

SKYPER PRIME 1700V 1400A ST10



IGBT Driver for SKM1400GB17R8

Order Number
L5066802 – Driver
22290412 - Module

SKYPER PRIME 1700V 1400A ST10

Features*

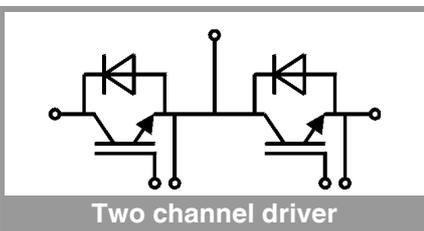
- Dynamic short circuit detection with SoftOff
- Galvanic isolated DC link measurement
- Galvanic isolated temp measurement
- PWM output for sensor signals
- Over voltage trip
- ROHS, UL recognized
- DC Bus up to 1200V

Typical Applications

- Regenerative inverters
- Traction
- Large drives

Remarks

- For environmental conditions please check technical explanation
- The driver has to be 100% tested for high voltage before use



Absolute Maximum Ratings			
Symbol	Conditions	Values	Unit
V_s	Supply voltage primary	16	V
V_{iH}	Input signal voltage (HIGH)	$V_s + 0.3$	V
V_{iL}	Input signal voltage (LOW)	GND - 0.3	V
$I_{outPEAK}$	Output peak current	15	A
$I_{outAVmax}$	Output average current	100	mA
f_{max}	Max. switching frequency 85°C	10	kHz
			kHz
V_{CE}	Collector emitter voltage sense across the IGBT	1700	V
dv/dt	Rate of rise and fall of voltage secondary to primary side	50	kV/ μ s
$V_{isol IO}$	Insulation test voltage input - output (AC, rms, 2s)	5000	V
$Q_{out/pulse}$	Max. rating for output charge per pulse	10	μ C
T_{op}	Operating temperature	-40 ... 85	°C
T_{stg}	Storage temperature	-40 ... 85	°C

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
V_s	Supply voltage primary side	14.4	15	15.6	V
I_{SO}	Supply current primary (no load)		85		mA
	Supply current primary side (max.)			1000	mA
V_i	Input signal voltage on / off		$V_s/0$		V
V_{IT+}	Input threshold voltage (HIGH)	8.6		10	V
V_{IT-}	Input threshold voltage (LOW)	5		6.7	V
R_{IN}	Input resistance (switching signal)		30		k Ω
C_{IN}	Input capacitance (switching signals)		1		nF
$V_{G(on)}$	Turn on output voltage		15		V
$V_{G(off)}$	Turn off output voltage		-8		V
$t_{d(on)IO}$	Input-output turn-on propagation time		1		μ s
$t_{d(off)IO}$	Input-output turn-off propagation time		1		μ s
$t_{d(Err)SCP}$	Error sec - prim propagation time		0.6		μ s
$t_{d(Err)HALT}$	Error primary - secondary side propagation time		0.6		μ s
t_{TD}	Top-Bot interlock dead time		4		μ s
t_{jitter}	Signal transfer prim - sec (total jitter)		25		ns
t_{SIS}	Short pulse suppression		0.4		μ s
t_{POR}	Power-On-Reset completed		0.1		s
t_{pRESET}	Error reset time	0.03			ms
V_{CEstat}	Reference voltage for V_{CE} -monitoring		8.5		V
t_{bl}	V_{CE} monitoring blanking time (dynamic)		4		μ s
V_{DCtrip}	Over voltage trip level		1250		V
R_{Gon}	Driver gate resistor at switch-on		3		Ω
R_{Goff}	Driver gate resistor at switch-off		0		Ω
MTBF	Mean Time Between Failure $T_a = 40^\circ\text{C}$		3		10^6h

SKYPER PRIME 1700V 1400A ST10

Signal Connector

PIN	Signal	Function	Specifications
X1:01	IF_PWR_15P	Drive power supply	Stabilised +15V \pm 4%
X1:02	IF_DC_LINK	Digitised DC Link signal	PWM output, 15V
X1:03	IF_PWR_15P	Drive power supply	Stabilised +15V \pm 4%
X1:04	IF_GND	GND	To be connected to ground
X1:05	IF_PWR_15P	Drive power supply	Stabilised +15V \pm 4%
X1:06	IF_GND	GND	To be connected to ground
X1:07	IF_nERROR_IN	ERROR input	LOW (GND, U_{TH} 1V) = External error HIGH (VP, U_{TH} 14V) = No error Max input current 1,8mA, can be connected with IF_nERROR_OUT
X1:08	IF_GND	GND	To be connected to ground
X1:09	IF_nERROR_OUT	ERROR output	HIGH = NO ERROR ;open collector output 15V / 10mA (external pull up Resistor necessary)
X1:10	IF_GND	GND	To be connected to ground
X1:11	IF_HB_TOP	Switching signal input (TOP switch)	Positive 15V CMOS logic, LOW = TOP switch off ; HIGH = TOP switch on
X1:12	IF_GND	GND	To be connected to ground
X1:13	IF_nERROR_OUT	ERROR output	HIGH = NO ERROR; open collector output; max. 15V / 10 mA (external pull up resistor necessary)
X1:14	IF_GND	GND	To be connected to ground
X1:15	IF_HB_BOT	Switching signal input (BOTTOM switch)	Positive 15V CMOS logic, LOW = BOT switch off; HIGH = BOT switch on
X1:16	IF_GND	GND	To be connected to ground
X1:17	IF_CFG_SELECT	Interlock set up	HIGH (VP) = No interlock LOW (GND) = Interlock 4 μ s
X1:18	IF_GND	GND	To be connected to ground
X1:19	IF_TEMP	Digitised NTC signal	PWM output, 15V
X1:20	IF_GND	GND	To be connected to ground

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, chapter IX.

*IMPORTANT INFORMATION AND WARNINGS

The specifications of SEMIKRON products may not be considered as guarantee or assurance of product characteristics ("Beschaffheitsgarantie"). The specifications of SEMIKRON products describe only the usual characteristics of products to be expected in typical applications, which may still vary depending on the specific application. Therefore, products must be tested for the respective application in advance. Application adjustments may be necessary. The user of SEMIKRON products is responsible for the safety of their applications embedding SEMIKRON products and must take adequate safety measures to prevent the applications from causing a physical injury, fire or other problem if any of SEMIKRON products become faulty. The user is responsible to make sure that the application design is compliant with all applicable laws, regulations, norms and standards. Except as otherwise explicitly approved by SEMIKRON in a written document signed by authorized representatives of SEMIKRON, SEMIKRON products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury. No representation or warranty is given and no liability is assumed with respect to the accuracy, completeness and/or use of any information herein, including without limitation,

SKYPER PRIME 1700V 1400A ST10

warranties of non-infringement of intellectual property rights of any third party. SEMIKRON does not assume any liability arising out of the applications or use of any product; neither does it convey any license under its patent rights, copyrights, trade secrets or other intellectual property rights, nor the rights of others. SEMIKRON makes no representation or warranty of non-infringement or alleged non-infringement of intellectual property rights of any third party which may arise from applications. Due to technical requirements our products may contain dangerous substances. For information on the types in question please contact the nearest SEMIKRON sales office. This document supersedes and replaces all information previously supplied and may be superseded by updates. SEMIKRON reserves the right to make changes.