Brückewell

Company Sales Presentation 2025

www.bruckewell-semi.com

Editor: Henry Yeh

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Zhubei City, Hsinchu County ,302044

PHONE

TEL: +886-3-6673276
FAX: +886-3-6673226

Company Description

LOGO Significance

Brückewell

Bruckewell comes from the German "Brücke" , meaning "bridge" and English "well"

To become synonymous with technical innovation and timely marketing partner

The green leaf symbol reflects taking an active part in health & safety and protecting the environment as our responsibility

We are discrete-semi professional

Established in 2008
Employees: 25

Discrete Wafer Design
Own-Brand Device
Exceptional Value

Location:
Taiwan headquarters
Taiwan Wafer Test/ Hi-Rel Lab
China branch Corp/ Sales Office

We pride ourselves in our expertise in all areas of power semiconductor technology and business operations, our technical team that from Vishay & Infineon contributes over 25 years expertise in power semiconductor.

Our Products

01

Diode
Silicon Diodes

Description:

Standard/ Fast/ Schottky

TVS/ Zener/ ESD Protector

02

Transistor
Silicon MOSFET/IGBT

Description:

Unipolar

20~300V N/P MOSFET

600V up HV MOSFET

Small Signal MOSFET

Bipolar

Low Losses, 650-1200V IGBT

Automotive Grade IGBT

03

Wide Band Gap
Silicon Carbide Gallium Nitride

Description:

SiC-SiC, GaN-Si, GaN-Sapphire

SiC Schottky Diode

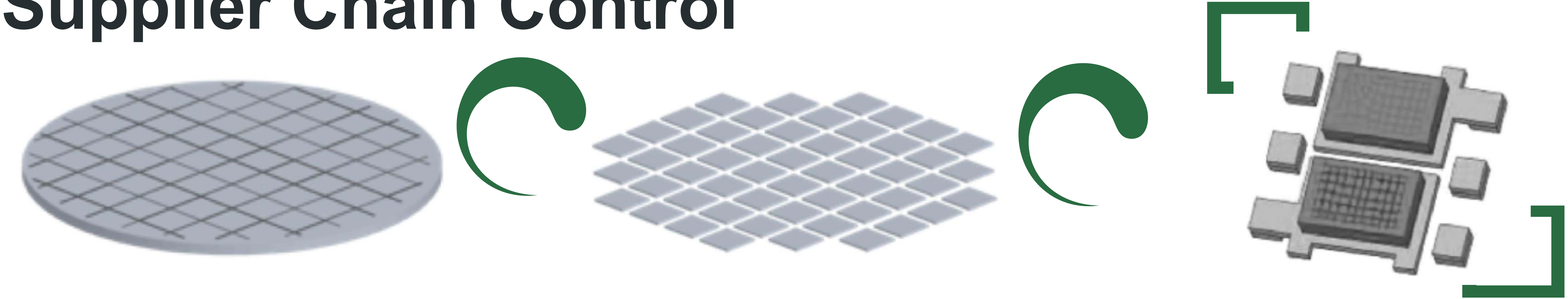
SiC MOSFET

SiC series Module

650V GaN-S HEMT

650V GaN-S **IC**

Supplier Chain Control



Semiconductor Wafer Process

Taiwan/ China

POWERCHIP (Taiwan)
MOSEL / EPISIL(Taiwan)
Vanguard Semi (Taiwan)
GTA (China)

Wafer Testing and dicing

Taiwan/ China

Bruckewell (Taiwan)
Micro Silicon (MSEC) (Taiwan)

Assembly & Package

Taiwan, China/ ASEAM

gEM (China)
JCET (China)
HUATIAN (China)
FENGHUA (China)
Cirtek/ IMI (Philippines)
AIC (Malaysia)

Quality Compliance

RoHS Compliant

Halogen Free

TÜVRheinland CERTIFIED

CERTIFIED ISO 9001:2015 COMPANY

MATERIAL DATA SYSTEM

IMDS for Automotive

TÜV NORD

Bruckewell Technology Co., Ltd.
13F., No. 251, Dong Sec. 1, Guangming 6th Rd.,
Zhubei City, Hsinchu County, 302044 Taiwan

Date : 19.06.2024
Your ref. : --
Our ref. : TWR2406012 001

Attn: Ms. Olive Hung

Notification of test results

Product name : Electrical components (Discrete Semiconductors, MOSFETs)
Type designation : MSH100N045SAAU
Report no. : TWR2406012 001
Test methods: : AEC - Q101 - Rev – E, March 1, 2021

Dear Sirs:

The application to fulfill AEC - Q101 - Rev – E is filed in March, 2024 and the above-mentioned testing sample is complied with the requirements of AEC - Q101 - Rev – E.

We appreciate your kind support and would like to offer our assistance and continuous services in the future.

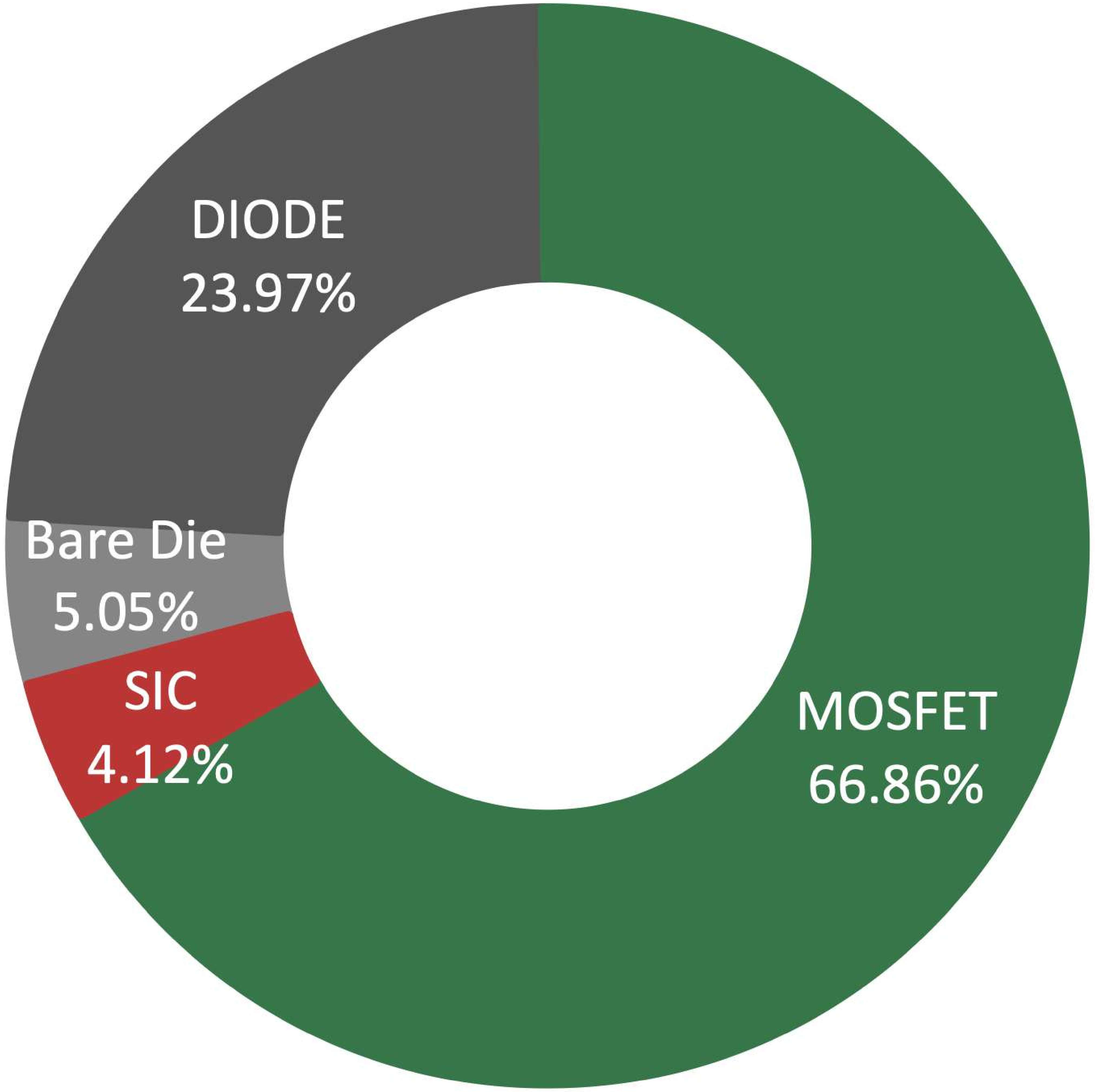
Yours sincerely,
TUV NORD Taiwan Co., Ltd.

Jack Liao
Manager
Product Certification

AEC-Q101
Qualification or Certification

Revenue by Products($USD)

2025



In 2025, MOSFETs remain the primary revenue driver, accounting for 66.86% of total sales, supported by strong demand in servers, motor control, and automotive applications.

Bare Die / Module products represent 5.05%, mainly driven by custom packaging requirements for industrial and automotive platforms. Notably, SiC Diodes / MOSFETs now account for 4.12% of revenue, showing significant growth from the previous year. In high-efficiency applications such as AI servers and electric vehicles (EVs), and their transition into volume production.

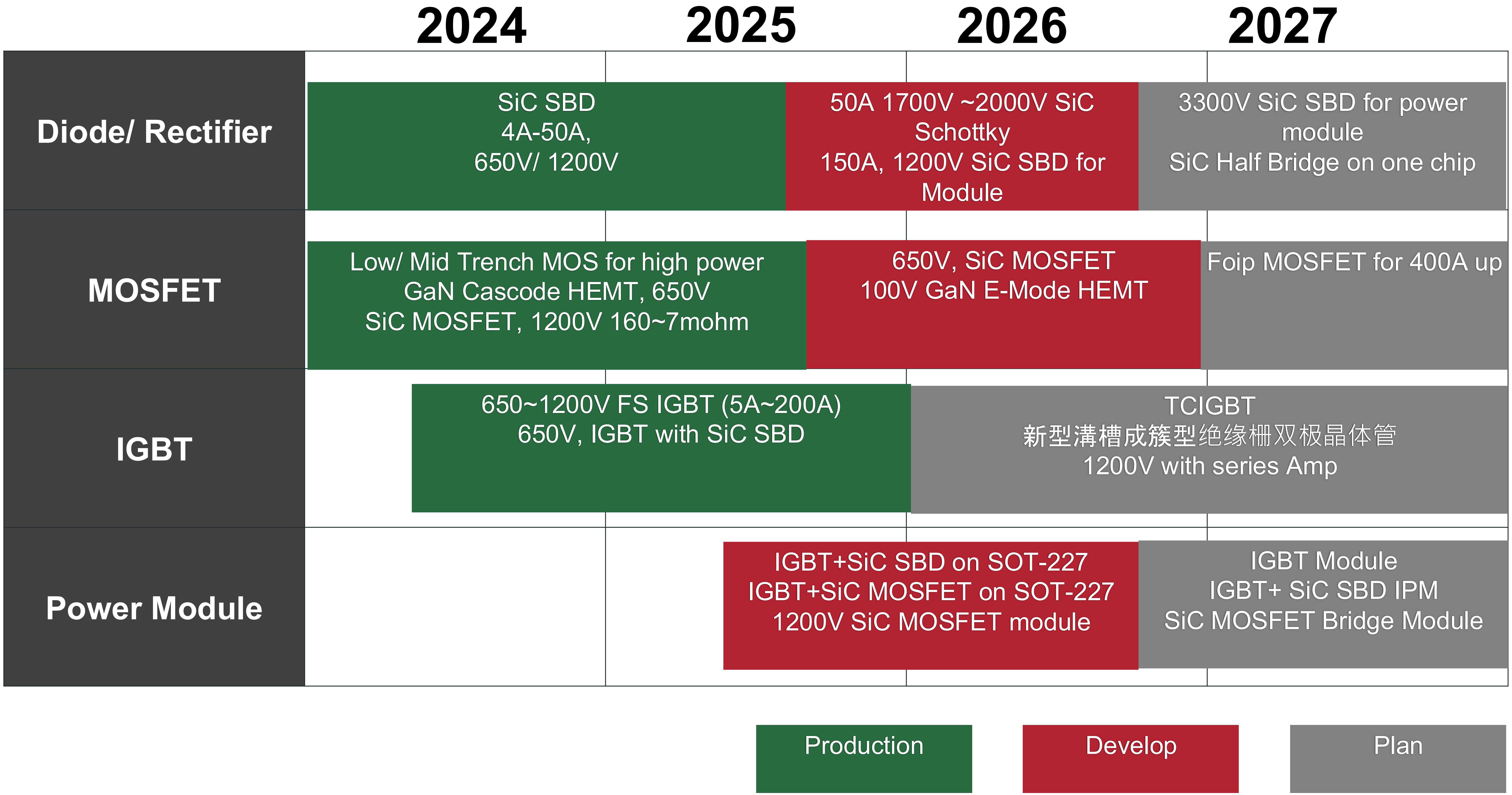
1 **MOSFETs**

2 **Diodes**

3 **Bare Die / Module**

4 **SiC Diodes/ OSFET**

New Product Roadmap



2024 2025 2026 2027

Diode/ Rectifier

SiC SBD
4A-50A,
650V/ 1200V

50A 1700V ~2000V SiC Schottky
150A, 1200V SiC SBD for Module

3300V SiC SBD for power module
SiC Half Bridge on one chip

MOSFET

Low/ Mid Trench MOS for high power
GaN Cascode HEMT, 650V
SiC MOSFET, 1200V 160~7mohm

650V, SiC MOSFET
100V GaN E-Mode HEMT

Foip MOSFET for 400A up

IGBT

650~1200V FS IGBT (5A~200A)
650V, IGBT with SiC SBD

TCIGBT
新型溝槽成簇型绝缘柵双极晶体管
1200V with series Amp

Power Module

IGBT+SiC SBD on SOT-227
IGBT+SiC MOSFET on SOT-227
1200V SiC MOSFET module

IGBT Module
IGBT+ SiC SBD IPM
SiC MOSFET Bridge Module

🟩 Production
🟥 Develop
▨ Plan

Revenue by key application - 2025

($USD)

Electronics & Others 34%

Power Adapter

(USB-PD / SiC/ GaN)

Power Tools

Major Appliances

Automotive 51%

Electric Motorcycle

Car Compressor, Motor

BMS / OBC / DC-DC

Industrial 15%

Server Power Supply

(AI / Cloud VRM、PFC、LLC)

Industrial power supply

（SMPS、PLC、Robot）

PV inverter

ESS

Corresponding product line

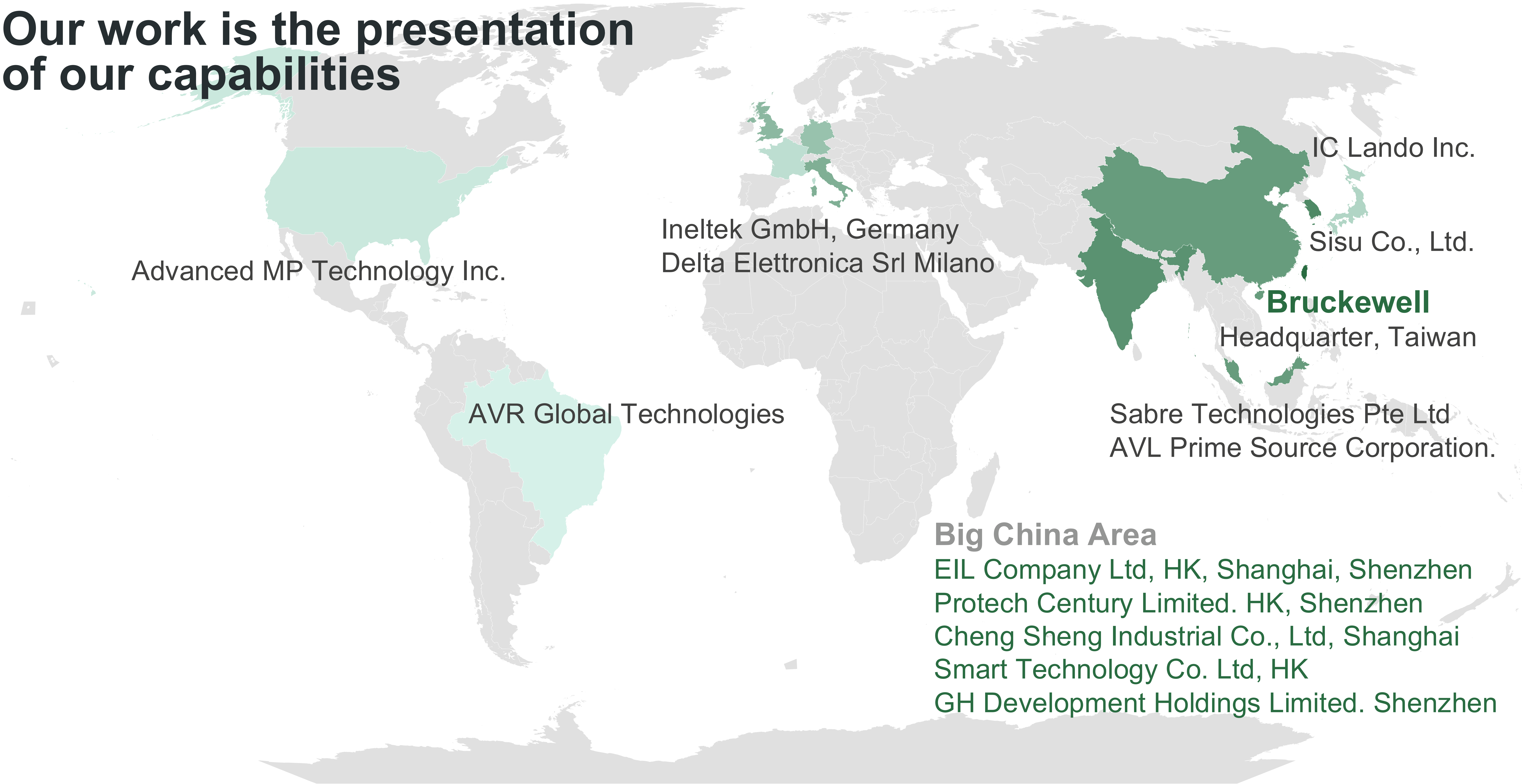
GaN HEMT、
Si MOS、Diode

AEC-Q 認證
Si MOS/ Diode、
SiC MOS/ Diode 、IPM

Si MOSFET、SiC MOSFET、
IGBT、Hybrid Module

Regional Distributors **Presence**

Our work is the presentation of our capabilities



Advanced MP Technology Inc.

AVR Global Technologies

Ineltek GmbH, Germany
Delta Elettronica Srl Milano

IC Lando Inc.

Sisu Co., Ltd.

Bruckewell
Headquarter, Taiwan

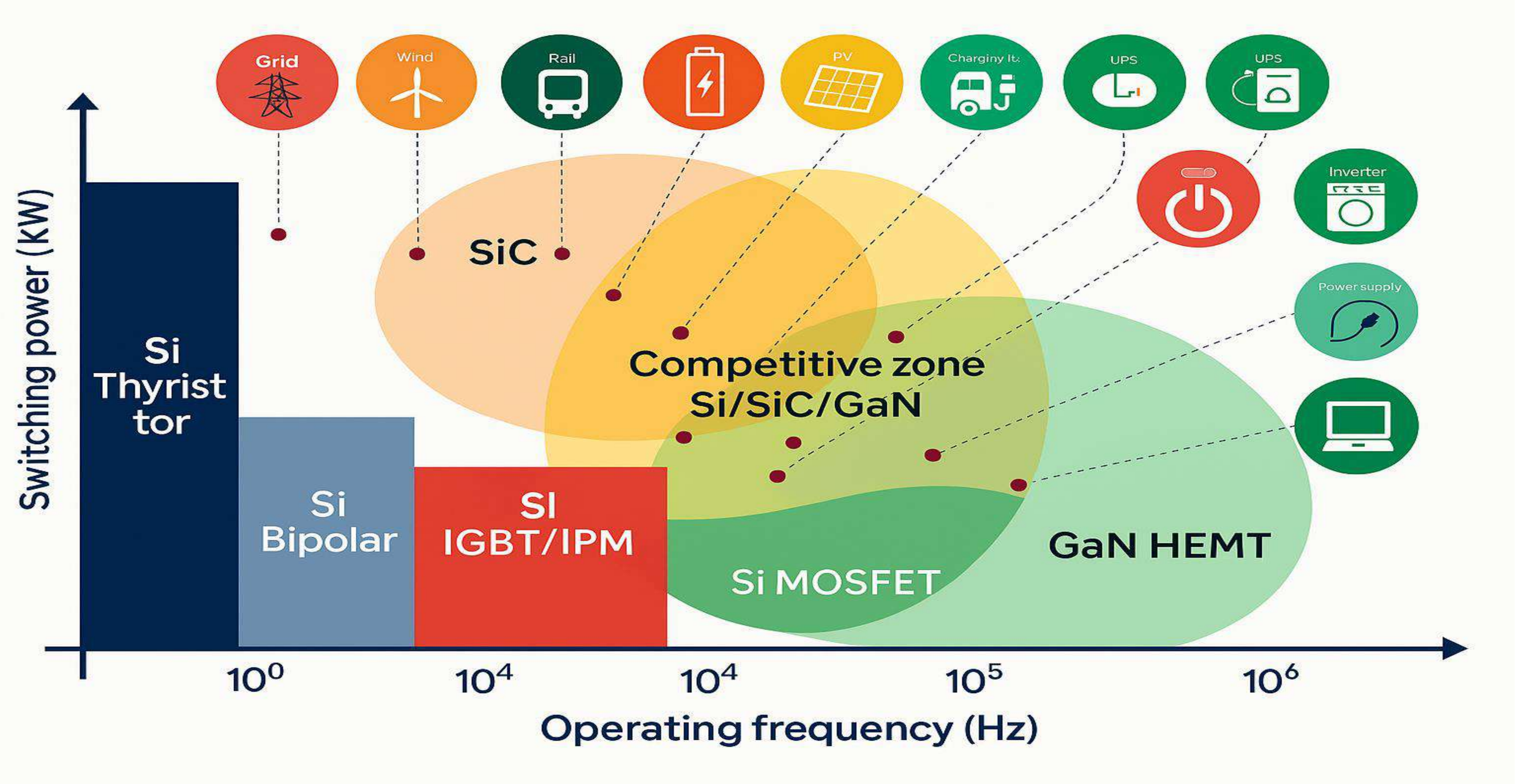
Sabre Technologies Pte Ltd
AVL Prime Source Corporation.

