

Chargers for battery-powered applications featuring new ICC80QSG flyback controller

restricted

Overview

1 Introduction, topologies and offering

2 QR Flyback controller ICC80QSG

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Overview

1 Introduction, topologies and offering

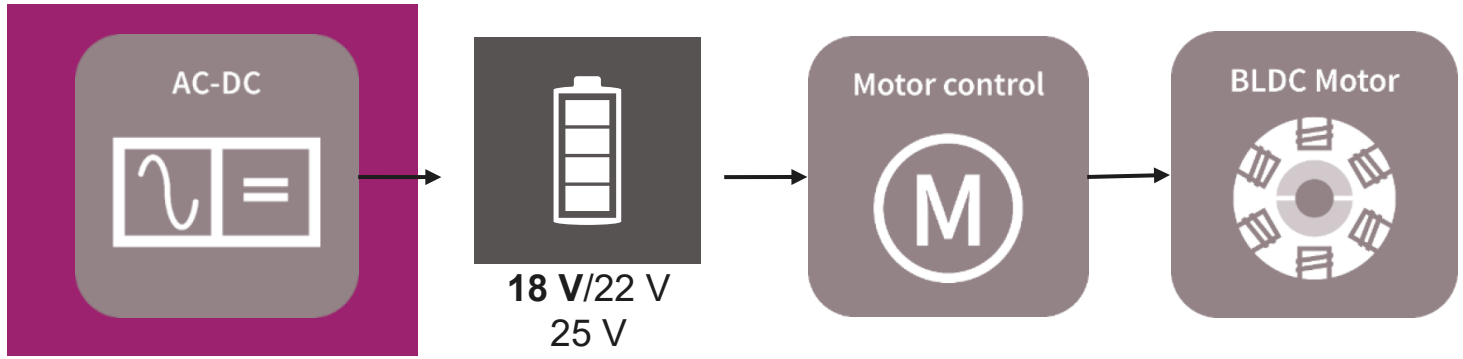
2 QR Flyback controller ICC80QSG

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Overview of battery-powered applications for system power up to 300 W



