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REF_ICC80QSG_84W2_BPA

Overview

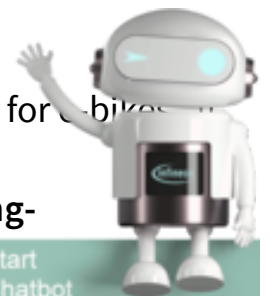
84 W AC-DC reference design for e-bike battery charger

The REF_ICC80QSG_BPA2_84W is an 84 W flyback-based reference design tailor-made for battery chargers for e-bikes. It is based on the quasi-resonant flyback controller

ICC80QSG (/cms/en/product/power/ac-dc-power-conversion/ac-dc-pwm-pfc-controller/battery-charging-ic/icc80qsg/)

and the renowned

700 V CoolMOS™ P7 (/cms/en/product/power/mosfet/n-channel/500v-950v/coolmos-p7/700v-coolmos-p7/)



technology in the small footprint and wave solderable

SOT-223 package ([/cms/en/products/power/mosfet/mosfet-uc1804a-be/50v-950v/coolmos-latest-packages/sot-223/](#)).

> REF_ICC80QSG_84W2_BPA

Summary of Features

- Secondary-side regulation with adjustable CC output set-point from 0.2 A to 2 A
- Supports wide output load range from 6 V to 42 V
- Full-power efficiency more than 91 percent at 230 V_{RMS_AC} input
- Four-point average efficiency more than 91 percent at 42 V output load
- System standby power less than 200 mW at 230 V_{RMS_AC} input

Potential Applications

- **Battery chargers** ([/cms/batterychargers](#))
- **Light electric vehicles** ([/cms/en/applications/consumer/light-vehicles/light-electric-vehicles/#lowpower](#)) such as e-bikes

List of components

Benefits

- High efficiency and low EMI with quasi-resonant (QR) valley switching
- Cost-effective flyback MOSFET with high performance, using CoolMOS™ P7 in SOT-223 package
- Configurable hysteresis of brown-in and brown-out
- Adaptive brown-out level triggering based on bus voltage ripple, to better protect primary components from overheating and saturation with higher brown-out level at higher power transfer
- Comprehensive set of protections: internal overtemperature protection (OTP), output overvoltage protection (OVP), VCC OVP, overcurrent protection (OCP), brown-in and brown-out protection, input OVP and open-loop protection



[ICC80QSG \(/cms/en/product/power/ac-dc-power-conversion/ac-dc-pwm-pfc-controller/battery-charging-ic/icc80qsg/\)](/cms/en/product/power/ac-dc-power-conversion/ac-dc-pwm-pfc-controller/battery-charging-ic/icc80qsg/)

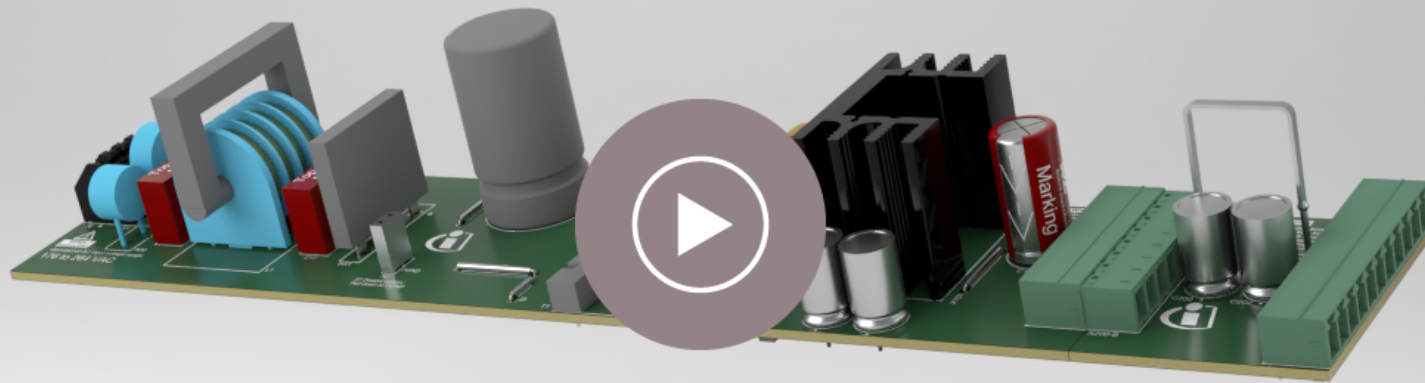
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 - > [REF-ICC80QSG-BPA](#)
 - > [REF-ICC80QSG-BPA2](#)
- [IPN70R450P7S \(/cms/en/product/power/mosfet/n-channel/500v-950v/ipn70r450p7s/\)](/cms/en/product/power/mosfet/n-channel/500v-950v/ipn70r450p7s/) (700 V CoolMOS™ P7 superjunction MOSFET)

Interactive 3D board model

[\(/cms/media/pss-3dmodels/REF-ICC80QSG-BPA2-84W/\)](/cms/media/pss-3dmodels/REF-ICC80QSG-BPA2-84W/)



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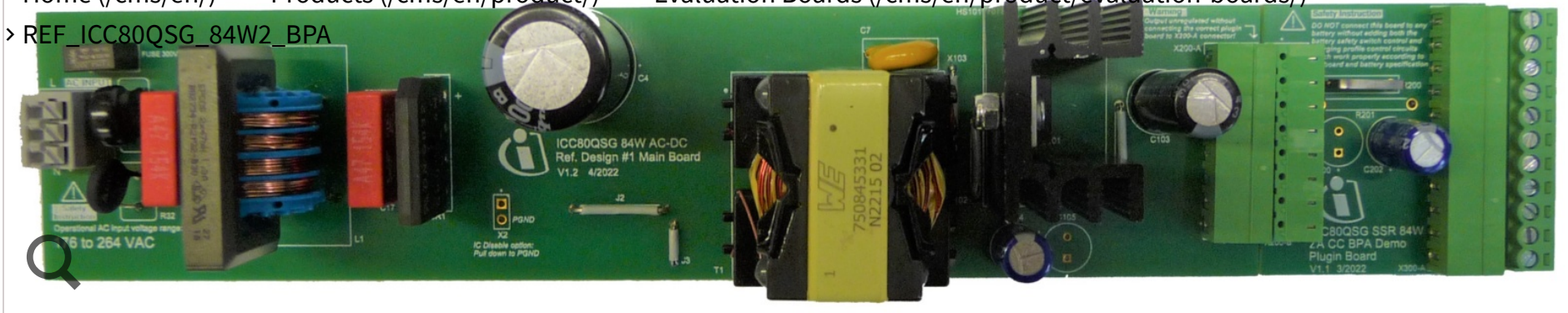
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Parametrics

Parametrics	REF_ICC80QSG_84W2_BPA
Frequency max	60 kHz
I _{out} min max	1 A 0.2 A 2 A
I _{out}	DC
Input Type	AC
Input Voltage min max	230 V 176 V 264 V
Output Voltage min max	24 V 6 V 42 V
P _{out} max	84 W



Parametrics	REF_ICC80QSG_84W2_BPA
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> REF_ICC80QSG_84W2_BPA Product Description	<ul style="list-style-type: none"> • Secondary side regulation with adjustable CC output set-point from 0.2 to 2 A • Supports wide output load range from 6 to 42 V • Full-power efficiency more than 91 percent at 230 VRMS AC input
Target Application	Charging
Topology	Flyback
V _{out}	DC

Documents

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+ Expand all

— Data Sheets

