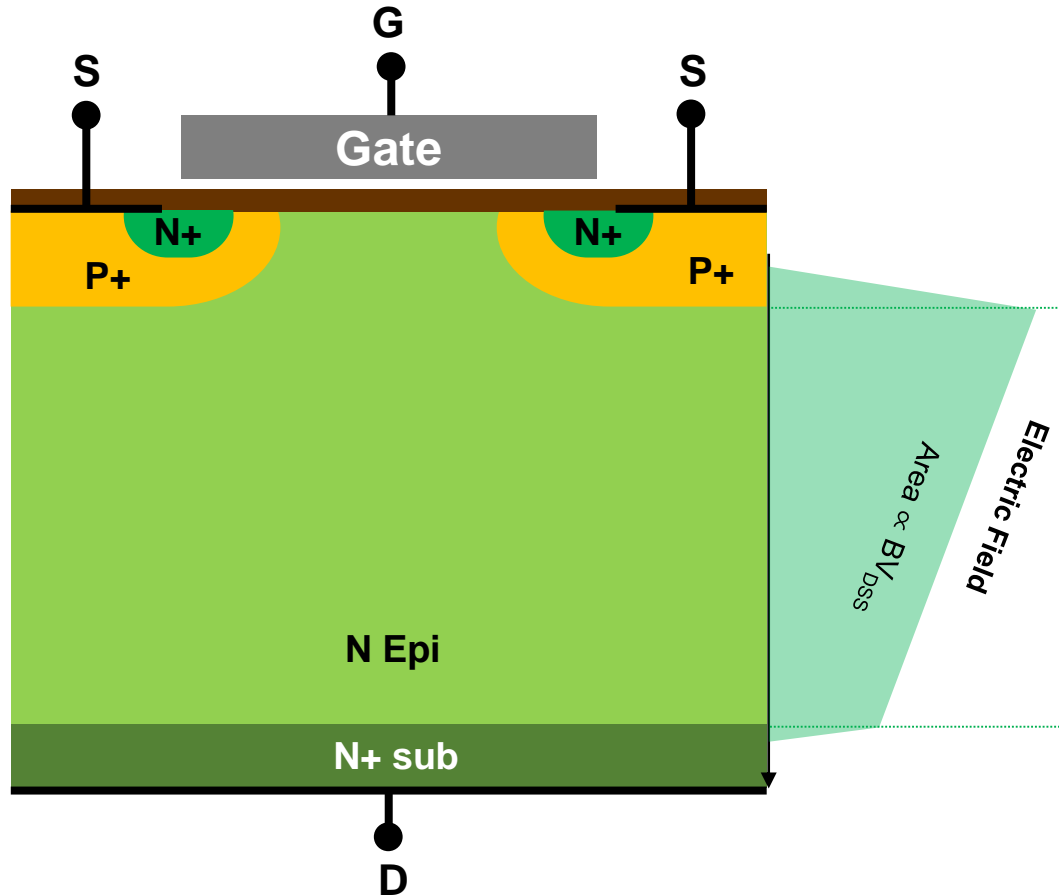


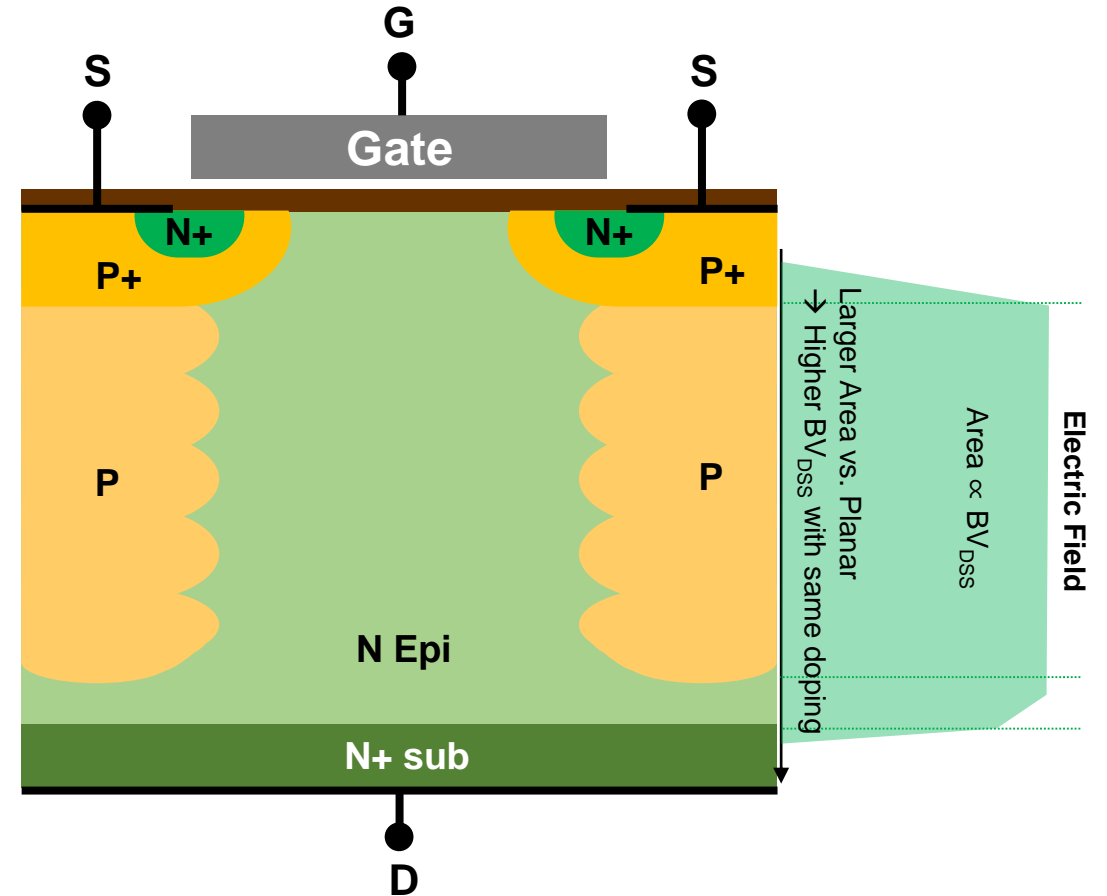
eMOS SJ MOSFET Selection Guide 2022

Advanced Power Master Semiconductor's Super-Junction MOSFET Technology

eMOS - Super Junction MOSFET Technology



Planar MOSFET

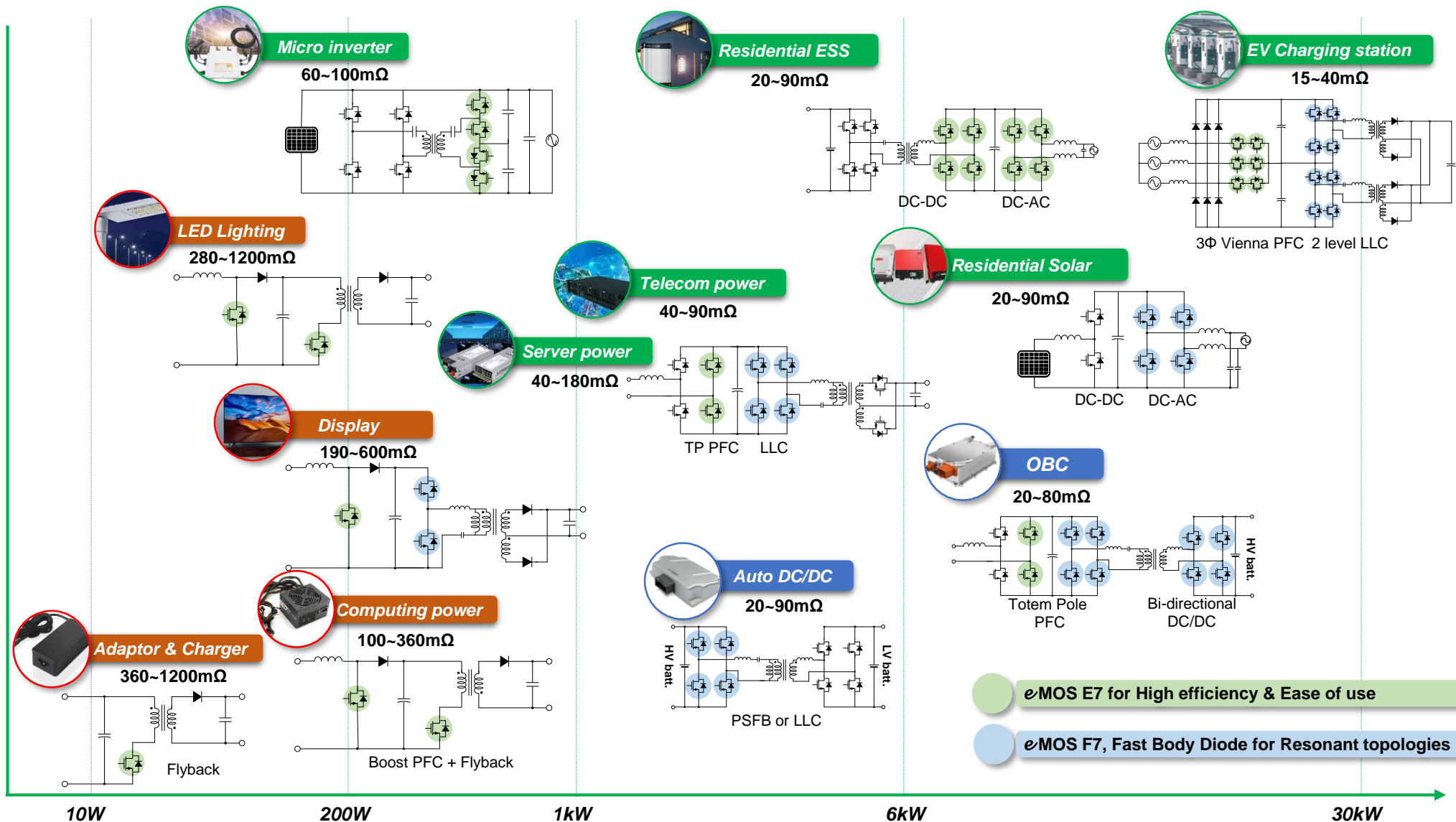


Super Junction MOSFET

- A linear relation between $R_{DS(ON)}$ and BV_{DSS}
- Lower $R_{DS(ON)}$ in same die size
- Smaller die size in same $R_{DS(ON)}$
- Low capacitance → Lower switching losses

eMOS for High and Low Power Applications

- Consumer
- Industrial
- Automotive



- eMOS E7 for High efficiency & Ease of use
- eMOS F7, Fast Body Diode for Resonant topologies

eMOS 7 Series - Features and Benefits

The eMOS 7 series is designed to target the world-class performance in the various applications ranging from low power to high power.

The eMOS 7 series enables to offer high performance, cost-effective, and robust solution for AC/DC and DC/DC applications such as hard & soft switching with a wide range of package options.

The **eMOS E7** is well-balanced combining **ease of use with an excellent efficiency performance** and a reasonable price.

Key Features

- Excellent ruggedness
- Good switching behavior for hard and soft switching.
- Significant reduction of switching and conduction losses

Key Benefits

- Suitable for hard and soft switching (PFC and LLC)
- Ease of use and fast design-in through low ringing tendency and usage across PFC and PWM stages
- Simplified thermal management due to low switching and conduction losses
- Suitable for a wide variety of applications and power ranges

The **eMOS F7** is well-optimized for resonant topologies with an **excellent integrated body diode** performance.

