

eGaN® FETs and ICs for Drones

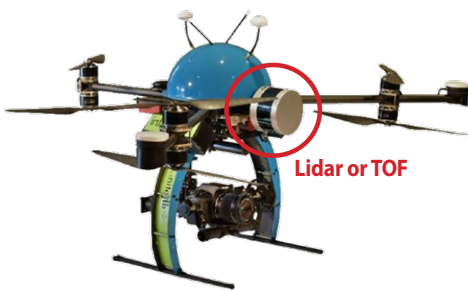


Applications	Why GaN?
Lidar/Time of Flight	Higher resolution, increased range, smaller/lighter weight
DC-DC Power Supply	Higher efficiency, smaller/lighter weight, lower cost
BLDC motors	Smaller/lighter weight, higher efficiency, reduced EMI

Key eGaN Features

- Smaller size for $R_{DS(on)}$
- Lower switching losses
- No reverse recovery
- Hard switching figure of merit 5 x better than silicon MOSFET at 100 V
- Very high switching frequency
- Capability to generate very narrow high current pulses
- Extremely reliable
- Integration simplifies design

Opportunities for eGaN devices in Industrial Drones and UAVs



Lidar or TOF

Lidar/Time of Flight

Part Number	Description	V_{BUS} (max)	V_{INPUT} (max)	T_{PIN} (min)	Max Pulse (A)	Featured Product
EPC9144	Short-Range Lidar Demo	12	5	1 ns	28	EPC2216
EPC9154	Short-Range Lidar Demo	40	5	2 ns	10	EPC21601
EPC9156	Short-Range Lidar Demo	40	5	2 ns	10	EPC21603
EPC9126	Long-Range Lidar Demo	80	5	6 ns	75	EPC2212
EPC9126HC					150	EPC2001C
EPC9150	Long-Range Lidar Demo	160	5	1 ns	220	EPC2034C



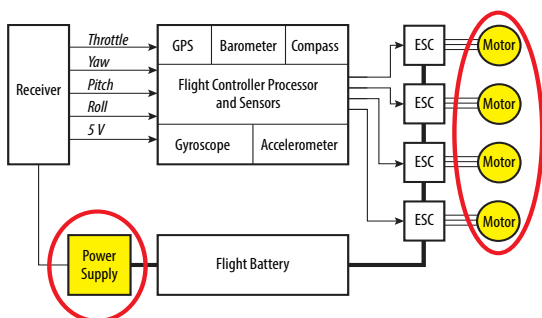
48 V Power Supply

Part Number	Description	V_{IN}	V_{OUT}	I_{OUT} (A)	Featured Product
EPC9151	300 W Bidirectional $\frac{1}{16}$ th Brick Evaluation Module	18 V – 60 V (Buck) 12 V – 15 V (Boost)	12 V (Buck) 48 V (Boost)	25 A (Buck) 5.5 A (Boost)	EPC2152



Motor Drive

Part Number	Description	DC input	Max per phase current	Switching Frequency	Featured Product
EPC9146	Three-Phase BLDC motor drive reference design	48	15 A	100 kHz	EPC2152



