

**NKOSITHANDILEB SOLAR**

# High efficiency three-phase inverter



## Overview

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What is the efficiency and power loss of three-phase inverter mode?

Figure 51 and Figure 52 display the measured efficiency and power loss under three-phase inverter mode operation at different line voltages. The peak efficiencies of 99.263%, 99.122%, and 98.855% and the full-load efficiencies of 99.166%, 98.938%, and 98.632% are measured for the high-line, nominal, and low-line conditions, respectively.

What is the peak efficiency of a PFC inverter?

11 kW in both power-flow directions, i.e., either PFC mode or inverter mode, with peak efficiency of 99.15 % (PFC) and 99.122 % (inverter) with 230 VRMS grid voltage.

How much power can a single-phase grid convert?

When interfacing with single-phase grid, the design can convert steady state maximum power of 7.3 kW in both power-flow directions, with peak efficiency of 98.95 % (PFC) and 98.91 % (inverter).

Which waveforms are captured during three-phase inverter mode operation?

The steady-state waveforms captured during three-phase inverter mode operation is shown in Figure 50, which includes the upper and lower bulk voltages, grid-side phase A, B, and C currents, and phase A voltage. It can be concluded that the three-phase current waveforms are in good shape and no significant distortion can be identified.

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This reference design demonstrates how to use silicon carbide (SiC) MOSFETs to optimize the performance of a motor drive for auxiliary motors in electric vehicles, as well as ...

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Explore strategies and SiC tech that raise three-phase inverter efficiency, slash switching losses, and future-proof your power systems.

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