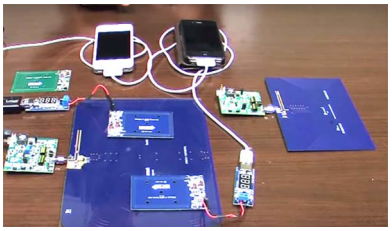
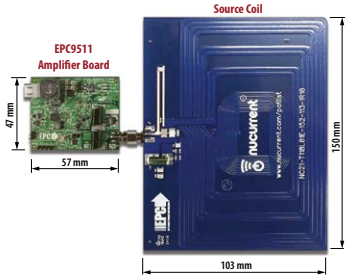
eGaN® FETs and ICs for Wireless Power

EFFICIENT POWER CONVERSION

	Wireless Power Application	Cut the Cord!	Benefits
Wireless Charging Standards **AirFuel™ Alliance Standard**	 AirFuel resonant wireless charging employs the principle of magnetic resonance, bringing a number of unique benefits to wireless power applications such as: • **Consumer Electronics** • **Automotive** • **Medical** 	 • Eliminates the need for cumbersome power cords • No need to find power outlets	eGaN FETs and ICs make ideal switching devices for use in wireless power, ensuring low operating losses, which lead to higher amplifier efficiency and help keep EMI generation low. In addition, eGaN FETs and ICs have a very small footprint and are low profile, which are important for smartphone handsets. eGaN FETs and ICs high frequency switching (6.78 MHz) and the FET's extremely small chip-scale packaging enables high power density with outstanding thermal efficiency.
Wireless Charging Evaluation Kits using eGaN FETs and ICs	 • Class 2: 10 W (EPC9127) • Class 3: 16 W (EPC9128) • Class 4: 30 W (EPC9128) • 6.78 MHz : 33 W (EPC9129) • 6.78 MHZ : 50 W (EPC9112)	Reduce wireless power system cost by leveraging the ability to power multiple devices from a single-stage transmitter.	eGaN FETs and ICs are available to enable the full AirFuel Alliance power range. Dedicated eGaN FETs and ICs for each power requirement: • Class 2: EPC2107/EPC2036 • Class 3: EPC2036 • Class 4: EPC8010/EPC2038/EPC2019 • 33 W: EPC2014C • 50 W: EPC2007C/ EPC2038 
Multi-mode Evaluation Kit	 EPC9121: 10 W Multi-mode wireless power charging eGaN FET and IC Evaluation Kit	Multi-mode wireless power capability eliminates the need for the user to worry about the wireless power standard of the receiving device.	eGaN FETs and ICs enable high efficiency for both low and high frequency modes. • AirFuel compatible – class 2 • Wireless Power Consortium (Qi) compatible – A6

Highly Resonant Wireless Power Kits

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

AirFuel™ Alliance Compatible Wireless Power Kits

Part Number	Class	Output Power	Operating Frequency
EPC9127	2	10 W	6.78 MHz
EPC9128	3	16 W	6.78 MHz
EPC9129	4	33 W	6.78 MHz

Multi-Mode Wireless Power Kit

Part Number	Standard	Class	Output Power	Operating Frequency
EPC9121	AirFuel Compatible Qi/PMA Compatible	2 A6	10 W 5 W	6.78 MHz 6.165 KHz

