

AUTOMOTIVE





COMPANY OVERVIEW

Diodes Incorporated's (Diodes) Discrete, Analog, Mixed-Signal, and Logic products provide our customers with leading-edge solutions for next-generation systems.

Discrete products include Bipolar Transistors, MOSFETs, Diodes and Rectifiers, Protection products, and Functional Specific Arrays.

Analog and Mixed-Signal products cover these main areas: Power Management ICs, Standard Linear, LED Drivers, Sensors and Motor Control, Switching, Signal Integrity, Connectivity, and Timing products.

Our Logic products include Single-Gate, Dual-Gate and Standard-Logic Gates as well as Level Translators, Analog Switches, Registers, and Multiplexers.

INFOTAINMENT & TELEMATICS

MOTOR
CONTROL
MODULES

BODY
CONTROL
ELECTRONICS

DIODES AUTOMOTIVE

Semiconductors form an integral part of modern automobiles. A typical vehicle may have up to 100 Electronic Control Units (ECUs) embedded in systems including those governing engine, transmission, active safety, passenger comfort, and infotainment.

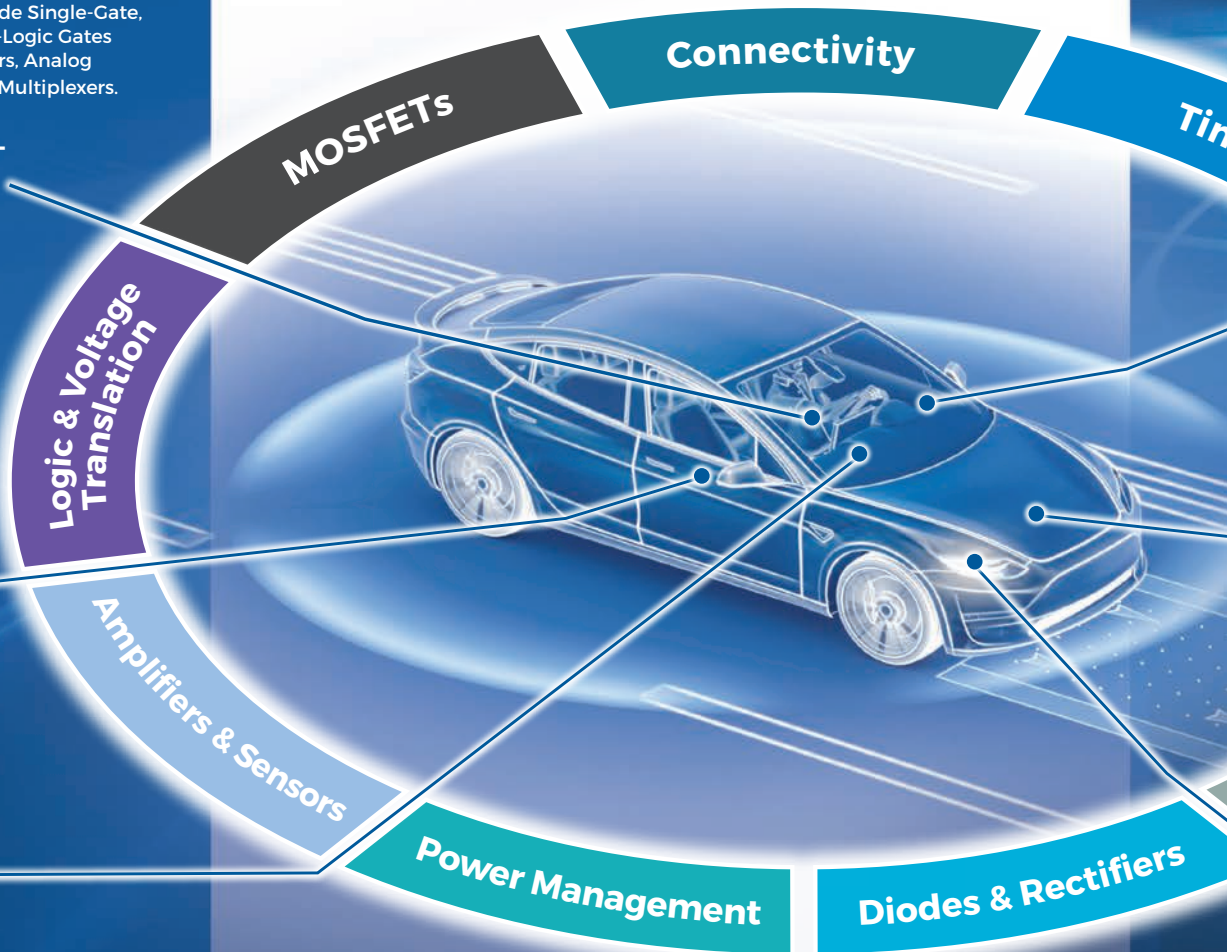
Diodes has a wide portfolio of automotive-compliant analog, discrete, and timing products.

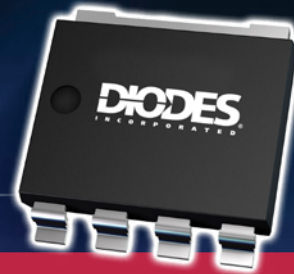
These automotive parts are clearly identified by a 'Q' at the end of the part number.



Diodes' fully automotive-compliant 'Q' parts are all qualified to AEC-Q100, AEC-Q101, AEC-Q104, and AEC-Q200 respectively, are manufactured in facilities certified to the rigorous IATF 16949 standard, and capable of customer audit to VDA6.3.

These parts are all supported by Production Part Approval Process (PPAP) documentation, thus meeting all the requirements of the automotive electronics industry.





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ADVANCED
DRIVER
ASSISTANCE
SYSTEMS

POWER TRAIN

INTERIOR
AND EXTERIOR
LIGHTING

MOSFETs Automotive 'Q' Portfolio

THE DIODES ADVANTAGE

- **DMTHxxxQ Series**
Optimized for low figure of merit ($R_{DS(ON)} \cdot Q_G$) to minimize switching losses
- **Qualified to 175°C**
Suitable for use in high-ambient environments
- **100% Avalanche Tested**
Ensures robust design able to withstand reverse avalanche energy from inductive loads



High-Temperature N MOSFET Automotive 'Q' Portfolio

Part Number	Polarity	V _{DS} (V)	V _{GS} (V)	I _D (A)	V _{GSTH} (V)	R _{DS(ON)} max (mΩ) @10V	R _{DS(ON)} max (mΩ) @4.5V	Q _G (nC) Typ @ V _{GS} = 10V	C _{ISS} (pF) Typ @ 1/2V _{DS}	E _{AS} (mJ)	I _{AS} (A)	T _J (°C)	Package	Status
DMTH31M7LPSQ	N	30	20	100	1 to 3	1.7	2.4	5741	90	215	65	175	PowerDI5060	Released
DMTH32M5LPSQ	N	30	20	170	1 to 3	2.2	3.2	68	3944	140	50	175	PowerDI5060	Released
DMTH3004LPSQ	N	30	20	145	1 to 3	3.8	6	44	2370	110	11	175	PowerDI5060	Released
DMTH3004LK3Q	N	30	20	75	1 to 3	4	7	44	2370	110	11	175	TO252 (DPAK)	Released
DMTH3004LFCQ	N	30	20	91	1 to 3	5.5	8.5	44	2370	110	11	175	PowerDI3333	Released
DMTH4M40SPGWQ	N	40	20	TBF	2 to 4	0.4	-	TBF	TBF	TBF	TBF	175	PowerDI8080	Q4 2024
DMTH4M70SPGWQ	N	40	20	460	2 to 4	0.7	-	117	10053	924	43	175	PowerDI8080	Released
DMTH4001STLWQ	N	40	20	300	2 to 4	0.85	-	150	13185	876	76	175	PowerDI1012S	Released
DMTH4M90LPSWQ	N	40	20	356	1 to 3	0.9	1.5	111	9308	1147	48	175	PowerDI5060(SWP)	Released
DMTH4M90SPSWQ	N	40	20	100	2 to 4	0.9	-	115	9434	800	40	175	PowerDI5060(SWP)	Released
DMTH41M3LPSWQ	N	40	20	100	1 to 2.5	1.5	2.3	62	5002	315	25	175	PowerDI5060(SWP)	Q3 2024
DMTH41M3SPSWQ	N	40	20	TBF	2 to 4	1.7	-	61	5433	278	23.3	175	PowerDI5060(SWP)	Q3 2024
DMTH41M2SPSQ	N	40	20	225	2 to 4	1.2	-	144	10737	440	94	175	PowerDI5060	Released
DMTH41M6SPSWQ	N	40	20	TBF	2 to 4	1.6	-	TBF	TBF	TBF	TBF	175	PowerDI8080	Q1 2025
DMTH41M6SPGWQ	N	40	20	TBF	2 to 4	1.6	-	TBF	TBF	TBF	TBF	175	PowerDI8080	Q4 2024
DMTH41M8SPSQ	N	40	20	100	2 to 4	1.8	-	79	6968	265	73	175	PowerDI5060	Released
DMTH42M4SPSQ	N	40	20	100	2 to 4	2.4	-	79	6968	265	73	175	PowerDI5060	Released
DMTH42M5LPSWQ	N	40	20	100	2 to 4	2.5	3.7	30	2182	141	16.6	175	PowerDI5060	Q3 2024
DMTH4004LPSQ	N	40	20	100	1 to 3	2.5	5	69	5220	283	53	175	PowerDI5060	Released
DMTH4004SPSQ	N	40	20	100	2 to 4	2.7	-	60	3714	200	45	175	PowerDI5060	Released
DMTH4004LK3Q	N	40	20	100	1 to 3	3	5	83	4450	120	30	175	TO252 (DPAK)	Released
DMTH4002SCTBQ	N	40	20	192	2 to 4	3	-	77.5	7180	551	19.2	175	TO63 (D2PAK)	Released
DMTH4004SCTBQ	N	40	20	100	2 to 4	3	-	67	4305	200	45	175	TO63 (D2PAK)	Released
DMTH43M7LFCQ	N	40	20	100	1 to 2.5	3	5	30	2182	185	19.3	175	PowerDI3333	Released
DMTH43M8LFCQ	N	40	20	100	1 to 2.5	3	5	40	2798	165	13	175	PowerDI3333	Released

SWP: Side Wall Plated Package TBF: To be finalized

PowerDI is a registered trademark of Diodes Incorporated

High-Temperature N MOSFET Automotive 'Q' Portfolio (Cont.)

Part Number	Polarity	V _{DS} (V)	V _{GS} (V)	I _D (A)	V _{GSTH} (V)	R _{DS(ON)} max (mΩ) @10V @4.5V		Q _G (nC) Typ @ V _{GS} = 10V	C _{ISS} (pF) Typ @ 1/2V _{DS}	E _{AS} (mJ)	I _{AS} (A)	T _J (°C)	Package	Status
DMTH43M8LFVWQ	N	40	20	96	1 to 2.5	4.3	7.5	36.9	2737	83.2	12.9	175	PowerDI3333	Released
DMTH4004SK3Q	N	40	20	100	2 to 4	3.2	-	68.6	4305	160	40	175	TO252 (DPAK)	Released
DMTH43M8LPSWQ	N	40	20	100	1 to 2.5	3.3	5	38.5	2693	87	13	175	PowerDI5060 (SWP)	Released
DMTH43M8LK3Q	N	40	20	119	1 to 2.4	3.6	5.2	38	2693	87	13	175	TO252 (DPAK)	Released
DMTH4005SPSQ	N	40	20	90	2 to 4	3.7	-	49	3062	53	32	175	PowerDI5060	Released
DMTH43M8LPDWQ	N+N	40	20	110	1 to 2.5	3.6	5.2	38	2693	87	13	175	PowerDI5060 (SWP)	Q3 2024
DMTH4005SK3Q	N	40	20	90	1 to 4	4.5	-	49	3062	53	32	175	TO252 (DPAK)	Released
DMTH45M5SFVWQ	N	40	20	71	2 to 4	5.5	-	13.2	1083	20.5	21	175	PowerDI3333 (SWP)	Released
DMTH45M5LFVWQ	N	40	20	71	1.2 to 2.2	5.5	7.9	13.9	978	19.2	19.6	175	PowerDI3333 (SWP)	Released
DMTH45M5LPSWQ	N	40	20	86	1.2 to 2.3	5.5	7.9	13.9	978	19.2	18.4	175	PowerDI5060 (SWP)	Released
DMTH45M5LPDWQ	N+N	40	20	79	1.2 to 2.3	5.5	7.9	13.9	978	19.6	19.8	175	PowerDI5060 (SWP)	Released
DMTH45M5SPSWQ	N	40	20	86	2 to 3.5	5.5	-	13.2	1083	20.6	20.3	175	PowerDI5060 (SWP)	Released
DMTH45M5SPDWQ	N+N	40	20	79	2 to 3.5	5.5	-	13.2	1083	20.6	20.3	175	PowerDI5060 (SWP)	Released
DMTH45M5SK3Q	N	40	20	71	2 to 4	5.5	-	13.2	1083	20.5	21	175	TO252 (DPAK)	Released
DMTH46M7SFVWQ	N	40	20	67.2	2 to 4	7.4	-	14.8	1315	35.5	26.6	175	PowerDI3333 (SWP)	Released
DMTH4007LPSWQ	N	40	20	100	1 to 3	6.5	9.8	29	2492	20	20	175	PowerDI5060 (SWP)	Released
DMTH4007LK3Q	N	40	20	70	1 to 3	7.3	9.8	29	1895	20	20	175	TO252 (DPAK)	Released
DMTH47M2LPSWQ	N	40	20	73	1.2 to 2.3	7.3	12	14	891	24	22	175	PowerDI5060 (SWP)	Released
DMTH47M2SPSWQ	N	40	20	73	2 to 4	7.5	-	12.1	897	30.5	24.7	175	PowerDI5060 (SWP)	Released
DMTH48M3SFVWQ	N	40	20	52.4	2 to 4	8.3	-	12	897	35	27	175	PowerDI3333 (SWP)	Released
DMTH4007SPDQ	N+N	40	20	18	2 to 4	8.6	-	42	2026	89	24	175	PowerDI5060	Released
DMTH47M2LFVWQ	N	40	20	49	1.2 to 2.5	8.9	13.5	12.3	881	24	22	175	PowerDI5060 (SWP)	Released
DMTH4008LPSQ	N	40	20	65	1 to 3	8.8	13	15	1088	25	22	175	PowerDI5060	Released
DMTH4008LDFWQ	N	40	20	12	1 to 3	11.5	18	14	1030	32	14	175	DFN2020-6	Released
DMTH4011SPDQ	N+N	40	20	55	1 to 3	12	18.5	15	767	238	30	175	PowerDI5060	Released
DMTH4008LPDWQ	N+N	40	20	31	1 to 3	12.3	20	17.6	1000	27	23	175	PowerDI5060 (SWP)	Released
DMTH4014LFVWQ	N	40	20	55	1 to 3	14	19	15	767	21	12	175	PowerDI3333 (SWP)	Released
DMTH4014LPSWQ	N	40	20	43.5	1 to 3	14.5	25	11.2	750	19.6	19.8	175	PowerDI5060 (SWP)	Released
DMTH4014SPSWQ	N	40	20	43.5	2 to 4	14.8	-	10.6	805	19.4	19.7	175	PowerDI5060 (SWP)	Released
DMTH4014LDVWQ	N+N	40	20	39	1 to 3	15	25	11.2	750	19.6	19.8	175	PowerDI3333 (SWP)	Released
DMTH4014LPDQ	N+N	40	20	44	1 to 3	15	25	10	733	21	12	175	PowerDI5060	Released
DMTH6M70SPGWQ	N	60	20	TBF	2 to 4	0.85	-	TBF	TBF	TBF	TBF	175	PowerDI8080	Q4 2024
DMTH61M5SPSWQ	N	60	20	225	2 to 4	1.5	-	131	8306	641	36	175	PowerDI5060 (SWP)	Released
DMTH61M8LPSWQ	N	60	20	100	2 to 4	1.6	-	131	8306	641	36	175	PowerDI5060 (SWP)	Released
DMTH61M8SPSQ	N	60	20	100	2 to 4	1.6	-	131	8306	641	36	175	PowerDI5060	Released
DMTH6002LPSWQ	N	60	20	100	1 to 3	2	3.3	131	8289	661	21	175	PowerDI5060	Released
DMTH62M7SPSWQ	N	60	20	170	2 to 4	2.7	-	68	4973	202	45	175	PowerDI5060 (SWP)	Released
DMTH6004LPSQ	N	60	20	100	1 to 3	3.1	4.5	96	4515	160	40	175	PowerDI5060	Released
DMTH6004SPSQ	N	60	20	100	2 to 4	3.1	-	95	4556	200	45	175	PowerDI5060	Released
DMTH6004SCTBQ	N	60	20	100	2 to 4	3.4	-	95	4556	200	45	175	TO263 (D2PAK)	Released
DMTH6004SK3Q	N	60	20	95	2 to 4	3.8	-	95	4556	200	45	175	TO252 (DPAK)	Released
DMTH63M6LPSWQ	N	60	20	105	1 to 3	4.1	6.2	131	8299	200	20	175	PowerDI5060 (SWP)	Released
DMTH6005LFCQ	N	60	20	100	1 to 2.5	4.1	7	49	3150	171	18	175	PowerDI3333	Released
DMTH6005LPSQ	N	60	20	100	1 to 3	5.5	10	47	2962	98	15	175	PowerDI5060	Released
DMTH6005LK3Q	N	60	20	90	1 to 3	5.6	10	47	2962	98	15	175	TO252 (DPAK)	Released
DMTH6006LPSWQ	N	60	20	100	1.2 to 2.5	6.5	10	35	2162	41	28	175	PowerDI5060 (SWP)	Released
DMTH6010SK3Q	N	60	20	70	2 to 4	8	-	30	2841	20	27	175	TO252 (DPAK)	Released

High-Temperature N MOSFET Automotive 'Q' Portfolio (Cont.)

Part Number	Polarity	V _{DS} (V)	V _{GS} (V)	I _D (A)	V _{GSTH} (V)	R _{DS(ON)} max (mΩ) @10V @4.5V		Q _G (nC) Typ @ V _{GS} = 10V	C _{ISS} (pF) Typ @ 1/2V _{DS}	E _{AS} (mJ)	I _{AS} (A)	T _J (°C)	Package	Status
DMTH6010LK3Q	N	60	20	50	1 to 3	8	12	41	2090	20	20	175	TO252 (DPAK)	Released
DMTH6010LPSWQ	N	60	20	50	1 to 3	8	12	41	2090	20	20	175	PowerDI5060 (SWP)	Released
DMTH69M8LFVWQ	N	60	20	45	1 to 3	9.5	13	33	1925	45	30	175	PowerDI3333 (SWP)	Released
DMTH6009LK3Q	N	60	20	59	0.7 to 2	10	13	33	1925	20	20	175	TO252 (DPAK)	Released
DMTH6009LPSQ	N	60	20	89.5	0.7 to 2	10	13	33	1925	20	20	175	PowerDI5060	Released
DMTH6010LPDWQ	N+N	60	20	48	1 to 3	11	16	40	2615	20	20	175	PowerDI5060 (SWP)	Released
DMTH6012LPSWQ	N	60	20	51	1 to 2.3	14	21	14	785	8	13	175	PowerDI5060 (SWP)	Released
DMTH6016LPSWQ	N	60	20	37	1 to 3	16	24	8	864	12	15	175	PowerDI5060 (SWP)	Released
DMTH6016LFVWQ	N	60	20	41	1 to 3	16	27	15	939	12	15	175	PowerDI3333 (SWP)	Released
DMTH6016LK3Q	N	60	20	46	1 to 3	17	24	8	864	12	15	175	TO252 (DPAK)	Released
DMTH6016LDFWQ	N	60	20	9	1 to 3	18	27.5	15	925	12	15	175	DFN2020-6 (SWP)	Released
DMTH6016LPDQ	N+N	60	20	8	2 to 2.5	19	28	17	864	12	15	175	PowerDI5060	Released
DMTH6016LSDQ	N+N	60	20	8	1 to 2.5	19.5	28	17	864	12	15	175	SO-8	Released
DMTH6015LPDWQ*	N+N	60	20	36.3	1.3 to 2.5	20	27	14.3	825	20.8	20.4	175	PowerDI5060	Released
DMTH6015LDVWQ*	N+N	60	20	19.7	1.3 to 2.5	20.5	27	14.3	825	20.8	20.4	175	PowerDI3333	Released
DMTH81M2STLWQ	N	80	20	TBF	2 to 4	1.25	-	171	10969	1458	54	175	PowerDI8080	Q1 2025
DMTH81M2SPGWQ	N	80	20	390	2 to 4	1.25	-	171	10969	1458	54	175	PowerDI8080	Q4 2024
DMTH8001STLWQ	N	80	20	231	2 to 4	1.7	-	138	8894	1104	47	175	PowerDI1012S	Released
DMTH8003STLWQ	N	80	20	239	2 to 4	2.5	-	136.5	8614	800	73	175	PowerDI1012S	Released
DMTH83M2SPSWQ	N	80	20	165	2 to 4	2.9	5.3@6V	87	5466	1227	29	175	PowerDI5060 (SWP)	Released
DMTH84M1SPSQ	N	80	20	100	2 to 4	4	5.7@6V	63	4209	264	23	175	PowerDI5060	Released
DMTH8008LFCQ	N	80	20	70	1.2 to 2.5	6.9	10.4	38	2254	162	18	175	PowerDI3333	Released
DMTH8008SFCQ	N	80	20	68	2 to 4	7	10@6v	32	1945	175	18.7	175	PowerDI3333	Released
DMTH8008SPSQ	N	80	20	92	2 to 4	7.8	-	34	1950	80	40	175	PowerDI3333	Released
DMTH8008LPSQ	N	80	20	91	1 to 3	7.8	11	41	2345	26	23	175	PowerDI3333	Released
DMTH8012LK3Q	N	80	20	50	1 to 3	16	21	46	2051	147	80	175	TO252 (DPAK)	Released
DMTH8012LPSQ	N	80	20	72	1 to 3	17	21	46	2051	10	12	175	PowerDI5060	Released
DMTH8028LFVWQ	N	80	20	27	1.3 to 2.5	25	41	10	631	23	13	175	PowerDI5060 (SWP)	Released
DMTH8028LPSWQ	N	80	20	42	1.3 to 2.5	25	41	10	641	23	13	175	PowerDI5060 (SWP)	Released
DMTH8030LPDWQ	N+N	80	20	28	1 to 3	26	45	5.4	631	23.4	12.5	175	PowerDI5060 (SWP)	Released
DMTH10H1M7SPGWQ	N	100	20	TBF	2 to 4	1.5	-	10881	171	1404	53	175	PowerDI8080	Q1 2025
DMTH10H1M5STLWQ	N	100	20	TBF	2 to 4	1.7	2.5@6V	203	13767	912	78	175	PowerDI1012S	Q2 2025
DMTH10H1M7STLWQ	N	100	20	267	2 to 4	2	-	147	9871	800	73	175	PowerDI1012S	Released
DMTH10H2M5STLWQ	N	100	20	248	2 to 4	2.5	-	124	8450	701	68	175	PowerDI1012S	Released
DMTH10H003SPSWQ	N	100	20	152	1.3 to 2.5	3.2	-	116	6322	612	20	175	PowerDI5060 (SWP)	Q3 2024
DMTH10H2M2LPSWQ	N	100	20	153	1.3 to 2.5	3.2	4.5	116	6322		44	175	PowerDI5060 (SWP)	Released
DMTH10H4M6SPSWQ	N	100	20	100	2 to 4	4.6	-	66	4327	252	41	175	PowerDI5060 (SWP)	Released
DMTH10H4M5LPSWQ	N	100	20	100	2 to 4	4.9	6.7	80	4843	240	40	175	PowerDI5060 (SWP)	Released
DMTH10H009LFCQ	N	100	20	46	1.1 to 2.5	8.5	13.6	41	2361	144.5	17	175	PowerDI3333	Released
DMTH10H009LPSQ	N	100	20	91	1.2 to 2.5	8	12.5	40	2309	66	21	175	PowerDI5060	Released
DMTH10H010SPSQ	N	100	20	98	2 to 4	8.5	-	54	2592	150	10	175	PowerDI5060	Released
DMTH10H009SPSQ	N	100	20	100	2 to 4	8.9	-	30	2085	181	11	175	PowerDI5060	Released
DMTH10H015SK3Q	N	100	20	53	1.4 to 3.5	14	20@6V	33	2343	85	7.5	175	TO252 (DPAK)	Released
DMTH10H015SPSQ	N	100	20	98	2 to 4	15	19.5@6V	54	2343	13	16	175	PowerDI5060	Released
DMTH10H015LPSQ	N	100	20	44	1 to 3	16	18@6V	33	1871	85	7.5	175	PowerDI5060	Released
DMTH10H017LPDQ	N+N	100	20	60	2 to 4	17	28	14	1968	150	10	175	PowerDI5060	Released
DMTH10H025LK3Q	N	100	20	45	1 to 3	22	30@6V	21	1477	96	8	175	TO252 (DPAK)	Released

* = ESD gate protection diodes

High-Temperature N MOSFET Automotive 'Q' Portfolio (Cont.)

