



# qorvo®

## Product Selector Guide

SiC FETs, SiC JFETs and SiC Schottky Diodes

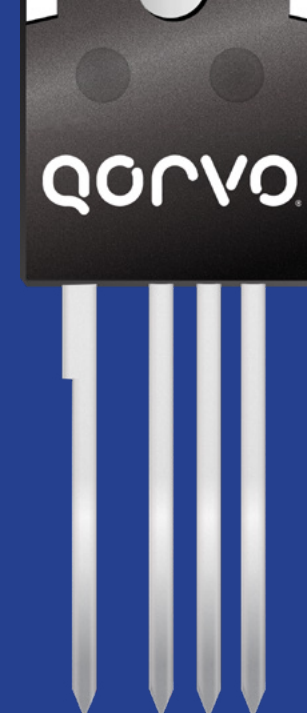
## High Performance SiC FETs, JFETs and Schottky Diodes

### Key Features

- Multiple VDS options: 650/750/900/1200/1700V
- Lowest  $R_{DS(on)}$ 
  - 6m $\Omega$  @ 750V
  - 7m $\Omega$  @ 650V
  - 9m $\Omega$  @ 1200V
- Gen 4 SiC FETs
  - 750V, 6m $\Omega$  to 60m $\Omega$  options (UJ4C/SC Series)
  - 1200V, 23m $\Omega$  to 70m $\Omega$  options (UF4C/SC Series)
- Best-in-class Figures of Merit (FoM)
  - $R_{DS(on)} \times \text{Area}$
  - $C_{oss(er)}/E_{oss} \times R_{DS(on)}$
  - $C_{oss(tr)} \times R_{DS(on)}$
  - $R_{DS(on)} \times Q_g$
- 5 $\mu$ s short-circuit withstand time @ 6m $\Omega$ , 750V
- High-performance cascode configuration
- Excellent body diode ( $V_f < 2V$ )
- Drive with any Si and/or SiC gate drive voltage
- Superior thermal performance
- Integrated ESD and gate protection
- Industry standard packages, including Kelvin source
- Majority of devices are AEC-Q101 qualified

### End Applications

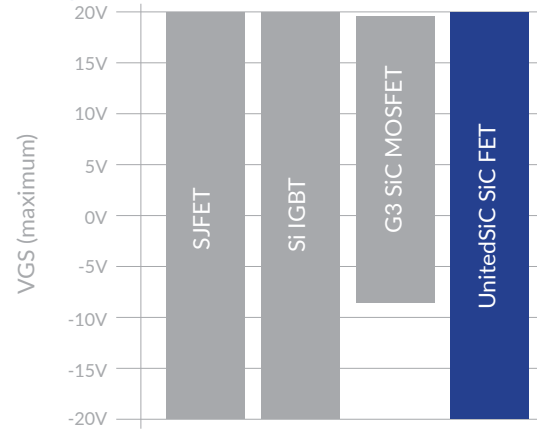
- Electric Vehicles
- Motor Drives
- On-board Chargers
- Battery Chargers
- Wireless Chargers
- DC/DC Conversion
- Telecom and Server PSU
- Circuit Protection
- Solar Inverters
- Energy Storage



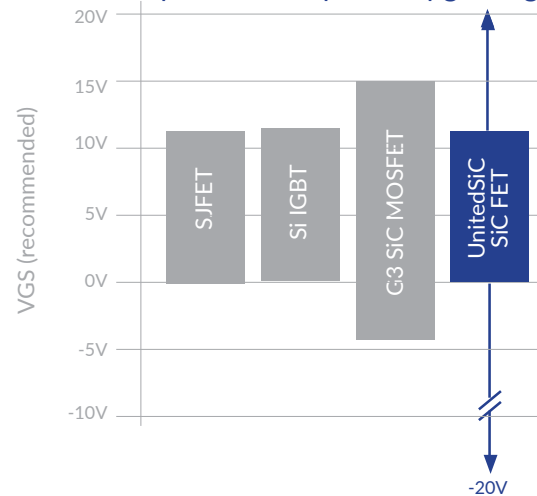
## Flexible Design Without Changing Gate Drive Voltage

