

Component Sourcing & Design Support for Industrial and Level III Fast Chargers

- Semiconductors include: SiC and Si MOSFETs and rectifiers, IGBTs, current sensors
- Passive components include: film and electrolytic capacitors, magnetics, resistors
- Thermal products include: extrusion, bonded-fin, liquid cold plates, and board-level
- Solutions include: PFC, AC-DC rectifier, DC-AC inverter, high frequency rectifier

Level III (DC Fast Charger) Details:

- Input Voltage: 480VAC, three-phase
- DC Output Power: 15kW – 120kW
- Charging Current: 5A – 200A
- Output Voltage: 50VDC – 500VDC
- Charge Time: 30min (80%)

Industrial Battery Charger Details:

- Input Voltage: 85VAC – 600VAC, single and three-phase
- DC Output Power: 6kW – 80kW
- Charging Current: 40A – 600A
- Output Voltage: 12VDC – 80VDC
- Industrial EV Types: Forklifts, Reach Trucks, Pallet Jacks, Ground Support Equipment



DC Link Capacitors (Power Film & Aluminum Electrolytic):

Film: 100VDC-3000VDC, 0.001 μ F-2700 μ F
Terminal Type: screw, box, axial, board mount
Manufacturers: CDE / KEMET / Kendell

Electrolytic: 3VDC-550VDC, 1 μ F-2.7F
Terminal Type: screw, snap, flatpack, radial, axial
Manufacturers: CDE / Illinois Capacitor / KEMET / Kendell / UCC / Genteq

EMI/RFI Filter Products:

X1/X2 & Y1/Y2 Capacitors:

Film Cap: Up to 760VAC, 0.001 μ F-8.2 μ F
Terminal Type: box
Manufacturer: CDE / KEMET

Modules:

DC Filter: 75V-1200V, 3A-2500A @ 150KHz
AC Filter: 250VAC-600VAC, 1A-2000A @ 150KHz
Type: single-phase, three-phase (Delta/Wye), IEC INLET/PEM, medical, military, tempest, custom.
Manufacturer: Astrodyne TDI (Radius Power)

Power Factor Correction (PFC) Film Capacitors:

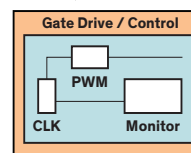
Oil Filled: 240VAC-4000VAC, 0.5 μ F-600 μ F
Output Type: single-phase, three-phase
Case: aluminum cylindrical case
Manufacturers: CDE / KEMET / Genteq

Gate Driver/Control:

Integrated Drivers
 Plug-and-Play drivers
Manufacturers: Powerex / Power Integrations (CT Concept) / Wolfspeed

DC-DC Converters:

Manufacturers: Powerex / Recom Power

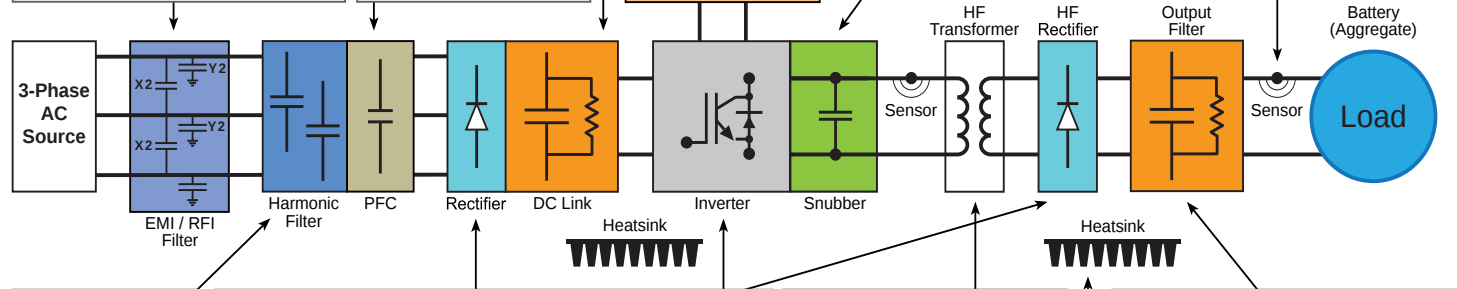


Snubber Capacitors:

Film: 250Vdc-3000Vdc, 0.01 μ F-330 μ F
Terminal Type: box, axial, direct-mount, oil-filled, cylindrical-dry film
Manufacturers: CDE / Genteq / Illinois Capacitor / KEMET / GE

Current Sensors:

Hall Effect-Open Loop 3A-1500A
 Hall Effect-Closed Loop 2A-500A
 Flux Gate 6A-50A
Manufacturer: Tamura



AC Filter/Harmonic Film Capacitors:

Oil-Filled: 240VAC-4000VAC, 0.5 μ F-600 μ F
Output Type: single-phase, three-phase
Case: aluminum cylindrical case
Manufacturers: CDE / KEMET / Genteq

Power Semiconductor Products:

SCR/Thyristor:200V-8500V, 240A-7610A
 IGBT/IPM/DIPIPM:250V-6500V, 4A-3600A
 Diode/Rectifier/Module:30V-9000V, <1A-8800A
 HV Diode/Assembly:1000V-200kV, <1A-25A
 SiC MOSFET/Module:600V-1700V, 5A-300A
 SiC Diode/Module:600V-1700V, 1A-100A
 SiC/Si Hybrid Products:500V-1700V, 15A-1200A
 MOSFET/Module:55V-1200V, 3.5A-640A
Manufacturers: Dynex / EDI / Microsemi / Powerex / Semikron / Vincotech / Wolfspeed

