

Westpac Electronics Limited
威柏電子有限公司



威柏电子提供电动汽车核心功率器件及解决方案



FE Fuji Electric 富士电机IGBT/IPM中国区一级代理-威柏电子

香港威柏
(852)2763 5991
(852)2343 6979

深圳威柏
0755-8826 7606
0755-8826 7406

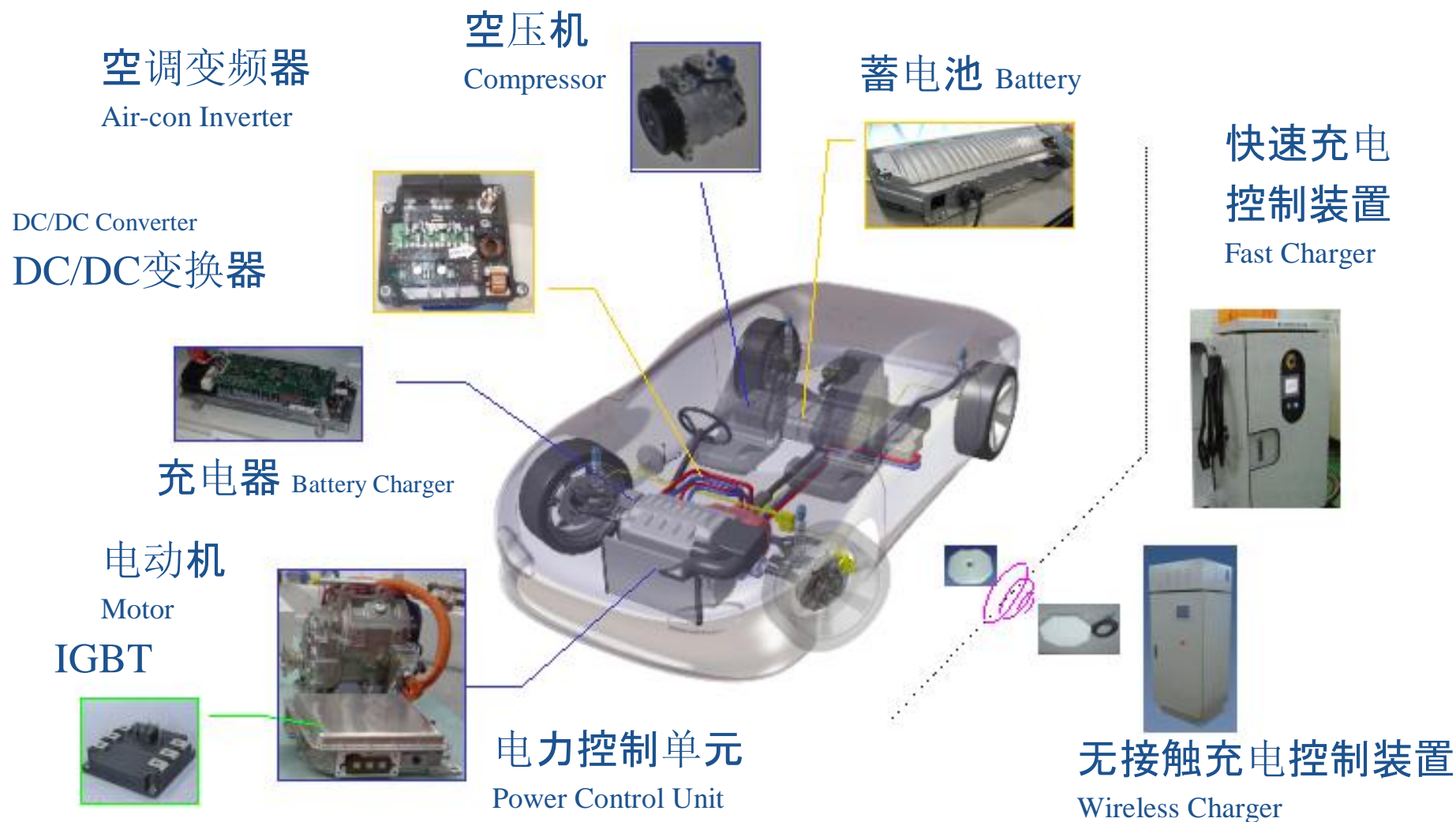
上海威柏
021-5489 1460
021-5425 9682

北京威柏
010-6750 6489
010-6750 6489

青岛威柏
0532-8823 1566
0532-8580 7948

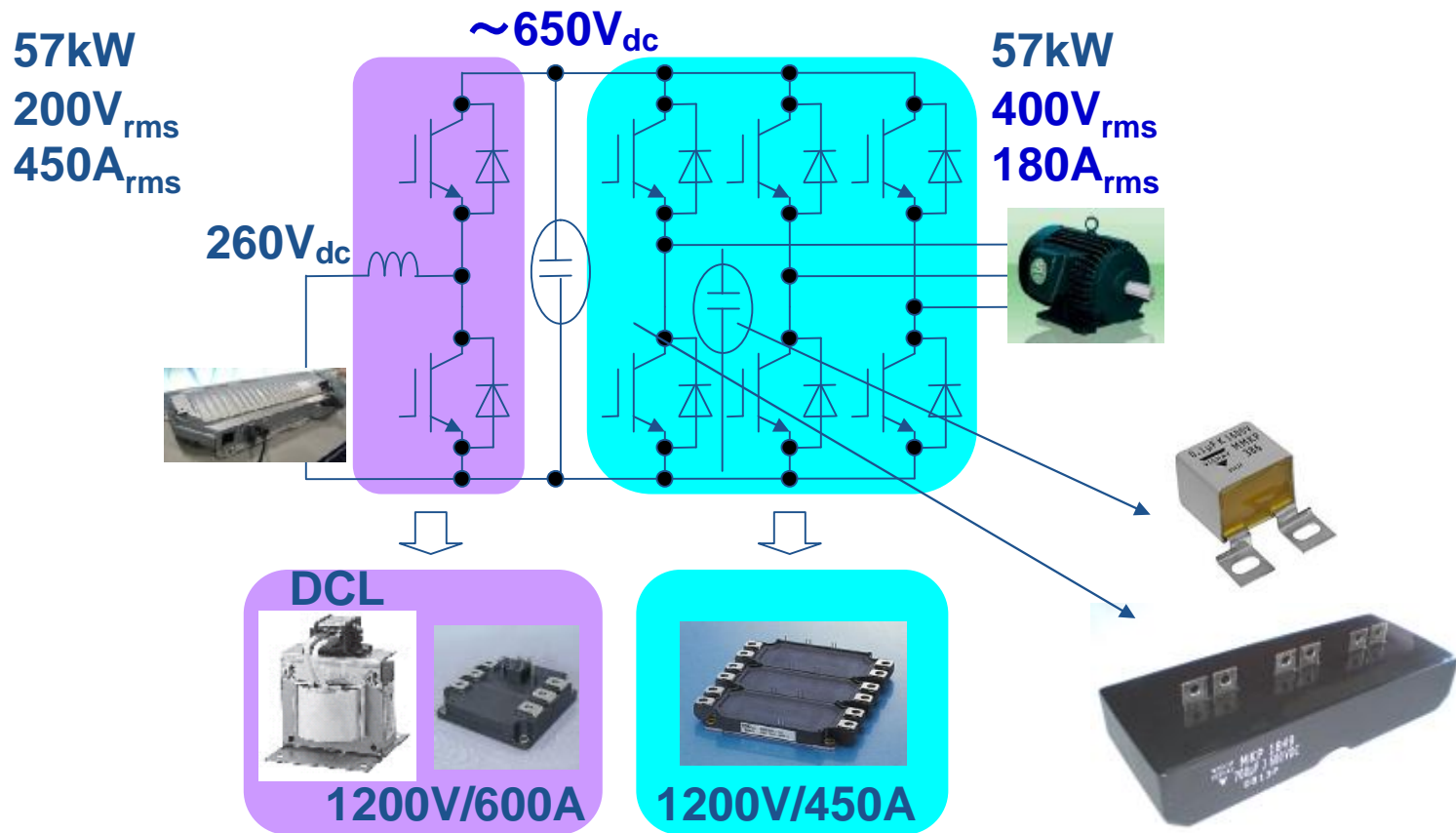
成都威柏
028-8554 0368
028-8554 0368

