eGaN® FETs and ICs for Wireless Power Applications

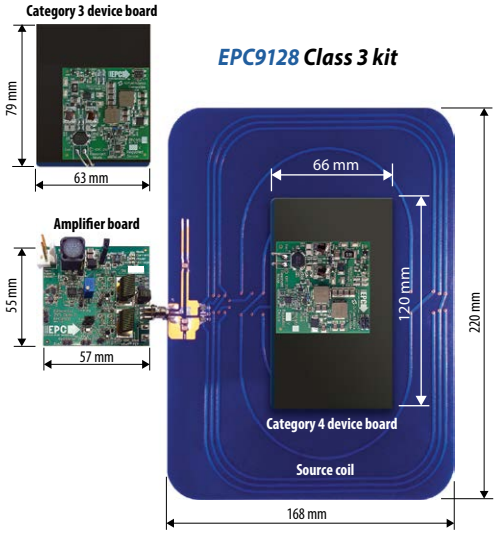
EFFICIENT POWER CONVERSION

Wireless energy transfer enables the remote powering and charging of the myriad of battery-powered devices that have infiltrated our daily lives.

With this explosion in the variety and number of mobile devices, wireless power transfer offers the convenience of charging batteries without the annoyance of cumbersome cables and the inconvenience of looking for outlets to "plug in."

Enhancement-mode gallium nitride (eGaN) FETs and ICs are ideal for wireless power applications due to their ability to operate at high frequency, high voltage, and high power.

Demonstration Kits Speed Time to Market



eGaN Products Cover Full Power Range

- Class 2, 10 W
- Class 3, 16 W
- Class 4, 33 W
- Multi-mode

AirFuel™ Alliance Compatible Wireless Power Kits

	Device Receive Unit				
Transmit Unit (amplifier)		EPC9513 Category 3 (6.5 W)	EPC9513 Category 3 (6.5 W) EPC9515 Category 4 (13 W)	EPC9513 Category 3 (6.5 W) EPC9514 Category 5 (27 W)	Category 3 (6.5 W) Qi (5 W)
	Typical Application	Smart Phone, Digital Assistant, any 1 A USB Device	Tablet, any 2 A USB Device	Small Form Factor Laptop, 19 V Lamp	Smart Phone, Digital Assistant, any 1 A USB Device
	EPC9510 Class 2 (10 W)	EPC9127 Class 2 Demo Kit			
	EPC9509 Class 3 (16 W)		EPC9128 Class 3 Demo Kit		
	EPC9512 Class 4 (33 W)			EPC9129 Class 4 Demo Kit	
	EPC9511 Multi-Mode (10 W)				EPC9121 Multi-Mode Demo Kit

Highly Resonant Wireless Power Kits

Part Number	Output Power	Operating Frequency
EPC9111	35 W	6.78 MHz preset or user selectable
EPC9112	50 W	6.78 MHz preset or user selectable

Wireless Power Device Receive Boards

Part Number	Description	V_{IN}	V_{OUT}	I_{OUT}	Featured Product
EPC9513	AirFuel Category 3, 5 W Device Receive Board	5	1 A	EPC2019	Smart Phone
EPC9515	AirFuel Category 4, 10 W Device Receive Board	5	2 A	EPC2019	Tablet, Phablet
EPC9514	AirFuel Category 5, 27 W Device Receive Board	19	1.4 A	EPC2016C	Small laptop

