SC8745Q 36V / 100W Buck-Boost Converter with Low-Side MOSFETs Integrated and I2C Interface

1 Descriptions

The SC8745Q is a buck-boost converter with two low-side integrated power switches capable of regulating the output voltage at, above, or below the input voltage. The SC8745Q operates over 3.7V to 36V wide input voltage and can output 1V to 29V voltage to support a variety of applications.

The SC8745Q is suitable for USB power delivery application. It can work well with external USB PD controller through I2C interface and provide flexibility of programmable features.

The SC8745Q employs current mode control scheme. The switching frequency could be set at 280kHz/420kHz/560kHz through I2C. The SC8745Q also provides optional spread spectrum to optimize EMI performance.

The SC8745Q offers input/output over-voltage protection, cycle-by-cycle current limit, output short circuit protection, average output current limit and thermal shutdown protection

The SC8745Q is available in 20-pin 3mm x 5mm Wettable Flank QFN packages.

2 Applications

- Automotive Wireless Charging
- Automotive USB Charging
- Automotive ADAS

3 Features

- AEC-Q100 qualified for automotive applications:
  - Temperature grade 1: T_A range: -40°C to 125 °C
- Integrated gate driver for high-side power switches
- 4V to 36V start up input voltage, support 3.7V falling V_{IN}
- 1V to 29V output voltage range
- Programmable Power Supply (PPS) support for USB power delivery
  - Programmable reference voltage range: 0.1V – 1.123V with 1mV resolution
  - Programmable output current limit up to 6.35A with 50-mA step
  - +/- 5% accurate average output current limiting
- I2C Interface for:
  - 280k/420k/560kHz frequency selectable
  - Auto PFM / Forced PWM
  - Spread spectrum dithering
  - Line drop compensation
  - Current limit setting
- IMON for output current
- External biased V_{CC} for higher efficiency
- Output OCP / SCP / OVP / TSD protection