Application Report

Mobileye EyeQ5 – Mid Core Rail Power-Supply Design Using TPS59632-Q1 and TPS59603-Q1

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ABSTRACT

This document is an Abstract of the complete Application Report, *Mobileye EyeQ5 – Mid Core Rail Power-Supply Design Using TPS59632-Q1 and TPS59603-Q1*. Please contact your local Texas Instruments representative to access the complete Application Report.

Automotive applications such as Autonomous Driving Assist Systems (ADAS) use ADAS Domain Controller processors such as Mobileye EyeQ5®. These are sophisticated processors which require a very high amount of current at very low voltages. These processors also require very fast transient response of the output voltage for step changes in processor load current. Texas Instruments solution for the VCORE Power supply meets this high-current requirement and fast transient response in an efficient, cost-effective manner using the TPS59632-Q1 and TPS59603-Q1 devices.

The TPS59632-Q1 is a three-phase driverless step-down controller with advanced features such as DCAP+® control architecture providing very fast transient response, lowest output capacitance, and high efficiency. The device supports I2C for dynamic control of the output voltage, phase management for optimized efficiency and current monitor telemetry. The TPS59632-Q1 controller device is packaged in a 5-mm by 5-mm space saving, thermally-enhanced 32-pin, 0.5-mm pitch QFN with wettable flanks and is rated to operate at a range between –40°C and 125°C. For more information about the TPS59632-Q1 device, see the *TPS59632-Q1 2.5-V to 24-V, 3-, 2-, and 1-Phase Step-Down Driverless Controller for Automotive ADAS Applications Data Sheet*.

The TPS59603-Q1 MOSFET gate driver is designed specifically to accompany this controller to drive the synchronous buck converter power stage MOSFETs. The TPS59603-Q1 MOSFET gate driver is packaged in a 2-mm × 2-mm, 8-P with WSON Thermal Pad Package and wettable flanks and operates in a temperature range between –40°C to 125°C. For more information about the TPS59603-Q1 device, see the *TPS59632-Q1 2.5-V to 24-V, 3-, 2-, and 1-Phase Step-Down Driverless Controller for Automotive ADAS Applications Data Sheet*.

Both the TPS59632-Q1 and TPS59603-Q1 devices are AEC Q-100 qualified to support the automotive applications.

The Application Report provides an overview of the D-CAP+® Technology, a detailed Design Procedure, a Reference Design and Bill of Material (BOM), test results and layout guidelines to easily develop a solution to meet the VCORE power needs of the Mobileye EyeQ5®-Mid processor so that the Texas Instruments solution can be adapted for any particular requirements as demanded by the end-user.

Please contact your local Texas Instruments representative to access the complete Application Report.

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