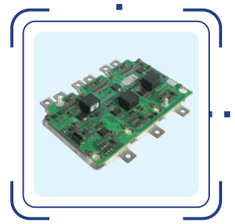
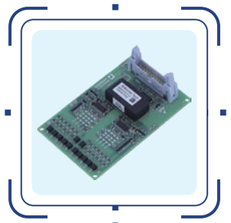
2025-05-16

青铜剑技术
Bronze Technologies

POWER DEVICE
GATE DRIVER

Technology · Drives · Future





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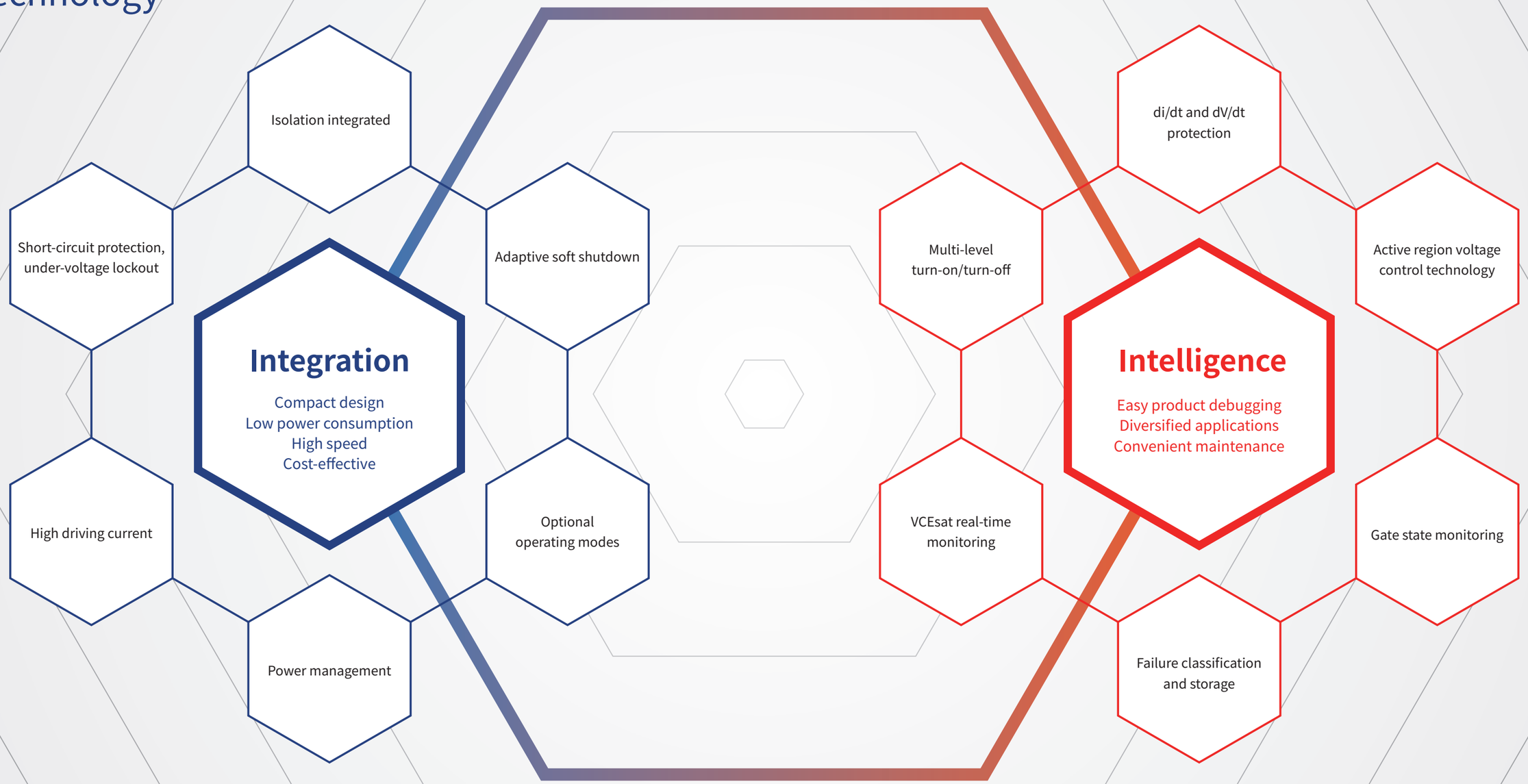
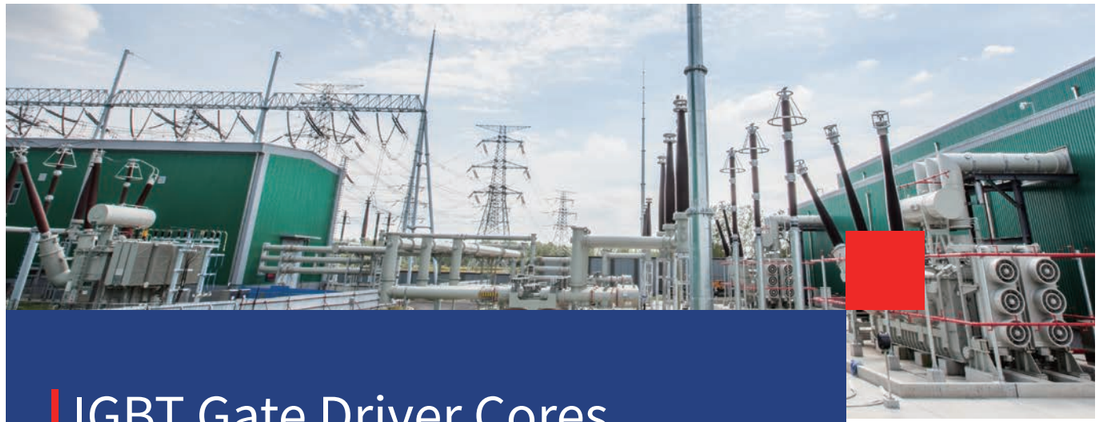
Company Profile

