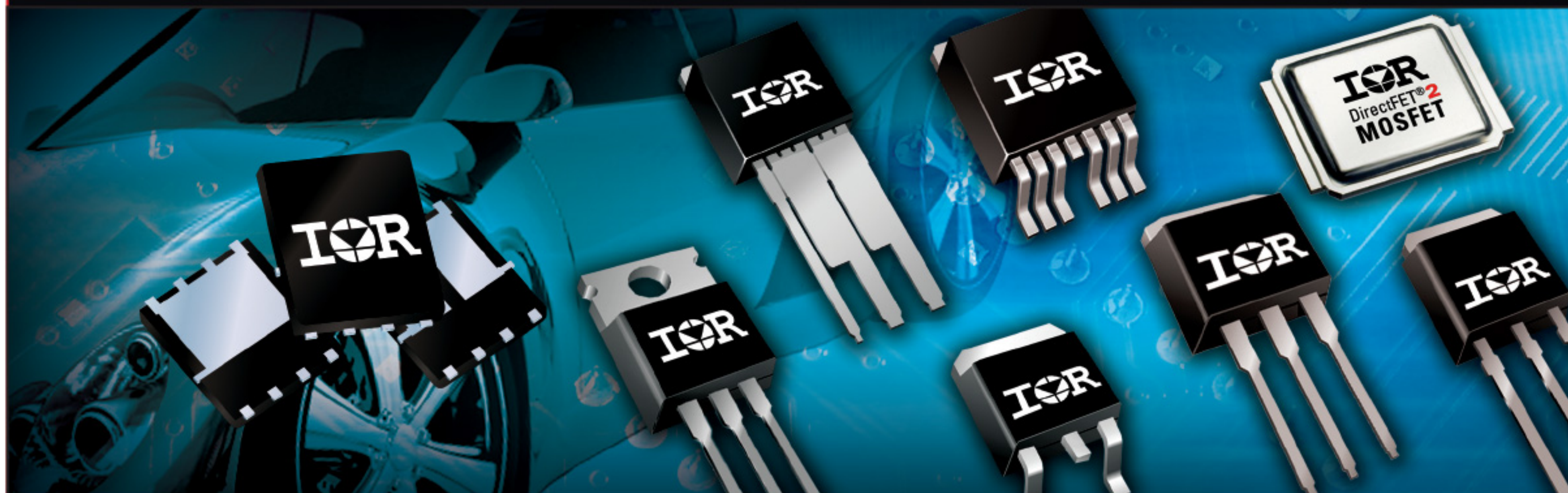


Automotive Ultra-Low $R_{DS(on)}$ 40V MOSFET Product Selection Guide



International
IOR Rectifier

AN INFINEON TECHNOLOGIES COMPANY

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Automotive 40V Ultra-Low $R_{DS(on)}$ MOSFETs