- Replaces Si IGBTs, Si FETs, SiC MOSFETs or Si Superjunction devices
  - SiC FET design guidelines available to support successful upgrade
- Innovative cascode configuration enables Si and SiC gate voltage compatibility
- Integrated clamping diode protects gates from  $\pm 20V$  with built-in ESD protection

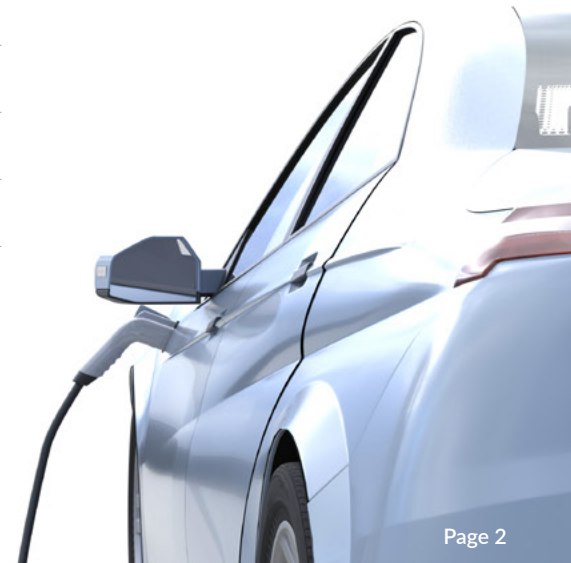
### Superior Gate and ESD Protection



### 12V/0V Operation Simplifies Upgrading



[www.unitedsic.com](http://www.unitedsic.com)



## SiC FETs

650V to 750V

UF3C/UF3SC/UJ3C/UJ4C/UJ4SC  
Series Selector Guide



TO-247-3L



TO-247-4L



D2PAK-3L



TO-220-3L



D2PAK-7L

Volt.	$R_{DS(on)}$ (m $\Omega$ ) at 25°C	$R_{DS(on)}$ (m $\Omega$ ) at 125°C	Generation	TO-247-3L	TO-247-4L	D2PAK-3L	TO-220-3L	D2PAK-7L
650V	6.7	8.8	Gen 3 Fast		UF3SC065007K4S			
	27	35	Gen 3 Fast	UF3C065030K3S <sup>(1)</sup>	UF3C065030K4S	UF3C065030B3 <sup>(1)</sup>	UF3C065030T3S <sup>(1)</sup>	UF3SC065030B7S
			Gen 3	UJ3C065030K3S		UJ3C065030B3	UJ3C065030T3S	
	42	59	Gen 3 Fast	UF3C065040K3S	UF3C065040K4S	UF3C065040B3	UF3C065040T3S	UF3SC065040B7S
	80	111	Gen 3 Fast	UF3C065080K3S <sup>(1)</sup>	UF3C065080K4S	UF3C065080B3 <sup>(1)</sup>	UF3C065080T3S <sup>(1)</sup>	UF3SC065080B7S
			Gen 3	UJ3C065080K3S		UJ3C065080B3	UJ3C065080T3S	
750V	5.9	9.8	Gen 4		UJ4SC075006K4S			
	9	14.8	Gen 4		UJ4SC075009K4S			UJ4SC075009B7S
	11	18.4	Gen 4		UJ4SC075011K4S			UJ4SC075011B7S
	18	29	Gen 4					UJ4SC075018B7S
		31	Gen 4	UJ4C075018K3S	UJ4C075018K4S			
	23	39	Gen 4	UJ4C075023K3S	UJ4C075023K4S			UJ4C075023B7S
	33	57	Gen 4	UJ4C075033K3S	UJ4C075033K4S			UJ4C075033B7S
	44	75	Gen 4	UJ4C075044K3S	UJ4C075044K4S			UJ4C075044B7S
	58	106	Gen 4	UJ4C075060K3S	UJ4C075060K4S			UJ4C075060B7S

Notes:

(1) Q(rr) for UF3C FAST device lower than equivalent UJ3C device

All data represents current information as of July, 2022. Please refer to product datasheet for specifications.

