



Build An International Brand Of Semiconductor Discrete Devices

# Company Profile

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Ver: 2024.06

Microdiode Semiconductor (Shenzhen) Co., Ltd.



- 01** About US
- 02** Products
- 03** R&D and Quality
- 04** Applications



Build An International Brand Of Semiconductor Discrete Devices

01



About us



# Overview



 **16** years

Deeply engaged in the semiconductor discrete device industry for 16 years

 **5** areas

Focus on five major areas: new energy vehicles, industrial control, consumer electronics, communications, and home appliances

 **40** countries

Products are distributed in 40 countries and regions around the world

 **20000** client

Cumulative terminal customers exceed 20,000

# Location



## HEADQUARTER

Shenzhen, GuandDong China



## FACTORY

Chuzhou, Anhui, China



## REP. & DISTRIBUTOR

[9 Orchard, Ste 106, Lake Forest, CA 92630, USA](#)



# History

 **2008**

Established Microdiode Semiconductor (Shenzhen) Co., Ltd.

 **2016**

\*Passed ISO9001:2015/ISO14001:2015. \*Became a shareholder of Shandong packaging factory.

 **2018**

\*Won National High-tech Enterprise in November; \*Won Shenzhen High-tech Enterprise in December.

 **2022**

\*Chuzhou factory was established, monthly capacity > 600KK. \*Won the Shenzhen Specialized and New Enterprise Certificate.



 **2011-2013**

\*Launched MDD brand.  
\*SMAF and SMBF ultra-thin packages are on the market.  
\* Invested in Jiangsu packaging factory.

 **2017**

\*Established international trade department to lay out overseas markets.  
\*Products are selling to 40 countries including Europe, the United States, Japan, South Korea, and Southeast Asia.

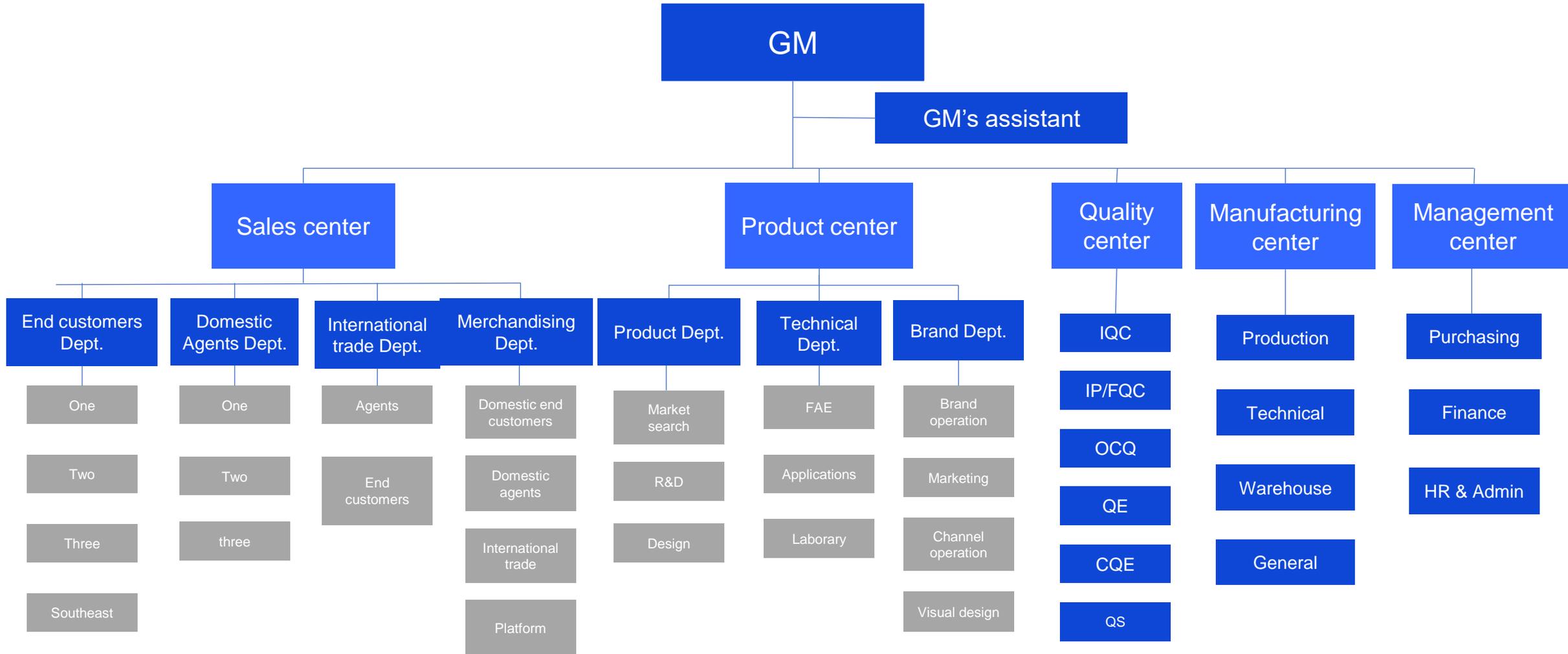
 **2019-2020**

\*Design and mass production of ESD and bridges.  
\*Sold them to customers such as Luxshare, Lenovo, Greenlink, TTI, and Zhuimi.

