IOR HiRel
An Infineon Technologies Company

www.infineon.com/defense

Power MOSFETs for aerospace and defense applications

High reliability Enhanced COTS plastic package and bare die



ENHANCED COTS

Power MOSFETs for heightened reliability

Introducing Infineon IR HiRel's Enhanced COTS (commercial-off-the-shelf) family for aerospace and defense applications. Our Enhanced COTS family features high reliability plastic packaged MOSFETs and their corresponding bare die counterparts. By leveraging established commercial and automotive MOSFET designs and enhancing them for defense applications, IR HiRel transforms industry-leading devices into high reliability components that deliver the performance and quality required in aerospace and defense systems.

Our plastic packaged MOSFETs undergo a specialized solder dipping process to ensure compatibility with the stringent requirements of aerospace and defense systems. This process involves refinishing the parts with a Tin-Lead (SnPb) solder dip to prevent the formation of whiskers that can lead to shorts and other failures. Our plastic packaged MOSFETs offer a convenient and easy-to-integrate solution that are qualified to industry standards.

Our bare die line is ideal for applications requiring a higher level of customization and flexibility. Our bare die products undergo rigorous qualification and inspection procedures, including 100% visual inspection, to ensure the highest level of quality and reliability.

Benefit from the expertise and support of a trusted supplier with IR HiRel's Enhanced COTS power portfolio.

Qualification Glossary

- AEC-Q101: Automotive Electronics Council
- JEDEC: Joint Electron Device Engineering Council

ENHANCED COTS

Plastic packaged MOSFETs

Our Enhanced COTS MOSFETs are designed to deliver high performance and reliability in demanding aerospace and defense applications. They are built on Infineon's latest generation of market-leading automotive qualified high-voltage MOSFETs. Our FETs provide an integrated fast body diode and are suitable for use in PFC and various switching power supply.

Key Features

Our FETs feature ultra-low Q_{rr}, lowest FOM $R_{DS(on)}$·Q_g and $R_{DS(on)}$·E_{oss}, and 100% avalanche testing, making them ideal for high-performance applications. Additionally, they offer a Kelvin source contact, providing advanced controllability and increased efficiency. Our plastic packaged MOSFETs are qualified to the AEC-Q101 automotive standard and have undergone a specialized solder dipping process to prevent whisker formation and ensure reliable operation.

Applications

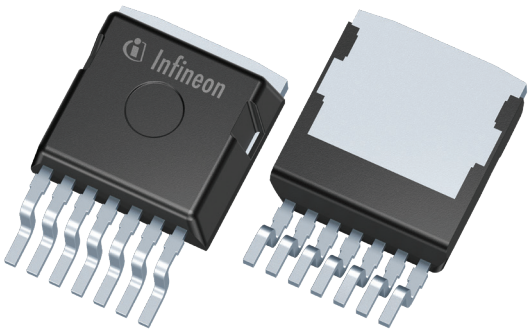
Our Superjunction (CoolMOS™) MOSFETs are optimized for applications requiring higher bus voltage in aerospace and defense applications. Infineon's CoolMOS™ technology enables lower conduction and switching losses, allowing for increased efficiency and higher switching frequencies. These devices are suitable for a variety of applications, including:

- Power Factor Correction (PFC)
- DC-DC isolated converters
- Battery chargers for onboard equipment
- Motor drives such as for pumps, fans, and servos

Our plastic packaged MOSFETs offer a reliable and high-performance solution for power management needs, with benefits including increased efficiency, advanced controllability, and high reliability. Whether you're designing a new system or upgrading an existing one, our plastic packaged MOSFETs are an ideal choice for demanding applications.

Packaging

Our 650 V FETs are offered in a PG-TO263-7-11 (D2PAK 7-pin) package, featured in the image below.



AEC Qualified

Packaged MOSFETs

650 V N-channel MOSFETs packaged in Infineon's plastic SMD.

Part Number	V_{BRDS}	$R_{DS(ON)}$ at 25°C max	I_D at 25°C max	Package	Polarity	Technology	Qual
IRXPBE65R050CFD7A	650 V	50 mΩ	45 A	PG-TO263-7-11	N	650 V Si CoolMOS™ CFD7A	AEC-Q101
IRXPBE65R075CFD7A		75 mΩ	32 A				
IRXPBE65R099CFD7A		99 mΩ	24 A				
IRXPBE65R115CFD7A		115 mΩ	21 A				
IRXPBE65R190CFD7A		190 mΩ	14 A				
IRXPBE65R230CFD7A		230 mΩ	11 A				

Additional Parts*

*Information, including key features and packaging details from previous page, do not apply to the parts listed below.

