



Powering Innovation: 12 V Electric Power Steering with POWERTRENCH[®] MOSFET in Top Cool Package

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Overview

In the fast-paced world of automotive industry, adaptability and innovation are the key. This success story showcases how **onsemi** team's dedication to understanding and addressing customer pain points resulted in the timely delivery of an innovative solution for the 12 V Electric Power Steering system (EPS).

The Challenge:

A potential customer urgently contacted our sales team due to a last-minute issue with their MOSFET supplier. With their production schedule at risk, the customer needed immediate support to source a suitable replacement for MOSFET.

Our Approach:

Despite not having the exact MOSFET package the customer required in our existing portfolio, we saw an opportunity to demonstrate our commitment to customer success. The sales team escalated the issue and, recognizing the urgency of the customer situation, contacted the Product Line Manager to discuss the specifics of the customer requirements. The Product Line Manager identified a potential solution which was a combination of our best-in-class [POWERTRENCH T6 MOSFET](#) and highly innovative, thermal efficient [Top Cool Package](#). Our team collaborated cross-functionally to tailor an existing solution to meet the specific requirements of the customer, significantly accelerating our response time. We prioritized the development of the samples and conducted rigorous testing to ensure that our product met the performance and reliability required for safety critical applications such as EPS.

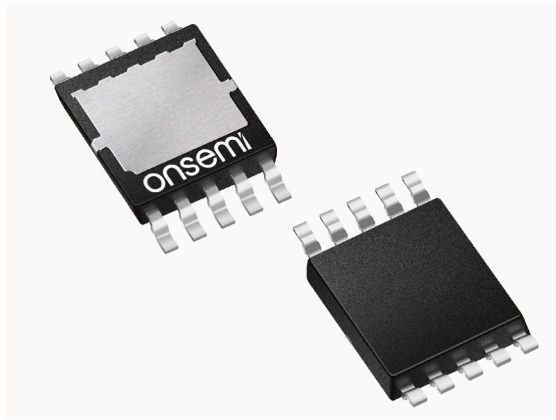


Figure 1. Power 56 TCPAK

Through our collaborative efforts and customer-centric approach, we were able to achieve remarkable outcomes.

- We provided MOSFET that met the customer's specifications for 12 V EPS Application.
- Our quick response and solution helped the customer maintain their schedule despite the last-minute supplier issue.
- The new MOSFET design exceeded the performance requirements of the customer's applications.
- Our responsiveness and dedication to solving customer problems laid the foundation for an ongoing, trusted relationship.

Our success story exemplifies **onsemi's** core values: Customer-First Mindset – Agility and Innovation – Teamwork and Collaboration – Commitment to quality.

While our [POWERTRENCH T6 MOSFETs](#) successfully addressed the requirements of EPS applications, we have made advancements in MOSFET technology with the release of [POWERTRENCH T10 MOSFETs](#) which can address the requirements of 24 V and 48 V EPS system.

Automotive – Electric Power Steering (EPS)

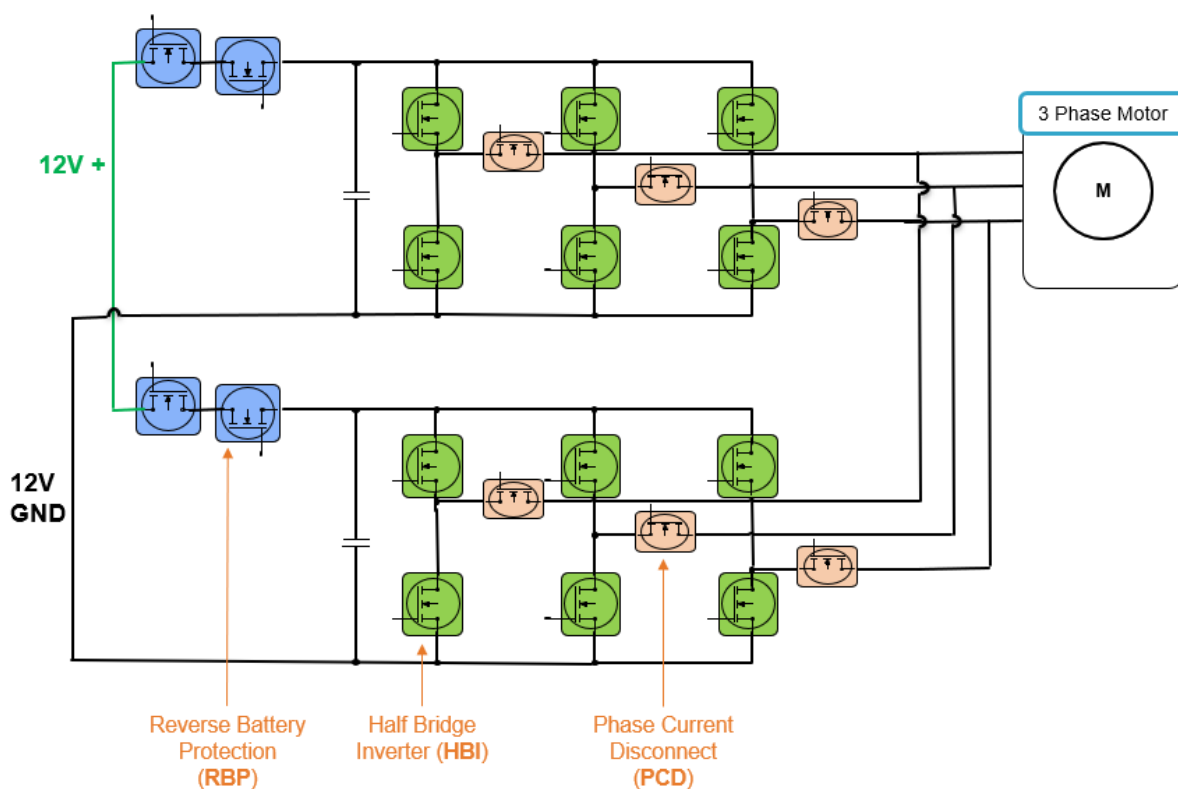


Figure 2. Electric Power Steering System (EPS) Block Diagram

Table 1. 12 V EPS PRODUCT RECOMMENDATIONS – T10 40 V

OPN	Package	$R_{DS(on)}$	Solution
NVMFWS0D9N04XM	SO-8FL	0.96	HBI, PCD
NVMFWS0D7N04XM	SO-8FL	0.7	HBI, PCD
NVMFWS1D3N04XM	SO-8FL	1.3	HBI, PCD
NVMTS0D6N04XM	PWR88	0.6	RBP

Table 2. 48 V EPS PRODUCT RECOMMENDATIONS – T10 80 V

OPN	Package	$R_{DS(on)}$	Solution
NVMFWS1D5N08X	SO-8FL	1.5	HBI
NVMFWS1D9N08X	SO-8FL	1.9	HBI
NVMFWS2D1N08X	SO-8FL	2.1	HBI
NVMFWS2D5N08X	SO-8FL	2.5	HBI
NVMFWS3D0N08X	SO-8FL	3.0	HBI

Additional Resource:

- [Top Cool Package for Power Discrete MOSFETs](#)
- [Contact Sales](#)

REVISION HISTORY

Revision	Description of Changes	Date
1	Created a dual-language document – Chinese version added	6/4/2025

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