



# Strong Connection

PRODUCT AND TECHNOLOGY OVERVIEW

# Strong Connection

The new combined portfolio makes ON Semiconductor the 2<sup>nd</sup> largest supplier of power discretes and standard products in the world.

A new powerhouse is born. ON Semiconductor's extensive low voltage portfolio is now joined with Fairchild Semiconductor's broad range of medium and high voltage products. Now, you benefit from a vast selection across the entire voltage spectrum.

And this is where Avnet Silica's unique expertise comes in. Our passionate team of qualified specialists simplifies complexity by advising you on the right ON Semiconductor and Fairchild

products for your needs. If you have a knotty problem, we can untangle it for you. How? By providing creative solutions, technologies and logistics to make your route to market as short and simple as possible.

With product highlights like power solutions for e-vehicles, intelligent modules for industrial applications, and mobile power for smart devices, your first connection for ON Semiconductor and Fairchild solutions is with Avnet Silica!

## CONTENT

New Extended Portfolio	3
Combined Solutions for Key Markets	
Industrial	4
Motor Control	5
Automotive	6
Mobile Devices & IoT	7
Power Product Families	8

## NEW EXTENDED PORTFOLIO

Together, Fairchild and ON Semiconductor deliver a more extensive product portfolio, a stronger presence in key markets of automotive, industrial and wireless, and increased technical and sales support. The comprehensive portfolio of power discretes, ICs and power modules, plus a complete offering of low-, mid- and high-voltage products across the entire voltage spectrum means more choices for your customers' designs.

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By overlaying the ON Semiconductor and Fairchild Semiconductor positions this matrix of products and applications from the Power Solutions Group shows the unique position in virtually all segments.

		Automotive			Motors			Solar	UPS	Welding & Induction Heating	Lighting	HVAC	Robotics	IoT (Portable and Wireless)
		<4kW	4-40kW	>40kW										
MOSFETs	LV (<40V)	••	•						•		•	•	•	•
	MV (60 - 200V)	••	••						•		••	••	••	••
	HV SJ (600 - 800V)	•	•	•					•		•	•	•	•
	UHV (up to 1700V)	•		•	•	•					•			
	IGBT (650 - 1200 V)	•	••	•	•	•			••	••		••	••	
	IPM/SPM Modules	••	••	•	•	•			•	•		••	••	
	PIM / HPM Modules			•	•	•			•	•				
	Gate Drivers	•		•	•	•			•	•		•	•	
	SiC Rectifiers and MOSFETs	•	•	•	•	•			•	•		•	•	•
	Wide Band Gap Devices	••	•	•	•	•			•		•	•	•	•
	LDO	•	•	•	•	•					•	•	•	•
	Op-Amp	•	•	•	•	•			•			•	•	•
	Circuit Protection (ESD)	•	•	•	•	•			•	•		•	•	•
	Small Signal Discretes	•	•	•	•	•			•	•		•	•	•
	Logic	••	•	•	•						•	•	••	••
	Optoelectronics	•	•	•	•	•			•	•		•	•	•
	PWM Controllers & Regulators	•	••	••	••	••			••	••	••	••	•	•

