

Product brief

R9 rad hard MOSFET technology

Higher performance & efficiencies with low risk design reuse

Our new R9 superjunction technology platform offers notable size, weight and power improvements over prior rad hard MOSFET generations, delivering superior performance and efficiencies with a well-known silicon gate drive setup. A simple drop-in, R9 enables a high degree of design reuse, yielding immediate efficiency improvements in your proven circuitry. R9 is a low risk upgrade path to higher performing space-grade power systems, with assured confidence in overall system reliability.

In systems such as high-throughput satellites, using R9-based rad hard MOSFETs enables simpler circuit topologies and can significantly reduce cost-per-bit ratio and overall system cost. Our full ecosystem of N- and P-channel R9 MOSFETs delivers a range of options for high-reliability applications such as:

- > Space-grade DC-DC converters
- > Intermediate bus converters
- > Motor controllers
- > Other high-speed switching designs
- > High-side, low frequency load switching
- > Overload protection switching
- > Circuits requiring linear mode operation

Rugged, reliable performance you can count on

International Rectifier HiRel (IR HiRel)'s R9 MOSFET technology supports wide gate-source voltage variation ($\pm 20V$), making the portfolio far less sensitive to circuit parasitics than alternatives. Especially for high frequency applications, designers must balance between higher switching frequency, design and verification time to optimal board layout and reliability. R9-based rad hard MOSFETs are also highly ruggedized, designed to absorb avalanche energy for momentary drain-source voltage overshoot. Combined with superior SOA, transient thermal impedance and high ESD ratings, our R9-based MOSFET portfolio is a low risk path to improved reliability and performance.

Key features

- > V_{GS} rating of $\pm 20V$
- > Avalanche capability
- > Enhanced Safe Operating Area (SOA)
- > Largest portfolio of N- and P-channel power MOSFETs

Customer benefits

- > Rugged designs, less sensitive to electrical parasitics
- > Superior linear mode operation
- > Design heritage/reuse
- > Well-known Si gate driver setup
- > Simplified circuit topologies
- > Low risk upgrade path



SMD-0.1



SMD-0.5e



SupIR-SMD



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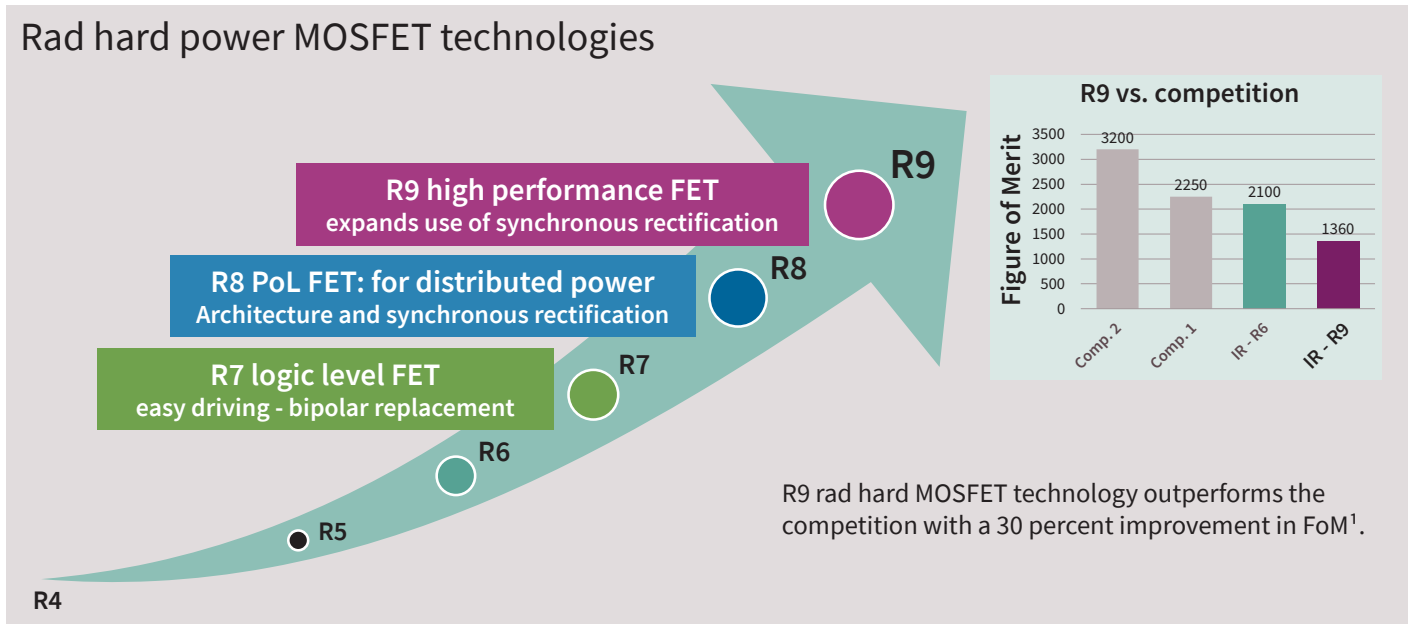
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Backed by the confidence of QPLs