Recommended Devices for Industrial Drones

Part Number	Configuration	V _{DS} (V)	Max R _{DS(on)} (mΩ) @ 5V _{GS}	Q _G typ (nC)	Q _{GS} typ (nC)	Q _{GD} typ (nC)	Q _{OSS} typ (nC)	Q _{RR} (nC)	C _{ISS} (pF)	C _{OSS} (pF)	C _{RSS} (pF)	I _D (A)	Pulsed I _D (A)	Max T _J (°C)	Package (mm)	Development Board
EPC2040	Single	15	30	0.745	0.23	0.14	0.42	0	86	67	20	3.4	28	150	BGA 0.85 x 1.2	n/a
EPC2216	Single – AEC-Q101	15	26	0.87	0.21	0.13	0.53	0	98	66	20	3.4	28	150	BGA 0.85 x 1.2	n/a
EPC2014C	Single	40	16	2	0.7	0.3	4	0	220	150	6.5	10	60	150	LGA 1.7 x 1.1	EPC9005C
EPC2055	Single	40	3.6	6.6	2.3	0.7	13	0	841	408	8.8	29	161	150	LGA 2.5 x 1.5	EPC90132
EPC2102	Half Bridge	60	4.9	8	2.5	1.5	26 31	0	850	500 610	11	30	220	150	BGA 6.05 x 2.3	EPC9038
EPC2101	Half Bridge	60	11.5 2.8	3.3 13	1.1 3.9	0.5 2.2	9.3 45	0	300 1200	200 1000	5 25	10 40	80 350	150	BGA 6.05 x 2.3	EPC9037
EPC2203	Single – AEC-Q101	80	80	0.67	0.22	0.12	3.6	0	73	47	0.5	1.7	17	150	BGA 0.9 x 0.9	n/a
EPC2039	Single	80	25	1.91	0.76	0.42	7.64	0	210	115	2	6.8	50	150	BGA 1.35 x 1.35	EPC9057
EPC2214	Single – AEC-Q101	80	20	1.8	0.5	0.3	8	0	198	129	1.8	10	47	150	BGA 1.35 x 1.35	n/a
EPC2103	Half Bridge	80	5.5	6.5	2.2	1.1	30 34	0	730	445 525	7	30	195	150	BGA 6.05 x 2.3	EPC9039
EPC2105	Half Bridge	80	14.5 3.6	2.7 11	0.9 3	0.5 2.1	11 51	0	300 1170	170 780	3 12	10 40	70 300	150	BGA 6.05 x 2.3	EPC9034
EPC2021	Single	80	2.2	15	4.1	3	72	0	1610	1100	15	90	390	150	LGA 6.05 x 2.3	EPC9034
EPC2106	Half Bridge	100	70	0.73	0.24	0.140	3.96 4.68	0	79	52 61	0.5	1.7	18	150	BGA 1.35 x 1.35	EPC9055
EPC2007C	Single	100	30	1.6	0.6	0.3	8.3	0	170	110	1.9	6	40	150	LGA 1.7 x 1.1	EPC9006C
EPC2051	Single	100	25	1.8	0.6	0.3	7.3	0	224	86	1	1.7	37	150	LGA 1.3 x 0.85	EPC9091
EPC2212	Single	100	13.5	3.2	0.9	0.6	18	0	339	238	3	18	75	150	LGA 2.1 x 1.6	n/a
EPC2052	Single	100	13.5	3.5	1.5	0.5	13	0	441	195	3.2	8.2	74	150	BGA 1.5 x 1.5	EPC9092
EPC2045	Single	100	7	6	1.9	0.8	25	0	767	295	3	16	130	150	BGA 2.5 x 1.5	EPC9078
EPC2104	Half Bridge	100	6.8	6.8	2.3	1.4	35 41	0	730	430 500	5	30	180	150	BGA 6.05 x 2.3	EPC9040
EPC2204	Single	100	6	5.7	1.8	0.8	25	0	644	304	2.3	29	125	150	LGA 2.5 x 1.5	EPC9097
EPC2053	Single	100	3.8	11.4	4.1	1.5	45	0	1453	642	10.4	48	246	150	BGA 3.5 x 2	EPC9093
EPC2218	Single	100	3.2	10.5	3.2	1.5	46	0	1189	562	4.3	60	231	150	LGA 3.5 x 1.95	EPC90123
EPC2022	Single	100	3.2	13.2	3.4	2.4	71	0	1400	840	7	90	390	150	LGA 6.05 x 2.3	EPC9035
EPC2071	Single	100	2.2	18	6	1.8	71	0	2664	878	5.4	64	350	150	LGA 4.45 x 2.3	EPC90146
EPC2302	Single	100	1.8	23	8	2.3	85	0	3200	1000	7	101	408	150	QFN 3 x 5	EPC90142
EPC2034C	Single	200	8	11.4	3.8	2.1	95	0	1166	630	2.8	48	213	150	BGA 4.6 x 2.6	EPC9048C
EPC2019	Single	200	50	1.8	0.6	0.35	18	0	200	110	0.7	8.5	42	150	LGA 2.77 x 0.95	EPC9014
EPC2207	Single	200	22	4.5	1.3	0.7	23	0	454	130	0.7	14	54	150	LGA 2.9 x 0.9	EPC90124
EPC2215	Single	200	8	13.6	3.3	2.1	69	0	1356	390	2	32	162	150	LGA 4.6 x 1.6	EPC9099

ePower™ Stage

Part Number	Configuration	Function	VPwr	I _{OUT}	I _{OUT Peak}	V _{DD}	Input Logic	F (Max)	UVLO	Package (mm)	Development Board
EPC2152	Half-Bridge ePower™ Stage	ePower™ Stage	80	12.5	90	12	3.3V	3 MHz	7.5	LGA 3.65 x 2.59	EPC90120
EPC23101	HS FET + Driver + Level Shift	ePower™ Stage	100	65	240	6	5.5V	3 MHz	0.5 - 4V	QFN 3.5 x 5	EPC90142

eToF™ Laser Driver IC

Part Number	Configuration	Function	VPwr	I _{OUT}	I _{OUT Peak}	V _{DD}	Input Logic	F (Max)	UVLO	Package (mm)	Development Board
EPC21601	Single	eToF™ Laser Driver	40	3.7	10	5	3.3V	200	0	BGA 1 x 1.5	EPC9154
EPC21603	Single	eToF™ Laser Driver	40	3.7	10	5	LVDS	200	0	BGA 1 x 1.5	EPC9156

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

For More Information

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