• ON Semiconductor Products | • Fairchild Semiconductor Products

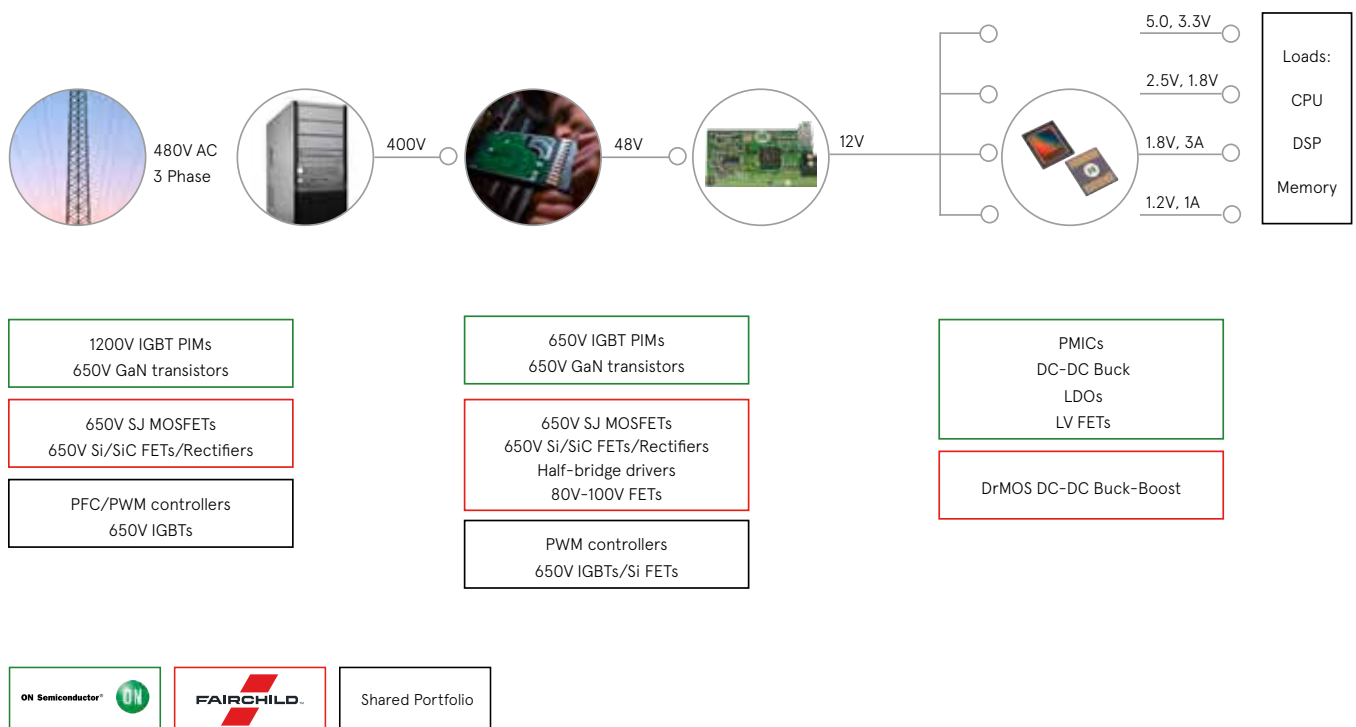
# Combined Solutions for Key Markets

## INDUSTRIAL

The combination of ON Semiconductor's and Fairchild's AC to DC, DC to DC and power discrete portfolios creates an industry leader in high performance power conversion serving a broad range of applications traversing the high, medium and low voltage spectrum. Fairchild's super-junction MOSFETs and ON Semiconductor's GaN power switches enable significantly improved power density and efficiency

for industrial variable speed drives, as well as uninterruptable power supplies used in networking, telecom and data center applications.