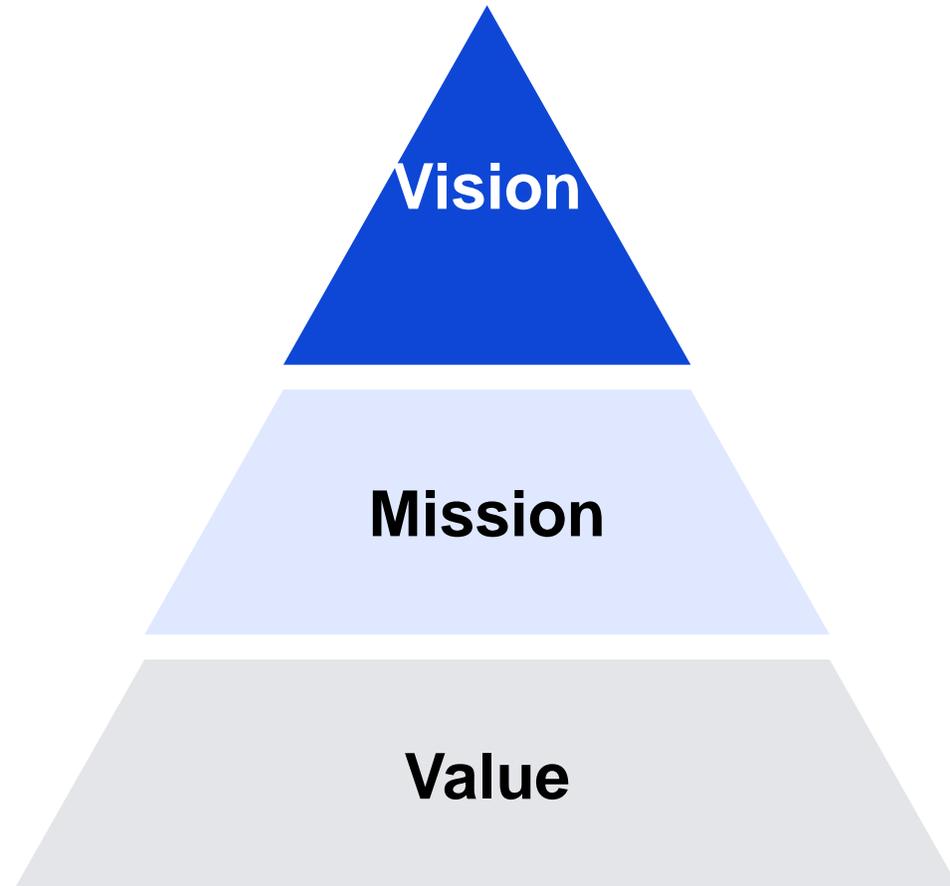
 **2023-2025**

\*Auto grade products certify.  
\*Monthly capacity > 850KK.  
\*3rd generation semiconductor R&D and mass production.  
\*Strategic goal > 500 million.

# Organization



# Culture



Be an innovative and leading international brand of semiconductor discrete devices.

Fulfill customers, contribute to intelligent electronic manufacturing.  
Fulfill employees, create a better life for their families.

Professional and pragmatic, service-oriented, efficient and innovative, win-win cooperation

# Honors

- National High-Tech Enterprise
- Shenzhen High-tech Enterprise
- Shenzhen Specialized and New Small and Medium Enterprises
- Shenzhen innovative small and medium-sized enterprises
- Shenzhen Entrepreneurship Pioneer Growth Enterprise
- Guangdong Province Contract-abiding and Credit-worthy Enterprise
- Top 10 high-quality suppliers of diodes and triodes in 2017
- Shenzhen Electronics Chamber of Commerce Outstanding Contribution Enterprise
- Vice President Unit of Shenzhen Electronics Chamber of Commerce



# Factory Scenes





Build An International Brand Of Semiconductor Discrete Devices

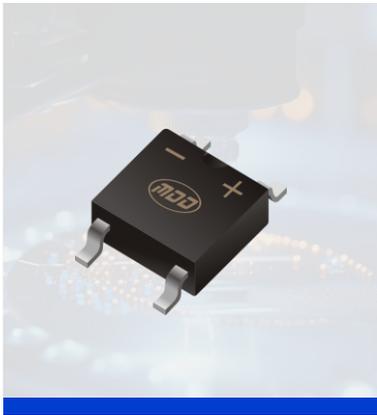
# 02

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## Products



# Product Series



## Rectification Device

Bridge Rectifiers  
 General Purpose Rectifiers Diodes  
 Schottky Diodes  
 Fast Recovery Diodes  
 High Efficient Diodes  
 Ultra Fast Recovery Diodes



## Small signal

Small Signal Switching Diodes  
 Small Signal Schottky Diodes  
 Small Signal Schottky Transistors



## Protective device

TVS Diodes  
 ESD Diodes  
 Zener Diodes



## MOSFET

Planar MOS  
 Trench MOS  
 SGT MOS  
 SJ MOS



## SiC

SiC Schottky Barrier  
 SiC MOSFET

# Rectifier Device—STD

Category	Product series	Current Rating	Voltage Rating	Packages
Schottky Barrier	Small Signal Schottky Diodes	0.015A-1A	20-100V	SOD-123,SOD-323,SOD-523,SOT-23
	Schottky Rectifiers	1A-40A	20-200V	SOD-123FL,SMA,SMB,SMC,TO-277,TO-252,TO-263,TO-220(F),etc
Diodes	Small Signal Switching Diodes	0.1A-0.35A	30-250V	SOD-123,SOD-323,SOD-523,SOT-23
	General Purpose Rectifiers	1A-10A	50-1000V	SOD-123FL,SMA,SMB,SMC
	Fast Recovery Rectifiers	1A-5A	50-1000V	SOD-123FL,SMA,SMB,SMC
	High Efficient Rectifier	1A-5A	50-1000V	SOD-123FL,SMA,SMB,SMC
	Ultra Fast Recovery Rectifiers	1A-5A	50-600V	SOD-123FL,SMA,SMB,SMC
Bridge	General Purpose Bridge	0.8A-50A	50-1000V	MBS,MBF,ABS,DBS,UMSB,TTF,DB,KBP,KBL,KBJ,GBU,GBJ,etc
	Fast Recovery Bridge	1A-8A	50-1000V	MBS,ABS,UMSB,TTF

# Protective Device——ESD

## Product Features and Benefits

- IEC61000-4-2 (ESD)  $\pm 30\text{kV}$  (air),  $\pm 30\text{kV}$  (contact)
- Low Leakage Current
- Low Capacitance
- High Pulse Current
- Working Voltage: 3.3-36V
- Packaging Diversity: DFN0603、DFN1006、DFN1610、DFN2020、DFN2510、SOD-123、SOD-323、SOD-523、SOT-23、SOT-23-6L, etc



