

2RT0435T2Ax-12

Target Data Sheet

Two layer Base Board exclusively assembled with through-hole components for 2SC0435T SCALE™-2 driver for 1200V IGBT modules or MOSFETs with an electrical interface for 2-level, 3-level and multilevel converter topologies with paralleling capability

Abstract

The 2RT0435T is a Base Board based on the SCALE™-2 driver core 2SC0435T designed to drive almost all available 1200V IGBT modules like 62mm IGBT modules, 130mm x 140mm IGBT modules and others. The Base Board features an electrical interface with a built-in DC/DC power supply. This Base Board is a two layer solution, assembled exclusive with THT-components.

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 2RT0435T Base 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

Features

- ✓ Easy start of operation of 2SC0435T
- ✓ Two layer solution
- ✓ Exclusively THT assembled
- ✓ Shortens application development time
- ✓ Schematics available
- ✓ Production data available (Gerber files)
- ✓ 20-pin flat cable interface
- ✓ Allows parallel connection of IGBT modules
- ✓ Safe isolation according to IEC 61800-5-1
- ✓ 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 (refer to 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 2RT0435T Base Boards" on www.IGBT-Driver.com/go/2SC0435T and www.IGBT-Driver.com/go/2RT0435T.

The turn-on and turn-off gate resistors on this Base Board are not assembled in order to provide maximum flexibility. Please refer to "Description & Application Manual for 2RT0435T Base Boards" for more information.

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Mechanical Dimensions

Dimensions: Refer to "Description & Application Manual for 2RT0435T Base Boards"

Mounting principle: Connected to IGBT module through the connectors X1 and X2

Absolute Maximum Ratings

Parameter	Remarks	Min	Max	Unit
Average supply current I_{DC}	Note 1		500	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		800	V

Recommended Operating Conditions

Parameter	Remarks	Min	Typ	Max	Unit
Resistance from TB to GND	Blocking time \neq 0, ext. value	134		∞	k Ω
SOx current	Fault condition, 15V logic			5	mA

Electrical Characteristics

Logic Inputs and Outputs	Remarks	Min	Typ	Max	Unit
Input impedance	V(INx)		4.7		k Ω
SOx output voltage	Fault condition, I(SOx)		0.6	2.5	V
Minimum pulse suppression	Turn-on		400		ns
Minimum pulse suppression	Turn-off		600		ns
Short-circuit Protection	Remarks	Min	Typ	Max	Unit
Vce-monitoring threshold	Between auxiliary terminals		10.2		V
Response time	Note 4		8.3		μ 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		μ s
Jitter of dead time	Half-bridge mode		t.b.d.		ns

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Outputs	Remarks	Min	Typ	Max	Unit
Turn-on gate resistor $R_{g(on)}$	Note 7		not assembled		Ω
Turn-off gate resistor $R_{g(off)}$	Note 7		not assembled		Ω
Gate resistance to COMx			4.7		k Ω

Electrical Isolation	Remarks	Min	Typ	Max	Unit
Creepage distance	Primary to secondary side	15.7			mm
	Secondary to secondary side	12.2			mm
Clearance distance	Primary to secondary side	15.7			mm
	Secondary to secondary side	6.6			mm

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

Footnotes to the Key Data

- 1) If the specified value is exceeded, this indicates the Base Board is overloaded. It should be noted that the Base Board is not protected against overload.
- 2) If the specified value is exceeded, this indicates the Base Board is overloaded. It should be noted that the Base Board is not protected against overload. From 70°C to 85°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 2RT0435T Base 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 2RT0435T Base 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.
- 7) The gate resistors are not assembled on this Base Board. They must be assembled by the user. Please refer to "Description & Application Manual for 2RT0435T Base Boards".

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Legal Disclaimer

The statements, technical information and recommendations contained herein are believed to be accurate as of the date hereof. All parameters, numbers, values and other technical data included in the technical information were calculated and determined to our best knowledge in accordance with the relevant technical norms (if any). They may base on assumptions or operational conditions that do not necessarily apply in general. We exclude any representation or warranty, express or implied, in relation to the accuracy or completeness of the statements, technical information and recommendations contained herein.

No responsibility is accepted for the accuracy or sufficiency of any of the statements, technical information, recommendations or opinions communicated and any liability for any direct, indirect or consequential loss or damage suffered by any person arising therefrom is expressly disclaimed.

Ordering Information

Note that the Base Boards 2RT0435T2A0-xx cannot be ordered. This Base Board is a reference design for the production by the customer. We recommend a board-thickness of 1.55mm. All necessary production data (like CAM files and BOM) are published at the product homepage: www.IGBT-Driver.com/go/2RT0435T

Refer to 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

For other drivers, evaluation systems product documentation and application support

Please click onto: www.IGBT-Driver.com

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