Power Resistors:

Axial lead, power controls, current sense, surface mount, heat sinkable, surge rated, high current/braking, tubular, high voltage
Manufacturer: Ohmite

Transformers and Reactors:

Industrial High Power: Custom X-formers, Reactors, X-formers/Reactors up to 1000kVA
Linear Power Transformers: Laminated and low-profile Board-mount, 1.1VA-56VA
Switch Mode Power Transformers: Custom Low- to High-Power Board-Mount, 1VA-360VA
Manufacturer: Tamura

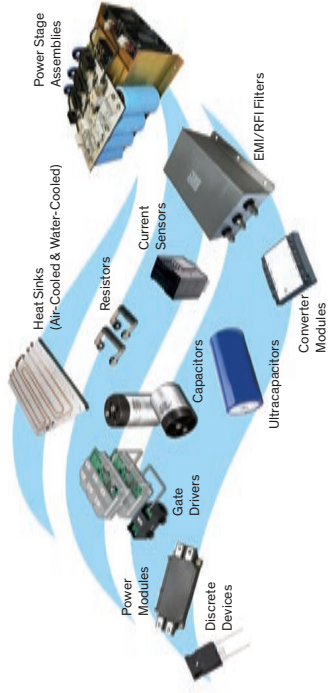
DC Output Capacitors (Power Film & Aluminum Electrolytic):

Film: 100Vdc-3000Vdc, 0.001 μ F-2700 μ F
Terminal Type: screw, box, axial, board mount
Manufacturers: CDE / KEMET / Kendell
Electrolytic: 3VDC-550VDC, 1 μ F-2.7F
Terminal Type: screw, snap, flatpack, radial, axial
Manufacturers: CDE / Illinois Capacitor / KEMET / Kendell / UCC / Genteq

Thermal Management:

Board level, extrusion, bonded fin, liquid cold plate, custom
Manufacturers: Aavid / DAU / Priatherm / Wakefield-Vette





FROM COMPONENTS TO INTEGRATED POWER SOLUTIONS

Providing

- Global distribution with local presence
- Design support from prototype to production
- Latest products from market-leading suppliers

POWER SEMICONDUCTORS	Silicon Carbide Diodes	Rectifiers/ Thyristors	IGBTs	MOSFETs	Silicon Carbide MOSFETs/Modules	Silicon Carbide/Silicon Hybrid Power Modules
Dynex	—	M	M	—	—	—
Electronic Devices, Inc.	—	D & M	—	—	—	—
Microsemi	D & M	D & M	D & M	D & M	D & M	D & M
Powerex*	—	D & M	D & M	M	M	M
Semikron	—	D & M	M	M	—	—
Vincotech	—	M	M	M	M	M
Wolfspeed	D & M	—	—	—	D & M	—

D = Discrete, M = Module

THERMAL MANAGEMENT	Board Level	Bonded Fin	Extruded	Liquid Cold Plate	Custom	Thermal Accessories [■]
Aavid	—	•	•	•	•	—
DAU	—	•	—	•	•	—
Priatherm	•	•	•	•	•	—
Wakefield-Vette	•	•	•	•	•	•

■ Thermal Accessories include precision clamps, thermal interface material and wedgelocks.

POWER CAPACITORS	Power Film	Aluminum Electrolytic	AC & DC Oil-Filled	Mica	Ultracapacitors
Cornell Dubilier (CDE)	•	•	•	•	—
Europtronic	•	—	•	—	—
General Electric	—	—	•	—	—
Genteq	—	•	•	—	—
Illinois Capacitor	•	•	—	—	•
Kemet	•	•	•	—	•
Kendell	•	•	—	—	—
Maxwell**	—	—	—	—	•
United Chemi-Con	—	•	—	—	—
Vinatach	—	—	—	—	•

POWER RESISTORS & CURRENT SENSORS	Axial Lead	Heat Sinkable	Surface Mount	Tubular	Open Loop Current Sensors	Closed Loop Current Sensors	Flux-Gate Current Sensors
Ohmite	•	•	•	•	—	—	—
Tamura	—	—	—	—	•	•	•

POWER SOLUTIONS FOR VARIABLE FREQUENCY DRIVES (VFDS)	Industrial Power Filters	Industrial Power Supply	Overtoltage Products	Regulator for VFDS	Switching Regulator Module	Undervoltage Products
Bonitron	•	•	•	•	•	•

EMI/RFI FILTER PRODUCTS	AC Filter Modules			DC Filter Modules			Discretes (X & Y Capacitors)	
Astrodyne TDI (Radius Power)	—	•	•	—	•	•	—	—
Kemet	—	—	—	—	—	—	•	•
Cornell Dubilier (CDE)	—	—	—	—	—	—	•	•

GATE DRIVERS, CONVERTERS & CONTROL DEVICES	AC-DC Modules	DC-DC Modules	Switching Regulators	LED Driver Modules	SIC MOSFET Gate Drivers	IGBT Gate Drivers	Custom Gate Drivers	Medical & Military Power Supplies/Systems
Analog Devices, Inc. (ADI)	—	—	•	•	—	IC	—	—
Power Integrations (CT-CONCEPT)	—	—	—	—	—	M	M	—
Powerex*	—	•	—	—	—	M	—	—
RECOM Power	•	•	•	•	—	—	—	•
Semikron	—	—	—	—	—	M	—	—
Wolfspeed	—	—	—	—	M	—	—	—

M = Modules only, IC = Integrated Circuits only