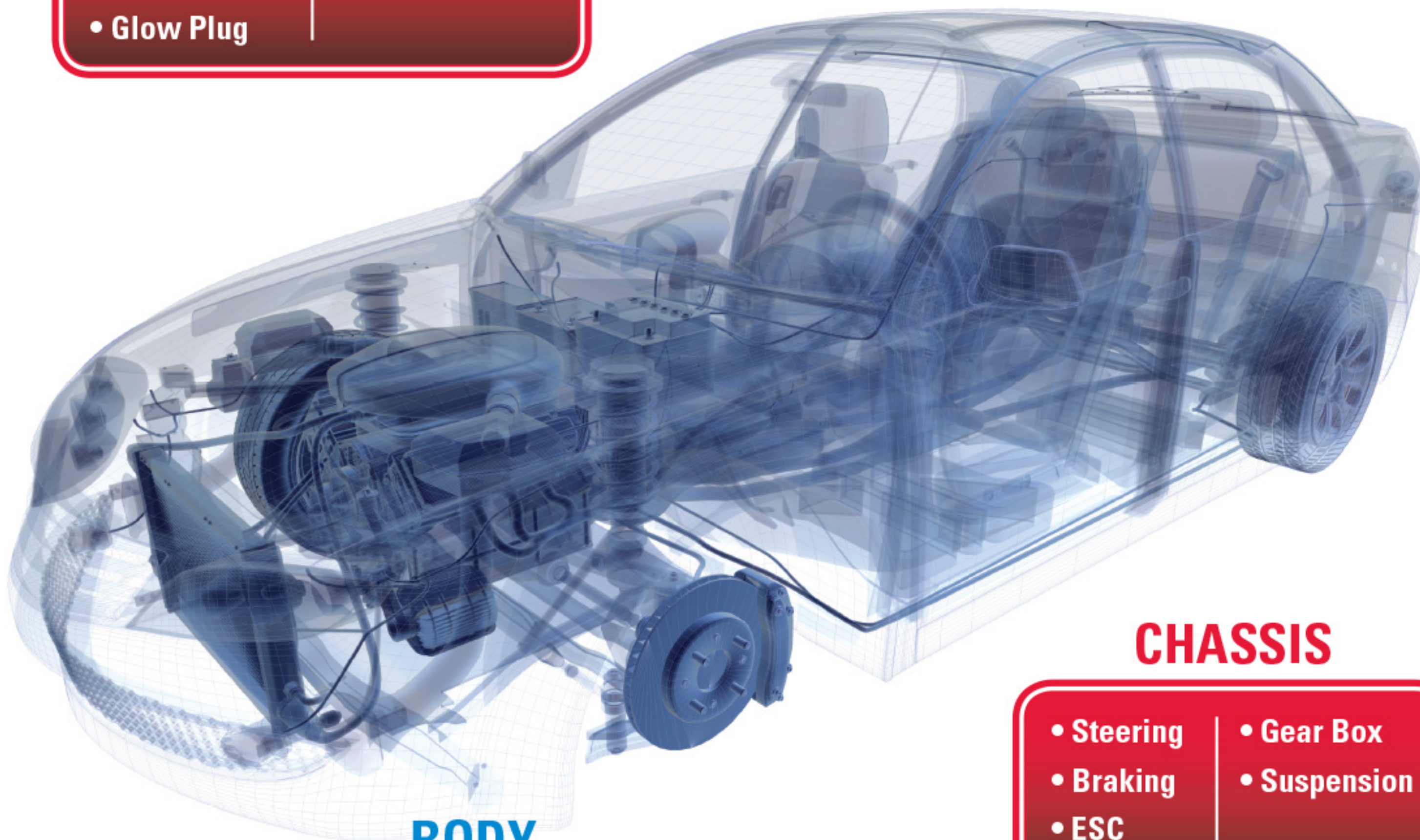
The new International Rectifier AEC-Q101 qualified next-generation MOSFET technology surpasses industry benchmarks with its ultra-low $R_{DS(on)}$. The advanced silicon trench technology has been developed specifically for the needs of automotive heavy load applications offering system level benefits as a result of superior $R_{DS(on)}$, good avalanche performance, a wide range of packaging options - with both traditional and innovative performance power packaging - and a 0 ppm manufacturing goal for excellent reliability and robustness.

POWERTRAIN

- Oil, Fuel or Water Pump
- Fuel Injection
- Glow Plug
- Engine Cooling
- Exhaust Gas Recirculation

POWER SUPPLY

- Battery Switch
- DC-DC Converter



BODY

- Lighting
- Window Lifter
- Blower Fan
- Power Door
- Power Seat
- Heater
- Windshield Wiper
- Audio Amplifier

