PRODUCT BRIEF

R9 rad hard MOSFET technology

Higher performance and efficiencies with low risk design reuse

International Rectifier HiRel (IR HiRel)'s 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

IR HiRel's R9 MOSFET technology supports wide gate-source voltage variation (±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.

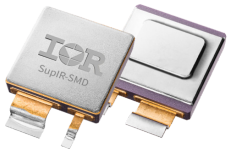
Key features

- V_{GS} rating of ±20 V
- 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



SupIR-SMD

SMD-0.5e

Space

Defense technology

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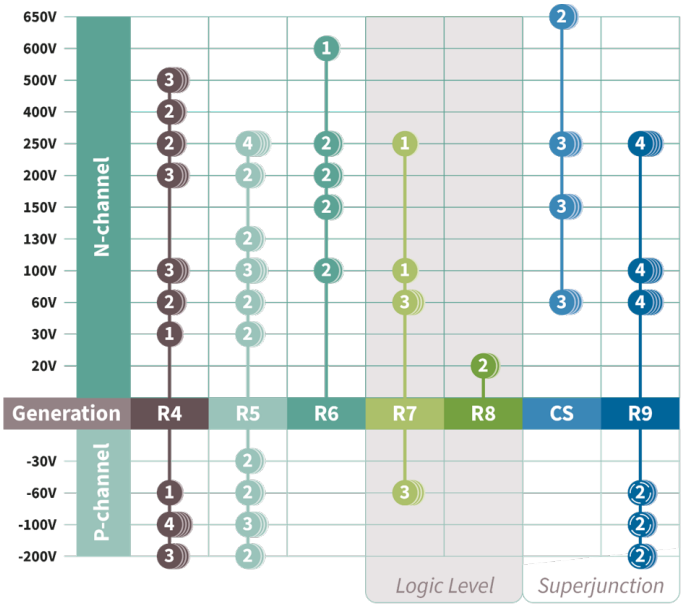
Backed by the confidence of QPLs

To help our customers accelerate new product development, IR HiRel's R9 rad hard MOSFETS are qualified for direct release to DLA's 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

