

Product brief

License-free power FETs for space

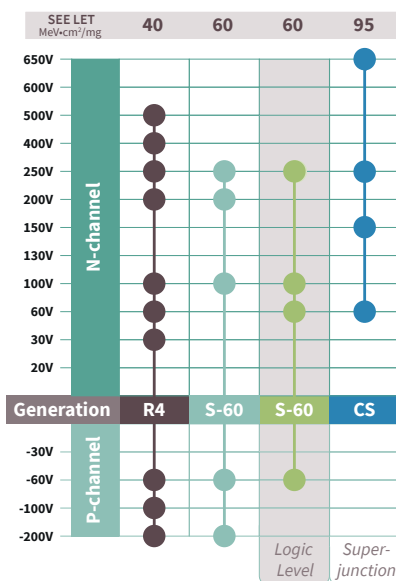
Ecosystem of N- and P-channel options from -200V to 650V

Infineon has a long history of serving the space industry with high-reliability radiation hardened semiconductor solutions. We understand the requirements and challenges of designing for reliable performance in the extreme thermal, mechanical and radiation environments of space. For decades, customers have relied on Infineon power solutions in thousands of mission-critical space, aerospace and national security programs. Many of these missions are still in operation today.

Together with our subsidiary, International Rectifier HiRel Products (IR HiRel), an Infineon Technologies company, Infineon combines world-class heritage with deep technical expertise to deliver benchmark power solutions for space. Our license-free rad hard power management offering is recognized globally for its excellent performance, reliability, supply longevity and unparalleled design heritage.

License-free rad hard space power FETs

Infineon offers a broad selection of license-free N-channel and P-channel rad hard MOSFETs in a wide range of packaging options, spanning from -200V to 650V.



- > **R4** is an all purpose legacy design with extensive space heritage
- > **S-60** MOSFETs are optimized for low-to mid-voltage designs
- > **S-60 logic level** MOSFETs are designed for logic-level gate drivers
- > **CS superjunction PowerMOS** are ESA-qualified and offer best-in-class electrical performance and radiation hardness

Key features

- > ESA-qualified options
- > Best in class radiation hardness and electrical performance
- > Broad selection of N- and P-channel power MOSFETs, including highest voltage rad hard space-qualified FET on the market

Target applications

- > Space-grade DC-DC converters
- > Intermediate bus converters
- > Motor controllers
- > Other high-speed switching designs
- > High-side and low-side load switching
- > Overload protection switching

License-free power FETs for space

Ecosystem of N- and P-channel options from -200V to 650V

Infineon PowerMOS transistors

Based on Infineon's unique CoolMOS™ superjunction technology, the single radiation hard PowerMOS transistors are the worldwide benchmark in radiation hardness and electrical performance.

- › TID hardness is specified up to 100 krad(Si) (300 krad(Si) on request)
- › SEE tested up to LET 95 MeV•cm²/mg with Pb and LET 62 MeV•cm²/mg with Xe ions

With their extremely low specific $R_{DS(on)}$ and comfortable Safe Operating Area (SOA), Infineon's PowerMOS transistors deliver best-in-class radiation performance for all kinds of space applications.

The PowerMOS family is rated 60V to 650V in through hole and SMD package options screened to ESCC-5000 and available as ESA QPLs. These MOSFETs are also available as qualified bare die.