CHASSIS

- Steering
- Braking
- ESC
- Gear Box
- Suspension

Benchmark Technology for Benchmark Applications

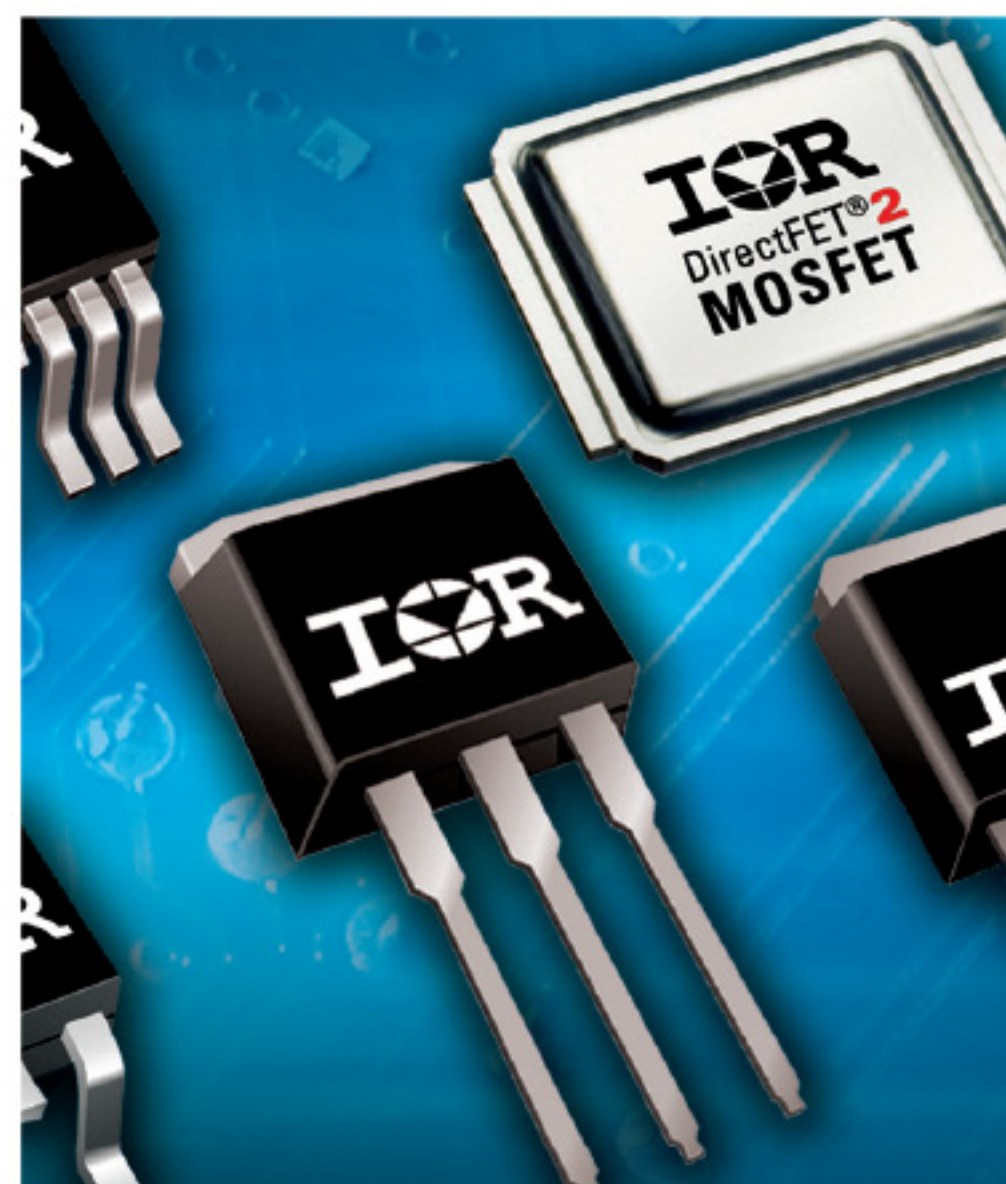
The electrification of the car - the rising number of electrical systems in today's vehicles - creates the need for new and more efficient automotive applications. IR's next-generation benchmark $R_{DS(on)}$ automotive-qualified MOSFETs are developed specifically to:

- Increase power density
- Reduce system cost
- Improve system efficiency
- Shrink system size
- Wide application coverage

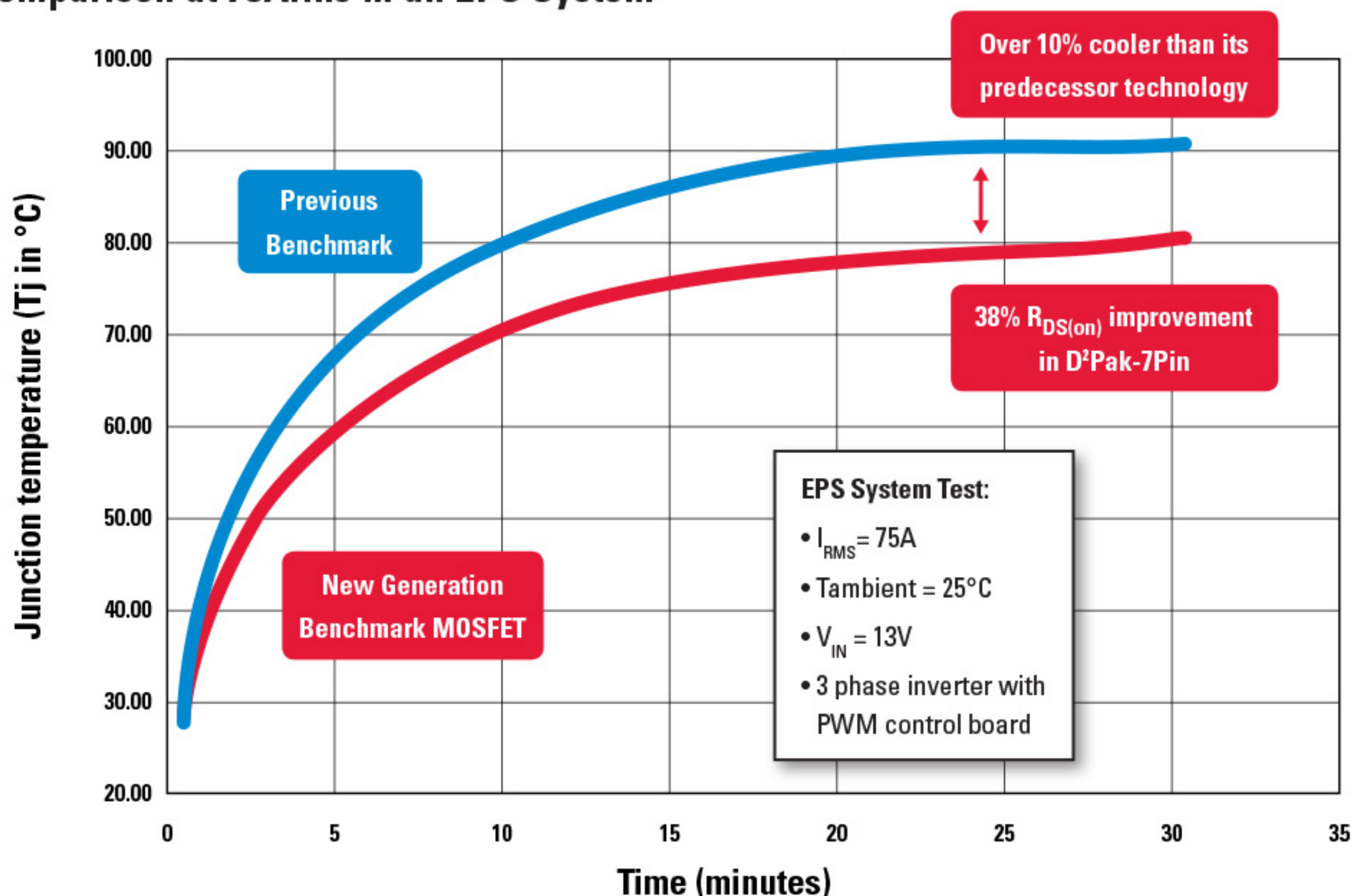
Making The Best Even Better

IR's next-generation automotive-qualified MOSFETs offer improved performance for heavy load applications compared to our previous benchmark technologies.