Big China Area
EIL Company Ltd, HK, Shanghai, Shenzhen
Protech Century Limited. HK, Shenzhen
Cheng Sheng Industrial Co., Ltd, Shanghai
Smart Technology Co. Ltd, HK
GH Development Holdings Limited. Shenzhen

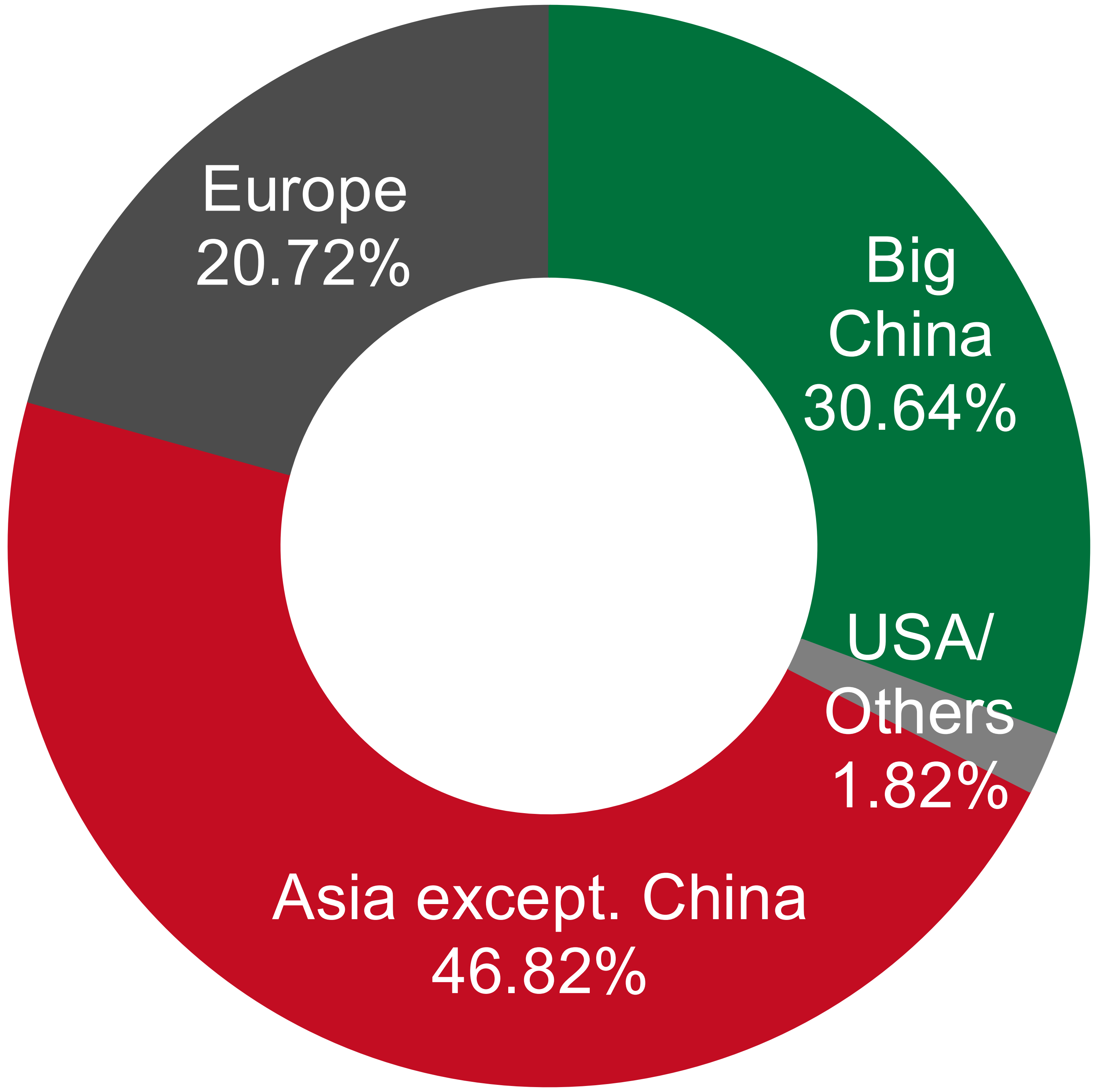
由 Bing 提供

Market
Analysis

Power semiconductor market from Yole report



Sales by regional and key customers



USA

NOVOMATIC

vossloh
enabling green mobility

emz
smart solutions

AVL
DITEST

Europe

ABB

DIEHL
Metering

KÄRCHER

BYD

China

**Headquarter
Taiwan**

Korea

Japan

BOSCH

ASEAN

motorola

Key customers

HYUNDAI

Nidec

LS Automotive

KIA

GMB

Clarion

UNICK

SL

SHARP

Key EMS

HOTAYI

NationGate

FOXCONN®

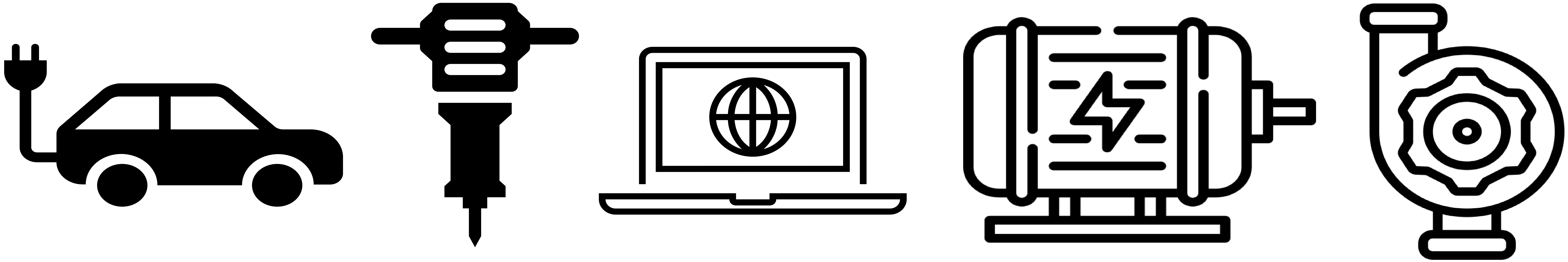
SISU
SISU
SISU

DigiKey

High Power MOSFETs Application

Silicon high power density MOS-40V

BVDSS	RDSON	ID	Package
MSH40N032(AU)	3.2mohm	90A	DFN 5X6
MSHM40N027(AU)	2.7mohm	100A	DFN 3X3
MSHM40N021(AU)	2.1mohm	130A	DFN 3X3
MSH40N020(AU)	2.0mohm	160A	DFN 5X6
MSH40N01(AU)	1.7mohm	180A	DFN 5X6
MSH40N11(AU)	0.8mohm	265A	DFN 5X6
MSHL40N008(AU)	0.5mohm	455A	DFN 8X8

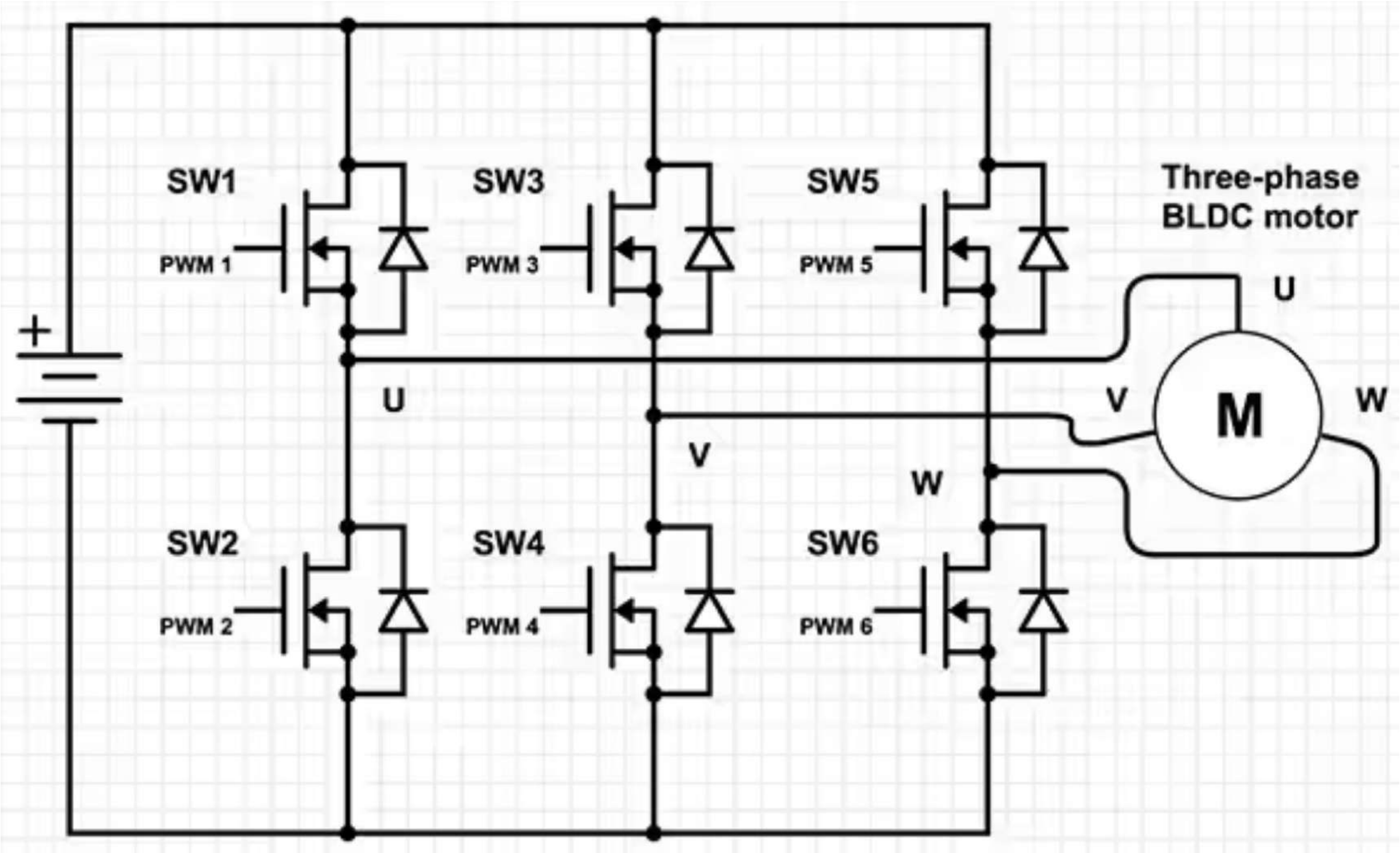


MOSFET IPM for BLDC Application

three-phase BLDC motor is typically powered by three pairs of MOSFETs arranged in a bridge structure and controlled by PWM. PWM offers precise control over the motor's speed and torque.

The major space of PCB is from the six MOSFET.

Using the MSIE40N150 that six MOS in one package to save space



RDS(on) 2.2mohm @10V

Save Space

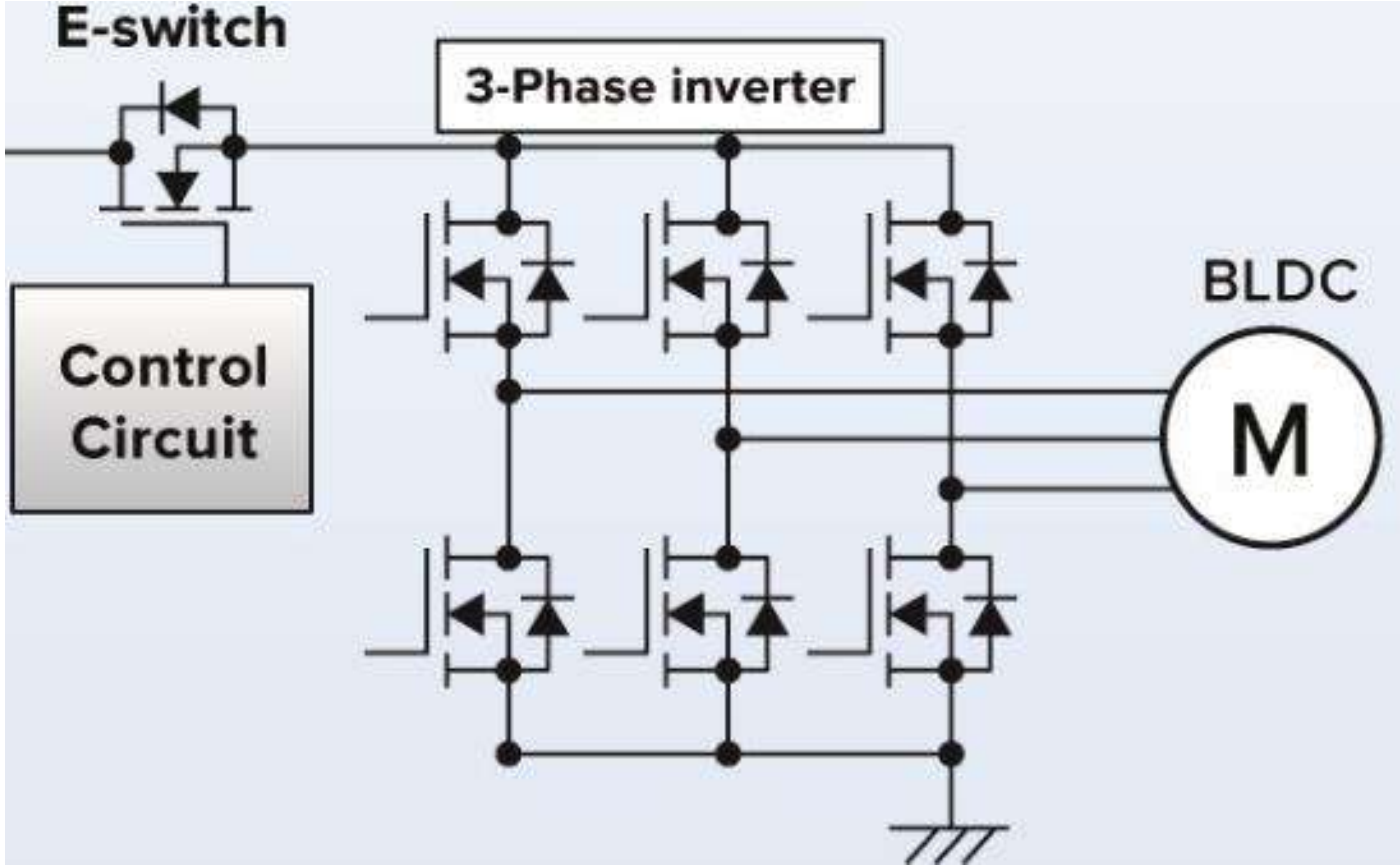
DFN 14X12

14mmX12mm

MOSFET IPM for Power Drill

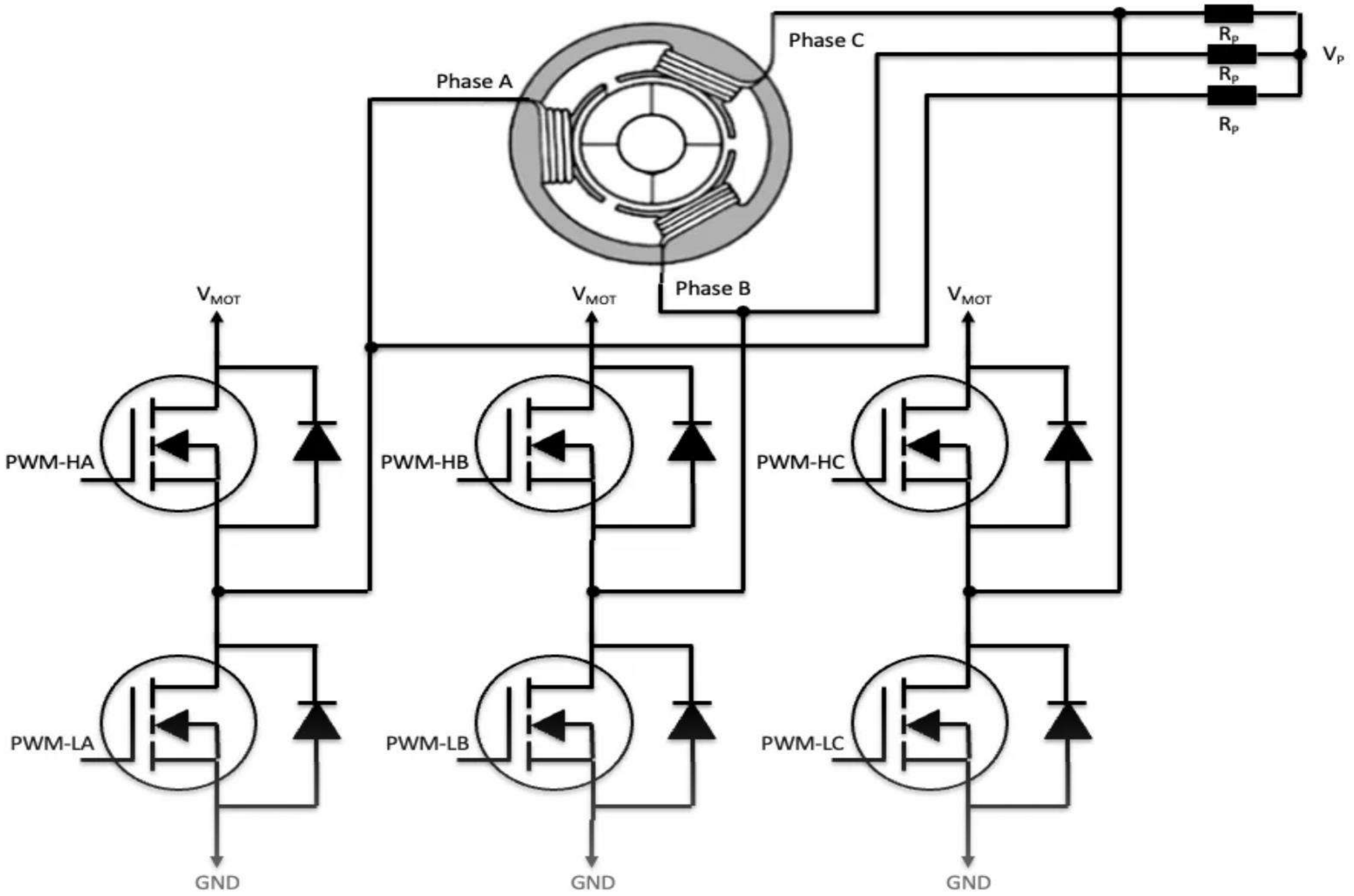
Power Drill

18~36V



Estimated 6~12pcs 40V MOSFETs
Using one DFN 14X12 to replace it

In ESC motor control, the topology is fixed — six switches.