Bronze Technologies Ltd. in Shenzhen is a pioneer in China's power device driver industry. Bronze specialises in R&D, manufacturing, marketing and services for power device gate driver board & ICs and test equipment. The company also offers integrated, intelligent power electronics solutions from in house to its customers. Bronze has built a strong research and development team and has been recognised as the Guangdong Engineering Technology Research Center of High Voltage High Power Device Applications and Drivers. It has been responsible for numerous municipal, provincial and national level research & development projects.

Bronze has successfully developed the first high-power IGBT driver ASIC chip in China and launched a complete series of products, including IGBT standard driver cores, plug-and-play drivers, customized driver solutions, isolated power supplies, isolated driver ICs, driver chipsets and Power Device Dynamic Parameter Test System. The products are UL certified, and are widely applied in applications such as renewable power generation, electric vehicles, smart grids, locomotive traction, industrial drives. Bronze is a key component supplier for customers such as CRRC, State Grid, Sungrow, TBEA. Bronze has also established strategic cooperation with internationally renowned power module manufacturers such as Infineon and Fuji Electric.

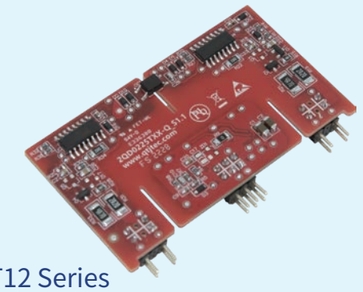
Technology


Isolation integrated
Short-circuit protection, under-voltage lockout
Adaptive soft shutdown
Integration
Compact design
Low power consumption
High speed
Cost-effective
High driving current
Optional operating modes
Power management
di/dt and dV/dt protection
Multi-level turn-on/turn-off
Active region voltage control technology
Intelligence
Easy product debugging
Diversified applications
Convenient maintenance
VCEsat real-time monitoring
Gate state monitoring
Failure classification and storage



IGBT Gate Driver Cores

Based on different application requirements, Bronze Technologies launched a variety of gate driver cores with driving power ranging from 1W to 5W and peak current ranging from ±8A to ±35A, presenting core driver circuitry as “ASIC”. Customers can select the best-fit gate driver cores according to different requirements; with a simple external circuitry design, the performance of the gate driver core can be maximized and the IGBT module can stay in the best working state, ensuring stable and reliable long-term operation of the system.



