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DID YOU KNOW?

USING POWER METAL STRIP® RESISTORS IN BATTERY / METER APPLICATIONS

Automotive Battery Management

Accurate current sensing is becoming an increasingly important capability as the demands being placed on automotive batteries continue to grow. Electro-hydraulic power steering (EHPS) / electric power steering (EPS) / electric power-assisted steering (EPAS), electro-hydraulic braking, electric and hybrid vehicles, and power doors all require the battery to provide additional current above and beyond what the alternator can deliver.

For proper battery management, a low ohmic current sensing resistor is used to sense the amount of current flowing into the vehicle's electrical system. The current sensing resistor must be capable of handling high currents (up to 1000 A) while offering a low temperature coefficient of resistance, low thermal EMF, and high stability in extreme environments. Resistance values of 25 µΩ to 100 µΩ are typically required for these applications.

Fig. 1 illustrates the use of a current sense resistor in a high current battery management circuit.

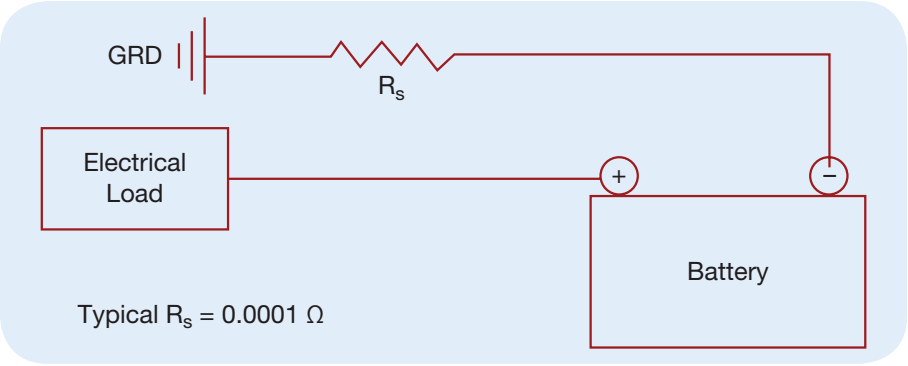


Fig. 1 - Automotive Battery Sensor

Utility Power Meters Shunt

The utility industry is seeing a new generation of multifunction power meters. The new meters are more accurate in measuring and reporting actual utility usage and peak usage times, providing the power company with more accurate data to determine customer usage and to adjust billing terms.

In this application, a current sense resistor supports the microcontroller to determine power usage. A current shunt converts the current through the meter to a small, millivolt-level voltage. The voltage across the shunt must remain small to minimize the power dissipation by the shunt. A shunt with a resistance of 100 µΩ will provide a signal of 20 mV and dissipate 1 W of power at 100 A.

Fig. 2 shows the current channel of an electric meter using a current shunt to convert the load current to a millivolt-level voltage.

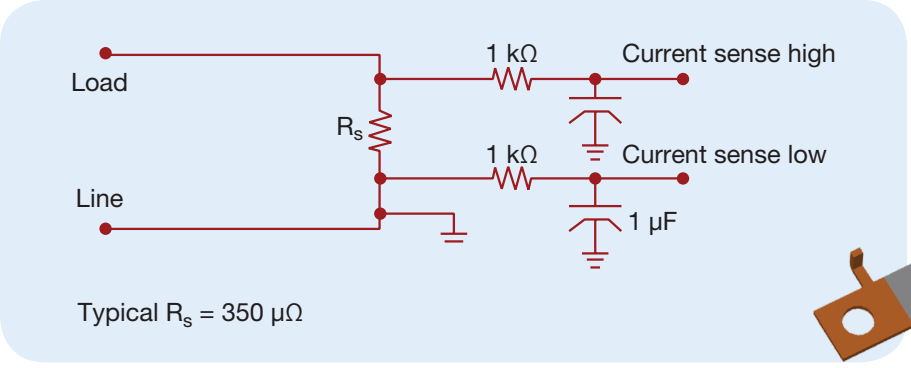
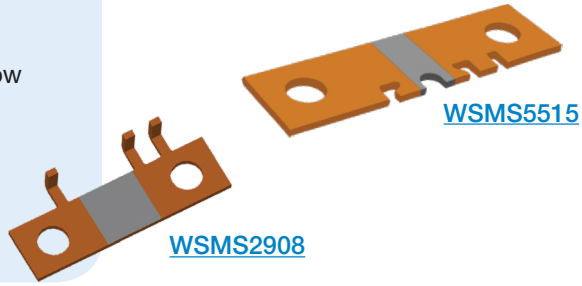


Fig. 2 - Current Channel of an Electric Meter



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