Part Number	Polarity	V _{DS} (V)	V _{GS} (V)	I _D (A)	V _{GSTH} (V)	R _{DS(ON)} max (mΩ) @10V @4.5V	Q _G (nC) Typ @ V _{GS} = 10V	C _{ISS} (pf) Typ @ 1/2V _{DS}	E _{AS} (mJ)	I _{AS} (A)	T _J (°C)	Package	Status
DMTH10H025LPSWQ	N	100	20	45	1 to 3	23 30@6V	21	1477	96	8	175	PowerDI5060 (SWP)	Released
DMTH10H025LPDWQ	N+N	100	20	33	1.3 to 2.5	23 45	11.9	1463	21	20	175	PowerDI5060 (SWP)	Q4 2024
DMTH10H032LFVWQ	N	100	20	26	1.3 to 2.5	30 50	11.9	683	25.3	13	175	PowerDI5060 (SWP)	Released
DMTH10H032LPSWQ	N	100	20	26	1.3 to 2.5	32 50	11.9	683	25.3	13	175	PowerDI5060 (SWP)	Released
DMTH10H032LPDWQ	N+N	100	20	24	1.3 to 2.5	32 50	11.9	683	25.3	13	175	PowerDI5060 (SWP)	Released
DMTH10H032SPSWQ	N	100	20	34	2 to 4	32 -	8	544	25.3	13	175	PowerDI5060 (SWP)	Released
DMTH10H038SPDWQ	N	100	20	34	2 to 4	33 -	8	544	23.4	12.5	175	PowerDI5060 (SWP)	Released
DMTH10H071LDFWQ	N	100	20	5	1.3 to 2.5	68 116	TBF	TBF	TBF	TBF	175	DFN2020-6	Q3 2024
DMTH12H007SPSWQ	N	120	20	84	2 to 4	8.9 16@6V	44	3142	360.4	15.5	175	PowerDI5060 (SWP)	Released
DMTH15H4M2STLWQ	N	150	20	TBF	2 to 4	4.2 -	TBF	TBF	TBF	TBF	175	TOLL (PowerDI1012S)	Q1 2025
DMTH15H009HPSWQ	N	150	20	TBF	2 to 4	9 -	TBF	TBF	TBF	TBF	175	PowerDI5060 (SWP)	Q3 2024
DMTH15H017SPSWQ	N	150	20	61	2 to 4	19 -	34	2344	311	14.4	175	PowerDI5060 (SWP)	Released
DMTH15H017LPSWQ	N	150	20	61	2 to 4	19 25.5	50	3369	315	14.5	175	PowerDI5060 (SWP)	Released
DMTH15H053SPSWQ	N	150	20	25	2 to 4	66 -	11.5	814	68.4	11.7	175	PowerDI5060 (SWP)	Released
DMTH15H053SPSWQ	N	150	20	25	2 to 4	66 -	11.5	814	68.4	11.7	175	PowerDI5060 (SWP)	Released

High-Temperature MOSFET Applications

Brushless DC Motor Control

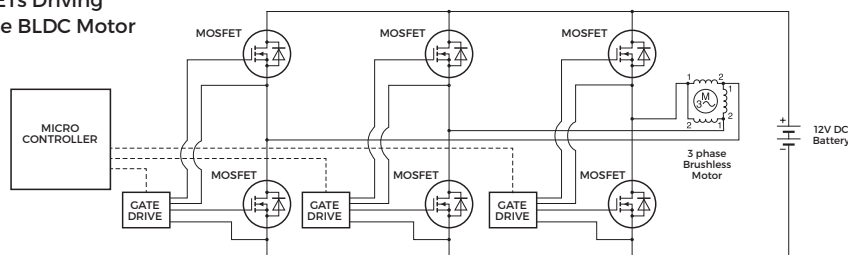
Brushless DC (BLDC) motor control provides improved performance, longer life, reduced noise, and greater ease of use compared to equivalent mechanical solutions.

Consequently, 3-phase BLDC systems are widely used in automotive applications such as fuel pumps, water pumps, anti-lock braking systems (ABS), and power steering systems.

The motor power depends on the vehicle application and performance.

In BLDC motor systems, MOSFETs are typically configured in a 3-phase bridge arrangement to drive the DC motor and must be capable of handling start-up and stalled motor currents of up to six times the continuous current rating of the motor.

MOSFETs Driving 3-Phase BLDC Motor



THE DIODES ADVANTAGE

- **Low R_{DS(ON)}**
Reduced conduction losses
- **Low Q_{GD}**
Reduced switching losses
- **100% Avalanche Rated**
Ensures robust design able to withstand the reverse avalanche energy generated by the BLDC
- **Rated to +175°C**
For use in high-ambient temperature environments
- **Low Thermal Resistance Package**
Maintains low operating temperature

High-Temperature Planar MOSFET Automotive 'Q' Portfolio

THE DIODES ADVANTAGE

- **DMNHXXXX Q Series**
Optimized for Safe Operating Area (SOA) and superior avalanche performance for use in applications requiring robust performance
- **Qualified to 175°C**
Suitable for use in high-ambient environments
- **100% Avalanche Tested**
Ensures robust design able to withstand reverse avalanche energy from inductive loads

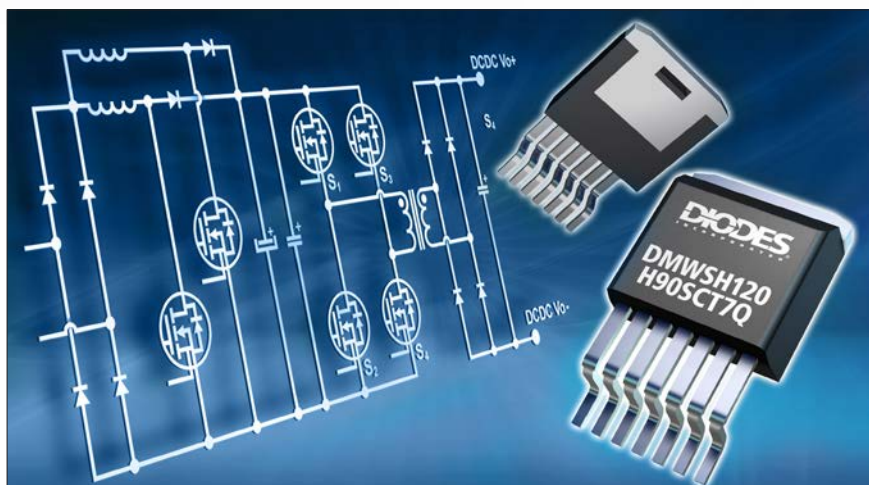


Part Number	Polarity	V _{DS} (V)	V _{GS} (V)	I _D (A)	V _{GS(TH)} (V)	R _{DS(ON)} max (mΩ)		Q _G (nC) Typ @ V _{GS} = 10V	C _{ISS} (pf) Typ @ 1/2V _{DS}	E _{AS} (mJ)	I _{AS} (A)	T _J (°C)	Package	Status
						@10V	@4.5V							
DMNH6035SPDWQ	N+N	60	20	33	1 to 3	35	44	16	879	230	21	175	PowerDI5060/SWP	Released
DMNH6065SPDWQ	N+N	60	20	27	1 to 3	65	79	9.5	466	89	13	175	PowerDI5060/SWP	Released

Silicon Carbide Power MOSFET Automotive 'Q' Portfolio

THE DIODES ADVANTAGE

- **Low R_{DS(ON)} and Low Q_G**
Enables system designers to maximize efficiency while ensuring power dissipation is kept to a minimum
- **Low Thermal Resistance Packaging**
Enables higher switching currents
- **Kelvin Sense Pin**
Optimizes switching performance, enabling higher power densities
- **Robust Body Diode**
Fast t_{RR} and Low Q_{RR} minimizes switching losses
- **Qualified to 175°C**
Suitable for use in high-ambient environments



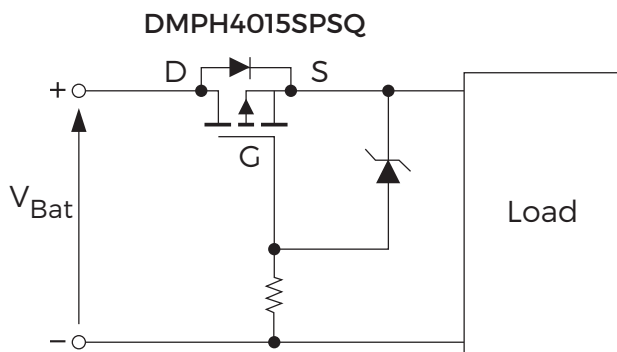
Part Number	Polarity	ESD Diodes Y/N	V _{DS} (V)	V _{GS} (± V)	I _{DS} @ T _C = +25°C (A)	P _D @ T _C = +25°C (W)	R _{DS(ON)} Max @ 10V V _{GS} (mΩ)	V _{GS(TH)}		Q _G Typ @ V _{GS}		C _{ISS} Typ (pf)	C _{ISS} Condition @ V _{DS} (V)	Package	Status
								Min (V)	Max (V)	4.5V (nC)	10V (nC)				
DMWSH120H28SM4Q	N	No	1200	15, -4	100	429	28.5 (@ 15V)	1.8	3.6	-	173.7 (@ 15V)	3944	1000	TO247-4	Released
DMWSH120H90SM4Q	N	No	1200	15, -4	40	235	97.5 (@ 15V)	1.7	3.5	-	52.6 (@ 15V)	1112	1000	TO247-4	Released
DMWSH120H28SM3Q	N	No	1200	15, -4	97.4	405	28.5 (@ 15V)	1.8	3.6	-	173.7 (@ 15V)	3905	1000	TO247-3	Released
DMWSH120H90SM3Q	N	No	1200	15, -4	41	235	97.5 (@ 15V)	1.7	3.5	-	52.6 (@ 15V)	1090	1000	TO247-3	Released
DMWSH120H90SCT7Q	N	No	1200	15, -4	38.2	197	90 (@ 15V)	1.7	3.5	-	54.6 (@ 15V)	1078	1000	TO263-7	Released
DMWSH120H43SM4Q	N	No	1200	15, -4	-	-	43 (@ 15V)	-	-	-	-	-	-	TO247-4	Q3 2024
DMWSH120H28SCT7Q	N	No	1200	15, -4	-	-	28.5 (@ 15V)	-	-	-	-	-	-	TO263-7	Q3 2024

High-Temperature P MOSFET Automotive 'Q' Portfolio

Part Number	Polarity	V _{DS} (V)	V _{GS} (V)	I _D (A)	V _{GSTH} (V)	R _{DS(ON)} max (mΩ)		Q _G (nC) Typ @ V _{GS} = 10V	C _{ISS} (pF) Typ @ 1/2V _{DS}	E _{AS} (mJ)	I _{AS} (A)	T _J (°C)	Package	Status
DMPH1006UPSQ	P	-12		-80	-0.4 to -1	6	-	-	6334	-17	-18	175	PowerDI5060	Released
DMPH2040UVTQ	P	-20	12	-5.6	-0.6 to -1.5	-	38	19@8V	834	-	-	175	TSOT26	Released
DMPH33M8SPSQ	P	-30	20	-100	-1 to -3	3.8	10	127	3775	241	-69	175	PowerDI5050 (SWP)	Released
DMPH3010LK3Q	P	-30	20	-50	-1.1 to -2.1	7.5	10	139	6807	113	-47	175	TO252 (DPAK)	Released
DMPH3010LPSQ	P	-30	20	-50	-1.1 to -2.1	7.5	10	139	6807	113	-47	175	PowerDI5060	Released
DMPH4015SPSQ	P	-40	25	-50	-1.5 to -2.5	10	14	91	4234	260	-22	175	PowerDI5060	Released
DMPH4015SSSQ	P	-40	25	-11.4	-1.5 to -2.5	11	15	91	4234	260	-22	175	SO-8	Released
DMPH4015SK3Q	P	-40	25	-45	-1.5 to -2.5	11	15	91	4234	260	-22	175	TO252 (DPAK)	Released
DMPH4009SPSQ	P	-40	20	-83	-1 to -2.5	11	19	112	5697	394	-22	175	PowerDI5050 (SWP)	Q1 2025
DMPH4009SSSQ	P	-40	20	-11	-1 to -2.5	11	19	112	5697	330	-25.7	175	SO-8	Released
DMPH4013SPSQ	P	-40	20	-75	-1 to -3	15	23	39	4763	260	-22	175	PowerDI5060	Released
DMPH4013SK3Q	P	-40	20	-55	-1 to -3	15	23	31	4004	69	-40	175	TO252 (DPAK)	Released
DMPH4016SPSQ	P	-40	20	-90.7	-1.5 to -2.5	10	14	112	5697	418.6	-28.9	175	PowerDI5050 (SWP)	Released
DMPH4016SSSQ	P	-40	20	-11	-1.5 to -2.5	11	15	112	5697	338	-26	175	SO-8	Released
DMPH4026SFVWQ	P	-40	20	-20	-0.8 to -1.8	25	45	45.8	2064	82	-23	175	PowerDI3333 (SWP)	Released
DMPH4023SK3Q	P	-40	20	-50	-1 to -3	26	-	18.7	1091	85	-40	175	TO252 (DPAK)	Released
DMPH4023SPDQ	P	-40	20	-27	-1 to -3	26	-	18.7	1091	85	-40	175	PowerDI5060	Released
DMPH4029LFGQ	P	-40	20	-22	-1 to 3	29	45	34	1626	32	-25	175	PowerDI3333	Released
DMPH6023SK3Q	P	-60	20	-35	-1 to -3	33	40	53	2569	60	-35	175	TO252 (DPAK)	Released
DMPH6050SSDQ	P+P	-60	20	-5.2	-1 to -3	48	60	30	1525	33	-25	175	SO-8	Released
DMPH6050SPDQ	P+P	-60	20	-26	-1 to -3	48	60	30	1525	30	-21	175	PowerDI5060	Released
DMPH6050SFCQ	P	-60	20	-18	-1 to -3	50	70	24	1293	31	-25	175	PowerDI3333	Released
DMPH6050SK3Q	P	-60	20	-23.6	-1 to -3	50	70	25	1377	31	-25	175	TO252 (DPAK)	Released
DMPH6250SQ	P	-60	20	-2.4	-1 to -3	155	240	8.3	512	-	-	175	SOT23	Released

Automotive 'Q' Mosfets For Reverse Battery Protection

REVERSE BATTERY PROTECTION CIRCUIT



Application Requirements

Protect against reverse polarity connection of the battery during vehicle maintenance. During the reconnection of a vehicle's battery, it is possible to reverse the battery polarities, thus causing damage to the vehicle's electronics.

- Simple, Low-Cost, and Minimal Component Count
- Minimal Power Losses
- Pulse Ruggedness to ISO7637
- AEC-Q101 and PPAP Supported
- EMI Emissions

Key Products: 40V P-Channel MOSFETs

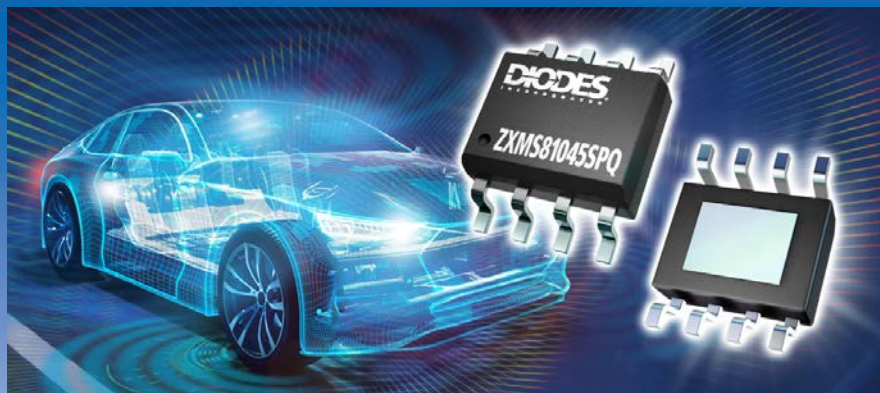
- DMPH4015SPSQ in PowerDI5060.
- DMPH4015SK3Q in TO252 (DPAK).

IntelliFET® - Protected Power Switches Automotive 'Q' Portfolio

Diodes incorporated designs, develops, and manufactures a range of high-side and low-side self-protected MOSFETs that are ideal for switching inductive loads such as motors, relays, and lamps at low frequencies.

These devices feature overtemperature, overvoltage, and overcurrent protection as well as input ESD protection facilities enabling circuit designers to dramatically increase reliability.

The Diodes IntelliFET portfolio is packaged in the SOT23F, SOT223, SM-8, SO-8, SO-8EP, and SO-14EP packages.



THE DIODES ADVANTAGE

- **Overvoltage, Overtemperature, and Overcurrent Protection**
Improved robustness and reliability for harsh environments
- **Typical $R_{DS(ON)}$ as Low as 34mΩ**
Low $R_{DS(ON)}$ minimizes the conduction losses through the device
- **3V and 5.5V Inputs**
IntelliFET portfolio can be driven directly from a microcontroller

IntelliFET - Low-Side Protected Power Switches

Part Number	Channel	V_{DS} (V)	I_D (A)	P_D (W)	$R_{DS(on)}$ max (mΩ) @ V_{IN}			V_{DS} (S/C) $V_{IN} = 5V$	E_{AS} (mJ)	Package	Status
					3V	5V	10V				
ZXMS6006DN8Q	Dual	60	2.8	3	125	100	-	16	490	SO-8	Released
ZXMS6006DCQ	Single	60	2.8	3	125	100	-	16	490	SOT223	Released
ZXMS6006SCQ	Single	60	2.8	3	125	100	-	16	490	SOT223	Released
ZXMS6006DT8Q	Dual	60	2.8	2.1	125	100	-	16	210	SM-8	Released
ZXMS6005DGQ	Single	60	2	1.6	250	200	-	24	490	SOT223	Released
ZXMS6005SCQ	Single	60	2	1.6	250	200	-	24	490	SOT223	Released
ZXMS6005DT8Q	Dual	60	1.8	1.6	250	200	-	24	210	SM-8	Released
ZXMS6005N8Q	Single	60	2	1.6	250	200	-	24	210	SO-8	Released
ZXMS6005DN8Q	Dual	60	1.8	1.6	250	200	-	24	210	SO-8	Released
ZXMS6004SCQ	Single	60	1.3	1.6	600	500	-	36	480	SOT223	Released
ZXMS6004DCQ	Single	60	1.3	3	600	500	-	36	490	SOT223	Released
ZXMS6004FFQ	Single	60	1.3	1.5	600	500	-	36	90	SOT23F	Released
ZXMS6004N8Q	Single	60	1.3	1.3	600	500	-	36	120	SO-8	Released
ZXMS6004DN8Q	Dual	60	1.3	1.3	600	500	-	36	120	SO-8	Released
ZXMS6004DT8Q	Single	60	1.2	2.3	600	500	-	36	210	SM-8	Released
BSP75CQ	Single	60	1.4	2.5	-	675	550	36	550	SOT223	Released
BSP75NQ	Single	60	1.2	1.5	-	675	550	36	550	SOT223	Released
ZXMS6008FFQ	Single	60	1.1	1.5	800	700	-	36	90	SOT23F	Released

IntelliFET is a registered trademark of Diodes Incorporated in the United States and other countries

IntelliFET - High-Side Protected Power Switches

Part Number	Channel	V _S (V)	V _S (S/C)	I _{L,NOM} (A)	R _{(DS(on) typ)} @25°C	R _{(DS(on) max)} @150°C	E _{AS} (mJ)	Package	Status
ZXMS81045SPQ	Single	41	24	4.0	34	90	40	SO-8EP	Released
ZXMS81090SPQ	Single	41	24	3.0	90	200	50	SO-8EP	Released
ZXMS81200SPQ	Single	41	24	1.5	200	400	70	SO-8EP	Released
ZXMS82090S14PQ	Dual	41	24	3.5	75	180	42	SO-14EP	Released
ZXMS82120SP14Q	Dual	41	24	2.5	100	240	28	SO-14EP	Released
ZXMS82180S14PQ	Dual	41	24	2	150	360	28	SO-14EP	Released
ZXMS82030S14PQ	Dual	41	24	6	25	60	TBF	SO-14EP	Q3 2024
ZXMS82045S14PQ	Dual	41	24	4.5	37	90	TBF	SO-14EP	Q3 2024
ZXMS81030SPQ	Single	41	24	5	30	60	TBF	SO-8EP	Q3 2024
ZXMS81016S14PQ	Single	41	24	8	16	32	TBF	SO-14EP	Q1 2025
ZXMS81020S14PQ	Single	41	24	6.5	20	40	TBF	SO-14EP	Q1 2025

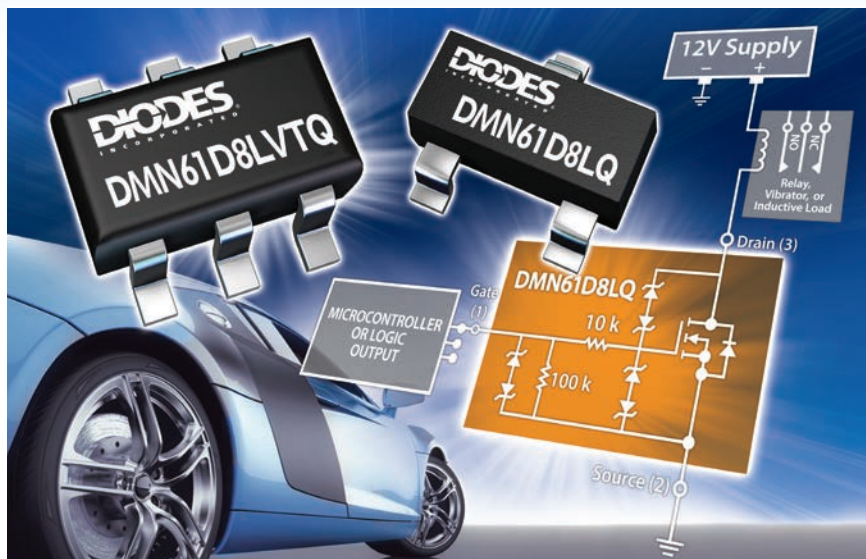
Relay Drivers Automotive 'Q' Portfolio

DMN61D8LQ and DMN61D8LVTQ inductive load-drivers are designed for inductive load-switching applications, such as door relays, solenoids, and small DC motors.

On-chip integrated Zener diodes and bias resistors eliminate the requirement for several external components, saving cost and reducing the PCB footprint.

THE DIODES ADVANTAGE

- **Integrated Solution**
Replaces three to four discrete components
- **Integrated Active Clamp**
Eliminates the requirement for external freewheeling diodes

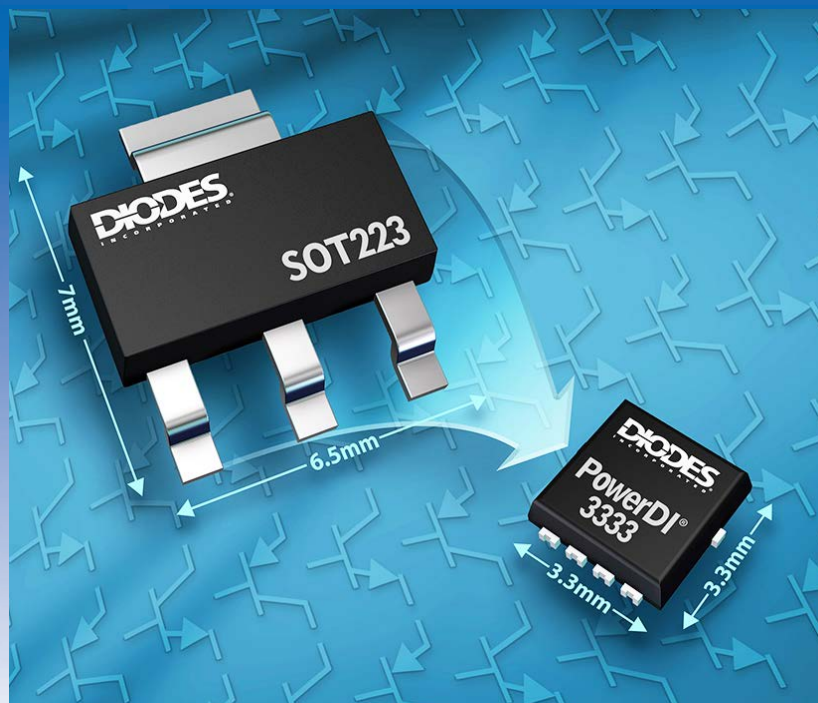


Part Number	Polarity	ESD Diodes V/N	V _{DS} (V)	V _{GS} (V)	I _D (A)	R _{DS(ON)} @ 5V V _{GS}	R _{DS(ON)} @ 3V V _{GS}	C _{ISS} (Pf) typ @ 1/2 V _{DS}	Q _G (nC) @ V _{GS} = 10V	Package	Status
DMN61D8LVTQ	N+N	Y	60	12	0.47	1800	2400	12.9	0.74	SOT26	Released
DMN61D8LQ	N	Y	60	12	0.47	1800	2400	12.9	0.74	SOT23	Released

Bipolar Transistors NPN Automotive 'Q' Portfolio

THE DIODES ADVANTAGE

- **Broad Portfolio**
NPN, PNP, Darlingtons, Matched Pairs, Pre-Biased Transistors, and Gate Drivers meet the majority of customer needs
- **Low $V_{CE(sat)}$**
Leading-edge silicon technology gives best-in-class saturation voltage performance with respect to footprint
- **High Peak Current**
For gate driving, high peak current handling allows the capacitive load of MOSFET and IGBT gates to be switched quickly
- **High Gain**
High minimum gains help reduce the base current requirements and assist in switching faster



Part Number	Product Type	V _{CEO} V _{CES} (V)	I _C (A)	I _{CM} (A)	P _D (A)	h _{FE}				V _{CE(sat)}				fT	Package	Status
						Min	@I _C (A)	Min 2	@I _C 2 (A)	Max (mV)	@ I _C /I _B (A/mA)	Max 2 (mV)	@ I _C /I _B 2 (A/mA)			
DSS4310FJAWQ	NPN	10	3	5	0.69	325	0.1	250	3	25	0.5/50	110	3/30	80	DFN2020-3/SWP	Released
FMMT618Q	NPN	20	2.5	6	0.625	300	0.2	200	2	15	0.1/10	200	2.5/50	140	SOT23	Released
ZXTN19020DZQ	NPN	20	7.5	20	2.4	300	0.1	150	7.5	70	1/10	80	2/40	160	SOT89	Released
ZXTN2005ZQ	NPN	25	5.5	20	2.1	300	0.01	200	7	35	0.5/10	130	2/10	150	SOT89	Released
DXTN22040DFGQ	NPN	40	2	3	2.3	300	0.5	140	2	120	0.5/50	350	2/200	198	PowerDI3333-8 (SWP) (Type UX)	Released
FCX491AQ	NPN	40	1	2	1	300	0.5	200	1	300	0.5/50	500	1/100	150	SOT89	Released
FMMT491AQ	NPN	40	1	2	0.5	300	0.5	200	1	300	0.5/50	500	1/100	150	SOT23	Released
FZT491AQ	NPN	40	1	2	2	300	0.5	200	1	300	0.5/50	500	1/100	150	SOT223	Released
DXT690BP5Q	NPN	45	3	6	3.2	400	1	150	2	85	0.1/0.50	320	2/40	150	PowerDI5	Released
FZT690BQ	NPN	45	3	6	2	500	0.1	150	2	100	0.1/0.50	500	1/50	150	SOT223	Released
ZXT690BKQ	NPN	45	3	6	3.4	400	1	60	3	360	1/5	320	2/40	150	TO252 (DPAK)	Released
FCX619Q	NPN	50	3	6	1	300	0.2	100	2	25	0.1/10	260	2/50	165	SOT89	Released
FMMT619Q	NPN	50	2	6	0.625	300	0.2	100	2	20	0.1/10	220	2/50	165	SOT23 (Type DN)	Released
MJD2873Q	NPN	50	2	3	2.6	80	0.75	40	2	300	1/50	-	-	65	TO252 (DPAK)	Released
ZXT13N50DE6Q	NPN	50	4	10	1.1	300	1	100	4	12	0.1/10	200	3/50	115	SOT26	Released
MJD2873Q	NPN	50	2	3	2.6	40	2	80	0.75	300	1/50	-	-	65	TO252 (DPAK)	Released

Bipolar Transistors NPN Automotive 'Q' Portfolio (Cont.)