2QD0225T12 Series

- Dual-channel IGBT gate driver
- Peak driving current: ±25A
- Driving power per channel: 2W
- Compatible with 5V/15V input logic
- Isolated DC/DC converter integrated
- Primary/secondary side undervoltage lockout
- IGBT short-circuit protection integrated
- Normal switching pattern integrated
- Fault sequence shutdown integrated
- Soft shutdown

2QD0435T17 Series

- Dual-channel IGBT gate driver core
- Blocking voltage up to 1700V
- Peak current ±35A, 4W output power per channel
- Up to 5000V isolation voltage
- Direct/half-bridge mode available
- Primary/secondary side undervoltage lockout
- IGBT short-circuit protection integrated
- Advanced active clamping integrated

2QD30A17K Series

- Dual-channel gate driver core
- Maxium IGBT voltage: 1700V
- Maximum operating switching frequency: 60kHz
- Peak driving current: ±30A;
- Driving power per channel: 4W
- Gate driving voltage: +15V/-15V
- Optional direct mode or half-bridge mode
- IGBT short-circuit protection
- Soft shutdown
- Power supply undervoltage lockout
- Immunity to high-frequency interference

2QD0108T17 Series

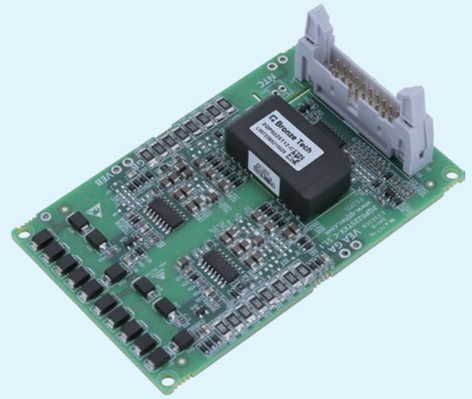
- Dual-channel gate driver
- Maxium IGBT voltage: 1700V
- Maximum operating switching frequency: 50kHz
- Turn-on and turn-off delay: <300ns
- Peak driving current: ±8A;
- Driving power per channel: 1W
- Gate driving voltage: +15V/-9.5V
- Compatible with 3.3V/5V/15V PWM logic input
- Optional direct mode or half-bridge mode
- IGBT short-circuit protection
- Power supply undervoltage lockout

2QD0535T33 Series

- Dual-channel gate driver core
- Maxium IGBT voltage: 3300V
- Maximum operating switching frequency: 100kHz
- Turn-on and turn-off delay: <300ns
- Peak driving current: ±35A;
- Driving power per channel: 5W
- Gate driving voltage: +15V/-10V
- Compatible with 3.3V/5V/15V PWM logic input
- Optional direct mode or half-bridge mode
- IGBT short-circuit protection
- Power supply undervoltage lockout

Plug-and-Play Gate Drivers

For IGBT modules of different packages, Bronze Technologies provides a number of plug-and-play drivers suitable for EconoDUAL™3, EconoPACK™+, PrimePACK™, IHM and other packages. This series of products integrates all elements necessary for the complete driver circuitry, and can be put into use without the need of adding external circuitry, which effectively shortens the development schedule for users; meanwhile, the finely tuned driver parameters can greatly improve the IGBT performance and reliability.