DFN1006



DFN2510



SOD-123



SOD-323



SOD-523



SOT-23-6L

# Protective Device——TVS

## Product Features and Benefits

- Fast response time
- Excellent clamping capability
- Low inductance
- Working Voltage: 5.0V-440V
  
- Packaging Diversity: SOD-123FL, SMAF、SMA、SMB、SMC、DO-218AB



SOD-123FL



DO-218AB



SMAF



SMA



SMB



SMC

# Protective Device——Zener

## Product Features and Benefits

- Total power dissipation: Max. 0.2W-5W.
- Wide zener reverse voltage range 3.3V to 330V.
- Small plastic package suitable for surface mounted design.
- Tolerance approximately :  $\pm 2\%$ 、 $\pm 5\%$
- Packaging Diversity: SOD-123, SOD-323、SOD-523、SMAF、SMA、SMB



SOD-123



SOD-323



SOD-523



SMA



SMB

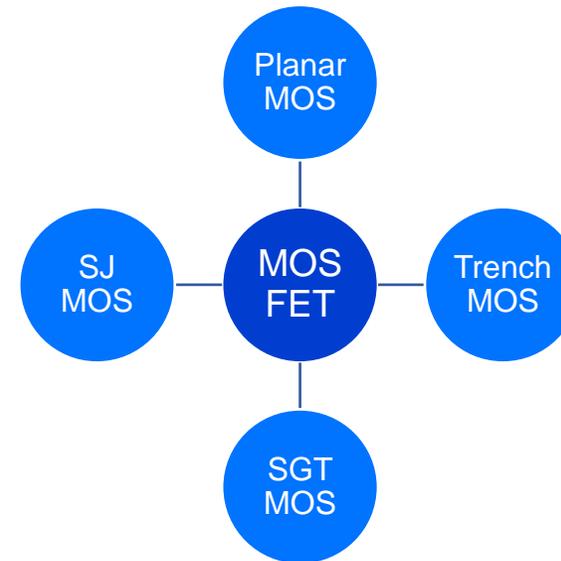


SMAF

# MOSFET

## Product Features and Benefits

- Low  $R_{d(on)}$
- Ultra low gate charge
- Extremely low switching loss
- Excellent reliability and uniformity
- Fast switching and soft recovery



PDFN3\*3-8L



PDFN5\*6-8L



TO-220F



TO-247-3L



TO-252



SOT-23

# SiC MOSFET

## Product Features and Benefits

- High Blocking Voltage
- Low Rd(on)
- High Speed Switching with Low Capacitances
- Excellent reliability and uniformity
- Fast switching and soft recovery



TO-247-3L

Part Number	Package	Type	Bvdss (V)	I <sub>D</sub> (A)	V <sub>GS</sub> (V)	R <sub>DS(ON)</sub> (mΩ) V <sub>GS</sub> =20V		V <sub>GS(th)</sub> (V)	
						Typ.	Max.	Min.	Max.
MDDG2C065R060K3	TO-247-3L	N	650	29	-8/+19	60	79	1.8	3.6
MDDG2C120R160K3	TO-247-3L	N	1200	18	-10/+25	160	196	2	4
MDDG1C120R080K3	TO-247-3L	N	1200	36	-10/+25	80	98	2	4
MDDG1C120R040K3	TO-247-3L	N	1200	55	-10/+25	44	52	2	4
MDDG2C120R016K3	TO-247-3L	N	1200	115	-8/+19	16	22.3	1.8	3.6
MDDG2C170R045K3	TO-247-3L	N	1700	72	-10/+25	45	70	2	4

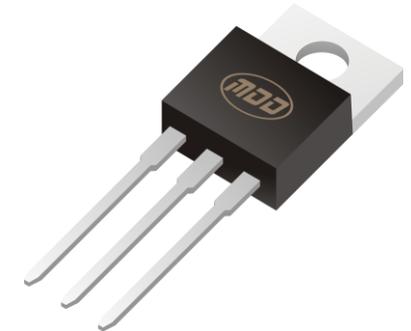
# SiC SBD

## Product Features and Benefits

- 1.7kV Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching
- Extremely Fast Switching
- Positive Temperature Coefficient on VF