## SiC FETs

1200V to 1700V  
UF3C/UF3SC/UJ3C  
UF4C/SC  
Series Selector Guide

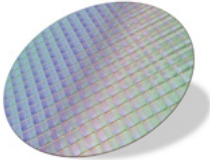


Volt.	$R_{DS(on)}$ (mΩ) at 25°C	$R_{DS(on)}$ (mΩ) at 125°C	Generation	TO-247-3L	TO-247-4L	D2PAK-3L	TO-220-3L	D2PAK-7L
1200V	8.6	13.5	Gen 3 Fast		UF3SC120009K4S			
	16	25	Gen 3 Fast	UF3SC120016K3S	UF3SC120016K4S			
	23	42	Gen 4		UF4SC120023K4S			
	30	56	Gen 4		UF4SC120030K4S			
	35	56	Gen 3 Fast	UF3C120040K3S	UF3C120040K4S			UF3SC120040B7S
			Gen 3	UJ3C120040K3S				
	53	112	Gen 4	UF4C120053K3S	UF4C120053K4S			
	70	111	Gen 3	UJ3C120070K3S				
	72	140	Gen 4	UF4C120070K3S	UF4C120070K4S			
	80	132	Gen 3 Fast	UF3C120080K3S	UF3C120080K4S			UF3C120080B7S
			Gen 3	UJ3C120080K3S <sup>(1)</sup>				
	150	254	Gen 3 Fast		UF3C120150K4S			UF3C120150B7S
			Gen 3	UJ3C120150K3S				
	410	775	Gen 3 Fast	UF3C120400K3S				
1700V	410	775	Gen 3 Fast	UF3C170400K3S				

Notes:

(1) The UJ3C120080K3S is not recommended for new designs. UJ3C120070K3S is recommended as a replacement. Please contact UnitedSiC sales for recommended device support at [sales@unitedsic.com](mailto:sales@unitedsic.com)  
All data represents current information as of July, 2022. Please refer to product datasheet for specifications.

SiC JFETs



UJ3N/UF3N Series Selector Guide

						
Voltage	R <sub>DS(on)</sub> (mΩ)	I <sub>D</sub> max (A) at 25°C	Generation	Wafer (Contact Sales)	TO-247-3L	D2PAK-7L
1700V	1100	3.4	Gen 3	UJ3N1701K2		
	400	6.8	Gen 3 Fast			UF3N170400B7S
	400	8 (1)	Gen 3 Fast	UF3N170400		
1200V	140	20 (1)	Gen 3 Fast	UF3N120140		
	70	33.5	Gen 3	UJ3N120070	UJ3N120070K3S	
	66	34	Gen 3		UJ3N120065K3S	
	35	63	Gen 3	UJ3N120035	UJ3N120035K3S	
900V	735	4 (1)	Gen 3 Fast	UF3N090800		
	330	8 (1)	Gen 3 Fast	UF3N090350		
650V	580	4 (1)	Gen 3 Fast	UF3N065600		
	265	8 (1)	Gen 3 Fast	UF3N065300		
	80	32	Gen 3	UJ3N065080	UJ3N065080K3S	
	25	85	Gen 3	UJ3N065025	UJ3N065025K3S	

Notes:  
(1) Limited by bondwire.  
Advanced information for wafer parts, please refer to product datasheet for specifications.

## SiC Schottky Diodes

### UJ3D Series Selector Guide

					
Voltage	Current Rating	Generation	TO-220-2L	TO-247-3L	TO-247-2L
1700V	25A	Gen 3			UJ3D1725K2
1200V	2A	Gen 3	UJ3D1202TS		
	5A	Gen 3	UJ3D1205TS		
	2 x 5A	Gen 3		UJ3D1210KSD	
	10A	Gen 3	UJ3D1210TS	UJ3D1210KS	UJ3D1210K2
	2 x 10A	Gen 3		UJ3D1220KSD	
	20A	Gen 3			UJ3D1220K2
	50A	Gen 3		UJ3D1250K	UJ3D1250K2
650V	4A	Gen 3	UJ3D06504TS		
	6A	Gen 3	UJ3D06506TS		
	8A	Gen 3	UJ3D06508TS		
	10A	Gen 3	UJ3D06510TS		
	12A	Gen 3	UJ3D06512TS		
	16A	Gen 3	UJ3D06516TS		
	2 x 10A	Gen 3		UJ3D06520KSD	
	20A	Gen 3	UJ3D06520TS		
	30A	Gen 3	UJ3D06530TS		
	2 x 30A	Gen 3		UJ3D06560KSD	

Notes:

For all die inquiries, contact sales@unitedsic.com

All data represents current information as of July 2022. Please refer to product datasheet for specifications.