2QP0225 Series

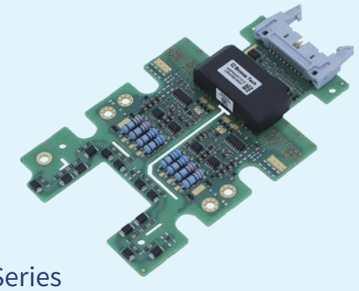
2QP0225Txx is a dual-channel compact plug-and-play gate driver designed for high reliability applications based on the ASIC chipset developed by Bronze Technologies.
2QP0225Txx is suitable for 2-level topologies built with EconoDUAL™ package IGBT modules up to 1700V. The plug-and-play capability of the driver allows immediate operation without adaptions after assembly

Product Features

- Dual-channel IGBT gate driver
- Blocking voltage up to 1700V
- Gate current ±25A, 2W output power per channel
- Compatible with 1700V IGBT modules in EconoDual™3 package
- Isolated DC/ DC converter integrated
- 20-pin header connector for input / output
- Direct / half-bridge mode available
- Primary/secondary side undervoltage lockout
- Active clamping function integrated
- IGBT short-circuit protection integrated
- Soft shutdown integrated
- Supports various input levels

Applications

- Energy storage converters
- Wind power converters
- Solar inverters

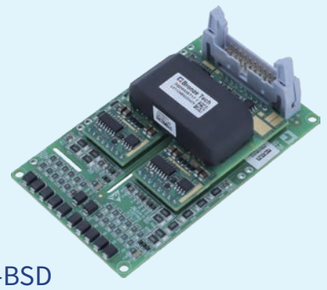


2QP0320 Series

- 1700V PrimePack™ package half-bridge module plug-and-play driver
- Dual-channel IGBT gate driver
- Blocking voltage up to 1700V
- Peak driving current: ±20A
- Driving power per channel: 3W
- Isolated DC/DC converter integrated
- Primary/secondary under-voltage lockout
- Direct / half-bridge mode available
- Advanced active clamping
- VCE short-circuit protection

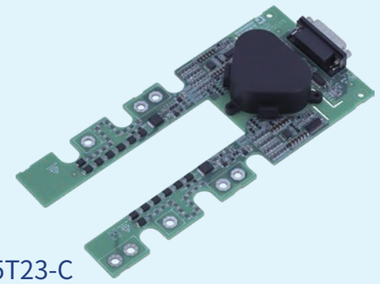
2QP0435T17-x2x

- 1700V EconDual™3 package half-bridge parallel connection plug-and-play IGBT driver
- ±35A peak current per channel, 4W driving power
- Isolated DC/DC converter integrated
- Primary/secondary undervoltage lockout
- Advanced active clamping
- IGBT short-circuit protection
- 6000Vac isolation voltage



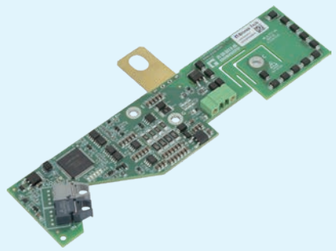
2QP0435T12-BSD

- ◆ 1200V EconoDual™3 package high-power plug-and-play IGBT driver (Extension board to be used together with 2QD0435T17 driver core)
- ◆ ±35A peak current per channel, 4W output
- ◆ Complete isolated DC/DC power
- ◆ Direct/half-bridge mode selection
- ◆ Primary/secondary power undervoltage lockout
- ◆ Advanced active clamping
- ◆ VCE short-circuit protection



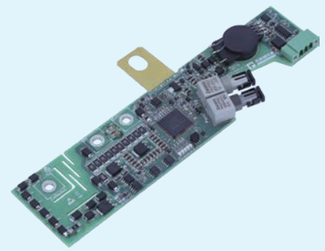
2QP0535T23-C

- ◆ 2300V PrimePack™3+ package plug-and-play IGBT driver
- ◆ 20PIN card-edge or DB15 connector optional
- ◆ ±35A peak current per channel, 5W output
- ◆ Integrated isolated DC/DC power
- ◆ Primary/secondary power undervoltage lockout
- ◆ Dynamic advanced active clamping
- ◆ VCE short-circuit protection
- ◆ Soft shutdown
- ◆ 8000Vac isolation voltage



