



# RARA Electronics LLC

## Resistors and Resistive Applications



### Resistors And Resistive Applications

#### (유)라라전자

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## RARA Electronics L.L.C.

Since 1989, RARA Electronics has been improving the quality, efficiency, and availability of various resistive products. Through its extensive network of distributors, RARA actively sells products globally, reaching out to markets in Japan, the United States, Brazil, and Europe. We maintain a solid relationship with more than 80 international customers across 40 countries, providing a complete solution for industrial and special resistors for a wide range of industrial needs

## Business Areas

Manufacturing and export of automotive and industrial resistors, import and sales of high-precision, high-reliability resistors and measuring instruments.

## Products

Automotive resistors, metal clad resistors, current detection resistors (shunts), wire wound resistors, precision resistors, thick film resistors, heaters, etc.



### MISSION

By delivering top notch services and solutions, we facilitate joint success for both our customers and team members, fostering a collaborative environment of achievement.



### VISION

Our aim is to become the most competitive industrial resistor producer worldwide.



### CORE VALUES

- Adherence to strict industry standards.
- Diligence.
- Continuous development
- Kindness and consideration.

## High Power Metal Clad Resistors

Our metal-clad resistors are meticulously manufactured in accordance with the ISO9001 and IATF16949 systems, ensuring the highest quality standards. Furthermore, they have received certifications such as UL, CE, IP65, and AEC-Q200, demonstrating their compliance with rigorous industry specifications. Rest assured, all our products fully adhere to RoHS regulations, making them environmentally friendly. These versatile resistors find extensive applications in a wide range of motor control circuits. Whether it's for braking, current limiting, charging and discharging, or other crucial functions, our resistors are engineered to excel. They are commonly employed in various industrial robots, inverters, servo motor drives, electric vehicles, energy storage systems (ESSs), and fuel cell systems. You can rely on our resistors to deliver exceptional performance and reliability in these demanding environments.

### Aluminum Housed, Chassis Mount Resistor

Model: RH, FRH, URH

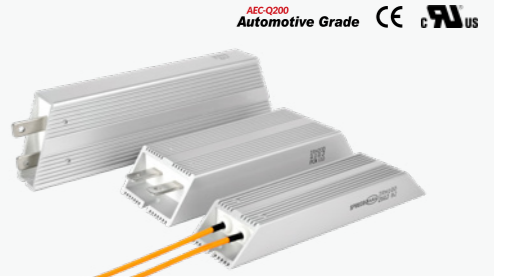
- Power Rating: 10W~100W
- Resistance( $\Omega$ ): 0.1~50k
- Tolerance(%):  $\pm 1$ ,  $\pm 2$ ,  $\pm 5$
- TCR(ppm/C): 30, 50, 100, 200



### Aluminum Housed, Chassis Mount Resistor

Model: IRH, IRV, ULH, ULV, ARH, ARV

- Power Rating: 60W~500W
- Resistance( $\Omega$ ): 0.1~6.8k
- Tolerance(%):  $\pm 0.5$ ,  $\pm 1$ ,  $\pm 2$ ,  $\pm 5$
- TCR(ppm/C): 260Max.



### Aluminum Housed, Chassis Mount Resistor

Model: IRV, ULV, IRM, ULM

- Power Rating: 600W~1200W
- Resistance( $\Omega$ ): 0.1~175
- Tolerance(%):  $\pm 1$ ,  $\pm 2$ ,  $\pm 5$
- TCR(ppm/C): 260Max.



### Mini Braking High Power Resistor

Model: MBH, MBV, BRH, BRV

- Power Rating: 1.1kW~3.6kW
- Resistance( $\Omega$ ): 0.4~300
- Tolerance(%):  $\pm 5$ ,  $\pm 10$
- TCR(ppm/C): 260Max.



### High Power Resistor Assemblies

Model: LCAH, LCAV

- Power Rating: 1kW~4.2kW
- Resistance( $\Omega$ ): 0.6~864
- Tolerance(%):  $\pm 5$ ,  $\pm 10$
- TCR(ppm/C): 260Max.





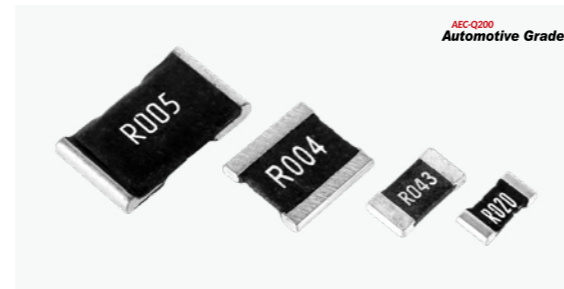
## Current Sensing Resistors

In response to the growing market demand for high current detection resistors in applications such as automotive and secondary battery markets, particularly within the electric vehicle sector, we have significantly expanded our product offerings. We understand the importance of meeting diverse customer needs and have introduced a wide range of series to cater to specific requirements. Our goal is to provide comprehensive solutions that align with the evolving demands of the current control application market.

