

**SEMIPONT™ 5**

## Half Controlled 3-phase Bridge Rectifier

### SKDH 115

Target Data

### Features

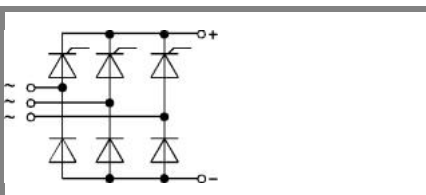
- Compact design
- Two screws mounting
- Heat transfer and isolation through direct copper board (low  $R_{th}$ )
- Low resistance in steady-state and high reliability
- High surge currents
- UL -recognized, file no. E 63 532

### Typical Applications\*

- For DC drives with a fixed direction of rotation
- Controlled field rectifier for DC motors
- Controlled battery charger

| $V_{RSM}$<br>V | $V_{RRM}, V_{DRM}$<br>V | $I_D = 110$ A (full conduction)<br>( $T_s = 80$ °C) |
|----------------|-------------------------|---|
| 1200           | 1200                    | SKDH 115/12   |
| 1600           | 1600                    | SKDH 115/16   |

| Symbol                  | Conditions  | Values         | Units                                |
|-------------------------|---|----------------|--------------------------------------|
| $I_D$                   | $T_s = 80$ °C   | 110            | A                                    |
| $I_{TSM}, I_{FSM}$      | $T_{vj} = 25$ °C; 10 ms<br>$T_{vj} = 125$ °C; 10 ms                 | 1050<br>950    | A<br>A                               |
| $i^2t$                  | $T_{vj} = 25$ °C; 8,3 ... 10 ms<br>$T_{vj} = 125$ °C; 8,3 ... 10 ms | 5500<br>4500   | A <sup>2</sup> s<br>A <sup>2</sup> s |
| $V_T, V_F$              | $T_{vj} = 25$ °C; $I_T, I_F = 120$ A                                | max. 1,8       | V                                    |
| $V_{T(TO)} / V_{F(TO)}$ | $T_{vj} = 125$ °C;  | max. 1,1       | V                                    |
| $r_T$                   | $T_{vj} = 125$ °C   | max. 6         | mΩ                                   |
| $I_{DD}, I_{RD}$        | $T_{vj} = 125$ °C; $V_{DD} = V_{DRM}; V_{RD} = V_{RRM}$             | max. 20        | mA                                   |
| $t_{gd}$                | $T_{vj} = 25$ °C; $I_G = A; di_G/dt = A/\mu s$                      |                | μs                                   |
| $t_{gr}$                | $V_D = \cdot V_{DRM}$   |                | μs                                   |
| $(dv/dt)_{cr}$          | $T_{vj} = 125$ °C   | max. 1000      | V/μs                                 |
| $(di/dt)_{cr}$          | $T_{vj} = 125$ °C; $f = 50...60$ Hz                                 | max. 50        | A/μs                                 |
| $t_q$                   | $T_{vj} = 125$ °C; typ.   | 150            | μs                                   |
| $I_H$                   | $T_{vj} = 25$ °C; typ. / max.                                       | - / 200        | mA                                   |
| $I_L$                   | $T_{vj} = 25$ °C; $R_G = 33$ Ω                                      | - / 400        | mA                                   |
| $V_{GT}$                | $T_{vj} = 25$ °C; d.c.  | min. 3         | V                                    |
| $I_{GT}$                | $T_{vj} = 25$ °C; d.c.  | min. 150       | mA                                   |
| $V_{GD}$                | $T_{vj} = 125$ °C; d.c.   | max. 0,25      | V                                    |
| $I_{GD}$                | $T_{vj} = 125$ °C; d.c.   | max. 5         | mA                                   |
| $R_{th(j-s)}$           | per thyristor / diode   | 0,84           | K/W<br>K/W<br>K/W                    |
| $T_{vj}$                |   | - 40 ... + 125 | °C                                   |
| $T_{stg}$               |   | - 40 ... + 125 | °C                                   |
| $T_{solder}$            | terminals   | 260            | °C                                   |
| $V_{isol}$              | a. c. 50 Hz; r.m.s.; 1 s / 1 min.<br>to heatsink                    | 3600 ( 3000 )  | V                                    |
| $M_s$                   |   | 2,5            | Nm                                   |
| $M_t$                   |   |                | Nm                                   |
| $m$                     | approx.   | 75             | g                                    |
| Case                    | SEMIPONT 5  | G 61           |                                      |



