

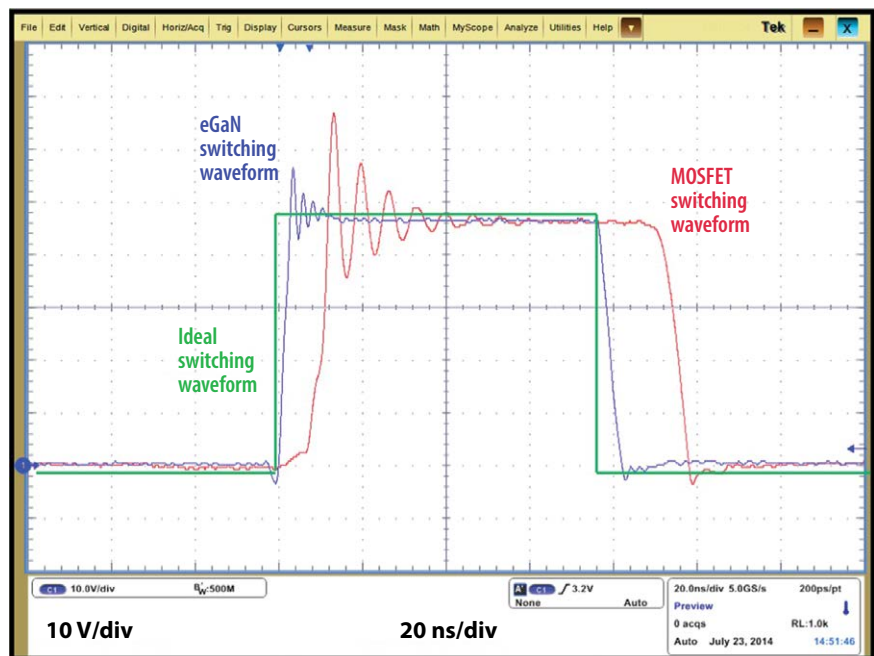
eGaN® FETs and ICs for Class-D Audio Applications



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
- **Eliminate heat sinks**

Class-D Audio Reference Designs

Reference Design	Description	Output Power	Frequency Response
Mini GaN 5	Balanced 2-Channel Power Amplifier	200 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

Mini GaN 5



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	EPC2055	Single	40	3.6	6.6	2.3	0.7	13	0	29	161	LGA 2.5 x 1.5	EPC90132	
		EPC2214	Single – AEC-Q101	80	20	1.8	0.5	0.3	8	0	10	47	BGA 1.35 x 1.35	n/a	
		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	13.5	3.5	1.5	0.5	13	0	8.2	74	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	
		EPC2065	Single	80	3.6	9.4	2.6	1.7	33	0	60	215	LGA 3.5 x 2	EPC90137	
		EPC2206	Single – AEC-Q101	80	2.2	15	4.1	3	72	0	90	390	LGA 6.05 x 2.3	EPC90122	
		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	1.8	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	
		EPC2212	Single – AEC-Q101	100	13.5	3.2	0.9	0.6	18	0	18	75	LGA 2.1 x 1.6	n/a	
		EPC2045	Single	100	7	6	1.9	0.8	25	0	16	130	BGA 2.5 x 1.5	EPC9078	
		EPC2104	Half Bridge	100	6.8	6.8	2.3	1.4	35 41	0	30	180	BGA 6.05 x 2.3	EPC9040	
		EPC2204	Single	100	6	5.7	1.8	0.8	25	0	29	125	LGA 2.5 x 1.5	EPC9097	
		EPC2032	Single	100	4	12	3	2	66	0	48	340	BGA 4.6 x 2.6	EPC9062	
		EPC2218	Single	100	3.2	10.5	3.2	1.5	46	0	60	231	LGA 3.5 x 1.95	EPC90123	
		EPC2302	Single	100	1.8	23	8	2.3	85	0	101	408	QFN 3 x 5	EPC90142	
		Prosumer	EPC2219	Single with Gate Diode – AEC-Q101	65	3300	0.044	0.02	0.004	0.104	0	0.5	0.5	BGA 0.9 x 0.9	n/a
			EPC2033	Single	150	7	12	3.8	3.2	90	0	48	260	BGA 4.6 x 2.6	EPC9047
	EPC2059		Single	170	9	5.7	1.3	0.9	35	0	24	102	LGA 2.8 x 1.4	EPC9098	
	EPC2054		Single	200	43	2.9	0.9	0.30	15	0	3.0	32	BGA 1.3 x 1.3	EPC9094	
	EPC2207		Single	200	22	4.5	1.3	0.7	23	0	14	54	LGA 2.9 x 0.9	EPC90124	
EPC2215	Single		200	8	13.6	3.3	2.1	69	0	32	162	LGA 4.6 x 1.6	EPC9099		
EPC2034C	Single	200	8	11.4	3.8	2.1	95	0	48	213	BGA 4.6 x 2.6	EPC9048C			

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



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