

TPS65652 Increased Output Current

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ABSTRACT

This application note describes the operating conditions over which the V_{ELVDD} and V_{ELVSS} outputs of the TPS65652 can support output currents up to 400 mA.

1 TPS65652 Increased Output Current

The standard application circuit of the TPS65652 is rated for output currents up to 300 mA from V_{ELVDD} and V_{ELVSS} for input voltages in the range 2.9 V to 4.5 V. Some applications need output currents up to 400 mA.

1.1 Output Current up to 330 mA

The TPS65652 device can support V_{ELVDD} and V_{ELVSS} output currents up to 330 mA under the following conditions:

- $V_I \geq 2.9$ V
- V_{ELVSS} is not more negative than -4.6 V
- The inductor used for the V_{ELVDD} boost converter has a saturation current rating greater than 0.8 A
- The inductor used for the V_{ELVSS} inverting buck-boost converter has a saturation current rating greater than 1.5 A
- The DCR of the inductors used is < 250 m Ω
- The thermal design of the system provides adequate heatsinking

1.2 Output Current up to 350 mA

The TPS65652 device can support V_{ELVDD} and V_{ELVSS} output currents up to 350 mA under the following conditions:

- $V_I \geq 2.9$ V
- V_{ELVSS} is not more negative than -4.3 V
- The inductor used for the V_{ELVDD} boost converter has a saturation current rating greater than 0.8 A
- The inductor used for the V_{ELVSS} inverting buck-boost converter has a saturation current rating greater than 1.5 A
- The DCR of the inductors used is < 250 m Ω
- The thermal design of the system provides adequate heatsinking

1.3 Output Current up to 400 mA

The TPS65652 device can support V_{ELVDD} and V_{ELVSS} output currents up to 400 mA under the following conditions:

- $V_I \geq 2.9$ V
- V_{ELVSS} is not more negative than -3.4 V
- The inductor used for the V_{ELVDD} boost converter has a saturation current rating greater than 0.8 A
- The inductor used for the V_{ELVSS} inverting buck-boost converter has a saturation current rating greater than 1.5 A
- The DCR of the inductors used is < 250 m Ω
- The thermal design of the system provides adequate heatsinking

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