

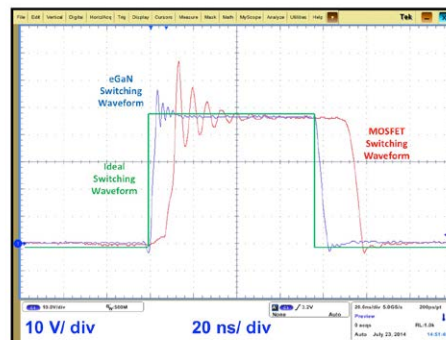
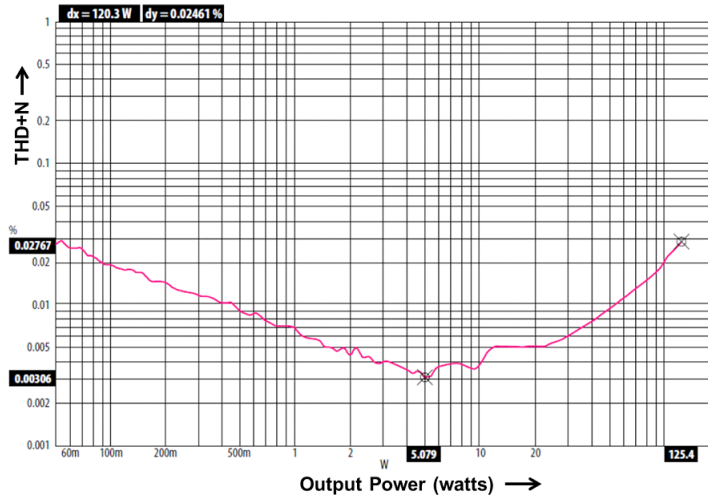
eGaN® FETs and ICs for Class-D Audio Applications



The quality of sound reproduced by the audio amplifier, measured by THD (Total Harmonic Distortion), DF (damping factor), and IMD (inter-modulation distortion) is influenced by the characteristics of the power transistors used.

eGaN FETs' near ideal switching performance due to lower propagation delays and faster slew rates (due to their lower gate capacitance) and zero Q_{RR} enable very short dead times to provide lower open loop distortion, lowering the THD and overall losses. This reduces feedback, driving down T-IMD and DF to provide a step jump in the sonic quality of Class-D audio amplifiers and lowering overall losses.

EPC9106 Demonstration Board showing excellent THD+N across a wide range of output power



Benefits of eGaN FETs and ICs in Your Class-D Audio Amplifier Designs

- **Lower IMD and THD** – faster switching, shorter dead-time, and zero reverse recovery (Q_{RR})
- **Higher Efficiency** – lower conduction and switching losses, and lower drive power
- **Smaller Footprint** – Higher power density

Class-D Audio Reference Designs

Part Number	Description	Output Power	Frequency Response
EPC9106	Class-D Audio Amplifier	150 W / 8 Ω	20 Hz – 20 kHz, ±0.5 dB
eGaNAMP 2.1	Class-D Audio Amplifier Platform	200 W / 8 Ω	10 Hz – 20 kHz, ±0.5 dB
eGaNAMP2016	Class-D Audio Amplifier Module	200 W / 8 Ω	10 Hz – 20 kHz, ±0.5 dB