Part Number	Product Type	V _{CE0} , V _{CES} (V)	I _C (A)	I _{CM} (A)	P _D (A)	Min	h _{FE}			Max (mV)	V _{CE(sat)}			f _T	Package	Status
DSS4160TQ	NPN	60	1	2	0.73	200	0.5	100	1	115	0.1/1	280	1/0.1	150	SOT23	Released
DSS4160FDBQ	NPN + NPN	60	1	1.5	1.6	290	0.1	150	0.5	120	0.5/50	240	1/50	175	U-DFN2020-6 (Type B)	Released
DSS60601MZ4Q	NPN	60	6	12	2	120	1	50	6	60	1/100	220	3/60	100	SOT223	Released
DXTN10060DFJBWQ	NPN	60	4	6	1.8	340	0.2	140	2	20	0.1/10	200	2/50	125	W-DFN2020-3 (SWP) (Type A)	Released
DXTN3C60PSQ	NPN	60	3	8	2.5	200	0.5	50	3	120	1/50	270	3/300	140	PowerDI5060-8	Released
FZT851Q	NPN	60	6	20	3	100	0.01	75	5	100	1/50	170	2/50	130	SOT223	Released
ZXTN2010ZQ	NPN	60	5	20	2.1	100	0.01	55	5	30	0.1/5	125	2/50	130	SOT89	Released
ZXTN2018FQ	NPN	60	5	12	1	100	0.01	40	5	30	0.1/5	110	2/50	130	SOT23	Released
ZXTN25060BZQ	NPN	60	5	10	2.4	100	0.01	45	2	90	1/50	230	4/400	185	SOT89	Released
DXT651Q	NPN	60	3	6	1	100	0.5	40	2	300	1/100	600	3/300	200	SOT89	Released
FZT651Q	NPN	60	3	6	2	100	0.5	40	2	300	1/100	600	3/300	175	SOT223	Released
FZT692BQ	NPN	70	2	5	2	500	0.1	150	1	150	0.1/0.5	500	1/10	150	SOT223	Released
FZT603Q	NPN	80	2	6	2	5000	0.5	2000	2	900	0.4/0.4	1130	-	150	SOT223	Released
FMMT620Q	NPN	80	1.5	5	0.625	300	0.2	60	1.5	20	0.1/10	200	1.5/20	160	SOT23	Released
BCP5616TQ	NPN	80	1	2	2.5	100	0.15	40	0.5	500	0.5/50	-	-	150	SOT223	Released
BCX5616Q	NPN	80	1	1.5	1	100	0.15	25	0.5	500	0.5/50	-	-	150	SOT89	Released
BC56-16PAWQ	NPN	80	1	2	0.5	100	0.15	40	0.5	500	0.5/50	-	-	150	DFN2020-3 (SWP)	Released
MJD44H11Q	NPN	80	8	16	2.7	60	2	40	4	1000	8/400	-	-	3	TO252 (DPAK)	Released
FMMT614Q	NPN	100	0.5	2	0.5	15000	0.1	5000	0.5	900	0.1/0.1	1000	0.5/50		SOT23	Released
FMMT634Q	NPN	100	0.9	5	0.625	20000	0.1	5000	2	930	0.5/5	960	1/50	140	SOT23	Released
DXTN3C100PSQ	NPN	100	3	6	2.5	150	0.5	20	2	150	1/50	330	3/300	140	PowerDI5060-8	Released
DXTN3C100PDQ	NPN + NPN	100	3	8	1.47	150	0.5	20	2	150	1/10	330	3/300	140	PowerDI5060-8/ SWP (Type UXD)	Released
ZXTN25100DCQ	NPN	100	3	3.5	3	300	0.01	40	1	170	0.5/10	345	2.5/600	175	SOT223	Released
MJD31CHQ	NPN	100	3	5	2.6	25	1	10	3	1200	3/375	-	-	3	TO252 (DPAK)	Released
MJD41CQ	NPN	100	6	10	2.7	30	0.3	15	3	1500	6/600	-	-	3	TO252 (DPAK)	Released
DXTN07100BP5Q	NPN	100	2	6	3.2	100	0.5	55	1	300	1/100	500	2/200	175	PowerDI5	Released
FCX493Q	NPN	100	1	2	1	100	0.25	60	0.5	300	0.5/0.50	600	1/100	150	SOT89	Released
FMMT493Q	NPN	100	1	2	0.5	100	0.25	60	0.5	300	0.5/50	600	1/100	150	SOT23	Released
FZT653Q	NPN	100	2	6	2	100	0.5	55	1	300	1/100	500	2/200	175	SOT223	Released
MJD31CUQ	NPN	100	3	5	2.1	25	1	10	3	1200	3.375	-	-	3	TO252 (DPAK)	Released
FCX495Q	NPN	150	1	2	1	100	0.25	50	0.5	200	0.25/25	300	0.5/50	100	SOT89	Released
FMMT495Q	NPN	150	1	2	0.5	100	0.25	50	0.5	200	0.25/25	300	0.5/50	100	SOT23	Released
FMMT625Q	NPN	150	1	3	0.625	300	0.2	30	1	50	0.1/10	300	1/50	135	SOT23	Released
FZT855Q	NPN	150	5	10	3	100	0.01	15	5	65	0.5/50	110	1/100	90	SOT223	Released
ZXTN4004KQ	NPN	150	1	3	3.4	60	0.085	100	0.15	250	0.1/5	-	-	-	TO252 (DPAK)	Released
FCX458Q	NPN	400	0.225	0.5	1	100	0.001	15	0.1	200	0.02/2	500	0.05/60	50	SOT89	Released
FMMT458Q	NPN	400	0.225	1	0.5	100	0.001	15	0.1	200	0.02/2	500	0.05/60	50	SOT23	Released
FZT458Q	NPN	400	0.3	1	2	100	0.001	15	0.1	200	0.02/2	500	0.05/60	50	SOT223	Released
FMMT459Q	NPN	450	0.15	0.5	0.625	50	0.03	-	-	75	0.02/2	90	0.05/60	50	SOT23	Released

Bipolar Transistors PNP Automotive 'Q' Portfolio

Part Number	Product Type	V_{CEQ} V_{CES} (V)	I_C (A)	I_{CM} (A)	P_D (A)	Min	h_{FE} β_{IC} (A)	Min 2	β_{IC2} (A)	Max (mV)	$V_{CE(sat)}$ β_{IC}/I_B (A/mA)	Max 2 (mV)	β_{IC}/I_{B2} (A/mA)	fT	Package	Status
DSS3515MQ	PNP	15	0.5	1	0.4	150	0.1	90	0.5	25	0.01/0.5	250	0.5/50	340	X1-DFN1006-3	Released
DSS5220TQ	PNP	20	2	3	1.2	225	0.1	150	2	80	0.5/50	250	2/100	100	SOT23	Released
FMMT718Q	PNP	20	1.5	6	0.625	300	0.1	150	2	40	0.1/10	220	1.5/50	180	SOT23	Released
ZXTP56020FDBQ	PNP + PNP	20	2	3	2.47	250	0.1	160	1	110	0.5/50	200	0.7/7	N/A	U-DFN2020-6 (SWP) (Type A)	Released
DXTP07025BFCQ	PNP	25	3	8	2.3	100	1	75	2	200	1/100	400	3/300	160	PowerDI3333-8 (SWP) (Type UX)	Released
FZT789AQ	PNP	25	3	6	2	300	0.01	100	6	250	1/10	450	2/20	100	SOT223 (Type DN)	Released
ZXTP2008ZQ	PNP	30	5.5	20	2.1	100	0.01	70	5	40	0.5/20	80	1/20	110	SOT89	Released
DSS3540MQ	PNP	40	0.5	1	0.4	150	0.1	40	0.5	50	0.01/0.50	350	0.5/50	100	X1-DFN1006-3	Released
DSS5240TQ	PNP	40	2	3	0.73	260	0.5	100	2	100	0.1/1	350	2/200	100	SOT23	Released
DXTP22040DFCQ	PNP	40	2	3	2.3	300	0.5	120	2	170	0.5/50	400	2/200	120	PowerDI3333-8 (SWP) (Type UX)	Released
FMMT720Q	PNP	40	1.5	4	0.625	300	0.1	60	1.5	40	0.1/10	220	1/50	180	SOT23	Released
ZTP25040DFHQ	PNP	40	3	9	1.25	300	0.01	30	3	260	1/20	220	3/300	270	SOT23	Released
ZXTI3P40DE6Q	PNP	40	3	10	1.1	300	1	100	3	25	0.1/10	200	1/20	115	SOT26	Released
ZXTP19040CGQ	PNP	40	3	5	2	220	0.5	100	3	150	0.5/5	500	3/300	150	SOT223	Released
ZXTP2009ZQ	PNP	40	5.5	15	2.1	200	0.01	110	5.5	30	0.1/10	175	2/40	152	SOT89	Released
DXTP07040CFGQ	PNP	40	3	6	2.3	250	0.5	150	2	200	0.5/50	500	2/50	100	PowerDI3333-8 (SWP) (Type UX)	Released
FCX591AQ	PNP	40	1	2	1	250	0.5	160	1	200	0.1/1	500	1/100	150	SOT89	Released
FMMT591AQ	PNP	40	1	2	0.5	300	0.1	160	1	200	0.1/1	350	0.5/20	150	SOT23	Released
FZT591AQ	PNP	40	1	2	2	250	0.5	160	1	200	0.1/1	500	1/100	150	SOT223	Released
DSS5160TQ	PNP	60	1	2	0.725	150	0.5	100	1	175	0.1/1	340	1/100	150	SOT23	Released
DSS60600MZ4Q	PNP	60	6	12	2	120	1	70	6	70	1/100	250	3/60	100	SOT223	Released
DXTP3C60PSQ	PNP	60	3	8	2.5	150	0.5	35	3	225	1/50	360	3/300	100	PowerDI5060-8	Released
ZX5T1951GQ	PNP	60	6	15	3	100	0.01	100	2	30	0.1/10	130	2/200	120	SOT223	Released
ZX5T951GQ	PNP	60	6	15	3	100	0.01	100	2	30	0.1/10	130	2/200	120	SOT223	Released
ZXTP2012ZQ	PNP	60	4.3	15	2.1	100	0.01	45	5	20	0.1/10	110	2/200	120	SOT89	Released
ZXTP2027FQ	PNP	60	4	10	1	100	0.01	80	4	25	0.1/10	95	2/200	165	SOT23	Released
ZXTP56060FDBQ	PNP + PNP	60	2	3	2.47	170	0.1	110	1	120	0.5/50	420	0.7/7	N/A	U-DFN2020-6 (SWP) (Type A)	Released
DXT751Q	PNP	60	3	6	1	100	0.5	40	2	300	1/100	600	3/300	145	SOT89	Released
DXTP07060BFCQ	PNP	60	3	6	2.3	100	0.5	40	2	250	1/100	500	3/300	140	PowerDI3333-8 (SWP) (Type UX)	Released
FZT751Q	PNP	60	3	6	2	100	0.5	40	2	300	1/100	600	3/300	140	SOT223 (Type DN)	Released
ZXT951KQ	PNP	65	6	15	4.2	100	2	50	6	90	1/100	165	2/200	120	TO252 (DPAK)	Released
FMMT722Q	PNP	70	1.5	3	0.625	300	0.1	175	1	50	0.1/10	200	0.5/20	200	SOT23	Released
BCP5316Q	PNP	80	1	2	2	100	0.15	25	0.5	500	0.5/50	-	-	150	SOT223	Released
BCX5316Q	PNP	80	1	1.5	1	100	0.15	25	0.5	500	0.5/50	-	-	150	SOT89	Released
DXTP06080BFCQ	PNP	80	1	2	2.3	100	0.15	40	0.5	280	0.5/50	500	0.8/70	150	PowerDI3333-8 (SWP) (Type UX)	Released
MJD45H11Q	PNP	80	8	16	2.7	40	4	60	2	1000	8/400	-	-	3	TO252 (DPAK)	Released
DXTP3C100PSQ	PNP	100	3	8	2.5	170	0.5	45	2	110	0.5/50	360	2/200	125	PowerDI5060-8	Released
FMMT723Q	PNP	100	1	2.5	0.625	300	0.1	250	0.5	80	0.1/10	200	0.5/50	200	SOT23	Released
ZX5T953GQ	PNP	100	5	10	3	100	0.01	25	3	30	0.1/10	90	1/100	125	SOT223	Released

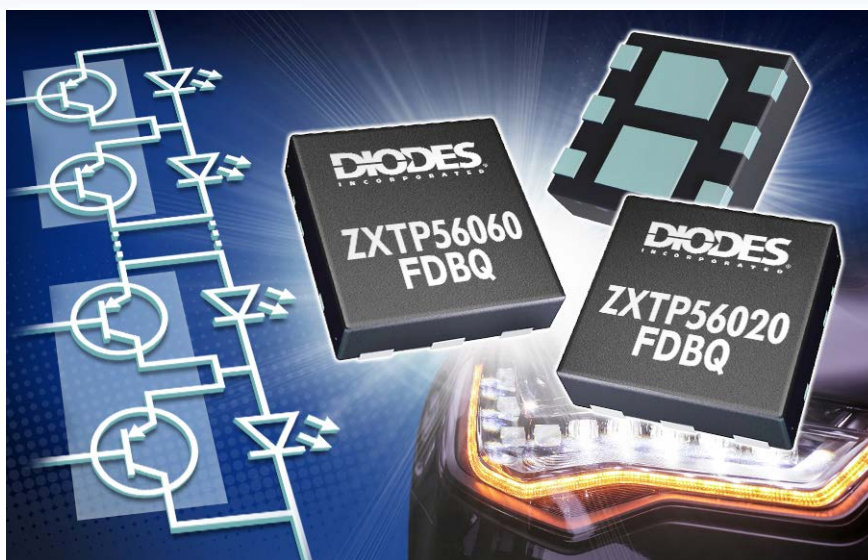
Bipolar Transistors PNP Automotive 'Q' Portfolio (Cont.)

Part Number	Product Type	V_{CE0}, V_{CES} (V)	I_C (A)	I_{CM} (A)	P_D (A)	h_{FE}				$V_{CE(sat)}$				ft	Package	Status
						Min	@ I_C (A)	Min 2	@ I_{C2} (A)	Max (mV)	@ I_C/I_B (A/mA)	Max 2 (mV)	@ I_C/I_{B2} (A/mA)			
ZXTP19100CZQ	PNP	100	2	3	2.4	200	0.1	70	1	130	0.5/20	225	1/50	142	SOT89	Released
ZXTP25100CFHQ	PNP	100	1	3	1.25	200	0.01	110	0.5	210	0.1/1	310	0.5/20	180	SOT23	Released
DXTP3C100PDQ	PNP + PNP	100	3	8	1.76	170	0.5	45	2	110	0.5/50	360	2/200	125	PowerDI5060-8/SWP (Type UXD)	Released
MJD42CQ	PNP	100	6	10	2.7	15	3	30	0.3	1500	6/600	-	-	3	TO252 (DPAK)	Released
DXTP07100BFGQ	PNP	100	2	6	2.3	100	0.5	55	1	250	1/100	500	2/200	140	PowerDI3333-8 (SWP) (Type UX)	Released
FMMT593Q	PNP	100	1	2	0.5	100	0.25	50	1	200	0.25/25	300	0.5/50	50	SOT23	Released
FZT753Q	PNP	100	2	6	2	100	0.5	55	1	300	1/100	500	2/200	140	SOT223	Released
MJD32CUQ	PNP	100	3	5	2.1	25	1	10	3	1200	3.375	-	-	3	TO252 (DPAK)	Released
FZT705Q	PNP	120	2	4	2	3000	0.1	2000	2	1300	1/1	2500	2/2	160	SOT223	Released
ZXTP2014ZQ	PNP	140	3	10	2.1	100	0.01	45	3	60	0.1/5	115	1/100	120	SOT89	Released
FMMT555Q	PNP	150	1	2	0.5	50	0.01	50	0.3	300	0.1/10	-	-	100	SOT23	Released
FCX558Q	PNP	400	0.2	0.5	1	100	0.05	15	0.1	200	0.02/2	500	0.05/60	50	SOT89	Released
FMMT558Q	PNP	400	0.15	0.5	0.5	100	0.05	15	0.1	200	0.02/2	500	0.05/60	50	SOT23	Released
FMMT560Q	PNP	500	0.15	0.5	0.5	100	0.001	80	0.05	200	0.02/2	500	0.05/10	60	SOT23	Released
ZXTP01500BCQ	PNP	500	0.15	0.5	2	100	0.001	80	0.05	200	0.02/2	500	0.05/10	60	SOT223	Released

The ZXTP56060FDBQ and ZXTP56020FDBQ dual PNP transistors provide automotive OEMs with a highly efficient solution for controlling matrix LED light clusters.

THE DIODES ADVANTAGE

- Very Low Collector-Emitter Saturation Voltage $V_{CE(sat)}$
Replaces three to four discrete components
- Compact and Low Profile DFN2020 Package
Miniature 4mm² footprint allows for greater power density



Super Barrier Rectifier Automotive 'Q' Portfolio

Super Barrier Rectifier (SBR®) is a Diodes Incorporated proprietary rectifier technology that combines the low reverse leakage (I_R) and fast-switching characteristics (T_{RR}) of ultrafast rectifiers with the low forward voltage drop (V_F) of Schottky diodes.

Furthermore, SBR has a proven, best-in-class repetitive avalanche rating, high-temperature stability, and wide safe operating area (SOA) that improves the reliability of the end application.

These characteristics make SBRs ideal for use as a reverse battery blocking or freewheel diode in automotive applications.



THE DIODES ADVANTAGE

- **Avalanche Rated**
Reverse avalanche capability that is up to 10 times greater than competing solutions; 100% avalanche tested, ensuring more rugged and reliable end applications
- **Low Reverse Leakage Current (I_R)**
Low reverse leakage (I_R) at high temperatures provides increased reliability against thermal runaway
- **Low Forward Voltage (V_F)**
The lower SBR forward voltage drop ensures power dissipation is minimized

Comparison of SBR against other diode technologies

Part	Forward Voltage	Leakage Current	Junction Temperature	Reverse Recovery Time	Reverse Avalanche
	V_F	I_R	T_J	T_{RR}	
Ultra-Fast Rectifiers	⊗ High V_F	✓ Low I_R	✓ $T_J < 175^\circ\text{C}$	✓ Fast	⊗ Low
Standard Rectifiers	⊗ High V_F	✓ Low I_R	✓ $T_J < 175^\circ\text{C}$	⊗ Slow	⊗ Low
Schottky Rectifiers	✓ Low V_F	⊗ High I_R	✓ $T_J < 150^\circ\text{C}$	✓ Fast	⊗ Low
Super Barrier Rectifiers (SBR)	✓ Low V_F	✓ Low I_R	✓ $T_J < 200^\circ\text{C}$	✓ Fast	✓ Very High
SBR Trench (SBRT)	✓ Ultra Low V_F	✓ Ultra Low I_R	✓ $T_J < 200^\circ\text{C}$	✓ Fast	✓ High
SBR Field Plated (SBRFP)	✓ Low V_F	✓ Low I_R	✓ $T_J < 200^\circ\text{C}$	✓ Fast	✓ High

SBR® is a registered trademark of Diodes Incorporated

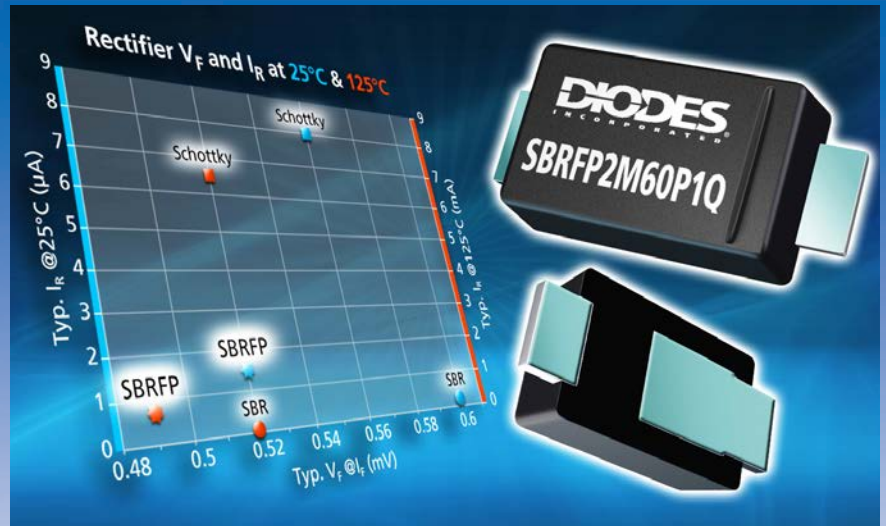
Super Barrier Rectifier Automotive 'Q' Portfolio

Part Number	Configuration	V _{RRM} (V)	I _F (A)	I _{FSM} (A)	V _F Max (V)	I _R Max (mA)	C _T (typ)	E _{AS} (mJ)	T _J (°C)	Package	Status
SBRT05U20LPQ	Single	20	0.5	10	0.39	0.05	-	-	150	DFN1006	Released
SBRT05U20S3Q	Single	20	0.5	10	0.52	0.2	10	-	150	SOD323	Released
SBR8U20SP5Q	Single	20	8	180	0.51	0.3	360	146	150	PowerDI5	Released
SBR15U30SP5Q	Single	30	15	200	0.49	0.5	500	1074	150	PowerDI5	Released
SBR1A40S3Q	Single	40	1	20	0.55	0.5	55	-	150	SOD323	Released
SBR140S1FQ	Single	40	1	30	0.51	0.1	50	-	150	SOD123F	Released
SBR2A40PIQ	Single	40	2	50	0.5	0.1	60	-	150	PowerDI123	Released
SBRT3U40PIQ	Single	40	3	50	0.49	0.18	45	-	150	PowerDI123	Released
SBR3U40S1FQ	Single	40	3	90	0.49	0.1	80	-	150	SOD123F	Released
SBR3A40SAQ	Single	40	3	45	0.5	0.4	70	-	150	SMA	Released
SBR3U40PIQ	Single	40	3	75	0.47	0.4	70	-	150	PowerDI123	Released
SBR440SBQ	Single	40	4	100	0.5	0.15	-	-	150	SMB	Released
SBR545SAFQ	Single	40	5	100	0.56	0.2	-	-	150	SMAF	Released
SBR1045DIQ	Single	45	10	90	0.58	0.3	280	200	150	TO252 (DPAK)	Released
SBR10U45DIQ	Single	45	10	125	0.57	0.3	550	620	150	TO252 (DPAK)	Released
SBR1045SP5Q	Single	45	10	180	0.53	0.4	220	-	150	PowerDI5	Released
SBR10A45SP5Q	Single	45	10	45	0.53	0.4	45	-	150	PowerDI5	Released
SBR1045CTLQ	Dual	45	10	90	0.55	0.3	120	100	150	TO252 (DPAK)	Released
SBR10U45SP5Q	Single	45	10	125	0.47	0.3	600	530	150	PowerDI5	Released
SBR20M45DIQ	Single	45	20	140	0.61	0.1	650	-	175	TO252 (DPAK)	Released
SBR30A45CTBQ	Dual	45	30	175	0.55	0.55	500	135	150	TO263AB (D2PAK)	Released
SBR3045CTBQ	Dual	45	30	180	0.7	0.5	-	-	150	TO263AB (D2PAK)	Released
SBRT20U50SLPQ	Single	50	20	200	0.5	0.5	350	-	150	PowerDI5060	Released
SBR0560S1Q	Single	60	0.5	15	0.5	0.1	-	-	150	SOD123	Released
SBR160S3FQ	Single	60	1	15	0.62	0.05	TBF	TBF	150	SOD323F	Q3 2024
SBR2M60S1FQ	Single	60	2	30	0.7	0.0008	70	-	175	SOD123F	Released
SBR2U60S1FQ	Single	60	2	35	0.51	0.15	75	-	175	SOD123F	Released
SBR3U60PIQ	Single	60	3	80	0.6	0.06	60	120	175	PowerDI5	Released
SBR3U60P5Q	Single	60	3	80	0.6	0.06	35	110	175	PowerDI6	Released
SBR660CTLQ	Dual	60	6	80	0.57	0.3	116	130	150	TO252 (DPAK)	Released
SBR8U60P5Q	Single	60	8	280	0.53	0.33	40	620	150	PowerDI5	Released
SBRT10U60DIQ	Single	60	10	140	0.52	0.4	390	-	150	TO252 (DPAK)	Released
SBRT20M60SP5Q	Single	60	20	320	0.57	0.18	300	-	150	PowerDI5	Q3 2024
SBR20A60CTBQ	Dual	60	20	150	0.79	0.5	400	500	150	TO263AB (D2PAK)	Released
SBR30A60CTBQ	Dual	60	30	180	0.63	0.33	-	600	150	TO263AB (D2PAK)	Released
SBR02U100LPQ	Single	100	0.25	5	0.8	1	-	-	150	X1-DFN1006-2	Released
SBR02U100LPWQ	Single	100	0.25	5	0.8	0.001	-	-	150	X1-DFN1006-2(SWP)	Q3 2024
SBR05100LPWQ	Single	100	0.5	5	1	0.001	-	-	150	X1-DFN1006-2(SWP)	Q3 2024
SBR5U100DNCQ	Single	100	5	100	0.71	0.04	-	-	150	TO252 (DPAK)	Q3 2024
SBR6100CTLQ	Dual	100	6	78	0.74	0.1	80	120	150	TO252 (DPAK)	Released
SBR8M100P5Q	Single	100	8	130	0.88	0.002	245	350	175	PowerDI5	Released
SBR10M100P5Q	Single	100	10	220	0.88	0.002	245	-	175	PowerDI5	Released
SBR12U100P5Q	Single	100	12	250	0.78	0.25	200	592	150	PowerDI5	Released
SBR15U100CTLQ	Dual	100	15	100	0.8	0.1	150	192	150	TO252 (DPAK)	Released
SBR20A100STQ	Single	100	20	250	0.88	0.05	-	-	150	TO220AB	Q3 2024
SBR1U150SAQ	Single	150	1	42	0.7	0.1	10	-	150	SMA	Released
SBR3150SBQ	Single	150	3	80	0.82	0.03	TBF	TBF	150	SMB	Q3 2024
SBR20M150DIQ	Single	150	20	160	0.9	0.05	170	-	175	TO252 (DPAK)	Released
SBR1U200PIQ	Single	200	1	40	0.82	1	25	20	150	PowerDI123	Released
SBR3200SAFQ	Single	200	3	100	0.84	0.05	-	-	150	SMAF	Q3 2024
SBR10U200P5Q	Single	200	10	180	0.88	0.1	200	-	150	PowerDI5	Released
SBR40U200CTBQ	Dual	200	40	280	0.93	0.2	500	-	175	TO263AB (D2PAK)	Released

Field Plated Super Barrier Rectifiers (SBRFP)

THE DIODES ADVANTAGE

- **Ultra-Low Forward Voltage Drop (V_F)**
Reduces losses to improve efficiency and cooler operation
- **Low Reverse Current Leakage (I_R)**
Gives immunity to thermal runaway in high-temperature environments
- **Superior Avalanche Capability**
Increased system robustness and reliability
- **Small Die Size, Increased Power Density**
Improved performance over larger packaged products
- **Qualified to 175°C**
Suitable for use in high-ambient environments



Part Number	Configuration	V_{RRM} (V)	I_F (A)	I_{FSM} (A)	V_F Max (V)	I_R Max (mA)	C_T (typ)	E_{AS} (mJ)	T_J (°C)	Package	Status
SBRFP05M70LPWQ	Single	70	0.5	0.62	0.62	0.06	TBF	TBF	175	XI-DFN1006-2(SWP)	Q3 2024
SBRFP2M60PIQ	Single	60	2	50	0.58	0.012	50	145	150	PowerDI123	Released
SBRFP2M45P3Q	Single	45	2	22	0.56	0.025	TBF	TBF	150	PDI323	Q4 2024
SBRFP2M60S1FQ	Single	60	2	50	0.62	0.0012	TBF	TBF	150	SOD123F	Q4 2024
SBRFP2M60SAFQ	Single	60	2	40	0.62	0.0012	TBF	TBF	150	SMAF	Q4 2024
SBRFP3M60S1FQ	Single	60	3	40	0.62	0.0012	TBF	TBF	150	SOD123F	Q4 2024
SBRFP3M60SAFQ	Single	60	3	50	0.62	0.0018	TBF	TBF	150	SMAF	Q4 2024

Schottky Diodes Automotive 'Q' Portfolio

The PowerDI123 and PowerDI5 packages feature a proprietary clip die attach that improves IFSM and reliability.