Wireless Power Amplifier Boards

Part Number	Description	V_{IN}	V_{OUT}	I_{OUT} (A)	Featured Product
EPC9051	Class-E	0 V - 40 V	V_{IN}	1 A	EPC2037
EPC9052	Class-E	0 V - 40 V	V_{IN}	1 A	EPC2012C
EPC9053	Class-E	0 V - 40 V	V_{IN}	1 A	EPC2019
EPC9054	Class-E	0 V - 40 V	V_{IN}	1 A	EPC2010C
EPC9083	Class-E	0 V – 80 V	V_{IN}	4 A	EPC2046
EPC9508	ZVS Class-D	7 V - 36 V	V_{IN}	3 A	EPC8009, EPC2007C
EPC9506	ZVS Class-D	8 V - 32 V	V_{IN}	10 A	EPC2014C
EPC9507	ZVS Class-D	8 V - 36 V	V_{IN}	6 A	EPC2007C, EPC2038
EPC9509	ZVS Class-D	17 V - 24 V	52 V	1 A	EPC2036
EPC9510	ZVS Class-D	17 V - 24 V	66 V	0.8 A	EPC2107, EPC2036
EPC9065	ZVS Class-D	12 V (max V_{DD})	80 V	1.8 A_{RMS}	EPC2007C, EPC2038
EPC9512	ZVS Class-D	Mode Dependent	80 V	1.8 A	EPC8010, EPC2038, EPC2019
EPC9511	10 W Multi-Mode Wireless Power System	17 V - 24 V	66 V/ 26 V	1.7 A	EPC2107, EPC2038, EPC2036

GaN Integrated Circuits

Part Number	V_{DS}	$R_{DS(on)}$ (typ)			Q_{OSS} (typ)		
		Q1 Control FET	Q2 Sync. FET	Bootstrap FET	Q1 Control FET	Q2 Sync. FET	Bootstrap FET
EPC2107	100	240 mΩ	240 mΩ	2.1 mΩ	800 pC	1400 pC	140 pC

For more information, visit the Wireless Power page on our website:

Recommended Devices for Wireless Power

Part Number	ConfigurationWWW	V_{DS}	Max $R_{DS(on)}$ (mΩ) (V_{GS} = 5 V_{GS})	Q_G typ (nC)	Q_{GS} typ (nC)	Q_{GD} typ (nC)	Q_{OSS} typ (nC)	Max. Peak Pulsed I_D(A) (25°C, Tpulse = 300 µs)	Package (mm)	Development Board
EPC8004	Single	40	110	0.37	0.12	0.047	0.63	27	LGA 6.05 x 2.3	EPC9033
EPC2014C	Single	40	16	2	0.7	0.3	4	60	LGA 1.7 x 1.1	EPC9005C
EPC2015C	Single	40	4	8.7	2.7	1.2	19	235	LGA 4.1 x 1.6	EPC9001C
EPC8009	Single	65	130	0.37	0.12	0.055	0.94	7.5	LGA 2.05 x 0.85	EPC9029
EPC2039	Single	80	25	1.91	0.76	0.42	7.64	50	BGA 1.35 x 1.35	EPC9057
EPC2038	Single with Gate Diode	100	3300	0.044	0.02	0.004	0.134	0.5	BGA 0.9 x 0.9	EPC9057
EPC2107	Dual with Sync Boot	100	390 3300	0.19 0.044	0.077 0.02	0.041 0.004	1.25 0.9 0.134	3.8 0.5	BGA 1.35 x 1.35	EPC9063
EPC8010	Single	100	160	0.36	0.13	0.06	2.2	7.5	LGA 2.05 x 0.85	EPC9030
EPC2036	Single	100	73	0.7	0.17	0.14	3.9	18	BGA 0.9 x 0.9	EPC9050
EPC2007C	Single	100	30	1.6	0.6	0.3	8.3	40	LGA 1.7 x 1.1	EPC9006C
EPC2016C	Single	100	16	3.4	1.1	0.55	16	75	LGA 2.1 x 1.6	EPC9010C
EPC2110	Dual Common Source	120	60	0.8	0.25	0.19	4.9	20	BGA 1.35 x 1.35	N/A
EPC2012C	Single	200	100	1	0.3	0.2	10	22	LGA 1.7 x 0.9	EPC9004C
EPC2019	Single	200	50	1.8	0.6	0.35	18	42	LGA 2.77 x 0.95	EPC9014
EPC2010C	Single	200	25	3.7	1.3	0.7	40	90	LGA 3.6 x 1.6	EPC9003C
EPC2046	Single	200	25	2.9	1	0.6	22	55	BGA 2.77 x 0.95	EPC9079
EPC2047	Single	200	10	8.2	2.9	1.8	60	160	LGA 4.6 x 1.6	EPC9081

Table data subject to change. Please visit: www.epc-co.com/epc/Products/eGaNFETsandICs.aspx

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