Part number	ESCC part number	Package	V_{DSS} (V)	Q_G (nC)	$R_{DS(on)}$ @25°C (mΩ)	I_D @25°C (A)	I_{dpuls} (A)	Power dissipation (W)	Gate voltage	ESD class	ESA qualified
BUY06CS23K-01(ES)	5205 032 03	TO-257AA	60	26	36	23	100	75	+/- 20	2	QPL
BUY06CS23K-01(P)		TO-257AA	60	26	36	23	100	75	+/- 20	2	
BUY06CS35J-01(ES)	5205 032 01	SMD-0.5	60	25	28	35	100	75	+/- 20	2	QPL
BUY06CS35J-01(P)		SMD-0.5	60	25	28	35	100	75	+/- 20	2	
BUY06CS45B-01(ES)	5205 032 04	TO-254AA	60	75	14	45	200	208	+/- 20	2	QPL
BUY06CS45B-01(P)		TO-254AA	60	75	14	45	200	208	+/- 20	2	
BUY06CS80A-01(ES)	5205 032 02	SMD-2	60	175	5.6	80	300	250	+/- 20	2	QPL
BUY06CS80A-01(P)		SMD-2	60	175	5.6	80	300	250	+/- 20	2	
BUY15CS23J-01(ES)	5205 031 01	SMD-0.5	150	25	55	23	93	75	+/- 20	1C	QPL
BUY15CS23J-01(P)		SMD-0.5	150	25	55	23	93	75	+/- 20	1C	
BUY15CS23K-01(ES)	5205 031 03	TO-257AA	150	25	55	23	93	75	+/- 20	1C	QPL
BUY15CS23K-01(P)		TO-257AA	150	25	55	23	93	75	+/- 20	1C	
BUY15CS45B-01(ES)	5205 031 04	TO-254AA	150	75	23	57	180	208	+/- 20	1C	QPL
BUY15CS45B-01(P)		TO-254AA	150	75	23	57	180	208	+/- 20	1C	
BUY15CS57A-01(ES)	5205 031 02	SMD-2	150	160	9	57	224	250	+/- 20	1C	QPL
BUY15CS57A-01(P)		SMD-2	150	160	9	57	224	250	+/- 20	1C	
BUY25CS12J-01 (ES)	5205 026	SMD-05	250	42	100	12.4	50	75	+/- 20	1C	QPL
BUY25CS12J-01 (P)		SMD-0.5	250	42	100	12.4	50	75	+/- 20	1C	
BUY25CS12K-01 (ES)	5205 030 01	TO-257AA	250	42	120	12.4	50	75	+/- 20	1C	QPL
BUY25CS12K-01 (P)		TO-257AA	250	42	120	12.4	50	75	+/- 20	1C	
BUY25CS12K-11 (ES)	5205 030 02	TO-257AA	250	42	120	12.4	50	75	+/- 20	1C	QPL
BUY25CS12K-11 (P)		TO-257AA	250	42	120	12.4	50	75	+/- 20	1C	
BUY25CS45B-01 (ES)	5205 030 03	TO-254AA	250	100	45	45	180	208	+/- 20	1C	QPL
BUY25CS45B-01 (P)		TO-254AA	250	100	45	45	180	208	+/- 20	1C	
BUY25CS54A-01 (ES)	5205 027	SMD-2	250	180	25	54	214	250	+/- 20	1C	QPL
BUY25CS54A-01 (P)		SMD-2	250	180	25	54	214	250	+/- 20	1C	
BUY65CS08J-01(ES)	5205 033 01	SMD-0.5	650	23	370	8	24	75	+/- 20	1C	QPL
BUY65CS08J-01(P)		SMD-0.5	650	23	370	8	24	75	+/- 20	1C	
BUY65CS28A-01(ES)	5205 033 02	SMD-2	650	67	116	28	80	215	+/- 20	1C	QPL
BUY65CS28A-01(P)		SMD-2	650	67	116	28	80	215	+/- 20	1C	

License-free power FETs for space

Ecosystem of N- and P-channel options from -200V to 650V

IR HiRel S-line power MOSFETs

Infineon's license-free portfolio also includes a variety of N- and P-channel options rated from -200V to 250V from IR HiRel, an Infineon Technologies company. The S-line MOSFETs have the same electrical characteristics as IR HiRel's standard rad hard MOSFET portfolio.

- › TID hardness at 100 krad(Si) and 300 krad(Si)
- › SEE rating of 60 MeV•cm²/mg

All S-line rad hard MOSFETs are available in COTS and JANS-equivalent (SCS) Qualified IR List (QIRL) flow.