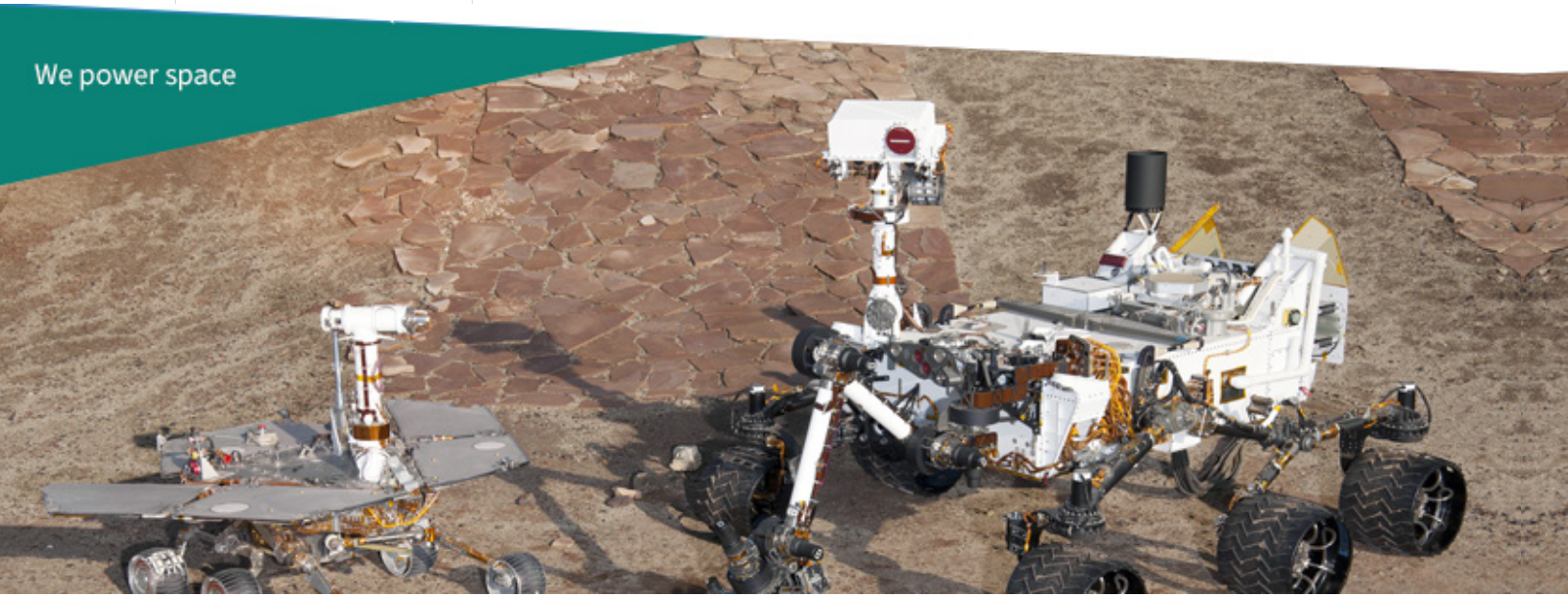


N-Channel: 20 V to 650 V

P-Channel: -30 V to -200 V

R9	Improved SWaP over prior rad hard MOSFET generations
CS	License-free, based on Infineon CoolMOS™ technology
R8	Designed for low voltage POL designs
R7	Designed for logic level gate drives
R6	Best performance for mid to high-voltage designs
R5	Optimized performance for low to mid-voltage designs
R4	All purpose MOSFET, legacy design with extensive space heritage

(#) Die sizes available



PRODUCT BRIEF

R9 rad hard MOSFET technology

Higher performance and efficiencies with low risk design reuse

Part number	Vds (V)	Ch	I_d (A)	$R_{DS(on)}$ (mΩ)	Package	Screening	JEDEC	Slash sheet
IRHNS9A7264	250	N	82	17	SupIR-SMD	JANS	2N7658U2A	/777*
IRHYB9A7234CM	250	N	17	110	TO-257AA tabless low ohmic	JANS	2N7649D5	/775*
IRHYS9A7234CM	250	N	17	110	TO-257AA low ohmic	JANS	2N7649T3	/775*
IRHNS9A3264	250	N	82	17	SupIR-SMD	JANS	2N7658U2A	/777*
IRHYB9A3234CM	250	N	17	110	TO-257AA Low Ohmic	JANS	2N7649T3	/775*
IRHYS9A3234CM	250	N	17	110	TO-257AA Low Ohmic	JANS	2N7649T3	/775*
IRHNJ9A3234	250	N	17	110	SMD-0.5	JANS	2N7649U3	/775*
IRHNJ9A7234	250	N	17	110	SMD-0.5	JANS	2N7649U3	/775*
IRHMS9A7264	250	N	45	18.5	TO-254AA low ohmic	COTS	2N7658T1	/777*
IRHNKC9A7234	250	N	17	110	SMD-0.5e ceramic lid	JANS	2N7649U3CE	/775*
IRHNMC9A7224	250	N	6	138	SMD-0.2 ceramic lid	JANS	2N7654U8C	/776*
IRHNPC9A7214	250	N	5.5	500	SMD-0.1 ceramic lid	JANS	2N7657xx	TBD*
IRHNS9A7160	100	N	100	6.5	SupIR-SMD	JANS	2N7653U2A	/777*
IRHYB9A7130CM	100	N	30	35	TO-257AA tabless low ohmic	JANS	2N7648D5	/775
IRHYS9A7130CM	100	N	30	35	TO-257AA low ohmic	JANS	2N7648T3	/775
IRHNMC9A7120	100	N	23	55	SMD-0.2 ceramic lid	JANS	2N7651U8C	/776*
IRHNS9A3160	100	N	100	6.5	SupIR-SMD	JANS	2N7653U2A	/777*
IRHYB9A3130CM	100	N	30	35	TO-257AA Tabless Low Ohmic	JANS	2N7648D5	/775*
IRHYS9A3130CM	100	N	30	35	TO-257AA Low Ohmic	JANS	2N7648T3	/775*
IRHNJ9A3130	100	N	35	34	SMD-0.5	JANS	2N7648U3	/775*
IRHNJ9A7130	100	N	35	34	SMD-0.5	JANS	2N7648U3	/775*
IRHNJC9A3130	100	N	35	34	SMD-0.5	JANS	2N7648U3C	/775*
IRHNJC9A7130	100	N	35	34	SMD-0.5	JANS	2N7648U3C	/775*
IRHNM9A3120	100	N	23	55	SMD-0.2	JANS	2N7651U8	/776*
IRHNM9A7120	100	N	23	55	SMD-0.2	JANS	2N7651U8	/776*
IRHNMC9A3120	100	N	23	55	SMD-0.2C	JANS	2N7651U8C	/776*
IRHNKC9A7130	100	N	35	34	SMD-0.5e ceramic lid	JANS	2N7648U3CE	/775*
IRHNPC9A7110	100	N	6	150	SMD-0.1 ceramic lid	JANS	2N7656xx	TBD*
IRHNS9A7064	60	N	100	4	SupIR-SMD	JANS	2N7652U2A	/777*
IRHMS9A7064	60	N	45	7	TO-254AA low ohmic	JANS	2N7652T1	/777*
IRHYS9A7034CM	60	N	30	19	TO-257AA low ohmic	JANS	2N7647T3	/775
IRHYB9A7034CM	60	N	30	19	TO-257AA tabless low ohmic	JANS	2N7647D5	/775
IRHNMC9A7024	60	N	25	30	SMD-0.2 ceramic lid	JANS	2N7650U8C	/776*
IRHYB9A3034CM	60	N	30	19	TO-257AA Tabless Low Ohmic	JANS	2N7647D5	/775*
IRHYS9A3034CM	60	N	30	19	TO-257AA Low Ohmic	JANS	2N7647T3	/775*
IRHNJ9A3034	60	N	40	18	SMD-0.5	JANS	2N7647U3	/775*
IRHNS9A3064	60	N	100	4	SupIR-SMD	JANS	2N7652U2A	/777*
IRHNJ9A7034	60	N	40	18	SMD-0.5	JANS	2N7647U3	/775*
IRHNJC9A3034	60	N	40	18	SMD-0.5	JANS	2N7647U3C	/775*
IRHNJC9A7034	60	N	40	18	SMD-0.5	JANS	2N7647U3C	/775*

