IceMOS Technology

High Voltage Power MOSFETs
Product Brochure

https://www.icemostech.com

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Features of Power MOSFETs:

- High Voltage
- Low On-Resistance
- Ultra Low Gate Charge
- High dv/dt Capability
- High UIS capability
- High peak current capability
- Increased transconductance performance

Applications:

- **Power Supplies**
- **IT hardware : data center, servers, cloud, lap**
- **Lighting: HID lamp and LED lamp**
- **LED TV drivers and power supplies**
- **Electric and hybrid cars**
- **Solar Inverters**
- **Chargers, UPS**

Silicon Super Junction Applications

SMPS

UPS

Home Appliances

PC Power Supply

SiC Applications

Electric Vehicles

Solar inverters

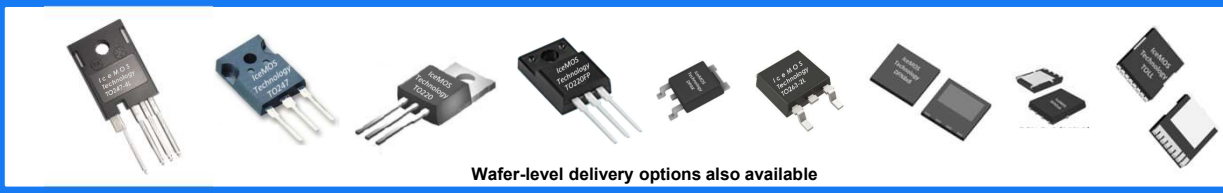
Industrial Motor Drives

Renewable Energy

Packages:

- Compliant RoHS (EU)2015/863
- Lead Free (Pb free)
- Halogen Free
- Green Mold

RoHS COMPLIANT EU 2015/863 | LEAD FREE | HALOGEN FREE



Wafer-level delivery options also available

TO247-4L | TO247 | TO220 | TO220FP | DPAK | D2PAK | DFN8x8 | DFN5x6 | TOLL

Selection Guide

Si Super Junction MEMS SJ & K-Series Advantages

Application-Specific Efficiency: Optimized for high-voltage operation in PFC and industrial inverter applications.
Optimized Cost-Performance: Provides significant performance gains over Si DMOS at a lower price point than SiC alternatives.
Simplified Design-In: Compatible with existing Si MOSFET footprints, reducing engineering overhead and time-to-market.

M-Series SiC Performance Benefits

Optimized Performance: Features outstanding thermal stability and high-voltage efficiency for EV and industrial power conversion.
Proven Reliability: Built for longevity and consistent performance under harsh mission-critical conditions.
High-Frequency Capability: Facilitates reduced magnetic footprints, allowing for more compact and lightweight system architectures

Characteristic	Si DMOS	Si Superjunction		SiC	GaN
		MEMs SJ	K series	M series	
Switching Frequency	△	○	◎	○	◎
Efficiency (Low Loss)	△	◎		◎	◎
High-Temperature Rating	△	○		◎	○
Cost	◎	○	◎	×	△
High-Voltage Capability	△	◎		◎	○
High-Current Capability	○	○		◎	△
Gate-Drive Simplicity	◎	○		△	△
Layout Flexibility	○	○		○	◎
Feature		Robust EAS	Fast recovery	High Voltage	