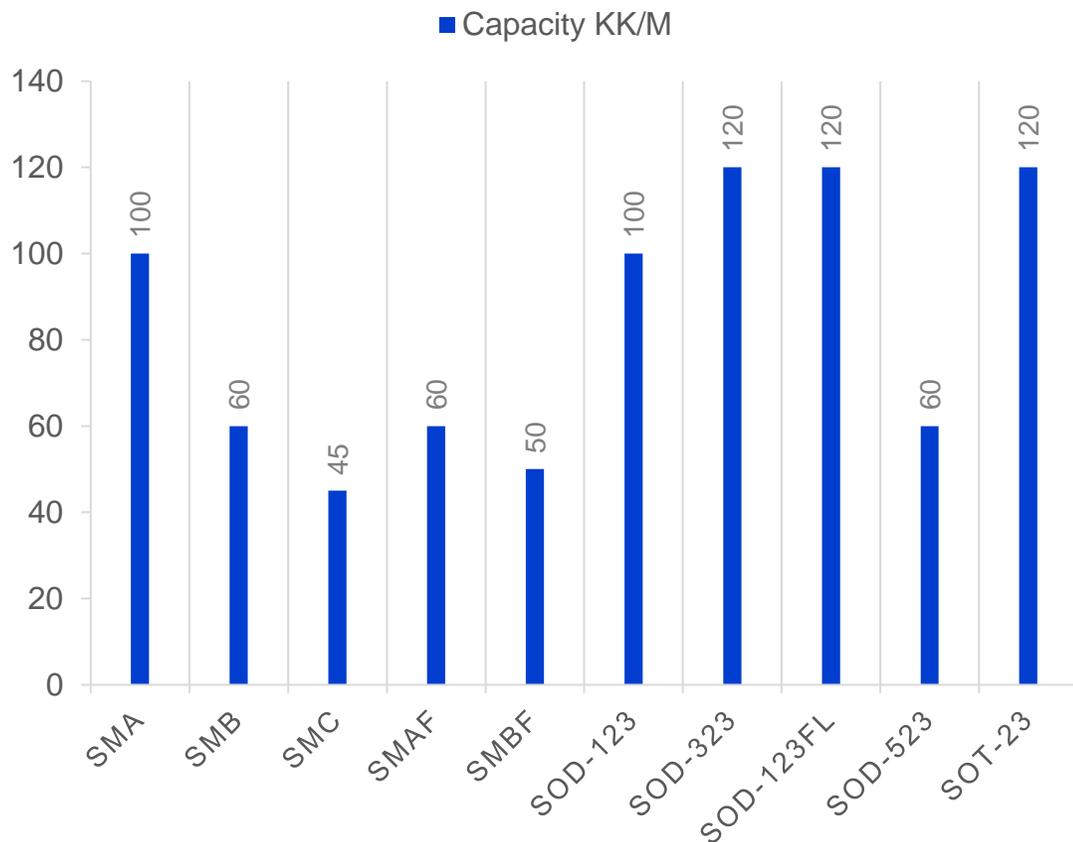
TO-247-2L



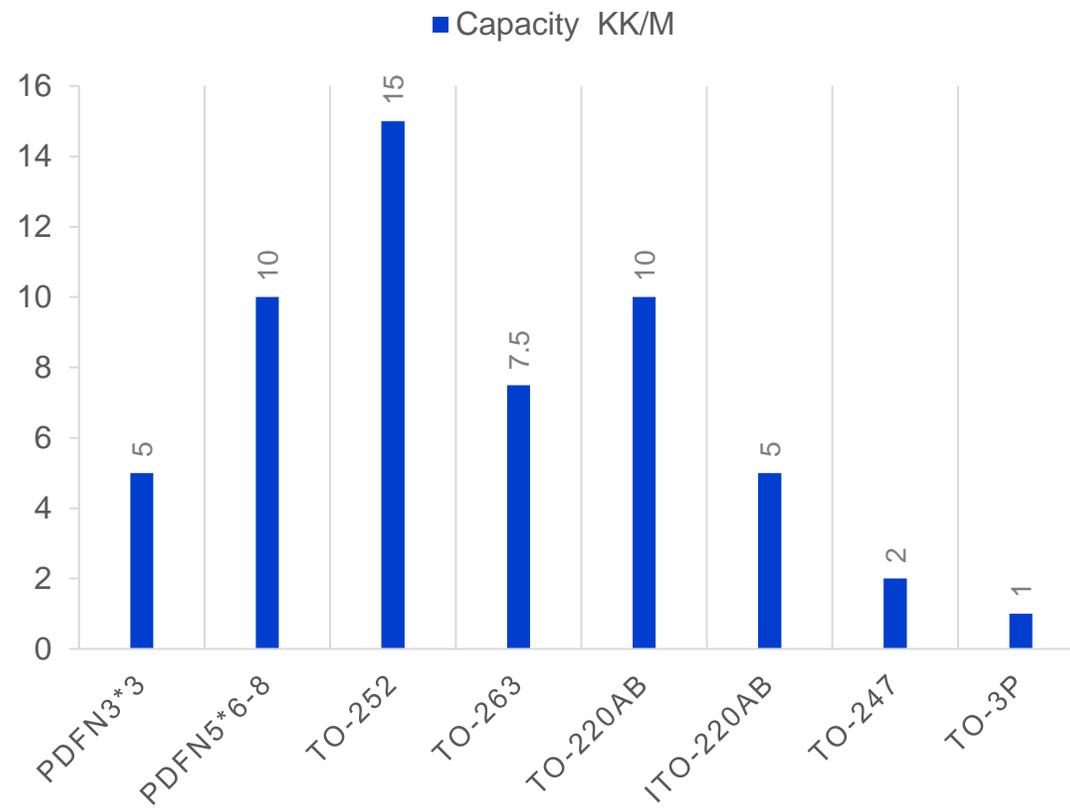
TO-220

型号 TYPE NO.MDD	Package	最大反向峰值电压 Max.Reverse Voltage	平均电流 IF	浪涌电流 IFSM	正向电压 VF.Max	正向电流 @IF	反向漏电流 IR@VR
							( $\mu$ A)
MCRP210650SG3	TO-220	650	10	90	2	10	60
MCRK2101200SG3	TO-247-2L	1200	10	67	1.8	10	250
MCRK2201200SG3	TO-247-2L	1200	20	130	1.8	20	200
MCRK2401200SG2	TO-247-2L	1200	40	247	1.8	40	300
MCRK2101700SG3	TO-247-2L	1700	10	55	2	10	60