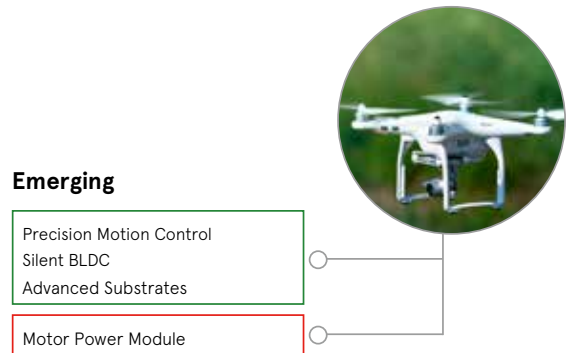
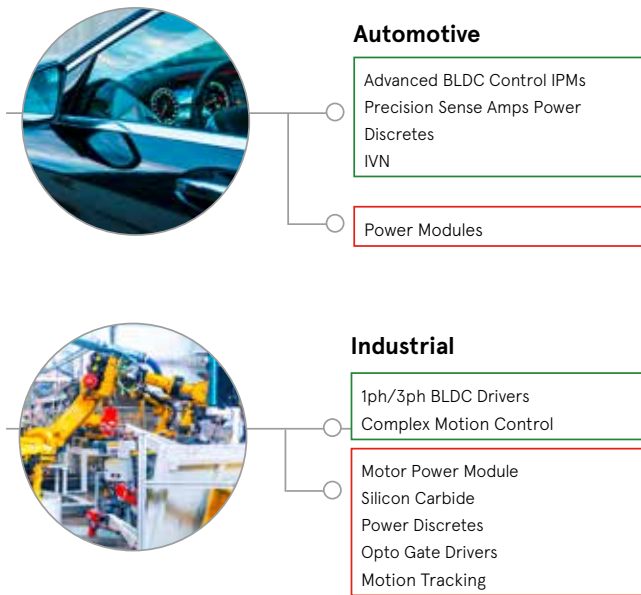
ONS IGBTs for solar inverters and super-junction MOSFETs and GaN power switches for networking, cloud, telecom and data centers position us as a leader in the industrial market.



## MOTOR CONTROL

Fairchild's leadership in motor control and high power conversion nicely complements ON Semiconductor's strengths in these markets. Fairchild is an established market leader in motor control solutions with its discrete and power module product portfolio.

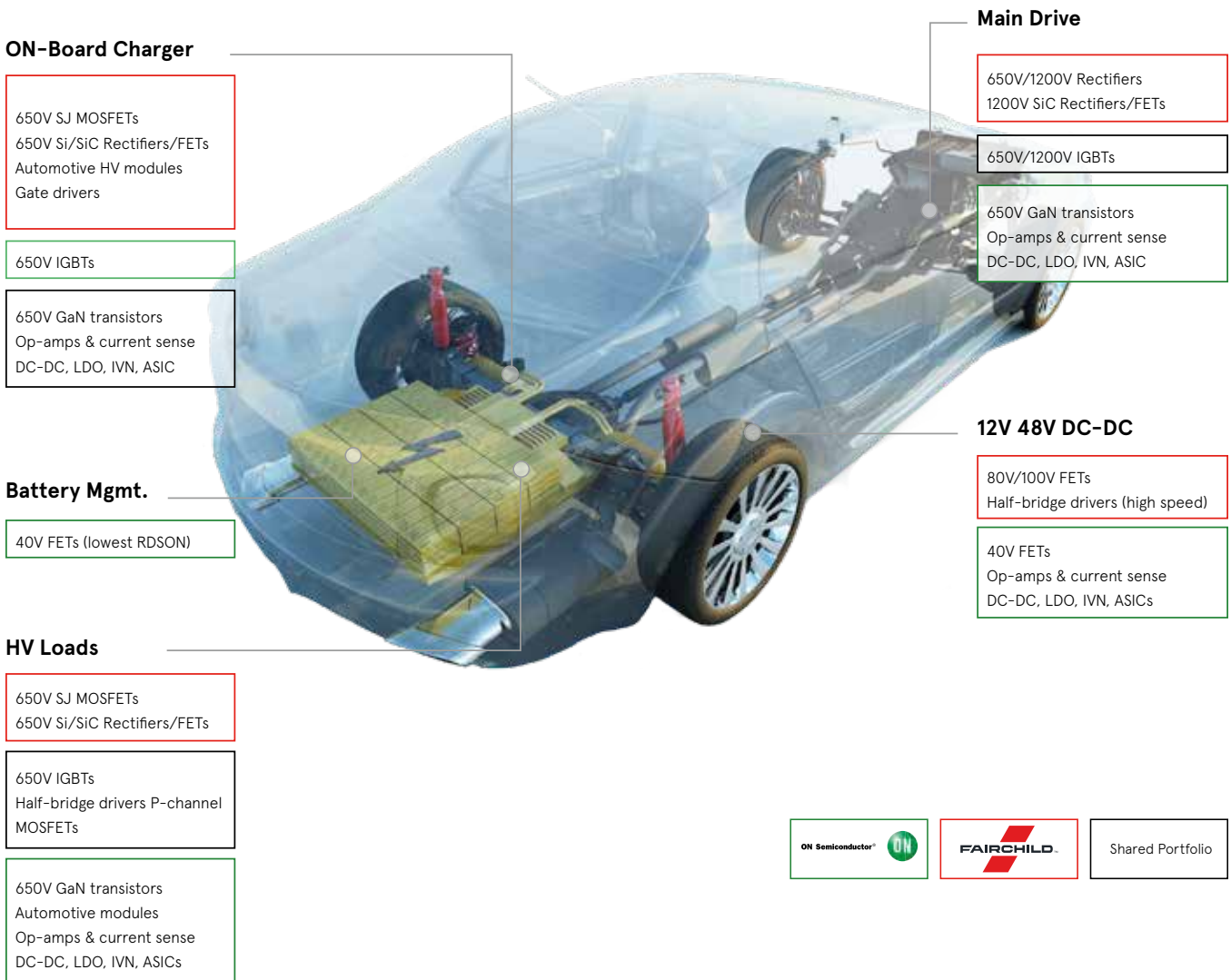
Combining these products with ON Semiconductor's BLDC motor control ICs and IPMs provides our industrial customers with comprehensive solutions for the extensive range of motor-based systems.