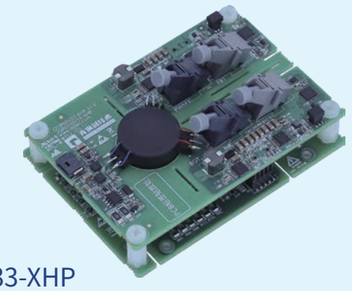
1QP0335V/S45-Q

- ◆ 4500V IHV package single-channel driver
- ◆ 3W power, ±35A peak current
- ◆ Fiber-optic isolated PWM
- ◆ Edge feedback
- ◆ Isolated DC/DC power
- ◆ Secondary undervoltage lockout
- ◆ Dynamic advanced active clamping
- ◆ VCE short-circuit protection
- ◆ di/dt protection
- ◆ Soft shutdown



1QP0650V33-IHM

- ◆ 3300V IHM/HiPAK package single-channel driver
- ◆ 6W power, ±50A peak current
- ◆ Isolated DC/DC power supply
- ◆ Fiber-optic interface
- ◆ PWM edge feedback
- ◆ Secondary undervoltage lockout
- ◆ Dynamic advanced active clamping
- ◆ VCE short-circuit protection
- ◆ di/dt protection
- ◆ Soft shutdown
- ◆ Staged shutdown
- ◆ 8000Vac isolation voltage

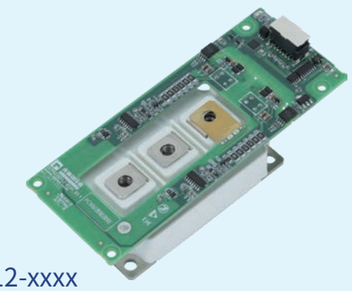


2QP0335V33-XHP

- ◆ 3300V XHP3 package plug-and-play IGBT driver
- ◆ Dual-channel IGBT gate driver
- ◆ Compact design 68mm*99.5mm
- ◆ Wide supply voltage range 14V~30V
- ◆ Fiber optic input/output
- ◆ 8000Vac isolation voltage
- ◆ Secondary side undervoltage lockout
- ◆ IGBT short-circuit protection integrated
- ◆ Soft shut down integrated

2CP0335V33-LV100

- ◆ 3300V LV100 package SiC MOSFET driver
- ◆ ±35A peak current per channel, 3W output
- ◆ 68mm×99.5mm compact design
- ◆ 15V-30V input range
- ◆ Fiber optic I/O
- ◆ 8000Vac isolation voltage
- ◆ Isolated DC/DC power
- ◆ Secondary undervoltage lockout
- ◆ Miller clamp
- ◆ VDS short-circuit protection



2CP0220T12-xxxx

- ◆ Dual-channel SiC MOSFET driver
- ◆ Adjustable gate driving voltage
- ◆ Blocking voltage up to 1200V
- ◆ 2W output power per channel with peak gate driving current of ±20A
- ◆ Ideal for 62mm packaged SiC MOSFET modules
- ◆ Isolated DC/DC converter integrated
- ◆ 12-PIN interface input/output
- ◆ Active clamping
- ◆ VDS short-circuit protection
- ◆ Soft shutdown
- ◆ Optional PWM direct mode (default) or interlock mode
- ◆ 6000Vac isolation voltage

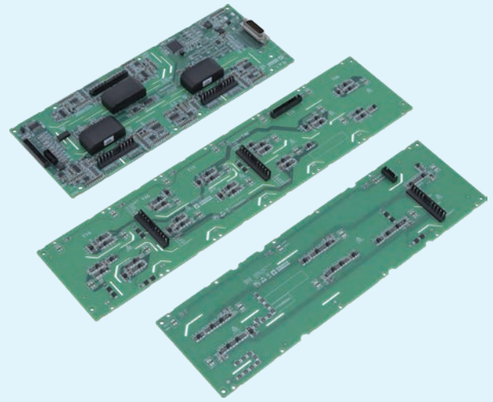
Gate Driver System Solutions

For high-voltage, high-current applications in green energy generation, high voltage power grid, and railway industries, Bronze Technologies launches a series of driver solutions with high reliability and high cost performance, covering 600V-6500V, multi-level, multi-module parallel, and other applications. These driver solutions are all the optimum ones designed according to customers' actual application needs, which can meet their requirements on product performance and cost control.

