



**SEMIDRIVER™**

## Hybrid Dual MOSFET Driver

**SKHI 21A R**

Preliminary Data

### Features

- Drives MOSFET with  $V_{DS(on)} < 10\text{ V}$
- Is compatible to old SKHI 21
- CMOS compatible inputs
- Short circuit protection by  $V_{CE}$  monitoring and switch off
- Drive interlock top / bottom
- Isolation by transformers
- Supply undervoltage protection (13 V)
- Error latch / output

### Typical Applications

- Driver for MOSFET modules in bridge circuits in industrial applications

### Footnotes

see fig. 6

At  $R_{CE} = 18\text{ k}\Omega$ ,  $C_{CE} = 330\text{ pF}$

| Absolute Maximum Ratings |                                                            |               |              |
|--------------------------|------------------------------------------------------------|---------------|--------------|
| Symbol                   | Conditions                                                 | Values        | Unit         |
| $V_S$                    | Supply voltage primary                                     | 18            | V            |
| $V_{IH}$                 | Input signal voltage (HIGH)                                | $V_S + 0.3$   | V            |
| $I_{outPEAK}$            | Output peak current                                        | 8             | A            |
| $I_{outAVmax}$           | Output average current (max.)                              | 40            | mA           |
| $f_{max}$                | max. switching frequency                                   | 50            | kHz          |
| $V_{CE}$                 | Collector emitter voltage sense across the IGBT            | 1200          | V            |
| $dv/dt$                  | Rate of rise and fall of voltage secondary to primary side | 50            | kV/ $\mu$ s  |
| $V_{isol IO}$            | Isolation test voltage input - output (2 sec. AC)          | 2500          | V            |
| $V_{isol12}$             |                                                            |               | V            |
| $R_{Gon min}$            | Minimum rating for external $R_{Gon}$                      | 3             | $\Omega$     |
| $R_{Goff min}$           | Minimum rating of external $R_{Goff}$                      | 3             | $\Omega$     |
| $Q_{out/pulse}$          | Max. rating for output charge per pulse                    | 4             | $\mu$ C      |
| $T_{op}$                 | Operating temperature                                      | - 40 ... + 85 | $^{\circ}$ C |
| $T_{stg}$                | Storage temperature                                        | - 40 ... + 85 | $^{\circ}$ 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 side (no load)        |      | 80     |      | mA         |
|                 | Supply current primary side (max.)           |      |        | 290  | mA         |
| $V_i$           | Input signal voltage on / off                |      | 15 / 0 |      | V          |
| $V_{IT+}$       | Input threshold voltage (High)               | 10,9 | 11,7   | 12,5 | V          |
| $V_{IT-}$       | Input threshold voltage (Low)                | 4,7  | 5,5    | 6,5  | V          |
| $R_{IN}$        | Input resistance                             |      | 10     |      | k $\Omega$ |
| $V_{G(on)}$     | Turn on gate voltage output                  |      | + 15   |      | V          |
| $V_{G(off)}$    | Turn off gate voltage output                 |      | 0      |      | V          |
| $R_{GE}$        | Internal gate-emitter resistance             |      | 22     |      | k $\Omega$ |
| $f_{ASIC}$      | Asic system switching frequency              |      | 8      |      | MHz        |
| $t_{d(on)IO}$   | Input-output turn-on propagation time        | 0,85 | 1      | 1,15 | $\mu$ s    |
| $t_{d(off)IO}$  | Input-output turn-off propagation time       | 0,85 | 1      | 1,15 | $\mu$ s    |
| $t_{d(terr)}$   | Error input-output propagation time          |      | 0,6    |      | $\mu$ s    |
| $t_{pERRRESET}$ | Error reset time                             |      | 9      |      | $\mu$ s    |
| $t_{TD}$        | Top-Bot Interlock Dead Time                  | 3,3  |        | 4,3  | $\mu$ s    |
| $V_{CEstat}$    | Reference voltage for $V_{CE}$ monitoring    |      | 5      | 10   | V          |
| $C_{ps}$        | Coupling capacitance primary / secondary     |      | 12     |      | pF         |
| MTBF            | Mean time between failure $T_a=40^{\circ}$ C |      | 2,0    |      | $10^6$ h   |
| w               | weight                                       |      | 45     |      | g          |