Part number	Package	Channel	BV _{DSS} (V)	Q _G (nC)	R _{DS(on)} (mΩ)	I _d (A)	Power dissipation (W)	Gate voltage	ESD class
IRHNA6S7264	SMD-2	N	250	220	40	50	250	+/- 20	3A
IRHMS6S7264	TO-254AA	N	250	220	41	45	208	+/- 20	3A
IRHNJ6S7234	SMD-0.5	N	250	50	210	12.4	75	+/- 20	2
IRHYS6S7234CM	TO-257AA	N	250	40	220	12	75	+/- 20	2
IRHLQ7S7214	28-Pin LCC	N	250	18	1000	2.6	12	+/- 10	1B
IRHLF7S7214	TO-205AF	N	250	18	1000	3.3	22.7	+/- 10	1B
IRHLG7S214	MO-036AB	N	250	15	1100	0.8	1.4	+/- 10	1B
IRHLNM7S7214	SMD-0.2	N	250	13	1100	3.2	23.2	+/- 10	1B
IRHNA6S7260	SMD-2	N	200	240	28	56	250	+/- 20	3A
IRHMS6S7260	TO-254AA	N	200	240	29	45	208	+/- 20	3A
IRHMB6S7260	TO-254AA	N	200	240	29	45	208	+/- 20	3A
IRHNJ6S7230	SMD-0.5	N	200	42	130	16	75	+/- 20	2
IRHYS6S7230CM	TO-257AA	N	200	42	130	16	75	+/- 20	2
IRHF6S7230	TO-205AF	N	200	45	145	9.1	25	+/- 20	2
IRHNA6S7160	SMD-2	N	100	170	10	56	250	+/- 20	3A
IRHMS6S7160	TO-254AA	N	100	170	11	45	208	+/- 20	3A
IRHNJ6S7130	SMD-0.5	N	100	50	42	22	75	+/- 20	2
IRHYS6S7130CM	TO-257AA	N	100	50	42	20	75	+/- 20	2
IRHNM7S7110	SMD-0.2	N	100	11	290	6.5	23.2	+/- 10	1B
IRHNMC7S7110	SMD-0.2	N	100	11	290	6.5	23.2	+/- 10	1B
IRHLG7S7110	MO-036AB	N	100	11	330	1.8	1.4	+/- 10	1B
IRHNA5S97160	SMD-2	P	-100	170	49	-47	250	+/- 12	3A
IRHNJ5S97130	SMD-0.5	P	-100	45	205	-12.5	75	+/- 12	1B
IRHNA5S97260	SMD-2	P	-200	180	102	-33.5	250	+/- 20	3A
IRHNJ5S97230	SMD-0.5	P	-200	45	505	-8	75	+/- 20	1C

ESD class voltage ranges

ESD class	Voltage (V)
0	<250
1A	250-499
1B	500-999
1C	1,000-1,999


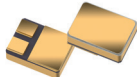
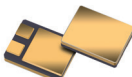
ESD class	Voltage (V)
2	2,000-3,999
3A	4,000-7,999
3B	8,000-15,999
Nonsensitive	16,000+

License-free power FETs for space


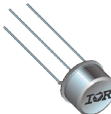
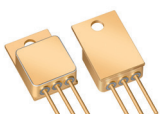

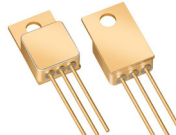
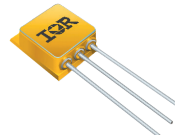
Ecosystem of N- and P-channel options from -200V to 650V

Package overview

Surface mount

SMD-0.2	SMD-0.5	SMD-2
		

Through hole

MO-036AB	TO-205AF	TO-254	Tabless TO-254
			
TO-257	Tabless TO-257		
			

Published by
Infineon Technologies AG
81726 Munich, Germany

© 2021 Infineon Technologies AG.
All Rights Reserved.

Please note!

This Document is for information purposes only and any information given herein shall in no event be regarded as a warranty, guarantee or description of any functionality, conditions and/or quality of our products or any suitability for a particular purpose. With regard to the technical specifications of our products, we kindly ask you to refer to the relevant product data sheets provided by us. Our customers and their technical departments are required to evaluate the suitability of our products for the intended application.

We reserve the right to change this document and/or the information given herein at any time.

Additional information

For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office (www.infineon.com).

Warnings

Due to technical requirements, our products may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by us in a written document signed by authorized representatives of Infineon Technologies, our products may not be used in any life-endangering applications, including but not limited to medical, nuclear, military, life-critical or any other applications where a failure of the product or any consequences of the use thereof can result in personal injury.