## INDUSTRIAL

In the automotive end-market, Fairchild significantly enhances ON Semiconductor's capabilities in the rapidly emerging electric vehicle and hybrid electric vehicle market. The combination of Fairchild's automotive qualified medium voltage and high voltage MOSFETs with ON Semiconductor's extensive portfolio of automotive qualified power management solutions positions the company as an unrivaled supplier of power solutions for traditional internal

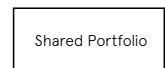
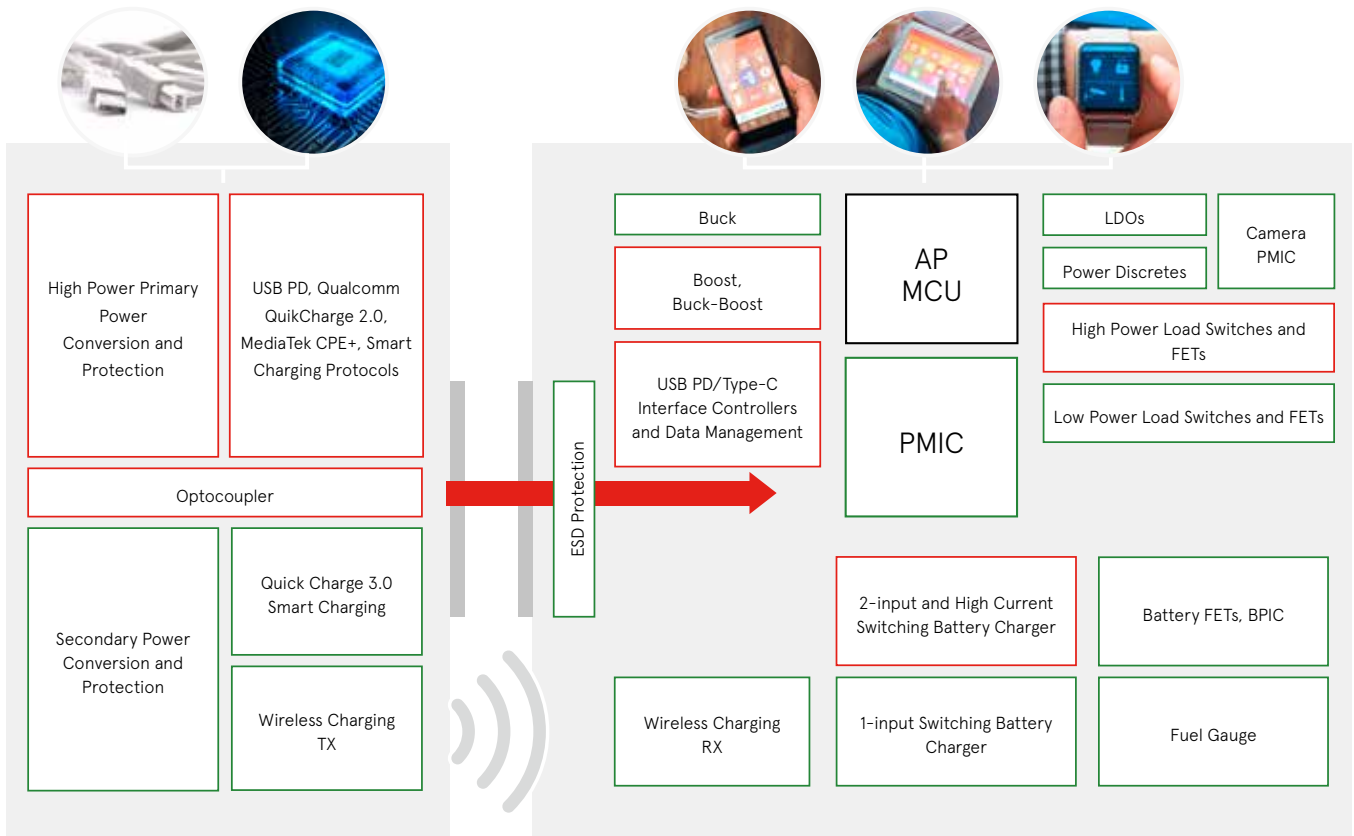
combustion engine vehicles as well as the fast growing EV/HEV vehicles. As automotive manufacturers turn to next generation semiconductor materials to improve power density and efficiency in hybrid and electric vehicles, Fairchild's 1200V silicon carbide power devices coupled with ON Semiconductor's 650V gallium nitride power devices provide market leading solutions.