To help our customers accelerate new product development, IR HiRel's R9-based rad hard MOSFETs are qualified for direct release to the Defense Logistics Agency (DLA) Qualified Parts List (QPL) in the newest generation packages. This reduces packaging, assembly, and testing risk, ensuring confidence in the reliability of long-lasting, high performance specification compliance to known industry standards.

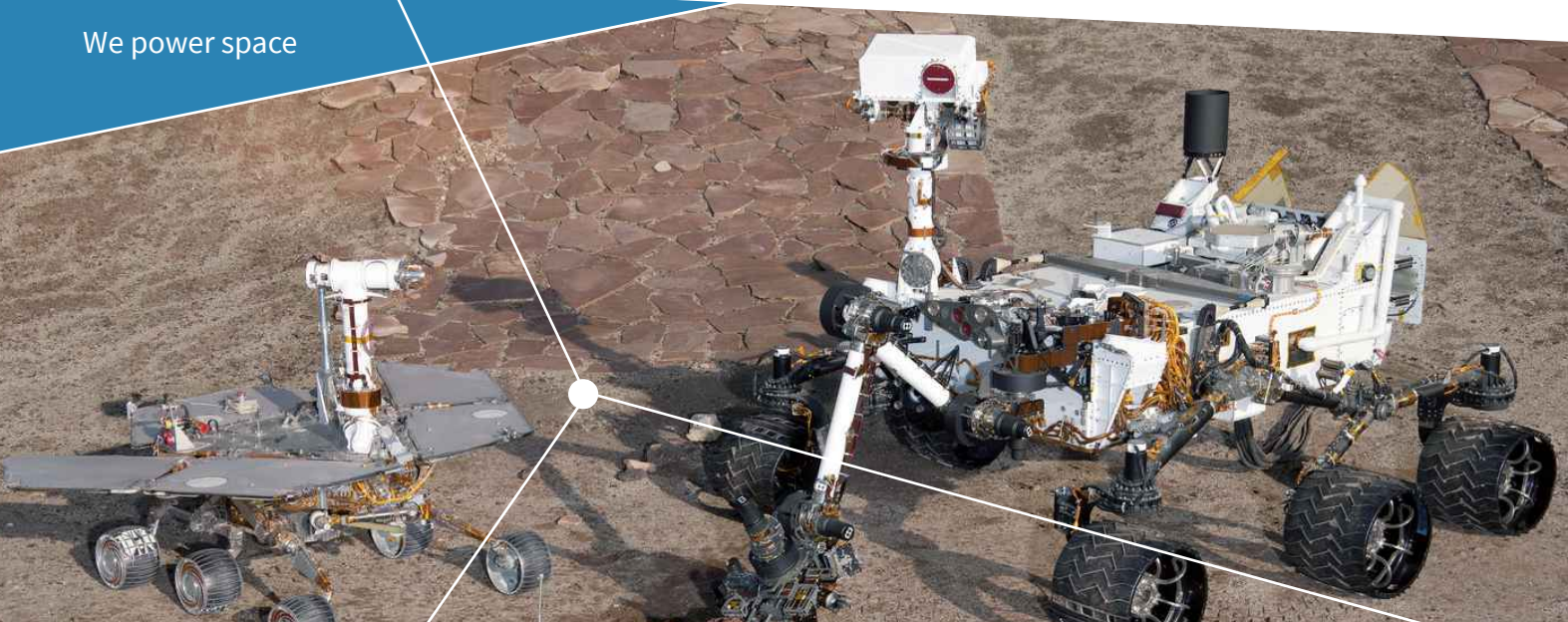
IR HiRel continues to make holistic investments in its silicon platforms, packaging, die sizes and more to deliver next-gen technology for space and other demanding applications. We offer the largest portfolio of N- and P-channel power MOSFETs with continuously enhanced performance and packaging. With silicon's proven flight heritage, performance, and robustness, why risk your mission with anything else?