# Package Capacity — Low Power . High Power

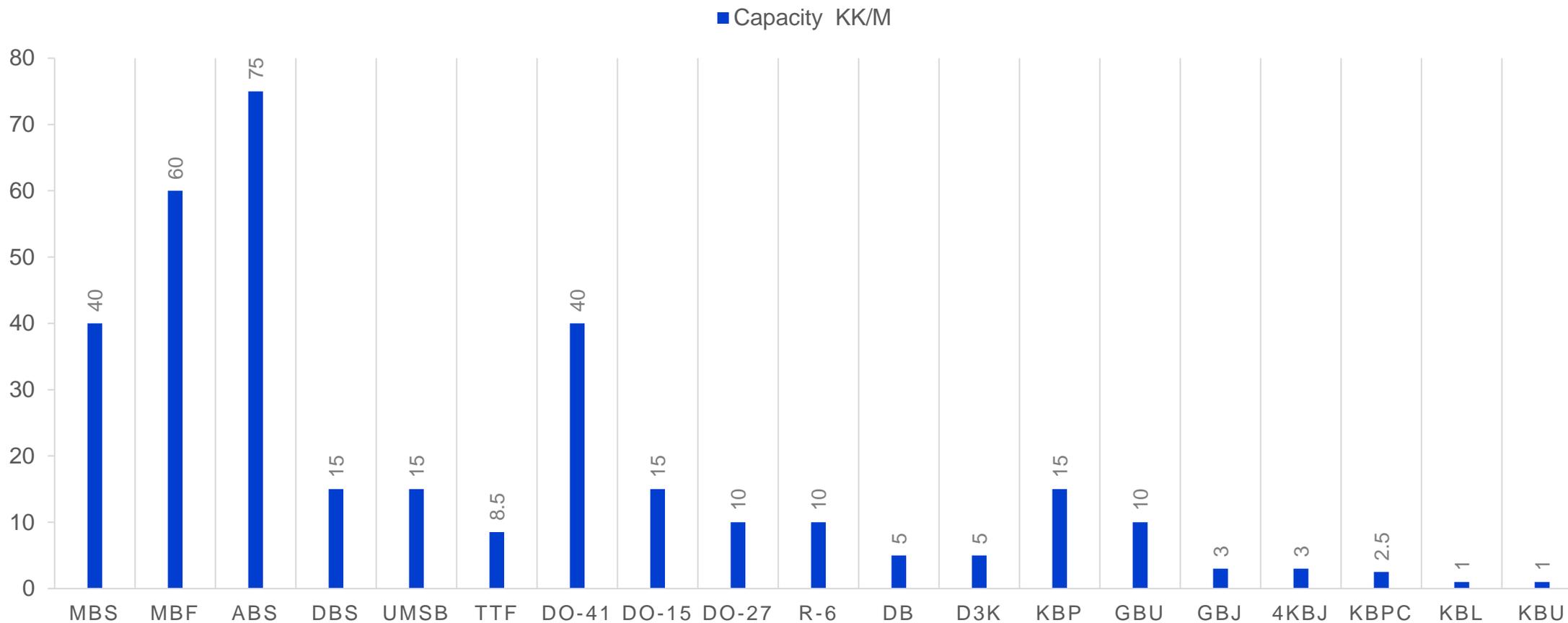


Low Power Capacity per month



High Power Capacity per month

# Package Capacity — Bridge Rectifiers, Diodes



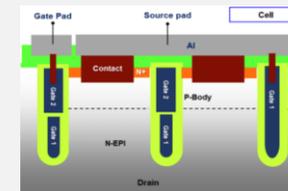
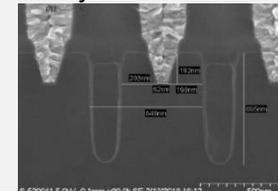
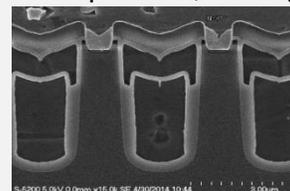
# MOSFET Product Blueprint

## Diversified Products

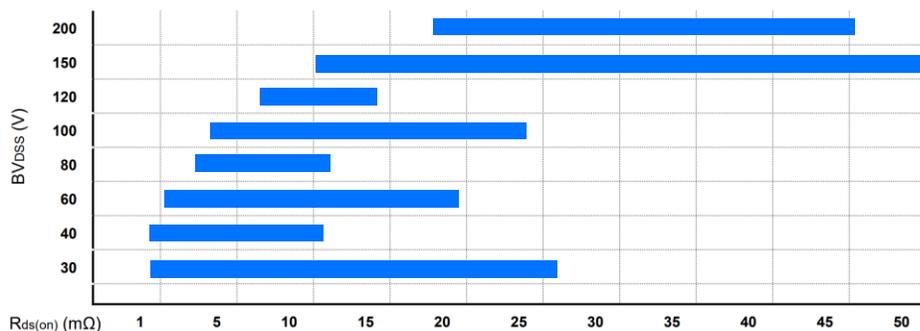


## Leading SGT MOSFET Technology

RDS(ON) : At least 50% optimization compared to other similar components,, meaning that power consumption can be optimized in high-current applications  
 Gate charge (Qg) : At least 65% optimization compared to other similar components, leading the industry



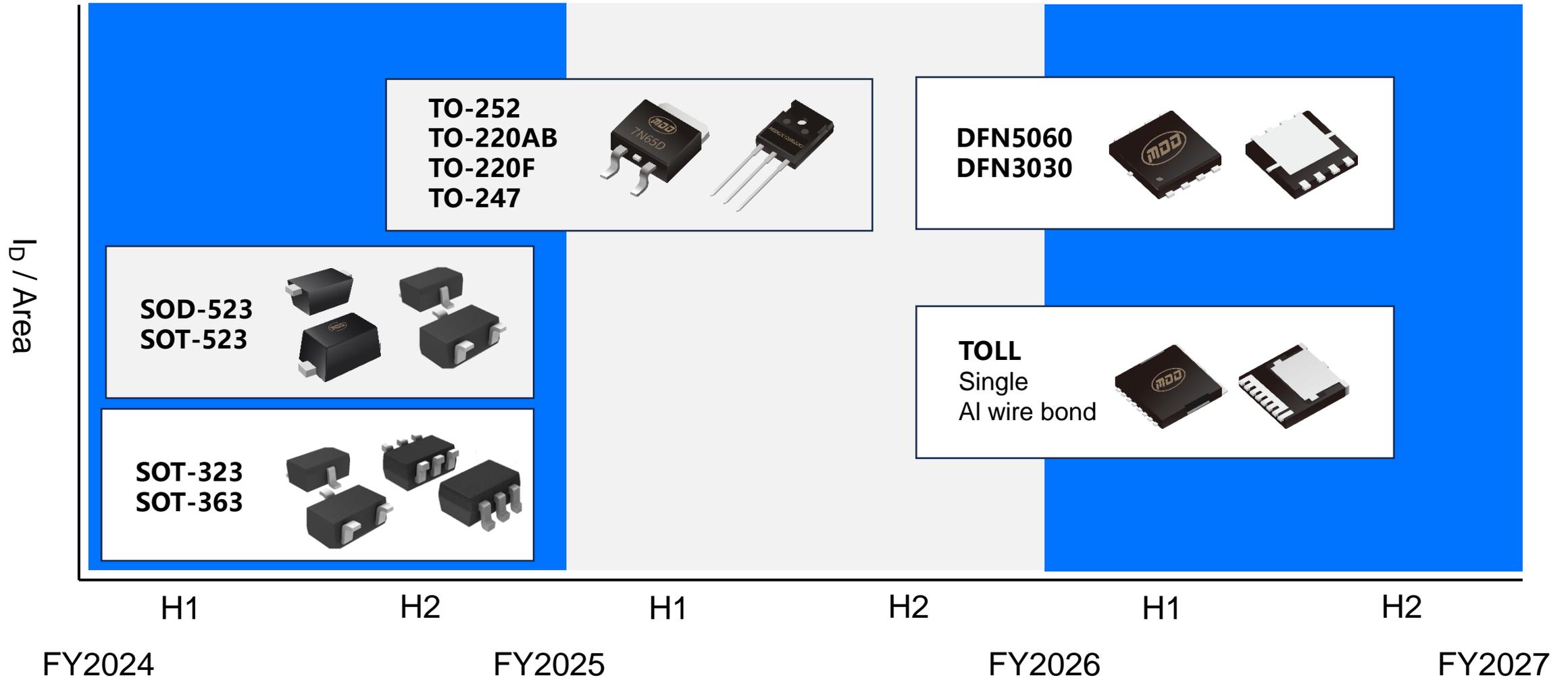
## SGT MOSFET Rds(on) vs. BVdss Overview