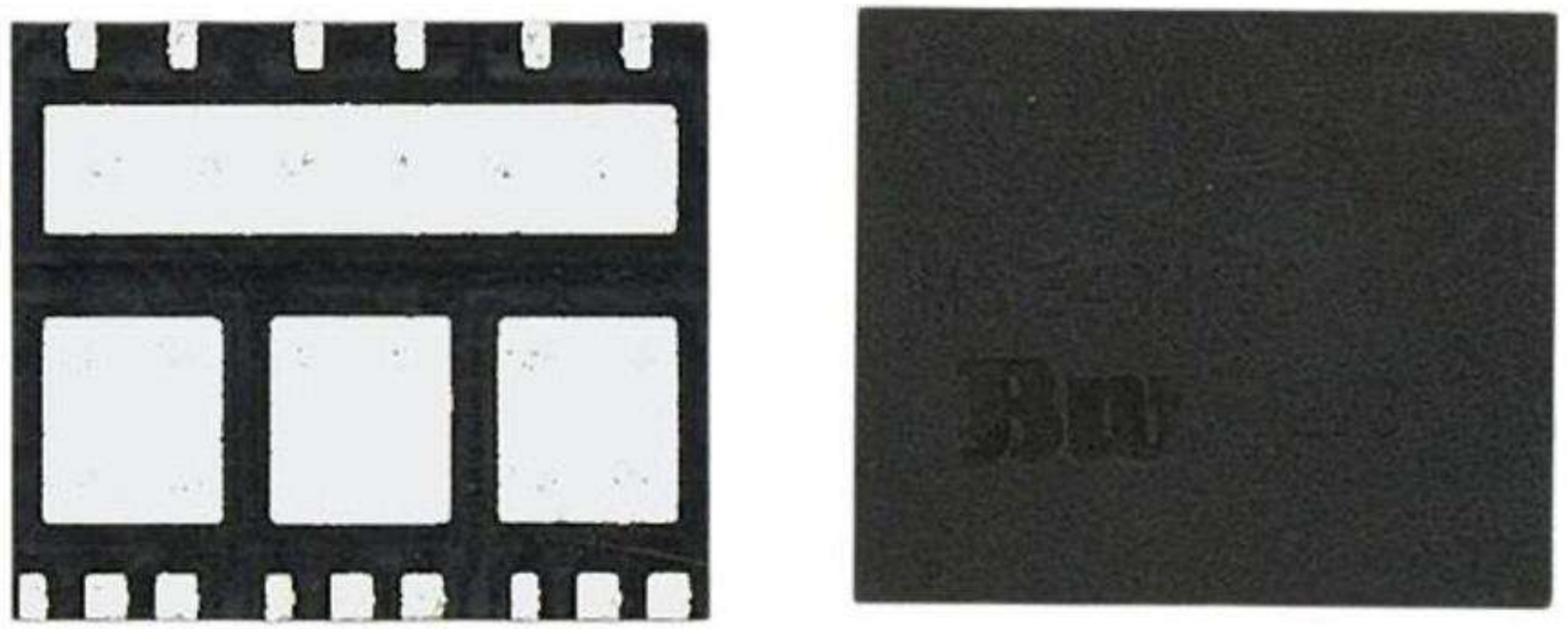


Implementation A

Dual-N MOSFET ×3

Implementation B

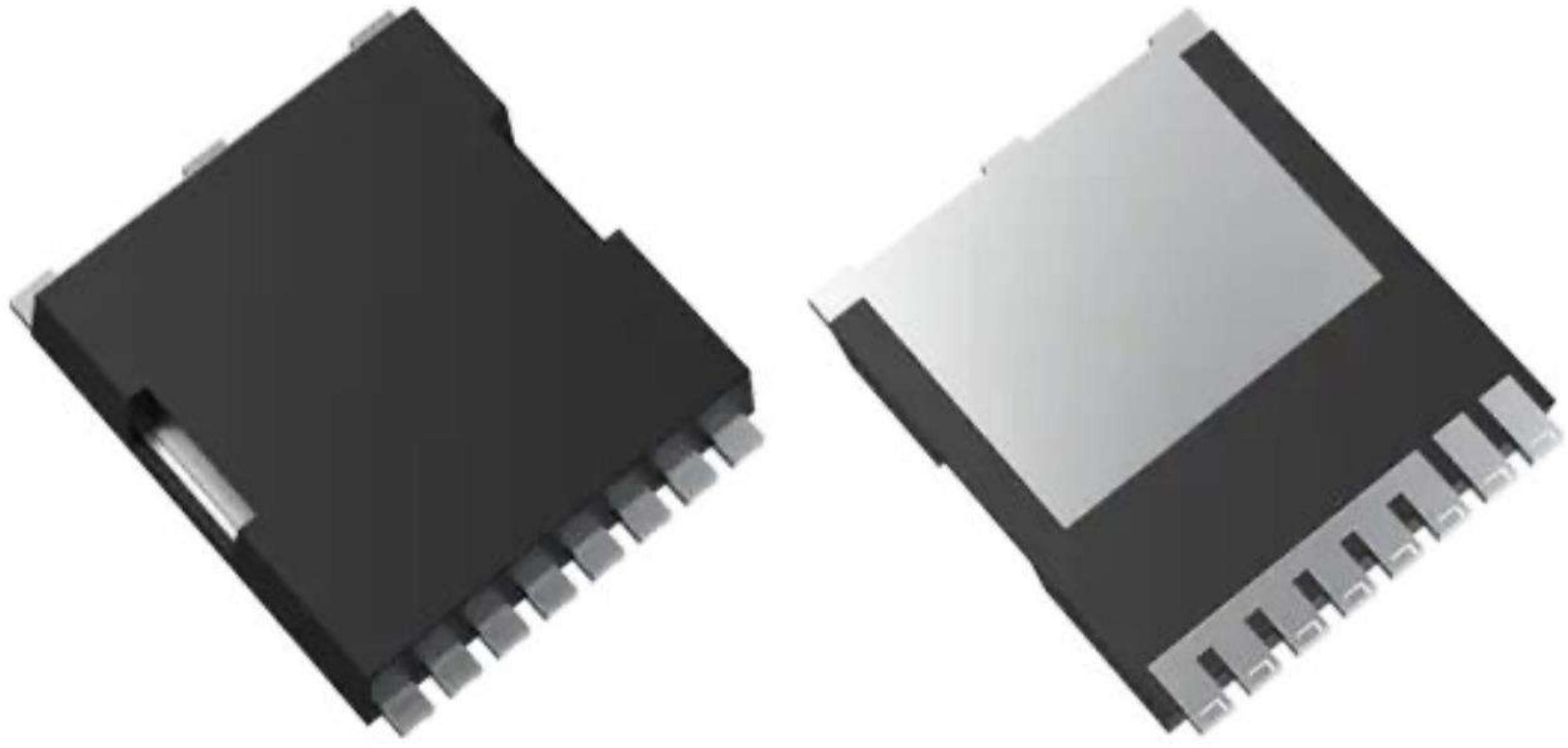
Integrated 6-in-1 (DFN14×12)



High Power Density MOSFET with DFN 8X8 Comparison

Parameter	MSHL40N008AU	NTMTS0D6N04C	IAUAN04S7N005AU	SM4056NHL
MFG	Bruckewell	Onsemi	Infineon	Sinopower
Package	PDFN 8x8	DFN 8x8	DFN 8x8	PDFN 8x8
VDS	40 V	40 V	40 V	40 V
RDS(on) @10V (typ/max)	0.57 / 0.7 mΩ	0.39 / 0.48 mΩ	0.57 / 0.7 mΩ	0.65 / 0.85 mΩ
ID (Cont.) @25°C	455 A	533 A	420 A	360 A
IDM (Pulse)	1820 A	~1500 A	1600 A	1200 A
Qg (typ)	135 nC ✅	187 nC	154 nC	130 nC
Ciss	10,000 pF	11,800 pF	9,700 pF	8,800 pF
TJ,max	175°C	175°C	175°C	175°C
RθJC	0.36°C/W ✅	0.61°C/W	0.42°C/W	0.45°C/W

TOLL Package Features



TOLL: Transistor Outline Leadless

Dimensions:10 x 11 x 2.3 mm

Thermal Resistance (RthJC):Max < 0.4 °C/W

Size Efficiency:

30% smaller footprint compared to traditional D2PAK products

Height: 2.3 mm, which is half the height of comparable designs

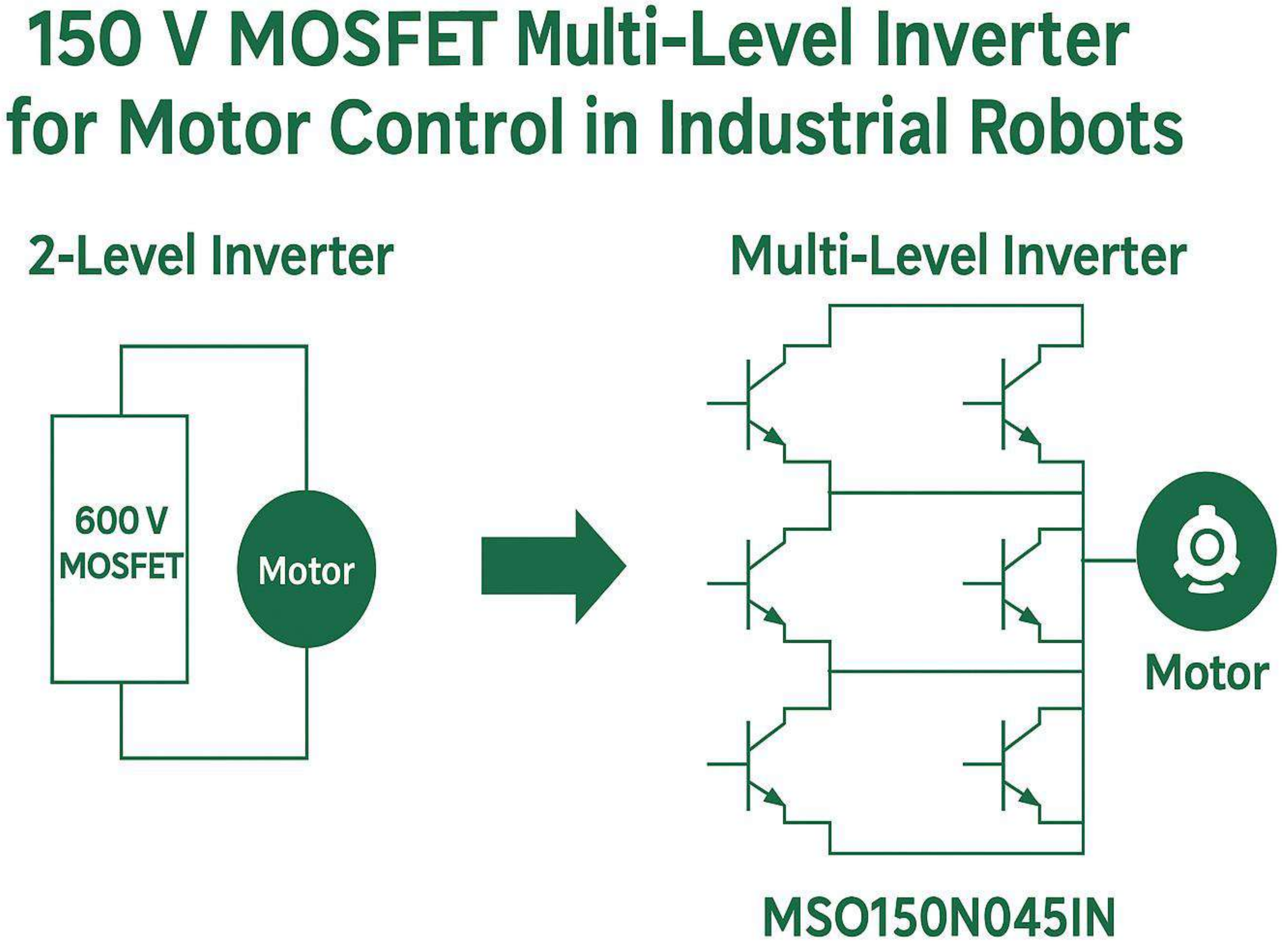
The TOLL package accommodates a range of devices, including MOSFETs, SiC MOSFETs, GaN HEMTs, and IGBTs, highlighting its versatility and readiness for mass production. Additionally, Kelvin source connections enhance the ability for reliable high-speed switching.

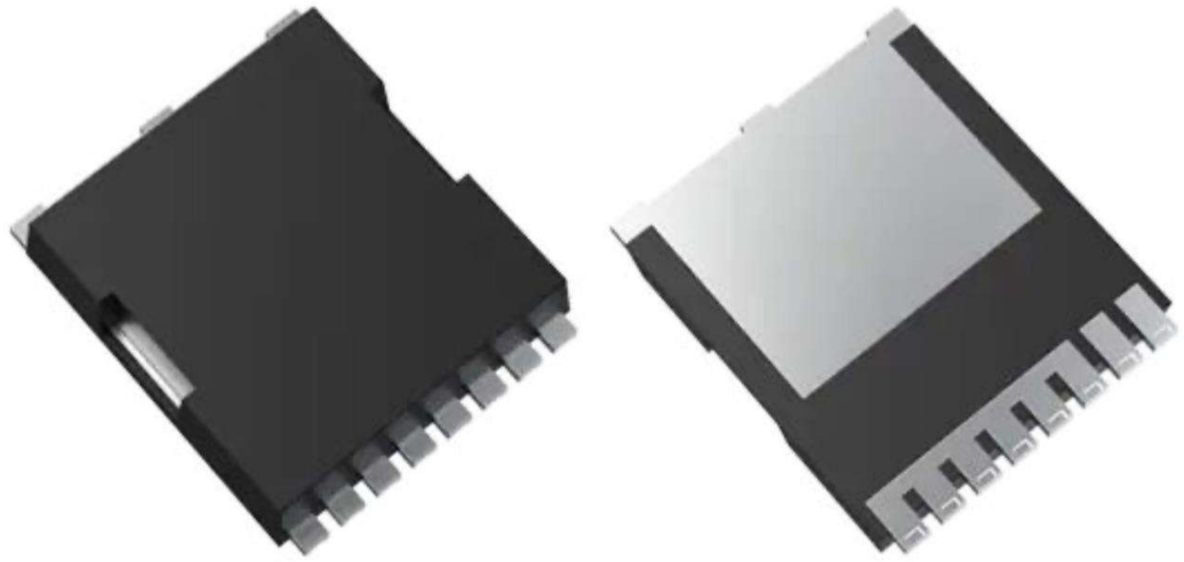
- **100V:** MSO100N019IN, 330A, RDS(on) 1.6 mΩ
- **150V:** MSO150N045IN, 188A, RDS(on) 3.7 mΩ
-   **600V:** MSO600N480, 48A, RDS(on) 48 mΩ

If TOLL package, better, and same price with DFN 8X8, D2PAK...

150V MOSFET for Multi-Level Inverter

In industrial automation and robotics, motor control inverters are essential. Using 150V MOSFETs for the multi-level inverter design to replace conventional 600V MOSFET 2-level inverters, aiming to significantly improve system efficiency.

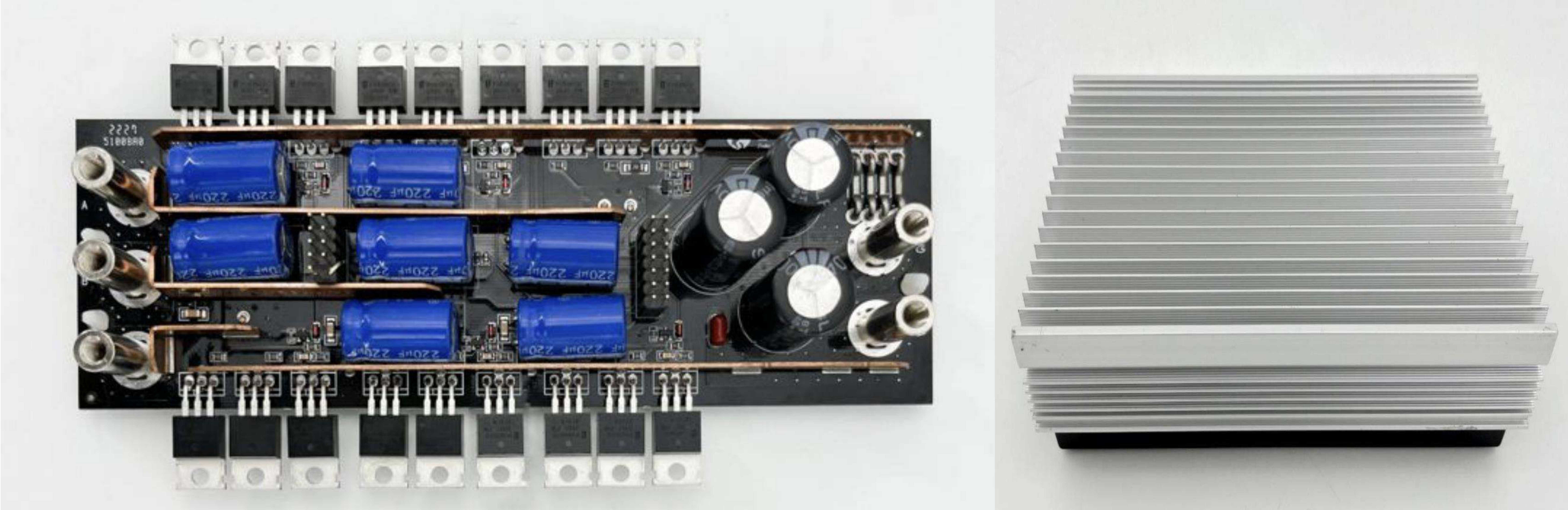




MSO150N045IN
RDS(on)@10V, 3.7mohm

Better than Toshiba TPH9R00CQ5
RDS(on)@10V, 7.9mohm

MOSFET on BMS Controller



18 symmetrical TO-220 MOSFETs—9 on each side—meticulously crafted for optimal power conversion efficiency.

Key Features:

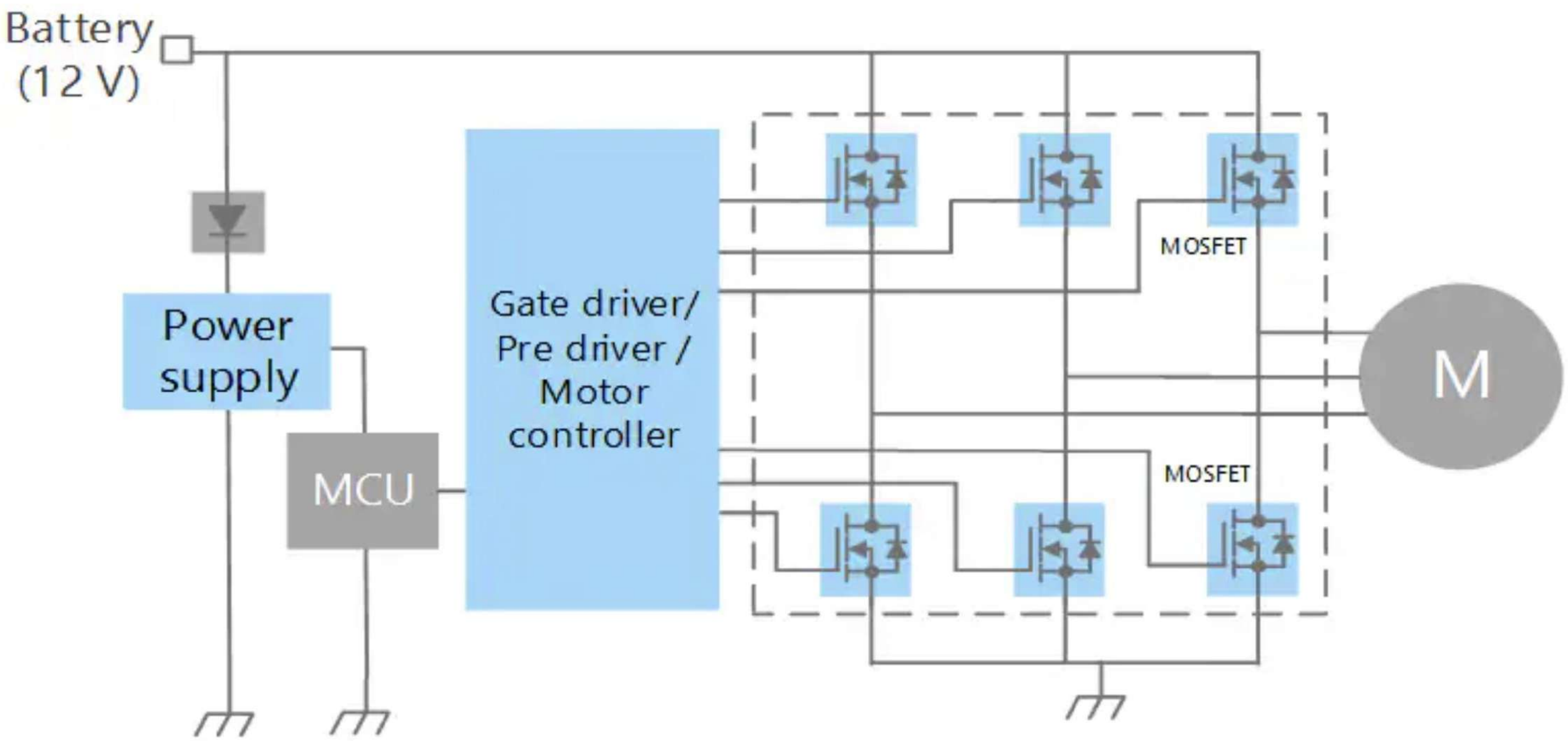
- Package: TO-220
- RDS(on): 4.2 mΩ (mainstream option) like the MSP100N042SB
- Applications: BMS, motor control, inverter power stages

MOSFET Bridge For Automotive

The new MOSFET Bridge is for the Electric Water Pump of EV.
This MOSFET is also suitable for a variety of BLDC

Applications

electric oil pumps, engine cooling fans, electric power steering, and battery cooling fans.