When tested in an Electric Power Steering (EPS) system at 75Arms in a D²Pak-7P package, the new silicon platform stays significantly cooler (over 10%) than previous technologies.



Thermal Comparison at 75Arms in an EPS System



Leveraging our applications expertise, IR's benchmark $R_{DS(on)}$ automotive-qualified MOSFETs are the ideal solution for modern and highly efficient EPS systems. Available in many different packages the benchmark technology is capable of high ambient temperatures, high currents that suit the needs of different EPS systems.

High-End Power EPS Systems



Typical system requirements:

- High phase currents over 110A
- Power levels of more than 1000W
- Rack drive

Recommended parts:

AUIRFS8409-7P	AUIRFS8408-7P
AUIRF(S/SL)8409	AUIRF(S/SL)8408

Medium Power EPS Systems

Typical system requirements:

- Phase currents between 90-110A
- Power level from 800-1000W
- Rack or column drive

Recommended parts:

AUIRFS8408-7P	AUIRFS8407-7P
AUIRF(S/SL)8408	AUIRF(S/SL)8407



Low Power EPS Systems

Typical system requirements:

- Phase currents below 90A
- Power levels below 800W
- Column drive

Recommended parts:

AUIRF(S/SL)8407	AUIRFB8407
AUIRF(R/U)8405	AUIRF8736M2













Benchmark $R_{DS(on)}$ 40V MOSFET Portfolio

The innovative silicon technology behind IR's next-generation benchmark $R_{DS(on)}$ MOSFETs combined with a wide variety of packaging options including traditional plastic packaging as well as unique power packaging possibilities such as the DirectFET[®]2 result in the most powerful and efficient automotive MOSFET portfolio available:

Features:

- Benchmark $R_{DS(on)}$
- AEC-Q101 qualified
- High current capability
- 40V $V_{(BR)DSS}$ standard gate drive
- Robust avalanche performance

Package	$R_{DS(on)}$ Max@ 10Vgs	Q_g Typ	I_D Max	R_{thjC} Max	Part Number
D ² PAK-7P 	0.75 mΩ	305 nC	240 A	0.40°C/W	AUIRFS8409-7P
	1.0 mΩ	210 nC	240 A	0.51°C/W	AUIRFS8408-7P
	1.3 mΩ	150 nC	240 A	0.65°C/W	AUIRFS8407-7P
D ² PAK 	1.2 mΩ	300 nC	195 A	0.40°C/W	AUIRFS8409
	1.6 mΩ	216 nC	195 A	0.51°C/W	AUIRFS8408
	1.8 mΩ	150 nC	195 A	0.65°C/W	AUIRFS8407
	2.3 mΩ	107 nC	120 A	0.92°C/W	AUIRFS8405
	3.3 mΩ	62 nC	120 A	1.52°C/W	AUIRFS8403
TO-262 	1.2 mΩ	300 nC	195 A	0.40°C/W	AUIRFS8409
	1.6 mΩ	216 nC	195 A	0.51°C/W	AUIRFS8408
	1.8 mΩ	150 nC	195 A	0.65°C/W	AUIRFS8407
	2.3 mΩ	107 nC	120 A	0.92°C/W	AUIRFS8405
	3.3 mΩ	62 nC	120 A	1.52°C/W	AUIRFS8403
TO-220 	1.3 mΩ	300 nC	195 A	0.40 °C/W	AUIRFB8409
	2.0 mΩ	150 nC	195 A	0.65 °C/W	AUIRFB8407
	2.5 mΩ	107 nC	120 A	0.92 °C/W	AUIRFB8405
DPAK 	1.98 mΩ	103nC	100 A	0.92 °C/W	AUIRFR8405
	3.1 mΩ	66nC	100 A	1.52 °C/W	AUIRFR8403
	4.25 mΩ	42nC	100 A	1.90 °C/W	AUIRFR8401
IPAK 	1.98 mΩ	103nC	100 A	0.92 °C/W	AUIRFU8405
	3.1 mΩ	66nC	100 A	1.52 °C/W	AUIRFU8403
	4.25 mΩ	42nC	100 A	1.90 °C/W	AUIRFU8401
DirectFET [®] 2 	0.6 mΩ	345nC	344 A	1.20 °C/W	AUIRF8739L2
	1.9 mΩ	136nC	137 A	2.40°C/W	AUIRF8736M2
PQFN 5x6 	1.6 mΩ	125nC	98 A	0.80 °C/W	AUIRFN8406
	3.3 mΩ	65nC	95 A	1.60 °C/W	AUIRFN8403
PQFN 5x6 Dual 	5.9 mΩ	40nC	50 A	3.0 °C/W	AUIRFN8459
	10 mΩ	22nC	43 A	4.4 °C/W	AUIRFN8458
TO-262WL 	1.2 mΩ	305 nC	240 A	0.40°C/W	AUIRF8409WL