## ESD Enhancement Design Capability

ESD Structure	Process	Potential Impact
<p>Each Poly Si Back-to-Back Zener diode can afford 4-6V stress (Define which stress level customer needs)</p>	Back-to-Back Poly Si Zener	Increase Igss (Pay special attention to ESD implant)
	Back-to-Back Poly Si Zener + Thicken Poly	Increase Igss (Pay special attention to ESD implant)
	Back-to-Back Poly Si Zener + Thicken Poly + Serial with Resistor	Increase Igss and Rg (Only suitable for small die size, ex 7002 series)

# Package Planning Blueprint



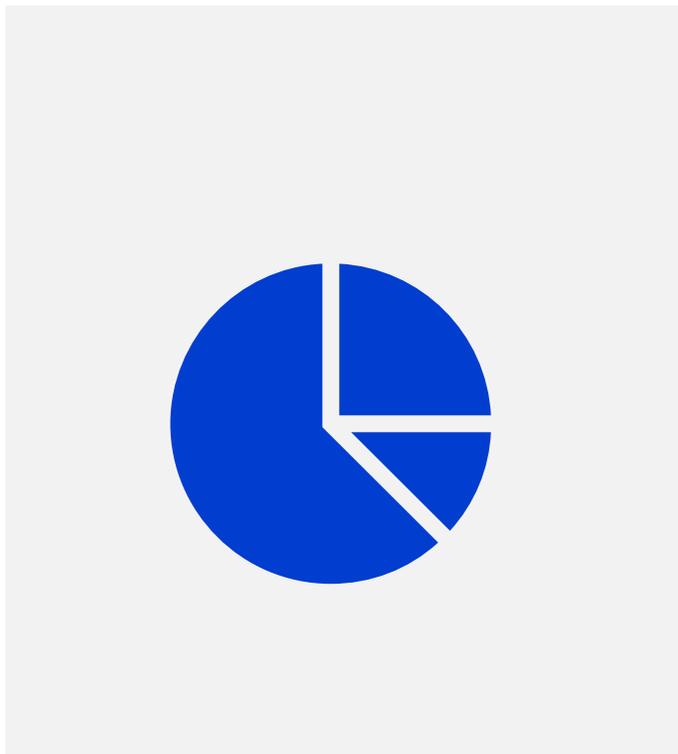
# 03

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## R&D and Quality



# Technology R&D



## R&D Input

Continuous research and development investment, annual research and development expenses accounted for nearly 10%-12% of sales



## R&D Platform

MDD built its own R&D laboratory, continuously introduced senior technical talents, and formed a high-quality talent team covering high-end chip R&D and advanced packages R&D.



## Technical Patent

MDD has obtained a total of 35 authorized national patents, including 5 invention patents.

# Quality Assurance



**Continuous and complete quality management system**



**Advanced instruments and equipment**



**Production management staff with more than 20 years of industry experience**

# The Reliability Lab

## Reliability Test

conducts reliability tests on related products according to entrusted requirements, judges the test results, gives accurate test results and issues reports.

## Lightning Surge Ability Test

MDD conducts surge overvoltage test for protection device products according to entrusted requirements, judges the test results, provides accurate test results and issues a report.