### Metal Alloy Low-Resistance Resistor

Model: LR, LRA, LRE

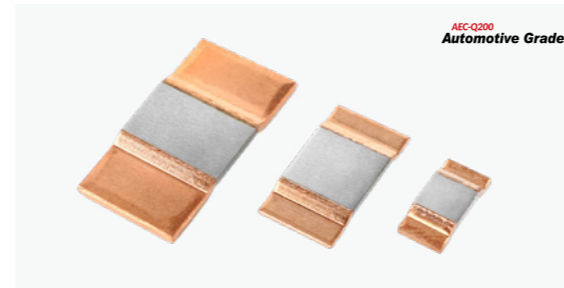
- Power Rating : 1/16W~5W
- Resistance( $\Omega$ ) : 0.2m~300m
- Tolerance(%) :  $\pm 0.5$ ,  $\pm 1$ ,  $\pm 2$ ,  $\pm 5$
- TCR(ppm/C) : 25~175



### SMD Current Sense Resistor

Model: ECS, BWR, BWN, BWB

- Power Rating : 1W~15W
- Resistance( $\Omega$ ) : 0.2m~10m
- Tolerance(%) :  $\pm 1$ ,  $\pm 2$ ,  $\pm 5$
- TCR(ppm/C) : 50~200



### Electron Beam Welding Shunt Resistor

Model: TCS

- Power Rating : 12W~36W
- Resistance( $\Omega$ ) : 0.05m~10m
- Tolerance(%) :  $\pm 1$ ,  $\pm 2$ ,  $\pm 5$
- TCR(ppm/C) : 100



### High Power Precision Shunt Resistor

Model: LPS, IRH-F

- Rated Current : 30A~500A
- Resistance( $\Omega$ ) : 0.1666m~3.333m
- Tolerance(%) :  $\pm 0.1$ ,  $\pm 0.5$ ,  $\pm 1$
- TCR(ppm/C) : 15, 30



### High Power Precision Shunt Resistor

Model: HPS, UHPS

- Power Rating : 100W, 250W
- Resistance( $\Omega$ ) : 0.2m~100m
- Tolerance(%) :  $\pm 0.05$ ,  $\pm 0.1$ ,  $\pm 1$
- TCR(ppm/C) : 3, 5, 10



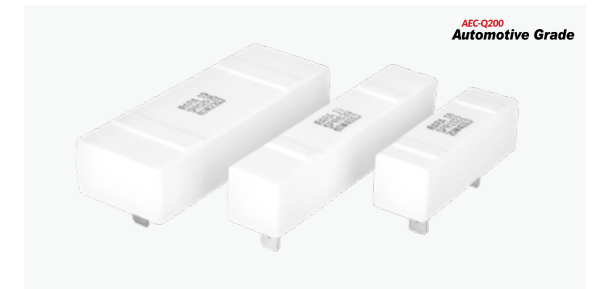
## Pre-Charge / Discharge Resistors (EV, HEV, PHEV)

We offer a comprehensive selection of AEC-Q200 automotive-grade high-power pre-charge and discharge resistors designed to meet various requirements. Our resistors come in power ratings ranging from 20W to 500W, ensuring compatibility with a wide range of applications. Additionally, we provide different package styles and types to accommodate diverse installation needs. Our resistors are highly customizable, allowing you to tailor them to your specific specifications. We offer options such as non-inductive windings, HV cables, compact designs, and intrinsically safe features to cater to your unique requirements.

### Ceramic Encased Resistor

Model: AQL

- Power Rating: 20W~100W
- Resistance( $\Omega$ ) : 10~80
- Tolerance(%) :  $\pm 1$ ,  $\pm 5$ ,  $\pm 10$
- TCR(ppm/C) : 260Max.



### Aluminum Housed, Chassis Mount Resistor

Model: IRH, IRV, ULH, ULV

- Power Rating: 60W~500W
- Resistance( $\Omega$ ) : 0.2~3K
- Tolerance(%) :  $\pm 0.5$ ,  $\pm 1$ ,  $\pm 5$
- TCR(ppm/C) : 260Max.



### Flat Type Aluminum Housed Resistor

Model: IRN, IRF, ULN, ULF

- Power Rating: 50W~500W
- Resistance( $\Omega$ ) : 1~5.78K
- Tolerance(%) :  $\pm 0.5$ ,  $\pm 1$ ,  $\pm 5$
- TCR(ppm/C) : 260Max.



### Aluminum Housed, Chassis Mount Resistor

Model: IRHC

- Power Rating: 40W, 60W, 100W
- Resistance( $\Omega$ ) : 10~1K
- Tolerance(%) :  $\pm 5$ ,  $\pm 10$
- TCR(ppm/C) : 260Max.



### Aluminum Housed, Chassis Mount Resistor

Model: IRV, ULV, IRM, ULM

- Power Rating: 600W~1200W
- Resistance( $\Omega$ ) : 0.1~175
- Tolerance(%) :  $\pm 1$ ,  $\pm 2$ ,  $\pm 5$
- TCR(ppm/C) : 260Max.



## High Power Film Resistors

Our film resistor series offers a substantial increase in power rating and pulse load performance compared to standard resistors.

