

# eGaN® FETs and ICs for Wireless Power Applications



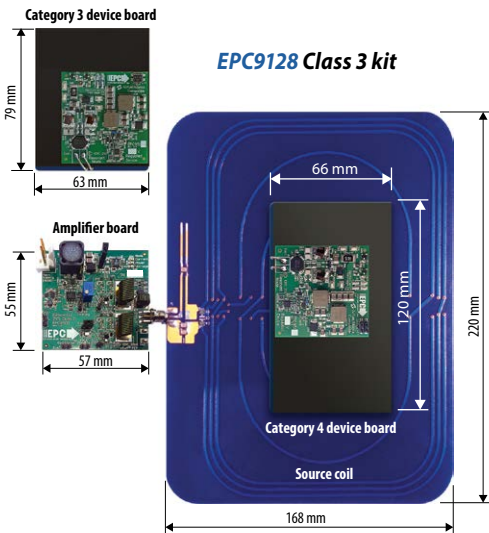
Wireless energy transfer enables the remote powering and charging of the myriad of battery-powered devices that have infiltrated our daily lives.

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

Transmit Unit (amplifier)	Device Receive Unit				
	Typical Application	<b>EPC9513</b> Category 3 (6.5 W)	<b>EPC9513</b> Category 3 (6.5 W) <b>EPC9515</b> Category 4 (13 W)	<b>EPC9513</b> Category 3 (6.5 W) <b>EPC9514</b> Category 5 (27 W)	Category 3 (6.5 W) Qi (5 W)
<b>EPC9510</b> Class 2 (10 W)	<b>EPC9127</b> Class 2 Demo Kit				
<b>EPC9509</b> Class 3 (16 W)		<b>EPC9128</b> Class 3 Demo Kit			
<b>EPC9512</b> Class 4 (33 W)			<b>EPC9129</b> Class 4 Demo Kit		
<b>EPC9511</b> Multi-Mode (10 W)					<b>EPC9121</b> Multi-Mode Demo Kit

## Highly Resonant Wireless Power Kits

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

## Wireless Power Device Receive Boards

Part Number	Description	V <sub>IN</sub>	V <sub>OUT</sub>	I <sub>OUT</sub>	Featured Product
<b>EPC9513</b>	AirFuel Category 3, 5 W Device Receive Board	5	1 A	<b>EPC2019</b>	Smart Phone
<b>EPC9515</b>	AirFuel Category 4, 10 W Device Receive Board	5	2 A	<b>EPC2019</b>	Tablet, Phablet
<b>EPC9514</b>	AirFuel Category 5, 27 W Device Receive Board	19	1.4 A	<b>EPC2016C</b>	Small laptop

eGaN FETs and ICs

Recommended Devices for Wireless Power Applications

AirFuel Class	Max Input Power (W)	Topology	EPC Part Number	Configuration	V <sub>DS</sub>	Max R <sub>DS(on)</sub> (mΩ) @ 5 V <sub>GS</sub>	Q <sub>G</sub> typ (nC)	Q <sub>GS</sub> typ (nC)	Q <sub>GD</sub> typ (nC)	Q <sub>SS</sub> typ (nC)	Q <sub>RR</sub> (nC)	I <sub>D</sub> (A)	Pulsed I <sub>D</sub> (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
		ZVS Class-D	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
			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
		Current Mode Class-D	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
			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	6	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
EPC2016C	Single				100	16	3.4	1.1	0.55	16	0	18	75	LGA 2.05 x 0.85
ZVS Class-D	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	6	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	6	1.9	0.8	25	0	16	130	BGA 1.5 x 2.5
5	45	Class-E	EPC2207	Single	200	22	4.5	1.3	0.7	23	0	14	54	LGA 2.9 x 0.9
			EPC2215	Single	200	8	13.6	3.3	2.1	69	0	32	162	LGA 4.6 x 1.6
		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	6	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	6	1.9	0.8	25	0	16	130	BGA 1.5 x 2.5

Table data subject to change. Please refer to the Product section on [www.epc-co.com](http://www.epc-co.com).

Design Support Materials @ [www.epc-co.com](http://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

For More Information

Please contact [info@epc-co.com](mailto:info@epc-co.com) or your local sales representative

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