## Failure Analysis

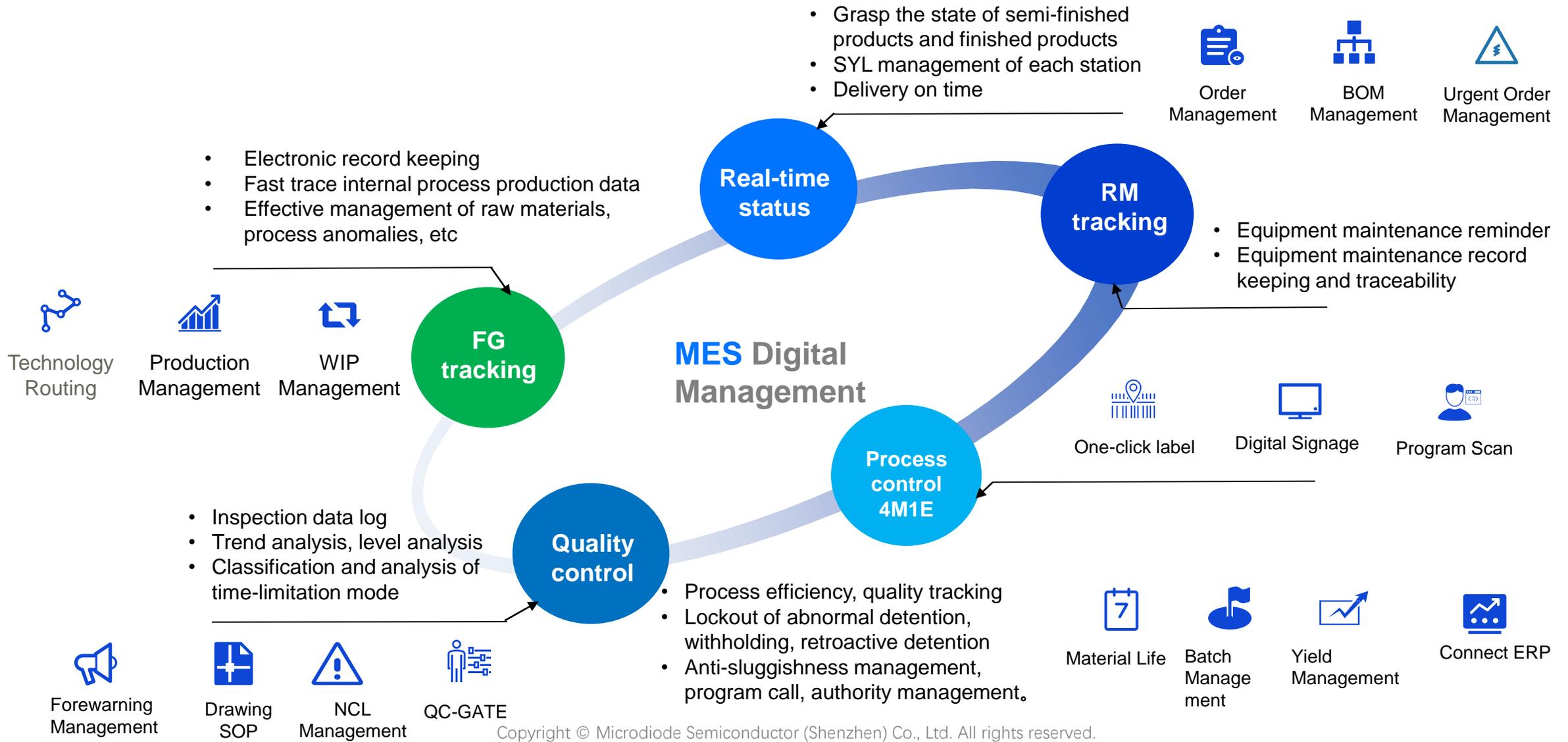
MDD analyzes the failure samples in the testing process, obtains the preliminary failure cause, and assists the product engineer to find out the real cause of the product failure.

## Dynamic and Static Parameter Test

MDD tests the electrical performance of the product according to the given test conditions, including dynamic and static parameter testing at high and low temperatures.



# MES Digital Management System — Process Control MES



# 04

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## Applications



# Application Field

## New Energy Vehicles

Battery management, Central control, Inverter, HID xenon lamp, Vehicle OBC, Charging pile

## Smart Home

Sweeping robots, Floor washing machines, Home appliances, High-speed hair dryers

## Consumer Electronics

Mobile phones, Tablets, POS machines, Laptops, drones, Power adapters, PD fast charging, Mobile power supplies, PC power supplies, Smart wearables

## Industry Control

Robots, Instruments, Power tools, Frequency converters, BMS, Photovoltaic inverters, Energy storage, Electronic detonators

## Telecommunication

Gateway, Router, 5G power supply, Base station Power supply

# Main Application — Battery Management

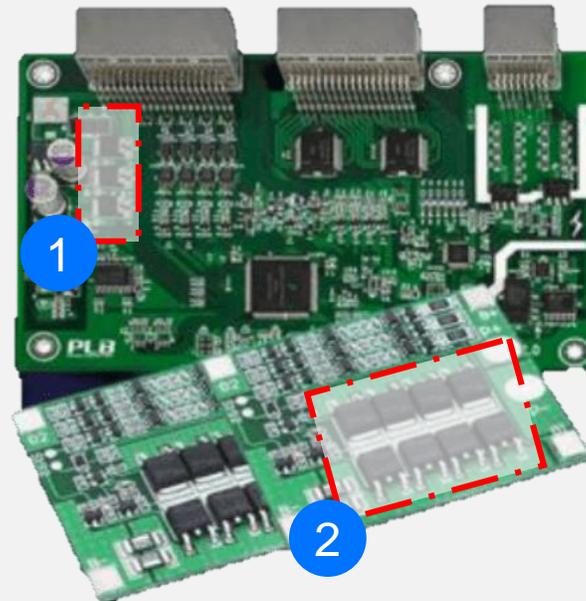
## Applications

### Battery Management System

- Can manage 16 single 23AH lithium iron phosphate batteries at the same time
- Discharge overcurrent and overload protection
- High and low temperature protection
- Single battery low voltage detection and protection
- Working range: 30-60V, maximum current 20A



## Structure/Diagram



Photovoltaic power generation, Electric vehicle, Battery energy storage

## Recommended Product Models

Category	MDD Part No.	Spec.	Package
Charge and discharge	MDDG10R12D	N-MOS/100V/55A	TO-252
Battery protection	MDDG10R10D	N-MOS/100V/60A	TO-252