### Carbon Film/Metal Film Resistor, Melf

**Model: CFS, CSR, CSRA, CSRV**

The MELF is cylindrical in shape and with metal electrode Leadless face resistor. Land pattern sizes are the same as SMD chip resistors. It is manufactured by depositing a homogeneous film of NiCr onto a high-grade.

- Power Rating: 1/4W~2W
- Resistance( $\Omega$ ): 1~10M
- Tolerance(%):  $\pm 0.1, \pm 1, \pm 2, \pm 5$
- TCR(ppm/C): 10~1000



### Power Metal Film Chip Resistor

**Model: SMF**

Flameproof UL94V0 molded package, resistance to heat, humidity & insulation.

- Power Rating: 2W, 3W, 5W
- Resistance( $\Omega$ ): 10~2M
- Tolerance(%):  $\pm 1, \pm 5$
- TCR(ppm/C): 100



### Power Thin Film Resistor

**Model: TNP**

Non-inductive design suits high frequency applications and high-speed pulse circuits.

- Power Rating: 20W, 35W, 50W, 100W, 140W
- Resistance( $\Omega$ ): 0.02~510K
- Tolerance(%):  $\pm 1, \pm 5$
- TCR(ppm/C): 50, 100, 250



### Chassis Mounting Power Film Resistor

**Model: TPM, TPK**

Small size SOT227, light weight, high power resistor install on air-cooled heat sink or water-cooling is necessary.

- Power Rating: 150W~900W
- Resistance( $\Omega$ ): 0.1~1M
- Tolerance(%):  $\pm 5$
- TCR(ppm/C): 50, 100



### Chassis Mounting, High Voltage, Power Film Resistor

**Model: TPU, HPR**

Low profile flat type, high power resistor. Attaching large air-cooled heat sink or water-cooling operation.

- Power Rating: 300W, 600W, 800W, 1000W, 2000W
- Resistance( $\Omega$ ): 0.5~1M
- Tolerance(%):  $\pm 1, \pm 5, \pm 10$
- TCR(ppm/C): 50~250



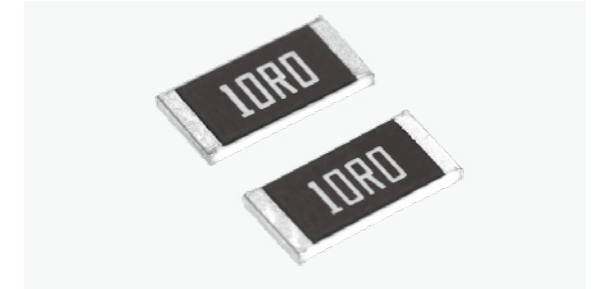
## Precision Resistors

### Thin Film High Precision Chip Resistor

**Model: AR**

Thin film NiCr accurate resistor, Size from 0201 to 2512, Tight tolerance 0.01%, 0.1% Low TCR 1ppm-50 ppm.

- Power Rating: 1/20W~1W
- Resistance( $\Omega$ ): 1~3M
- Tolerance(%):  $\pm 0.01 \sim \pm 1\%$
- TCR(ppm/C): 1~50



### Precision Metal Film Leaded Resistor

**Model: MFR**

Excellent stability and tight tolerance, extremely low TCR, high power is available for telecommunication and medical equipment.

- Power Rating: 1/8W~2W
- Resistance( $\Omega$ ): 1~10M
- Tolerance(%):  $\pm 0.05 \sim \pm 1$
- TCR(ppm/C): 5~100



### High Precision Metal Film Leaded Resistor

**Model: MFD**

High precision metal film leaded resistor, very tight tolerance and extremely low TCR for precision high level equipment and measurement etc.

- Power Rating: 1/4W~1/2W
- Resistance( $\Omega$ ): 10~1M
- Tolerance(%):  $\pm 0.02 \sim \pm 0.1$
- TCR(ppm/C): 5~25



## High Voltage Resistors

Our High Voltage Resistor series is specifically designed to meet the most demanding requirements, particularly in terms of temperature coefficient and high stability performance at elevated operating voltages. These resistors excel in maintaining their precise ohmic values, minimizing any changes caused by power dissipation during warm-up. With a low temperature coefficient, they provide exceptional stability and reliability in a wide range of applications.

### Chassis Mounting, High Voltage, Power Film Resistor

**Model: HVE, HVI**

HV series for very low TCR, low VCR, high voltage-functional non-inductive divider.

- Power Rating: 1W~20W
- Resistance( $\Omega$ ): 200~10G
- Tolerance(%):  $\pm 1, \pm 5, \pm 10$
- TCR(ppm/C): 25, 100



### High Voltage Thick Film Planar Resistor

**Model: HVP**

High resistance resistors for high voltage circuits and Thin SIP shape.

- Power Rating: 0.5W~4W
- Resistance( $\Omega$ ): 1M~1G
- Tolerance(%):  $\pm 0.5, \pm 1, \pm 5, \pm 10$
- TCR(ppm/C): 50, 100, 250

