power integrations™

Ihr Vertriebspartner:
HY-LINE® POWER COMPONENTS

Inselkammerstraße 10
D-82008 Unterhaching
Tel: +49 (0)89 614 503 10
Fax:+49 (0)89 614 503 20
E-Mail: power@hy-line.de
www.hy-line.de

Hochstraße 355
CH-8200 Schaffhausen
Tel: +41 (0)52 647 42 00
Fax:+41 (0)52 647 42 01
E-Mail: power@hy-line.ch
www.hy-line.ch

2SC0435T
SCALE™-2 IGBT Gate Driver Core

c UL us
E321757

2SC0435T
Dual-Channel, Low-Cost High-Power SCALE™-2 Driver Core.
New with SCALE™-2+ Chipset.

PRODUCT DESCRIPTION

The new high-power low-cost SCALE™-2 dual - driver core 2SC0435T combines unrivalled compactness with broad applicability. It is made for universal applications requiring high reliability and performance. The 2SC0435T drives all common high-power IGBT modules up to 1700 V. Its embedded paralleling capability allows easy inverter design covering higher power ratings. Multilevel topologies are also supported.

The 2SC0435T is the most compact driver core in its power range, featuring a footprint of only 57.2 mm x 51.6 mm and an insertion height of 20 mm. It allows even the most restricted spaces to be efficiently used. Compared with conventional drivers, the highly integrated SCALE™-2 chipset allows about 85 % of components to be dispensed with. This advantage is impressively results in significantly-increased reliability and minimized cost.

The 2SC0435T combines a complete two-channel driver core with all components required for driving, such as short-circuit protection, advanced active clamping, an isolated DC/DC converter as well as supply voltage monitoring. Each of the two output channels is electrically isolated from the primary side and the other secondary channel.

APPLICATIONS

- Wind power and photovoltaic
- Industrial drives
- Traction applications
- Electric/hybrid drive commercial vehicles
- Uninterruptible power supplies (UPS)
- Driving large parallel-connected IGBTs
- High gate-current driving applications
- Medical (MRT, CT, X-ray)
- Laser technology

KEY BENEFIT

The 2SC0435T drives all common high-power IGBT modules up to 1700 V. It offers broad applicability thanks to its compactness and cost effectiveness, especially for solar/wind applications.

KEY FEATURES

- High-power dual-channel driver
- Blocking voltages up to 1700 V
- Switching frequency up to 100 kHz
- Very short delay time of <100 ns
- Small jitter of ±3 ns
- Gate current ±35 A
- Regulated gate-emitter voltage
- Interface for 3.3 V...15 V logic level
- Direct and half-bridge modes
- Embedded paralleling capability
- 2-level and multilevel topologies
- IGBT short-circuit protection
- Advanced active clamping
- Isolated DC/DC converter
- 2 x 4 W output power
- Supply under-voltage lockout
- Safe isolation to EN50178
- UL recognized: under UL 508C NMMS2/8 and under UL 60950-1 NWGQ2/8
- Superior EMC
- Reliable, long service life
- Footprint: 57.2 mm x 51.6 mm
- Soft Shut Down (SSD)

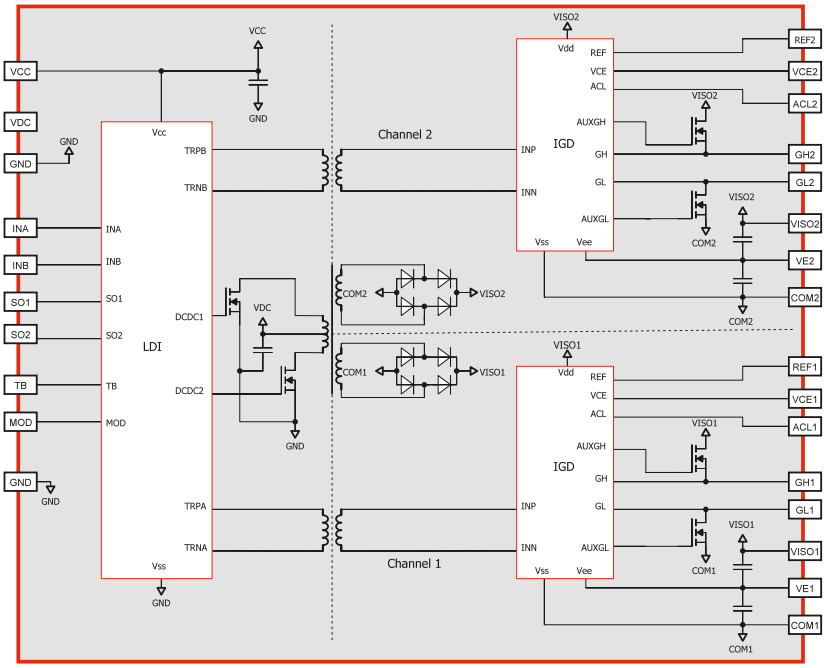
KEY DATA OVERVIEW

Parameter	Min	Typical	Max	Unit
Nominal supply voltage		15		V
Supply current @ f_{IN}=0 Hz		58		mA
Supply current, full load		700		mA
Output power per channel		4		W
Gate voltage		+15/-10		V
Peak output current (gate current)	-35		35	A
Switching frequency f_{IN} [1)]	0		100	kHz
Duty cycle	0		100	%
Turn-on delay		85		ns
Turn-off delay		70		ns
Output rise time		20		ns
Output fall time		20		ns
Creepage distance primary-secondary	15.7			mm
Creepage secondary-secondary	12			mm
Clearance distance primary-secondary	15.7			mm
Clearance distance secondary-secondary	7.3			mm
Dielectric test voltage	5000			V_{AC}
Partial discharge extinction voltage	1768			V_{peak}
dv/dt immunity, input to output		75		kV/us
Operating temperature	-40		+85	degC

[1)] Maximum switching frequency depends on the IGBT gate charge. See data sheet for actual value of specific driver.

BASIC SCHEMATIC OF THE 2SC0435T

The 2SC0435T targets medium-power, dual-channel IGBT and MOSFET applications. The driver supports switching up to 100 kHz at best-in-class efficiency. The 2SC0435T comprises a complete dual-channel IGBT driver core, fully equipped with an isolated DC/DC converter, short-circuit protection, advanced active clamping and supply-voltage monitoring. The 2SC0435T is a driver core equipped with the SCALE™-2 chipset, a set of application-specific integrated circuits (ASICs) that covers the main range of functions needed to design intelligent gate drivers.



DRIVING PARALLEL-CONNECTED IGBTS

The driver allows direct parallel connection of any number of IGBT modules with individual drivers. This new pioneering concept for simple and reliable parallel connection makes it practical for the first time to set up converter series with discrete modules as well as parallel-connected IGBTs without any additional development effort.

ORDERING INFORMATION 2SC0435T DUAL-CHANNEL SCALE™-2 GATE DRIVER CORE

	Type Designation	Increased EMI capability	SSD*	Lead free	Pin length
2SC0435T	2SC0435T2A0-17	no	no	no	2.54 mm
	2SC0435T2C0-17	no	no	no	5.84 mm
	2SC0435T2D0-17	no	no	yes	2.54 mm
	2SC0435T2E0-17	no	no	yes	5.84 mm
	2SC0435T2F0-17	yes	no	no	5.84 mm
	2SC0435T2F1-17 (under development)	yes	yes	yes	5.84 mm
	2SC0435T2G1-17 (new)	yes	yes	yes	3.10 mm
	2SC0435T2H0-17 (under developmemnt)	yes	yes	yes	2.54 mm

*) Soft Shut Down