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威柏电子提供电动汽车电机驱动器核心器件





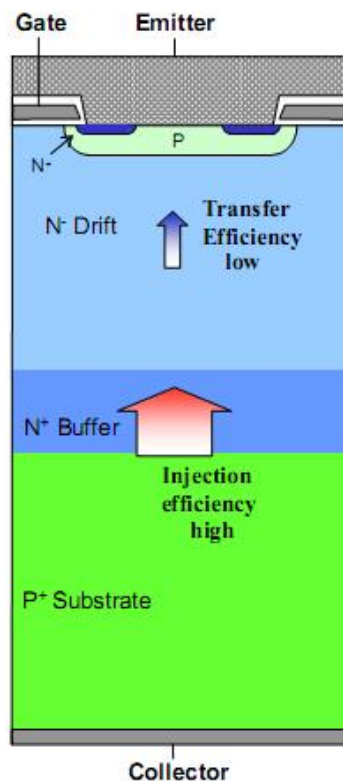
富士用于电动汽车驱动的水冷6单元IGBT

- ✓ **6in1 package 650V/400A, 650V/600A, 650V/900A**
- ✓ **for EV and Parallel Hybrid**
- ✓ **Feature : Direct water cooling Fin-base**
Compact Package
Higher Current Density Connection
with Metalized chip
- ✓ **Achieving automotive quality**



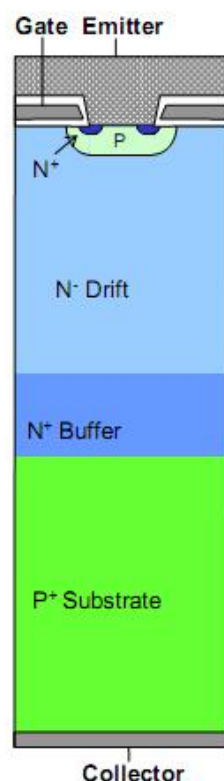
3rd GEN IGBT (1995)

