

2SC0108T SCALE™-2 IGBT Gate Driver Core



2SC0108T
Dual-Channel Ultra-Compact Universal SCALE™-2
Gate Driver Core. New Types with SCALE™-2+ Chipset.

PRODUCT DESCRIPTION

The SCALE™-2 dual-driver core 2SC0108T combines unrivalled compactness with broad applicability and low cost. The driver was designed for universal applications requiring high reliability. The 2SC0108T drives all standard IGBT modules up to 600 A/1200 V or 450 A/1700 V. Its embedded paralleling capability allows easy inverter design covering higher power ratings. Multi-level topologies are also supported.

The 2SC0108T is the most compact driver core available for industrial applications, with a footprint of only 45 mm x 34.3 mm and an insertion height of 16 mm. It allows even the most restricted insertion 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 reflected in increased reliability at simultaneously minimized cost.

The 2SC0108T combines a complete two-channel driver core with all components required for driving, such as an isolated DC/DC converter, short-circuit protection as well as supply voltage monitoring. Each of the two output channels is electrically isolated from the primary side and the other

secondary channel.

An output current of 8 A and 1 W drive power is available per channel, making the 2SC0108T an ideal driver platform for universal use in small and medium power applications. The driver provides a gate voltage swing of +15 V/-8 V. The turn-on voltage is regulated to maintain a stable 15 V regardless of the output power level. Its outstanding EMC allows safe and reliable operation even in tough industrial applications.

APPLICATIONS

- General purpose drives
- Uninterruptible power supplies (UPS)
- Solar and wind power converters
- Auxiliary converters for traction
- Electric/hybrid drive vehicles
- Driving parallel-connected IGBTs
- Switched-mode power supplies (SMPS)
- Medical (MRT, CT, X-ray)
- Laser technology

KEY BENEFIT

Unrivalled compactness with broad applicability and high reliability - 85 % less components compared to conventional drivers.

KEY FEATURES

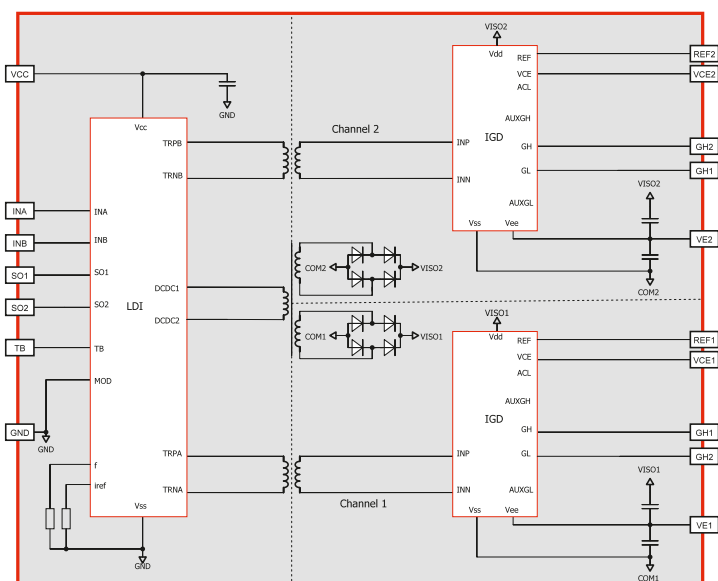
- Ultra-compact dual-channel driver
- Blocking voltages up to 1700 V
- Switching frequency up to 50 kHz
- Very short delay time of <100 ns
- Small jitter of ±2 ns
- Gate current ±8 A
- +15 V/-8 V gate driving
- Regulated gate-emitter voltage
- Interface for 3.3 V...15 V logic level
- Direct and half-bridge modes
- Embedded paralleling capability
- 2-level and multilevel topologies
- IGBT short-circuit protection
- Isolated DC/DC converter
- 2 x 1 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: 45 mm x 34.3 mm

KEY DATA OVERVIEW

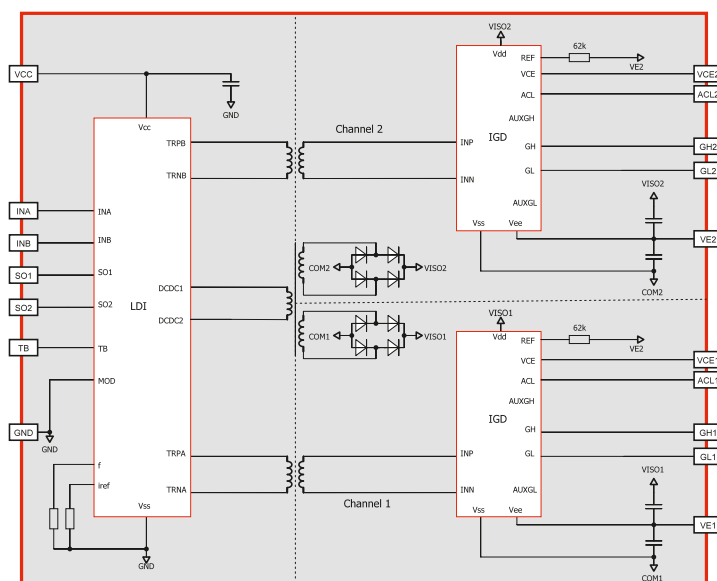
Parameter	Min	Typical	Max	Unit
Nominal supply voltage		15		V
Supply current @ $f_{IN}=0$ Hz		31		mA
Supply current, full load		240		mA
Output power per channel		1		W
Gate voltage		+15/-8		V
Peak output current (gate current)	-8		+8	A
Switching frequency $f_{IN}^{1)}$	0		50	kHz
Duty cycle	0		100	%
Turn-on delay		90		ns
Turn-off delay		75		ns
Output rise time		17		ns
Output fall time		15		ns
Creepage distance primary-secondary	12.9			mm
Creepage secondary-secondary	8.5			mm
Clearance distance primary-secondary	12.9			mm
Clearance distance secondary-secondary	6.5			mm
Dielectric test voltage	5000			V _{AC}
Partial discharge extinction voltage	1768			V _{peak}
dv/dt immunity, input to output			75	kV/us

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

BASIC SCHEMATIC OF THE 2SC0108T



BASIC SCHEMATIC OF THE 2SC0108T2D0-XX



ORDERING INFORMATION 2SC0108T DUAL-CHANNEL SCALE™-2 GATE DRIVER CORE

	Type Designation	Increased EMI capability	Temp degC	SSD*	Lead free	Pin length
2SC0108T	2SC0108T2A0-17	no	-20...85	no	no	2.54 mm
	2SC0108T2B0-17	no	-40...85	no	no	2.54 mm
	2SC0108T2C0-17	no	-40...85	no	no	5.84 mm
	2SC0108T2D0-12 / 2SC0108T2D0-07	yes	-40...85	no	no	2.54 mm
	2SC0108T2E0-17	no	-40...85	no	yes	2.54 mm
	2SC0108T2F0-17	no	-40...85	no	yes	5.84 mm
	2SC0108T2H0-17 (under development)	yes	-40...85	yes	yes	2.54 mm
	2SC0108T2F1-17 (under development)	yes	-40...85	yes	yes	5.84 mm
	2SC0108T2G0-17 (under development)	yes	-40...85	yes	yes	3.10 mm

*) Soft Shut Down