System overview of battery-powered applications

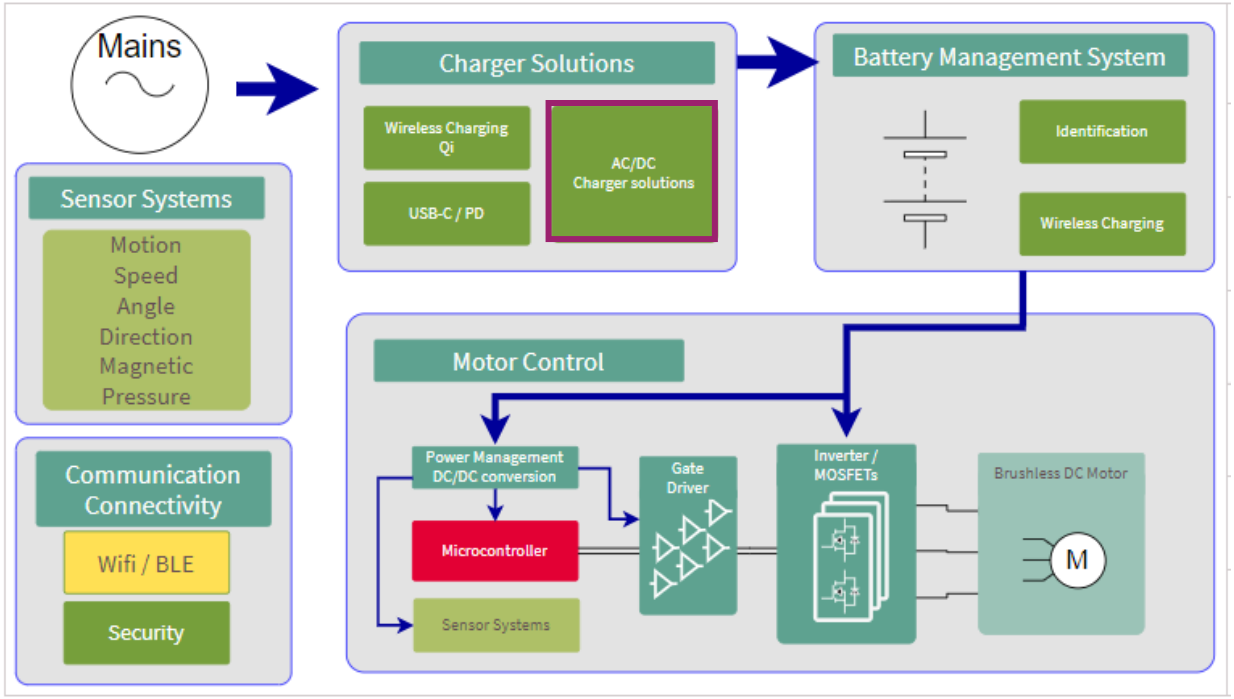


AC/DC solutions for battery chargers up to ~300 W

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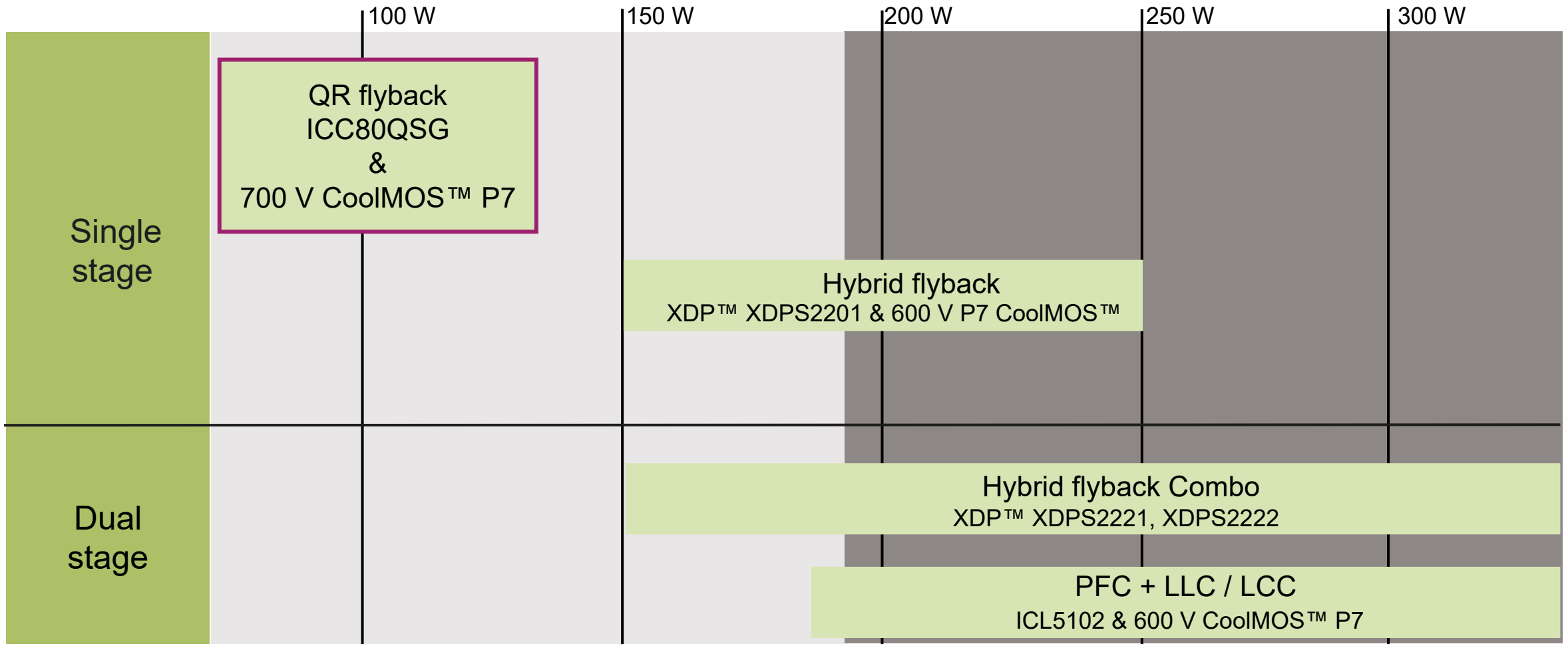
Controller ICs for highly efficient and cost-effective battery charging