Furthermore, both the PowerDI5 and PowerDI123 feature off-board profiles of just 1.1mm and 1mm respectively, providing designers with a high-density, low-profile Schottky portfolio.



THE DIODES ADVANTAGE

- **Small Form Factor Packages**
PowerDI5 occupies just 26mm², 55% smaller than DPAK
PowerDI123 PCB footprint is just 7.5mm², 60% smaller than SMA package
- **Low Forward Voltage (V_F)**
Diodes' schottky portfolio features low forward voltage that minimizes conduction losses, reducing power dissipation

Schottky Diodes Automotive 'Q' Portfolio (Cont.)

Part Number	Configuration	V _{RRM} (V)	I _F (A)	I _{FSM} (A)	V _F Max (V)	I _R Max (mA)	C _T Typ	T _J (°C)	Package	Status
BAS70-06Q	Dual, Com. Anode	70	0.07	0.1	0.41	0.0001	1.6	125	SOT23	Released
BAS70-05Q	Dual, Com. Cath	70	0.07	0.1	0.41	0.0001	1.6	125	SOT23	Released
BAS70-04Q	Dual, Series	70	0.07	0.1	0.41	0.0001	1.6	125	SOT23	Released
BAS70Q	Single	70	0.07	0.1	0.41	0.0001	1.6	125	SOT23	Released
SDM03U40Q	Single	40	0.03	0.2	0.37	0.0005	2	125	SOD523	Released
BAS70DW-05Q	Dual-Dual, Com. Cath	70	0.07	0.1	0.41	0.0001	1.8	125	SOT363	Released
BAS70TWQ	Triple, Isolated	70	0.07	0.1	0.41	0.0001	1.8	125	SOT363	Released
BAS70WQ	Single	70	0.07	0.1	0.41	0.0001	1.8	125	SOT323	Released
BAS70W-04Q	Dual, Series	70	0.07	0.1	0.41	0.0001	1.8	125	SOT323	Released
BAS70W-05Q	Dual, Com. Cath	70	0.07	0.1	0.41	0.0001	1.8	125	SOT323	Released
BAS70W-06Q	Dual, Com. Anode	70	0.07	0.1	0.41	0.0001	1.8	125	SOT323	Released
BAS70DW-04Q	Dual-Dual, Series (Alt.)	201	0.07	0.1	0.41	0.0001	1.8	125	SOT363	Released
BAT54WSQ	Single	30	0.1	0.6	1	0.002	8	150	SOD323	Released
BAT46WQ	Single	100	0.15	0.75	1	0.002	20	125	SOD123	Released
BAT54SQ	Dual, Series	30	0.2	0.6	0.8	0.002	8	150	SOT23	Released
BAT54CQ	Dual, Com. Cath	30	0.2	0.6	0.8	0.002	8	150	SOT23	Released
BAT54AQ	Dual, Com. Anode	30	0.2	0.6	0.8	0.002	8	150	SOT23	Released
BAT54Q	Single	30	0.2	0.6	0.8	0.002	8	150	SOT23	Released
BAT54CWQ	Dual, Com. Cath	30	0.2	0.6	0.32	0.002	8	125	SOT323	Released
BAT54SWQ	Dual, Series	30	0.2	0.6	0.32	0.002	8	125	SOT323	Released
BAT54AWQ	Dual, Com. Anode	30	0.2	0.6	0.32	0.002	8	125	SOT323	Released
BAT54WQ	Single	30	0.2	0.6	0.32	0.002	8	125	SOT323	Released
BAT54SDWQ	Dual-Dual, Series (Alt.)	30	0.2	0.6	1	0.002	8	125	SOT363	Released
BAT54TWQ	Triple, Isolated	30	0.2	0.6	1	0.002	8	125	SOT363	Released
SDM20U30LPQ	Single	30	0.2	1	0.575	0.15	20	125	X1-DFN1006-2	Released
BAT54TQ	Single	30	0.2	0.6	1	0.002	8	150	SOT523	Released
BAT54STQ	Dual, Series	30	0.2	0.6	1	0.002	8	150	SOT523	Released
SDM20U30Q	Single	30	0.2	1	0.5	0.15	20	125	SOD523	Released
BAT54LPQ	Single	30	0.2	0.6	1	0.002	8	125	X1-DFN1006-2	Released
BAS40TWQ	Triple, Isolated	40	0.2	0.6	1	0.0002	3	125	SOT363	Released
BAS40Q	Single	40	0.2	0.6	1	0.0002	4	125	SOT23	Released
BAS40-04Q	Dual, Series	40	0.2	0.6	1	0.0002	4	125	SOT23	Released
BAS40-05Q	Dual, Com. Cath	40	0.2	0.6	1	0.0002	4	125	SOT23	Released
BAS40-06Q	Dual, Com. Anode	40	0.2	0.6	1	0.0002	4	125	SOT23	Released
BAS40LPQ	Single	40	0.2	1	1	0.0002	2.3	150	X1-DFN1006-2	Released
SDM20U40Q	Single	40	0.25	1	0.6	0.005	50	125	SOD523	Released
BAT64Q	Single	39	0.25	1.1	0.75	0.002	6	150	SOT22	Released
BAT64AQ	Dual	40	0.25	1.2	0.75	0.002	6	150	SOT23	Released
BAT64CQ	Dual	41	0.25	1.3	0.75	0.002	6	150	SOT23	Released
BAT64SQ	Dual	42	0.27	1.4	0.75	0.002	6	150	SOT23	Released
BAT64T5Q	Single	40	0.25	1.2	0.725	0.002	6	150	SOD523	Released
SD103BWSQ	Single	40	0.35	1.5	0.37	0.005	35	125	SOD323	Released
SD103AWSQ	Single	40	0.35	1.5	0.37	0.005	35	125	SOD323	Released
SDM40E20LSQ	Dual, Series	20	0.4	2	0.43	0.25	120	125	SOT23	Released
SDM40E20LAQ	Dual, Series	20	0.4	2	0.43	0.25	120	125	SOT23	Released
ZHCS400QTA	Single	40	0.4	3	0.5	0.04	20	150	SOD323	Released
SDM05U40CSPQ	Single	40	0.5	14	0.46	0.07	35	150	X3-WLB1006-2	Released
B0520LWQ	Single	20	0.5	5.5	0.385	0.25	100	125	SOD123	Released
B0530WSQ	Single	30	0.5	2	0.45	0.5	58	125	SOD323	Released
ZHCS500Q	Single	40	0.5	12	0.55	0.04	20	150	SOT23	Released
B0540WQ	Single	40	0.5	5.5	0.62	0.02	100	150	SOD123	Released
B0540WSQ	Single	40	0.5	5.5	0.62	0.02	100	150	SOD323	Released
ZHCS506QTA	Single	60	0.5	2.5	0.63	0.04	20	150	SOT23	Released
ZLLS400QTA	Single	40	0.52	2.5	0.5	0.01	15	150	SOD323	Released
ZHCS750QTA	Single	40	0.75	5.2	0.49	0.1	25	150	SOT23	Released
ZLLS500QTA	Single	40	0.75	3.2	0.63	0.01	16	150	SOT23	Released

Schottky Diodes Automotive 'Q' Portfolio (Cont.)

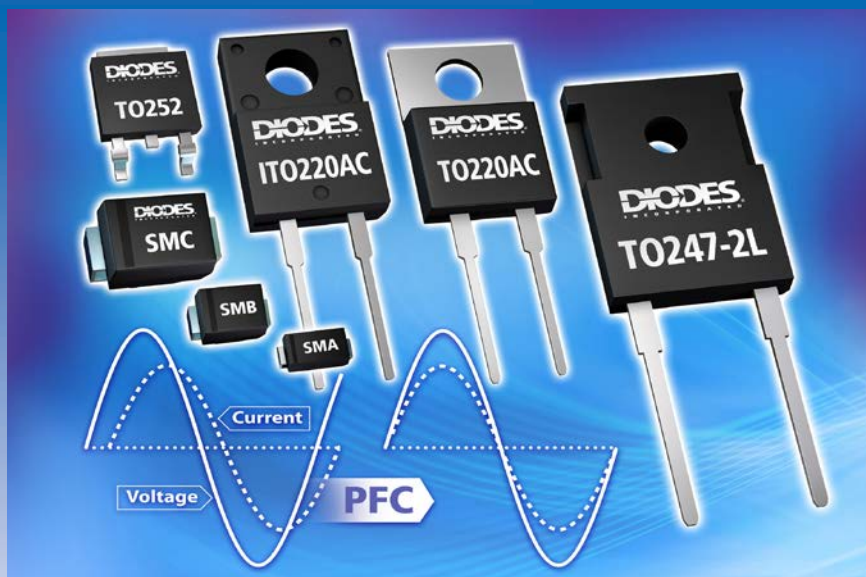
Part Number	Configuration	V _{RRM} (V)	I _F (A)	I _{FSM} (A)	V _F Max (V)	I _R Max (mA)	C _T Typ	T _J (°C)	Package	Status
B140WSQ	Single	40	1	3	0.62	0.05	125	150	SOD323	Released
PD3S120LQ	Single	20	1	33	0.42	0.16	200	150	PowerDI323	Released
DFLS120LQ	Single	20	1	22	0.36	1	75	150	PowerDI123	Released
BAT760Q	Single	30	1	5.5	0.55	0.01	25	150	SOD323	Released
PD3S130HQ	Single	30	1	22	0.45	0.1	200	150	PowerDI323	Released
PD3S130LQ	Single	30	1	22	0.42	1.5	150	150	PowerDI323	Released
DFLS130LQ	Single	30	1	33	0.36	1	75	150	PowerDI123	Released
ZHCS1000Q	Single	40	1	12	0.5	0.05	25	150	SOT23	Released
ZLLS1000Q	Single	40	1	12	0.56	0.02	30	150	SOT23	Released
BAT1000Q	Single	40	1	5.5	0.5	0.1	50	150	SOT23	Released
DFLS140Q	Single	40	1	40	0.55	0.01	28	150	PowerDI123	Released
DFLS140LQ	Single	40	1	50	0.51	0.1	90	150	PowerDI123	Released
PD3S140Q	Single	40	1	22	0.42	1.5	150	150	PowerDI323	Released
ZHCS1000QTA	Single	40	1	5.2	0.5	0.1	25	125	SOT23	Released
1N5819HWQ	Single	40	1	25	0.45	0.05	50	125	SOD123	Released
SDM160S1FQ	Single	60	1	50	0.53	0.06	50	175	SOD123F	Released
DFLS160Q	Single	60	1	50	0.5	0.1	67	150	PowerDI123	Released
PD3S1360Q	Single	60	1	22	0.64	0.05	40	150	PowerDI323	Released
PD3S160Q	Single	60	1	22	0.64	0.05	38	150	PowerDI5	Released
DFLS1100Q	Single	100	1	40	0.77	2	28	150	PowerDI123	Released
SDM1U100S1FQ	Single	100	1	40	0.77	0.15	-	150	SOD123F	Released
DFLS1150Q	Single	150	1	50	0.82	0.002	28	175	PowerDI5	Released
DFLS1200Q	Single	200	1	40	0.85	2	23	150	PowerDI123	Released
PD3S220LQ	Single	20	2	33	0.49	0.16	46	125	PowerDI323	Released
PD3S230LQ	Single	30	2	30	0.45	1.4	150	150	PowerDI323	Released
DFLS230Q	Single	30	2	22	0.49	1	75	150	PowerDI123	Released
DFLS230LQ	Single	30	2	33	0.42	1	76	150	PowerDI123	Released
PD3S230HQ	Single	30	2	30	0.6	0.1	40	150	PDI323	Released
DFLS240LQ	Single	40	2	50	0.5	1	90	150	PowerDI123	Released
DFLS240Q	Single	40	2	40	0.7	0.02	28	125	PowerDI123	Released
ZLLS2000Q	Single	40	2	12	0.54	0.04	65	150	SOT26	Released
DFLS260Q	Single	60	2	50	0.62	1	67	150	PowerDI123	Released
SDM2100S1FQ	Single	100	2	50	0.83	0.15	-	150	SOD123F	Released
DFLS2100Q	Single	100	2	50	0.86	0.001	36	175	PowerDI123	Released
PDS340Q	Single	40	3	90	0.49	0.5	490	150	PowerDI5	Released
PDS360Q	Single	60	3	100	0.62	0.15	380	150	PowerDI5	Released
PDS3100Q	Single	100	3	90	0.76	0.1	260	150	PowerDI5	Released
PDS3200Q	Single	200	3	180	0.78	0.1	520	150	PowerDI5	Released
PDS4150Q	Single	150	4	180	0.76	0.01	530	150	PowerDI5	Released
PDS4200HQ	Single	200	4	180	0.78	0.1	520	150	PowerDI5	Released
B140HWQ	Single	200	4	180	0.78	0.1	520	125	SOD123	Released
PDS540Q	Single	40	5	100	0.52	0.25	700	150	PowerDI5	Released
ZHCS506Q	Single	60	5	5.5	0.63	0.04	20	150	SOT23	Released
PDS560Q	Single	60	5	150	0.67	15	500	150	PowerDI5	Released
PDS5100Q	Single	100	5	250	0.78	0.2	310	150	PowerDI5	Released
PDS5100HQ	Single	100	5	250	0.71	0.0035	700	150	PowerDI5	Released
PDS760Q	Single	60	7	275	0.62	0.2	1050	150	PowerDI5	Released
PDS1040Q	Single	40	10	275	0.49	0.7	1000	150	PowerDI5	Released
PDS1040Q	Single	45	10	275	0.51	0.6	1000	150	PowerDI5	Released

Fast Rectifier Automotive 'Q' Portfolio

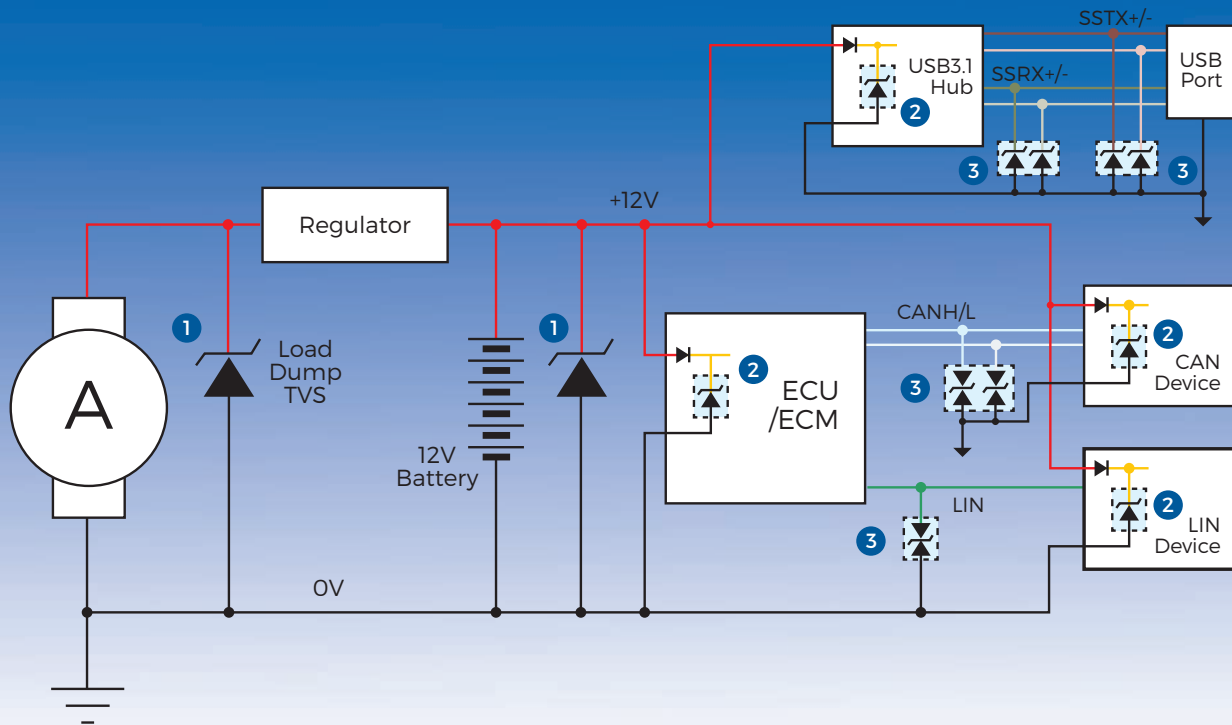
THE DIODES ADVANTAGE

Rectifiers optimized for PFC raise system efficiency in popular boost converter configurations.

- **Reduced Losses Through Low V_F and Fast Recovery**
Improves power efficiency, reducing running costs
- **High Forward Surge Current (I_{FSM})**
Robust design improves system reliability
- **Soft Recovery Behavior**
Reducing EMI
Saves space by reducing passive component count
- **Ultra-Low Leakage Current**
Reduces reverse losses
- **Low Thermal Resistance**
Reduced cooling budgets



Part Number	Configuration	Peak Repetitive Reverse Voltage V_{RRM} (V)	Maximum Average Rectified Current I_O (A)	Maximum Peak Forward Surge Current I_{FSM} (A)	Forward Voltage Drop V_F (V)	Maximum Reverse Current I_R (μ A)	Reverse Recovery Time t_{rr} (ns)	Package	Status
FESIDEQ	Single	200	1	30	0.92	5	25	DO-219AA	Released
FES2DEQ	Single	200	2	50	0.92	5	25	DO-219AA	Released
MURS3DDQ	Single	200	3	170	0.85	0.015	20	DO-221	Q4 2024
MURS160Q	Single	600	1	35	1.25	5	50	SMB	Released
MURS360BQ	Single	600	3	100	1.25	5	45	SMB	Q3 2024
DTH8E06DQ	Single	600	8	250	2.9	30	25	TO220AC	Q3 2024
DTH8E06FPQ	Single	600	8	250	2.9	30	25	ITO220AC	Q3 2024
DTH8L06DNCQ	Single	600	8	120	1.3	8	70	TO-252	Q3 2024
DTH8L06DQ	Single	600	8	120	1.3	8	70	TO220AC	Q3 2024
DTH8L06FPQ	Single	600	8	120	1.3	8	70	ITO220AC	Q3 2024
DTH8R06DIQ	Single	600	8	80	2.9	30	25	TO-252	Q3 2024
DTH8R06DQ	Single	600	8	80	2.9	30	25	TO220AC	Q3 2024
DTH8R06FPQ	Single	600	8	80	2.9	30	25	ITO220AC	Q3 2024
DTH8S06DQ	Single	600	8	150	3.4	15	18	TO220AC	Q3 2024
DTH8S06FPQ	Single	600	8	150	3.4	15	18	ITO220AC	Q3 2024
DTHI206DQ	Single	600	12	120	2.9	45	30	TO220AC	Q3 2024
DTHI206FPQ	Single	600	12	120	2.9	45	30	ITO220AC	Q3 2024
DTHI506DQ	Single	600	15	120	2.9	45	30	TO220AC	Q3 2024
DTHI506FPQ	Single	600	15	120	2.9	45	30	ITO220AC	Released
DTH3006DQ	Single	600	30	350	2.4	100	45	TO220AC	Released
DTH3006FPQ	Single	600	30	350	2.4	100	45	ITO220AC	Released
DTH3006PTQ	Single	600	30	350	2.4	100	45	TO247-2L	Released
DTHP60R07PTQ	Single	650	60	400	2.4	100	60	TO-247-2	Q4 2024
FRSIMEQ	Single	1000	1	30	1.3	5	500	DO-219AA	Released
DTH810DQ	Single	1000	8	80	2	5	65	TO220AC	Released
DTH810FPQ	Single	1000	8	80	2	5	65	ITO220AC	Released
DTHP15R12DQ	Single	1200	15	110	3.3	50	35	TO-220AC	Q4 2024



Diodes Incorporated's TVS devices cover the full spectrum of automotive TVS requirements, from CAN/LIN and USB ESD protection all the way up to 6.6kW alternator load dump.

Load Dump TVS absorbs large amounts of energy from events like alternator load dump, inductive load disconnect, etc. as defined in ISO16750-2.

Power Line TVS absorbs medium amounts of energy from ESD discharge, ignition spikes, and internal noise and switching.

Dataline TVS absorbs smaller amounts of energy, typically from ESD discharge on sensitive datalines. ESD can come from user-facing ports (e.g. USB) or the environment (e.g. in-cabin from carpets etc).

High-speed data interfaces call for low-capacitance parts to maintain signal integrity.

1 Load dump and battery disconnect protection in DO218 package

Series	Power (W)
DM5xxxQ	3600
DM6xxxQ	4600
DM8xxxQ	6600

2 Power Line TVS

Series	Power (W)
SMAJxxxxxQ	400
SMBJxxxxxQ	600
SMCJxxxxxQ	1500
3.0SMCJxxxxxQ	3000

3 Data TVS

Series	Interface
DESDxxxxxxQ	CAN, LIN, Flex
DUPxxxxxxQ	CAN, LIN
DTxxxxxxQ	USB, HDMI, DVI, Ethernet
DxxxxxxQ	USB, HDMI

Power Protection TVS Automotive 'Q' Portfolio

Part Number	Configuration	V _{RWM} (V)	V _{BR} (V)	I _R (mA)	I _{PP} (A)	V _{CLAMP@I_{PP}} (V)	P _{PK} (W)	Package	Status
DFLT5V0 - DFLT40AQ	Unidirectional	5 - 40	6.4 - 49.1	<0.4	24.5 - 3.5	9.2 - 64.5	225	SOD123F	Released
SMFL5.0 - SMFL200(C)AQ	Uni/Bidirectional	6.4 - 224	6.4 - 248	<1	43.5 - 1.2	9.2 - 324	400	DO219AA	Released
SMA5.0 - SMAJ200AQ	Single Unidirectional	5 - 200	6.4 - 248	<1	43.5 - 1.2	9.2 - 324	400	SMA	Released
P4SMAJ5.0 - P4SMAJ85ADFQ	Unidirectional	5 - 85	6.4 - 104	<0.1	43.5 - 2.9	9.2 - 137	400	DFlat	Released
SMAJ5.0 - SMAJ200CAQ	Single Bidirectional	5 - 200	6.4 - 248	<1	43.5 - 1.2	9.2 - 324	400	SMA	Released
SMA6J5.0 - SMAJ188AQ	Uni/Bidirectional	5 - 188	6.4 - 248	<0.1	65.2 - 1.8	9.2 - 328.6	600	SMA	Released
SMA6J5.0 - SMAJ188CAQ	Uni/Bidirectional	5 - 188	6.4 - 248	<0.1	65.2 - 1.8	9.2 - 328.6	600	SMA	Released
SMAJ5.0 - SMAJ200CAQ	Single Bidirectional	5 - 200	6.4 - 248	<1	43.5 - 1.2	9.2 - 324	400	SMA	Released
SMA6J5.0 - SMAJ188(C)AQ	Uni/Bidirectional	5 - 188	6.4 - 248	<0.1	65.2 - 1.8	9.2 - 328.6	600	SMA	Released
P6SMAJ5.0 - P6SMAJ85ADFQ	Unidirectional	5 - 85	6.4 - 108	<0.1	65.2 - 4.4	9.2 - 137	600	DFlat	Released
SMBJ12 - SMBJ100AQ	Single Unidirectional	12 - 100	13.3 - 128	<1	30.2 - 3.7	19.9 - 162	600	SMB	Released
SMBJ12 - SMBJ100CAQ	Single Bidirection	12 - 100	13.3 - 128	<1	30.2 - 3.7	19.9 - 162	600	SMB	Released
SMCJ5.0 - SMCJ85AQ	Single Unidirectional	5 - 85	6.4 - 104	<1	163 - 10.4	9.2 - 137	1500	SMC	Released
SMCJ5.0 - SMCJ85CAQ	Single Bidirectional	5 - 85	6.4 - 104	<1	163 - 10.4	9.2 - 137	1500	SMC	Released
3.0SMCJ14 - 3.0SMCJ30AQ	Single Unidirectional	14 - 30	15.6 - 36.8	<1	129.3 - 62	23.2 - 48.4	3000	SMC	Released
3.0SMCJ14 - 3.0SMCJ30CAQ	Uni/Bidirectional	14 - 30	15.6 - 36.8	<0.1	129.3 - 62	23.2 - 48.8	3000	SMC	Released
DM5W10 - DM5W36AQ	Single Unidirectional	10 - 36	11.1 - 44.2	<5	211 - 61	17 - 58.1	3600	DO218	Released
D6W10 - DM6W36AQ	Single Unidirectional	10 - 36	11.1 - 44.2	<5	271 - 79	17 - 58.1	4600	DO218	Released
DM8W10 - DM8W43AQ	Single Unidirectional	10 - 43	11.1 - 52.8	<5	226 - 95	29 - 69.4	6600	DO218	Released