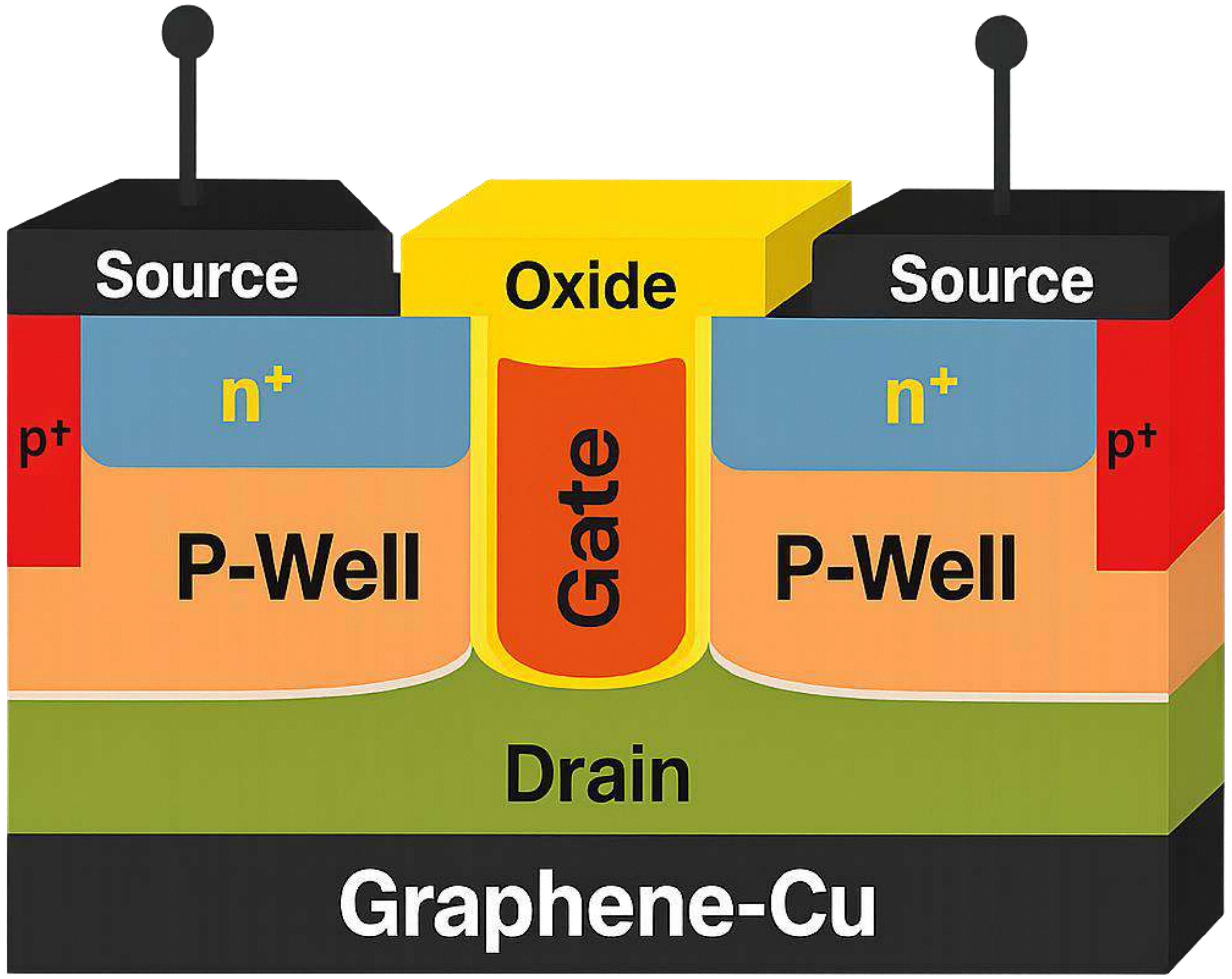


New MOSFET structure

MOSFET with Graphene–Cu backside

MSH30N60

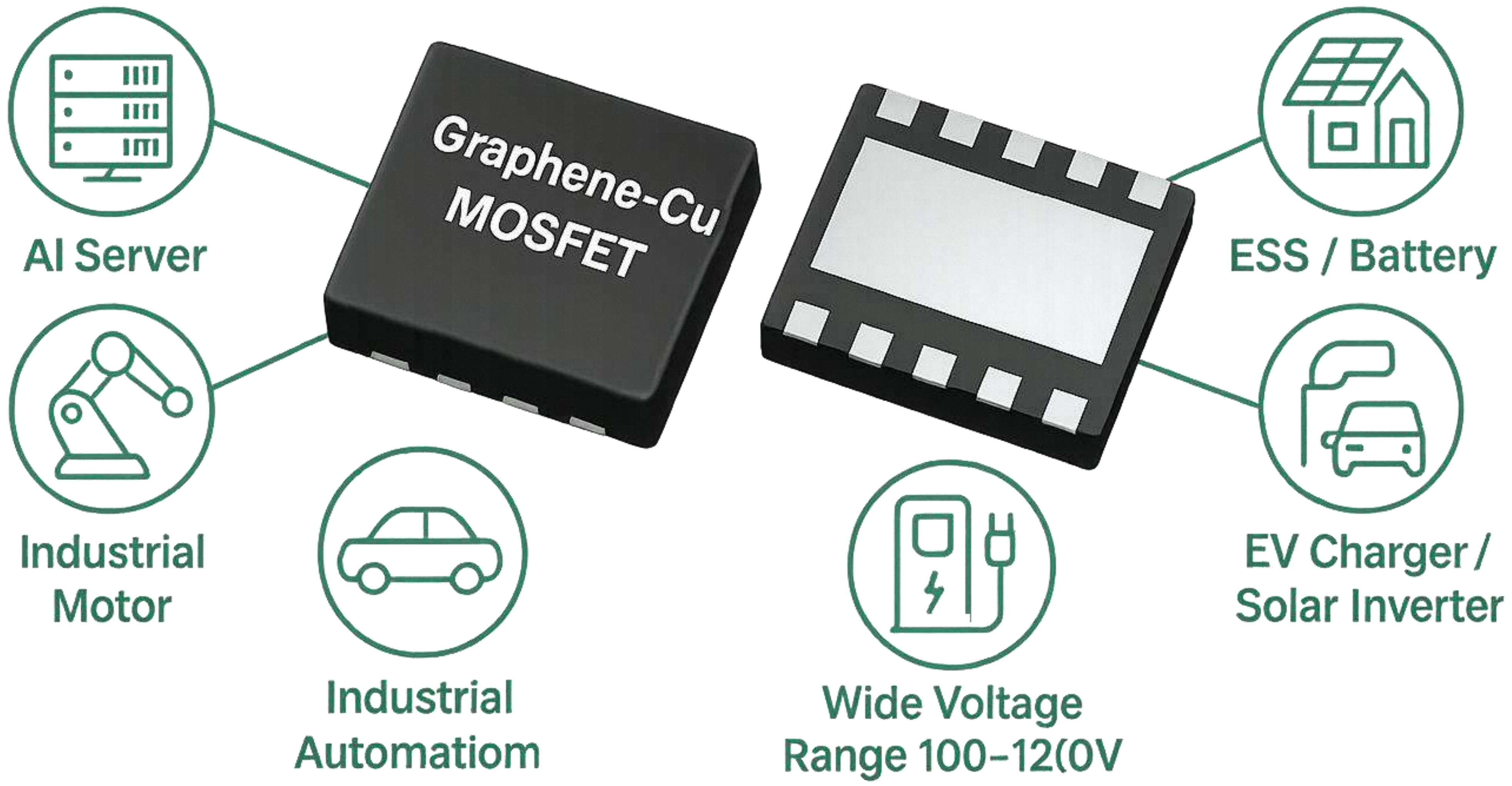
Graphene–Cu layer improves RDS(on) and lowers Rthjc



Bruckewell Graphene–Cu Trench Vertical MOSFET

Bruckewell Graphene-Cu MOSFET

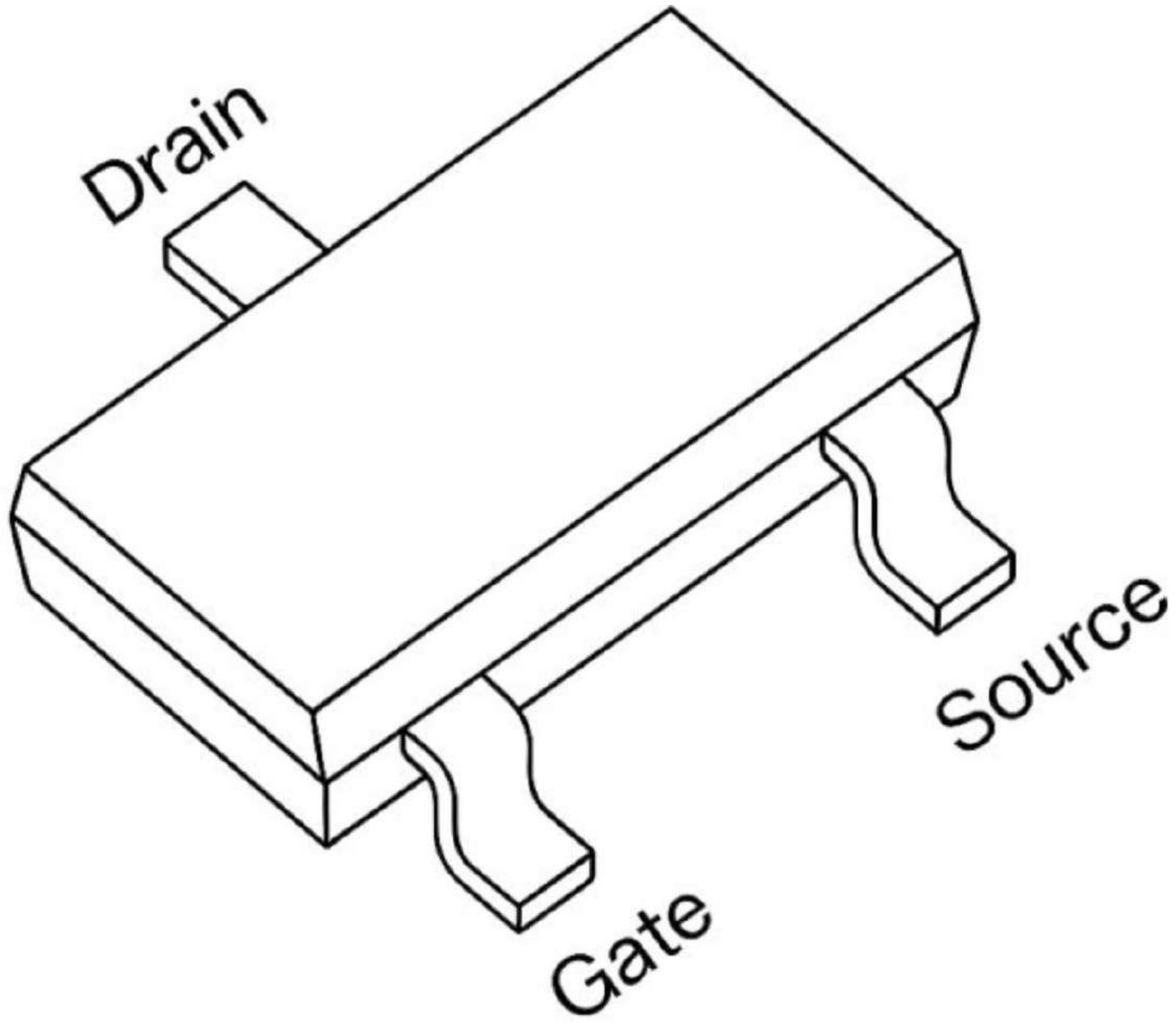
High Thermal Performance for Next-Gen Power Systems



DFNSx6 / DFNSx8 Package | Graphene-Cu Heat Spreader | Ru $_{JS}$ ≈ 0.3 K/W

Parameter	Value
Thermal Conductivity (W/m·K)	460 W/m·K
Equivalent R_{th} Improvement	≈ 10-20 %

100V MOSFET with 8KV ESD



8KV HBM ESD Capability
100V MOSFET, SOT-23

Many automotive exterior LED systems now incorporate 8 kV HBM protection to mitigate potential ESD damage.

However, ISO 10605 system-level testing (8–15 kV) is placing significantly greater stress on electronic components.

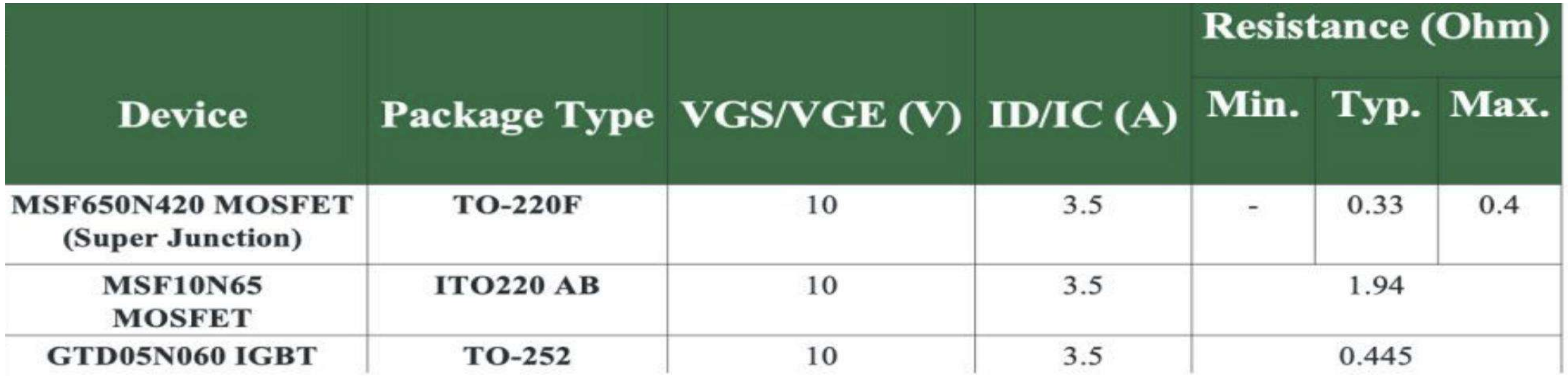
Some compact 80–100 V MOSFETs are beginning to demonstrate improved ESD robustness under these conditions.

In practical applications, even if only 1–2% of ESD events cause LED damage, the resulting module failure rate can still reach double-digit percentages.

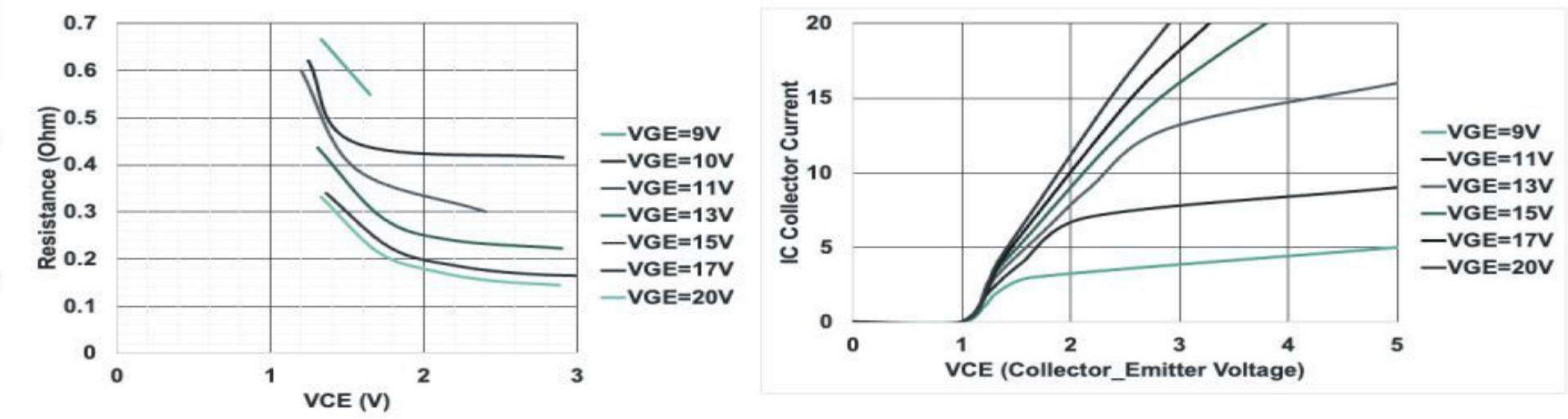
IGBT
Application

IGBT to replace the SJ MOSFET at low cost

P/N	Type	Voltage	Amp	Package	Target
GTD05N060	IGBT+FRED	600	5	TO-252	SJ-10A MOS
GTP20N065	IGBT+FRED	650	20	TO-220	SJ-40A MOS
GTF20N065	IGBT+FRED	650	20	TO-220F	SJ-40A MOS



Device	Package Type	VGS/VGE (V)	ID/IC (A)	Resistance (Ohm)		
				Min.	Typ.	Max.
MSF650N420 MOSFET (Super Junction)	TO-220F	10	3.5	-	0.33	0.4
MSF10N65 MOSFET	ITO220 AB	10	3.5		1.94	
GTD05N060 IGBT	TO-252	10	3.5		0.445	

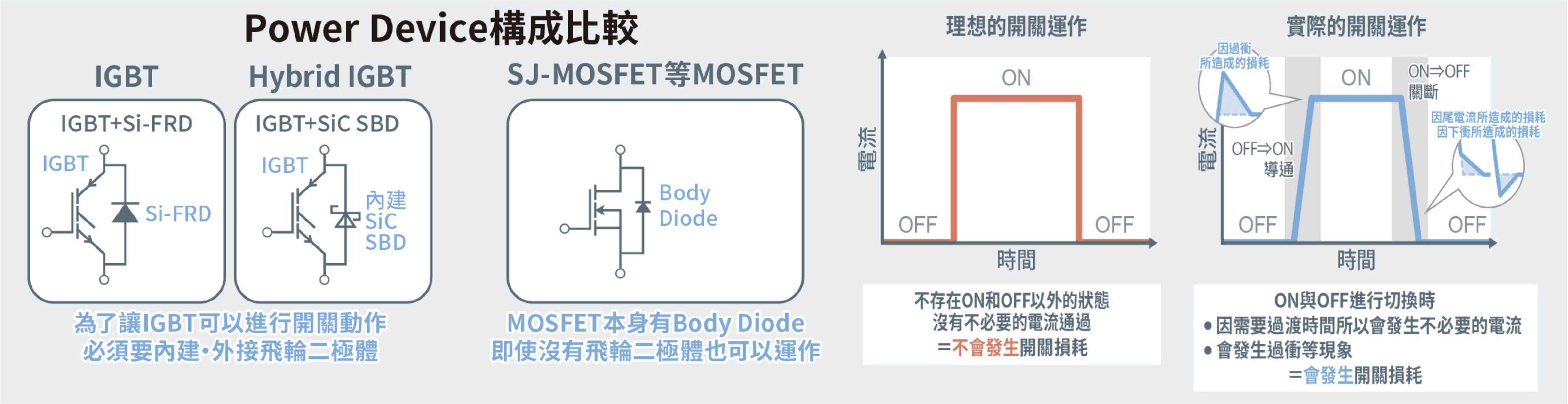


Our IGBT can replace the C6 Cool MOS

Better RDS(on) than the C3~C5

Low Cost than the C6 SJ MOS

IGBT with SiC SBD



為了讓IGBT可以進行開關動作
必須要內建・外接飛輪二極體

MOSFET本身有Body Diode
即使沒有飛輪二極體也可以運作

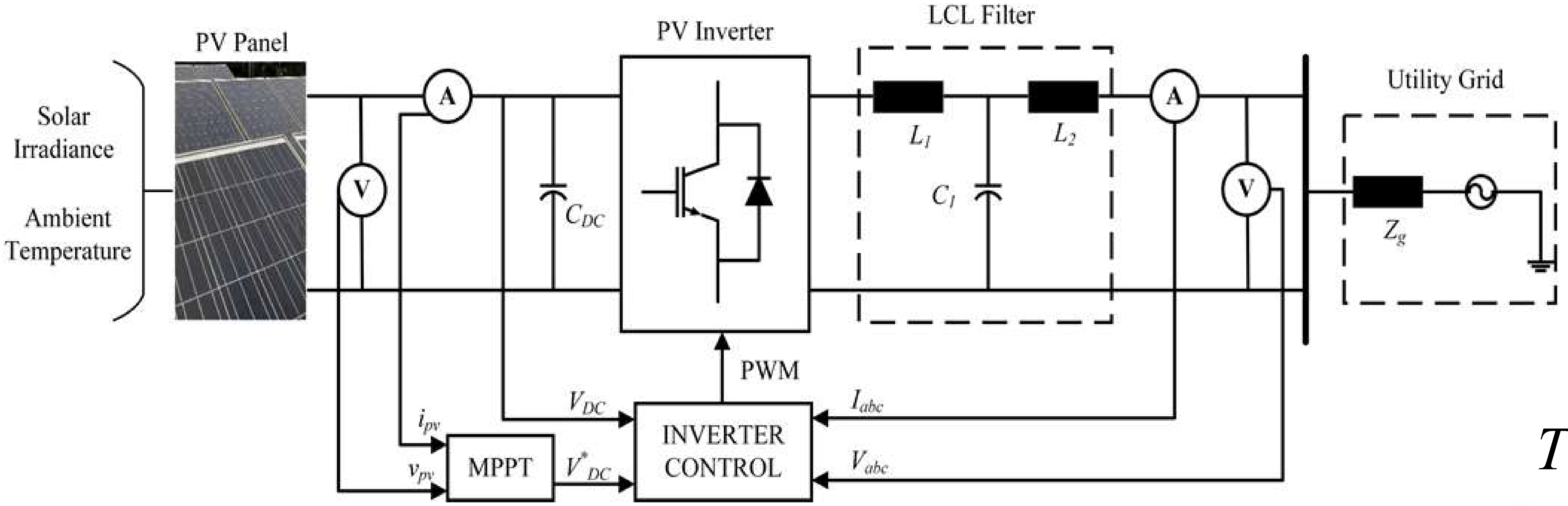
不存在ON和OFF以外的狀態
沒有不必要的電流通過
=不會發生開關損耗

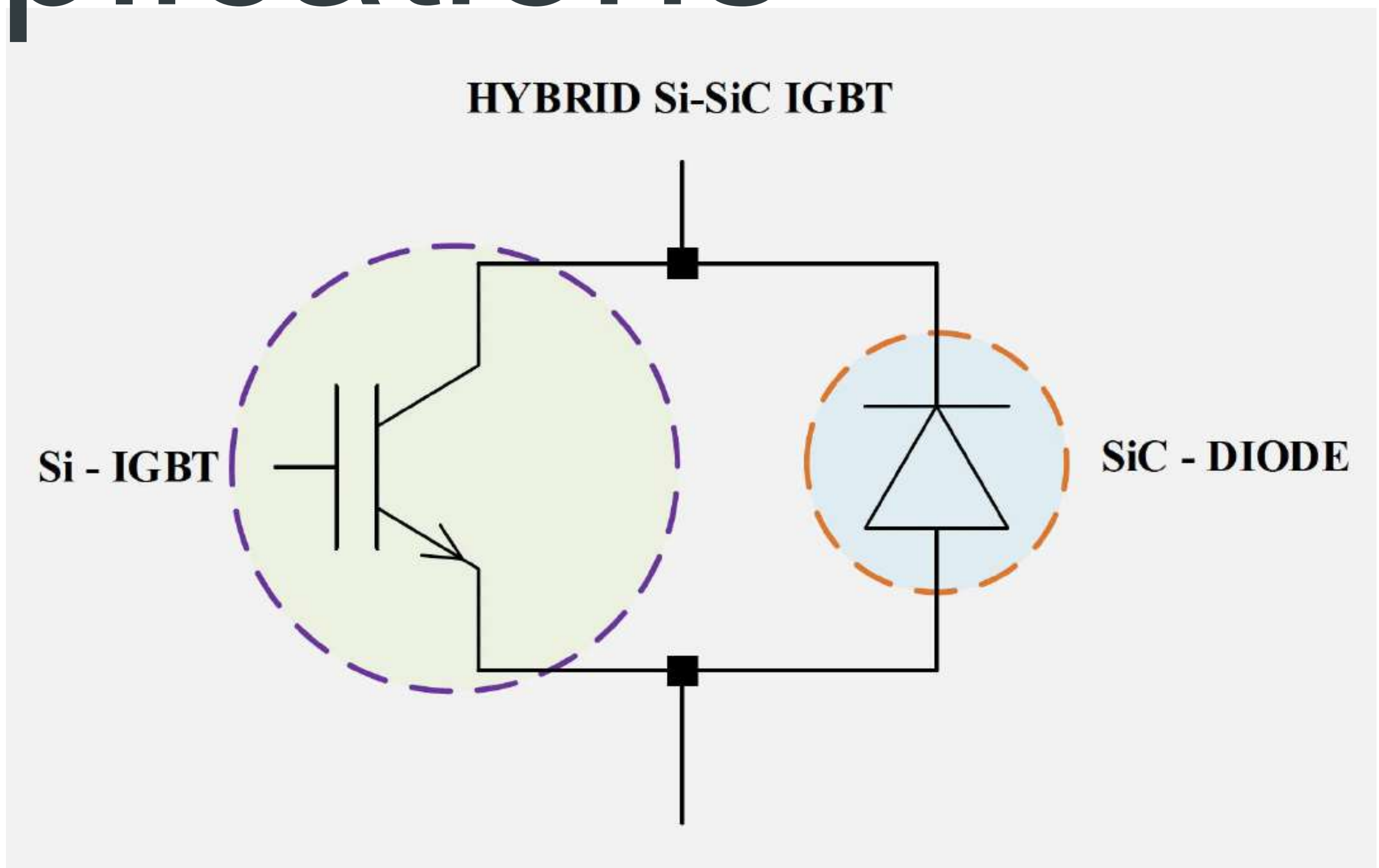
ON與OFF進行切換時
- 因需要過渡時間所以會發生不必要的電流
- 會發生過衝等現象