Key Features

- Excellent body diode performance - Smaller Q_{RR}
- Improved body diode dv/dt and di/dt ruggedness
- Lower E_{DYN}

Key Benefits

- Suitable for soft switching (LLC)
- Highest reliability for resonant topologies
- High light load efficiency.
- Suitable for a wide variety of applications and power ranges

eMOS E7 & F7 - Target Topologies

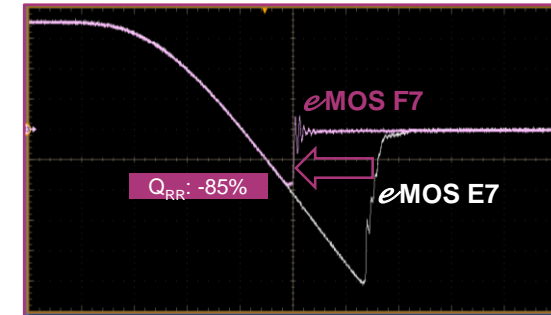
PFC (Hard Switching)



LLC / ZVS (DC-DC) (Soft Switching)

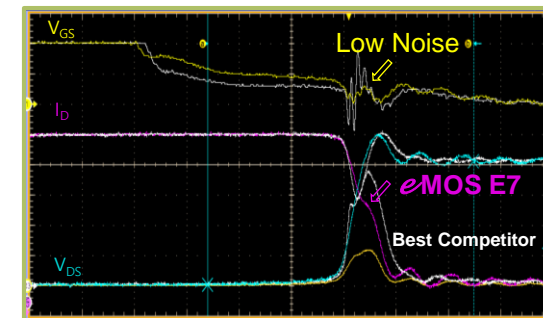


- High performance of body diode
- Smaller Q_{RR} for lower spikes
- Robust body diode for system reliability
- Reduced E_{DYN}
- Typ. $V_{TH}=4V$

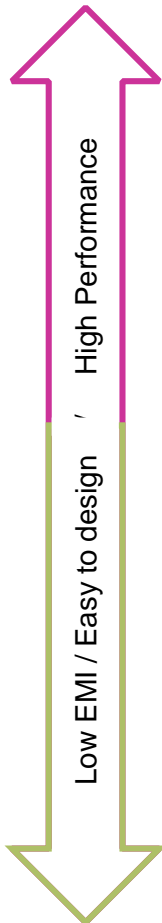


eMOS F7 by controlling carrier life-time

- Balanced performance between efficiency & easy of use
- Low EMI noise, optimized gate & drain ringing
- Rugged body diode
- Optimized Capacitances
- Typ. $V_{TH}=3.5V$

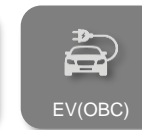


eMOS E7 by optimizing charge balance of pillar



600V / 650V eMOS E7 Portfolio

eMOS E7 (Easy Drive) for PFC & LLC Topologies



600V

650V

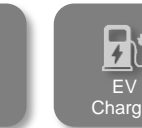
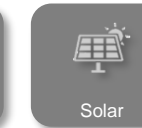
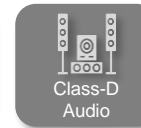
PKG	Die	DPAK	PQFN88	TO-220	TO-220F	TO-247 3L
$R_{DS(ON)_{max}}$						
28mΩ						PMW60N028E7
40mΩ						PMW60N040E7
70mΩ						PMW60N070E7
99mΩ			*PML60N0105E7	PMP60N099E7	PMF60N099E7	PMW60N099E7
120mΩ						
180mΩ	PMO60N180E7			PMP60N180E7	PMF60N180E7	
280mΩ	PMO60N280E7	PMD60N280E7		PMP60N280E7	PMF60N280E7	
380mΩ	PMO60N380E7	PMD60N380E7		PMP60N380E7	PMF60N380E7	
600mΩ	PMO60N600E7	PMD60N600E7			PMF60N600E7	
180mΩ	*PMO65N180E7					
280mΩ	*PMO65N280E7					
380mΩ	*PMO65N380E7					
600mΩ	*PMO65N600E7					
1200mΩ	*PMO65N1200E7					

