

Intelligent Drivers for Power

MOSFETs and IGBTs

Standard Program

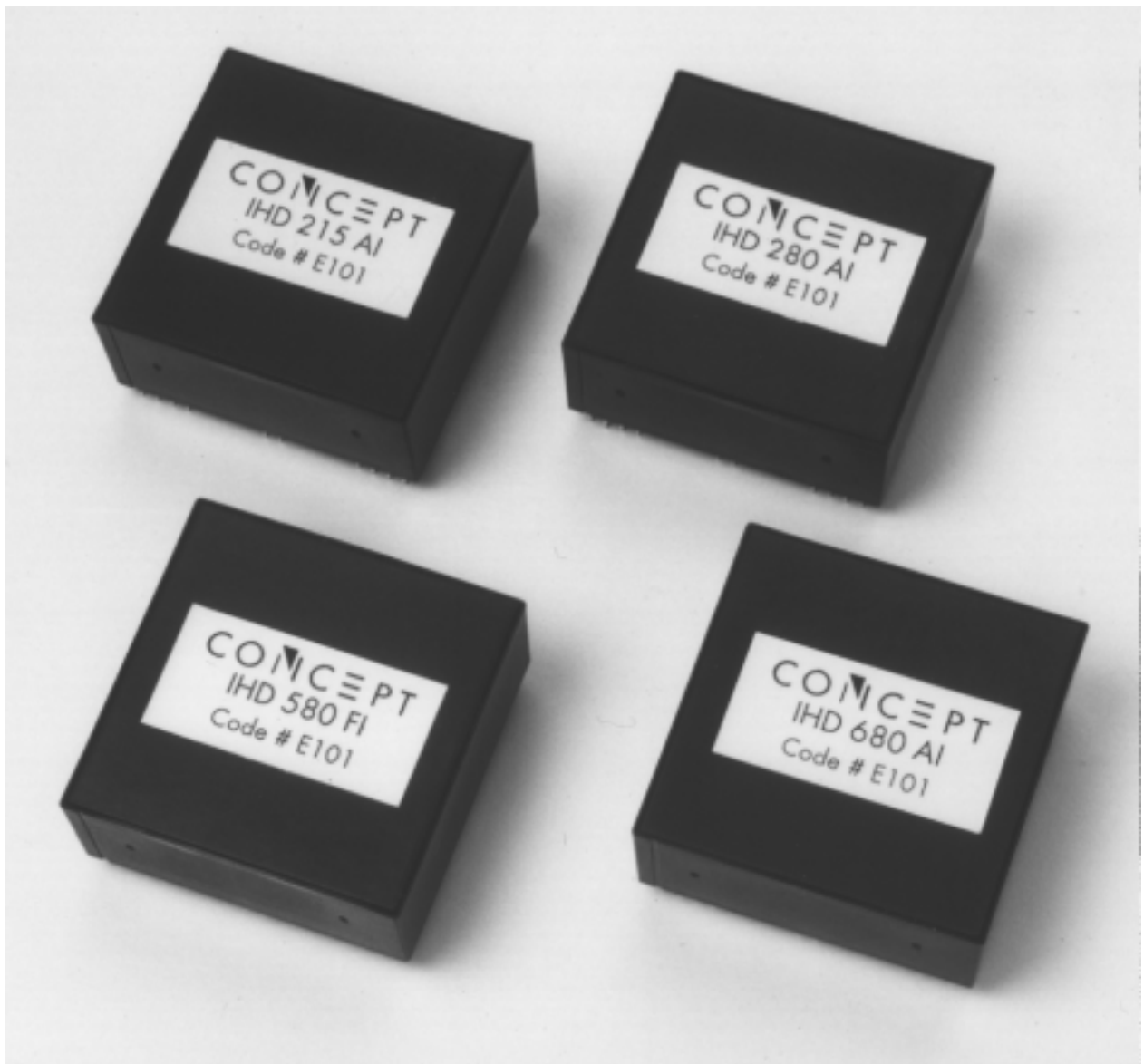


Diagram: Various half-bridge drivers from the standard program

Intelligent drivers from CONCEPT

Because there is no substitute for competence and experience

CONCEPT can look back on more than ten years of experience in the development and manufacture of intelligent drivers for power MOSFETs and IGBTs. Today, drivers from CONCEPT are used in practically all conceivable applications.

Here are just a few examples:

Drive systems equipped with CONCEPT drivers bring rail cars in underground and rapid-transit rail systems smoothly up to their cruising speed. They load and unload container ships, move passenger and freight elevators in response to the push of a button and manufacture new products in numerous industrial applications.