6AB0460Txx-xxxx

6AB0460Txx-xxxx is a I-type three-level, six-channel, medium power, high isolation voltage, compact, high-reliability driver designed for medium power, high reliability applications based on BronzeTechnologies' ASIC chip.

6AB0460Txx-xxxx driver is ideal for ANPC and NPC1 I-type three-level topologies constructed with IGBT modules up to1700V. It is compatible with IGBT modules in 62mm, EconoDual™3, PrimePack™3 and other packages. The driving core board is fixed on the power module case or specially designed fixed base to work with the driver board.



Core Technology

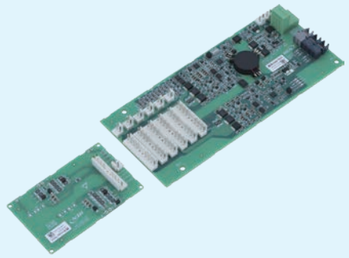
- ◆ Magnetic Isolation Technology
  - ≡ 15kVac isolation voltage.
  - ≡ 25A peak driving current, integrating advanced protection:
    - · Desaturation protection
    - · Soft shutdown
    - · Active clamping
    - · Miller clamping
  - ≡ CMTI: 100kV/μs.
- ◆ Multi-Level Drive Technology
  - ≡ Mature solutions for I-type and T-type three-level topologies.
  - ≡ Optimized commutation loop design for high current applications.
- ◆ Multi-Parallel Drive Technology
  - ≡ Specialized gate design to minimize parasitics.
  - ≡ Achieves **<5% current imbalance** under six-parallel operation.
- ◆ AVC (Active Voltage Clamp) Technology
  - ≡ Multi-loop negative feedback for precise VCE voltage control (dynamic/static).
  - ≡ Enables IGBT series connection.
- ◆ Smart Gate Voltage Control
  - ≡ Enhances short-circuit withstand time by dynamically adjusting gate voltage:
    - · Reduces gate voltage to a lower positive level during faults.
    - · Maintains partial conduction to limit instantaneous power dissipation.

Product Features

- ◆ Six-channel IGBT driver
- ◆ Maximum power device voltage: 1700V
- ◆ Single-channel driving power: 4W, peak current ±60A
- ◆ Power supply input: +15V
- ◆ Compatible with multiple IGBT modules: 62mm, EconoDual™3, PrimePack™3
- ◆ Supports ANPC and NPC1 I-type three-level multi-parallel topologies
- ◆ Integrated isolated DC/DC power supply
- ◆ Integrated primary/secondary power undervoltage lockout
- ◆ Integrated PWM interlock function
- ◆ Integrated shutdown sequence management
- ◆ Integrated VCE short-circuit protection
- ◆ Integrated soft shutdown
- ◆ Integrated NTC detection
- ◆ Optional Features:
  - ≡ Fault differentiation and intelligent management
  - ≡ Narrow pulse suppression
  - ≡ Multi-stage shutdown and switching sequence management

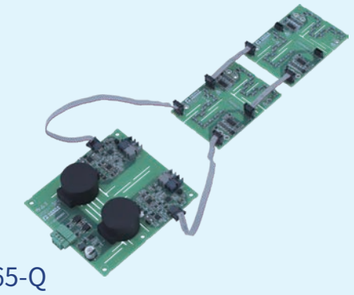
Applications

- ◆ Energy storage converters
- ◆ Wind power converters
- ◆ Solar inverters



2QP0630V17-6ED-RN

- ◆ 1700V Dual-Channel 6-Parallel IGBT Driver
- ◆ Dual-channel IGBT gate driver
- ◆ Blocking voltage up to 1700V
- ◆ Isolated DC/DC converter integrated
- ◆ Fiber-optic logic signal input/output
- ◆ 6W output power per channel with peak gate driving current of ±30A
- ◆ Supply over-current and undervoltage lockout
- ◆ VCE short-circuit protection
- ◆ NTC temperature detection
- ◆ Soft shutdown