=會發生開關損耗

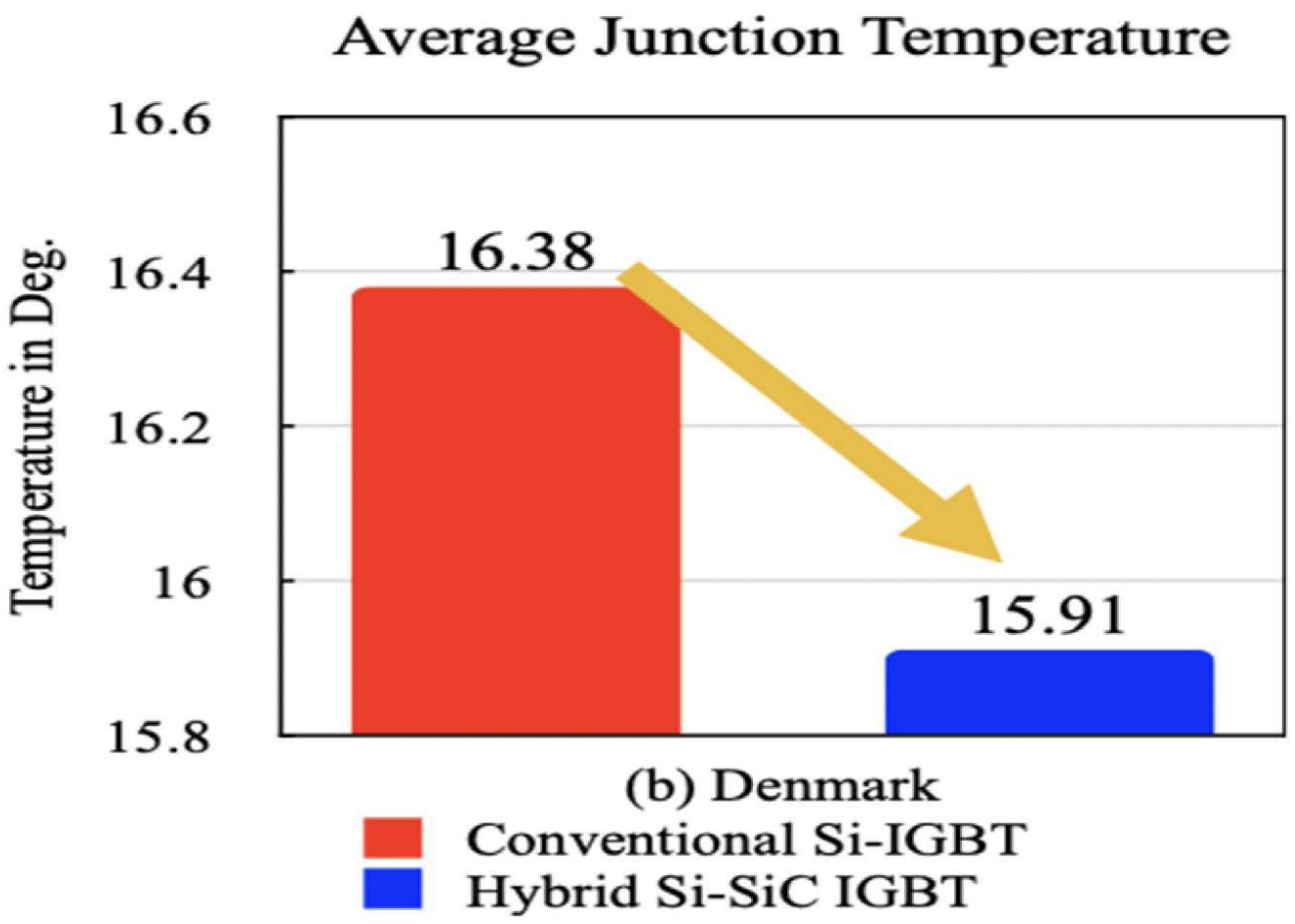
P/N	Type	Voltage	Amp	Package	Target
GTSB20N065	IGBT+SIC SBD	650	20	TO-263	RGW40NL65CHRB
GTSF20N065	IGBT+SIC SBD	650	20	TO-220F	RGW40NL65CHRB
GTSM20N065	IGBT+SIC SBD	650	20	SOT-227	
GTSM40N065D	IGBT+SIC SBD	650	40	SOT-227	

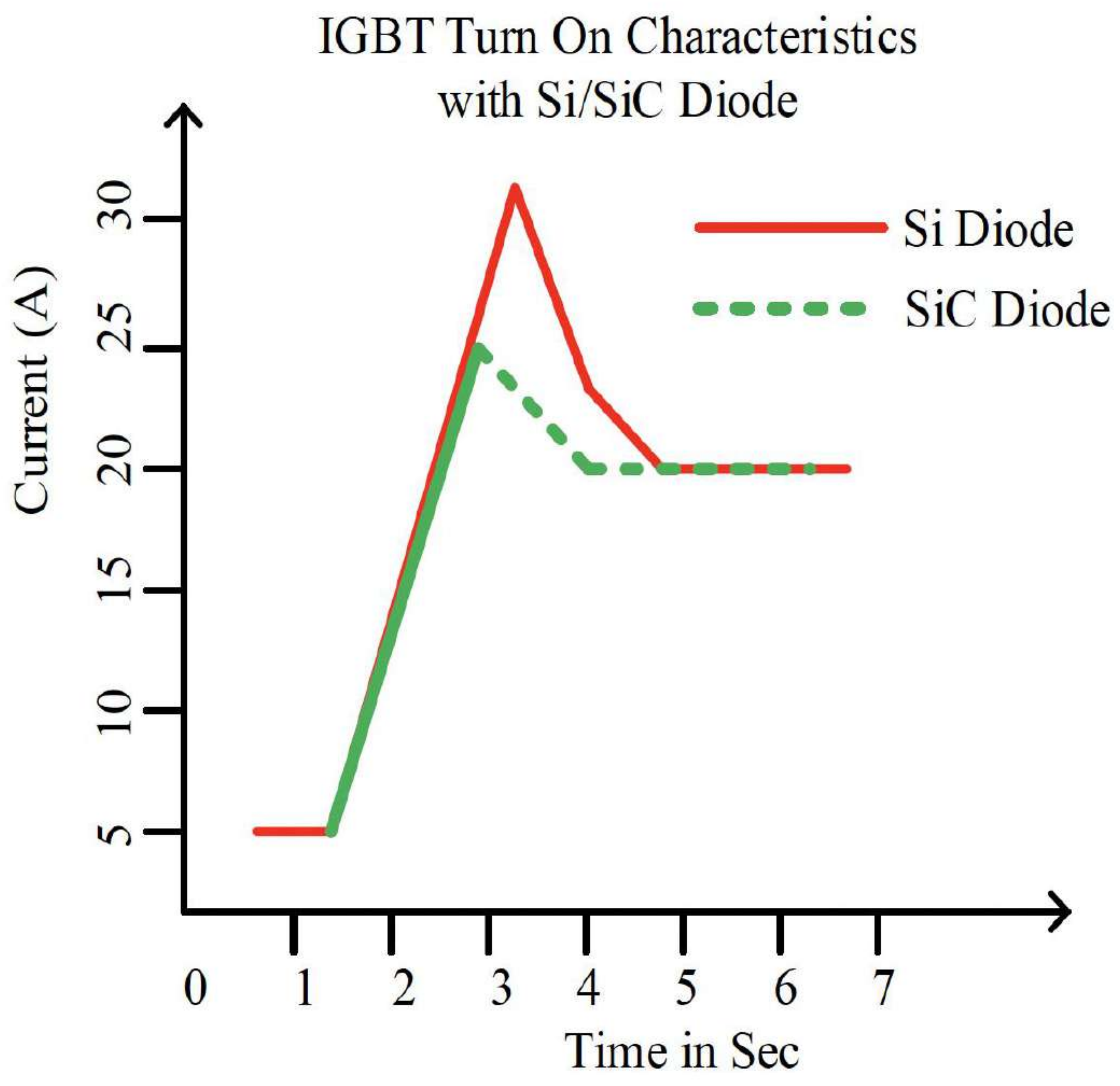
IGBT with SiC SBD on an Inverter for Photo Voltaic Applications