Surge Protection Automotive 'Q' Portfolio

Part Number	Channel	Direction	C _T Typ (pF)	V _{BR} Min (V)	V _{RWM} (V)	Max Vcl @ Max IPP (V)	Max IPP @ 8x20μs Max (A)	I _R @ V _{RWM} Max (μA)	VESD IEC61000-4-2 (kV) VESD CONTACT	Package	Status
DESDxxVS2UTQ	Dual	Unidirectional	20-180	5.2-40	3.3-36	12-65	2-20	0.5-1	±30	SOT23	Released
D3V3H1B2LPQ	Single	Bidirectional	100	3.8	3.3	9.5	40	0.5	±30	X1-DFN1006-2	Released
D12V0HA1U2LPQ	Single	Unidirectional	110	13.5	12	20	25	0.1	±30	X1-DFN1006-2	Released
T5V0S5AQ	Single	Unidirectional	130	6.2	5	17.3	15	0.05	±30	SOD523	Released
D7V0H1U2LPQ	Single	Unidirectional	150	7.5	7	14.4	24	1	±30	X1-DFN1006-2	Released
DESD5V2S2UTQ	Dual	Unidirectional	160	6.4	5.2	20	15	0.1	±25	SOT23	Released
D36V0S1U2LP1610Q	Single	Unidirectional	165	37	36	59	18	0.2	±30	U-DFN1610-2	Released
D12V0H1U2WSQ	Single	Unidirectional	180	13.3	12	24	25	0.1	±30	SOD323	Released
SD05CQ	Single	Bidirectional	200	6	5	17	40	1	±30	SOD323	Released
D24V0S1U2LP1610Q	Single	Unidirectional	210	26	24	42	32	0.2	±30	U-DFN1610-2	Released
DESD3V3S2UTQ	Dual	Unidirectional	240	5.2	2.3	20	18	0.1	±25	SOT23	Released
D20V0S1U2LP1610Q	Single	Unidirectional	242	22	20	36	37	0.2	±30	U-DFN1610-2	Released
D15V0S1U2LP1610Q	Single	Unidirectional	270	17	15	30	48	0.2	±30	U-DFN1610-2	Released
D12V0S1U2LP1610Q	Single	Unidirectional	400	13	12	20	65	0.2	±30	U-DFN1610-2	Released
D7V9H1U2LP1610Q	Single	Unidirectional	700	8.2	7.9	13.5	100	1	±30	U-DFN1610-2	Released
D4V5H1U2LP1610Q	Single	Unidirectional	800	5.5	4.5	13	90	1	±30	U-DFN1610-2	Released
D5V0S1U2LP1610Q	Single	Unidirectional	800	6	5	12	150	0.5	±30	U-DFN1610-2	Released
D6V3H1U2LP1610Q	Single	Unidirectional	800	6.5	6.3	13	90	0.5	±30	U-DFN1610-2	Released
D5V0S1U2LPSQ	Single	Unidirectional	210	6.2-7.4	5.5	11	40	1	±30	DFN1006_SWP	Q3 2024
DESDxxVxS2UTQ	Single	Unidirectional	20-180	5.2-48	5	12-65	3-14	1	±30	SOT23	Q3 2024

Low C_j Data Protection Automotive 'Q' Portfolio

Part Number	Channel	Direction	C _T Typ (pF)	V _{BR} Min (V)	V _{RWM} (V)	Max V _{cl} @ Max IPP (V)	Max IPP @ 8x20µs Max (A)	I _R @ V _{RWM} Max (µA)	VESD IEC61000- 4-2 (kV) VESD_ CONTACT	Package	Status
D3V3Z1B2LPSQ	Single	Bidirectional	0.25	4.7	3.3	15	3	0.1	±20	DFN1006_SWP	Q3 2024
D5V0X1B2LPQ	Single	Bidirectional	0.23	7	5	14	1.5	0.1	±15	X1-DFN1006-2	Released
DxxV0Z1B2LP3Q (6 Products)	Single	Bidirectional	0.25	4.7-25.7	3.3-24	17-50	4	0.1	±25	DFN0603	Q4 2024
DxxV0Z1B2LPQ (6 Products)	Single	Bidirectional	0.25	4.7-25.7	3.3-24	17-50	4	0.1	±25	DFN1006	Q4 2024
DxxV0Z4B10LPQ (6 Products)	Quad	Bidirectional	0.25	4.7-25.7	3.3-24	17-50	4	0.1	±25	DFN2510	Q4 2024
DESD3V3Z1BCSFQ	Single	Bidirectional	0.25	5	3.3	8	3	1	±8	X2-DSN0603-2	Released
D3V3Z1BD2CSPQ	Single	Bidirectional	0.3	5	3.3	5.3	10.5	0.05	±20	CSP0603	Q3 2024
D3V3Z1BD2LPSQ	Single	Bidirectional	0.3	5	3.3	5.3	10.5	0.05	±20	DFN1006_SWP	Q4 2024
D3V3Z1BD2S9Q	Single	Bidirectional	0.3	5	3.3	5.3	10.5	0.05	±20	SOD923	Q4 2024
D3V3Z1BD2TQ	Single	Bidirectional	0.3	5	3.3	5.3	10.5	0.05	±20	SOD523	Q4 2024
D3V3Z4BD10LPQ	Quad	Bidirectional	0.3	5	3.3	5.3	10.5	0.05	±20	DFN2510	Q4 2024
D5V0X1B2LP3Q	Single	Bidirectional	0.3	7	5	14	1.5	0.1	±15	X2-DFN0603-2	Released
DESD18VFIBLQ	Single	Bidirectional	0.3	19	18	17	1	0.03	±10	X1-DFN1006-2	Released
DESD24VFIBLQ	Single	Bidirectional	0.3	25	24	32	1	0.03	±9	X1-DFN1006-2	Released
DESD30VFIBLQ	Single	Bidirectional	0.3	31	30	13	1	0.05	±12	X1-DFN1006-2	Released
DESD35VFIBLQ	Single	Bidirectional	0.3	36	35	40	1	0.03	±15	X1-DFN1006-2	Released
DxxV0Z1B2LP3Q(6)	Single	Bidirectional	0.25	4.7-25.7	3-24	17	4	0.1	±25	DFN0603	Q4 2024
DxxV0Z1B2LPQ(6)	Single	Bidirectional	0.25	4.7-25.7	3-24	17	4	0.1	±25	DFN1006	Q4 2024
DxxV0Z4B10LPQ(6)	Quad	Bidirectional	0.25	4.7-25.7	3-24	17	4	0.1	±13	DFN2510	Q4 2024
D20V0Z1BD2CSPQ	Single	Bidirectional	0.25	24.5	24	17	1	0.03	±10	DFN0603	Q4 2024
D3V3X4U10LPQ	Quad	Unidirectional	0.45	5.5	3.3	3	3	1	±8	U-DFN2510-10	Released
D3V3F4U10LPQ	Quad	Unidirectional	0.5	5.5	3.3	5	5	1	±12	U-DFN2510-10	Released
D5V0X1BA2LP4Q	Single	Bidirectional	0.5	9.7	5	17	4	1	±20	X2-DFN1006-2	Released
D5V0FIU2LP3Q	Single	Bidirectional	0.5	6	5	12	1.5	0.1	±15	X3-DFN0603-2	Released
DT1140-04LPQ	Quad	Unidirectional	0.5	6	5.5	10	6	0.05	+20/-16	SOT323	Released
D5V0FIU2LPQ	Single	Unidirectional	0.5	6	5.5	12	1	0.01	±15	X1-DFN1006-2	Released
D5V0FIU2S9Q	Single	Unidirectional	0.5	6	5.5	12	1.5	0.01	±15	SOD923	Released
D5V0F2U3LPQ	Dual	Unidirectional	0.5	6	5.5	12	1.5	0.1	±15	X1-DFN1006-3	Released
D8V0X1B2LPQ	Single	Bidirectional	0.5	9.7	8	17	4	1	±20	X1-DFN1006-2	Released
D8V0X1B2LP4Q	Single	Bidirectional	0.5	9.7	8	17	4	1	±21	X2-DFN1006-3	Released
D10V0XB2LPQ	Single	Bidirectional	0.5	11.5	10	20	4	1	±20	X1-DFN1006-2	Released
D10V0X1B2LP4Q	Single	Bidirectional	0.5	11.5	10	20	4	1	±20	X2-DFN1006-2	Released
D12V0X1B2LP4Q	Single	Bidirectional	0.5	13	12	25	4	1	±20	X1-DFN1006-2	Released
D15V0X1B2LPQ	Single	Bidirectional	0.5	16.5	15	30	4	1	±20	X1-DFN1006-2	Released
D15V0X1B2LP4Q	Single	Bidirectional	0.5	16.5	15	30	4	1	±20	X1-DFN1006-2	Released
D18V0X1B2LP4Q	Single	Bidirectional	0.5	19.7	18	36	3	1	±20	X2-DFN1006-2	Released
D18V0X1B2LPQ	Single	Bidirectional	0.5	19.7	18	36	3	1	±20	X1-DFN1006-2	Released
DESD1CANFD24VSOQ	Dual	Bidirectional	0.5	25.5	24	42	2.6	0.05	±23	SOT23	Released
DESD1CANFD24VWQ	Dual	Bidirectional	0.5	25.5	24	42	2.6	0.05	±23	SOT323	Released
DT1240A-04LPQ	Quad	Unidirectional	0.55	5	3.3	9.5	5.5	1	±14	SOT323	Released
DT1240-04LPQ	Quad	Unidirectional	0.55	6	5.5	11	5.5	0.5	±14	U-DFN2510-10	Released
DBLCxxCIQ (16 Products)	Single	Bidirectional	0.6	4-26.7	3.3-24	18.5-58	19-6	4.5	±30	SOD323	Q3 2024
DT1240A-08LP3810Q	Octal	Unidirectional	0.6	5	3.3	10	5.5	0.5	±14	U-DFN3810-9	Released
DT1042-04SOQ	Quad	Unidirectional	0.65	6.2	5	9	6	0.5	±16	SOT26	Released

Low C_j Data Protection Automotive 'Q' Portfolio (Cont.)

Part Number	Channel	Direction	C _T Typ (pF)	V _{BR} Min (V)	V _{RWM} (V)	Max V _{cl} @ Max IPP (V)	Max IPP @ 8x20μs Max (A)	I _R @ V _{RWM} Max (μA)	VESD IEC61000- 4-2 (kV) VESD CONTACT	Package	Status
DT1042-02SRQ	Quad	Unidirectional	0.65	6.2	5	9	6	1	±18	SOT-143	Q3 2024
D5V0F2U3WQ	Single	Unidirectional	0.8	7	5	12	3.3	0.01	±25	SOT323	Released
D24V0F2U3WQ	Dual	Unidirectional	0.8	27	24	45	5.5	0.1	±10	SOT323	Released
D1213A-01LPQ	Single	Unidirectional	0.85	6	3.3	10	5	0.1	±8	X1-DFN1006-2	Released
D1213A-02SOLQ	Dual	Unidirectional	0.85	6	3.3	10	1	0.3	±15	SOT23	Released
D1213A-02WLQ	Dual	Unidirectional	0.85	6	5.5	17	5	1	±30	SOT323	Released
D1213A-01WSQ	Single	Unidirectional	0.85	6	6	20	7	1	±25	SOD323	Released
DRTR5V0U2SOQ	Quad	Unidirectional	1	6	5.5	16.5	6	0.1	±30	SOT-26	Q3 2024
D1213A-04VQ	Quad	Unidirectional	1.2	6	3.3	18	5	0.1	±25	SOT563	Released
DBLC05IQ	Single	Unidirectional	1.2	6	5	24	25	4.5	±30	SOD323	Released
DT1452-02SOQ	Dual	Unidirectional	1.2	7	5.5	9.5	12	1	±9.5	SOT23	Released
DT2042-04SOQ	Quad	Unidirectional	1.2	6	5.5	10.5	10	1	±30	SOT23-6	Released
DESD2ETH1GxxQ(2)	Dual	Bidirectional	1.3	28	24	160	2.3	0.1	±30	SOT23/DFN	Q4 2024
DRTR5V0U2SRQ	Dual	Unidirectional	1.5	6	5.5	7	5	0.01	±24	SOT-143	Released
DESD1ETH1GLPSQ	Single	Bidirectional	1.5	100	24	140	2.3	0.1	±30	X1-DFN1006-2	Q3 2024
DESD2ETH1GSOQ	Dual	Bidirectional	1.8	28	24	140	2.3	0.1	±30	SOT23	Released
D5V0P4UR6SOQ	Quad	Unidirectional	2.1	4.5	3.3	11	45	1	±30	SOT-26	Released
DESD2ETH100SOQ	Dual	Unidirectional	2.5	100	24	140	3.2	24	±30	SOT23	Q3 2024
DESD5V0U1BLQ	Single	Bidirectional	2.9	5.5	5	7.2	3	0.1	±10	X1-DFN1006-2	Released
DESD5V0U1BBQ	Single	Bidirectional	2.9	5.5	5	7.2	3	0.1	±10	SOD523	Q3 2024
DESD2CANFD24VLP1412Q	Dual	Bidirectional	3.2	25.5	24	50	1.9	0.05	+/-15	DFN1412-3	Q4 2024
DESD2CANFD24VSOQ	Dual	Bidirectional	3.2	25.5	24	50	1.9	0.05	+/-15	SOT-23	Q4 2024
DESD2CANFD24VWQ	Dual	Bidirectional	3.2	25.5	24	50	1.9	0.05	+/-15	SOT-323	Q4 2024
D24V0L1B2LP5Q	Single	Bidirectional	6	24	26	46	2	0.001	±20	U-DFN1006-2 (SWP)	Released
D18V0L1B2LPQ	Single	Bidirectional	7	21	20	34	2	0.01	±15	X1-DFN1006-2	Released
D8V0L1B2LP3Q	Single	Bidirectional	8.5	8.5	8	16.5	4	0.1	±25	X3-DFN0603-2	Released
DESD1CAN2WQ	Dual	Bidirectional	9.3	25.4	24	50	3	0.001	±23	SOT323	Released
DESD3V3S1BLQ	Single	Bidirectional	10	3.8	3.3	7	5	0.1	±30	X1-DFN1006-2	Q3 2024
D20V0L1B2WSQ	Single	Bidirectional	10	21	20	30	3	0.002	±30	SOD323	Released
DESD3V3S1BLQ	Single	Bidirectional	10	3.8	3.3	7	5	0.1	±30	X1-DFN1006-2	Q3 2024
D20V0L1B2WSQ	Single	Bidirectional	10	21	20	30	3	0.002	±30	SOD323	Released

General Purpose Protection Automotive 'Q' Portfolio

Part Number	Channel	Direction	C _T Typ (pF)	V _{br} (V)	V _{RWM} (V)	Vclamping @ IPP (Max)	Max IPP @ 8x20µs Max(A)	I _R @ V _{RWM} Max (µA)	VESD IEC61000-4-2 (kV) VESD ₋ CONTACT	Package	Status
DESD24VL2BTQ	Dual	Bidirectional	11	24	24	38	3	0.5	±30	SOT23	Released
DESD24VL1BAQ	Single	Bidirectional	11	24	24	38	3	0.5	±30	SOD323	Released
DESD1FLEX2SOQ	Dual	Bidirectional	11	25.4	24	70	3	0.001	±30	SOT23	Released
DESD1CAN2SOQ	Dual	Bidirectional	11	25.4	24	70	3	0.001	±30	SOT23	Released
DESD1CAN2WQ	Dual	Bidirectional	9.3	25.4	24	50	3	0.05	±23	SOT323	Released
DESD24VL2BTQ	Dual	Bidirectional	11	24	24	38	3	0.5	±30	SOT23	Released
DESD1FLEX2SOQ	Dual	Bidirectional	11	24	25.4	50	3	0.001	±30	SOT23	Released
D5V0L1B2LP3Q	Single	Bidirectional	12.5	6	5	14	6	0.2	±30	X3-DFN0603-2	Released
DESD1LIN2WSQ	Dual	Bidirectional	13	25.4	24	50	1	0.001	±30	SOT323	Released
DESD1IVN27V2WSQ	Single	Bidirectional	14	28	27	45	3	0.05	±30	SOD323	Released
DESD1IVN27V3WSQ	Dual	Bidirectional	14	28	27	45	3	0.05	±30	SOT323	Released
DESD2IVN27V3WQ	Dual	Bidirectional	14	28	27	45	3	0.05	±30	SOT323	Released
D5V0L4B5SOQ	Quad	Bidirectional	15	6	5	14	6	0.1	±30	SOT23-5	Released
DESD15VL2BTQ	Dual	Bidirectional	16	16	15	25	5	0.5	±30	SOT23	Released
D3V3L2B53LPQ	Dual	Bidirectional	18	3.8	3.3	7.3	8	0.5	±30	X1-DFN1006-3	Released
D24V0S1B2TQ	Dual	Bidirectional	18	27	24	60	5	0.2	±30	SOD523	Released
DESD12VL2BTQ	Dual	Bidirectional	19	13.5	12	22	5	0.5	±30	SOT23	Released
DESD12V0S1BLQ	Single	Bidirectional	20	15	12	33.5	9	0.1	±30	X1-DFN1006-2	Released
SD24CQ	Single	Bidirectional	24	26.7	24	45	7	0.5	±30	SOD323	Released
DESD2CAN2SQ	Dual	Bidirectional	25	24	25.4	50	3	+/-30	+/-30	SOT23	Released
DESD2FLEX2SOQ	Dual	Bidirectional	25	24	25.4	41	5	+/-30	+/-30	SOT23	Released
DMF05LCFLPAQ	Array	Unidirectional	25	6	5	12.5	5	0.1	±25	U-DFN1616-6	Released
D3V3L1B2LP3Q	Single	Bidirectional	28	3.8	3.3	8	12	0.2	±30	X3-DFN0603-2	Released
DUP2105SOQ	Dual	Bidirectional	30	26.2	24	44	8	10	±30	SOT23	Released
DUP3105SOQ	Dual	Bidirectional	30	35.6	32	66	8	10	±30	SOT23	Released
DESD32VS2SOQ	Dual	Unidirectional	36	34	32	50	4	0.1	±30	SOT23	Released
DESD15VS2UTQ	Dual	Unidirectional	40	17.6	15	40	5	0.1	±25	SOT23	Released
SD15CQ	Single	Bidirectional	44	16.7	15	30	12	0.5	±30	SOD323	Released
DESD24VS5U6SOQ	Quint	Unidirectional	45	25.5	24	45	5	0.1	±15	SOT26	Released
DESD5V0L2BTQ	Dual	Bidirectional	45	6	5	12	15	1	±30	SOT23	Released
DESD5V0L2BTQ	Dual	Bidirectional	45	6	5.5	12	15	1	±30	SOT23	Released
DESD5V0L1BAQ	Single	Bidirectional	46	6	5	12	15	0.5	±30	SOD323	Released
DESD24VS2SOQ	Dual	Unidirectional	52	26-32	24	41	5	0.01	±30	SOT23	Q3 2024
SD12CQ	Single	Bidirectional	52.6	13	12	24	15	1	±30	SOD323	Released
D5V0M1U2S9Q	Single	Unidirectional	54	6.2	5.5	12	9	0.01	±30	SOD923	Released
DESD3V3L2BTQ	Dual	Bidirectional	55	3.75	3.3	10	23	1	±30	SOT23	Released
DESD3V3L2BTQ	Dual	Bidirectional	55	3.75	3.3	10	23	1	±30	SOT23	Released
D8V0HIB2LPQ	Single	Bidirectional	55	8.5	8	20	19	0.2	±30	X1-DFN1006-2	Released

General Purpose Protection Automotive 'Q' Portfolio (Cont.)

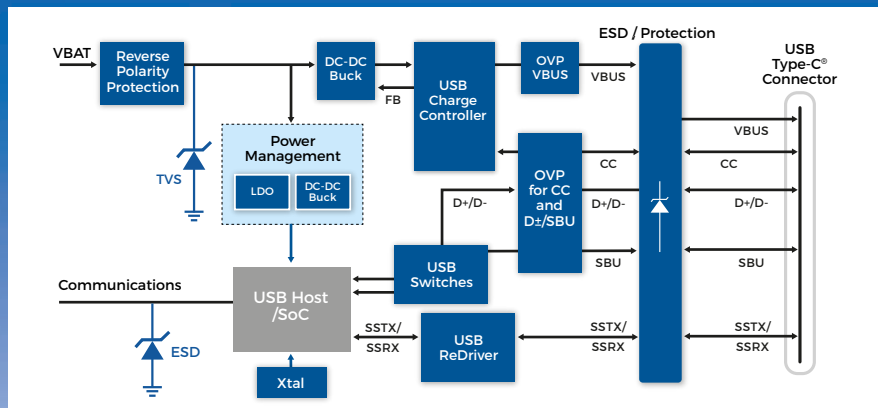
Part Number	Channel	Direction	C _T Typ (pF)	V _{br} (V)	V _{RWM} (V)	Vclamping @ IPP (Max)	Max IPP @ 8x20μs Max(A)	I _R @ V _{RWM} Max (μA)	VESD IEC61000-4-2 (kV) VESD _{CONTACT}	Package	Status
DESD3V3L1BAQ	Single	Bidirectional	56	3.75	3.3	10	23	0.5	±30	SOD323	Released
SM712Q	Dual	Bidirectional	57/35	13.3/7.5	7 & 12	26/19	21/38	1/20	±30	SOT23	Q3 2024
DUP1105SOQ	Dual	Unidirectional	60	25.7	24	44	8	10	±30	SOT23	Released
DESD12VS2UTQ	Dual	Unidirectional	60	14.7	12	35	5	0.1	±25	SOT23	Released
SD09CQ	Single	Bidirectional	68	10	9	20	20	1	±30	SOD323	Released
SD09CQ	Single	Bidirectional	68	10	9	20	20	1	±30	SOD323	Released
SMPD5.0VA – SMPD100VA	Single	Unidirectional	5-100	6.4-123	5-100	9.2-162	9.3-163	<1000	±30	PowerDI5	Q3 2024
MMBZ5V6ALAQ	Single	Unidirectional	N/A	5.32	3	8	3	5	N/A	SOT23	Released
MBMZ6V2ALAQ	Single	Unidirectional	N/A	5.89	3	8.7	2.76	1	N/A	SOT23	Released
MMBZ6V8ALAQ	Single	Unidirectional	N/A	6.46	4.5	9.6	2.5	0.5	N/A	SOT23	Released
MMBZ9V1ALAQ	Single	Unidirectional	N/A	8.65	6	14	1.7	0.3	N/A	SOT23	Released
MMBZ10VALAQ	Single	Unidirectional	N/A	9.5	6.5	14.2	1.7	0.3	N/A	SOT23	Released
MMBZ15VALAQ	Single	Unidirectional	N/A	14.25	12	21	1.9	0.05	N/A	SOT23	Released
MMBZ18VALAQ	Single	Unidirectional	N/A	17.1	14.5	25	1.6	0.05	N/A	SOT23	Released
MMBZ20VALAQ	Single	Unidirectional	N/A	19	17	28	1.4	0.05	N/A	SOT23	Released
MMBZ27VALAQ	Single	Unidirectional	N/A	25.65	22	40	1	0.05	N/A	SOT23	Released
MMBZ33VALAQ	Single	Unidirectional	N/A	31.35	26	46	0.87	0.05	N/A	SOT23	Released

USB Solutions Automotive 'Q' Portfolio

THE DIODES ADVANTAGE

Diodes Incorporated's USB Solutions provide simple and robust solutions to both the data path and the charging power path.