Rad hard power MOSFET technologies



¹ Figure of Merit is $R_{DS(on)} \times Q_g$ (Gate Charge)

We power space



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Part number	Vds (V)	Ch	I _d (A)	R _{DS(on)} (Ω)	Package	Screening	JEDEC	Slash sheet
IRHNS9A7064	60	N	100	0.004	SupIR-SMD	JANS	2N7648U2A	/777*
IRHNA9A7064	60	N	75	0.0047	SMD-2	JANS	2N7648U2	/777*
IRHMS9A7064	60	N	45	0.007	TO-254AA Low Ohmic	JANS	2N7648T1	/777*
IRHNJ9A7034	60	N	40	0.018	SMD-0.5	JANS	2N7647U3	/775
IRHNKC9A7034	60	N	40	0.018	SMD-0.5e	JANS	2N7647U3CE	/775*
IRHYS9A7034CM	60	N	30	0.019	TO-257AA Low Ohmic	JANS	2N7647T3	/775
IRHNMC9A7024	60	N	25	0.030	SMD-0.2C	JANS	2N7651U8C	/776*
IRHNPC9A7014	60	N	9	0.065	SMD-0.1	JANS		TBD
IRHNS9A7160	100	N	100	0.0065	SupIR-SMD	JANS	2N7653U2A	/777*
IRHNA9A7160	100	N	75	0.007	SMD-2	JANS	2N7653U2	/777*
IRHMS9A7160	100	N	45	0.0095	TO-254	JANS	2N7653T1	/777*
IRHNJ9A7130	100	N	35	0.034	SMD-0.5	JANS	2N7648U3	/775
IRHNJC9A7130	100	N	35	0.034	SMD-0.5	JANS	2N7648U3C	/775
IRHNKC9A7130	100	N	35	0.034	SMD-0.5e	JANS	2N7648U3C	/775*
IRHYB9A7130CM	100	N	30	0.035	TO-257AA Tabless Low Ohmic	JANS	2N7648D5	/775
IRHYS9A7130CM	100	N	30	0.035	TO-257AA Low Ohmic	JANS	2N7648T3	/775
IRHNMC9A7120	100	N	23	0.055	SMD-0.2	JANS	2N7651U8C	/776*
IRHNPC9A7110	100	N	6	0.15	SMD-0.1	JANS		TBD
IRHNS9A7264	250	N	84	0.0165	SupIR-SMD	JANS		TBD
IRHNA9A7264	250	N	75	0.018	SMD-2	JANS		TBD
IRHMS9A7264	250	N	45	0.0185	TO-254	JANS		TBD
IRHNKC9A7234	250	N	17	0.110	SMD-0.5	JANS	2N7649U3CE	/775*
IRHYB9A7234CM	250	N	17	0.110	TO-257 tabless	JANS	2N7649D5	/775*
IRHYS9A7234CM	250	N	17	0.110	TO-257	JANS	2N7649T3	/775*
IRHNMC9A7224	250	N	6*	0.138*	SMD-0.2	JANS		TBD
IRHNPC9A7214	250	N	5.5*	0.5*	SMD-0.1	JANS		TBD
IRHNS9A97064	-60	P	NA	NA	SupIR-SMD	JANS		TBD
IRHMS9A97064	-60	P	NA	NA	TO-254	JANS		TBD
IRHNKC9A97034	-60	P	20	0.045	SMD-0.5e	JANS		TBD
IRHYS9A97034CM	-60	P	20	0.046	TO-257	JANS		TBD
IRHNS9A97160	-100	P	55*	0.018*	SupIR-SMD	JANS		TBD
IRHMS9A97160	-100	P	45*	0.019*	TO-254	JANS		TBD
IRHNKC9A97130	-100	P	15	0.072	SMD-0.5e	JANS		TBD
IRHYS9A97130CM	-100	P	15	0.076	TO-257	JANS		TBD
IRHNS9A97260	-200	P	NA	NA	SupIR-SMD	JANS		TBD
IRHMS9A97260	-200	P	NA	NA	TO-254	JANS		TBD
IRHNKC9A97230	-200	P	9*	0.174*	SMD-0.5e	JANS		TBD
IRHYS9A97230CM	-200	P	9	0.175	TO-257	JANS		TBD

*pending as of publication date

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A pioneer in power electronics since 1947, IR HiRel is a leader in high-reliability, radiation-hardened power conversion solutions for space. For decades, customers have used IR HiRel's semiconductor-based power conversion and custom hybrid solutions in thousands of mission-critical space, aerospace, and national security programs. Applications range from satellite buses to space exploration vehicles and more, where failure-free performance is expected in extreme mechanical, thermal, and radiation environments. Our team of technical experts provides proven, high performance and high-reliability products that reduce development effort and risk for customers, paving the path for successful missions.

IR HiRel is an Infineon Technologies company. Together with our parent company, we offer a broad selection of solutions qualified to European Space Agency (ESA) and Defense Logistics Agency (DLA) standards for our global customers.

www.infineon.com/irhirel

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