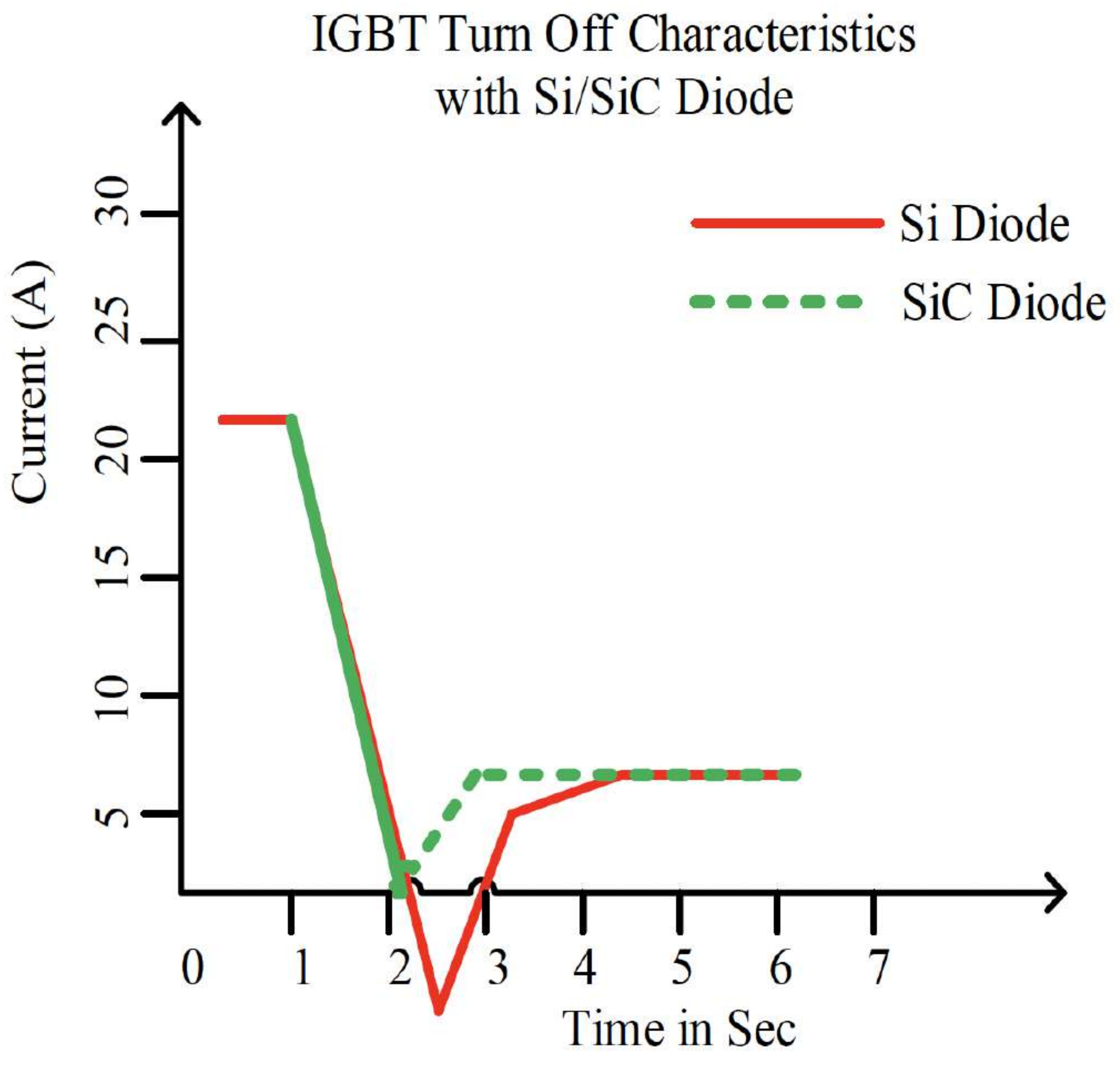


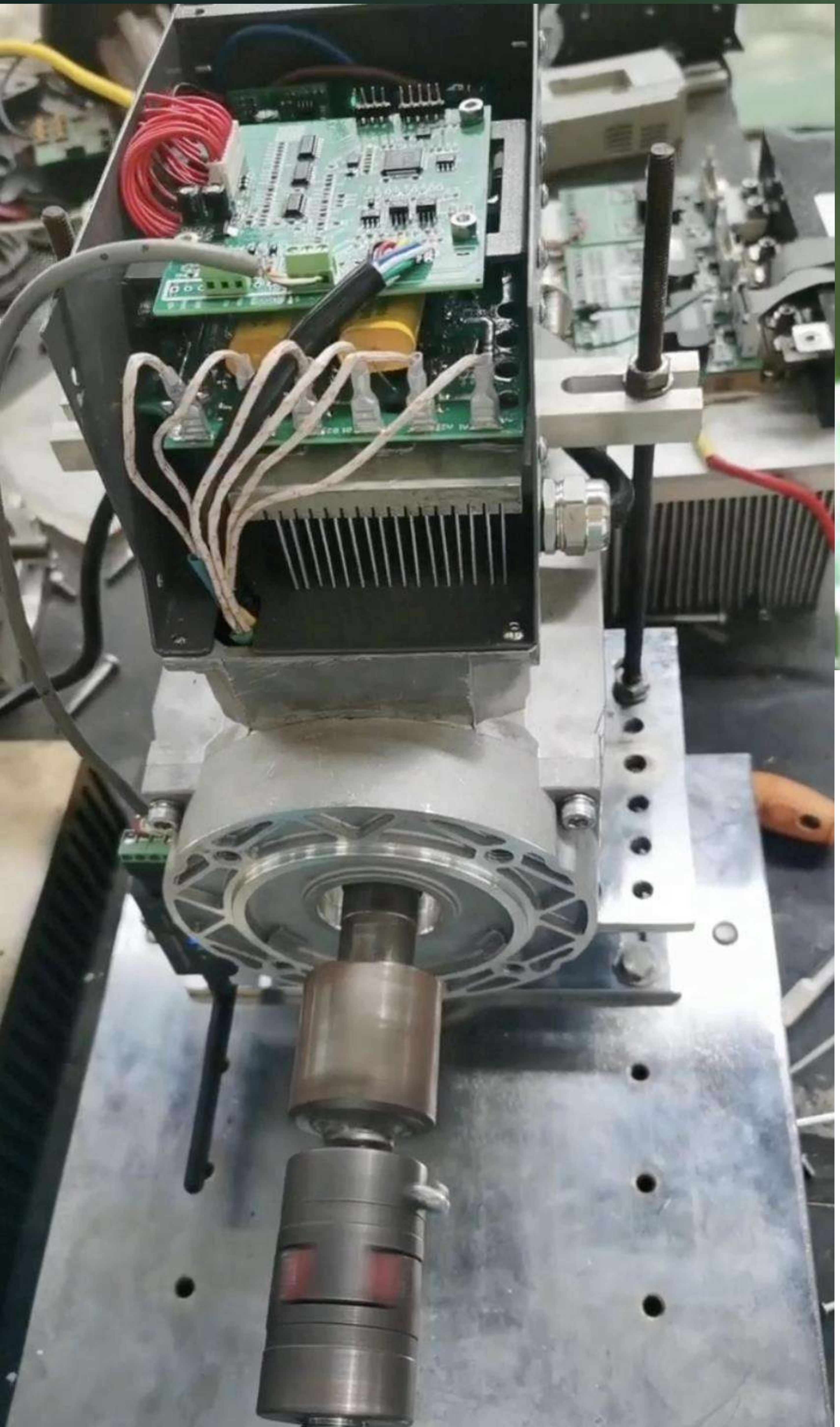


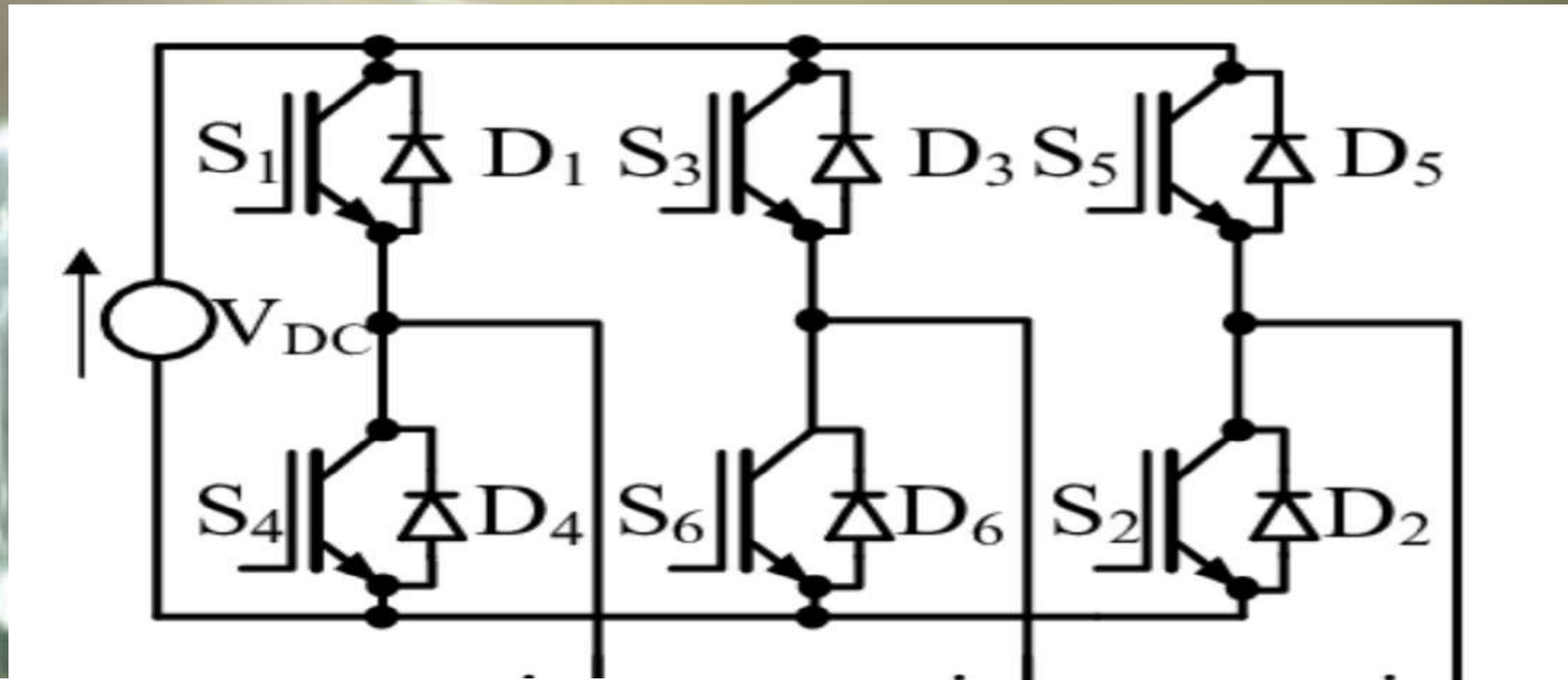
Turn On/Off Characteristics

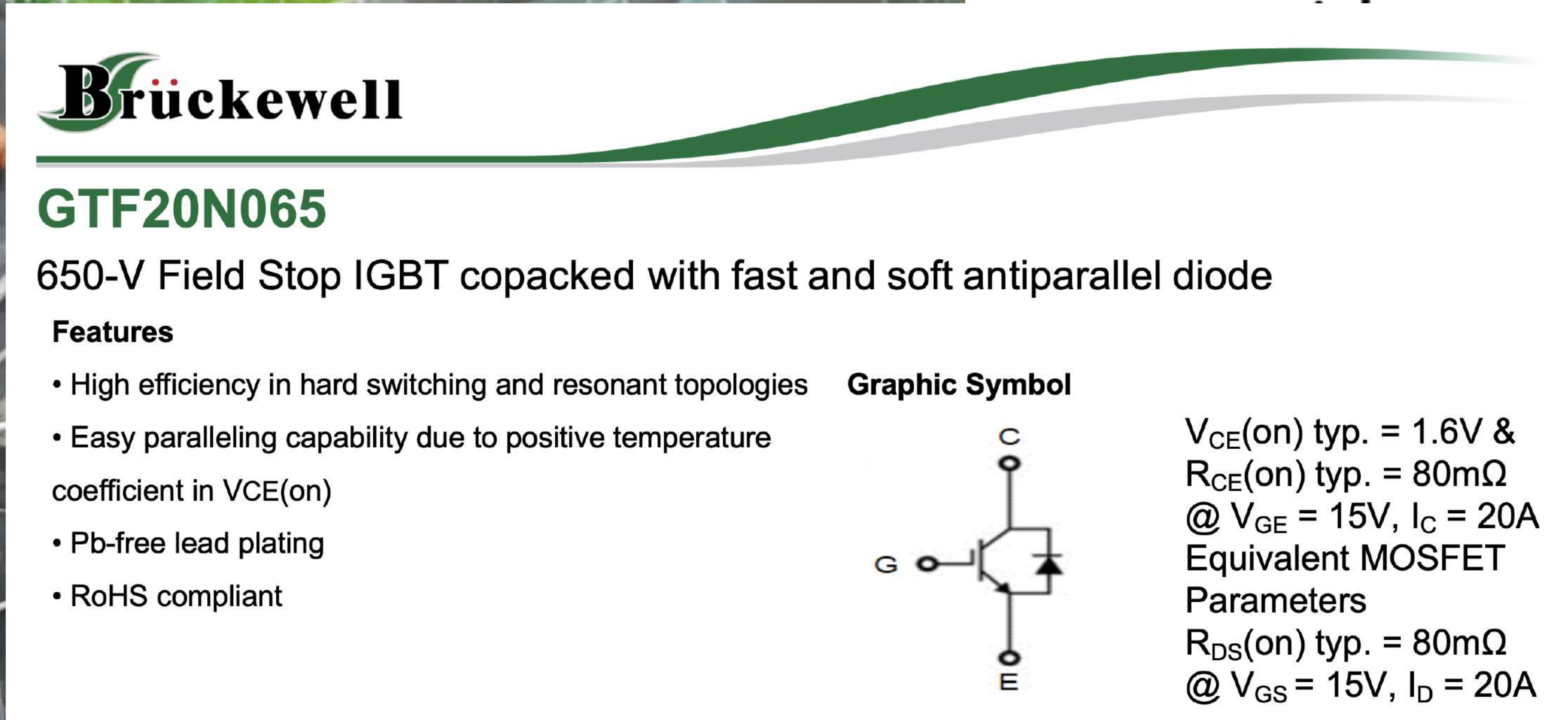












Brückewell

GTF20N065

650-V Field Stop IGBT copacked with fast and soft antiparallel diode

Features

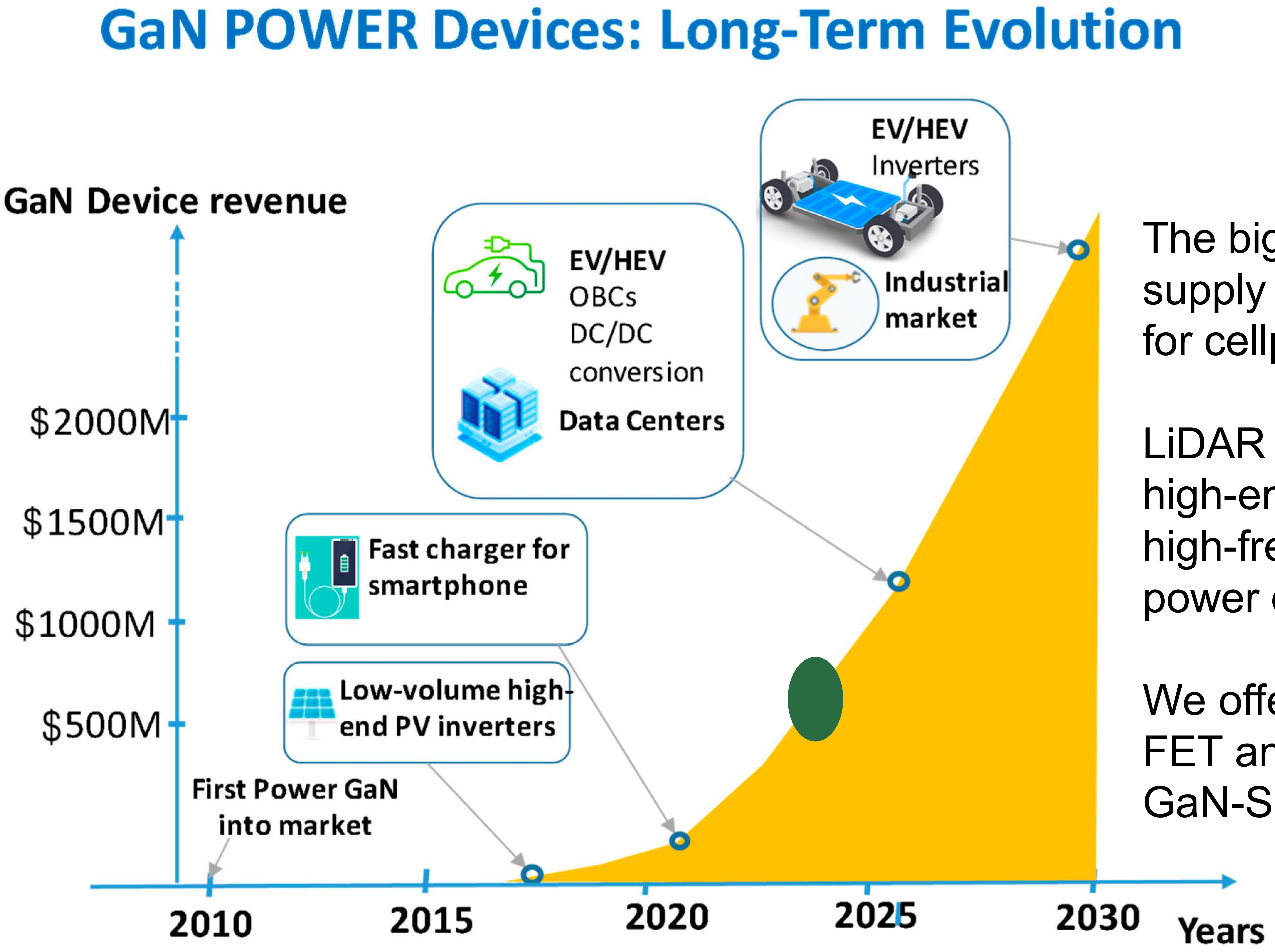
- High efficiency in hard switching and resonant topologies
- Easy paralleling capability due to positive temperature coefficient in VCE(on)
- Pb-free lead plating
- RoHS compliant

Graphic Symbol

V_{CE}(on) typ. = 1.6V &
R_{CE}(on) typ. = 80mΩ
@ V_{GE} = 15V, I_C = 20A
Equivalent MOSFET Parameters
R_{DS}(on) typ. = 80mΩ
@ V_{GS} = 15V, I_D = 20A

GaN FETs
Application

GaN power devices application



The biggest segment is still power supply applications, i.e. fast charging for cellphones.

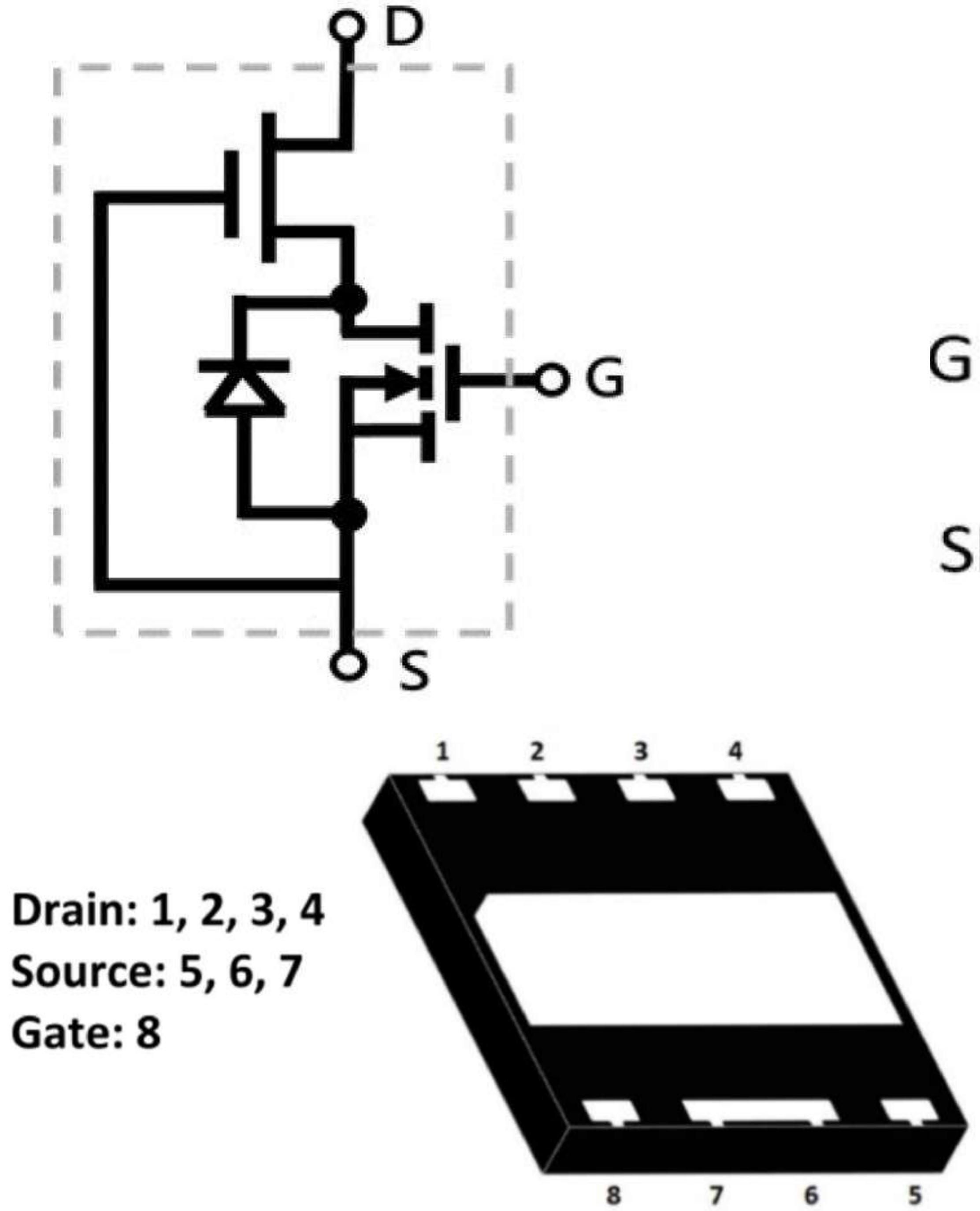
LiDAR applications are the other high-end solutions that benefit from high-frequency switching in GaN power devices.

We offer the D-Mode FET, E-Mode FET and D-Mode+Driver IC by 650V GaN-S Devices

Gallium nitride FETs solution

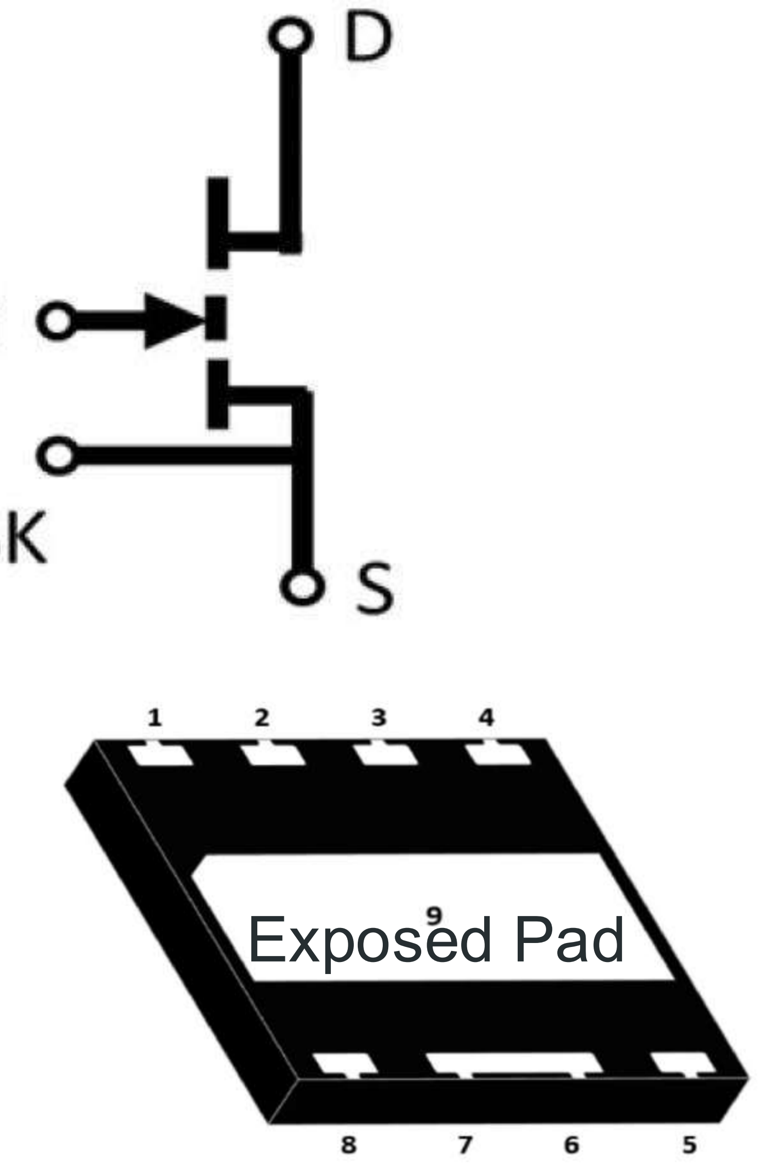
Part#	RDS(on)	VGSS or VPWM (Max. Ratings)	Description
HMHL065N185C	150mohm	-20V ~ +20V	Cascode (D mode GaN + LV MOS
HMHL065N210E	150mohm	-18V ~ +18V	E-mode GaN
HMHL065N170CI	170mohm	-30V~+30V	D mode GaN + Driver IC

Cascode



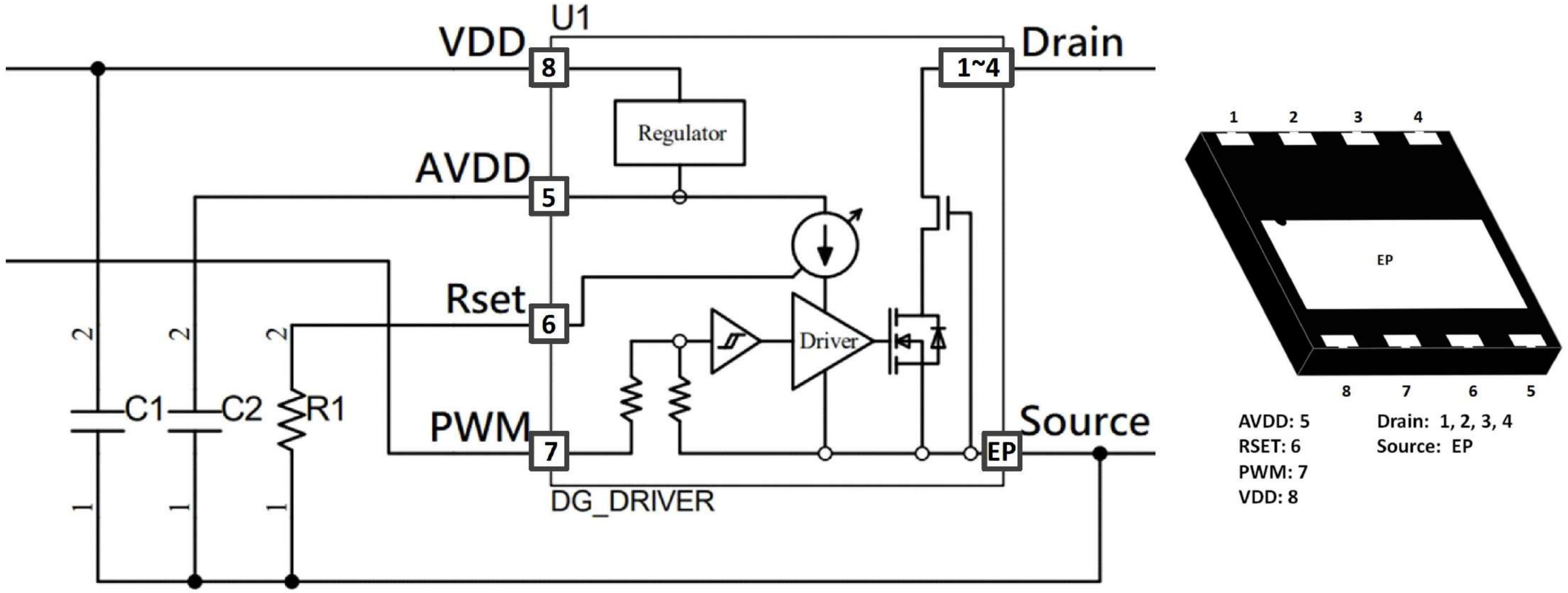
Drain: 1, 2, 3, 4
Source: 5, 6, 7
Gate: 8

E-Mode



Drain: 1, 2, 3, 4
Source: 5, 6, 7, 9
Gate: 8

GaN-IC



AVDD: 5
RSET: 6
PWM: 7
VDD: 8

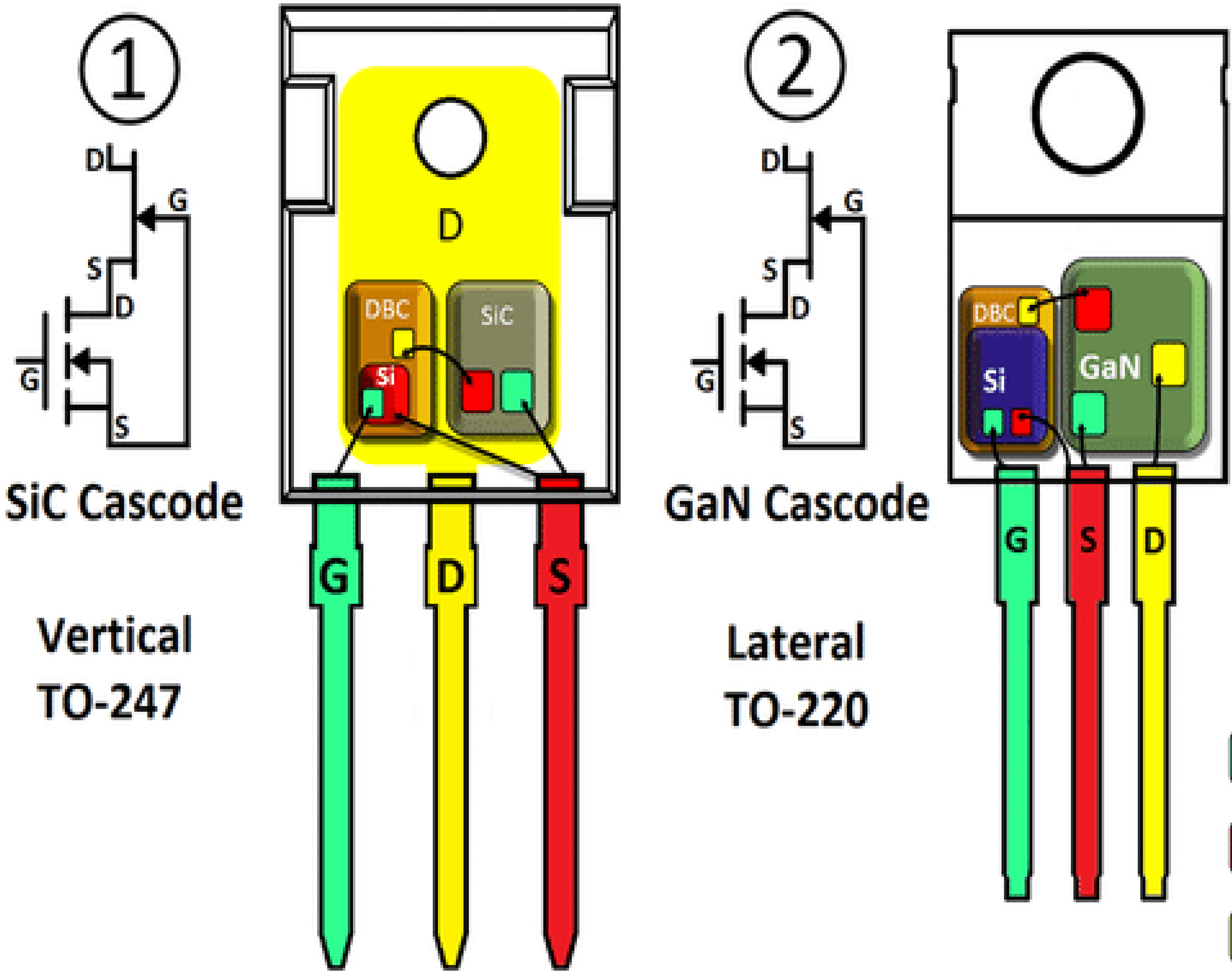
Drain: 1, 2, 3, 4
Source: EP

Fast Charger, Automotive Charger, Power server
PV Inverters, EV OBCs

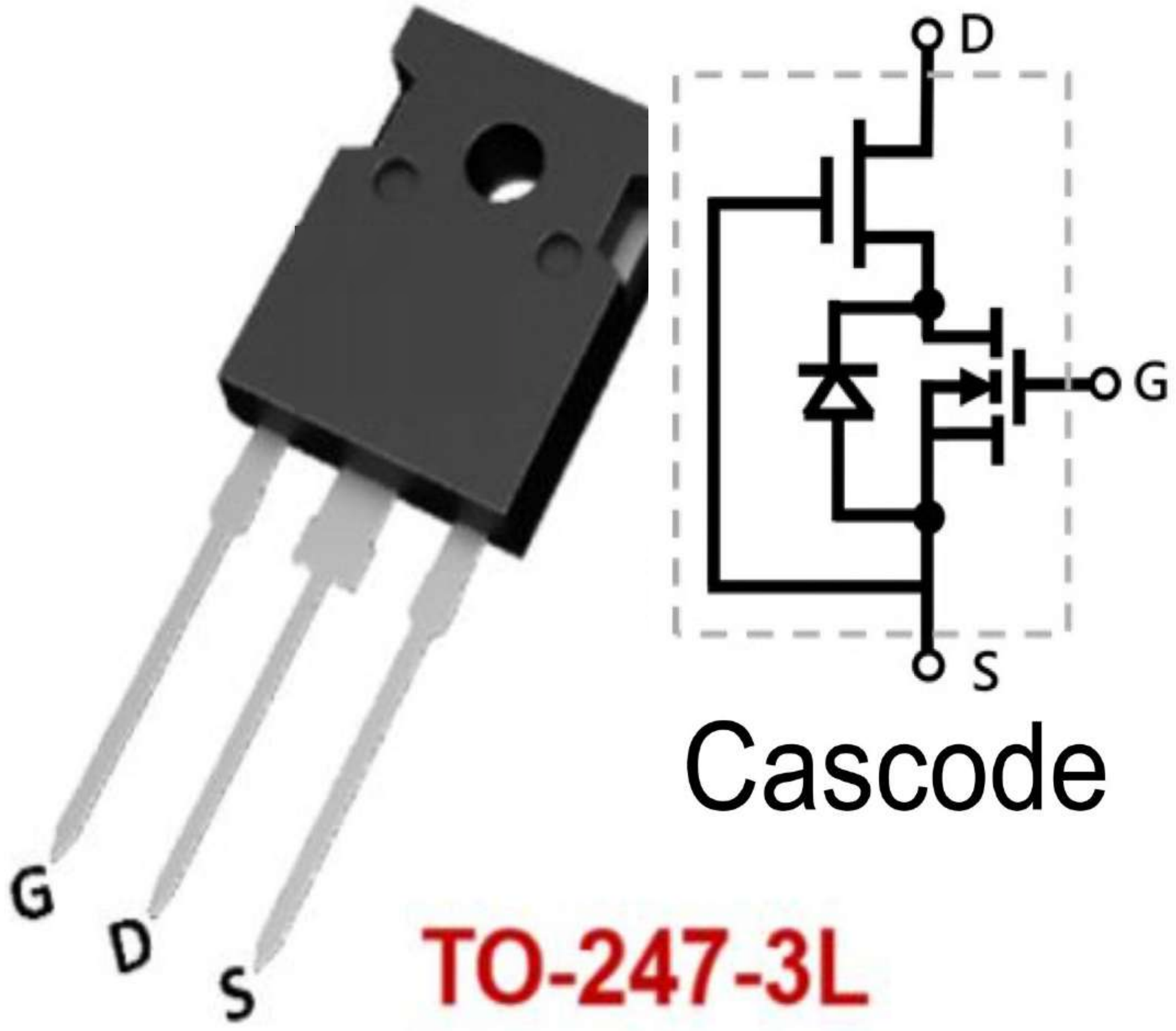
New generation GaN HEMT

Normally the SiC, Si MOSFET has the same Pin assignment GDS,
but the Casocde GaN is different, by GSD
Using the special package design to get the same pin assignment (GDS) for the GaN cascode with Si, SIC MOSFET