Epi Wafer
Punch-through
Planer gate



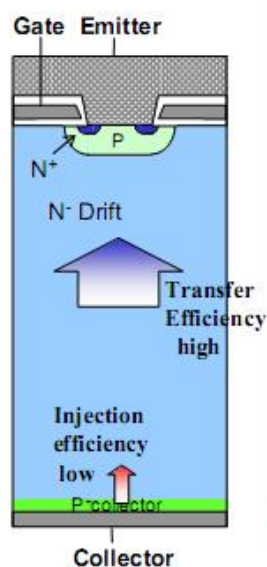
4th GEN IGBT (1999)

Epi Wafer
Punch-through
Fine Planer gate



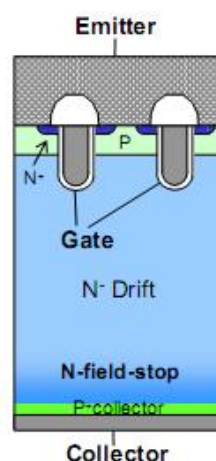
5th GEN IGBT (2002)

FZ Wafer
Non-Punch-through
Fine Planer gate



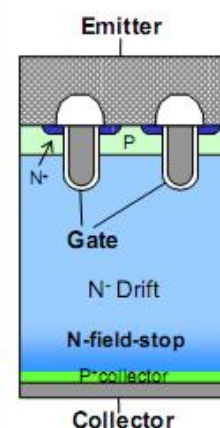
6th GEN IGBT (2009)

FZ Wafer
Field stop
Trench gate



7th GEN IGBT (2012)

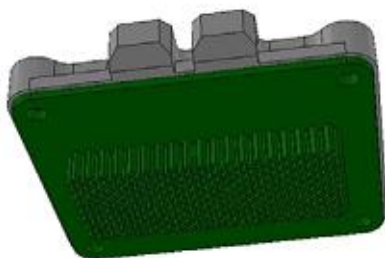
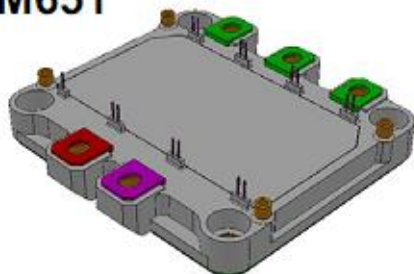
FZ Wafer
adv.-Field stop
adv.-Trench gate



V-series IGBT
Applied for
automotive-module

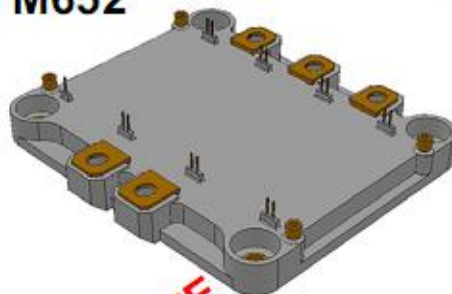


M651

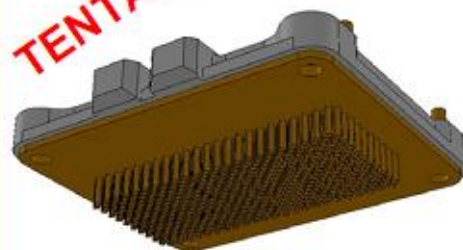


6MBI400V-065V
400A
(200Arms)

M652

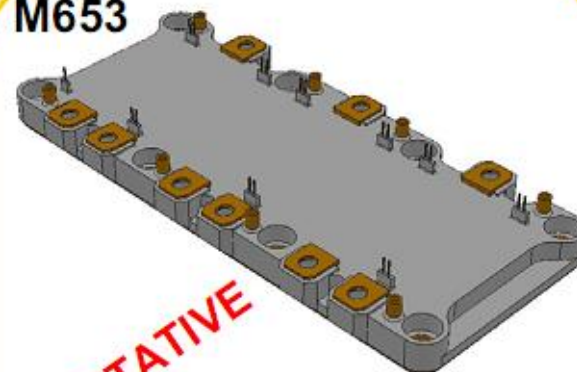


TENTATIVE

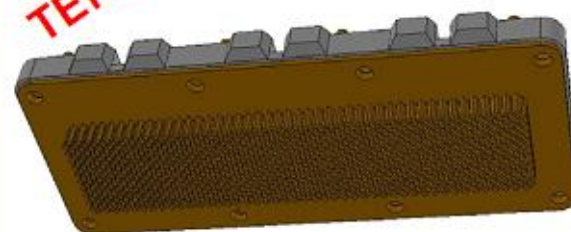


6MBI600V-065V
600A
(300Arms)

M653



TENTATIVE



6MBI900V-065V
900A
(450Arms)



