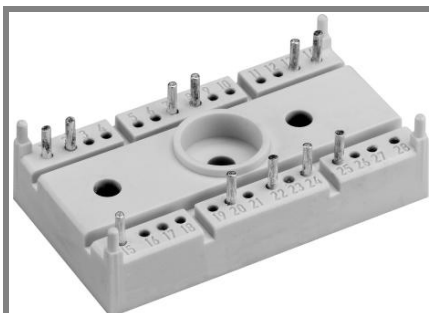




SEMITOP® 3

## Half Controlled Bridge Rectifier

### SK 40 DH

Preliminary Data

### Features

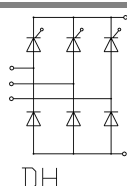
- Compact design
- One screw mounting
- Heat transfer and insulation through direct copper bonded aluminium oxide ceramic (DBC)
- Glass passivated thyristor chips
- Up to 1600V reverse voltage
- UL recognized, file no. E 63 532

### Typical Applications

- Soft starters
- Light control
- Temperature control
- Motor control

| $V_{RSM}$<br>V | $V_{RRM}, V_{DRM}$<br>V | $I_D = 42$ A (full conduction)<br>( $T_s = 80$ °C) |
|----------------|-------------------------|----------------------------------------------------|
| 900            | 800                     | SK 40 DH 08                                        |
| 1300           | 1200                    | SK 40 DH 12                                        |
| 1700           | 1600                    | SK 40 DH 16                                        |

| Symbol              | Conditions                                                        | Values        | Units      |
|---------------------|-------------------------------------------------------------------|---------------|------------|
| $I_D$               | $T_s = 80$ °C                                                     | 42            | A          |
| $I_{FSM} / I_{TSM}$ | $T_{vj} = 25$ °C; 10 ms<br>$T_{vj} = 125$ °C; 10 ms               | 320<br>280    | A<br>A     |
| $i^2t$              | $T_{vj} = 25$ °C; 8,3 ... 10 ms<br>$T_{vj} = 125$ °C; 8,3...10 ms | 510<br>390    | A²s<br>A²s |
| $V_T$               | $T_{vj} = 25$ °C; 75A                                             | max. 2,45     | V          |
| $V_{T(TO)}$         | $T_{vj} = 125$ °C;                                                | 1,1           | V          |
| $r_T$               | $T_{vj} = 125$ °C                                                 | 20            | mΩ         |
| $I_{DD}, I_{RD}$    | $T_{vj} = 125$ °C; $V_{DD} = V_{DRM}$ ; $V_{RD} = V_{RRM}$        | max. 8        | mA         |
| $t_{gd}$            | $T_{vj} =$ °C; $I_G =$ A; $di_G/dt =$ A/μs                        |               | μs         |
| $t_{gr}$            | $V_D = \cdot V_{DRM}$                                             |               | μs         |
| $(dv/dt)_{cr}$      | $T_{vj} = 125$ °C; d.c.                                           | max. 1000     | V/μs       |
| $(di/dt)_{cr}$      | $T_{vj} = 125$ °C; d.c.; $f = 50...60$ Hz                         | max. 50       | A/μs       |
| $t_q$               | $T_{vj} = 125$ °C; d.c.; typ.                                     | 120           | μs         |
| $I_H$               | $T_{vj} = 25$ °C; d.c.; typ. / max.                               | 80 / 150      | mA         |
| $I_L$               | $T_{vj} = 25$ °C; d.c.; $R_G = 33$ Ω                              | 150 / 300     | mA         |
| $V_{GT}$            | $T_{vj} = 25$ °C; d.c.                                            | min. 2        | V          |
| $I_{GT}$            | $T_{vj} = 25$ °C; d.c.                                            | min. 100      | mA         |
| $V_{GD}$            | $T_{vj} = 125$ °C; d.c.                                           | max. 0,25     | V          |
| $I_{GD}$            | $T_{vj} = 125$ °C; d.c.                                           | max. 3        | mA         |
| $R_{th(j-s)}$       | Per thyristor<br>Per diode                                        | 1,7<br>1,7    | K/W<br>K/W |
| $T_{solder}$        | Terminals, 10s                                                    | 260           | °C         |
| $T_{vj}$            | Diodes                                                            | -40...+150    | °C         |
| $T_{vj}$            |                                                                   |               | °C         |
| $T_{stg}$           |                                                                   | -40...+125    | °C         |
| $T_{vj}$            | Thyristors                                                        | -40...+125    | °C         |
| $V_{isol}$          | a. c. 50 Hz; r.m.s.; 1 s / 1 min.                                 | 3000 ( 2500 ) | V          |
| $M_s$               | Mounting torque to heatsink                                       | 2,5           | Nm         |
| $a$                 |                                                                   |               | m/s²       |
| $m$                 | weight                                                            | 30            | g          |
| Case                | SEMITOP® 3                                                        | T 39          |            |