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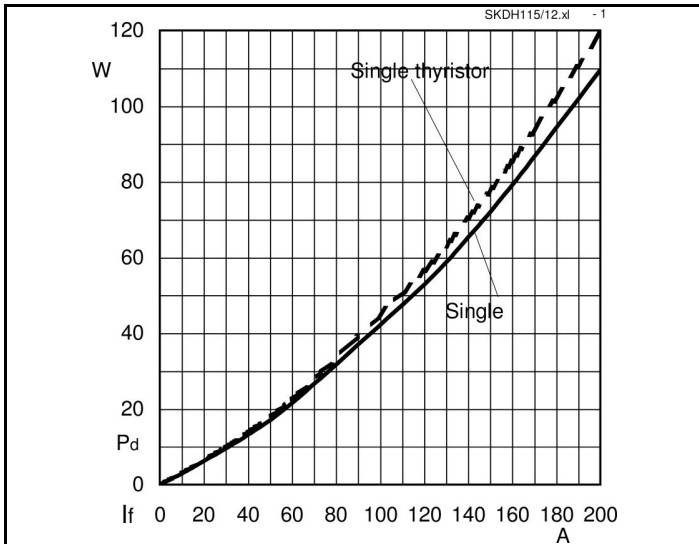


Fig. 1 Power diassipation vs. output current

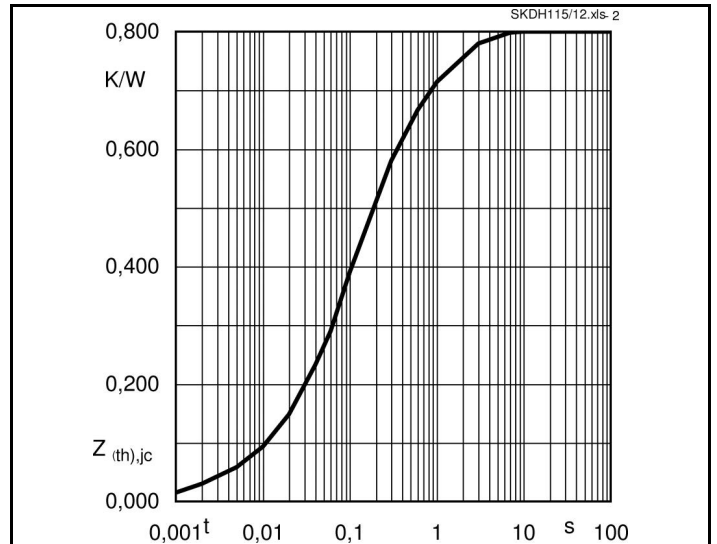


Fig. 2 Transient thermal impedance vs. time

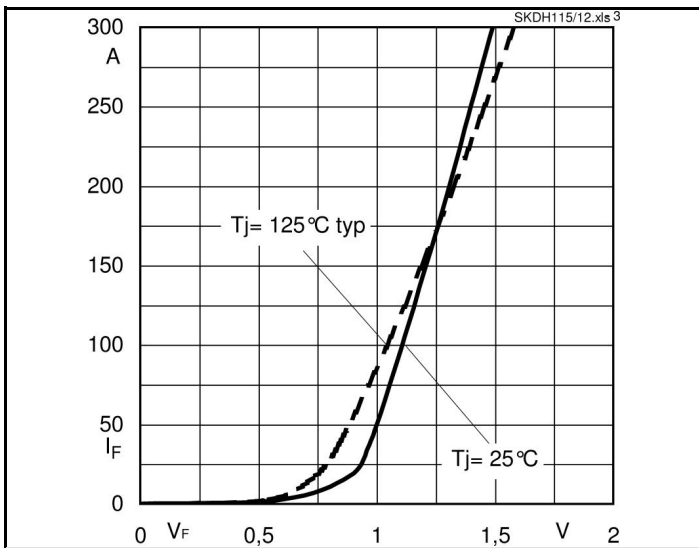


Fig. 3 Single diode on-state characteristic

