15}_{-0.10}$	0.55±0.10	0.45±0.20	0.45±0.20	
HQ07	1210 (3225)	3/4W	3.10±0.10	2.60±0.20	0.55±0.10	0.50±0.25	0.50±0.20	
HQ10	2010 (5025)	1W	5.00±0.10	2.50±0.20	0.55±0.10	0.60±0.25	0.50±0.20	
HQ12	2512 (6432)	2W	6.35±0.10	3.20±0.20	0.55±0.10	0.60±0.25	0.50±0.20	

*Special offers: HQ12 B:1.80±0.25mm

Performance Specification

Test Item	Reference standard	Test Methods	Evaluation Criteria
Temperature Coefficient of Resistance	**MIL-STD-202 Method 304**	Measure between: -55°C ~+155°C	1Ω≤R≤10Ω:±200ppm/°C 10Ω<R≤10MΩ:±100ppm/°C
Pre- and Post-Stress ElectricalTest (Short time Overload)	**AEC-Q200 TEST 1** **IEC60115 4.13**	2.5x Rated voltage or Max. Overload Voltage whichever is lower for 5 seconds, then check the resistance.	±1%: ±(1.0%+0.05Ω) ±5%: ±(2.0%+0.05Ω)
Biased Humidity	**AEC-Q200 TEST 7** **MIL-STD-202 Method 103**	1000 hours 85°C/85%RH. Note: Specified conditions:10% of operating power. Measurement at 24±4 hours after test conclusion.	±1%: ±(1.0%+0.05Ω) ±5%: ±(3.0%+0.05Ω)
Operational Life	**AEC-Q200 TEST 8** **MIL-STD-202 Method 108**	1,000 hours at 125°C, applied de-rated (36%) power of continuous working voltage, 1.5 hours on, 0.5 hour off.	±1%: ±(1.0%+0.1Ω) ±5%: ±(3.0%+0.1Ω)
Resistance to Soldering Heat	**AEC-Q200 TEST 15** **MIL-STD-202 Method 210**	Condition B No pre-heat of samples. Note: Single Wave Solder - Procedure 2 for SMD and Procedure 1 for Leaded with solder within 1.5mm of device body.	±(1.0%+0.05Ω)
Solderability	**AEC-Q200 TEST 18** **J-STD-002**	SMD. Electrical test not required. Magnification 50 X. **Conditions:** 1. Baking 4 hours@155°C dry heat, dipping @ 245±3°C for 5±0.5 second. 2. Steam aging 8 hours, dipping @ 260±3°C for 30±0.5 second.	Coverage must be over 95%.
Board Flex	**AEC-Q200 TEST 21** **AEC-Q200-005**	Bending 3mm(HQ02-HQ05)/2mm(HQ06-HQ12)for 60±5sec	±(1.0%+0.05Ω)
Sulfuration test		H_2S 3~5PPM 50°C±2°C 91%~93% RH 1000H	±5%: ±(5.0%+0.1 Ω) ±1%: ±(1.0%+0.1 Ω)

Ordering Procedure (Example: HQ06 1/4W 5% 1.2 Ω T/R-5000)



Remark: For more details, please check page 135, Part No. System