## MOBILE DEVICES & IOT

Fairchild Semiconductor has a leading position in fast charging AC to DC power adapters with support for multiple industry protocols. Fairchild's strength in power adapters is now augmented by ON Semiconductor's growing portfolio of power adapter products. In addition, ON Semiconductor offers complementary magnetic resonance wireless charging products to provide our customers a broad portfolio of wired and wireless charging solutions.

Bringing together the low power portfolios creates a comprehensive catalog of DC to DC and battery management solutions for Mobile Devices.



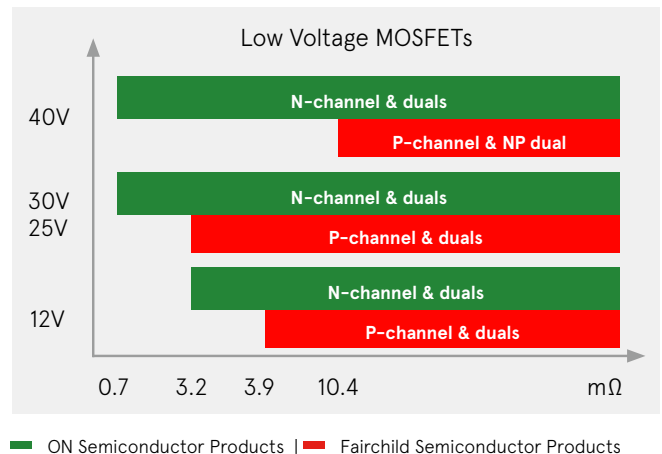
# Power Product Families

The combined portfolio of ON Semiconductor and Fairchild covers a broad range of power discretes. From microamps to megawatts ON Semiconductor now provides solutions with superior energy efficiency across a vast voltage spectrum.

## 20 - 40 V Low Voltage MOSFETs

ON Semiconductor now offers a wide range of MOSFETs with best in class figure of merit and ultra-low RDS(on) in various package options.