2AB0635V65-Q

- ◆ 6500V XHP-Package Half-Bridge IGBT Driver Solution
- ◆ Single-channel driving power: 6W, peak current ±35A
- ◆ Supports single-device/multi-parallel operation
- ◆ 10kVac isolation voltage
- ◆ Switching frequency up to 100kHz
- ◆ Fiber-optic logic signal input/output
- ◆ Isolated DC/DC power supply
- ◆ Integrated undervoltage protection
- ◆ Integrated VCE short-circuit protection
- ◆ Integrated soft shutdown

Required Accessories

- ◆ Gate board: 2MA35A-XHP65
- ◆ Cable: F3911C series

1QP0650V45-Q

- ◆ 4500V Press-Pack IGBT Driver Solution
- ◆ Single-channel driving power: 6W, peak current ±50A
- ◆ 10kVac isolation voltage
- ◆ Wide supply voltage range: 18V–25V
- ◆ Reverse polarity protection
- ◆ Fiber-optic PWM signal input
- ◆ Integrated isolated DC/DC power supply
- ◆ Integrated secondary power undervoltage lockout
- ◆ Integrated dynamic active clamping
- ◆ Integrated VCE short-circuit protection
- ◆ Integrated soft shutdown

Multifunction Signal Generator

QTJ15610A is an auxiliary signal generating device developed to test the dynamic characteristics of power semiconductor devices. It can output multiple drive signals including single-pulse, double-pulse, multi-pulse, SPWM, SVPWM and phase shifting full bridge signal. To meet different application scenarios of customers, QTJ15610A is compatible with industrial output ports, BNC terminals, box header connectors, optical ports and other connection modes. Besides, in order to avoid personal safety risks caused by high-voltage and heavy-current tests, QTJ15610A is integrated with the wireless communication function, which can realize remote operations by use of mobile phones, PCs, tablet PCs or other smart terminal devices.

Product Features

◆ **Flexible and convenient signal configuration**
Providing pulse signals with adjustable amplitudes, frequency, and duty cycle, continuous periodic signals, SPWM signals, SVPWM signals, and phase-shift full bridge signals

◆ **Operations with buttons**
Engineers can press buttons to start, stop, and reset the machine

◆ **Various ports available**
Providing various signal output ports and channels to meet various user needs

◆ **High-precision parameters**
High-precision (up to 0.1us pulse width) parameter setting ranges

◆ **Convenience in testing**
Compact and chic design for portability

◆ **Comprehensive protection functions**
Protecting equipment against under-voltage, over-voltage, over-current, etc. for secure operation

◆ **User-friendly HMI**
Color capacitive touch screen with high-precision, facilitating parameter configuration

◆ **UIs in both Chinese and English**
Switchable at a click

◆ **Different control methods**
Touchscreen control and remote control supported

Key Parameters	
Input supply voltage	220VAC
Operating frequency	47-63Hz
Output supply voltage	5VDC、15VDC
PWM signal output logic level	+5V/+15V optional
Pulse width step	0.1us
Maximum single pulse width	1000.0ms
Signal type	Single-pulse signals, double-pulse signals, multi-pulse signals, periodic pulse signals, SPWM signals, SVPWM signals, phase-shift full bridge signals
Signal interface	4 optical signals, 8 electrical signals
Pulse width range	Microsecond unit: 0.1μs-1000μs; Millisecond unit: 0.1ms-1000ms
SVPWM/SPWM parameters	Fundamental frequency, fundamental amplitude, switching frequency, and dead time adjustable
Customized functions	Customized signal level amplitude, customized host PC control function

Power Semiconductor Device Test System

QTJT650010000F is an integrated test system developed to test the dynamic characteristics of high-voltage and heavy-current power semiconductor devices; it integrates signal generator, high-voltage DC power supply, main test circuit, high-voltage protection module, test fixture, temperature control system, measurement system and HMI, and supports testing of up to 6500V power semiconductor devices; the maximum pulse current can reach 10000A.