富士用于电动汽车驱动的水冷6单元400A/650V

400A/650V 6in1 Direct Cooling IGBT Module

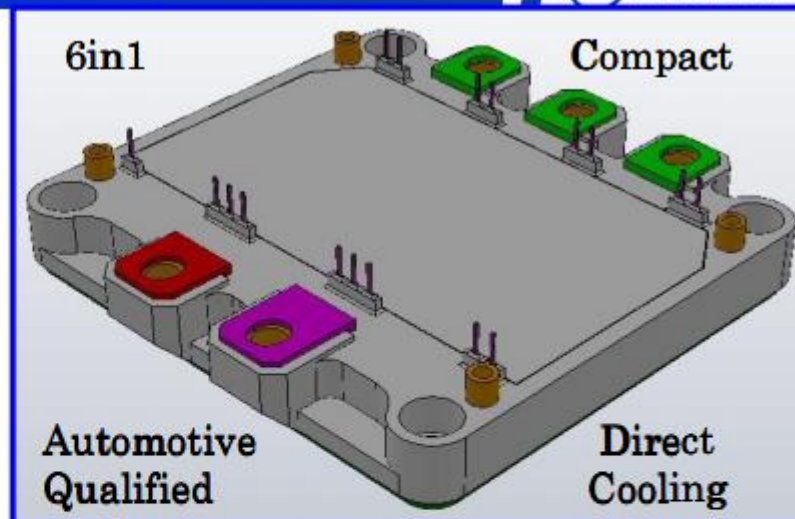


Fuji Technologies:

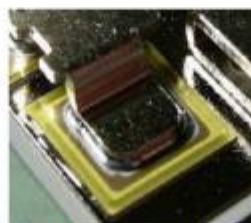
- 6th Generation IGBT
- Au and Ni Plating to IGBT/FWD surface
- Cu-Lead-Frame
- Direct Liquid Cooling

Advantages:

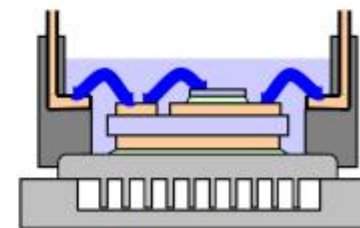
- To help reduce Inverter size !
- Contains a Cooling Fin !
- Automotive Qualified accomplished in HEV Market Experience !



Tentative Visual Image



Lead-Frame with Chip Plating technology for higher current density



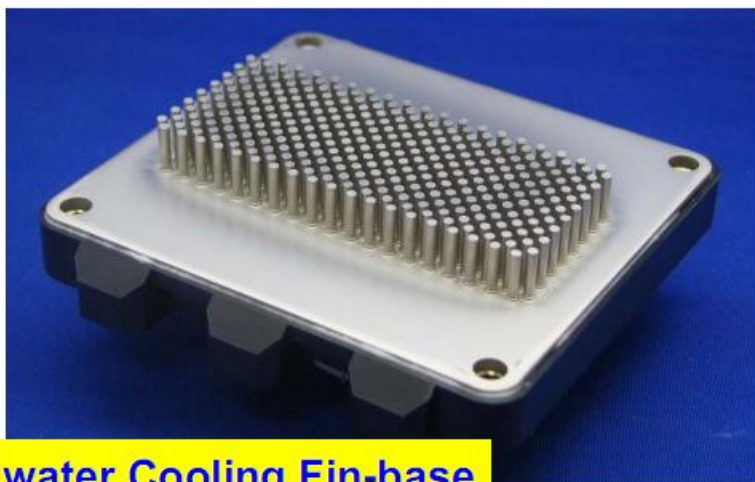
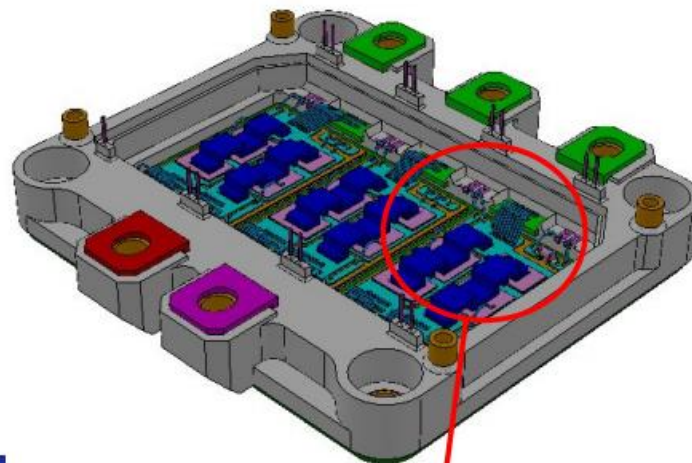
Direct Liquid Cooling



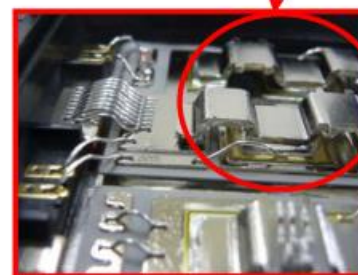
400A/650V 6in1 Module



Compact package



Direct water Cooling Fin-base



Lead-Frame connection
with metalized chips



富士用于电动汽车驱动的水冷6单元400A/650V

Inverter for Motor-drive up to 30kW

Device type :6MBI400V-065V

Package: M651

Under Development

■ Concept & Features

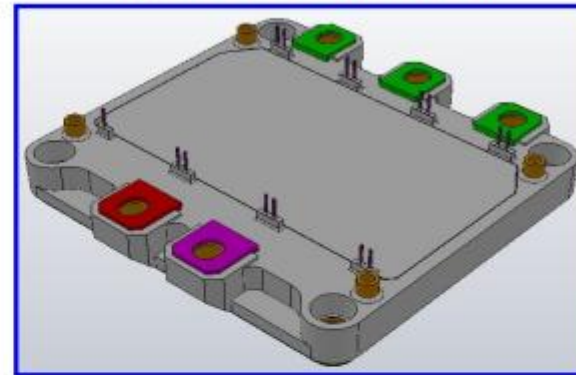
Fuji Technologies:

- 6th Generation 650V-IGBT
- Au and Ni Plating on chip surface
- Cu-Lead-Frame connection on chip
- Direct water Cooling Fin-base

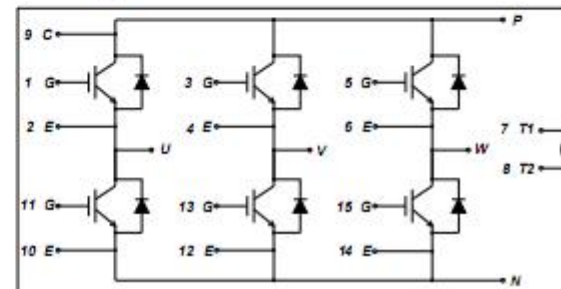
Advantages:

- Helpful to reduce Inverter size
- Includes a Cooling Fin
- Qualified to Automotive use

Compact 6 in One-package
with V-series IGBT chip



Equivalent Circuit Schematic





Inverter for Motor-drive up to 50kW

Device type :6MBI600V-065V

Package: M652

Under Development

■ Concept & Features

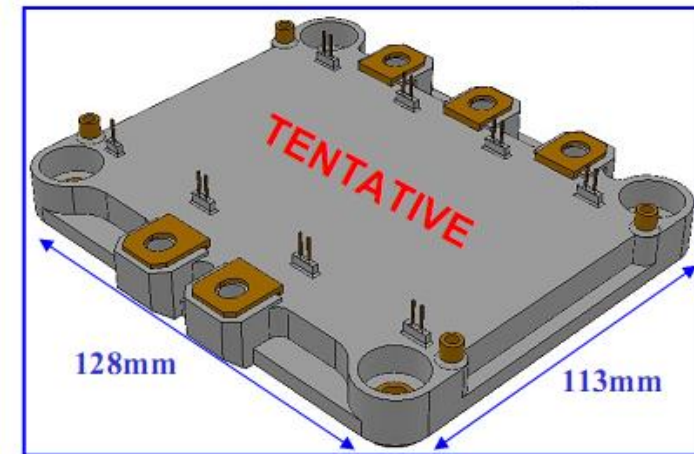
Fuji Technologies:

- 6th Generation 650V-IGBT
- Ni Plating on chip surface
- Cu-Lead-Frame connection on chip
- Direct water Cooling Fin-base

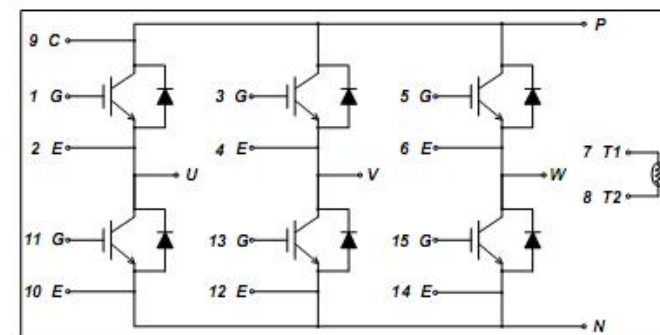
Advantages:

- Helpful to reduce Inverter size
- Includes a Cooling Fin
- Qualified to Automotive use

Compact 6 in One-package
with V-series IGBT chip



Equivalent Circuit Schematic





Inverter for Motor-drive up to 80kW

Device type : 6MBI900V-065V

Package: M653

Under Development

■ Concept & Features

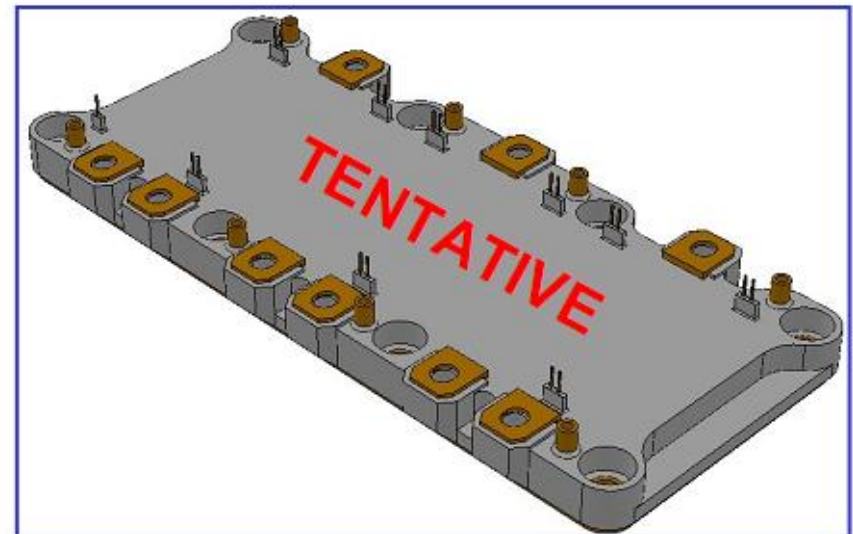
Fuji Technologies:

- 6th Generation 650V-IGBT
- Ni Plating on chip surface
- Cu-Lead-Frame connection on chip
- Direct water Cooling Fin-base

Advantages:

- Helpful to reduce Inverter size
- Includes a Cooling Fin
- Qualified to Automotive use

Compact 6 in One-package
with V-series IGBT chip





DENSO电驱系统（富士提供IGBT芯片）





升压用半桥IPM

Inverter for Motor-drive up to 120kW
Back Boost Converter

Device type :2MBP600UN-120V

Package:P401

Mass Production

■ Concept & Features

1. For Automotive application

Highly rugged electrical design

Detection and protection circuits for short-circuit,
over-temperature and under-voltage

High reliability with lead free design (RoHS compliant)

2. Chip technology

U-series Trench-FS technology

3. Easy to use

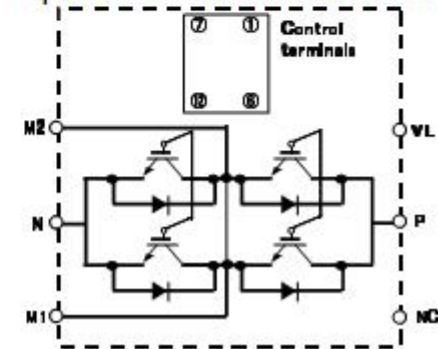
Optical isolated signal input (Upper arm & lower arm)

Optical isolated IGBT's temperature monitor

2-in-1 package (102 * 100)
U-series IGBT-IPM



Equivalent Circuit Schematic





Inverter for Motor-drive

Package: New Dual (M254)

Tentative

■ Concept & Features

1. For Automotive Application

Compact and Highly rugged electrical design
High reliability with lead free design

2. Chip Technology

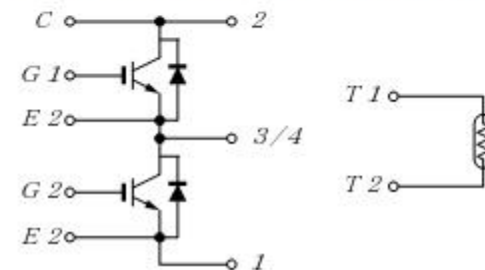
V-series Trench-FS technology

600V-450A/600A, 1200V-300A/450A/600A

2-in-1 package
with V-series IGBT chips



Equivalent Circuit Schematic





Key Functions

Over Temperature Protection

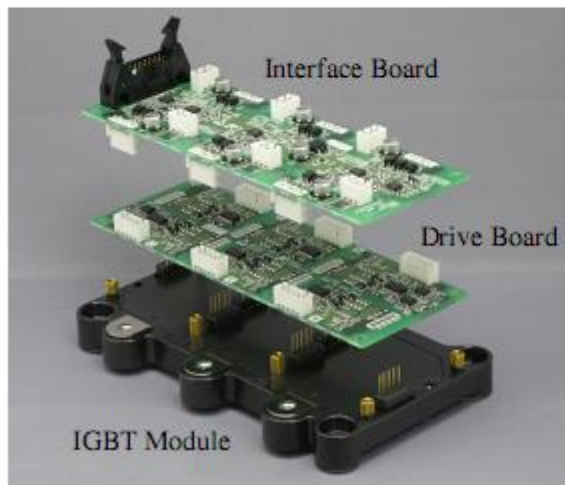
Temperature sensor formed on IGBT chip

Over-current & Short circuit Protection

Current sensor formed on IGBT chip

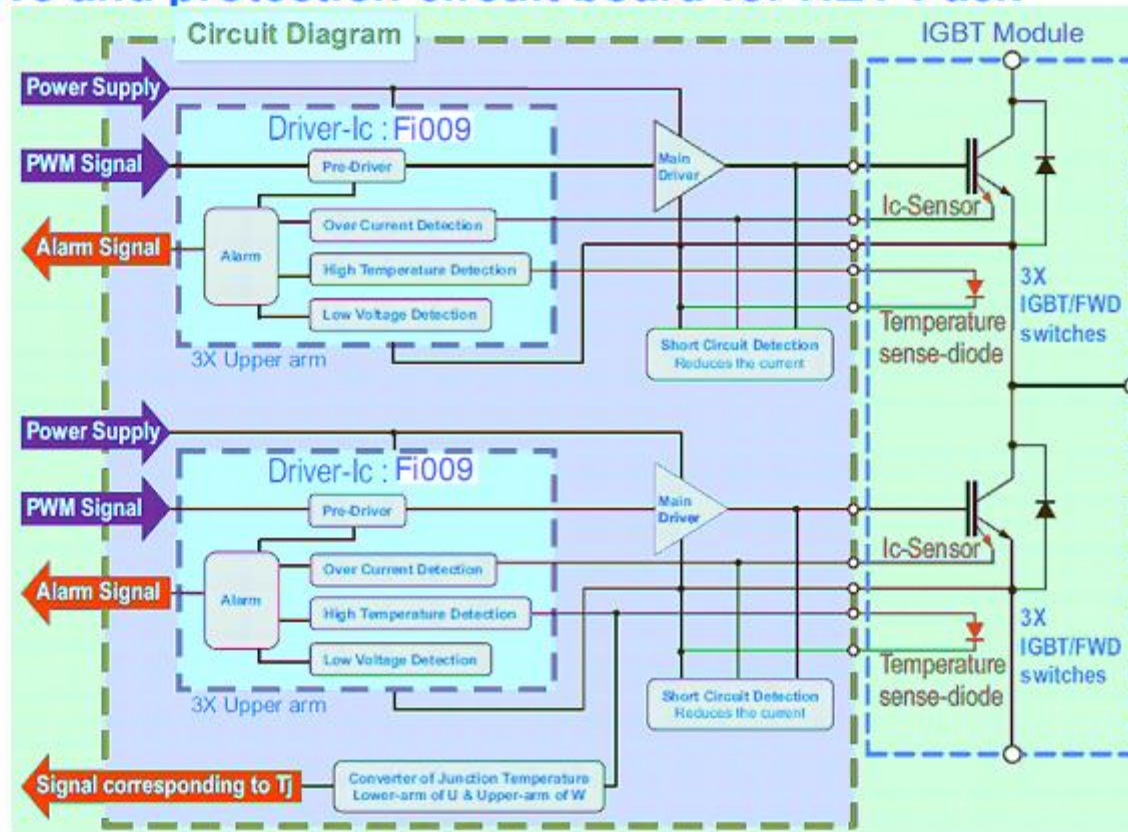
Temperature Output : corresponding to T_j

