

Success Story: Capability to Meet ISO 16750 Test Requirements in Automotive Headlamp Design

ISO 16750 Load Dump Test Solution

Solution Products



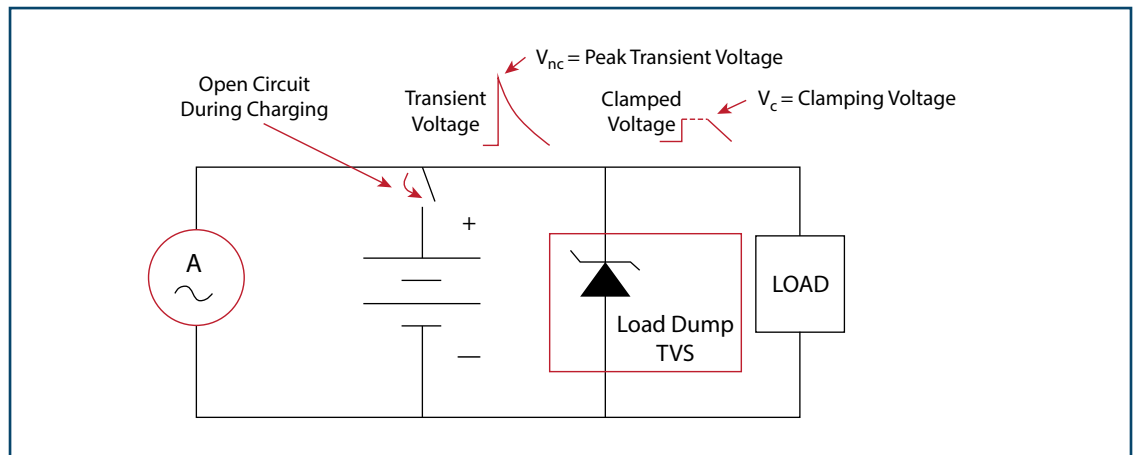
[SM8S24CA-Q](#)

Bourns® Power Play Solution™

Load dump tests are typically mandated by various automotive standards organizations and regulatory bodies to ensure the safety and reliability of virtually all vehicle components and systems. The scheduling of these tests typically occurs during the development and validation of vehicle components to ensure compliance with safety regulations and to guarantee the robustness of the electrical systems. These tests are also useful to help identify possible design issues so engineers can implement appropriate protection measures to mitigate the risks associated with load dump events.

To ensure safety when automotive generators are disconnected, the latest ISO 16750 testing requirements call for protection solutions that can handle a larger surge voltage and the ability to protect against longer duration events with smaller internal resistance. These requirements make it more difficult for traditional varistor solutions to pass testing standards. This customer was not able to pass the most recent ISO tests with the Metal Oxide Varistor (MOV) it had previously used, and came to Bourns for a more powerful Transient Voltage Suppressor (TVS) Diode. The ideal solution was Bourns® dual channel TVS Diode that provided effective protection against very high energy load dump transients when the battery is disconnected and helped eliminate the threat of an open circuit from the charging element.

The circuit shown below illustrates the clamping voltage capabilities of Bourns® TVS Diodes during a load dump event.



Qty.	Component Description	Part Number & Data Sheet Link	Distributor Inventory
1	TVS Diode	Model SM8S24CA-Q TVS Diode	Check Stock

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Summary

Customer: Automotive accessory manufacturer

Industry: Automotive

Application: Automotive headlamp

Bourns® Product: TVS Diode:

[Model SM8S24CA-Q](#)

Benefits: Cost-effective and accurate voltage clamping that helps reduce component count

Compliance

This Bourns® Power Play Solution™ helps designers meet ISO 16750 test requirements.

Additional Benefits

Additional benefits this Bourns® Power Play Solution™ provided to the customer were reducing their component count and providing a more cost-effective solution for their needs.

Situation

An automotive accessory customer looked to Bourns to help them meet mandated ISO 16750 test requirements for its automotive headlamp design. These ISO tests verify that the headlamp's circuitry is protected from load dump transients that can threaten reliable operation and potentially cause damage. A proven solution is to use load dump protection devices, such as TVS Diodes or MOVs.. These devices are connected across the input power supply, providing the ability to clamp the voltage to a safe level during a load dump event. In an automotive accessory application, this level of protection is also necessary to safeguard the headlamp and other components from overvoltage damage.

This Bourns® Power Play Solution™ Success Story details how Bourns® Model SM8S24CA-Q TVS Diodes successfully enabled this automotive customer to pass several required ISO safety tests for its headlamp design. It also underlines the importance of using an effective protection solution in applications that experience a very high energy load dump transient when the battery is disconnected which can potentially cause an open circuit problem.

Additional Resources

Helpful technical resources are also available from Bourns:

- [Bourns® Power Play Solutions™](#)

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