

# 2BB0435T2Ax-06

## Target Data Sheet

Basic board for 2SC0435T SCALE-2 driver for 600V IGBT modules or MOSFETs with an electrical interface for 2-level, 3-level and multilevel converter topologies with paralleling capability

### Abstract

The 2BB0435T is a basic board based on the SCALE-2 driver core 2SC0435T designed to drive almost all available 600V IGBT modules like 62mm IGBT modules, 130mm x 140mm IGBT modules and others. The basic board features an electrical interface with a built-in DC/DC power supply.

**The turn-on and turn-off gate resistors of both channels are not assembled in order to provide maximum flexibility. They must be assembled by the user before start of operation.** Please refer to "Description & Application Manual for 2BB0435T basic boards" for more information.

For drivers adapted to various types of high-power and high-voltage IGBT modules, refer to

[www.IGBT-Driver.com/go/plug-and-play](http://www.IGBT-Driver.com/go/plug-and-play)

### Features

- ✓ Easy start of operation of 2SC0435T
- ✓ Shortens application development time
- ✓ Schematics available
- ✓ Production data available (Gerber files)
- ✓ 20-pin flat cable interface
- ✓ Allows parallel connection of IGBT modules
- ✓ Safe isolation to EN 50178
- ✓ UL compliant

### Applications

- ✓ 62mm IGBT modules
- ✓ 130mm x 140mm dual IGBT modules
- ✓ 130mm x 140mm single IGBT modules
- ✓ 190mm x 140mm single IGBT modules
- ✓ 17mm dual IGBT modules
- ✓ PrimePACK™ IGBT modules
- ✓ EconoPACK+™ IGBT modules

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### Safety Notice!

The data contained in this data sheet is intended exclusively for technically trained staff. Handling all high-voltage equipment involves risk to life. Strict compliance with the respective safety regulations is mandatory!

Any handling of electronic devices is subject to the general specifications for protecting electrostatic-sensitive devices according to international standard IEC 60747-1, Chapter IX or European standard EN 100015 (i.e. the workplace, tools, etc. must comply with these standards). Otherwise, this product may be damaged.

### Important Product Documentation

The data sheet of 2SC0435T (see [www.igbt-driver.com/go/2SC0435T](http://www.igbt-driver.com/go/2SC0435T)) applies. **This data sheet contains only information which differs or completes the data contained in the data sheet of driver core 2SC0435T.**

For a detailed description, must-read application notes and common data that apply to the whole series, please refer to "Description & Application Manual for 2SC0435T drivers" and "Description & Application Manual for 2BB0435T basic boards" on [www.IGBT-Driver.com/go/2SC0435T](http://www.IGBT-Driver.com/go/2SC0435T) and [www.IGBT-Driver.com/go/2BB0435T](http://www.IGBT-Driver.com/go/2BB0435T).

The turn-on and turn-off gate resistors on this basic board are not assembled in order to provide maximum flexibility. Please refer to "Description & Application Manual for 2BB0435T basic boards" for more information.

### Mechanical Dimensions

Dimensions: See "Description & Application Manual for 2BB0435T basic boards"

Mounting principle: Connected to IGBT module over the connectors X2 and X3

### Absolute Maximum Ratings

Parameter	Remarks	Min	Max	Unit
Average supply current $I_{DC}$	Note 1		550	mA
Output power per gate	Ambient temperature <70°C (Note 2)		3	W
	Ambient temperature 85°C (Note 2)		2	W
DC-link voltage	Note 3		400	V

### Recommended Operating Conditions

Parameter	Remarks	Min	Typ	Max	Unit
Resistance from TB to GND	Blocking time≠0, ext. value	128		∞	kΩ
SO <sub>x</sub> current	Fault condition, 3.3V logic			4	mA

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**Electrical Characteristics**

Logic Inputs and Outputs	Remarks	Min	Typ	Max	Unit
Input impedance	$V(INx) > 3V$	3.5	4.1	4.6	$k\Omega$
SOx output voltage	Fault condition, $I(SOx) < 8mA$			0.7	V
Short-circuit Protection	Remarks	Min	Typ	Max	Unit
Vce-monitoring threshold	Between auxiliary terminals		10.2		V
Response time	DC-link voltage = 400V (Note 4)		5.4		$\mu s$
Blocking time	After fault (Note 5)		90		ms
Timing Characteristics	Remarks	Min	Typ	Max	Unit
Jitter of turn-on delay	Note 6		t.b.d.		ns
Jitter of turn-off delay	Note 6		t.b.d.		ns
Dead time between outputs	Half-bridge mode		3		$\mu s$
Jitter of dead time	Half-bridge mode		t.b.d.		ns
Outputs	Remarks	Min	Typ	Max	Unit
Turn-on gate resistor $R_{g(on)}$	Note 7		not assembled		$\Omega$
Turn-off gate resistor $R_{g(off)}$	Note 7		not assembled		$\Omega$
Gate resistance to COMx			4.7		$k\Omega$
Electrical Isolation	Remarks	Min	Typ	Max	Unit
Creepage distance	Primary to secondary side	15.7			mm
	Secondary to secondary side	6.6			mm
Clearance distance	Primary to secondary side	15.7			mm
	Secondary to secondary side	6.6			mm

All data refer to  $+25^{\circ}C$  and  $V_{DC} = V_{CC} = 15V$  unless otherwise specified

**Footnotes to the Key Data**

- 1) If the specified value is exceeded, this indicates a basic board overload. It should be noted that the basic board is not protected against overload.
- 2) If the specified value is exceeded, this indicates a basic board overload. It should be noted that the basic board is not protected against overload. From  $70^{\circ}C$  to  $85^{\circ}C$ , the maximum permissible output power can be linearly interpolated from the given data.
- 3) This limit is due to active clamping. Refer to the "Description & Application Manual for 2BB0435T basic boards".
- 4) Resulting pulse width of the direct output of the gate drive unit for short-circuit type I (excluding the delay of the gate resistors)
- 5) Factory set value. The blocking time can be reduced with an external resistor. Refer to the "Description & Application Manual for 2BB0435T basic boards".
- 6) Jitter measurements are performed with input signals INx switching between 0V and 15V referred to GND, with a corresponding rise time and fall time of 8ns.

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- 7) The gate resistors are not assembled on this basic board. They must be assembled by the user. Please refer to "Description & Application Manual for 2BB0435T basic boards".

### Legal Disclaimer

This data sheet specifies devices but cannot promise to deliver any specific characteristics. No warranty or guarantee is given – either expressly or implicitly – regarding delivery, performance or suitability.

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**Ordering Information**

The general terms and conditions of delivery of CT-Concept Technologie AG apply.

**CONCEPT Basic Board Type #**

**Related IGBTs**

2BB0435T2A0-06

600V IGBT modules

Note that the basic boards 2BB0435T2A0-06 are delivered without driver 2SC0435T and without gate resistors. For orders of 1000 pieces or more (per delivery) the basic board can be assembled with the driver 2SC0435T and the required gate resistors.

Product home page: [www.IGBT-Driver.com/go/2BB0435T](http://www.IGBT-Driver.com/go/2BB0435T)

Refer to [www.IGBT-Driver.com/go/nomenclature](http://www.IGBT-Driver.com/go/nomenclature) for information on driver nomenclature

**Information about Other Products**

**For drivers adapted to high-voltage or high-power IGBT modules**

Direct link: [www.IGBT-Driver.com/go/plug-and-play](http://www.IGBT-Driver.com/go/plug-and-play)

**For other drivers, evaluation systems product documentation and application support**

Please click onto: [www.IGBT-Driver.com](http://www.IGBT-Driver.com)

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