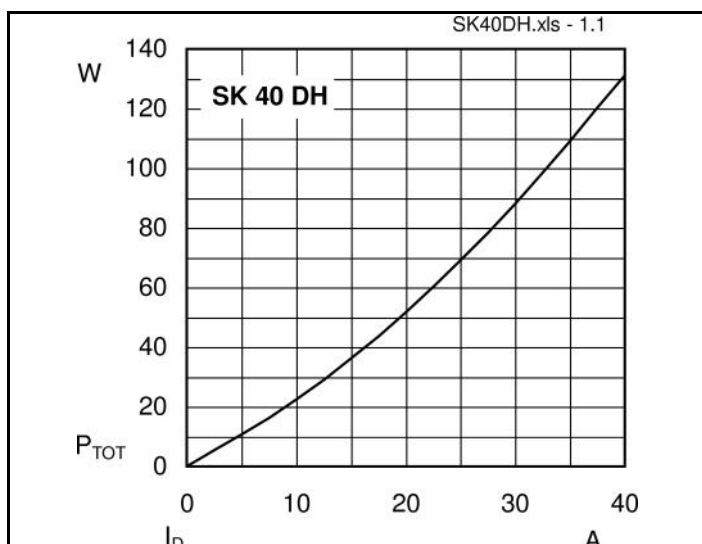


Fig. 1 Power dissipation vs. output current

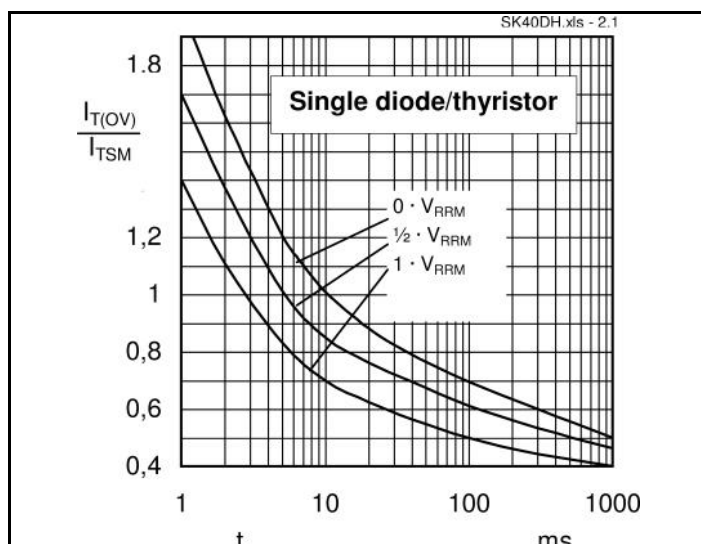


Fig. 2 Surge overload current vs. time

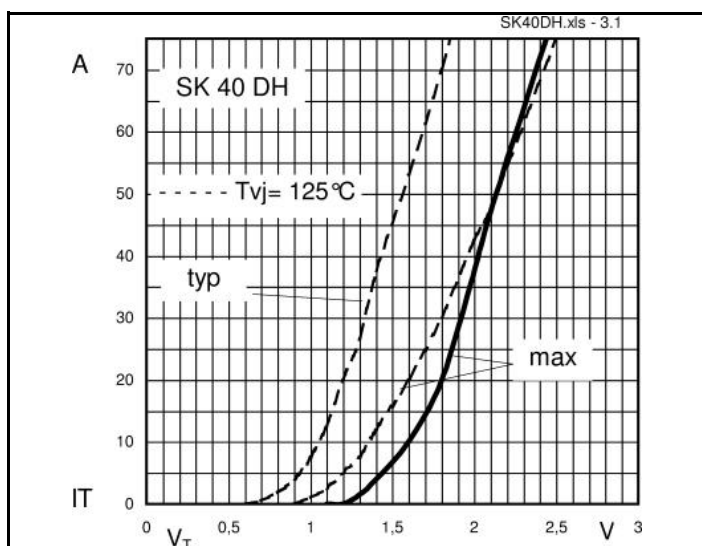


Fig. 3.1 Forward characteristics of single thyristor

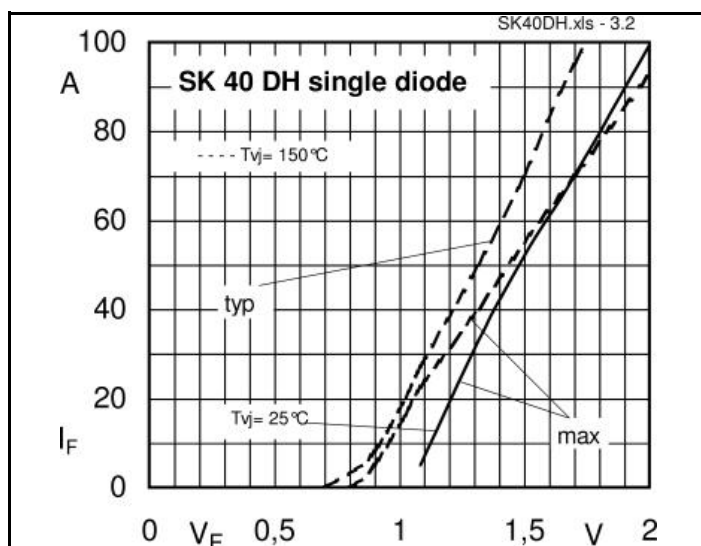