Drive-IC:Fi007 (by Fuji Electric)



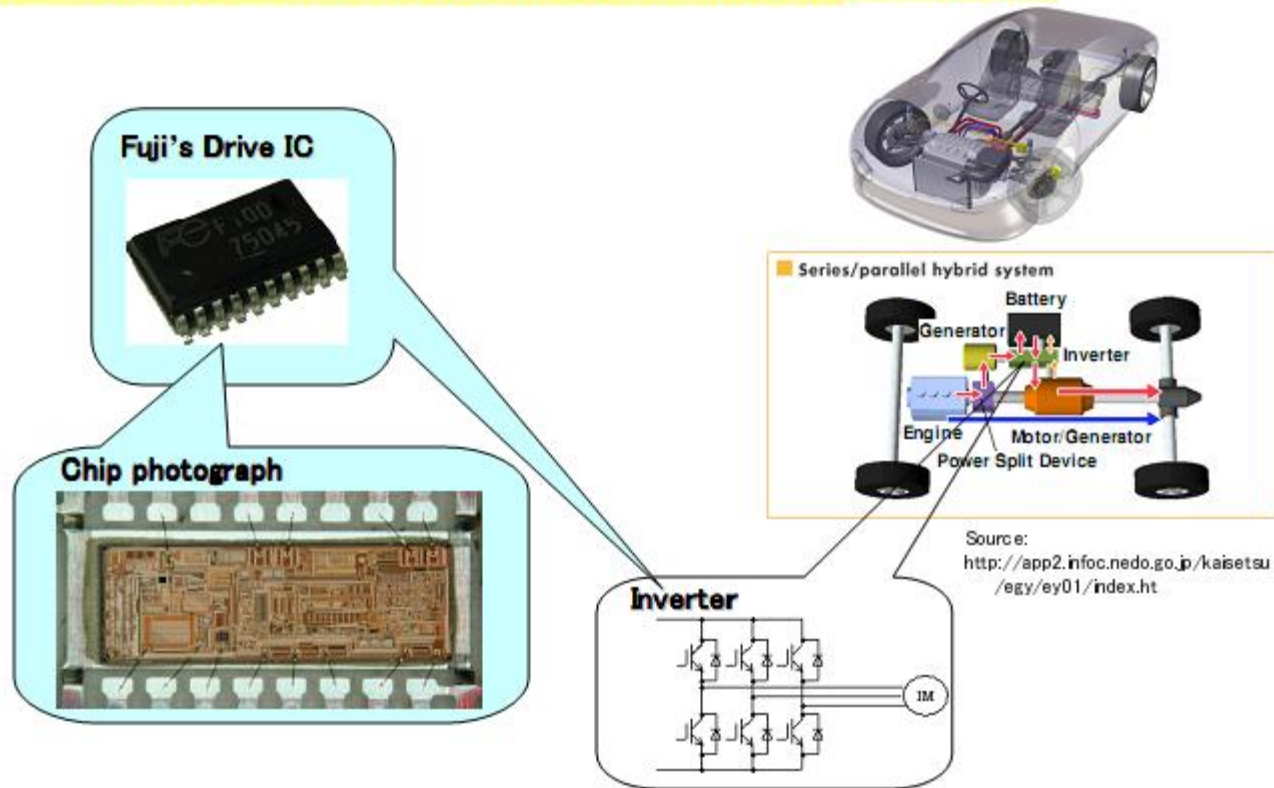


Drive and protection circuit board for HEV Pack





Drive IC for Drive and Protection Circuit of EV/HEV IGBTs





DC-LINK汽车电驱薄膜电容（125°C）可集成母线排！

MKP, metallized Polypropylene Film

Application:

DC-Filtering applications

Hybrid and Electric cars, Solar panels, windmills

Welding equipment



Parameter:

typical C-Range: 200...1800 μ F

typical nominal voltage: 400...650VDC

max operating temperature: 125°C

low losses and low inductance

long life time, no storage problems

high peak current; dU/dt

Customized product (design, terminals...)