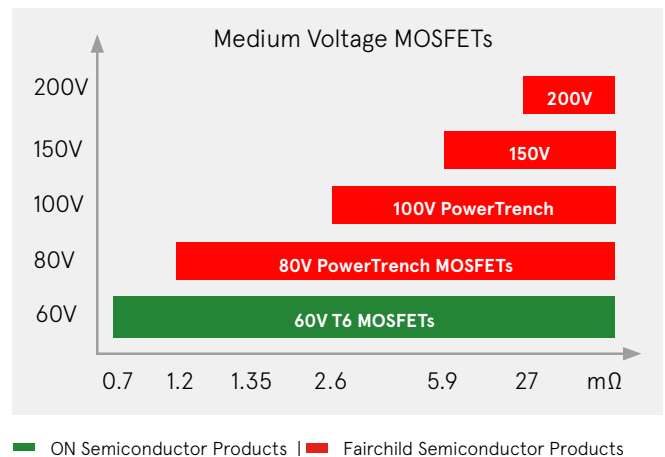
- High performance dual FETs, i.e. FDPC8014AS in power clip 5X6 package
- Battery protection CSP FETs, i.e. EFC8822R-TF with RDS(on) typ.(mΩ) VGS=3.8V of 2.2
- Power clip package FETs with superior thermal performance i.e.: FDPC8014S
- Ultra-low RDS(on) FETs for small motor drives and server power supply (ORing), i.e. NTMFS4C020N (5x6mm package, RDS(on) of 0.7mΩ (VGS= 10V)



## 60 - 250 V Mid Voltage MOSFETs

The combination of the new T6 and T8 technology from ON with former Fairchild's PTNG technology provides best in class 40V-200V MOSFETs.

- T6 and T8 provides lowest RDS(on) in the market, Low Qg & best FOM for 40V, 60V and 80V MOSFETs in standard packaging such as SO8-FL and u8FL
- Ultra-Low RDS(on) 40V devices (0.75mOhm ) in SO8-FL package, i.e. NTMFS5C404NL
- PTNG technology, released in 80V and 100V, brings the benefit of industry leading lowest Qrr and softest body diode reducing switching spikes and EMI. This enables you to go one voltage class down and in return get a lower RDS(on) device or a more cost competitive solution. It also reduces the system costs by enabling a tighter BoM
- Optimized Low Qrr rating 100V devices (1000A/uS of 158nC (typ) in SO8FL package, like i.e. FDMS86181
- Dual Cool™ 88 package FDMT800xx family offers a wide range of 40V to 150V MOSFETs. It is 78% thinner @ 0.95 mm max, offers 53% less area @ 8x8mm and is top side heat sink capable
- Robust planar UniFET™ and QFET® technologies for applications from 60 to 200V

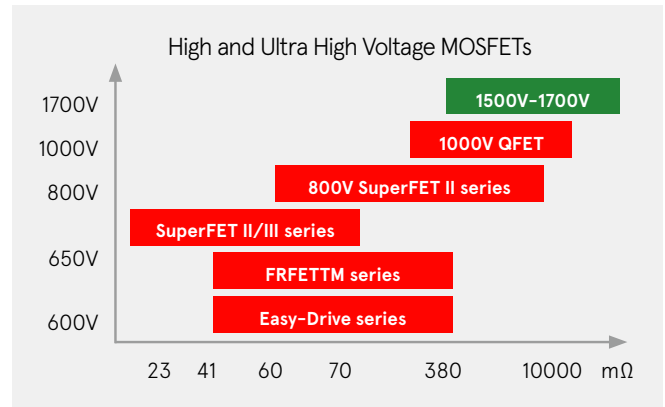




### 600 - 1700 V High Voltage MOSFETs

ON Semiconductor with its High- and Ultra High Voltage MOSFET portfolio is offered in a wide RDS(on) range and variety of package options, from traditional TO and D/D2 packages to more modern QFN surface mount and dual cool types.