Si SJ MOSFET



🟩 Gate
🟥 Source
🟨 Drain

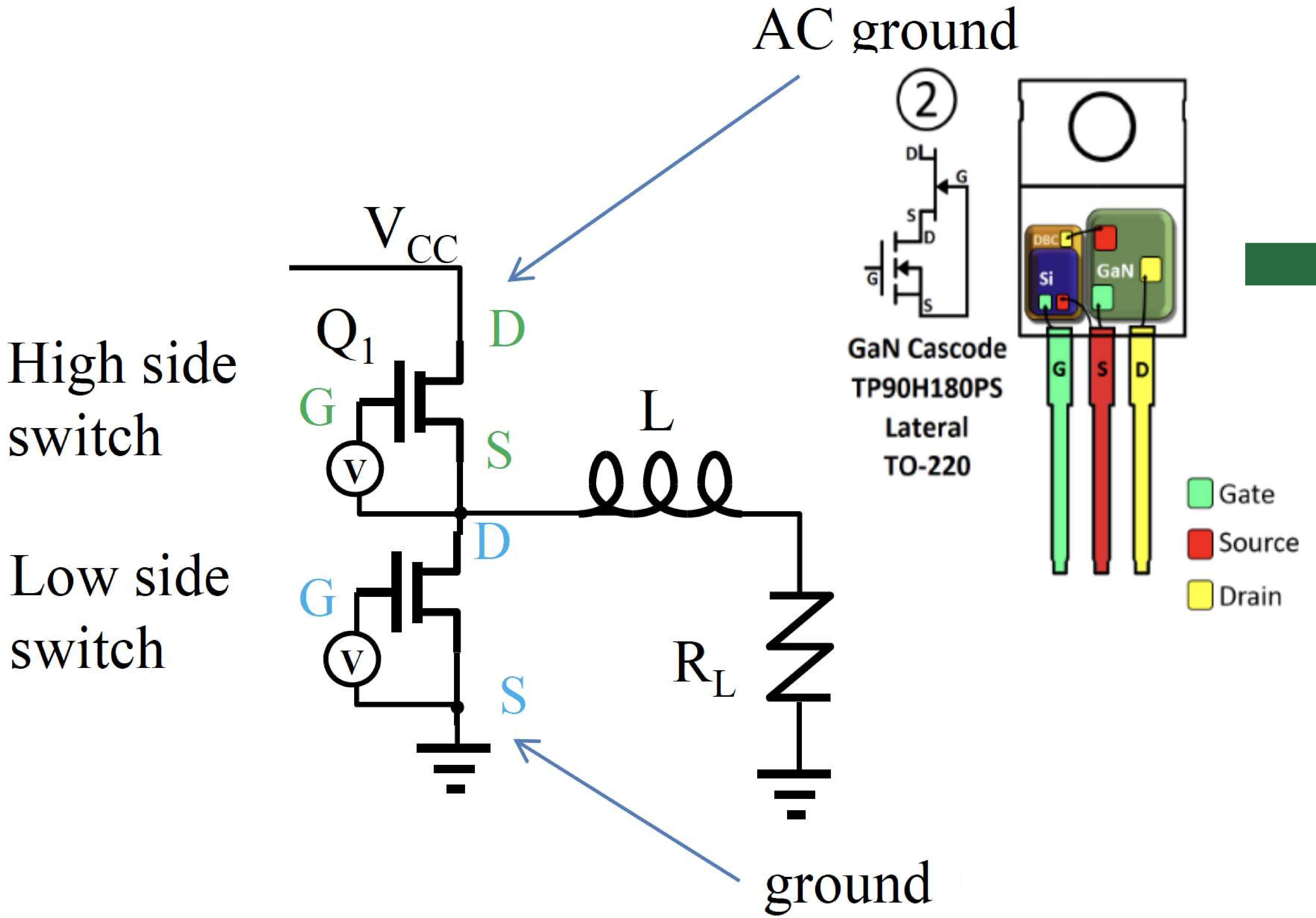


Cascode

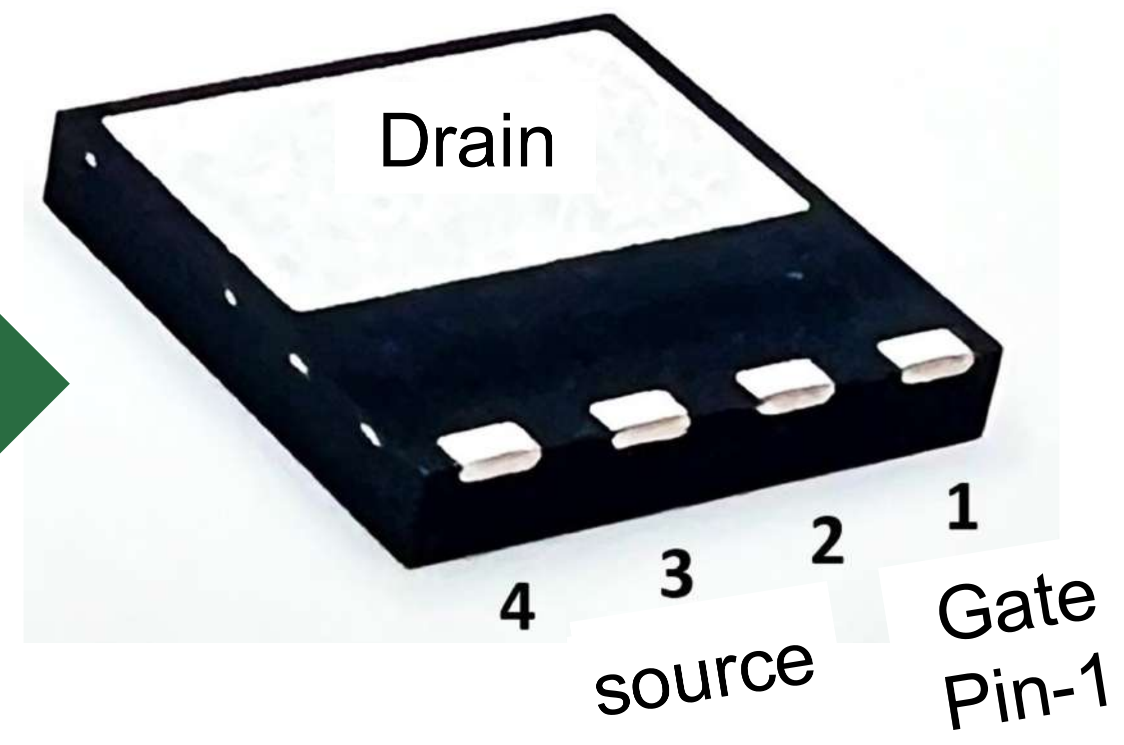
TO-247-3L

New Gen GaN HEMT

GaN HEMT for the high-side/ Low side circuit

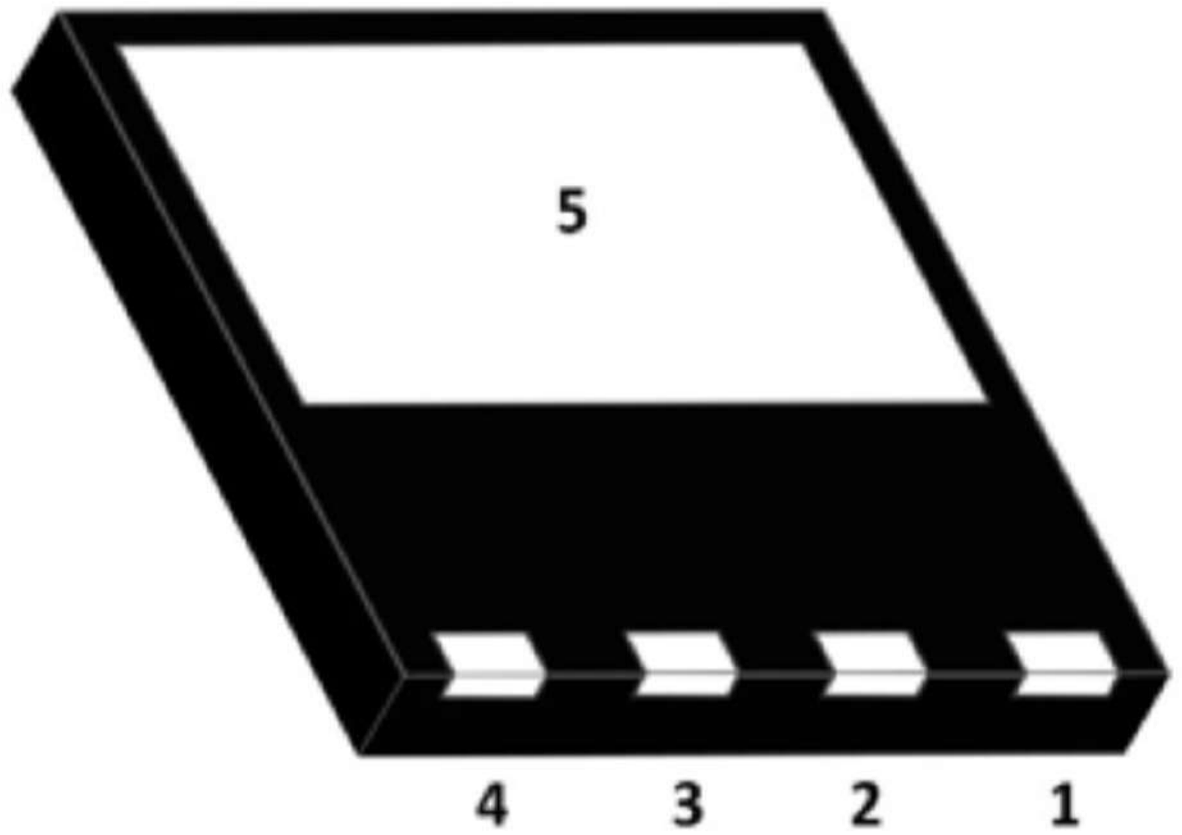


HMHC065N120C

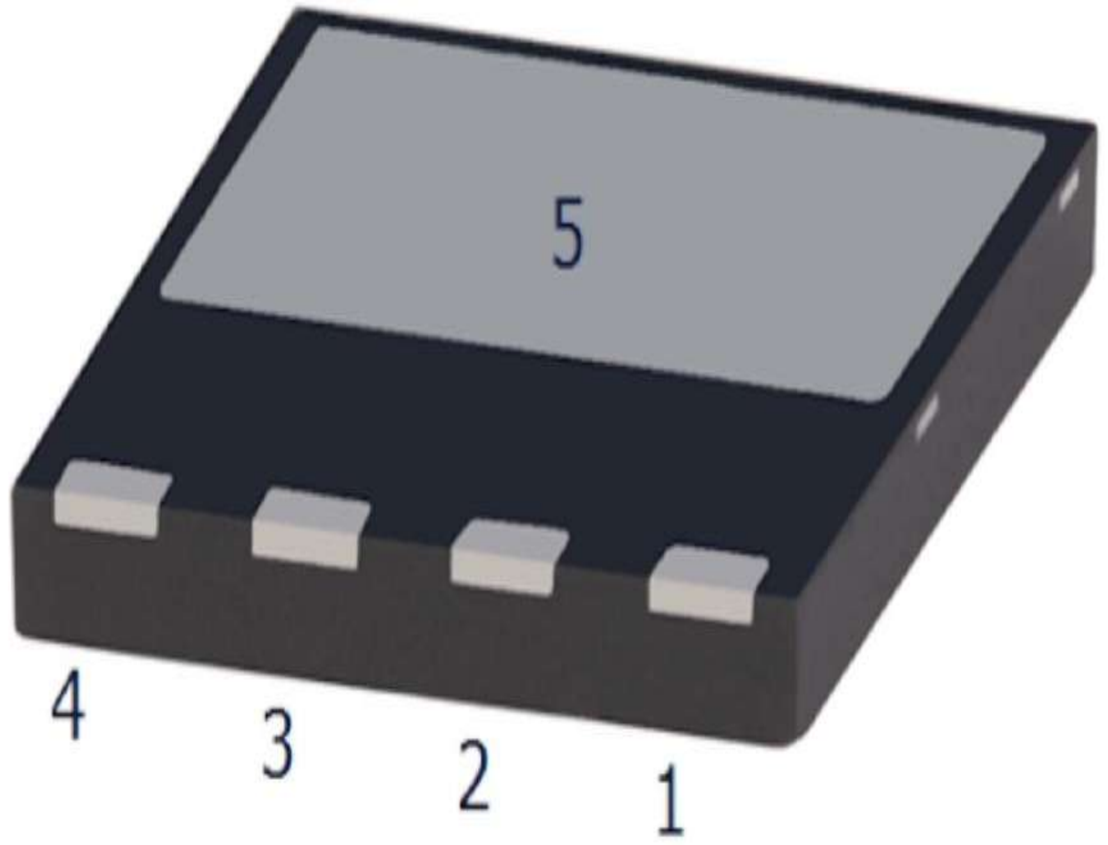


New generation GaN HEMT

Pin to Pin to replace Cool MOSFET (Super Junction)



HMHC065N185CG
aN HEMT
185mohm
650V



IPL60R199CP
Cool MOS
199mohm
600V

DFN 8X8 Available, will extend to TO-220, TO-247 and TOLL

P/N	Voltage	Ampere	RDS(on) (mohm) Max.	Package
HMHC070N120C	700	13	120	DFN8X8
HMHC070N185C	700	10	185	DFN8X8

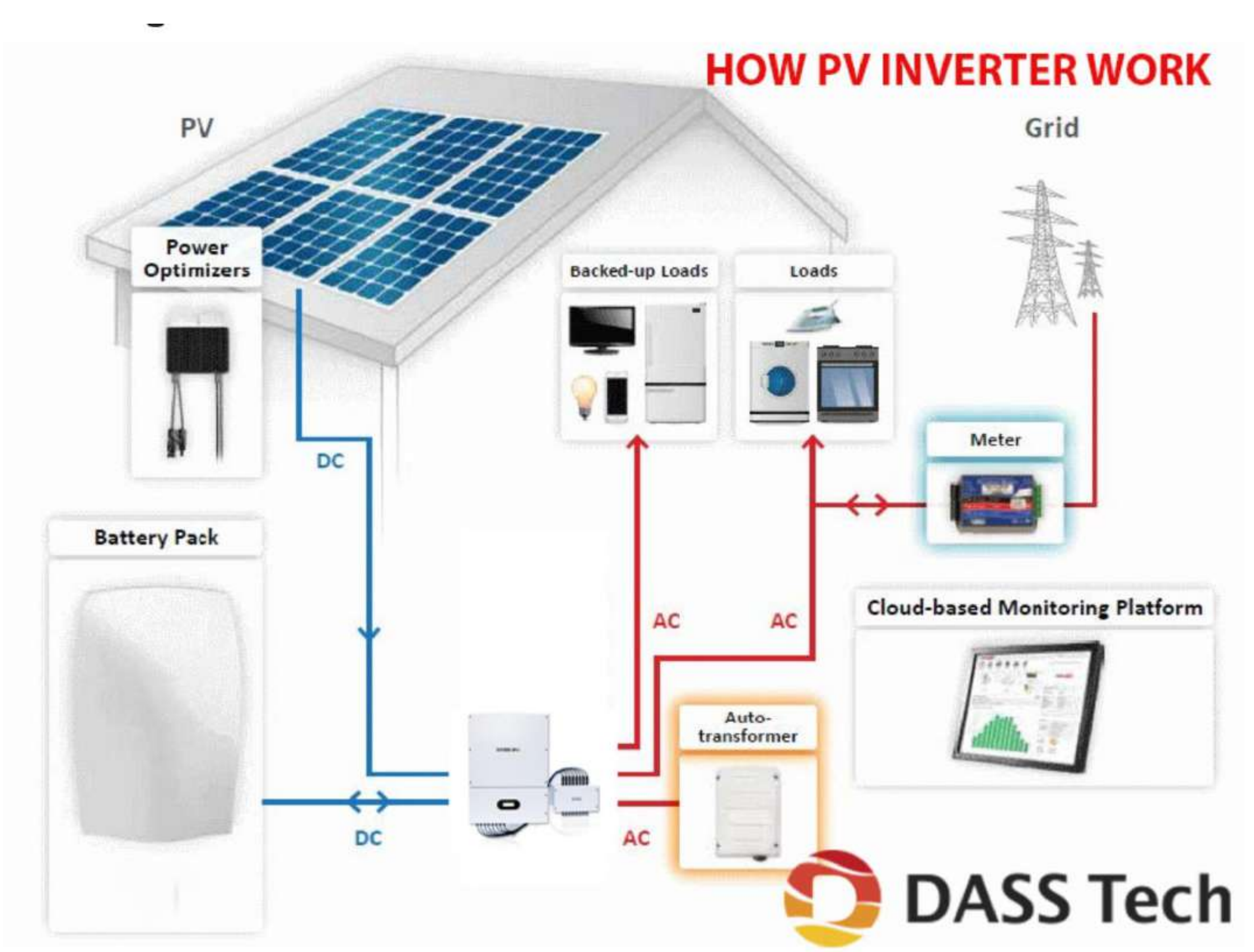
New generation 700V GaN HEMT

Pin to Pin to replace Cool MOSFET (Super Junction)

HMF070N120C
HMF070N180C
Are 700V GaN HEMT with the TO-220F package to P2P replace the SJ MOSFET
In the 2025, will have the TO-252/ TO-263 and Isolate TO-220 Package for the GaN Series products

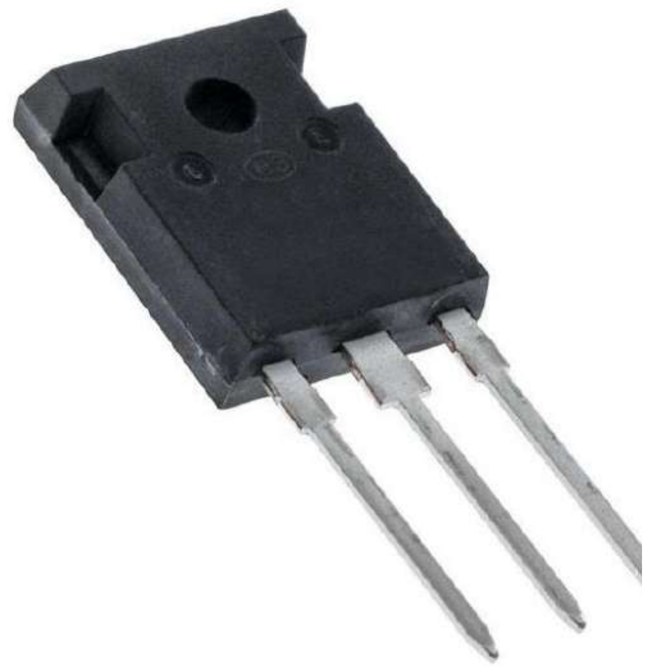
SiC-MOSFET/ HyS IPM Application

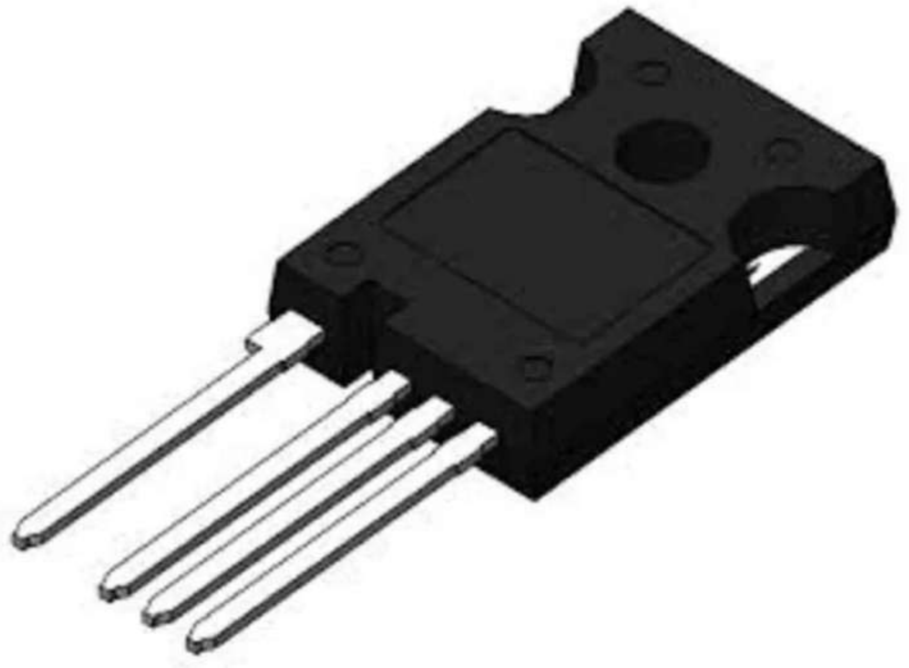
SiC MOSFET Package with different application