eGaN FETs and ICs

Recommended Devices for Wireless Power Applications

AirFuel Class	Max Input Power (W)	Topology	EPC Part Number	Configuration	V_{DS}	Max $R_{DS(on)}$ (mΩ) @ 5 V_{GS}	Q_G typ (nC)	Q_{GS} typ (nC)	Q_{GD} typ (nC)	Q_{OSS} typ (nC)	Q_{RR} (nC)	I_D (A)	Pulsed I_D (A)	Package (mm)
1	tbd	Class-E	EPC2037	Single	100	550	0.115	0.032	0.025	0.6	0	1	2.4	BGA 0.9 x 0.9
			EPC8010	Single	100	160	0.36	0.13	0.06	2.2	0	4	7.5	LGA 2.05 x 0.85
		ZVS Class-D	EPC2108	Dual with Sync Boot	60	240 3300	0.24 0.044	0.106 0.02	0.047 0.004	0.71 0.93 0.134	0	1.7 0.5	5.5 0.5	BGA 1.35 x 1.35
			EPC8009	Single	65	130	0.37	0.12	0.055	0.94	0	4	7.5	LGA 2.05 x 0.85
			EPC2038	Single with Gate Diode	100	3300	0.044	0.02	0.004	0.134	0	0.5	0.5	BGA 0.9 x 0.9
		Current Mode Class-D	EPC8010	Single	100	160	0.36	0.13	0.06	2.2	0	4	7.5	LGA 2.05 x 0.85
2	10	Class-E	EPC2012C	Single	200	100	1	0.3	0.2	10	0	5	22	LGA 1.7 x 0.9
			EPC2106	Half Bridge	100	70	0.73	0.24	0.140	3.96 4.68	0	1.7	18	BGA 1.35 x 1.35
			EPC2038	Single with Gate Diode	100	3300	0.044	0.02	0.004	0.134	0	0.5	0.5	BGA 0.9 x 0.9
		ZVS Class-D	EPC8010	Single	100	160	0.36	0.13	0.06	2.2	0	4	7.5	LGA 2.05 x 0.85
			EPC2038	Single with Gate Diode	100	3300	0.044	0.02	0.004	0.134	0	0.5	0.5	BGA 0.9 x 0.9
			EPC2107	Dual with Sync Boot	100	390 3300	0.19 0.044	0.077 0.02	0.041 0.004	0.9 1.25 0.134	0	1.7 0.5	3.8 0.5	BGA 1.35 x 1.35
		Current Mode Class-D	EPC8010	Single	100	160	0.36	0.13	0.06	2.2	0	4	7.5	LGA 2.05 x 0.85
3	16	Class-E	EPC2012C	Single	200	100	1	0.3	0.2	10	0	5	22	LGA 1.7 x 0.9
			EPC2115	Dual Integrated Driver GaN FET	150	88				6.7	0	5	18	BGA 2.9 x 1.1
		ZVS Class-D	EPC2108	Dual with Sync Boot	60	240 3300	0.24 0.044	0.106 0.02	0.047 0.004	0.71 0.93 0.134	0	1.7 0.5	5.5 0.5	BGA 1.35 x 1.35
			EPC2007C	Single	100	30	1.6	0.6	0.3	8.3	0	6	40	LGA 1.7 x 1.1
			EPC2038	Single with Gate Diode	100	3300	0.044	0.02	0.004	0.134	0	0.5	0.5	BGA 0.9 x 0.9
		Current Mode Class-D	EPC2007C	Single	100	30	1.6	0.6	0.3	8.3	0	6	40	LGA 1.7 x 1.1
			EPC2016C	Single	100	16	3.4	1.1	0.55	16	0	18	75	LGA 2.1 x 1.6
			EPC2045	Single	100	7	5.9	1.9	0.8	25	0	16	130	BGA 1.5 x 2.5
4	33	Class-E	EPC2112	Integrated Driver GaN FET	200	40				24.0	0	10	40	BGA 2.9 x 1.1
		ZVS Class-D	EPC2016C	Single	100	16	3.4	1.1	0.55	16	0	18	75	LGA 2.05 x 0.85
			EPC2007C	Single	100	30	1.6	0.6	0.3	8.3	0	6	40	LGA 1.7 x 1.1
			EPC2038	Single with Gate Diode	100	3300	0.044	0.02	0.004	0.134	0	0.5	0.5	BGA 0.9 x 0.9
			EPC2045	Single	100	7	5.9	1.9	0.8	25	0	16	130	BGA 1.5 x 2.5
		Current Mode Class-D	EPC2001C	Single	100	7	7.5	2.4	1.2	31	0	36	150	LGA 4.1 x 1.6
			EPC2045	Single	100	7	5.9	1.9	0.8	25	0	16	130	BGA 1.5 x 2.5
5	45	ZVS Class-D	EPC2016C	Single	100	16	3.4	1.1	0.55	16	0	18	75	LGA 2.05 x 0.85
			EPC2038	Single with Gate Diode	100	3300	0.044	0.02	0.004	0.134	0	0.5	0.5	BGA 0.9 x 0.9
			EPC2045	Single	100	7	5.9	1.9	0.8	25	0	16	130	BGA 1.5 x 2.5
		Current Mode Class-D	EPC2001C	Single	100	7	7.5	2.4	1.2	31	0	36	150	LGA 4.1 x 1.6
			EPC2045	Single	100	7	5.9	1.9	0.8	25	0	16	130	BGA 1.5 x 2.5

Design Support Materials @ www.epc-co.com

Wireless Power Handbook

Wireless Power Application Page
Video: Cut the Cord! Wireless Power with GaN
Highly Resonant Wireless Power Design Kits:
- EPC9111: 35 W, highly resonant demo kit
- EPC9112: 50 W, highly resonant demo kit
- EPC9129: AirFuel™ Class 4 Kit, 33 W
- EPC9121: 10 W Multi-Mode Kit
- EPC9127: AirFuel™ Class 2 Kit, 10 W
- EPC9128: AirFuel™ Class 3 Kit, 16 W

GaN Transistors for Efficient Power Conversion Textbook
DC-DC Handbook
Demo Boards
Reliability Reports
Device Models
Assembly Guides

EFFICIENT POWER CONVERSION

For More Information

Please contact info@epc-co.com or your local sales representative

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