Product Features

◆ Wide applicability

Support dynamic performance test of various power semiconductor devices such as IGBT and SiC

◆ One-button test function

Automatically complete dynamic performance test of power semiconductor devices and automatically generate test reports in formats such as .doc, .pdf, .xls and .ppt

◆ Various signal options

Outputs drive signals flexibly, including single-pulse, double-pulse, multi-pulse and other types of signals, with both duty cycle and frequency adjustable

◆ Stable and reliable quality

Key components are all of mainstream brands at home and abroad, featuring stable and reliable quality

◆ Comprehensive protections

Offers different over-voltage and over-current protection points for different power devices, thus timely protecting the objects under test

◆ High-temperature tests supported

Tests the dynamic characteristics of power semiconductor devices under high temperature

◆ Fast platform assembly

Ensured by special fixture for connecting power semiconductor devices and external drive circuitry

◆ Strict security protection measures

Designed with insulated test cabin with anti-explosion, high-temperature resistance, and high-voltage protection, and integrated with the intelligent discharge function to effectively protect test engineers

◆ User-friendly HMI

Touch screen control that allows fast and convenient operations

◆ Powerful database

The built-in database of power semiconductor devices contains specifications of mainstream power semiconductor devices in the industry to facilitate test and comparison

Key Parameters	
Supply voltage	380V±10% (three-phase four-wire system +PE),50Hz±3Hz
Supply power	15kVA
Test object	Si/SiC，IGBT/DIODE/MOSFET
Number of paralleled modules supported	Two parallel (customized parallel number expansion is available)
Maximum output voltage	6000VDC
Maximum withstanding pulse current	10000A
Pulse width	0.5μs~1000μs
Pulse width resolution	20ns
Temperature control range	Room temperature up to 200°C
Inductive load	20μH/60μH/100μH/150μH/250μH/350μH/450μH/500μH
Protection class	IP20
Operating ambient temperature	5°C~45°C

Partners

Partners

Infineon technologies

株洲中车时代半导体有限公司 ZHUZHOU CRRC TIMES SEMICONDUCTOR CO., LTD.

富士电机 Fuji Electric

三菱电机 MITSUBISHI ELECTRIC

TOSHIBA Leading Innovation

基本半导体 BASiC Semiconductor

清華大學 Tsinghua University

UNIVERSITY OF CAMBRIDGE

北京交通大學 BEIJING JIAOTONG UNIVERSITY

華南理工大學 South China University of Technology

浙江大學 ZHEJIANG UNIVERSITY

南方科技大学 SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA

Key Customers

中国中车 CRRC

国家电网 STATE GRID

中国南方电网 CHINA SOUTHERN POWER GRID

阳光电源 SUNGROW

金风科技 GOLDWIND

上汽集团 SAIC MOTOR

上海电气 SHANGHAI ELECTRIC

东方电气 DEC

HYOSUNG

TBEA 特变电工

中国电气装备 China Electrical Equipment 许继集团有限公司 XJ GROUP CORPORATION

智光 Zhiguang

LS

广汽埃安 GAC AION

铁科院 CARS

Envision

• • •

Service & Support

Bronze Technologies owns a professional technical support team to offer customers fast and efficient services. Solve various problems with regarded to pre-sales consulting, design and development, product test, installation and commissioning and fault analysis and so on; assist customers in shortening the development period; and comprehensively enhance the market competitiveness of products.

24-hour Technical Support

Ordering Information

2 QD 04 35 T 17 – C – A0

Driver channels:

1: Single-channel
2: Dual-channel
4: Four-channel
6: Six-channel
12: Twelve-channel

Product series:

QD: Driver core
QP: Plug-and-play driver
AP: Automotive driver
CD: SiC driver core
AB: Combined solution
CP: SiC driver

Maximum driving power per channel:

01:1W
02:2W
03:3W
05:5W
04:4W
08:8W

Peak driving current:

08:±8A
14:±14A
15:±15A
20:±20A
30:±30A
35:±35A
50:±50A

Isolated signal transmission mode:

T: Transformer
V: Optocoupler
S: Fiber optic cable

Rated voltage class of power module:

06:650V
08:750V
12:1200V
17:1700V
33:3300V
45:4500V
65:6500V

Compatibility:

C: Compatible with common footprint
Q: Unique footprint of Bronze technologies

Extra:

Please consult the supplier.