Examples:

850 μ F/460VDC capacitor for a hybrid car

1800 μ F/450VDC for Electric car

50...2000 μ F/850VDC for welding equipment

50...1000 μ F/...850VDC for solar panels

.....10.000 μ F/1250...2000VDC for windmills





EMC filter:

- X2: 339-serie (up to 40 μ F)
- X1: 338 1-serie
- Y2: 338 6-serie



Set-up converter & bridge circuit:

- snubber: 375-serie and 383-serie
- DC-link: MKP1848-serie (700 – 900Vdc)

MKP1848 / 1849

Features:

200 – 6000 μ F

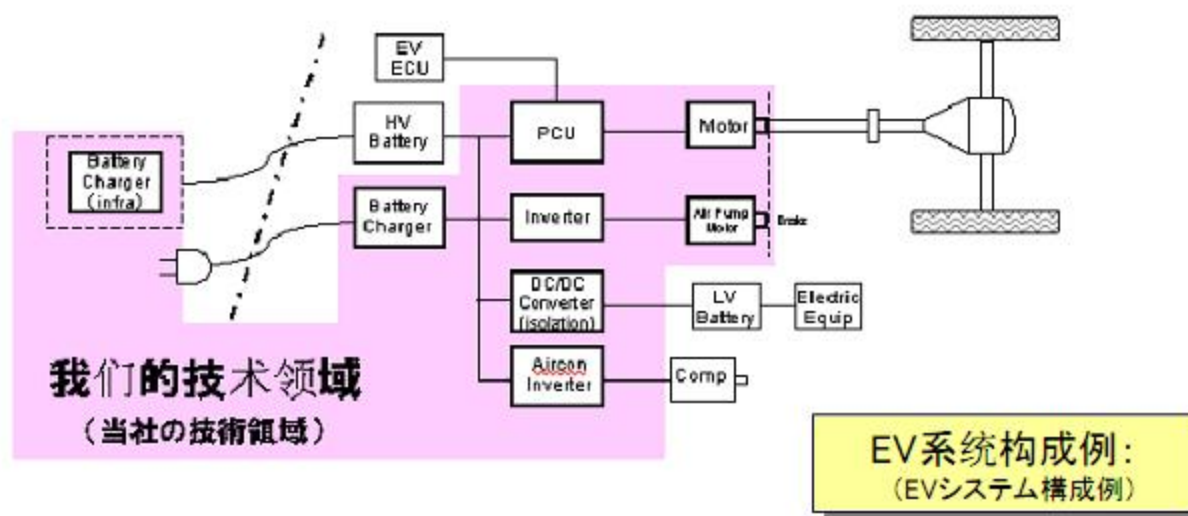
450Vdc - 1200Vdc

85°C – 110°C

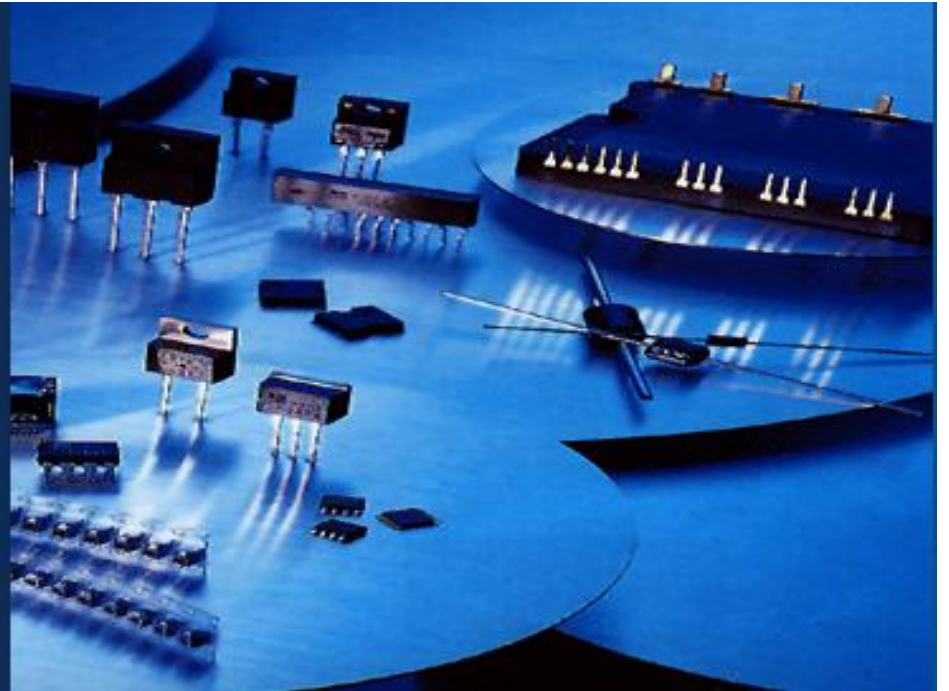




- 因为没有引擎的限制，设计自由度高
エンジンの制限がないため、設計自由度が高い
- 我们拥有关于电动汽车的电力电子技术
当社は、EVシステムに必要なパワエレ技術を保有している



Westpac Electronics Limited
威柏電子有限公司



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Westpac深圳分公司:

深圳市威柏德电子有限公司

深圳: 深圳市福田区金田路诺德中心17楼B室

Nobel Center 17B Room, JinTian Road, Futian District

电话: 0755-88267606 88262913 88262982 88262986 传真: 0755-88267406