

eGaN® FETs and ICs for 48 V-12 V Regulated Brick Converters



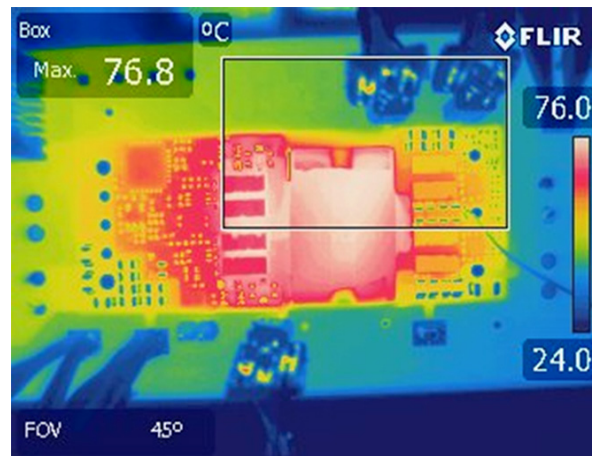
Unregulated performance in a regulated design delivers unprecedented power density.

Low Q_{OSS} , zero Q_{RR} and low Q_{GD} , along with low inductance and low resistance, are the keys to the eGaN FET's advantage in hard switched converters.

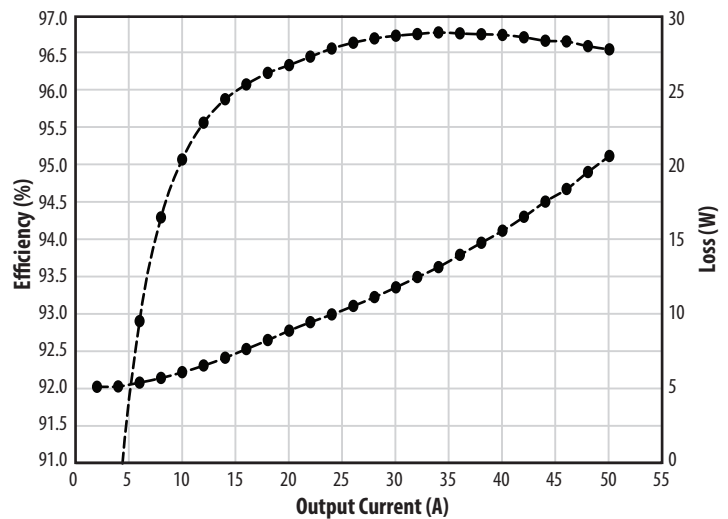
EPC's eGaN FETs and ICs enable 500 W 1/8th brick DC-DC converters

EPC9115: Eighth-brick integrated bus converter

- Fully regulated
- Isolated
- 500 W output at 12 V
- 52 V nominal input (4:1 transformer)
- > 96% efficient
- DOSA-compliant footprint
- Off the shelf parts



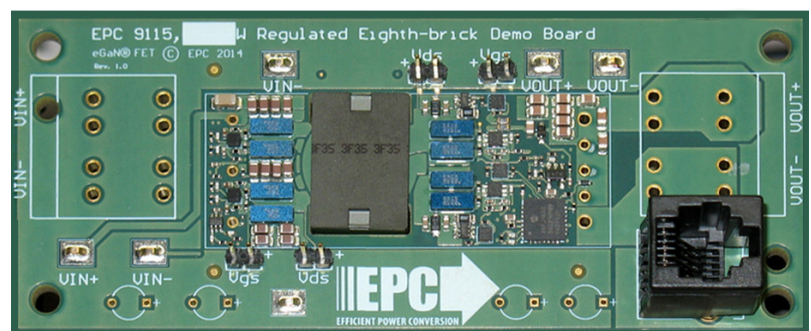
EPC9115 $P_{OUT} = 526\text{ W}$, 100°C max junction temperature



EPC9115: 48 Vin, 12 Vout

Benefits of eGaN FETs and ICs in 48 V – 12 V Hard Switched Converter Designs:

- **Higher Current Capability** – Reduces component count
- **Higher Efficiency** – Lower conduction and switching losses, zero reverse recovery losses
- **Smaller Footprint** – Higher power density



EPC9115: Fully regulated, Isolated, 500 W output at 12 V

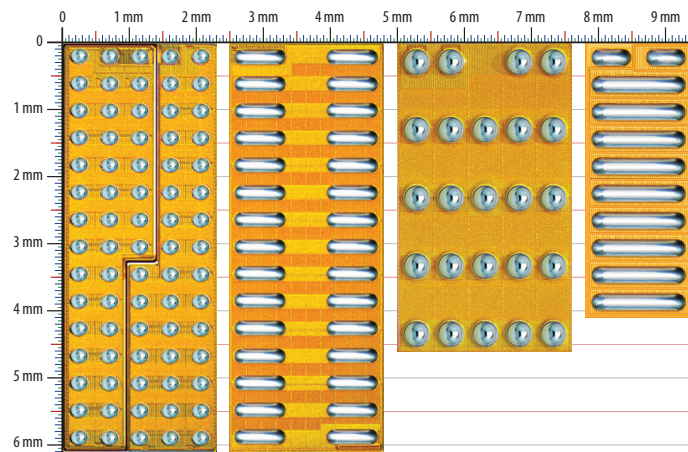
eGaN FET and ICs

48 V - 12 V Demonstration Board

Part Number	Description	V _{IN}	V _{OUT}	P _{OUT}
EPC9115	48 V to 12 V 1/8th Brick Converter	48 V - 60 V	12 V	42 A

Recommended Devices for Regulated Brick Converters

Part Number	Configuration	V _{DS}	Max R _{DS(on)} (mΩ) at 5 V _{GS}	Q _G typ (nC)	Q _{GS} typ (nC)	Q _{GD} typ (nC)	Q _{OSS} typ (nC)	Q _{RR} typ (nC)	I _D (A)	Pulsed I _D (A)	LGA Package (mm)	Demo Board
EPC2023	Single	30	1.3	20	5.8	1.9	28	0	60	590	6.1 x 2.3	EPC9031
EPC2024	Single	40	1.5	19	6.4	2	32	0	60	550	6.1 x 2.3	EPC9032
EPC2030	Single	40	2.4	18	5.2	3.4	41	0	31	495	4.6 x 2.6	EPC9060
EPC2015C	Single	40	4	8.7	3.0	1.4	18.5	0	36	235	4.1 x 1.6	EPC9001C
EPC2020	Single	60	2	16	5.0	2.0	42	0	60	470	6.1 x 2.3	EPC9033
EPC2031	Single	60	2.6	17	5.2	3.2	50	0	31	450	4.6 x 2.6	EPC9061
EPC2021	Single	80	2.5	15	3.8	2.1	56	0	60	420	6.1 x 2.3	EPC9034
EPC2029	Single	80	3.2	13	4	2.5	57	0	31	360	4.6 x 2.6	EPC9046
EPC2103	Half Bridge	80	5.5	6.5	2	1.3	29 39	0	23	195	6.1 x 2.3	EPC9039
EPC2104	Half Bridge	100	6.3	7	2	1.2	47 39	0	23	165	6.1 x 2.3	EPC9040
EPC2001C	Single	100	7	7.5	2.4	1.2	31	0	36	150	4.1 x 1.6	EPC9002C
EPC2022	Single	100	3.2	13	3.7	2.0	62	0	60	360	6.1 x 2.3	EPC9035
EPC2032	Single	100	4	12	3.1	2.0	66	0	48	340	4.6 x 2.6	EPC9062

Design Support Materials @ www.epc-co.com:[DC-DC Handbook](#)[Wireless Power Handbook, 2nd Edition](#)[GaN Transistors for Efficient Power Conversion Textbook](#)[EPC9115: 500 W 1/8th Brick Demonstration Board](#)[Demo Boards](#)[Reliability Reports](#)[Device Models](#)[Assembly Guides](#)[Video: 500 W DC-DC with GaN – The Power of a Quarter Brick in the Size of an Eight Brick](#)

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