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Our offering for battery-powered applications
Topologies and power classes



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ICC80QSG – Flyback controller for battery charger application

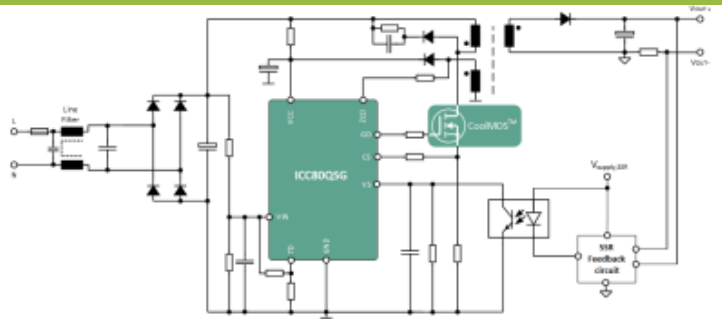
Features

- Quasi-resonant (QR) mode, switching in valley n (QRMn)
- Gate driver -I_{source} = 125 mA, I_{sink} = 250 mA
- Burst mode operation with reduced gated driver voltage, for low standby power
- Adjustable QR mode PWM on-time mapping

- **Configurable hysteresis of Brown-in and Brown-out**
- **Adaptive brown-out level triggered based on bus voltage ripple**

- Comprehensive set of protections: VCC OVP, Output OVP, Input OVP, Input UVP, over temp. protection and open loop protection
- Max. power limitation, with adaptive max. on-time based on input voltage
- Optional TD pin signal control of external VCC charging circuit for start-up

Application Diagram

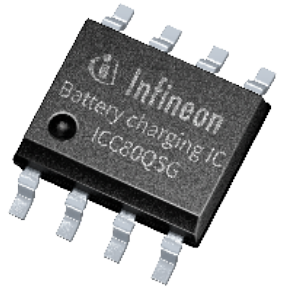


Benefits

- **High efficiency** and low EMI, with low BOM, **savings on coil and heatsink**
- Scalable power design up to 130 W, with CoolMOS™ P7
- Low standby power under light load and no load condition
- Flexible design with adjustable QR switching frequency range

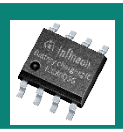
- Protects primary MOSFET from overheating and magnetics from saturation, during brown-out

- **Easy, safe and robust AC-DC solution for a lot of battery powered applications**



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Feature overview of ICC80QSG
Battery charging IC

ICC80QSG flyback controller										
	QR mode operation	Burst mode BM	Light load frequency reduction	Configurable Brown in/out	Soft-start	Control signal for external start-up circuit	MOSFET OCP	VCC, Output & Input OVP	Over temp. protection	Open loop protection
ICC80QSG	x	x	x	x	x	x	x	x	x	x