# Main Application — Portable Energy Storage Inverter Power Supply

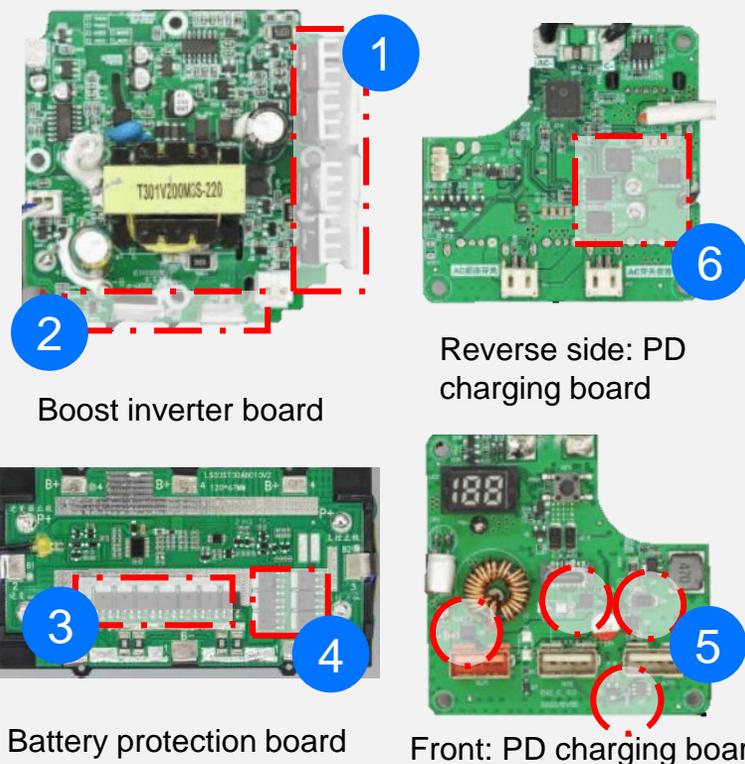
## Market Application

### Portable energy storage inverter power supply

- 65W 3A+1C PD Fast charging
- Support bidirectional charging and discharging
- 200W sine AC output



## Structure/Diagram



## Recommended Product Models

Category	MDD Part No.	Spec.	Package
Boost inverter	MDD13N50F	N-MOS/500V/0.46Ω	TO-220F
Push pull to boost pressure	MDDG06R03HP	N-MOS/60V/130A	TO-220
Battery protection	MDD50N03D	N-MOS/30V/50A	TO-252
Charge and discharge protection	MDD30N03D	30V/30A	TO-252
VBUS tube	MDDG06R10G	60V/68A	PDFN5*6-8L
Synchronous rectification	MDDG06R03HG	60V/130A	PDFN5*6-8L

# Main Application — Sweeping Robot

## Applications

### Sweeping robot

Host Rated Input	20V 2A
Rated Input	220-240V ~ 50-60Hz
Rated Output	20V 2A
Rated Input Current (charged state)	0.3A
Power (wash mop status)	35W
Power (drying state)	100W



## Structure/Diagram



## Recommended Product Models

Category	MDD Part No.	Spec.	Package
Transistor	MMBT4401	NPN/60V/0.6A	SOT-23
Transistor	MMBT3904	NPN/60V/0.2A	SOT-23
Transistor	2SC1623	NPN/50V/0.1A	SOT23
Schottky	BAT54WS	30V/0.2A	SOD-323
Switching	MMBD4148SE	100V/0.20A	SOT-23
Zener	BZX84C4V7	4.4V~4.7V	SOT23
TVS	SMBJ26A	28.9V~31.9V	SMB
Signal Mos	2N7002K	N/60V/0.34A	SOT-23
Power MOS	MDD16N65F	N/650V/0.6Ω	TO-220F
Bridge	DB207S	1000V/2A	DBS

# Main Application——Electric Bicycle

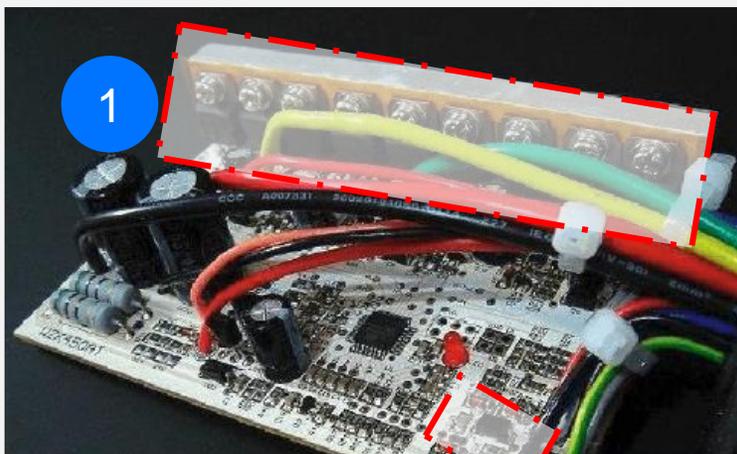
## Applications

### Two-wheel electric vehicle drive power supply

- 500W two-wheel electric vehicle drive
- Power Supply working range: 48-60V
- Universal 4-5 sets of 20AH lead-acid or lithium iron phosphate batteries
- Soft Start
- Under Voltage Protection



## Structure/Diagram



## Recommended Product Models

Category	MDD Part No.	Spec.	Package
Motor drive	MDDG10R08P	N-MOS/100V/70A	TO-220
VCC power supply	S1M	diode/1000V/1A	SMA

# Customers Served

## Power Supply



## Smart Home



## Electrical Tools



## Lithium Battery



# Customers Served

## EMS Factory



TOPBAND 拓邦



## Industry Control



YOGO ROBOT



## New Energy



## Electrical Instrument



# Worldwide Market



## Domestic

- 3 Sales Offices
- 2 Logistics Warehouses (Shenzhen & Anhui)
- Close to the market and customers to ensure express delivery response and quality service

## Overseas

- Exported to 40 Countries and Regions
- More than 15 Overseas Agency Channels

# Advantages



## Leading Technology

Continous investment in R&D,  
Obtained multiple invention patents,  
and put them into practical use  
One of the domestic discrete device  
manufacturers with leading technology  
and complete range of products

## Quality Assurance

Have advanced core equipment for the  
production  
16 years of experience in R&D and  
manufacturing of semiconductor discrete  
devices

## Professional Service

Provide customers special improvement  
suggestions and solutions based on their  
individual needs  
Professional MOSFET, lightning protection,  
surge protection, ESD protection and other  
reliable solution support

## Quality Delivery

The entire link between design, R&D,  
production and sales is open, and the  
entire process is digitally managed to  
achieve 100% traceability of the production  
process.  
Sign strategic cooperation agreements with  
core main material suppliers to maintain  
stable leadtime and reliable quality



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# THANK YOU !

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## HEADQUARTER

Microdiode Semiconductor (Shenzhen) Co., Ltd.

## FACTORY

Microdiode Semiconductor (AnHui) Co., Ltd.

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## REP. & DISTRIBUTOR

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