Fig. 3.2 Forward characteristics of single diode

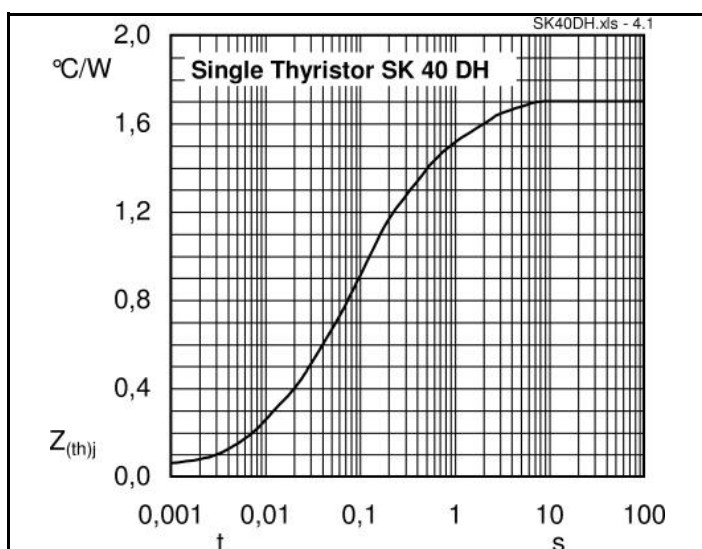


Fig. 4.1 Transient thermal impedance vs. time for single thyristor

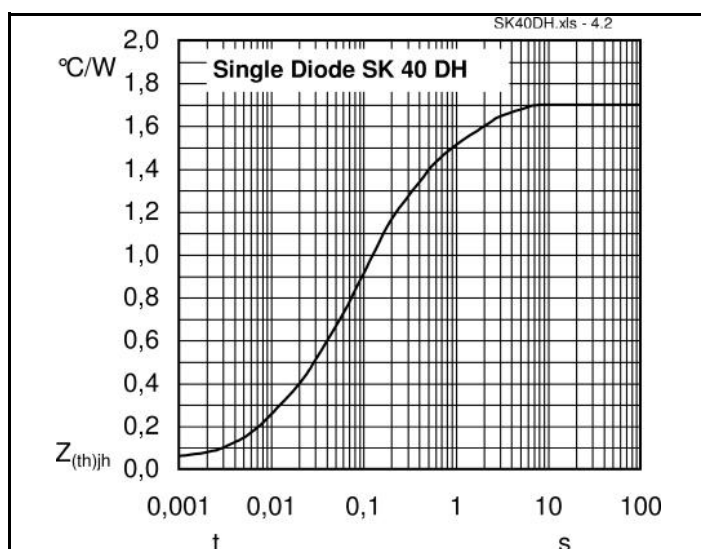


Fig. 4.2 Transient thermal impedance vs. time for single diode

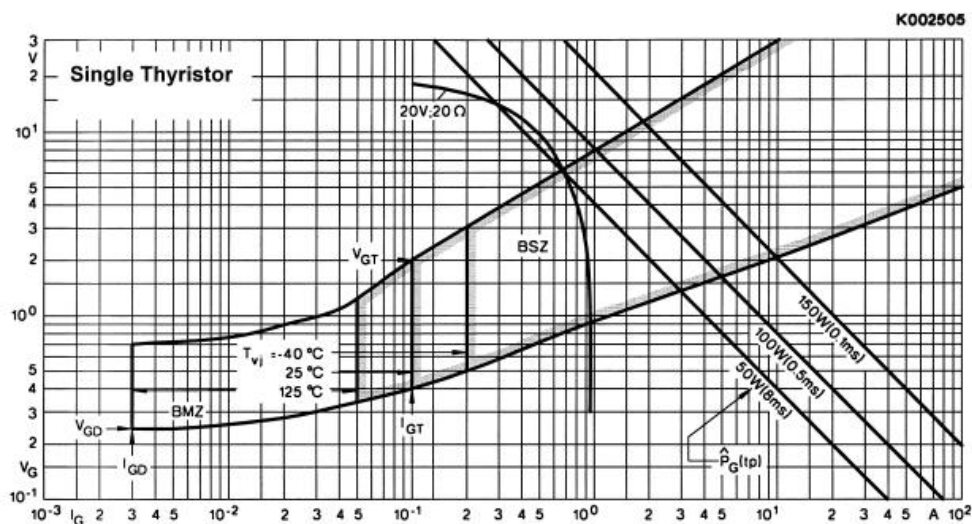