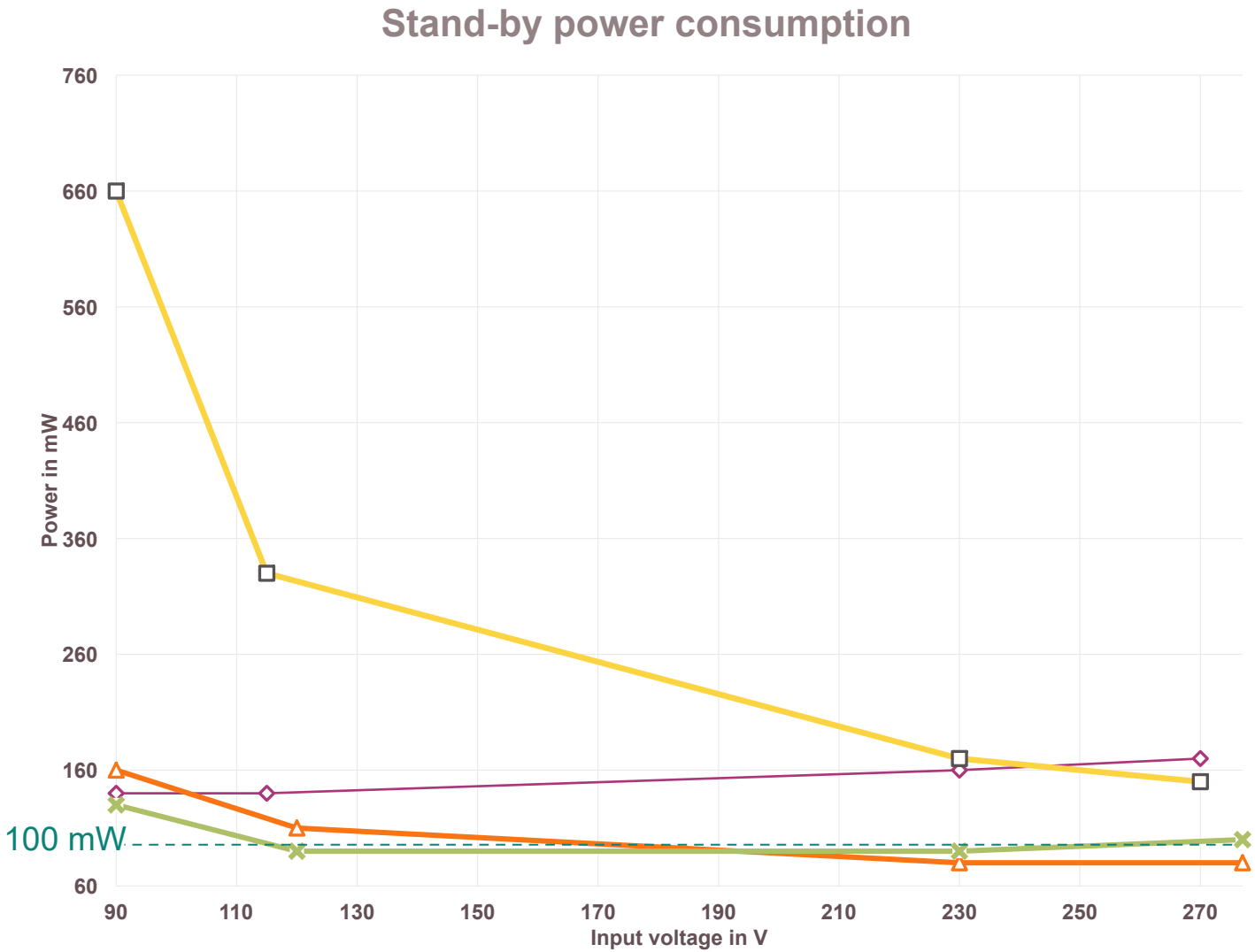
Quasi-resonant mode enables high efficiency and low EMI

Comprehensive IC protection features for improved battery charger robustness and safety

Burst mode of ICC80QSG enables low standby power **< 100 mW**

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ICC80QSG is ideally suited for very low stand-by requirements

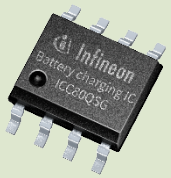


Input voltage [V]	Competitor A	Competitor B	ICC80QSGSSR OPAMP 43 W	ICC80QSGSSR TL431 43 W
90	660 mW	140 mW	160 mW	130 mW
115	330 mW	140 mW	110 mW	90 mW
230	170 mW	160 mW	80 mW	90 mW
270	150 mW	170 mW	80 mW	100 mW

The battery charging IC ICC80QSG shows the best stand-by performance over the whole operating range!

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Ordering information

	Description	SP number
ICC80QSG 	Battery charging IC, QR flyback controller	SP005731066
REF_ICC80QSG_84W3_BPA 	84 W battery charging reference design for power tools (21 V, 4 A)	
REF_ICC80QSG_84W2_BPA 	84 W battery charging reference design for e-bikes (42 V, 2 A)	SP005916684

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