- Automotive Compliant**
AEC-qualified, manufactured in IATF 16949 certified sites, supporting PPAPs



USB Power, Charging, and Protection

Part Number	Function	VBUS Power Switch	VBUS Short to				D+/D- Short to				CC/SBU Short to				Status
			GND	Vbat	Vbus	ESD	GND	Vbat	Vbus	ESD	GND	Vbat	Vbus	ESD	
DPS1133FIAQ	Vbus Power Switch	Yes	OCF	24V	24V	-	-	-	-	-	-	-	-	-	Released
AP22653Q	Vbus Power Switch	Yes	SCP	No	No	-	-	-	-	-	-	-	-	-	Released
AP22654Q/5Q	Vbus Power Switch	Yes	SCP	No	No	-	-	-	-	-	-	-	-	-	Released
AP25810LQ	USB-C UFP Ctrl	Yes	OCF	No	5V	2kV	-	-	-	-	Yes	No	5V	2kV	Released
PI5USB2546AQ	USB 2 CDP/DCP	Yes	OCF	No	5V	2kV	-	-	-	-	-	-	-	-	Released
AP43776Q	USB PD Ctrl	Ext	I_lim	-	-	-	Yes	No	5V	2kV	Yes	24V	24V	2kV	Released
DPO2039Q	CC/SBU OVP	No	-	-	-	-	Yes	24V	24V	8kV	Yes	24V	24V	8kV	Released

USB Charging IC

Features		PI5USB2546AQ	AP25810LQ	AP43776Q	AP43777Q
Status		Released	Released	Released	Q3 2025
Power Port Control/Management		Yes	Yes		
Power MOSFET RON		73mΩ	34mΩ	External 30V (<10mΩ) NMOS	External 80V (<10mΩ) NMOS
YD/T 1591-2009 charging (D+/D- shorted and charging)		Yes	No		Yes
BC 1.2: DCP, SDP, CDP		Yes			Yes
Non-BC 1.2 charging:	Apple 1A, 2A (Divider-1A, -2A) charging	Yes	No D+/D- pins So external decoding required		Yes
	Samsung 1.2V fast charging (DCP-1.2V)	Yes			Yes
	Apple 2.4A charging, (Divider-2.4A)	Yes			Yes
USB PD Type-C standard (15W and above)		No	15W non-PD		USB-PD 3.0 PPS (3.3-21V)
Low power supply with limit at 30mA (eMarker supply)		No	No		Yes
Cable compensation		External - current sense amp to buck converter FB input		Yes - I2C comm to buck-boost	
Fault indications		Yes	Yes		Yes
Adjustable USB output current limit		Ext res adj.	Selectable		Yes
Short circuit protection on VBus/Data/CC lines: Short to	GND	5V-VBUS SCP	5V-VBUS SCP		External NMOS
	Vbatt (I4V)				-
					CC
VBUS Reverse leakage protection		Yes (when off)		Yes (via buck-boost & ext NMOS)	

USB Type-C Protection IC

Part Number	Function	Input Voltage (V)	Max Load Current GND	OCF	OVP	Reverse Protection	Thermal Shutdown (°C)	VBUS RDS(ON) (mΩ)	Slew Rate Control	Output Discharge	Fault Flag	USB Fast-role Swap	IEC61000 -4.2	Package	Status
DPS1133FIAQ	VBUS	4.5 to 24	3.5	Adj.	24V	Yes	165	30	Adj.	Yes	Yes	Yes	-	V-QFN4040-17	Released
AP22653Q	5-V VBUS	3 to 5.5	3	Adj.	No	Yes	150	55	Yes	Yes	Yes	No	16kV (with ext caps)	SOT26	Released
AP22654Q/5Q	5-V VBUS	3 to 5.5	3	Adj.	No	Yes	150	50	Yes	Yes	Yes	No		TSOT26	Released
DPO2039Q	CC & SBU	2.7 to 24	-	No	24V (auto-recovery)	No	150	-	No	No	Yes	No	Yes	U-QFN3030-16	Released

USB Solutions Automotive 'Q' Portfolio

VBUS DC-DC Converter Generation

Part Number	Type	Max VIN (V)	IOUT (A)	VOUT (V)	Max VOUT (V)	FSW (kHz)	Power Good	Adj FSW	Sync to Ext. CLK	Ext. Comp	Adj. Soft-Start	HLLE	IQ (μA)	Comments	Ambient Temperature Range (°C)	Package	Status
AP63356Q	Buck	32	3.5	Adj	V _{IN}	450	Y	N	N	Y	N	Y	258	Synchronous converter	-	V-DFN3020-13 /SWP	Released
AP63357Q	Buck	32	3.5	Adj	V _{IN}	450	Y	N	N	Y	N	N	22	Synchronous converter	-	V-DFN3020-13 /SWP	Released
AP64350Q	Buck	40	3.5	Adj	V _{IN}	100 to 2200	N	Y	Y	Y	N	Y	22	Synchronous converter	-	SO-8EP	Released
AP64351Q	Buck	40	3.5	Adj	V _{IN}	570	N	N	N	Y	Y	Y	22	Synchronous converter	-	SO-8EP	Released
AP64352Q	Buck	40	3.5	Adj	V _{IN}	100 to 2200	N	Y	Y	N	Y	Y	22	Synchronous converter	-	SO-8EP	Released
AP64303Q	Buck	40	3	Adj	35	300 to 2500	Y	Y	Y	Y	Y	Y	22	Synchronous converter	-	U-QFN4040-16 /SWP	Released
AP72054	Buck-boost	-	-	I2C	21	-	-	-	-	-	-	-	-	Synchronous 4-SW converter	-40 to 125	-	Q3 2025

USB Data Switches and ReDrivers

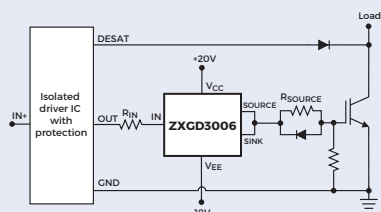
Part Number	Description			AEC-Q100 Grade	Package	Status
USB (ACTIVE) SIGNAL INTEGRITY/REDRIVERS						
PI3EQX7741AIQ	3.3V, USB3.2 5.0Gbps ReDriver with Equalization & Emphasis	1-port (Rx & Dx)	Extends the drive length of USB3	Grade 3	TQFN (ZD20)	Released
PI3EQX501BQ		1-channel		Grade 3	TDFN (ZA8)	Released
PI3DPX1225Q	USB3.2 Gen2 with Alt-DP2.1 6:4 Mux/Demux ReDriver	6:4 Differential Crossbar ReDriver		Grade 3	W-QFN6040-40 (ZLB40)	Released
PI3DPX1207Q	USB3.2 Gen2 with Alt-DP1.4 ReDriver	Supports DP1.4 on USB-C cables		Grade 3	TQFN (ZH42)	Released
CROSSBAR SWITCHES						
PI3DBS16222Q	3.3V, 20Gbps 4-Channel 2x2 Exchange Switch	USB-C SS channel routing		Grade 2	TQFN (ZL30)	Released
PI3USB31532Q	10Gbps USB Type-C DP2.1/USB3 6:4 Crossbar Switch	Mux/Demux, 6:4 Differential Crossbar		Grade 2	W-QFN3060-40	Released
PI3WVR14412Q	20Gbps 1:2 4-ch Signal Switch For DP2.1, HDMI2.1, MIPI DPHY/CPHY, USB3.2	1:2 Mux/Demux		Grade 2	W-QFN3060-40 (ZLC)	Released
USB 2.0 (PASSIVE) SWITCHES/MUXES						
PI3USB221EQ	USB2 2:1 Mux with 5V D± withstand capability			Grade 1	QFN10 (ZUA10)	Released

ESD/Transient Protection TVS

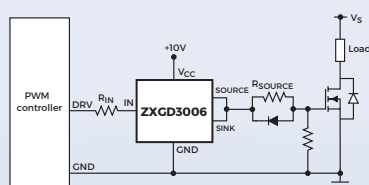
Part Number	Protection	#Ch	Direction	VBR (MIN) (V)	C _J (pF)	Max Vc @Ipp (8/20us) (V)	Package	Status
D5V0SIU2LP1610Q	VBUS	1	Unidirectional	-	800	11.5V @ 120A	DFN1610	Released
D12V0SIU2LP1610Q	VBUS	1	Unidirectional	-	-	20V @ 65A	DFN1610	Released
D20V0SIU2LP1610Q	VBUS	1	Unidirectional	-	-	36V @ 37A	DFN1610	Released
D24V0SIU2TQ	VBUS	1	Unidirectional	27	35	42V @ 6A	SOD523	Released
D5V0HIU2LP1610Q	CCx	1	Unidirectional	5.5	800	12.5V @ 30A	DFN1610	Released
D3V3H1B2LPQ	SBUX	1	Bidirectional	3.8	100	9V @ 40A	DFN1006	Released
DESD3V3I2BCSFQ	USB3.x	1	Bidirectional	5	0.17	4.5V @ 3.5A	DSN0603	Released
D5V0X1BA2LPQ	USB3.x	1	Bidirectional	7	0.48	16V @ 4A	DFN1006	Released
DTI240-04LPQ	USB2.0	4	Unidirectional	5	0.55	9.4V @ 5.5A	DFN2510	Released

Gate Drivers

IGBT Driving



MOSFET Driving



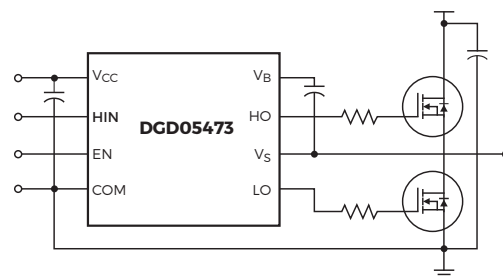
THE DIODES ADVANTAGE

- **4A Output From 1mA Input**
High-gain buffer stage for driving the capacitive load of MOSFET and IGBT gates
- **40V Wide Operating Voltage**
Full enhancement to minimize on-state losses
- **Resistant to Latch-Up & Shoot-Through**
Bipolar emitter-follower configuration is inherently resistant to latch-up and shoot-through issues
- **Short Propagation Delay**
Less than 10ns propagation delay can rapidly track input

Part Number	V _{IN} & V _{CC} Max (V)	I _{SOURCE} @ I _{IN} (A)	I _{SINK} @ I _{IN} (A)	I _{pk} Max (A)	I _{IN} Max (A)	Gate Driver Switching Times (typ)				@ Conditions	Package	Status
						td(rise) (ns)	tr (ns)	td(fall) (ns)	tf (ns)			
ZXGD3003E6Q	40	1.6 @ 10mA	1.4 @ -10mA	5	1	1.8	8.9	1.7	8.9	CL = 1nF; RL = 1Ω; V _{CC} = 12V; V _{IN} = 0-10V; R _{IN} = 25Ω	SOT26	Released
ZXGD3004E6Q	40	1.9 @ 10mA	1.9 @ -10mA	8	1	1.1	13.4	0.95	12.4	CL = 1.5nF; RL = 0.1Ω; V _{CC} = 15V; V _{IN} = 0-12.5V; R _{IN} = 25Ω	SOT26	Released
ZXGD3006E6Q	40	4 @ 1mA	3.8 @ -1mA	10	0.1	8	48	16	35	CL = 10nF; RL = 0.18Ω; V _{CC} = 15V; V _{IN} = 0-15V; R _{IN} = 21kΩ	SOT26	Released

MOSFET Half-Bridge Driving

- **50V Floating High and Low-Side N-Channel Half-Bridge Gate Driver**
- **Internal Bootstrap Diode and 1.5A Source, 2.5A Sink Output Current Capability**
- **Low 20ns Propagation Delay and High-Switching Frequency Capability**
- **Suitable for DC-DC Converters, Wireless Charging, Motor Driving, Class-D Power Amplifiers**



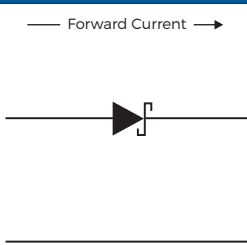
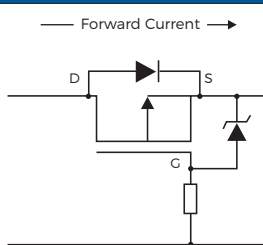
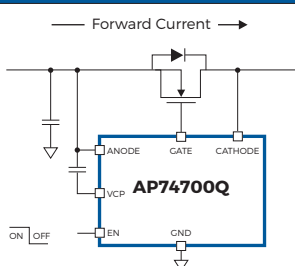
Part Number	Gate Driver Type	Inputs	BS Diode	Offset Voltage max (V)	V _{CC} (V)	Io+ (Typ) (A)	Io- (Typ) (A)	t _{on} (Typ) (ns)	t _{off} (Typ) (ns)	Package	Status
DGD05473FNQ	High-side/low-side	HIN, LIN, EN	Yes	50	4.7 - 14	1.5	2.5	20	23	DFN3030-10	Released
DGD0579UFNQ	High-side/low-side	HIN, LIN, EN	Yes	100	7 - 18	1.5	2.5	65	58	DFN3030-10	Released
DGD0597FUQ	High-side/low-side	HIN, LIN	Yes	40	4.5 - 5.5	1.5	2.5	14	14	QFN3030-8	Released
DGD0211CWTQ	Single Low-side	IN, IN*	-	-	4.5 - 18	1.9	1.8	35	35	TSOT25	Released
DGD0280WTQ	Single Low-side + LDO	IN	-	-	4.5 - 18	2.5	2.8	35	30	TSOT25	Released

Reverse Voltage Protection Automotive 'Q' Portfolio

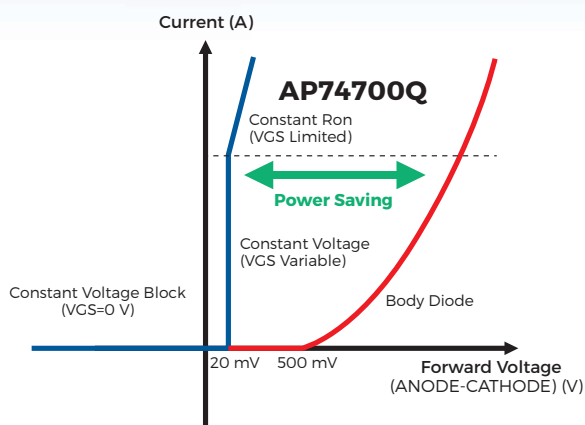
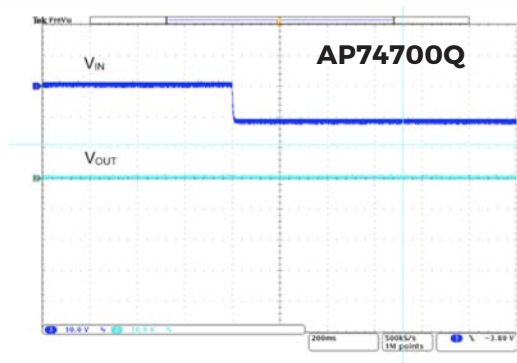
Rectifier Diode

P MOSFET

Ideal Diode Controller (IDC)

	(Schottky or SBR)	+ Zener + Resistor	+ N MOSFET
			
+	- Lowest cost - SBR – most robust and lower V_F - Smallest footprint	- Lower power dissipation - Simple sizing for different load currents - Allows reverse currents (allows reverse motor currents to return to the battery)	- Always blocks reverse currents - Lowest power dissipation - Regulates enhancement of N MOSFET - Fast turn-off of MOSFET due to reverse current flow - N MOSFET can be resized to match load currents
—	- Highest power dissipation - Large temperature increase	- Allows reverse currents - More expensive than just a diode - Largest footprint	- Always blocks reverse currents (prevents reverse motor currents from returning to the battery) - Highest cost at small load currents

Startup Reverse Polarity (-12V)



Part Number	Description	Operating Voltage (V)	Withstand Voltage (V)	$R_{DS(ON)}$ (mΩ)	V_{CS} Withstand (V)	Max V_{TH}/V_F (V)	Load Current (A)	Junction Temperature Range (°C)	Package	Status
AP74700Q	Ideal Diode Controller	3.2 to 65V	±65	Ext. NMOS	–	–	Ext. MOSFET	-40 to 125	SOT26	Released
AP74701Q	TVS-less Ideal Diode Controller	3.2 to 65V	±65	Ext. NMOS	–	–	Ext. MOSFET	-40 to 125	SOT28	Q3 2024
DMP4011SPSQ	PMOS RVP	–	40	10	20	2.5	11	-55 to 150	PowerDI5060-8	Released
DMP6110SFDFQ	PMOS RVP	–	60	56	20	3	<2	-55 to 150	U-DFN2020-6	Released
DMPH6050SFGQ	PMOS RVP	–	60	50	20	3	<5	-55 to 150	PowerDI3333-8	Released
DMP6018LPSQ	PMOS RVP	–	60	18	20	2.5	<10	-55 to 150	PD5060-8	Released
DMTH43M8LPSQ	NMOS RVP	–	40	3.3	20	2.5	22	-55 to 175	PowerDI5060-8	Released
DMTH6007LFQ	NMOS RVP	–	60	6	20	2	10	-55 to 150	PowerDI3333-8	Released
SBR8M100P5Q	SBR RVP	–	100	–	–	0.88	8	-55 to 175	PowerDI5	Released

Voltage Regulation Automotive 'Q' Portfolio

Off-battery DC-DC Buck Converters

Part Number	Max V _{IN} (V)	V _{OUT} Range (V)	Max I _{OUT} (A)	Switching Frequency (V)	I _Q (μA)	Key Features							Ambient Temperature Range °C	Package	Status			
						Adj. f _{sw}	Ext. Sync	FSS	PFM/LLHE	Ext comp	Adj Soft-Start	Power Good						
AP63200Q	32	0.8 - V _{IN}	2	500	22	-	-	Y	Y	-	-	-	-40 to 125	TSOT26	Released			
AP63201Q				-	-													
AP63203Q				Y	Y													
AP63205Q		5	3	500	22			Y	Y	-	-	-				-40 to 125	TSOT26	Released
AP63300Q				-	-													
AP63301Q				Y	-													
AP63356Q				Y	-													
AP63357Q		3.5	450	22	-	Y	Y	-	Y	-40 to 125	V-DFN3020-13/ SWP	Released						
AP642061Q	36	0.8 - V _{IN}	2	400	22	-	-		Y	-	-	Y	-40 to 125	QFN2030-12/ SO-8EP	Q4 2024			
AP642071Q					-				-									
AP642063Q					Y				-40 to 125									
AP642073Q					-				-40 to 125									
AP643061Q			3	400	22			Y	-			-	Y	-40 to 125	QFN2030-12	Q4 2024		
AP643071Q					-			-										
AP643063Q					Y			-40 to 125										
AP643073Q					-			-40 to 125										
AP64C05Q	40	-	Controller	-	100	-	-	-	-	-	-	Y	-40 to 125	QFN4535-20	Q4 2024			
AP64060Q		0.8 - 26	0.6	2200	90	-	-	-	-	-	-	-	-40 to 125	TSOT26	Q4 2024			
AP64100Q		0.8 - V _{IN}	1	100 - 2200	22	Y	Y	Y	Y	Y	-	-	-40 to 125	SO-8EP	Released			
AP64102Q											-					Y		
AP64200Q		0.8 - V _{IN}	2	100 - 2200	25	Y	Y	Y	Y	Y	-	-	-40 to 125	SO-8EP	Released			
AP64202Q											-					Y		
AP64203Q		0.8 - 35	3	300 - 2500	22	Y	Y	-	Y	-	Y	Y	-40 to 125	U-QFN4040-16/ SWP	Released			
AP64303Q																		
AP64350Q		0.8 - V _{IN}	3.5	100 - 2200	22	Y	Y	Y	Y	Y	-	-	-40 to 125	SO-8EP	Released			
AP64351Q					570	22	-	-	Y	Y	Y					Y		
AP64352Q					100 - 2200	22	Y	Y	Y	Y	-					Y		
AP64500Q			5	100 - 2200	25	Y	Y	Y	Y	Y	-	-	-40 to 125	SO-8EP	Released			
AP64501Q				570	25	-	-	Y	Y	Y	Y							
AP64502Q				100 - 2200	25	Y	Y	Y	Y	-	Y							
AP66200Q	60	0.8 - 50	2	300 - 2500	22	Y	Y	-	Y	-	Y	Y	-40 to 125	U-QFN4040-16/ SWP	Released			
AP66300Q			3															
AP68065Q	80	1.2 - 50	0.6	100 - 600	150	Y	-	No (COT)	Y	-	-	-	-40 to 125	SO-8EP	Q4 2024			
AP68105Q			1															
AP68255Q		1.2 - 50	2.5	300	140	-	-	No (COT)	Y	-	-	-	-40 to 125	SO-8EP	Q4 2024			
AP68355Q			3.5															
AP68C05Q		0.8 - V _{IN}	Controller	0.1 - 1.2	100	Y	Y	Y	Y	Y	Y	Y	-40 to 125	QFN4535-20	Q4 2024			
AP6A065Q	100	1.2 - 50	0.6	100 - 600	100	Y	-	No (COT)	Y	-	-	-	-40 to 125	SO-8EP	Q4 2024			
AP6A105Q			1															
AP6A255Q		1.2 - 50	2.5	300	140	Y	-	No (COT)	Y	-	-	-	-40 to 125	SO-8EP	Q4 2024			
AP6A355Q			3.5															
AP6ACO5Q			0.8 - V _{IN}	Controller	0.1 - 1.2	1000	Y	Y	Y	Y	Y	Y	Y	-40 to 125	QFN4535-20	Q4 2024		

Protected Rail DC-DC Converters

Part Number	Max V _{IN} (V)	V _{OUT} (V)	I _{OUT} (A)	f _{SW} (MHz)	I _O (μA)	Key Features						T _A Range °C	Package	Status
						LDO Mode	V _{IN} OVP	FSS	PWM/ PFM (LLHE)	Adj Soft-Start	Power Good			
AP61062Q	5.5	0.6 ~ 3.6	0.6	2.2	15	No	Y	No (COT)	Yes (Via EN pin)	-	Open-drain	-40 to 125	SOT563	Released
AP61100Q			1			-				-				
AP61102Q			2			-				Open-drain				
AP61204Q		0.6 ~ V _{IN}	3	2.2	19	Y				-	-			
AP61300Q			4							-	Open-drain			
AP61302Q			2							-	Open-drain			
AP61402Q		0.6 ~ V _{IN}	4	2	14	-				Open-drain	-40 to 125	DFN1510-6	Released	
AP61406Q				2.5	14	-				Open-drain	-40 to 125	QFN1520-8	Q4 2024	
AP62CO5Q	20	0.8 ~ V _{IN}	Controller	0.1 - 1.2	1000	Y	Y	Y	Y	Y	Y	-40 to 125	QFN4535-20	Q4 2024

Automotive Linear/LDO Regulators Automotive 'Q' Portfolio

Off-Battery Linear & LDO Regulators

Part Number	Output Voltage (V)	Max. V _{in} (V)	I _{out} (A)	I _Q (μA)	Dropout Voltage (V)	Tolerance (%)	PSRR @ 1kHz (dB)	Enable	Output Discharge	Power Good	Ambient Temperature (°C)	Packages	Status
AP7375Q	1.8, 3.0, 3.3, 5.0	45	300	2.1	1.2	2	85	Y	N	N	-40 to 125	SO-8EP, SOT25, SOT89, DFN2020-6/SWP	Released
AP7387Q	3.0, 3.3, 3.6, 5.0	60	150	2	1.1	2	70	-	N	N	-40 to 125	DFN2020-6/SWP, SOT89	Released
AP7583Q	Fixed & Adj: 1.2 ~ 5	42	300	2.5	0.3	1.5	70	Y	N	N	-40 to 125	DFN2020-6/SWP, MSOP-8EP, TO252-4	Released
AP7583AQ				3						Y			
ZXTR2005ZQ	5	100	30	270	-	5	46	-	N	N	-40 to 125	SOT89	Released
ZXTR2105FQ	5	60	30	450	-	5	46	-	N	N	-55 to 150	SOT23/F	Released
ZXTR2108FQ	8	60	15	500	-	10						SOT23	
ZXTR2112FQ	12	60	15	500	-	10						SOT23	
AP7369Q	2.5, 3.3, 5.0	45	150	2.1	0.6	2	85	-	N	N	-40 to 125	SOT25, SOT223	Q4 2024
AP7581EQ	3.3, 5.0	42	150	10	0.25	2	70	Y	N	Adj delay	-40 to 125	MSOP-8EP	Q4 2024
AP7582EQ	3.3, 5.0	42	300	10	0.45	2	70	Y	N	Adj delay	-40 to 125	SO-8EP	Q4 2024

Protected Rail Linear & LDO Regulators

Part Number	Output Voltage (V)	Max. V _{in} (V)	I _{out} (A)	I _Q (μA)	Dropout Voltage (V)	Tolerance (%)	PSRR @ 1kHz (dB)	Enable	Output Discharge	Power Good	Ambient Temperature (°C)	Packages	Status
AP7315DQ	1.1, 1.2, 1.5, 1.8, 2.5, 2.7, 2.8, 2.9, 3.0, 3.3	5.25	150	35	0.29	1	75	Y	Y	N	-40 to 125	SOT25	Released
AP7315Q									N				Released
AP7343DQ	0.9, 1.0, 1.1, 1.2, 1.5, 1.8, 2.5, 2.7, 2.8, 2.9, 3.0, 3.3	5.25	300	35	0.31	1	75	Y	Y	N	-40 to 125	SOT25, W-DFN2020-6/SWP	Released
AP7343Q									N				Released
AP7347DQ	1.0, 1.05, 1.1, 1.2, 1.5, 1.8, 2.2, 2.5, 2.8, 2.9, 3.3, 5.0	5.5	500	60	0.32	1	75	Y	Y	N	-40 to 125	SOT25, W-DFN2020-6/SWP	Released
AP7347EQ	1.0, 1.05, 1.1, 1.15, 1.2, 1.5, 1.7, 1.8, 2.2, 2.5, 2.8, 2.9, 3.0, 3.3, 5.0, ADJ (0.8)	5.5	500	75	0.27	1	75	Y	Y	Y	-40 to 125	U-DFN2020-6/SWP, V-DFN3030-8/SWP	Q4 2024
ZLDO1117Q	1.2, 1.5, 1.8, 2.5, 3.3, 5.0, ADJ (1.25)	18	1000	4000	1.11	1	80	N	N	N	-40 to 125	SOT223, TO252	Released
ZMR250Q	2.5	22.5	50	40	1.4	0.025	75	N	N	N	-55 to 125	SOT23	Released
ZMR330Q	3.3	24	50	170	1.44	0.025	72	N	N	N	-55 to 125	SOT23	Released
ZMR500Q	5	25	50	70	1.2	0.025	72	N	N	N	-55 to 125	SOT23	Released

Shunt Regulators and References

Part Number	Reference Voltage (V)	Tolerance (%)	Max input Voltage (V)	Max Sink Current (mA)	Min Cathode Current for Regulation Typ (μA)	Operating Ambient Temperature Range (°C)	AEC-Q100 Grade	Packages	Status
SHUNT REGULATORS									
ZTL431Q/2Q†	2.5	0.5:1	20	100	400	-40 to +125	1	SOT23; SOT25	Released
TL431Q/2Q†	2.495	0.5:1	36	100	400	-40 to +125	1	SOT23, SOT25	Q4 2025
LM431Q	2.5	0.5:1	36	100	400	-40 to +125	1	SOT23	Q4 2025
ATL431Q	2.5	0.5:1	36	100	50	-40 to +125	1	SOT23	Q4 2025
TLV431Q	1.24	0.2: 0.5:1	18	15	55	-40 to +125	1	SOT23; SOT25	Released
AZ9431Q	1.24	1	18	100	55	-40 to +125	1	SOT23	Released
SHUNT REFERENCES									
LM4040-xxQ	2.5, 3.0, 3.3, 4.096, 5.0	0.2: 0.5:1	-	15	60	-40 to +125	1	SOT23	Released
LM4041Q	1.225	0.5:1	-	12	30	-40 to +125	1	SOT23	Released
LM4041_ADJQ	1.233	1	10	12	30	-40 to +125	1	SOT23	Released

Overcurrent Protected Switches/Load Switches

Part Number	Input Voltage (V)	Max Load Current GND (A)	Channels	Enable Logic (Active)	R _{DS(ON)} (mΩ)	OCP	OVP	Reverse Protection	Thermal Shutdown (°C)	Slew Rate Control	Output Discharge	Fault Flag	OCP/SCP	IEC 61000 -4.2	Ambient Temp (°C)	Package	Status
OVERCURRENT PROTECTED SWITCHES																	
AP22653Q	3 to 5.5	1.5	1	High	55	Adj.	No	Yes	150	Yes	Yes	Yes	OCP/SCP	15kV (with ext caps)	-40 to 125	SOT26	Released
AP22654Q	3 to 5.5	3.1	1	Low	50	Adj.	No	Yes	150	Yes	Yes	Yes	OCP/SCP	-	-40 to 125	TSOT26	Released
AP22655Q	3 to 5.5	3.1	1	High	50	Adj.	No	Yes	150	Yes	Yes	Yes	OCP/SCP	-	-40 to 125	SOT26	Released
DPS1133FIAQ	4.5 to 24	3.5	1	High	29	Adj.	24V	Yes	165	Adj.	Yes	Yes	OCP/SCP	-	-40 to 125	V-QFN4040-17	Released
LOAD SWITCHES																	
AP22919Q	1.6 to 5.5	1.5	1	High	90	-	-	-	-	Yes	Yes	-	SCP	-	-40 to 125	SOT363	Released
AP22975Q	0.8 to 5.7	6	1	High	16	-	-	-	-	Adj	Yes	-	-	-	-40 to 125	DFN2020-8	Q3 2024
AP22976Q	0.8 to 5.5	6	2	High	16	-	-	-	-	Adj	Yes	-	-	-	-40 to 125	DFN3020-14	Q4 2024