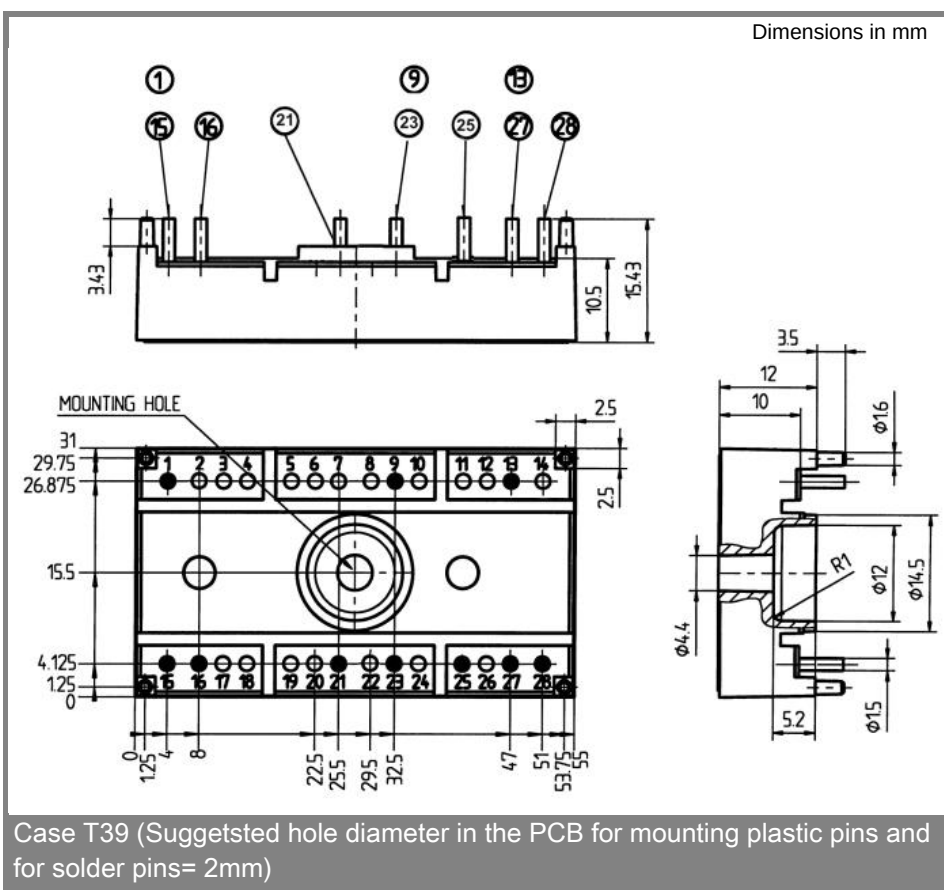
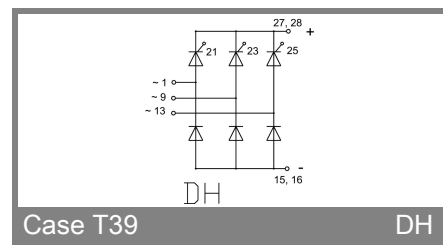


Fig. 5 Gate trigger characteristics



Case T39 (Suggested hole diameter in the PCB for mounting plastic pins and for solder pins= 2mm)



This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.