- 650V SuperFET III generation has now been released and is state of the art technology. It is released in an SF3 easy drive series, has low switching loss (high power efficiency), low oscillation (better EMI ) and the highest level of ruggedness in the market. One example from this family is the FCP067N65S3 67mΩ / 64nC in a TO-220 package
- SuperFet III will also be released in a fast recovery "FRFET" series, with very robust diode & low Qrr and Trr targeted soft switching topologies such as LLC. In addition, it will come in a "FAST" series targeted PFC sockets
- 800V, SuperFET II series has been upgraded to a breakdown voltage of 800V and is the most up to date 800V technology currently offered in the market
- 1500 & 1700V, targeting aux power supply in the industrial market for 3 phase AC mains input, up-to-date technology in the 1500 to 1700V range has been released

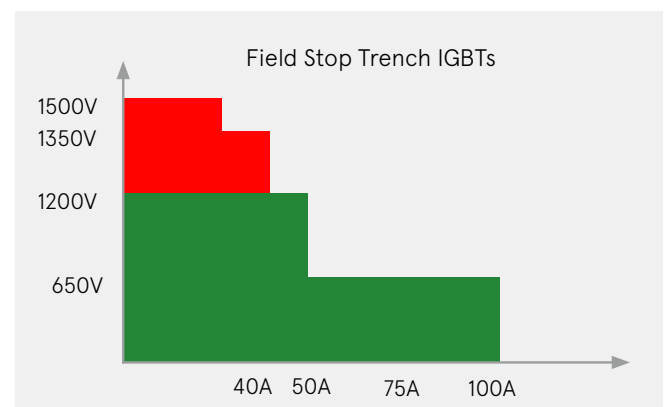


ON Semiconductor Products | Fairchild Semiconductor Products

### 600 - 1500 V IGBT Portfolio

ON Semiconductor has taken major steps in IGBT technology development. Even though ON is a relatively new player in the IGBT arena, they can today offer the most efficient and highest current density IGBT technology. With leading edge technology & world class operations they can handle the high future demand which is forecasted in the IGBT market and can ensure customers to stay competitive.

- 650V Field Stop , best devices in the market for high-speed switching applications, such as IH, UPS, Welding & Solar
- 1200V Field Stop II, short circuit rated, highest current density motor control IGBTs in the market
- 1200V Field Stop III (Ultra Field Stop). This unique technology gives you devices which have 20% lower VCE(sat) and at the same time offers 10% reduction in Eoff
- Automotive grade parts available up to 300Amps current rating pr. device

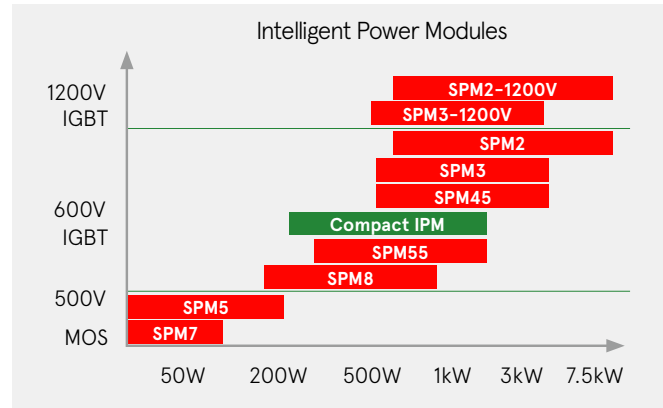


ON Semiconductor Products | Fairchild Semiconductor Products

### 500 - 1200 V Intelligent Power Modules

ON Semiconductor together with former Sanyo and Fairchild is now the WW#1 volume market leader with the widest package portfolio and relevant and leading edge solutions for any motor control challenge from 10 Watt to 10kW.

- Highest integration levels and most compact devices, i.e. SPM8 FNB81060T3
- Optimized MOSFET technology for most efficient solutions available both in 500V and 600V versions i.e. FSB50760SF
- Highest current density modules using new Field Stop 3 technology i.e. FNB35060T
- Most compact 1200V solutions in the market i.e. FSBB20CH120D
- Automotive versions available for applications such as cooling compressor control, On Board charger etc. i.e. FAM65V05DF1





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