Part Number	V_{BRDS}	$R_{DS(ON)}$ at 25°C max	I_D at 25°C max	Operating Temp.	Package	Polarity	Technology	Qual
IRXFR7446TR	40 V	3.9 mΩ	56 A	-55 °C to +175 °C	PG-TO252-3-901	N	StrongIRFET™	JEDEC
IRXPT60R022S7	600 V	22 mΩ	23 A	-55 °C to +150 °C	PG-HSOF-8-2	N	600 V Si CoolMOS™ S7	
IRXF5210STRL	-100 V	60 mΩ	-38 A	-55 °C to +150 °C	PG-TO263-3-901	P	HEXFET	



ENHANCED COTS

Bare die MOSFETs

Our bare die MOSFETs offer unparalleled design flexibility and optimized size, weight, and power (SWaP) benefits. Design smaller, lighter, and more efficient power systems with our 100% visually inspected bare die.

100% visually inspected

– **CDV**: Chip Device Visual

Bare die MOSFETs

Part Number	V_{BRDS}	$R_{DS(ON)}$ at 25°C max	I_D at 25°C max	Package	Polarity
IRFC65R050CDV	650 V	50 mΩ	45 A	Bare Die	N
IRFC65R075CDV		75 mΩ	32 A		
IRFC65R099CDV		99 mΩ	24 A		
IRFC65R115CDV		115 mΩ	21 A		
IRFC65R190CDV		190 mΩ	14 A		
IRFC65R230CDV		230 mΩ	11 A		
IRFC7446CDV	40 V	3.9 mΩ	56 A		
IRFC60R022CDV	600 V	22 mΩ	23 A		
IRFC5210CDV	-100 V	60 mΩ	-38 A		P

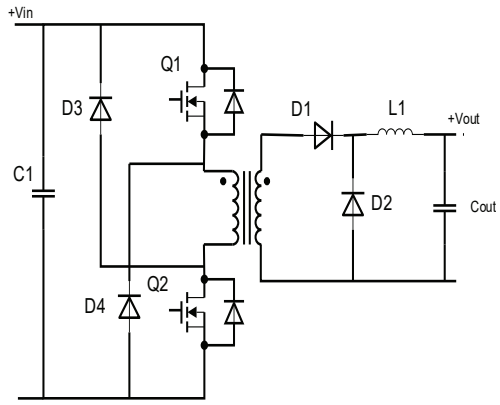
ENHANCED COTS

Block diagrams

Three sample block diagrams of our Enhanced COTS power MOSFETs in aerospace and defense systems. **Contact your regional HiRel sales representative for other complimentary power devices, such as gate drivers, current sensors, and more.**

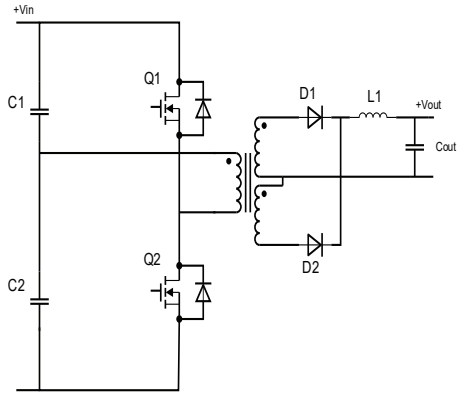
Two switch forward converter

Q1 and Q2 represent Enhanced COTS transitors



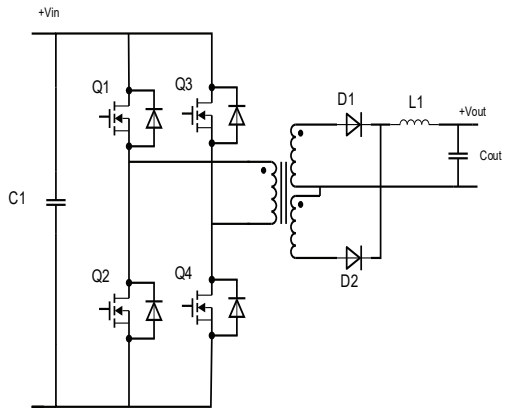
Half bridge converter

Q1 and Q2 represent Enhanced COTS transitors



Full bridge converter

Q1, Q2, Q3, and Q4 represent Enhanced COTS transitors



ADDITIONAL SERVICES

Shorten design cycles with IR HiRel services

IR HiRel's high reliability and extreme environment services deliver innovative solutions that meet the most stringent application requirements. Our unique value adds include single manufacturing flow with wafer lot traceability, upscreens, and continuity of supply programs, ensuring reliable performance and robust solutions.

- Identification and traceability
- Size, weight, and power (SWaP) benefits
- Supply longevity

Contact your regional IR HiRel sales manager for more information.



Where to Buy

Infineon distribution partners and sales offices:
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Service Hotline

Infineon offers its toll-free **0800/4001** service hotline as one central number, available 24/7 in English and German.

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Other countries	00* 800 951 951 951 (English/German)
Direct access	+49 89 234-0 (interconnection fee, German/English)

* Please note: Some countries may require you to dial a code other than "00" to access this international number, please visit www.infineon.com/service for your country!

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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.

Infineon Technologies Components may only be used in life-support devices or systems with the expressed written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety of effectiveness of that device or system.

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