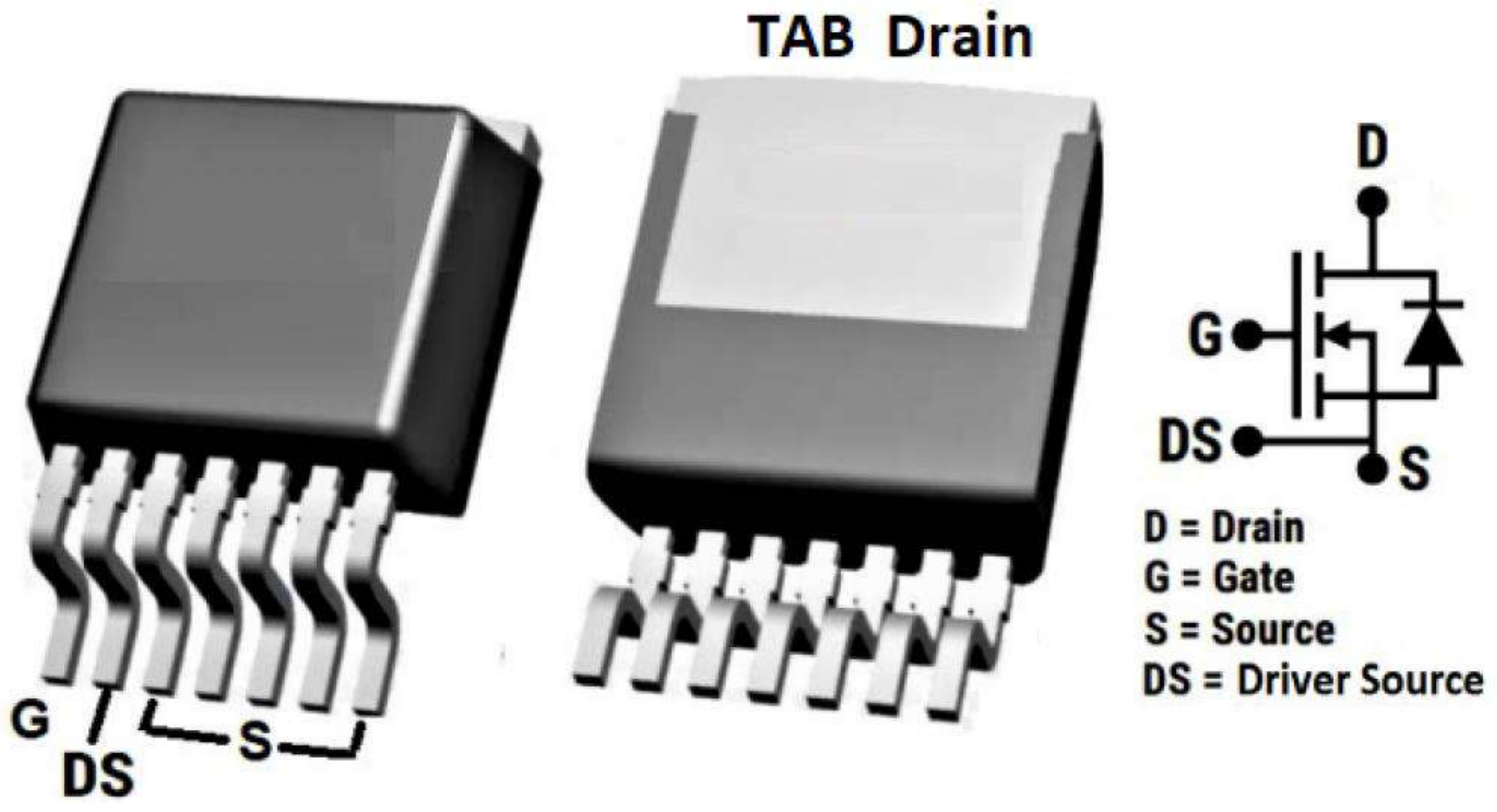
TO-247-3L, 4L, SOT-227, TO-263-7L TO-247 Plus 4L Packages

1200V, 160mohm, 80mohm, 37mohm , 7mohm available





SOT-227 25X33mm



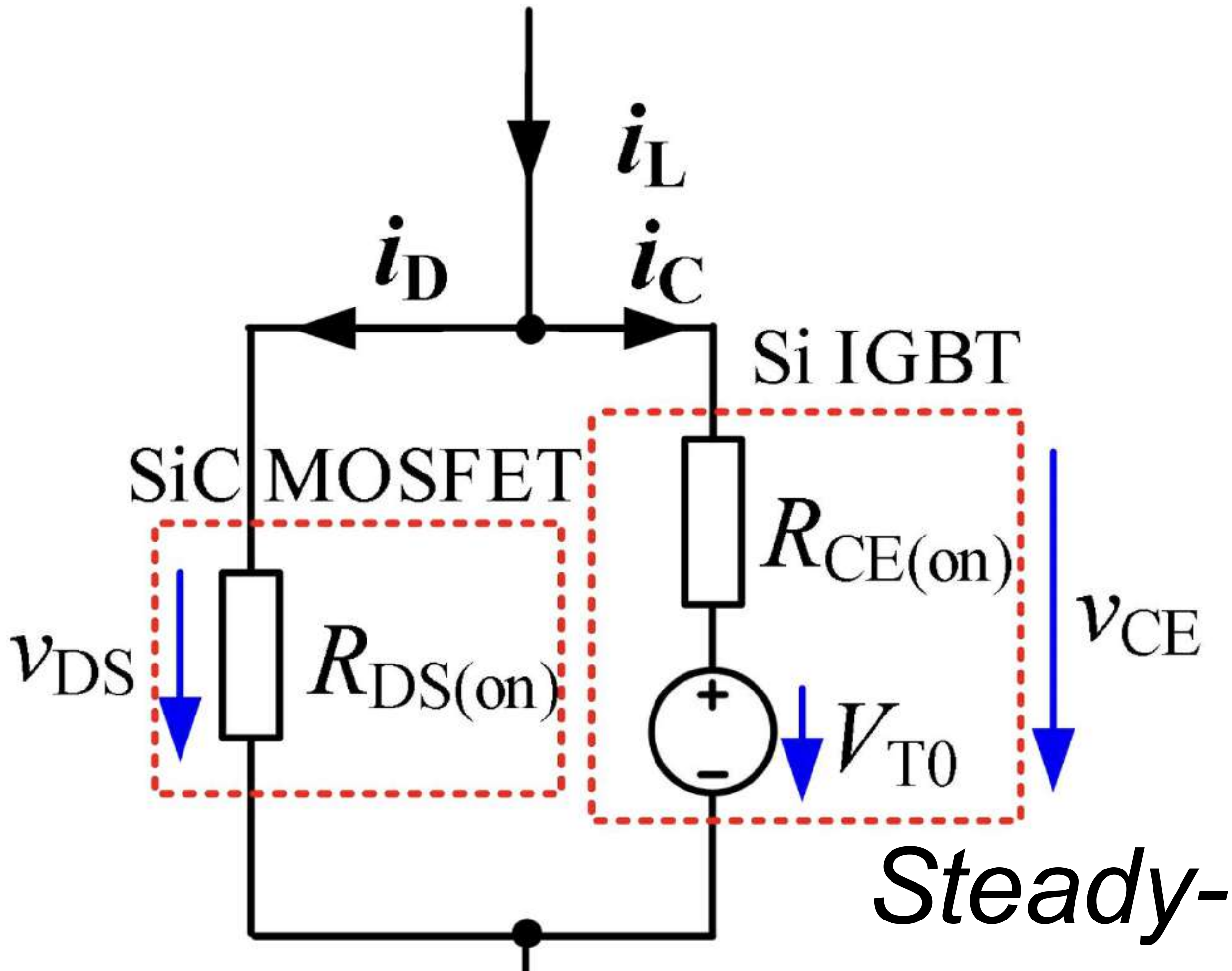
Bruckewell Si/SiC HyS Module CMSG120N013MDG With Isolated Dual-Channel Gate Driver-IGD8233 series

CMSG120N013MDG

Ic(A), 25C=260A

Ic(A), 100C=130A

VCE(on) typ. = 1.8V & RCE(on) typ. = 13mΩ
@ VG1E=VG2S = 15V, IC = 130A
Equivalent MOSFET Parameters
RDS(on) typ. = 13mΩ @ VGS = 15V, ID = 130A



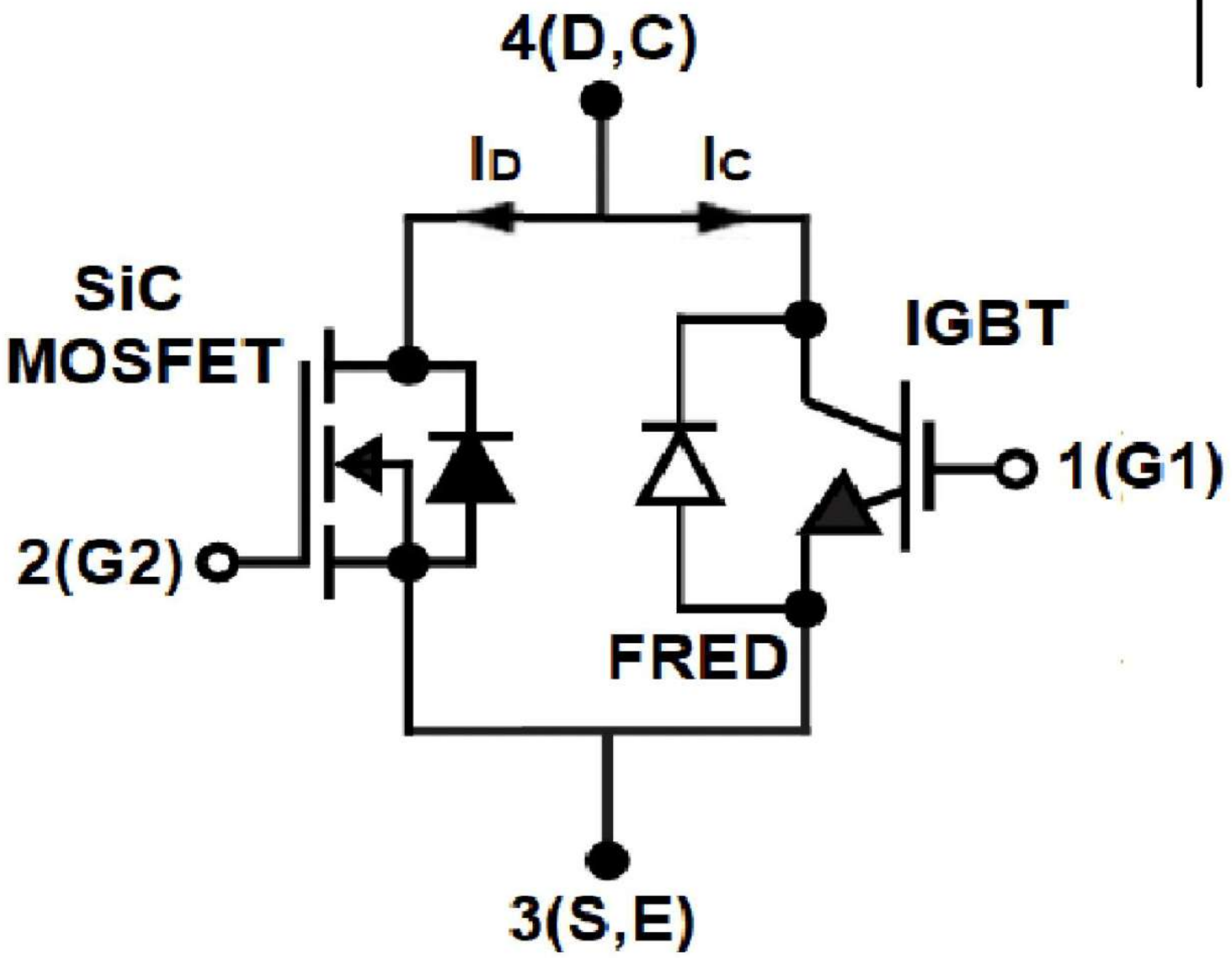
$$i_C = \frac{i_L \cdot R_{DS(on)} - V_{T0}}{R_{DS(on)} + R_{CE(on)}}$$

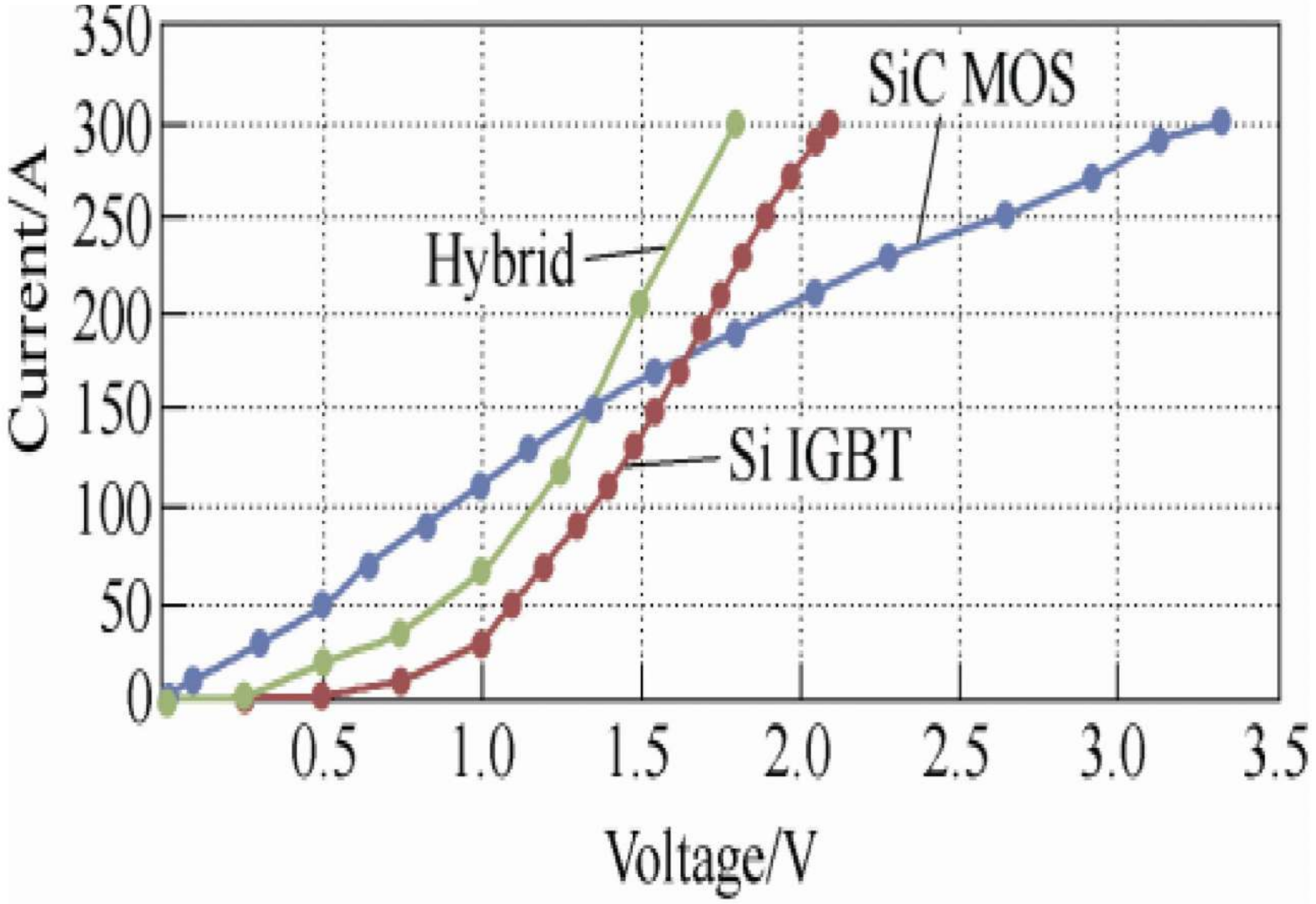
$$i_D = \frac{i_L \cdot R_{CE(on)} + V_{T0}}{R_{DS(on)} + R_{CE(on)}}$$

Steady-state model of hybrid parallel devices

IGBT:
G1 Gate
C Collector
E Emitter

SiC MOSFET
G2 Gate
D Drain
S Source





Isolated Dual-Channel Gate Driver Application

Isolated Dual-Channel Gate Driver-IGD8233 series

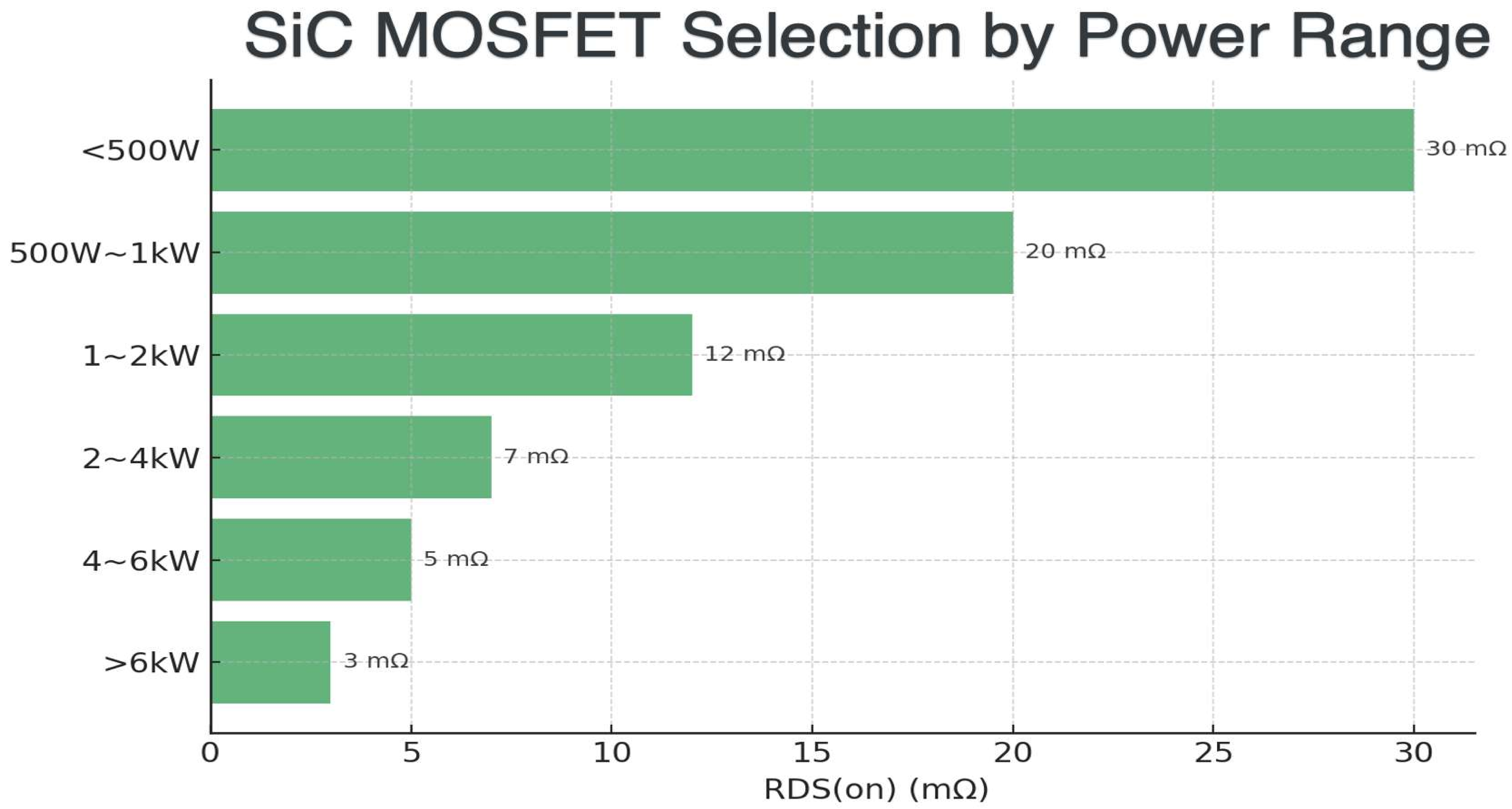
P2P compatibility with Skyworks SI8233 and Novosense NSI6602 makes the IGD8233 Series a top choice for replacing scarce materials, especially amidst the surge of cutting-edge technologies in power supplies, motors, and air conditioning drivers.

Designed to optimize Bruckewell MOSFETs and IGBTs,.

Industrial Applications:
- Power Delivery Systems
- Motor Control Systems
- Isolated DC-DC Power Supplies
- Lighting Control Systems
- Plasma Displays
- Solar and Industrial Inverters

Automotive Applications:
- On-board Chargers
- Battery Management Systems
- Charging Stations
- Traction Inverters
- Hybrid Electric Vehicles
- Battery Electric Vehicles

SiC MOSFET Application by Power Range



Brückewell
Bruckewell Technology LTD.

Thank you
謝謝

Next-Generation
Power Semiconductors
Global key Supplier