Intelligent drivers from CONCEPT are used to weld pipes for oil pipelines, in energy research programs, in inductive heating systems as well as in industrial and medical radiography equipment.

Manufacturers use CONCEPT drivers to test their new power semiconductors. Power supply units for lasers also operate with CONCEPT drivers.

Radio transmitters distributed around the globe obtain megawatts of transmission energy from power supplies equipped with intelligent CONCEPT drivers.

Multi-service transmitters in power plants control their loads with the aid of CONCEPT drivers.

Drive units of high-tech weapons systems are tested and equipped with CONCEPT drivers.

Deep within the world's fastest solar-powered racing car, that is packed to the hilt with high-tech equipment, CONCEPT drivers rouse the motor electronics to action.

Decentralized converters with intelligent drivers from CONCEPT feed solar power into the local grid, handling well over one megawatt with maximum efficiency.

And in modern long-haul railway trains, power supply units equipped with drivers from CONCEPT ensure that the lights never go out and that the passengers are always nice and warm in winter and pleasantly cool in summer.

Telecommunications network installations equipped with CONCEPT drivers supply half the Federal Republic of Germany with the power needed to operate the country's telephones.

A glance at the company's origins
**Or why competence and experience
have such deep roots at CONCEPT**

CONCEPT is the actual inventor of intelligent driver circuits for modern power semiconductors with turn-off capability.

The company was founded in 1986 with the aim of developing intelligent solutions for power electronics. Power MOSFETs were still new at the time and began hesitantly to conquer new markets. And many users experienced teething troubles with this new technology.

In 1987, less than half a year after the company was founded, CONCEPT presented the first intelligent drive circuit for power MOSFETs. This driver, which received the name IPD505, is still in our sales program in a reworked version.

Three and a half years later, after having sold over 100,000 drivers, CONCEPT unveiled the IGD507AN at the 1991 Hanover Fair. As the name indicates, this was the first intelligent driver designed specifically for IGBTs.

In the year 1992 CONCEPT presented an entire family of intelligent half-bridge drivers. This was the IHD215/280/680 series, which has now become the industry standard for demanding applications.

No one can have more than a decade of experience in this high-tech area. After all, the technology itself goes back no further.

CONCEPT has made good use of the experience gained over these years. As a result, there is hardly any sector of power electronics today in which CONCEPT drivers have not yet been fitted.

And CONCEPT developers can have their say in every one of these areas.

CONCEPT can therefore guarantee first-class advice and expert support for every power electronics project, no matter how demanding.

**CONCEPT also has the right solution for your requirements!
Don't merely take our word for it!**

Why CONCEPT drivers are simply better

The intelligent drivers from CONCEPT are universal drive circuits designed for the accurate and reliable driving of power MOSFETs and IGBTs in switching operation.

They are distinguished by superior technical properties, circuit technology of top quality, plus the use of highest-quality components and materials as well as a manufacturing process certified to ISO 9001.

The integrated protection functions represent the central feature of all intelligent drivers from CONCEPT. They protect power semiconductors against short-circuits and overloads with maximum reliability.

CONCEPT drivers stand out from the competition with their greatly superior quality of drive-signal transfer. The signal transit times of CONCEPT drivers are several orders of magnitude shorter than those of rival products. And these times are constant over the entire temperature range as well as being symmetrical for both turn-on and turn-off.

This feature makes a whole range of application-specific benefits possible: thus all offset problems in drive and converter applications are avoided in principle right from the start. These properties, coupled with very high isolation test voltages and a hitherto unattained noise immunity of the signal transfer function, put CONCEPT drivers into a class of their own.

This competitive edge is possible thanks to CONCEPT's state-of-the-art transformer technology based on a decade's experience in designing signal transformers for intelligent drivers.

CONCEPT responds to the continuous increase in the voltage range and power density of IGBT modules by constantly reviewing and developing its product range. As a result, CONCEPT can also offer matching drivers for all high-power IGBTs on the market.

CONCEPT drivers contain all the key functions required for electrically-isolated driving, isolated acknowledgement and for protecting power semiconductors. Most types are also equipped with an isolated voltage supply for the drivers. So hardly any additional components are required.

The exceptionally high reliability of CONCEPT drivers is confirmed by an MTBF figure calculated to the most rigorous MIL standards. The service life, both calculated and proven in field tests, is in the order of millions of operating hours.

