

3-phase, variable-speed inverter power module enables higher torque systems



SEMICONDUCTOR® Fairchild Semiconductor has developed the [FTC03V455A1, a 3-Phase, Variable Speed Drive Automotive Power Module](#) [1].

This device, intended for 3-Phase motor control applications under 2kW, allows designers to reduce the overall system cost of higher power applications. This includes electric power steering (column-mount and rack-mount), electro-hydraulic power steering, electric water pumps, electric oil pumps and engine cooling fans. The FTC03V455A1 allows these applications to deliver higher torque outputs. Additionally, power modules are more cost-effective than traditional solutions when all aspects of the power stage design (interconnections, mechanical, electrical and thermal) are considered.

The FTC03V455A1 [automotive power module](#) [2], through increased electronics integration, uses fewer components than discrete solutions and provides a compact system design that delivers better EMI performance. The integrated DC Bus high accuracy current sense resistor enables full control of the electric motor, while the NTC thermistor provides thermal protection.

The module enables an extremely low electrical resistance path between the battery and motor, in addition to a complete separation of the control board from the high power stage. This provides high current handling capability at a reduced system cost. The module, measuring 44.00 x 29.00 x 5.00 mm, offers designers better EMC, >1.5KV in electrical isolation and lower motor ripple. Additionally, the module provides better system reliability and easier installation.

Fairchild Semiconductor's reputation as a leading value-add partner working closely with manufacturers to deliver unique components is a key advantage in the [automotive industry](#) [3], where differentiated designs are essential. Fairchild's long history of partnership with customers on automotive semiconductor solutions helps automotive manufacturers achieve power management, fuel economy, and CO₂ reduction goals of as well as other innovative initiatives.

Key Features:

- Typical configuration: Full three phase motor drive inverter
- Designed for Automotive 12V battery systems
- Ratings: 40V / up to 130A Iphase RMS (with Tsink up to 100 degree C)
- Increased Electronics Integration (lower number of components)
- 1 percent tolerance DC Bus Current sensing and temperature sensing

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Published on Electronic Component News (<http://www.ecnmag.com>)

- Ultra-low total module resistances
- Compact size
- Lead-free

Fairchild Semiconductor is leading the way in addressing the semiconductor needs of today's automobile manufacturers. Fairchild combines unmatched expertise in feature-specific silicon solutions with the manufacturing resources and supply chain management efficiencies required to succeed in today's competitive, dynamic, and fast-paced automotive marketplace. Fairchild Semiconductor works with the world's leading automakers and system suppliers, creating semiconductor solutions that support a range of applications, including the optimization of power management in modern vehicle architectures, reducing fuel consumption and environmental pollutants.

Packaging and Pricing Information (in US 1,000 quantity pieces)

Samples available upon request - Delivery 8-12 weeks ARO

Available in APMCB-AP19, the FTC03V455A1 is priced at \$57.25.

For information on other products, design tools and sales contacts, please visit:
<http://www.fairchildsemi.com> [4]

Source URL (retrieved on 07/25/2014 - 12:17pm):

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Links:

[1] <http://www.fairchildsemi.com/pf/FT/FTCO3V455A1.html>

[2] <http://www.fairchildsemi.com/search/tree/controller?searchText=Automotive+Power+Modules&textBtn.x=-1000&textBtn.y=-83&textBtn=search>

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