

# SKYPER PRIME 1700V 1kA ST10



## IGBT Driver for SKM1000GB17R8

Order Number  
L5066807 – Driver  
22290422 - Module

### SKYPER PRIME 1700V 1kA ST10

#### Features\*

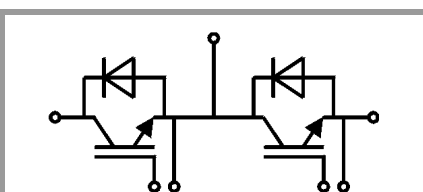
- Dynamic short circuit detection with SoftOff
- Galvanic isolated DC link measurement
- Galvanic isolated temp measurement
- PWM output for sensor signals
- Over voltage trip
- ROHS, UL recognized
- DC Bus up to 1200V

#### 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



Two channel driver

| 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/ $\mu$ s |
| $V_{isol IO}$            | Insulation test voltage input - output (AC, rms, 2s)       | 5000        | V           |
| $Q_{out/pulse}$          | Max. rating for output charge per pulse                    | 7           | $\mu$ 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 $\Omega$     |
| $C_{iN}$         | 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       |      | $\mu$ s        |
| $t_{d(off)IO}$   | Input-output turn-off propagation time             |      | 1       |      | $\mu$ s        |
| $t_{d(err)SCP}$  | Error sec - prim propagation time                  |      | 0.6     |      | $\mu$ s        |
| $t_{d(err)HALT}$ | Error primary - secondary side propagation time    |      | 0.6     |      | $\mu$ s        |
| $t_{TD}$         | Top-Bot interlock dead time                        |      | 4       |      | $\mu$ s        |
| $t_{jitter}$     | Signal transfer prim - sec (total jitter)          |      | 25      |      | ns             |
| $t_{SIS}$        | Short pulse suppression                            |      | 0.4     |      | $\mu$ 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              |
| $t_{bl}$         | VCE monitoring blanking time (dynamic)             |      | 4       |      | $\mu$ s        |
| $V_{DCtrip}$     | Over voltage trip level                            |      | 1250    |      | V              |
| $R_{Gon}$        | Driver gate resistor at switch-on                  |      | 3       |      | $\Omega$       |
| $R_{Goff}$       | Driver gate resistor at switch-off                 |      | 0       |      | $\Omega$       |
| MTBF             | Mean Time Between Failure $T_a = 40^\circ\text{C}$ |      | 3       |      | $10^6\text{h}$ |

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## 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<br>HIGH ( VP, $U_{TH}$ 14V ) = No error<br>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<br>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,<br>LOW = TOP switch off ;<br>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,<br>LOW = BOT switch off;<br>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<br>LOW (GND) = Interlock 4 $\mu$ 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

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