CONCEPT has developed a series of new processes for manufacturing these drivers. The production quality is continuously monitored with the aid of test systems and techniques developed specifically for these products.

Product Data in Brief

IPD505AN/IPD505AI

Intelligent single channel IGBT driver with short-circuit detection and shut down without integrated power supply (available separately as ISO115/ISO215)

Gate drive: 0V/+15V, Gate current: ± 6 A

Transformer isolation for gate drive

IPD505AN: Operating temperature 0... + 70°C

IPD505AI: Operating temperature -40... + 85°C

Typical application: Power MOSFETs up to 1000V

Special: The overcurrent threshold is fixed

Data sheet is only available in German

IGD507AN / IGD507AI

Intelligent single channel IGBT driver with short-circuit detection and shut down without integrated power supply (available separately as ISO115/ISO215)

Gate drive: 0V/+15V, Gate current: ± 8 A

Transformer isolation for gate drive

IGD507AN: Operating temperature 0... + 70°C

IGD507AI: Operating temperature -40... + 85°C

Typical application: Single IGBTs or Power MOSFETs up to 1200V

Data sheet is only available in German

IHD215AN / IHD215AI

Intelligent dual-channel IGBT driver

On-board power supply: 2W

Gate drive: 0V/+15V or +15V/-15V

Gate current: $\pm 1,5$ A

Transformer isolation for gate drive

Short-circuit detection and shut down

Opto-coupler isolation for failure feedback.

Input/Output control interface electrical 15V

IHD215AN: Operating temperature 0... + 70°C

IHD215AI: Operating temperature -40... + 85°C

Typical application: IGBT modules up to 1200V

Data sheet available

Overview and Product Information

IHD280AN / IHD218AI

Intelligent dual-channel IGBT driver
On-board power supply: 2W
Gate drive: 0V/15V or -15V/+15V
Gate current: $\pm 8A$
Transformer isolation for gate drive
Short-circuit detection and shut down
Opto-coupler isolation for failure feedback
Input/Output control interface electrical 15V
IHD280AN: Operating temperature 0... +70°C
IHD280AI: Operating temperature -40... +85°C
Typical application: IGBT modules up to 1200V
Data sheet available

IHD280AI-17

Intelligent half-bridge driver, same technical features as the IHD280AI, with additional testing and selection for partial discharge >1700Vac(peak)
Typical application: IGBT modules up to 1700V
Designed for traction applications
Data sheet available

IHD680AN / IHD680AI

Intelligent dual-channel IGBT driver
On-board power supply: 6W
Gate drive: 0V/15V or -15V/+15V
Gate current: $\pm 8A$
Transformer isolation for gate drive
Short-circuit detection and shut down
Opto-coupler isolation for failure feedback
Input/Output control interface electrical 15V
IHD680AN: Operating temperature 0... +70°C
IHD680AI: Operating temperature -40... +85°C
Typical application: IGBT modules up to 1200V, high-frequency applications
Data sheet available

IHD680AI-17

Intelligent half-bridge driver, same technical features as the IHD680AI, with additional testing and selection for partial discharge >1700Vac(peak)

Typical application: IGBT modules up to 1700V, high frequency applications

Designed for traction applications

Data sheet available

IHD580FN / IHD580FI

Intelligent dual-channel IGBT driver

On-board power supply: 5W

Gate drive: 0V/15V or -15V/+15V

Gate current: $\pm 8A$

Integrated fiber-optic isolation for gate drive

Short-circuit detection and shut down

Integrated fiber-optic isolation for failure feedback

Input/Output control interface: electrical

IHD580FN: Operating temperature 0... +70°C

IHD580FI: Operating temperature -40... +85°C

Typical application: IGBT modules up to 2500V

Data sheet available

IGD508EN / IGD508EI

Intelligent single-channel IGBT driver

On-board power supply: 5W

Gate drive: 0V/+15V or +15V/-15V

Gate current: $\pm 8A$

External fiber-optic link for input drive signal

Short-circuit detection and shut down

External fiber-optic link for failure feedback

Input/Output control interface: fiber-optic links

IGD508EN: Operating temperature 0... +70°C

IGD508EI: Operating temperature -40... +85°C

Special feature for series-connected IGBTs is integrated

Typical application: IGBT modules up to 2500V and parallel or series-connected IGBTs