# FETJet™ CALCULATOR

Start Designing Now - Make quick and confident data-driven design decisions

New tool allows you to evaluate UnitedSiC devices in 26 unique circuit topologies to:

- Instantly select optimal SiC device
- Get accurate loss and thermal estimates
- Get optimal gate drive and snubber recommendations
- Easily download design data to PDF



[unitedsic.com/fet-jet](https://unitedsic.com/fet-jet)





Get Started Now - UnitedSiC provides extensive resources to help get your new design on the right track



[FET-Jet Calculator](#)



[Technical Blog](#)



[Part Decoder](#)



[App Notes/User Guides](#)



[White Papers](#)



[Videos/Webinars](#)

Additional technical content supporting the move to higher performance SiC power designs can be found [HERE](#)



# SWEET SPOT

With our new **1200V Gen 4 SiC FETs**, it's never been easier to hit your power design sweet spot.



**UF4C/SC Series**  
1200V Gen 4  
SiC FETs

- $R_{DS(on)}$ : 23/30/53/70m $\Omega$  options
  - Industry's lowest  $R_{DS(on)}$  x Area
  - Industry best FoMs: Low  $Q_g$ ,  $E_{oss}$ , and  $C_{oss(tr)}$
  - Simple 0-12V, 0-15V gate drive, compatible with Si MOSFET, IGBT, SiC MOSFET gate drive voltages
  - Superior thermal performance
  - Industry standard 3- and 4-lead TO-247 packages
- Learn how to drive superior SiC FET performance at [unitedsic.com/gen4](https://unitedsic.com/gen4)

**FETJet™**  
CALCULATOR

Test these new FETs in 26 different power topologies.

► [info.unitedsic.com/fet-jet](https://info.unitedsic.com/fet-jet)

**qorvo**®

© 2022 Qorvo US, Inc. All rights reserved



# TOWERING EFFICIENCY

Seven new D2PAK-7L 750V SiC FETs, ranging from **11mΩ to 60mΩ**, deliver **design flexibility with multiple options** optimized for high-power applications requiring maximum efficiency and excellent cost-effectiveness in a thermally enhanced SMT package.



## UJ4C/SC Series

750V Gen 4 SiC FETs

► [unitedsic.com/gen4](https://unitedsic.com/gen4)

**FET-Jet™**  
CALCULATOR

Use our FET-Jet Calculator™ to quickly evaluate these new FETs in 26 different power topologies.

► [info.unitedsic.com/fet-jet](https://info.unitedsic.com/fet-jet)

**Qorvo**®

© 2022 Qorvo US, Inc. All rights reserved

Distribution  
Partner



800.348.5580  
630.208.2200



[rellpower.com](https://rellpower.com)  
[rellpower@rell.com](mailto:rellpower@rell.com)





Distribution Partner



800.348.5580 | 630.208.2200



rellpower.com | rellpower@rell.com  
rellpower.com/locations

For over 75 years, Richardson Electronics has been your industry-leading global provider of engineered solutions. We are an authorized distributor that provides specialized technical expertise and engineered solutions based on our core engineering and manufacturing capabilities. We provide solutions and add value through design-in support, systems integration, prototype design and manufacturing, testing, logistics, and aftermarket technical service and repair-all through our existing global infrastructure.

We are proud to announce our new partnerships with manufacturers of leading edge and disruptive technologies. These technologies drive the latest innovations for our customers.



650 College Road East  
Princeton, NJ 08540

Phone: (732) 355-0550  
FAX: (732) 355-0522

Get Datasheets, Appnotes  
and other design resources at  
[unitedsic.com](https://unitedsic.com).

© 2022 United Silicon Carbide, Inc. All rights reserved. UnitedSiC and the UnitedSiC logo are trademarks of United Silicon Carbide, Inc., in the United States and other jurisdictions throughout the world.

All information on this document is our best estimate. United Silicon Carbide, Inc. and its subsidiaries (UnitedSiC) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to UnitedSiC's terms and conditions of sale supplied at the time of order acknowledgment.