* Coming soon

600V / 650V eMOS F7 Portfolio

eMOS F7 (FRFET)

for LLC & Bridge Topologies



600V

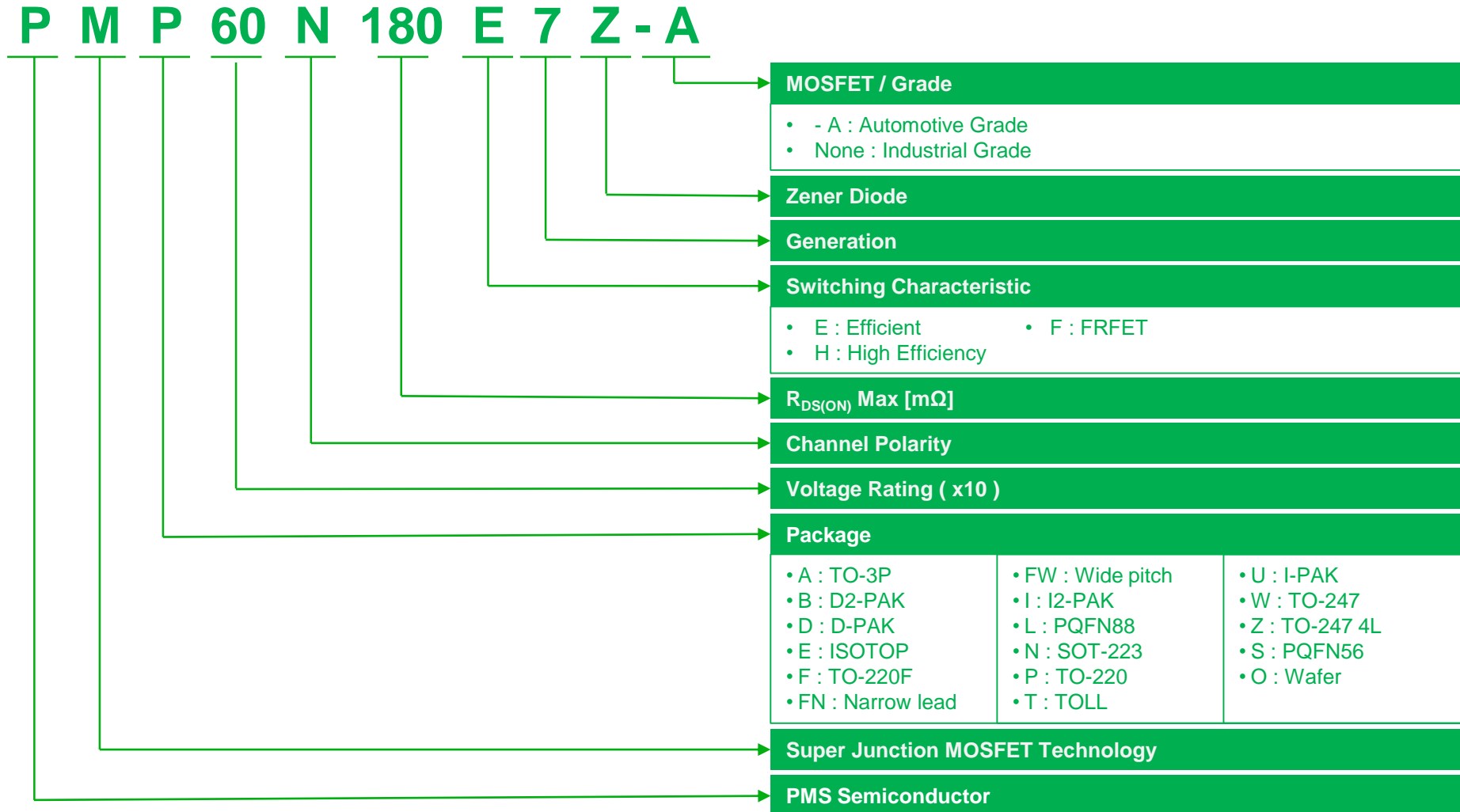
PKG	Die	DPAK	PQFN88	TO-220	TO-220F	TO-247 3L
$R_{DS(ON)_max}$						
30mΩ	PMO60N030F7					*PMW60N030F7
43mΩ	PMO60N043F7					*PMW60N043F7
75mΩ	PMO60N075F7					*PMW60N075F7
105mΩ	PMO60N105F7					*PMW60N105F7
193mΩ	*PMO60N193F7					

650V

43mΩ	*PMO65N043F7					*PMW65N043F7
310mΩ	*PMO65N310F7				*PMF65N310F7	

* Coming soon

eMOS - Nomenclature



Important Notice

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