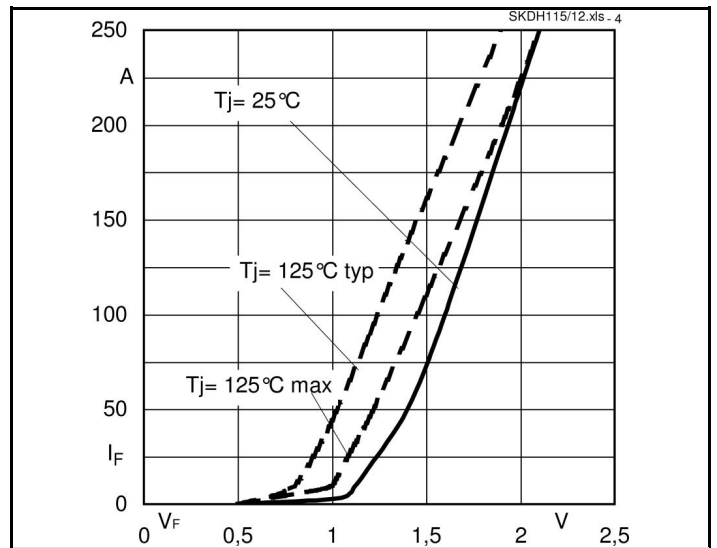


Fig. 4 Single thyristor on-state characteristic

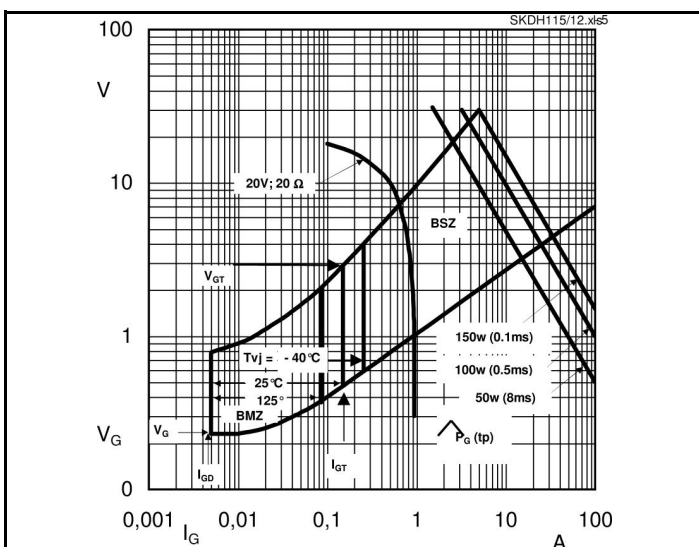
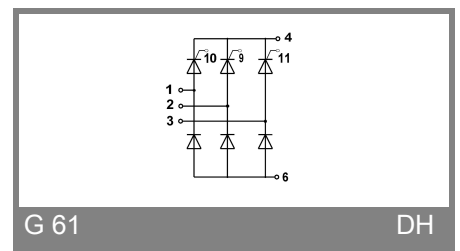
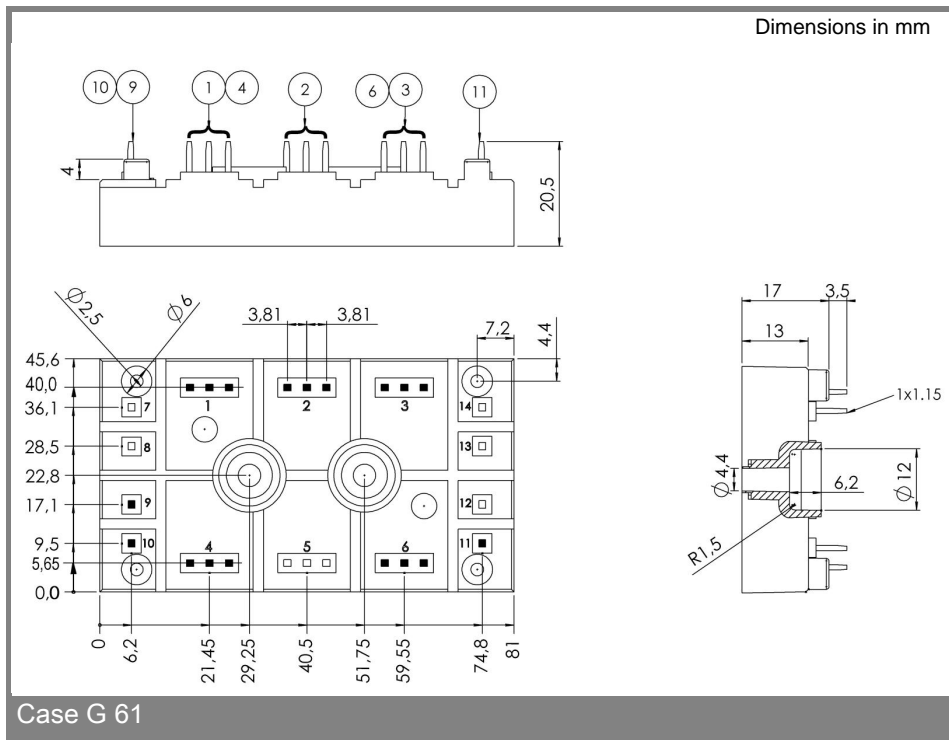


Fig. 5 Gate trigger characteristic

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