Data sheet available

Overview and Product Information

IGD515EN/IGD515EI

Intelligent single-channel IGBT driver

On-board power supply: 5W

Gate drive: 0V/+15V or +15V/-15V

Gate current: $\pm 15A$

External fiber-optic link for input drive signal

Short-circuit detection and shut down

External fiber-optic link for failure feedback

Input/Output control interface: fiber-optic links

IGD515EN: Operating temperature 0... + 70°C

IGD515EI: Operating temperature -40... + 85°C

Special feature for series-connected IGBTs is integrated

Typical application: IGBT modules up to 2500V and parallel or series-connected IGBTs

Data sheet available

IGD608AN/IGD608AI

Intelligent single-channel IGBT driver

On-board power supply: 6W

Gate drive: 0V/+15V or +15V/-15V

Gate current: $\pm 8A$

Transformer isolation for gate drive

Short-circuit detection and shut down

Opto-coupler isolation for failure feedback

Input/Output control interface electrical 15V

IGD508EN: Operating temperature 0... + 70°C

IGD508EI: Operating temperature -40... + 85°C

Typical application: High-Power IGBT modules up to 1200V, high-frequency applications

Data sheet available

IGD608AI-17

Intelligent single-channel driver, same technical features as the IGD608AI, with additional testing and selection for partial discharge >1700Vac(peak)

Typical application: High-Power IGBT modules up to 1700V, high-frequency applications

Designed for traction applications

Data sheet available

IGD615AN / IGD615AI

Intelligent single-channel IGBT driver

On-board power supply: 6W

Gate drive: 0V/+15V or +15V/-15V

Gate current: $\pm 15\text{A}$

Transformer isolation for gate drive

Short-circuit detection and shut down

Opto-coupler isolation for failure feedback

Input/Output control interface electrical 15V

IGD508EN: Operating temperature 0... + 70°C

IGD508EI: Operating temperature -40... + 85°C

Typical application: High-Power IGBT modules up to 1200V, parallel connected high-power IGBT modules and high-frequency applications

Data sheet available

IGD615AI-17

Intelligent single-channel driver, same technical features as the IGD615AI, with additional testing and selection for partial discharge >1700Vac(peak)

Typical application: High-Power IGBT modules up to 1700V, parallel-connected high-power IGBT modules and high-frequency applications

Designed for traction applications

Data sheet available

Driver Board TPD-1

This is a three-phase driver card that comprises three intelligent half-bridge drivers of the IHD series as well as all necessary external components. The card is suitable for all driver types of the IHD215Ax, IHD280Ax, IHD680Ax and IHD580Fx series.

The board is available either assembled and tested or unassembled.

Overview and Product Information

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Fax Reply Form

Please use a photocopier to enlarge to A4 size. Check relevant box [X]. Please complete the form and fax it to CONCEPT or to your local CONCEPT distribution partner!

Intelligent Drivers

- Data sheet IPD505Ax (German only)
- Data sheet IGD507Ax (German only)
- Data sheet IHD215/280/680
- Data sheet IHD580Fx
- Data sheet IGD508/515Ex
- Data sheet IGD608/615Ax
- Overview SCALE driver: The drive circuit for IGBTs, that's a prizewinner **NEW**
- Application Note AN-9701E: "IGBT drivers correctly calculated"

Evaluation Boards

- Product Information and Price List of Evaluation Boards (1kW to >1MW)

We would be interested in the following services:

- Consulting and training
- Troubleshooting and support for technical problems
- Customer-specific power stacks

My address:

Forename, Surname

Department/Function

Company

Telephone

Fax

E-Mail

Our business activities are in the sector of

Overview and Product Information

Delivery Time

All the products described in this overview are currently in production and can be supplied at short notice. Small quantities can usually be supplied from stock or within one to two weeks. Delivery dates for larger quantities can be quoted on request.

Evaluation Boards

CONCEPT offers diverse evaluation boards and power stages to permit users to make a fast entry into the world of IGBT technology and the protection concept used by the intelligent half-bridge drivers of the IHD series. Fully assembled and tested half-bridge evaluation boards with various IGBT types are available.

In conjunction with the documentation, fully operational prototypes can be set up within a matter of hours with these boards. Please feel free to ask for further relevant documentation.

Customer-Specific Drivers

If you require a power MOSFET or IGBT driver which is not listed in this overview, please contact CONCEPT or your CONCEPT sales partner.

CONCEPT has had more than ten years of experience in developing and manufacturing intelligent drivers for power MOSFETs and IGBTs and has already implemented numerous customer-specific solutions.

Manufacturer

Your Distribution Partner

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