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IRHNMC9A3024	60	N	25	30	SMD-0.2C	JANS	2N7650U8C	/776*
IRHMS9A3064	60	N	45	7	TO-254AA Low Ohmic	JANS	2N7652T1	/777*
IRHNKC9A7034	60	N	40	18	SMD-0.5e ceramic lid	JANS	2N7647U3CE	/775*
IRHNPC9A7014	60	N	9	65	SMD-0.1 ceramic lid	COTS	2N7655xx	TBD*
IRHYS9A93034CM	-60	P	-30	46	TO-257AA Low Ohmic	JANS	2N7659T3	/780*
IRHNKC9A93034	-60	P	-32	45	SMD-0.5e Ceramic Lid	JANS	2N7659U3CE	/780*
IRHNKC9A97034	-60	P	-32	45	SMD-0.5e ceramic lid	JANS	2N7659U3CE	/780*
IRHYS9A97034CM	-60	P	-30	46	TO-257AA Low Ohmic	JANS	2N7659T3	/780*
IRHNS9A97064	-60	P	TBD*	TBD*	SupIR-SMD	JANS	TBD*	TBD*
IRHMS9A97064	-60	P	TBD	TBD	TO-254AA Low Ohmic	JANS	TBD	TBD
IRHNKC9A97130	-100	P	-24	72	SMD-0.5e ceramic lid	JANS	2N7660U3CE	/780*
IRHYS9A97130CM	-100	P	-23	76	TO-257AA low ohmic	JANS	2N7660T3	/780*
IRHYB9A93130CM	-100	P	-23	76	TO-257AA Tabless Low Ohmic	JANS	2N7660D5	/780*
IRHYB9A97130CM	-100	P	-23	76	TO-257AA Tabless Low Ohmic	JANS	2N7660D5	/780*
IRHYS9A93130CM	-100	P	-23	76	TO-257AA Low Ohmic	JANS	2N7660T3	/780*
IRHNKC9A93130	-100	P	-24	72	SMD-0.5e Ceramic Lid	JANS	2N7660U3CE	/780*
IRHNS9A97160	-100	P	55	18	SupIR-SMD	JANS	TBD*	TBD*
IRHMS9A97160	-100	P	45	19	TO-254AA low ohmic	JANS	TBD*	TBD*

*pending as of publication date

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 ESA and DLA standards for our global customers. Infineon's broad space portfolio includes high-reliability and rad hard memory solutions, power and RF for extreme conditions. Learn more at www.infineon.com/space.

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