LED Drivers Automotive 'Q' Portfolio

DC-DC LED Drivers

Part Number	LED Driver Type	Topologies			Supply Voltage (V)	Output Current (A)	Accuracy (%)	Max Fsw MHz	Hysteresis %	Dimming		Fault Pin	NTC Pin	Temperature Protection	Over-Voltage (mV)	Ambient Temp Range (°C)	Packages					Status
		Buck	Buck-boost	Boost						PWM	Analog						MSOP-8EP	SO-8EP	TSSOP-16EP	DFN3030	QFN4040	
AL8860Q	Driver	Y	-	-	4.5 to 40	1/1.5	5	1	2	Y	Y	N	N	Y	100	-40 to 125	Y	-	-	-	-	Released
AL8861Q	Driver	Y	-	-	4.5 to 40	1/1.5	5	1	13	Y	Y	N	N	Y	100	-40 to 125	Y	-	-	-	-	Released
AL8841Q	Driver	Y	-	-	4.5 to 40	1/1.5	5	1	13	Y	Y	N	N	Y	100	-40 to 125	Y	-	Y	-	-	Released
AL8843Q	Driver	Y	-	-	4.5 to 40	3	5	1	13	Y	Y	N	N	Y	100	-40 to 125	-	Y	-	-	-	Released
ZXLD1356Q	Driver	Y	-	-	6 to 60	0.55	2.5	0.6	13	Y	Y	N	N	N	200	-40 to 125	-	-	Y	Y	-	Released
ZXLD1366Q	Driver	Y	-	-	6 to 60	1	2.5	0.6	13	Y	Y	N	N	N	200	-40 to 125	-	Y	Y	Y	-	Released
AL8862Q	Driver	Y	-	-	5 to 55	1	4	1	13	Y	Y	N	N	Y	100	-40 to 125	-	Y	-	Y	-	Released
AL8865Q	Driver	Y	Y	Y	4.5 to 100	2	3	2.2	-	Y	Y	Y	Y	Y	100	-40 to 125	-	Y	-	Y	-	Q1 2025
AL8866Q	Controller	Y	Y	Y	4.5 to 85	EXT	3	1	-	Y	Y	Y	Y	Y	100	-40 to 125	-	Y	-	Y	-	Q4 2024
AL8868Q	Controller	Y	Y	Y	4.5 to 85	EXT	3	1	-	Y	Y	Y	N	Y	100	-40 to 125	-	Y	-	Y	-	Q4 2024
AL8871Q	Controller	-	Y	-	5 to 60	EXT	0.25	1	15	Y	Y	Y	Y	Y	250	-40 to 125	-	-	-	-	Y	Released
AL8890Q	Voltage Converter	Y	-	-	5 to 60	3.5	1	2.5	-	Y	Y	N	N	Y	800	-40 to 125	-	-	-	-	Y	Q3 2024
AL88902Q	Voltage Converter	Y	-	-	5 to 60	2.5	1	2.5	-	Y	Y	N	N	Y	800	-40 to 125	-	-	-	-	Y	Q3 2024
AL8891Q	Driver	Y	-	-	5 to 65	2	4	2.2	-	Y	Y	Y	N	Y	200	-40 to 125	-	-	-	-	Y	Q4 2024
ZXLD1371Q	Controller	Y	Y	Y	5 to 60	EXT	0.25	1	15	Y	Y	Y	Y	Y	250	-40 to 125	-	-	-	-	Y	Released

Linear LED Drivers

Part Number	LED Driver Type	Supply Voltage (V)	Max. V _{OUT} (V)	Number of Channels	I _{LED} Sense Voltage (mV)	Output Current (mA)	Max. LED Current (mA)	Accuracy (%)	Dimming	Ambient Temp Range (°C)	Packages	Status
AL1783Q	Driver	6.5 to 55	55	3	-	Adj to 250	250	4	Independent PWM	-40 to 125	TSSOP-16EP	Released
AL5801Q	Driver	5 to 100	100	1	560	Adj to 350	350	10	PWM	-40 to 125	SOT26	Released
AL5809Q	Driver	2.5 to 60	60	1	-	Fixed, 10 to 150	150	5	Ext PWM	-40 to 125	PowerDI123 (Type B)	Released
AL5810Q	Driver	2.5 to 60	60	1	-	Adj to 200	200	5	PWM by external transistor	-40 to 125	TO252 (DPAK), W-DFN2020-3/SWP	Released
AL5814Q	Controller	4.5 to 60	60	1	ADJ (400)	15	EXT	5	PWM	-40 to 125	MSOP-8EP	Released
AL5816Q	Controller	4.5 to 60	60	1	200	10	BJT/MOS	4	Analog and PWM	-40 to 125	SOT25	Released
AL5871Q	Driver	5 to 55	55	1	-	Adj to 750	750	4	Analog and PWM	-40 to 125	TSSOP-16EP	Released
AL5873Q	Driver	5 to 55	55	3	-	Adj to 250	250	4	Analog and PWM	-40 to 125	TSSOP-16EP	Released
AL8400Q	Controller	2 to 18	18	1	200	15	EXT BJT/MOS	3	Ext	-40 to 125	SOT353	Released
BCR401UW6Q	Driver	1.4 to 40	40	1	700	10 Preset	100	10	PWM by external transistor	-55 to 150	SOT26	Released
BCR402UW6Q	Driver					20 Preset						
BCR405UW6Q	Driver					50 Preset						
BCR420UFDQ	Driver	1.4 to 40	40	1	700	10 Preset	350	10	PWM by external transistor	-55 to 150	U-DFN2020-6	Released
BCR420UW6Q	Driver										SOT26	Released
BCR421UFDQ	Driver	1.4 to 40	40	1	700	10 Preset	350	10	Logic level PWM by external transistor	-55 to 150	U-DFN2020-6	Released
BCR421UW6Q	Driver										SOT26	Released
BCR430UW6Q	Driver	5 to 42	40	1	892	Adj to 100	100	5	PWM dimming by REXT pin	-40 to 125	SOT26	Released

Multi-Channel Digital Interface LED Drivers

Part Number	# of channel	V _{CC} (V)	Max. of Built-in Scan	V _{IO} (V)	LED Voltage (V)	LED Current (mA)	Interface	Global ADIM	Channel ADIM	PWM DIM	SRAM Memory	FIFO Shift Register Latch	Daisy Chain in SPI	Protection LED Short/Open/OTP/OC/OPP	Diagnostic ADC	RGB	Individual CH Brightness Control	Package	Status
AL5887Q	36	1.8	0	1.8 - 5.5	5.5	70	I2C, SPI	6-Bit	N	12-Bit	N	N	Y	Y	N	Y	N	W-QFN6060-52	Released
AL58812Q	12																	W-QFN5050-40	Q3 2024
AL58818Q	18																	W-QFN5050-40	Q3 2024
AL58263Q	16	3.3-5.5	0	No	15	55	SPI	Y	N	Y	N	Y	Y	Y	N	Y	Y	W-QFN4040-24	Q3 2024
AL5958Q	48	2.8-5.5	32	No	5.5	20	SPI	Y	N	Y	3x16k	Y	Y	Y	N	Y	Y	W-QFN9090-76	Q3 2024
AL58821Q	12	3.3-5.5	0	No	24	60	SPI	Y	N	Y	N	Y	Y	Y	N	Y	Y	W-QFN4040-20	Q3 2024
AL58183AQ	8	3-5.5	0	No	17	120	Standalone	N	N	N	N	N	N	Y	N	Y	N	W-QFN3030-16	Q3 2024
AL58291Q	4	3.3-5.5	0	No	24	350	SPI	Y	Y	Y	N	N	Y	Y	N	Y	N	W-QFN3030-20	Q3 2024
AL5983Q	24	4.5	8	No	40	120	SPI	N	N	Y	7k	Y	Y	Y	Y	Y	Y	W-QFN5050-40	Q4 2024
AL5836Q	3	0	3.9	No	50	Ext	Single-wire	N	N	Y	N	N	N	N	N	N	Y	TSSOP14	Q4 2024

Amplifiers and Sensors Automotive 'Q' Portfolio

High-Side Current Monitors

Part Number	Description	V _{IN} (V)	V _{CC} (V)	Accuracy %	I _Q (μA)	V _{CM} (V)	Max. V _{OUT} (V)	Gain	Bandwidth (MHz)	Ambient Temp Range (°C)	Package	Status
CURRENT OUTPUT												
ZXCT1008Q/9Q	Cost-Effective Current Monitor	2.5 to 20	-	±2.5	4	V _{in}	V _{s+} -2.5	10mA/V	2	-40 to 125/85	SOT23	Released
ZXCT1082Q	60V Improved Accuracy	2.7 to 60	2.5 to 60	200%	25	V _{in}	V _{s-} -1	Prog	0.5	-40 to 125	SOT25	Released
ZXCT1083Q	40V Improved Accuracy	2.7 to 40	2.5 to 40	200%	25	V _{in}	V _{s-} -1	Prog	0.5	-40 to 125	SOT25	Released
ZXCT1107Q/9Q	High-Accuracy and Cost-Effective	2.5 to 36	-	±3.4	3	V _{in}	V _{s+} -2.5	4mA/V	0.3	-40 to 125	SOT23	Released
ZXCT1110Q	Improved Offset over ZXCT1107/9	2.5 to 36	-	±1.8	3	V _{in}	V _{s-} -1	4mA/V	0.3	-40 to 125	SOT25	Released
VOLTAGE OUTPUT												
ZXCT1080Q	60V Common-Mode Range	3 to 60	4.5 to 12	±3	30	V _{in}	V _{s-} -1	10	0.5	-40 to 125	SOT25	Released
ZXCT1081Q	40V Common-Mode Range	3 to 40	4.5 to 12	±3	30	V _{in}	V _{s-} -1	10	0.5	-40 to 125	SOT25	Released
ZXCT1084Q/5Q	60V/40V Common-Mode Enhanced Performance	2.7 to 60/40	2.5 to 60/40	±2	25	V _{in}	V _{s-} -1	25	0.5	-40 to 125	SOT25	Released
ZXCT1086Q/7Q						V _{in}	V _{s-} -1	50	0.2	-40 to 125	SOT25	Released
ZXCT199Q	High Precision Rail-to-Rail	-0.1 to 26	2.7 to 26	±0.8	65	-0.3 to 26	V _{s+} - 0.05	50, 100, 200	0.07 to 0.014	-40 to 125	SOT363	Released
ZXCT210Q	26V, Zero-Drift, High-Precision Current Monitor	-0.1 to 26	2.7 to 26	±0.5	65	-0.3 to 26	V _{s+} - 0.05	200	0.014	-40 to 125	SOT363	Released
ZXCT211Q								500	0.007			
ZXCT212Q								1000	0.004			
ZXCT213Q								50	0.08			
ZXCT214Q								100	0.03			
ZXCT215Q								75	0.04			
ZXCT180Q	26V, RRIO Current Monitor	-0.3 to 26	2.7 to 5.5	±1	200	-0.3 to 26	V _{s+} - 0.05	20, 50, 100, 200	0.35 to .105	-40 to 125	SOT25	Q3 2024
ZXCT181Q	26V, RRIO Current Monitor											

Operational Amplifiers

Part Number	Number of Channels	Supply Voltage (V)	Supply Current @ 5V (per ch) (mA)	Input Offset Voltage Typ (mV)	Input Bias Current Typ (nA)	Input Common Mode Voltage		Output Current (mA)	Rail-Rail	Ambient Temperature Range (°C)	Packages	Status
						Min (V)	Max (V)					
AS2333Q	2	1.8 ~ 5.5	0.012	0.008	0.07	(V-) -0.1	(V+) +0.1	-5/25	Input/output	-40 to 125	SO-8	Released
AS2376Q	2	2.2 ~ 5.5	0.76	0.005	0.0002	(V-) -0.1	(V+) +0.1	-5/25	Input/output	-40 to 125	MSOP-8, SO-8	Released
AS333Q	1	1.8 ~ 5.5	0.017	0.008	0.07	(V-) -0.1	(V+) +0.1	-5/25	Input/output	-40 to 125	SOT25	Released
LM2902AQ	4	3 ~ 36	0.9	1	25	V-	V+ -1.5	±16	No	-40 to 125	SO-14, TSSOP-14	Released
LM2902Q				2							MSOP-8, SO-8, TSSOP-8	Released
LM2904AQ	2	3 ~ 36	0.6	1	25	V-	V+ -1.5	±16	No	-40 to 125	MSOP-8, SO-8, TSSOP-8	Released
LM2904Q				2							MSOP-8, SO-8, TSSOP-8	Released

Comparators

Part Number	Number of Channels	Supply Voltage (V)	Supply Current @ 5V (per ch) (mA)	Input Offset Voltage (Typ/Max)	Input Bias Current Typ (nA)	Input Common Mode Voltage		Output Current Sink (mA)	Output Stage	Ambient Temperature Range (°C)	Packages	Status
						Min (V)	Max (V)					
LM2901AQ	4	2 ~ 36	0.9	1-2	25	0	V _{CC} -1.5	16	Open-collector	-40 to 125	SO-14, TSSOP-14	Released
LM2901Q				2-7							MSOP-8, SO-8, TSSOP-8	Released
LM2903AQ	2		0.6	1-2								
LM2903Q				2-7								

Audio Amplifiers

Part Number	Min. V _{DD} (V)	Max. V _{DD} (V)	I _Q (mA)	Mono or Stereo	Bridge-Tied-Load (BTL)	Single-Ended (SE)	Class-D or -AB	Volume/ Gain	Max Gain	SNR	Ambient Temperature Range (°C)	Package	Status
PAM8904Q	2.3	5.5	1	Mono	Yes	No	D	3- Step	N/A	N/A	-40 to 105	U-QFN3030-16 (Type B)	Released

Amplifiers and Sensors Automotive 'Q' Portfolio

Hall Sensors

Diodes' Automotive Hall-effect Switches provide simple and reliable solutions to contactless switching in automotive applications.

Latch Output latches with one field polarity and changes state only when opposite field is applied.

Unipolar Responds to either a N or S field; dependent on package.

Omnipolar Responds to any magnetic field polarity. Magnet's polarity not critical.

THE DIODES ADVANTAGE

- **Automotive Compliant**
AEC qualified, manufactured in IATF 16949 certified sites, supporting PPAPs
- **Wide Operating Range**
3V to 28V over -40° to +150°C
- **8kV ESD Rating**
- **Comprehensive Portfolio:**
High- and low-voltage latches, unipolar switches, omnipolar switches, linear sensors
- **Simple Cost-Effective Solution**
Industry-standard pin-out and packages SOT23, SC59, and SIP3
- **Wide Protection Features:**
 - Low-leakage reverse-blocking diodes
 - Zener clamps on supply and output pins
 - Output (tight tolerance)
 - Overcurrent limit
 - 32V/40V load-dump capability
- **Functional Safety Options in 2-Wire and Dual Sensor Devices**
Supports ASIL-B as SEooC

Hall Sensor Latches

Part Number	Outputs	Output Type	Active Output State (B > Bop)	Inactive Output State (B < Brp)	ISO 26262 Ready/Diagnostics	Operating Voltage (V)	Average Supply Current (mA)	Operating Point Bop (Bops +ve/ Bopn -ve) (Gauss)			Release Point Bop (Brps +ve/ Brpnn -ve) (Gauss)			Max Output Current (mA)	Ambient Temp Range (°C)	Packages	Status
AH1711Q	Single	Open Drain	Low	High-Z	-	2.4 to 5.5	2	-5	7	29	-29	-7	5	30	-40 to 150	SOT23	Released
AH1712Q	Single	Open Drain	Low	High-Z	-	2.4 to 5.5	2	2	18	45	-45	-18	-2	30	-40 to 150	SOT23	Released
AH1713Q	Single	Open Drain	Low	High-Z	-	2.4 to 5.5	2	15	50	88	-88	-50	-15	30	-40 to 150	SOT23	Released
AH1714Q	Single	Open Drain	High-Z	Low	-	2.4 to 5.5	2	2	18	45	-45	-18	-2	30	-40 to 150	SOT23	Released
AH3270Q	Single	Two-wire, Current, Active High	14.5mA	3.3mA	-	2.7 to 27	3.3	3	18	33	-33	-18	-3	14.5	-40 to 125	SC59, SIP-3	Released
AH3271Q	Single		14.5mA	6mA	-	2.7 to 27	6	3	18	33	-33	-18	-3	14.5	-40 to 125	SC59, SIP-3	Released
AH3272Q	Single		14.5mA	3.3mA	-	2.7 to 27	3.3	10	30	50	-50	-30	-10	14.5	-40 to 125	SC59, SIP-3	Released
AH3280Q	Single		14.5mA	3.3mA	Y	2.7 to 27	3.3	3	18	33	-33	-18	-3	14.5	-40 to 150	SC59, SIP-3	Released
AH3281Q	Single		14.5mA	6mA	Y	2.7 to 27	6	3	18	33	-33	-18	-3	14.5	-40 to 150	SC59, SIP-3	Released
AH3282Q	Single		14.5mA	3.3mA	Y	2.7 to 27	3.3	10	30	50	-50	-30	-10	14.5	-40 to 150	SC59, SIP-3	Released
AH3712Q	Single	Open Drain	Low	High-Z	-	3 to 27	2.8	10	25	40	-40	-25	-10	50	-40 to 150	SC59, SIP-3, SOT23, U-DFN2020-6/SWP	Released
AH3713Q	Single	Open Drain	Low	High-Z	-	3 to 27	2.8	15	30	45	-45	-30	-15	60	-40 to 150	SC59, SIP-3, SOT23	Released
AH3714Q	Single	Open Drain	Low	High-Z	-	3 to 27	2.8	20	40	60	-60	-40	-20	80	-40 to 150	SC59, SIP-3, SOT23	Released
AH3715Q	Single	Open Drain	Low	High-Z	-	3 to 27	2.8	50	70	90	-90	-70	-50	140	-40 to 150	SC59, SIP-3, SOT23	Released
AH3716Q	Single	Open Drain	Low	High-Z	-	3 to 27	2.8	80	110	140	-140	-110	-80	220	-40 to 150	SC59, SIP-3, SOT23	Released
AH3717Q	Single	Open Drain	Low	High-Z	-	3 to 27	2.8	110	140	170	-170	-140	-110	280	-40 to 150	SC59, SIP-3, SOT23	Released
AH3722Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	10	25	40	-40	-25	-10	30	-40 to 150	SIP-3	Released
AH3723Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	15	30	45	-45	-30	-15	30	-40 to 150	SC59, SIP-3, SOT23	Released
AH3724Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	20	40	60	-60	-40	-20	30	-40 to 150	SC59, SIP-3, SOT23	Released
AH3725Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	50	70	90	-90	-70	-50	30	-40 to 150	SIP-3, SOT23	Released
AH3726Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	80	110	140	-140	-110	-80	30	-40 to 150	SIP-3, SOT23	Released
AH3727Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	110	140	170	-170	-140	-110	30	-40 to 150	SIP-3	Released
AH3729Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	170	220	250	-250	-220	-170	30	-40 to 150	SOT23	Released
AH3965Q	Dual Speed and Direction	Open Drain	Low	High-Z	-	2.7 to 27	4.7	-10	10	30	-30	-10	10	11	-40 to 150	TSOT25	Released
AH3966Q		Open Drain	Low	High-Z	-	2.7 to 27	4.7	8	25	42	-42	-25	-8	11	-40 to 150	TSOT25	Released
AH3967Q	Dual Speed and Direction	Open Drain	Low	High-Z	-	2.7 to 27	4.7	50	75	100	-100	-75	-50	11	-40 to 150	TSOT25	Released
AH3968Q		Open Drain	Low	High-Z	-	2.7 to 27	4.7	50	75	100	-100	-75	-50	11	-40 to 150	TSOT25	Released
AH3975Q		Open Drain	Low	High-Z	Y	2.7 to 27	4.7	-10	10	30	-30	-10	10	11	-40 to 150	TSOT25	Released
AH3976Q		Open Drain	Low	High-Z	Y	2.7 to 27	4.7	8	25	42	-42	-25	-8	11	-40 to 150	TSOT25	Released
AH3977Q	Dual	Open Drain	Low	High-Z	Y	2.7 to 27	4.7	50	75	100	-100	-75	-50	11	-40 to 150	TSOT25	Released
AH3978Q		Open Drain	Low	High-Z	Y	2.7 to 27	4.7	50	75	100	-100	-75	-50	11	-40 to 150	TSOT25	Released

Hall Sensor Unipolar Switches

Part Number	Output	Output Type	Active Output State (B > Bop)	Inactive Output State (B < Brp)	ISO 26262 Ready, Diagnostics	Operating Voltage (V)	Average Supply Current (mA)	Operating Point Bop (Bops +ve/ Bopn -ve) (Gauss)			Release Point Bop (Brps +ve/ Brpn -ve) (Gauss)			Max Output Current (mA)	Ambient Temp Range (°C)	Packages	Status
								Min	Typ	Max	Min	Typ	Max				
AH3231Q	Single	Two-wire, Current, Active Low	6mA	14.5mA	-	2.7 to 27	14.5	55	90	135	35	70	115	14.5	-40 to 150	SC59, SIP-3	Released
AH3232Q	Single		14.5mA	6mA	-	2.7 to 27	6	30	60	90	10	40	70	14.5	-40 to 150	SC59, SIP-3	Released
AH3233Q	Single		14.5mA	6mA	-	2.7 to 27	6	20	45	70	3	28	53	14.5	-40 to 150	SC59, SIP-3	Released
AH3234Q	Single		6mA	14.5mA	-	2.7 to 27	14.5	20	45	70	3	28	53	14.5	-40 to 150	SC59, SIP-3	Released
AH3241Q	Single	Two-wire, Current, Active Low	6mA	14.5mA	Y	2.7 to 27	14.5	55	90	135	35	70	115	14.5	-40 to 150	SC59, SIP-3	Released
AH3242Q	Single		14.5mA	6mA	Y	2.7 to 27	6	30	60	90	10	40	70	14.5	-40 to 150	SC59, SIP-3	Released
AH3243Q	Single		14.5mA	6mA	Y	2.7 to 27	6	20	45	70	3	28	53	14.5	-40 to 150	SC59, SIP-3	Released
AH3244Q	Single		6mA	14.5mA	Y	2.7 to 27	14.5	20	45	70	3	28	53	14.5	-40 to 150	SC59, SIP-3	Released
AH3320Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	180	210	240	155	185	220	30	-40 to 150	SIP-3, SOT23	Released
AH3321Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	235	275	300	210	250	275	30	-40 to 150	SIP-3, SOT23	Released
AH3322Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	15	30	45	5	20	35	30	-40 to 150	SC59, SIP-3, SOT23	Released
AH3323Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	38	55	72	20	35	60	30	-40 to 150	SC59, SIP-3, SOT23	Released
AH3324Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	68	80	100	40	60	80	30	-40 to 150	SIP-3, SOT23	Released
AH3325Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	80	100	120	60	80	100	30	-40 to 150	SIP-3, SOT23	Released
AH3326Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	65	100	135	50	85	120	30	-40 to 150	SC59, SIP-3, SOT23	Released
AH3327Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	95	115	140	70	90	120	30	-40 to 150	SC59, SIP-3, SOT23	Released
AH3328Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	130	150	180	105	125	160	30	-40 to 150	SIP-3, SOT23	Released
AH3329Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	150	175	200	125	150	180	30	-40 to 150	SIP-3, SOT23	Released

Hall Sensor Omnipolar Switches

Part Number	Output	Output Type	Active Output State (B > Bop)	Inactive Output State (B < Brp)	ISO 26262 Ready, Diagnostics	Operating Voltage (V)	Average Supply Current (mA)	Operating Point Bop (Bops +ve/ Bopn -ve) (Gauss)			Release Point Bop (Brps +ve/ Brpn -ve) (Gauss)			Max Output Current (mA)	Ambient Temp Range (°C)	Packages	Status
								Min	Typ	Max	Min	Typ	Max				
AH3522Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	8	20	30	2	10	25	30	-40 to 150	SIP-3, SOT23	Released
AH3523Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	15	30	45	5	20	35	30	-40 to 150	SIP-3	Released
AH3524Q	Single	Open Drain	Low	High-Z	-	3 to 28	3	20	40	60	10	25	45	30	-40 to 150	SIP-3, SOT23	Released

Linear Hall Sensors

Part Number	Output	Output Type	Output Voltage Span (V)	ISO 26262 Ready, Diagnostics	Operating Voltage (V)	Average Supply Current (mA)	Typical Sensitivity (mV/ Gauss)	Linearity of Span	Magnetic Flux Density Range Gauss (Typ)	Null Output Voltage	Ambient Temp Range (°C)	Package	Status
AH49FQ	Single	Voltage Output	0.8 to (Vcc-0.8)	-	3 to 8	3	2.1	0.70%	±800	VCC/2	-40 to 125	SC59	Released

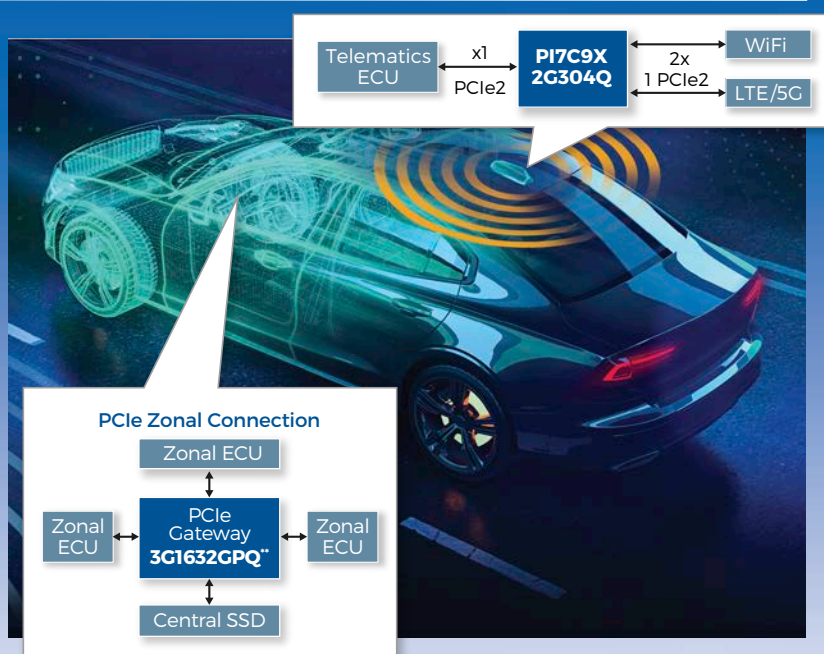
3D Linear Hall Sensors

Part Number	Output	Output Type	Output Voltage (V)	Magnetic Sensing Resolution (bit)	Operating Current (mA)	Low Power Mode Current (µA)	Update Rate (Hz)	Magnetic Range	Interface Clock Frequency (Hz)	ESD HBM	Ambient Temp Range (°C)	Package	Status
AH4930Q	Single	I2C	2.7 to 5.5	12	3.9	13@10Hz 100@100Hz	10/833/ 3.3k	±700/ 1300	100k/400k /1000k	2kV	-40 to 125	SOT26	Q4 2024

PCIe Solutions Automotive 'Q' Portfolio

THE DIODES ADVANTAGE

- Diodes' PCIe Devices Form Part of Chipset Manufacturers' Reference Design
Provides a verified solution meeting the application requirements
- Automotive-compliant PCIe 3.0 packet switches bring greater data lane versatility to automotive systems.
- PCIe 4.0 Exchange Switch for Fast Multiplexing/ Switching in ADAS and Telematics
- Multi-Host Application**
Supports cross-domain end-point (CDEP) ports, and up to 8 physical or 16 virtual DMA channels
- Low-Power HCSL Crystal Oscillator Family for PCIe 6.0/5.0 Automotive Applications**
Ideal for ADAS, telematics, and infotainment



