

eGaN® FETs and ICs for Robotics

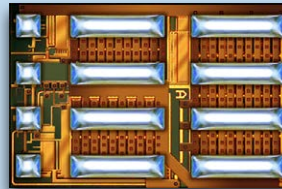


Robotic Application

eGaN® Technology

GaN Applications & Benefits

Warehouse Robotics



ePower™ Stage:
EPC2152

DC-DC Power Conversion

- Higher efficiency
- Smaller/lighter weight
- Lower cost

The latest generation of GaN devices increase the efficiency, shrink the size, and reduce system cost for the DC power systems used in robotic systems.

Lidar/Time of Flight (ToF)

- Higher resolution
- Increased range
- Smaller/lighter weight

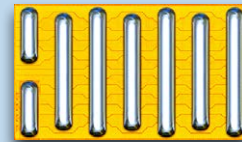
eGaN FETs and ICs are capable of very high switching frequency (up to 200 MHz) with very fast pulses (< 2 ns) for superior resolution in ToF systems.

BLDC Motors

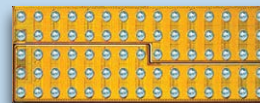
- Smaller/lighter weight
- Higher precision
- Reduced EMI

eGaN FETs and ICs are ideal for the integrated motors used in robotics with 48–100 V_{IN} @ 10 A - 40 A (500 W–2 kW)

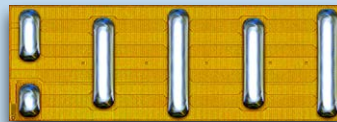
Drones



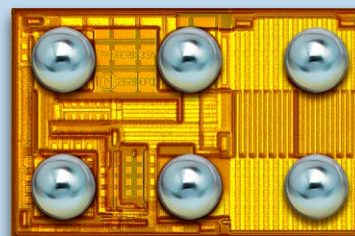
100 V eGaN® FET:
EPC2218



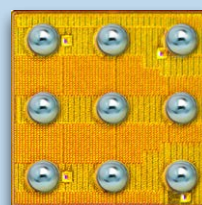
80 V eGaN® FET:
EPC2103



200 V eGaN® FET:
EPC2215



eToF™ Laser Driver IC:
EPC21601



80 V eGaN® FET:
EPC2039

Service Robotics



Household Applications



Surgical and Medical



High Current,
Narrow Pulse
Width Demo
Boards for Lidar

Part Number	Description	V _{BUS} (max)	V _{INPUT} (max)	T _{PIV} (min)	Max Pulse (A)
EPC9144	15 V High Current Pulsed Laser Diode Driver Demo Board	12	5	1 ns	28
EPC9154	40 V High Current Pulsed Laser Diode Driver Demo Board	40	5	2 ns	10
EPC9126	100 V High Current Pulsed Laser Diode Driver Demo Board	80	5	6 ns	75
EPC9126HC		80	5	6 ns	150
EPC9150	160 V High Current Pulsed Laser Diode Driver Demo Board	160	5	1 ns	220

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

Recommended Devices for Robotics

Part Number	Configuration	V _{DS} (V)	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)	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
EPC2023	Single	30	1.45	19	5.7	3.2	30	0	2150	1530	100	90	590	150	LGA 6.05 x 2.3	EPC9031
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
EPC2015C	Single	40	4	8.7	2.7	1.2	19	0	980	710	18	53	235	150	LGA 4.1 x 1.6	EPC9001C
EPC2030	Single	40	2.4	17	5.8	3.4	32	0	1960	1120	62	48	490	150	BGA 4.6 x 2.6	EPC9060
EPC2024	Single	40	1.5	18	5.1	2.4	45	0	1920	1620	29	90	560	150	LGA 6.05 x 2.3	EPC9032
EPC2035	Single	60	45	0.88	0.25	0.16	2.6	0	95	60	2	1.7	24	150	BGA 0.9 x 0.9	EPC9049
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
EPC2031	Single	60	2.6	16	5	3.2	48	0	1640	980	35	48	450	150	BGA 4.6 x 2.6	EPC9061
EPC2020	Single	60	2.2	16	3.9	2.3	50	0	1780	1020	24	90	470	150	LGA 6.05 x 2.3	EPC9033
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
EPC2029	Single	80	3.2	13	3.4	1.9	53	0	1410	820	17	48	360	150	BGA 4.6 x 2.6	EPC9046
EPC2021	Single	80	2.2	15	4.1	3	72	0	1610	1100	15	90	390	150	LGA 6.05 x 2.3	EPC9034
EPC2206	Single – AEC-Q101	80	2.2	15	4.1	3	72	0	1610	1100	15	90	390	150	LGA 6.05 x 2.3	EPC90122
EPC2038	Single with Gate Diode	100	3300	0.044	0.02	0.004	0.134	0	7	1.6	0.02	0.5	0.5	150	BGA 0.9 x 0.9	EPC9507
EPC2037	Single	100	550	0.115	0.032	0.025	0.6	0	14	6.5	0.1	1.7	2.4	150	BGA 0.9 x 0.9	EPC9087
EPC2036	Single	100	73	0.7	0.17	0.14	3.9	0	75	50	0.7	1.7	18	150	BGA 0.9 x 0.9	EPC9050
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	BGA 1.3 x 0.85	EPC9091
EPC2016C	Single	100	16	3.4	1.1	0.55	16	0	360	210	3.2	18	75	150	LGA 2.1 x 1.6	EPC9010C
EPC2212	Single – AEC-Q101	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
EPC2001C	Single	100	7	7.5	2.4	1.2	31	0	770	430	10	36	150	150	LGA 4.1 x 1.6	EPC9002C
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
EPC2032	Single	100	4	12	3	2	66	0	1270	800	12	48	340	150	BGA 4.6 x 2.6	EPC9062
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
EPC2033	Single	150	7	12	3.8	3.2	90	0	1160	480	6	48	260	150	BGA 4.6 x 2.6	EPC9047
EPC2059	Single	170	9	5.7	1.3	0.9	35	0	633	267	1.6	24	102	150	LGA 2.8 x 1.4	EPC9098
EPC2012C	Single	200	100	1	0.3	0.2	10	0	100	64	0.4	5	22	150	LGA 1.7 x 0.9	EPC9004C
EPC2019	Single	200	50	1.8	0.6	0.35	18	0	200	110	0.7	8.5	42	150	LGA 2.7 x 0.95	EPC9014
EPC2010C	Single	200	25	3.7	1.3	0.7	40	0	380	240	1.8	22	90	150	LGA 3.6 x 1.6	EPC9003C
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
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

ePower™ Stage

Part Number	Configuration	Function	VPwr	I _{OUT}	I _{OUT} Peak	V _{DD}	Input Logic	F (Max)	UVLO	Package (mm)	Dev. Board
EPC2152	Half-Bridge ePower™ Stage	ePower™ Stage	70	12.5		12	3.3 V			LGA 3.65 x 2.59	EPC90120

eToF™ Laser Driver IC

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

Design Support Materials @ www.epc-co.com

Books

GaN Transistors for Efficient Power Conversion
Wireless Power Handbook, 2nd Edition
DC-DC Conversion Handbook

Evaluation Kits
Demo Boards

For more information, please contact info@epc-co.com or your local sales representative. Visit our website: epc-co.com. Sign-up to receive EPC updates at bit.ly/EPCupdates or text "EPC" to 22828

Design Support

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