

SCALE-iDriver Gate Driver ICs INTRODUCTION

Power Integrations is a technology and market leader in mid- and high-power gate drivers. Using highly integrated technology, the company's gate drivers employ 85% fewer components than other commonly-available solutions. Power Integrations has 30 years' history of supporting demanding industries such as traction, power generation, power transmission and industrial automation with products that combine outstanding reliability, best-in-class performance and competitive pricing.

INNOVATIVE TECHNOLOGY

The SCALE-iDriver family of gate driver ICs, optimized for driving both IGBTs and MOSFETs, are the first products to bring Power Integrations' pioneering FluxLink™ magneto-inductive bi-directional communications technology to 1200 V and 1700 V driver applications.

- FluxLink technology eliminates the need for short-lived opto-electronics and associated compensation circuitry, thereby enhancing operational stability while reducing system complexity.
- Advanced system safety and protection features, commonly found in medium- and high-voltage applications, enhance product reliability.
- Innovative eSOP™ package features 9.5 mm of creepage and a Comparative Tracking Index (CTI) = 600, ensuring substantial operating voltage margin and high system reliability.

AUTOMOTIVE APPLICATIONS

Power Integrations SCALE-iDriver ICs for automotive applications (SID1132KQ/SID1182KQ) are AEC-Q100 qualified, can drive up to 8 A and support 600 V, 650 V and 1200 V IGBT and SiC inverter designs up to several hundred kW without a booster stage.

SCALE-IDRIVER GATE DRIVER ICs

The SCALE-iDriver family of galvanic isolated single-channel gate driver ICs ranges in output current from 1 A up to 8 A – the industry's highest without needing an external booster amplifier. SCALE-iDriver devices are optimized for driving IGBT and MOSFETs from 600 V to 1700 V, and enable inverters to be built up to 110 kW using only a few external components.



Automotive Application Gate Drivers SID1132KQ, SID1182KQ



2.5 A and up to 8 A single-channel IGBT/MOSFET gate driver for automotive applications providing reinforced galvanic isolation.

APPLICATIONS

- Electric vehicle power train
- Electric vehicle on-board chargers and charger stations
- High reliability drivers and inverters

CERTIFICATION

- AEC-Q100 qualified reaching automotive grade level 1
- Full safety and regulatory compliance
- 100% production partial discharge test
- 100% production HIPOT compliance testing at 6 kV RMS 1 s
- Reinforced isolation according to VDE0884-10 and IEC60747-10
- UL1577 certified: E358471 complies with IEC61000-4-8 and IEC61000-4-9 standards

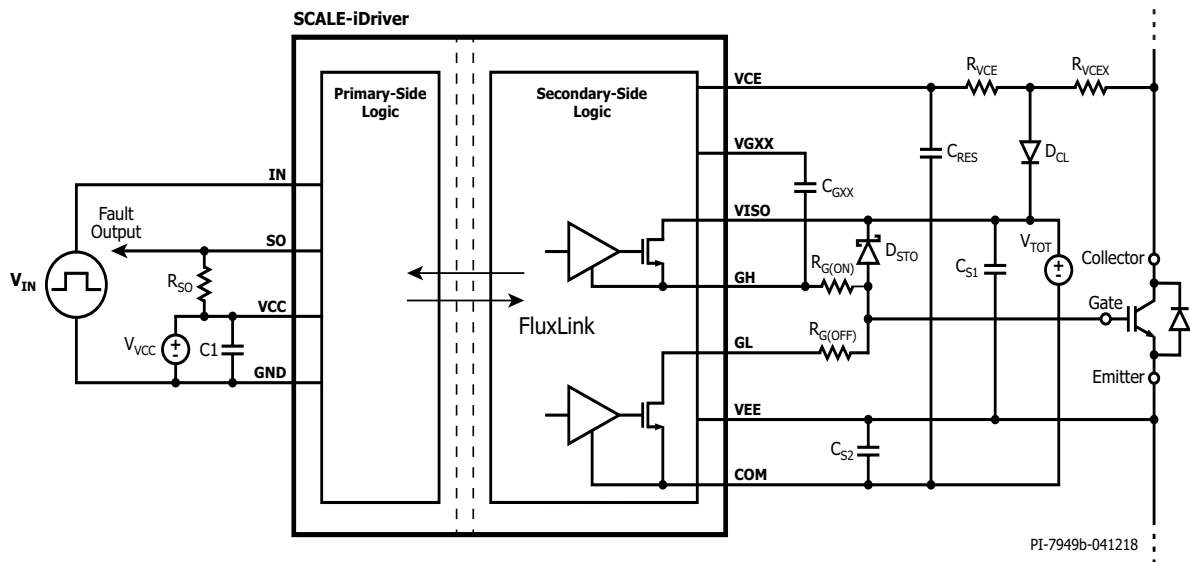
KEY FEATURES

- Split outputs providing up to 8 A peak drive current
- Integrated FluxLink technology providing safe isolation between primary-side and secondary-side
- Rail-to-rail stabilized output voltage
- Unipolar supply voltage for secondary side
- Suitable for 600 V / 650 V / 1200 V IGBT and MOSFET switches
- Up to 75 kHz switching frequency
- 260 ns propagation delay time
- ± 5 ns propagation delay jitter
- -40 °C to $+125$ °C operating ambient temperature
- High common-mode transient immunity
- eSOP package with 9.5 mm creepage and clearance

KEY DATA OVERVIEW

Parameter	Min	Typical	Max	Unit
Primary-side supply voltage (V_{VCC})	-0.5	5	6.5	V
Secondary-side total supply voltage (V_{TOT})	-0.5	25	30	V
Maximum gate sourcing peak current (I_{GH})		7.3		A
Maximum gate sinking peak current (I_{GL})		8		A
Operating switching frequency (f_s)		20	75	kHz
Propagation delay jitter			±5	ns
Turn-on propagation delay time ($t_{p(LH)}$)		253		ns
Turn-off propagation delay time ($t_{p(HL)}$)		262		ns
Minimum turn-on and off PWM pulses extension ($t_{GE(MIN)}$)			650	ns
Creepage distance primary-secondary (L2)	9.5			mm
Clearance distance primary-secondary (L1)	9.5			mm
Tracking resistance (comparative tracking index - CTI)		600		
Max. package dissipated power (P_s)			1.79	W
100% production withstanding isolation voltage test (V_{TEST})	6			kVRMS
100% production partial discharge test ($V_{PD(m)}$)	2550			Vpeak

APPLICATION CIRCUIT (SID1132KQ AND SID1182KQ)



ORDERING INFORMATION

Part Number	Product Rated Current	IGBT collector current ratings *(without booster)	Ordering Code
SID1132KQ	2.5 A	Up to 100 A	SID1182KQ (delivered in tubes - 48pcs) SID1182KQ-TL (delivered in Tape & Reel - 1000pcs)
SID1182KQ	8 A	Up to 600 A	SID1182KQ (delivered in tubes - 48pcs) SID1182KQ-TL (delivered in Tape & Reel - 1000pcs)