



Electric vehicle charging systems can be mainly classified into three sub categories:

- › High power fast charging stations
- › Low power wall boxes for daytime/overnight charging
- › Low power on-board charger used at „anywhere“ public mains

Discrete power components offer cost-effective, state-of-the-art solutions for all of these charging categories. At low power systems they can be used to build the entire power stage, while at high power charging stations they are mainly used for auxiliary functions and controls.

Typical circuits consist of input rectifier, power factor correction/boost (step-up) or forward (DC to DC) converter, auxiliary supplies, Gate driver and control. Diotec's product portfolio includes Standard, Fast and Superfast Efficient Rectifiers, Schottky, TVS and ESD Diodes, Power MOSFETs and Linear Voltage Regulators, suitable for all of these applications.

Features/Benefits

- › Industry Standard Package Outlines
- › Easy and Reliable Automatic Assembly
- › Cost Effective Solutions
- › Low Power Losses, High Efficiency
- › Available AEC-Q101 Qualified

Applications

- › AC to DC Conversion
- › Power Factor Correction (PFC)
- › DC to DC Charging Systems
- › Gate Driver and Control
- › Transient Surge and ESD Protection

**DISCRETE SOLUTIONS
FOR EV CHARGING**

Diodes for EV Charging Solutions:

Input Rectifier (AC to DC)/Power and Auxiliary

Partnumber	Package	I_{FAV}	V_{RRM}
1~ Bridge Rectifiers			
GBU 10/12 K...M	GBU (SIL 3x 5mm Raster)	10/12 A	800 ... 1000 V
GBI 25/35/40 K...W	GBI (SIL 2x5 1x 7.5mm Raster)	25/35/40 A	800 ... 1600 V
3~ Bridge Rectifiers			
DBI20-08...16B	DBI (SIL 4x 7.5mm Raster)	20 A	800 ... 1600 V
DBI25-08...18A	DBI (SIL 4x 7.5mm Raster)	25 A	800 ... 1800 V
Controlled Avalanche Rectifiers			
AM2000	DO-213AB/Melf	1 A	1600 V
BYG10K ... M	DO-214AC/SMA	1 A	800 ... 1000 V
P2500T ... Y	Axial lead (D 8mm)	25 A	1300 ... 2000 V
Schottky Rectifiers			
SK34SMA-3G	DO-214AC/SMA	3 A	40 V
SMS560-3G	DO-213AB/Melf	5 A	60 V

Power Factor Correction/Boost (Step-up) or Forward (DC to DC) Converter

Partnumber	Package	I_D / I_F	V_{DS} / V_{RRM}	$R_{DS(on)} / V_F$	$t_r / t_f / t_{rr}$
Power MOSFETs					
DI012N60D1	D-PAK	12 A	600 V	220 mΩ	22 ns / 62 ns
DIJ020N60	ITO-220AB	20 A	600 V	160 mΩ	26 ns / 68 ns
Boost Diodes					
UGB8JT	D ² PAK	8 A	600 V	1.75 V	35 ns
MUR860	TO-220AC	8 A	600 V	1.50 V	50 ns
UFT800J	TO-220AC	8 A	600 V	1.75 V	35 ns
MURF2060CT	ITO-220AB	2x 10 A	600 V	2.00 V	25 ns

Gate Driver/Protection

Partnumber	Package	I_F / P_{PPM}	V_{RRM} / V_{WM}	$t_{rr} / V_{BR} / C_j$
Bootstrap Diodes				
FR2YSMA	DO-214AC/SMA	2 A	2000 V	500 ns
BYG23T (Avalanche)	DO-214AC/SMA	1 A	1300 V	75 ns
Snubber (TVS + Blocking Diode)				
TGL200CF08	DO-213AB/Melf	300 W	800 V / 200 V	250 ns
Active Clamping				
P6SMB400 ... 550CA	DO-214AA/SMB	600 W	342 ... 495 V	400 ... 550 V
1.5SMC400 ... 550CA	DO-214AB/SMC	1500 W	342 ... 495 V	400 ... 550 V
ESD Protection				
ESD5Z3V3 ... 12	SOD-523	158 ... 240 W	3.3 ... 12 V	55 ... 105 pF
ESD9BL0522P, ESD9BL24P	SOD-882	80 W, 350 W	5.0 V, 26 V	0.4 pF, 35 pF

Linear Voltage Regulators/Controls

Partnumber	Package	Tol.	$V_{in MAX}$	$I_{O MAX}$	V_{OUT}	I_Q	V_D
DI78L Series	SO-8, SOT-89, TO-92	5 %	30 ... 40 V	0.1 A	3.3 ... 24 V	6 mA	1.7 V
DI79L Series		5 %	-20 ... -39V	0.1 A	-5.0 ... -24 V	6 mA	1.7 V
DI78M Series		5 %	35 V	0.5 A	5.0 V	6 mA	2.0 V
LDI1117 Series	SO-8, SOT-89, SOT-223	1 %	20 V	1.0 A	1.25 ... 5 V	5 mA	1.15 V
DI6206 Series	SOT-23	1 %, 2 %	7.0 V	0.2 A	1.5 ... 3.6 V	8.0 μA	250 mV

Disclaimer: This flyer describes device proposals and shall not be considered as assured and proven solution for any circuit.
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