Coming in 2014, Target Specifications

Product Line	Applications	Key Products
 <p>Energy Saving Products</p> <p>Integrated design platforms that enable customers to add energy-conserving features that achieve lower operating energy costs and manufacturing Bill of Material (BOM) costs.</p>	<ul style="list-style-type: none"> • Appliances • Audio • Display • Industrial • Lighting • SMPS 	<ul style="list-style-type: none"> • Digital Control ICs • High-Voltage ICs • IGBTs • IRAM Integrated Power Modules • MERs • μIPM™
 <p>Enterprise Power</p> <p>Optimized power management system solutions that deliver benchmark power density, efficiency and performance in enterprise power.</p>	<ul style="list-style-type: none"> • Servers • Storage Networks • Switchers & Routers • Workstations • Notebooks • Game Stations • Set-Top Box 	<ul style="list-style-type: none"> • DirectFET®<i>plus</i> • SupIRBuck® • PowIRstage® • CHiL Digital Controllers
 <p>Automotive</p> <p>Automotive grade power management solutions qualified to meet the needs of 12V, 24V and HEV/EV applications with a zero defect goal.</p>	<ul style="list-style-type: none"> • AC and DC Motor Drives • Powertrain / Engine control • Body Electronics • Lighting • Class D Audio • Heavy Loads and Actuators 	<p>Automotive Qualified:</p> <ul style="list-style-type: none"> • HEXFET® Power MOSFETs • Intelligent Power Switches • Driver ICs • IGBTs • DirectFET®2 • COOLiR™
 <p>Benchmark MOSFETs</p> <p>IR continues to lead the industry by offering power MOSFETs with the lowest $R_{DS(on)}$ and widest range of packages up to 250V for a diverse range of applications.</p>	<ul style="list-style-type: none"> • Audio • Computing • Communications • Motor Control • Power Supply • Synchronous Rectification 	<ul style="list-style-type: none"> • Discrete HEXFET® MOSFETs • Dual HEXFET® MOSFETs • FETKY® • DirectFET® • StrongIRFET™ • FastIRFET™
 <p>HiRel</p> <p>Our discrete components, complex hybrid power module assemblies and rugged DC-DC converters utilize leading-edge power technology which, together with demanding environmental specifications help engineers to meet their toughest design challenges.</p>	<ul style="list-style-type: none"> • Space • Military • Commercial Aviation • Rugged Industrial • Medical 	<ul style="list-style-type: none"> • RAD-Hard MOSFETs • Power Modules/Hybrid Solutions • Motor Control Solutions • DC-DC Converters