◎=Excellent O=Good、 △=Needs Improvement, X=Poor/Unsatisfactory

Power MOSFETs

Device Type	Product	BVDSS Min. (V)	ID Max. (A)	RDSON Max. (mΩ)	Qg Typ. (nC)	FOM (Ω· nC)	Trr/Qrr (ns)/(us)	Package
MEMS SJ GEN1 Robust UIS	ICE47N60	600	47	68	189	12.85	552/12	W,C
	ICE60N130	600	25	150	84	12.6	440/8	TO,FP,W,C
	ICE22N60	600	22	160	84	13.44	440/8	TO, B ,W
	ICE20N170	600	20	199	59	11.74	358/6.8	TO,FP,W,C,B
	ICE20N60	600	20	190	59	11.21	358/6.8	TO,FP,W,B,C
	ICE19N60	600	19	220	59	12.98	358/6.8	L8x8
	ICE15N73	730	15	350	75	26.25	383/7.0	TO,FP,W,T
	ICES15N60	600	15	240	52	12.48	318/5.3	TO,FP,L8X8,T
	ICE13N60	600	13	270	48	12.96	285/4.2	TO,FP,L8X8,T
	ICE11N70	700	11	250	84	21	408/7.5	TO,FP,W,B,C
	ICE10N60	600	10	330	43	14.19	303/4.21	TO,FP,W,B,L8x8
	ICES10N60	600	10	360	40	14.4	281/3.9	D
	ICE8N60	600	8	520	32	16.64	194/2.2	TO,FP,W,B,L8X8,T,D,LK
MEMS SJ GEN2 Good FOM	ICE32S60	600	32	78	47	3.67	400/6.8	TO,FP,W,C
	ICE25S65	650	25	133	34	4.52	326/5.6	TO,FP,W,C,B
	ICE24S65	650	24	141	34	4.79	326/5.6	L8x8
	ICE15S60	600	15	175	30	5.25	300/4	TO,FP,W,C,B
	ICE14S65	650	14	195	24	4.68	300/4	TO,FP,W,C,B
	ICE8S65	650	7.8	400	11.5	4.6	308/2	TO,FP,W,B,C,D,L5x6
Silicon SJ K series FAST Recovery	*ICEK55NF60	600	55.1	38	136	5.17	130/0.8	T, TO
	*ICEK49NF60	600	49.1	45	117	5.27	132/1.0	T,W,TO
	*ICEK42NF60	600	42	58	95	5.51	90/0.8	W, TO,T
	*ICEK35NF60	600	35	68	83	5.64	111/0.6	TO , W
	*ICEK16NF60	600	16	180	32	5.76	83/1.0	D,FP
	*ICE26NF65	650	25.6	99	48	4.75	114/0.7	T,W
	*ICEK15NF65	650	15.1	190	32	6.08	66/0.6	TO,D,FP
	*ICEK11NF65	650	10.5	290	22	6.38	71.5/0.29	TO220
	*ICEK9NF65	650	9.1	360	20	7.2	59/0.35	D , FP
	*ICEK6NF65	650	6	600	14	8.4	62/0.33	D
SiC M series High Blocking Voltage	*ICE38M65T	650	55	55	59	3.25	13/0.208	T
	*ICE10M75	750	152	13	140	1.82	21.0.500	W4
	*ICE26M75	750	65	35	49	1.72	8/0.170	T
	*ICE166M75	750	11.6	216	11.4	2.46	26/0.089	D,FP
	*ICE13M120	1200	118	16.5	210	3.47	37/2.2	W4
	*ICE14M120	1200	111	19	165	3.14	15/0.379	W4
	*ICE16M120	1200	112	22	279	6.14	33/0.842	W4
	*ICE31M120	1200	57	40	63	2.52	8/0.217	W4
	*ICE12M140	1400	124	15.4	177	2.73	19/0.368	W4
	*ICE20M150	1500	87	25	103	2.58	12/0.0005	W4
	*ICE33M150	1500	56	43	90	3.87	12/0.258	W4
	*ICE128M150	1500	19	166	24	3.98	18/0.186	W4
Low Voltage 30V - 150V	Also available for secondary-side synchronous rectification and battery Management: 100+ MOSFETs (30V-150V)							

Package Codes: TO=TO220, FP=Full Pak*, W=TO247*, W4-4L, D=TO252,DPAK, L=DFN88 , LK=DFN56, B=TO263 D2PAK, T=TOLL

* In qualification; samples available upon request

Device Selection Guide by Power Topology & Application

Topology	Typical Output Power	Recommended IceMOS Device			Applications
		MEMs SJ GEN1/GEN2	Fast Recovery K Series	SiC M Series	
Flyback	<150W	ICE10N60 ICE20N60 ICE8S65	ICEK6NF65 ICEK9NF65 ICEK15NF65	(Not typically required)	Cost-optimized AC-DC adapters, auxiliary power
Forward	150～400 W	ICE20N60 ICE32S60 ICE25S65	ICEK15NF65 ICEK35NF65	ICE10M75	Industrial/telecom DC-DC, mid-power AC-DC
LLC Half Bridge	300～800 W	ICE47N60 ICE60N130 ICE25S65	ICEK35NF65 ICE42NF60	ICE20M150 ICE31M120	High-efficiency server/industrial power supplies
Full Bridge(Inverter)	800 W～2 kW	ICE47N60 ICE60N130	ICE42NF60	ICE26M75 ICE128M150	High-power DC-DC, EV chargers, industrial supplies
Boost / Totem-Pole PFC	500 W–3 kW+	ICE47N60 ICE60N130	ICE42NF60	ICE20M150 ICE31M120 ICE128M150	High-efficiency front-end PFC, server/EV charging
Inverter (Motor / PV / Industrial)	11kW – >50 kW	SJ for cost-sensitive designs	SiC diode optional	ICE26M75 ICE31M120 ICE128M150	High-temperature, high-voltage, high-reliability applications
Secondary Rectification / Low Voltage DC-DC	Wide Range	Low Voltage Portfolio (30V - 150V)			ORing diodes, 48V Telecom, BMS (Battery Mgmt.)

Information subject to change. See the product datasheet for essential notes and disclaimers.

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Power MOSFET Production Designs

Asymmetrical ZVS Flyback circuit for 300W with PFC

Dual Flyback for 50W LTE Router

200W Half Bridge LLC Resonant Soft Switching ZVS

IceMOS SJ MOSFETs & Advanced Engineering Substrates

MOSFETs: IceMOS is a global innovator in Power Electronics. We design and manufacture high-voltage Super Junction (SJ) MOSFETs, providing energy-efficient solutions for the industrial, medical, automotive, and telecommunications sectors. We are dedicated to shaping a limitless, sustainable future.

Advanced Engineering Substrates: IceMOS Technology is a global semiconductor leader operating a proprietary fabrication facility in Belfast, Ireland. We deliver advanced Engineering Substrates that drive millions of smart, connected applications, transforming the way people work and live. Our substrates enhance speed, efficiency, and reliability across microelectronics, power devices, MEMS sensors, and photonics.

Patents : IceMOS owns intellectual property with 70+ granted and 15+ pending patents, powering our core technologies and process licenses, based on this IP.

Regulatory Compliance: Our products are RoHS and REACH compliant. We maintain a conflict-free supply chain and do not use minerals sourced from conflict zones.

IceMOS Worldwide Locations

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Engineered Substrate Sales:

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Scan the QR code to view our SJ MOSFET Production Selection Table