Packet Switches

Part Number	PCIe Gen	Ports	Lanes	Power	Latency	Data Rate (Gbps)	Other Features	Supply Voltage (V)	Ambient Temperature (°C)	AEC-Q100 Grade	Package	Status
PI7C9X2G304EVQ	2	3	4	0.3	150	5	Integrated clk buffer	1.0/3.3	-40 to 105	2	aQFN (ZXA136)	Released
PI7C9X2G404EVQ	2	4	4	0.3	150	5	Integrated clk buffer	1.0/3.3	-40 to 105	2	aQFN (ZXA136)	Released
PI7C9X3G1632GPQ	3	16	32	5.6	150	8	8-DMA/ 3-CDEP	0.95/1.8	-40 to 85	3	HFCBGA (HFC676)	Released
PI7C9X3G606GPQ	3	6	6	2.5	150	8	4-DMA/ 1-CDEP	0.95/1.8	-40 to 85	3	FC LFBGA (FCA144)	Released
PI7C9X3G808GPQ	3	8	8	2.9	150	8	4-DMA/ 1-CDEP	0.95/1.8	-40 to 85	3	HFCBGA (HFC196)	Released
PI7C9X3G816GPQ	3	8	16	4.1	150	8	4-DMA/ 1-CDEP	0.95/1.8	-40 to 85	3	H-FCBGA190190-324 (HFC324)	Released

PCIe Switches/Muxes

Part Number	PCIe Gen	Description	Differential Channels	Data Rate (Gbps)	Lanes	Type	Voltage (V)	Ambient Temperature (°C)	AEC-Q100 Grade	Package	Status
PI3DBS16222Q	4	4 Channel 2x2 Exchange Switch	2	20	2	Crossbar	3.3	-40 to 105	2	TQFN (ZL30)	Released

PCIe Clocks

Part Number	Highest PCIe Gen	Function	Input type(s)	Maximum Output Frequency (MHz)	Output type(s)	Additive Jitter (ps)	Number of outputs	Skew (ps)	Supply Voltage (V)	Ambient Temp (°C)	AEC-Q100 Grade	Package	Status
PI6C557-01BQ	3.0	Generator	Crystal, LVCMOS	100	HCSL	1	1	-	3.3	-40 to 85	3	TQFN (ZH16)	Released
PI6C557-03AQ	2.0	Generator	Crystal, CMOS	100	HCSL	<3	2	50	3.3	-40 to 85	3	TSSOP (L16)	Released
PI6C557-05Q	2.0	Generator	Crystal, CMOS	100	HCSL	<3	4	50	3.3	-40 to 85	3	TSSOP (L20)	Released
PI6CB184Q	4.0	Buffer	HCSL	100	LP-HCSL	0.1	4	50	1.8	-40 to 105	2	TQFN (ZHQ32)	Released
PI6CG182Q	4.0	Generator	Crystal, CMOS	100	Low Power HCSL	<0.5	2	50	1.8	-40 to 105	2	TQFN (ZDQ24)	Released
PI6CG184Q	4.0	Generator	Crystal, CMOS	100	Low Power HCSL	<0.5	4	50	1.8	-40 to 105	2	TQFN (ZHQ32)	Released
PI6CG188Q	4.0	Generator	Crystal, CMOS	100	Low Power HCSL	<0.5	8	50	1.8	-40 to 105	2	TQFN (ZLQ48)	Released
PI6CG332Q	6.0	Generator	Crystal, CMOS	100	Low Power HCSL	0.04	2	60	3.3	-40 to 105	2	V-QFN4040-24 (ZDW24)	Released
PI6CG334Q	6.0	Generator	Crystal, CMOS	100	Low Power HCSL	0.04	4	60	3.3	-40 to 105	2	W-QFN5050-32/SWP (ZHW32)	Released
PI6CG336Q	6.0	Generator	Crystal, CMOS	100	Low Power HCSL	0.04	6	60	3.3	-40 to 105	2	W-QFN5050-40/SWP (ZLW40)	Released
PI6CG338Q	6.0	Generator	Crystal, CMOS	100	Low Power HCSL	0.04	8	60	3.3	-40 to 105	2	V-QFN6060-48/SWP (ZLW48)	Released
PI6LC48H02Q	3.0	Generator	Crystal, CMOS	100	HCSL	0.45	2	50	3.3	-40 to 85	3	TSSOP (L16)	Released
UC25Q/2Q	5.0	XO	-	161	Low-Power HCSL	20-100	1	-	3.3, 2.5, 1.8	-40 to 125	AEC-Q104	Ceramic Seam 2520	Released
UC32Q/3Q	5.0	XO	-	161	Low-Power HCSL	20-100	1	-	3.3, 2.5, 1.8	-40 to 125	AEC-Q104	Ceramic Seam 3225	Released
UC50Q/5Q	5.0	XO	-	161	Low-Power HCSL	20-100	1	-	3.3, 2.5, 1.8	-40 to 125	AEC-Q104	Ceramic Seam 5032	Released
UC70Q/7Q	5.0	XO	-	161	Low-Power HCSL	20-100	1	-	3.3, 2.5, 1.8	-40 to 125	AEC-Q104	Ceramic Seam 7050	Released

High Speed Switches

Passive Switches

Part Number	Protocols Supported	Configuration	Differential Channels	Data Rate (Gbps)	Lanes	Other Features	Type	Supply Voltage (V)	Ambient Temp (°C)	Package	Status
PI3USB221EQ	USB2.0	1 Differential Channel 2:1	1	0.48	1	-	SPDT	3.3	-40 to 125	U-QFN1520-10 (ZUA10)	Released
PI3USB31532Q	USB Type-C DP2.1, USB3	Mux/Demux, 6:4 Differential Crossbar	6, 4	10	6, 4	-	MUX/DeMux	3.3	-40 to 105	W-QFN3060-40 (ZLC40)	Released
PI3WVR14412Q	DP2.1, HDMI2.1, MIPI DPHY/CPHY, USB3.2	1:2 Mux/Demux	8, 4	20	8, 4	-	SPDT	3.3	-40 to 105	W-QFN3060-40 (ZLC40)	Released
PI5USB2546AQ	USB2.0	1-port	1	0.48	1	BC1.2	USB Charger	5	-40 to 85	TQFN (ZH16)	Released
PI5USB2546Q	USB2.0	1-port									
PI3DBS16222Q	PCI Express® 4.0, USB 4.0, USB 3.1 Gen 2, Thunderbolt™ 4, 10G BASE-KR	4-Channel 2x2 Exchange Switch	4	20	4	-	Exchange Switch	3.3	-40 to 105	TQFN (ZL30)	Released

20Gbps, 2x2, Automotive-Compliant, Exchange Switch for Fast Multiplexing/ Switching in ADAS and Telematics

- **Four-Differential Channel, Bidirectional 2x2 Mux**
Offers channel number and routing flexibility
- **Low Insertion Loss: -2dB @ 10GHz**
Minimal attenuation of the signal
- **Fast 13GHz, -3dB Bandwidth**
Enables data rates of up to 20Gbps supporting PCIe 4.0, USB 3.2 Gen 2, and 10GBASE-KR

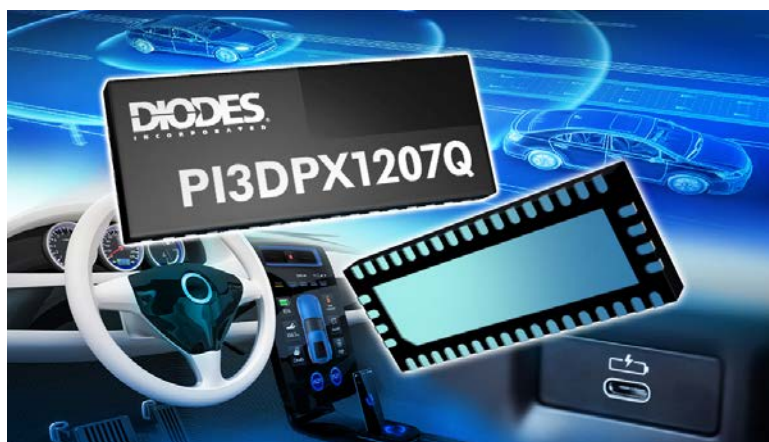


Active Switches (ReDrivers)

Part Number	Protocols List	Configuration	Differential Channels	Data Rate (Gbps)	Lanes/ Ports	Max Output Swing (mV)	Programming Interface(s)	Type	Supply Voltage (V)	Ambient Temp (°C)	Package	Status
PI3DPX1207Q	USB 3.2 Gen 2, DisplayPort	4-ch USB Type-C® DP-Alt ReDriver	4	10	4	1200	I2C, Pinstrap	-	3.3	-40 to 85	TQFN (ZH42)	Released
PI3DPX1225Q	USB 3.2 Gen 2, DisplayPort	Mux/Demux, 6:4 Differential Crossbar	6, 4	10	6, 4	1200	I2C, Pinstrap	MUX/DeMux	3.3	-40 to 85	W-QFN6040-40 (ZLB40)	Released
PI3EQX501BQ	USB 3.0	Single-Channel ReDriver	1	5	1	1000	Pinstrap	-	3.3	-40 to 85	TDFN (ZA8)	Released

10Gbps USB Type-C, USB3.2/DP1.4 Automotive-compliant Linear ReDriver with Built-in DP Aux Listener and Mux

- **Supports USB3.2 Gen2x2, USB3.2 Gen2 /2-lane DP1.4 and 4-lane DP1.4 Modes**
Flexible USB Type-C, USB 3.2/DP-Alt mode operations
- **Programmable and Flexible Controls**
I2C or Pin-strapping control
- **Programmable Receiver Side CTLE, Output Side Flat Gain and Swing Linearity Settings**
Provides good signal integrity performance and design reliability
- **Auto Power Saving Modes for both USB and DP**
USB U2/U3 and DP D3 power saving modes with built-in AUX Listener



Timing Automotive 'Q' Portfolio

THE DIODES ADVANTAGE

- **Automotive-Compliant** – AEC qualified, manufactured in IATF 16949 certified sites, supporting PPAPs
- **Total Timing Solutions** – Frequency Control Products + IC With Very Broad Portfolio for Crystals and Oscillators Supports infotainment, clusters, telematics, ADAS, connected box, TPMS applications
- **Diodes' Precision Timing Portfolio Form Part of Chipset Manufacturers' Reference Design**
Provides a verified solution meeting application requirements



Automotive Crystal Oscillators

Output Type	Supply Voltage (V _{DD})	Family	Package	Freq Range (MHz)	Jitter RMS ps RMS max	AEC-Q200	Status
CMOS	1.8V, 2.5V, 3.3V	FNQ	7050	1 - 156.25	<1	Grade 3	Released
		HXQ71	7050	1.75 - 60	<1	Grade 1	Released
		FDQ	5032	1 - 156.25	<1	Grade 3	Released
		HXQ51	5032	1.75 - 60	<1	Grade 1	Released
		FKQ	3225	1 - 156.25	<1	Grade 3	Released
		HXQ31	3225	1.75 - 60	<1	Grade 1	Released
		FJQ	2520	1 - 156.25	<1	Grade 3	Q4 2024
		HXQ21	2520	1.75 - 60	<1	Grade 1	Released
		FMQ	2016	1 - 156.25	<1	Grade 3	Q4 2024
		HXQ11	2016	1.75 - 60	<1	Grade 1	Released
	0.9V, 1.2V, 1.5V	LXQ71	7050	20 - 54	<1	Grade 1	Released
		LXQ51	5032	20 - 54	<1	Grade 1	Released
		LXQ31	3225	20 - 54	<1	Grade 1	Released
		LXQ21	2520	20 - 54	<1	Grade 1	Released
32 kHz, CMOS	1.8V, 2.5V, 3.3V	LXQ11	2016	20 - 54	<1	Grade 1	Released
		KDQ	5032	32 kHz	<1	Grade 3	Released
		KKQ	3225	32 kHz	<1	Grade 3	Released
		KJQ	2520	32 kHz	<1	Grade 3	Released
LVPECL	2.5V, 3.3V	KMQ	2016	32 kHz	<1	Grade 3	Q4 2024
		HXQ72	7050	25 - 161	<1	Grade 1	Released
		UFQ72	7050	100 - 212.5	0.07 - 0.09	Grade 1	Released
		HXQ52	5032	25 - 161	<1	Grade 1	Released
		UFQ52	5032	100 - 212.5	0.07 - 0.09	Grade 1	Released
		HXQ32	3225	25 - 161	<1	Grade 1	Released
		UFQ32	3225	100 - 212.5	0.07 - 0.09	Grade 1	Released
		HXQ22	2520	25 - 161	<1	Grade 1	Q4 2024
		UFQ22	2520	100 - 212.5	0.07 - 0.09	Grade 1	Released
LVDS	1.8V, 2.5V, 3.3V	UFQ22	2520	100 - 212.5	0.07 - 0.09	Grade 1	Released
		HXQ73	7050	25 - 161	<1	Grade 1	Released
		UFQ73	7050	100 - 212.5	0.07 - 0.09	Grade 1	Released
		HXQ53	5032	25 - 161	<1	Grade 1	Released
		UFQ53	5032	100 - 212.5	0.07 - 0.09	Grade 1	Released
		HXQ33	3225	25 - 161	<1	Grade 1	Released
		UFQ33	3225	100 - 212.5	0.07 - 0.09	Grade 1	Released
		HXQ23	2520	25 - 161	<1	Grade 1	Q4 2024
		UFQ23	2520	100 - 212.5	0.07 - 0.09	Grade 1	Released
		HXQ74	7050	25 - 161	<1	Grade 1	Q4 2024
HCSL	1.8V, 2.5V, 3.3V	UFQ74	7050	100 - 212.5	0.07 - 0.09	Grade 1	Released
		HXQ54	5032	25 - 161	<1	Grade 1	Q4 2024
		UFQ54	5032	100 - 212.5	0.07 - 0.09	Grade 1	Released
		HXQ34	3225	25 - 161	<1	Grade 1	Q4 2024
		UFQ34	3225	100 - 212.5	0.07 - 0.09	Grade 1	Released
		HXQ24	2520	25 - 161	0.07 - 0.09	Grade 1	Q4 2024
		UFQ24	2520	100 - 212.5	0.07 - 0.09	Grade 1	Released
		UC70Q	7050	25 - 212.5	0.1 - 0.3	Grade 1	Released
LP-HCSL	1.8V, 2.5V, 3.3V	UC50Q	5032	25 - 212.5	0.1 - 0.3	Grade 1	Released
		UC32Q	3225	25 - 212.5	0.1 - 0.3	Grade 1	Released
		UC25Q	2520	25 - 212.5	0.1 - 0.3	Grade 1	Released
		UC10Q	2016	25 - 212.5	0.1 - 0.3	Grade 1	Released
VC/TCXO Clip-Sine	1.8V, 2.5V, 3.3V	JT32Q	3225	8 - 52	<1	Grade 3	Released
		JT25Q	2520	10 - 52	<1	Grade 3	Released
		JC32Q	3225	8 - 52	<1	Grade 3	Released
		JC25Q	2520	10 - 52	<1	Grade 3	Released

Fn = CMOS; HX = High Temp; LX = Low voltage; UF = Low Jitter; UC = LP-HCSL

Automotive Crystals

Family	Ceramic Sealed Package	Frequency (MHz)	Temperature Range (°C)	AEC-Q200	Package Size (mm)	Status
FYQ	5032	8 to 125	-40 to 125	Grade 1	5.0 x 3.2	Released
FLQ	3225	8 to 66	-40 to 125	Grade 1	3.2 x 2.5	Released
FHQ	2520	12 to 66	-40 to 125	Grade 1	2.5 x 2.0	Released
FWQ	2016	16 to 66	-40 to 125	Grade 1	2.0 x 1.6	Released
USQ	1612	24 to 66	-40 to 125	Grade 1	1.6 x 1.2	Q4 2024
FEQ	5032	8 to 66	-40 to 150	Grade 0	5.0 x 3.2	Released
FTQ	3225	8 to 66	-40 to 150	Grade 0	3.2 x 2.5	Q4 2024
XRQ (Hi-Rel)	3225	12 to 66	-40 to 125	Grade 1	3.2 x 2.5	Released
	2520	16 to 66			2.5 x 2.0	Released
	2016	24 to 66			2.0 x 1.6	Released

Automotive CMOS & LVDS Clock Buffers

Part Number	Description	Additive Jitter (ps)	Input Type(s)	Maximum Output Frequency (MHz)	Number of Outputs	Output Type(s)	Skew (ps)	Supply Voltage (V)	Ambient Temp (°C)	Package	Status
PI6C4921502TQ	LVDS 2 Output	<0.03	Crystal, LVCMOS, LVDS	1500	2	LVDS	<40	2.5, 3.3	-40 to 125	W-QFN5050-32/ SWP (ZHW32)	Released
PI6C4921504TQ	LVDS 4 Output				4				-40 to 125		
PI6C49CB01Q	CMOS 1 Output	0.1	LVPECL, LVDS, LVHSTL, SSTL, HCSL	250	1	LVCMOS, LVTTTL	250	2.5, 3.3	-40 to 105	SO-8 (W8)	Released
PI6C49CB02Q	CMOS 2 Output	0.1	LVCMOS, LVTTTL	250	2		250		-40 to 105	SO-8 (W8)	Released
PI6C49CB04AQ	4 output with OE Pin without pull-up/down resistor	0.1	LVCMOS, LVTTTL	250	4		250	1.5 - 3.3	-40 to 105	SO-8 (W8)	Released
PI6C49CB04BQ	4 output without OE Pin	0.05	LVCMOS, LVTTTL	200			250		-40 to 105	SO-8 (W8)	Released
PI6C49CB04CQ	4 output with OE Pin with 125kΩ pull-up resistor	0.1	LVCMOS, LVTTTL	250			250		-40 to 105	SO-8 (W8)	Released

High-Performance Automotive Two- and Four-Output LVDS Clock Buffers

- **Up to 1GHz Output Frequency with Low 30fs Additive Jitter**
Minimizes phase noise for increased system timing margin
- **Offers User-Selectable Inputs from either Single-Ended, Differential Inputs, or Crystal Input**
Adds flexibility for input clock selection
- **Low Skew (<40ps) Between Outputs Within Same Bank**
Aligns clock outputs for multiple end devices to achieve synchronization
- **2.5V/3.3V Power Supply with Separate Input and Output Supply Voltages**
Supports input and output level shifting



555 Timers

Part Number	Description	Supply Voltage V	Supply Current V _{CC} =5V Output Low (mA)	Output High (mA)	Max Frequency (MHz)	Max Output Rise Time (ns)	Temperature Range (°C)	Package	AEC-Q100 Grade	Status
SE555QS-13	Automotive 555 Timer	4.5 to 15	3	2	0.1	3	-40 to 125	SO-8	1	Released

Single Gate Logic

Type	Description	Family Specific Min V _{CC} (V)				All Max V _{CC} (V)	Ambient Temperature (°C)	Packages	Status
		74LVC	74AHC	74AHCT	74AUP				
1G00Q	2-Input NAND Gate	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1G02Q	2-Input NOR Gate	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1G04Q	INVERTER	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1G06Q	INVERTER Open-drain	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1G07Q	BUFFER Open-drain	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1G08Q	2-Input AND Gate	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1G09Q	2-Input AND Gate Open-drain	–	2	–	–	5.5	-40 to 125	SOT353/SOT25	Released
1G125Q	3-state BUFFER OE LOW	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1G126Q	3-state BUFFER OE HIGH	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1G14Q	Schmitt Trigger INVERTER	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1G17Q	Schmitt Trigger BUFFER	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1G32Q	2-Input OR Gate	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1G34Q	BUFFER	1.65	–	–	–	5.5	-40 to 125	SOT353/SOT25	Released
1G86Q	2-Input XOR Gate	1.65	2	4.5	–	5.5	-40 to 125	SOT353/SOT25	Released
1T34Q	Dual supply translating BUFFER	–	–	–	0.9	3.6	-40 to 125	SOT353	Released

Voltage Translators

Auto-Direction Voltage Translators

Part Number	Translation		Auto-Direction Sensing	Level Shift	Max Signal Rate	Prop Delay (ns)	Channels	Ambient Temperature (°C)	Package	Status
	From (V)	To (V)								
PI4ULS5V108Q	0.95 to 3.3	1.8 to 5	Yes	Bidirectional	100MHz	2.2	8	-40 to 125	TSSOP-20	Released
PI4ULS5V202Q	1.2 to 5.5	1.2 to 5.5	Yes	Bidirectional	20Mbps	20	2	-40 to 125	MSOP-8	Released
PI4ULS3V304AQ	0.9 to 2	1.65 to 3.6	Yes	Bidirectional	140MHz	3	4	-40 to 125	U-QFN1720-12	Released
LSF0204Q	0.8 to 4.5	1.8 to 5.5	Yes	Bidirectional	100MHz	0.9	4	-40 to 125	TSSOP-14 U-QFN1720-12	Released
LSF0102Q	0.65 to 4.5	1.8 to 5.5	Yes	Bidirectional	100MHz	1.4	2	-40 to 125	VSSOP-8	Q3 2024
PI6ULS5V9306Q	1.2 to 3.3	1.8 to 5.5	Yes	Bidirectional	100MHz	1.4	2	-40 to 125	VSSOP-8	Q3 2024
PI3CLS39306Q	0.9 to 3.3	1.8 to 5.5	Yes	Bidirectional	100MHz	1.4	2	-40 to 125	VSSOP-8	Q3 2024
LXS0104Q	1.65 to 3.6	2.3 to 5.5	Yes	Bidirectional	24Mbps	7.5	4	-40 to 125	TSSOP-14 X-QFN1720-12	Q4 2024
LSF0106Q	0.65 to 4.5	1.8 to 5.5	Yes	Bidirectional	100MHz	1.4	6	-40 to 125	TSSOP-16	Q2 2024
LSF0108Q	0.65 to 4.5	1.8 to 5.5	Yes	Bidirectional	100MHz	1.4	8	-40 to 125	TSSOP-20	Q3 2024
								-40 to 125	V-QFN4525-20	Q2 2024
LXB0104Q	1.2 to 3.6	1.65 to 5.5	Yes	Bidirectional	100Mbps	3.9	4	-40 to 125	TSSOP-14	Q4 2024
								-40 to 125	U-QFN1720-12	Q3 2024

Unidirectional Voltage Translators

Part Number	Translation		Auto-Direction Sensing	Level Shift	Max Signal Rate	Prop Delay (ns)	Channels	Ambient Temperature (°C)	Package	Status
	From (V)	To (V)								
74AUPIT34Q	0.9 to 3.6	0.9 to 3.6	No	Unidirectional	–	18.6	1	-40 to 125	SOT353	Released

Interface

IO Expanders

Part Number	I2C Supply Voltage Range (V)	I/O Supply Voltage (V)	Single-Ended Channels	Signal Type	I2C Bus Speed (kHz)	IO Power-Off Leakage Current (nA)	Ambient Temperature (°C)	Package	Status
PI4IOE5V6416AQ	1.65 to 5.5	1.65 to 5.5	16	Single-Ended	400	100	-40 to 105	TSSOP-24	Released
PI4IOE5V6416RQ	1.65 to 5.5	1.65 to 5.5	16	Single-Ended	400	-	-40 to 105	TSSOP-24	Released
PI4IOE5V6534Q	0.8 to 3.6	1.65 to 5.5	34	Single-Ended	1000	-	-40 to 105	W-QFN4565-46 /SWP	Released

Analog Switches

Part Number	Type	Supply Voltage (V)	Single-Ended Channels	On-Resistance (Ω)	Rail-To-Rail	-3dB Bandwidth	Ambient Temperature (°C)	Package	Status
PI3A27518Q	SPDT	1.65 to 3.6	6	5	Yes	380 MHz	-40 to 85	TQFN4040-24 (ZD24)	Released

Automotive Quality, Reliability, and Commitment

At Diodes Incorporated, all our employees have a shared responsibility for Quality.

Our Quality Management Systems are designed to ensure all final products meet customer expectations, with our Quality Policy the basis for our commitment to provide our customers with world-class products.

All Diodes Incorporated sites are ISO 14001, and ISO 9001 certified with all products being RoHS compliant and meeting UL94-V0 requirements for all epoxy material used.

Diodes is committed to delivering high quality and reliable semiconductor solutions that meet or exceed customers' needs.

This is especially true for our automotive-compliant products, where we have created a growing portfolio to meet the automotive market's exacting and rigorous demands with a zero-defect objective.

All Diodes sites that manufacture automotive products are certified to IATF 16949:2016.



Manufacturing and Product Quality

- All qualified to AEC-Q100/101/104/200
- Manufactured in facilities certified to IATF 16949
- Capable of customer audit to VDA 6.3
- Zero-defect objective
- Dedicated Automotive manufacturing processes
- PPAP capable

Quality Systems and Certificates

- IATF 16949:2016
- ISO 9001:2015
- ISO 14001:2015
- ISO 45001:2018
- RoHS Compliant
- REACH Compliant



Analog and Discrete
Power Solutions

**CORPORATE
HEADQUARTERS AND
AMERICAS SALES OFFICE**

4949 Hedgcoxe Road
Suite 200
Plano, Texas 75024, USA
Tel: (+1) 972-987-3900
E: inquiries@diodes.com

SILICON VALLEY OFFICE

1545 Barber Lane
Milpitas,
California 95035, USA
Tel: (+1) 408-232-9100

EUROPE SALES OFFICE

Kustermann-Park
Balanstrasse 59, 8th Floor
D-81541 Munchen, Germany
Tel: (+49) 89-45-49-49-0
E: inquiries-europe@diodes.com

ASIA SALES OFFICES

E: inquiries-asia@diodes.com

DIODES-CHINA

SHANGHAI OFFICE
Room 3001-3002,
International Corporate City,
No. 3000 Zhongshan North
Road, Shanghai 200063, China
Tel: (+86) 21-5241-4882

SHENZHEN OFFICE

16th Floor Skyworth Semiconductor
Design Building East Wing,
No.8 Gaoxin South
4th Road, Nanshan District,
Shenzhen 518057, China
Tel: (+86) 755-8828-4988

DIODES-JAPAN

1F T-Square Hamamatsucho Building,
2-13-10, Hamamatsucho, Minato-Ku,
Tokyo 105-0013, Japan
Tel: (+81) 3-6459-0569

DIODES-KOREA

BUNDANG I'PARK1
102dong 901ho, 239, Jeongjail-ro,
Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea, 13556
Tel: (+82) 31-786-0434

DIODES-SINGAPORE

3 Fraser St #06-27 DUO Tower
Singapore 189352
Tel: (+886) 2-8914-6000

DIODES-TAIWAN

7F, No. 50, Min-Chuan Road,
Hsin-Tien District, New Taipei City 23141,
Taiwan, R.O.C.
Tel: (+886) 2-8914-6000

For further information please visit www.diodes.com/contact-us

diodes.com

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