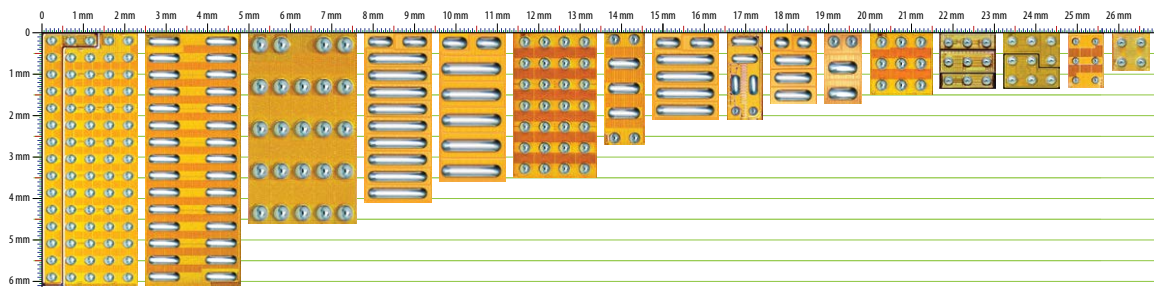


eGaN FETs and ICs

Recommended Devices for Class-D Audio Amplifier Designs

Application	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)	Half Bridge Development Board	
Pro	Consumer	EPC2015C	Single	40	4	8.7	2.7	1.2	19	0	53	235	LGA 4.1 x 1.6	EPC9001C
		EPC2036	Single	100	73	0.7	0.17	0.14	3.9	0	1.7	18	BGA 0.9 x 0.9	EPC9050
		EPC2007C	Single	100	30	1.6	0.6	0.3	8.3	0	6	40	LGA 1.7 x 1.1	EPC9006C
		EPC2052	Single	100	12.5	3.7	1.4	0.5	13	0	8.2	70	BGA 1.5 x 1.5	EPC9092
	Prosumer	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	EPC9064
		EPC2031	Single	60	3	16	5	3	48	0	48	450	BGA 4.6 x 2.6	EPC9061
		EPC2020	Single	60	2.2	16	3.9	2.3	50	0	90	470	LGA 6.05 x 2.3	EPC9033
		EPC2103	Half Bridge	80	5.5	6.5	2.2	1.1	30 34	0	30	195	BGA 6.05 x 2.3	EPC9039
		EPC2029	Single	80	3.2	13	3.4	1.9	53	0	48	360	BGA 4.6 x 2.6	EPC9046
		EPC2021	Single	80	2.5	15	3.4	2.3	63	0	90	420	LGA 6.05 x 2.3	EPC9034
		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	EPC9063
		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	EPC9055
		EPC2051	Single	100	25	1.7	0.6	0.3	7.3	0	1.7	37	BGA 1.3 x 0.85	EPC9091
		EPC2016C	Single	100	16	3.4	1.1	0.55	16	0	18	75	LGA 2.1 x 1.6	EPC9010C
		EPC2045	Single	100	7	5.9	1.9	0.8	25	0	16	130	BGA 2.5 x 1.5	EPC9078
		EPC2001C	Single	100	7	7.5	2.4	1.2	31	0	36	150	LGA 4.1 x 1.6	EPC9002C
		EPC2104	Half Bridge	100	6.8	6.8	2.3	1.4	35 41	0	30	180	BGA 6.05 x 2.3	EPC9040
		EPC2032	Single	100	4	12	3	2	66	0	48	340	BGA 4.6 x 2.6	EPC9062
		EPC2053	Single	100	4	12.0	4.1	1.5	43	0	32	240	BGA 3.5 x 2	EPC9093
		EPC2022	Single	100	3.2	13.2	3.4	2.4	71	0	90	390	LGA 6.05 x 2.3	EPC9035
EPC2033	Single	150	7	12	3.8	3.2	90	0	48	260	BGA 4.6 x 2.6	EPC9047		
EPC2019	Single	200	50	1.8	0.6	0.35	18	0	8.5	42	LGA 2.77 x 0.95	EPC9014		
EPC2010C	Single	200	25	3.7	1.3	0.7	40	0	22	90	LGA 3.6 x 1.6	EPC9003C		
EPC2034	Single	200	10	8.8	3	1.8	75	0	48	200	BGA 4.6 x 2.6	EPC9048		

Table data subject to change. Please refer to the Product section on www.epc-co.com



Design Support Materials @ www.epc-co.com

EPC9106: Class-D Audio Amplifier Demonstration Board
 Class D Audio Application Page
 Video: eGaN FETs for Class D Audio Applications

Live Demo
 GaN Transistors for Efficient Power Conversion Textbook
 DC-DC Converter Handbook

Demo Boards
 Reliability Reports
 Device Models
 Assembly Guides



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