

**SEMITOP® 3**

## Controllable Bridge Rectifier

### SK 40 DT

Preliminary Data

### Features

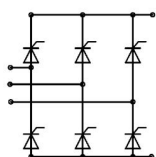
- Compact design
- One screw mounting
- Heat transfer and insulation through direct copper bonded aluminium oxide ceramic (DBC)
- Glass passivated thyristor chips
- Up to 1600V reverse voltage
- UL recognized, file no. E 63 532

### 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 DT 08                                        |
| 1300           | 1200                    | SK 40 DT 12                                        |
| 1700           | 1600                    | SK 40 DT 16                                        |

| Symbol           | Conditions                                                        | Values        | Units      |
|------------------|-------------------------------------------------------------------|---------------|------------|
| $I_D$            | $T_s = 80$ °C                                                     | 42            | A          |
| $I_{FSM}$        | $T_{vj} = 25$ °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;                                                | max. 1,1      | V          |
| $r_T$            | $T_{vj} = 125$ °C                                                 | max. 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                                                 | max. 1000     | V/μs       |
| $(di/dt)_{cr}$   | $T_{vj} = 125$ °C; $f = 50...60$ Hz                               | max. 100      | A/μs       |
| $t_q$            | $T_{vj} = 125$ °C; typ.                                           | 80            | μs         |
| $I_H$            | $T_{vj} = 25$ °C; typ. / max.                                     | 80 / 150      | mA         |
| $I_L$            | $T_{vj} = 25$ °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                                                     | 1,7           | K/W        |
| $T_{solder}$     | Terminals, 10s                                                    | 260           | K/W<br>°C  |
| $T_{vj}$         |                                                                   | -40...+125    | °C         |
| $T_{stg}$        |                                                                   | -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         |
| $m$              | weight                                                            | 30            | g          |
| Case             | SEMITOP® 3                                                        | T 15          |            |



DT

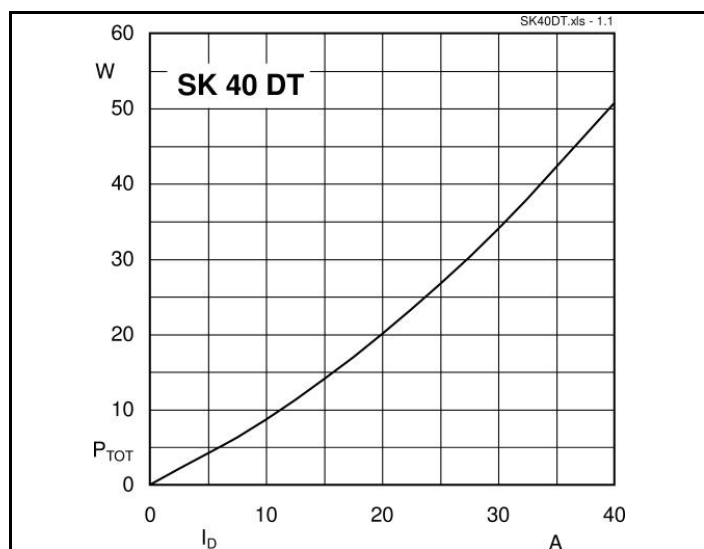


Fig. 1 Power dissipation vs. output current

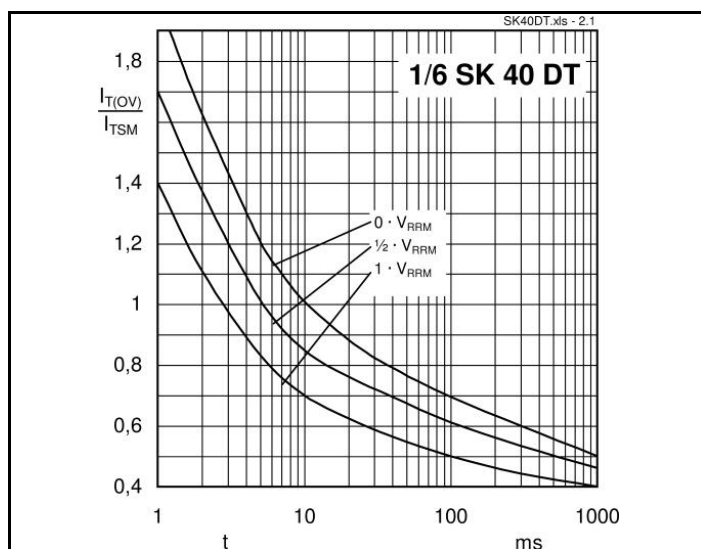


Fig. 2 Surge overload current vs. time

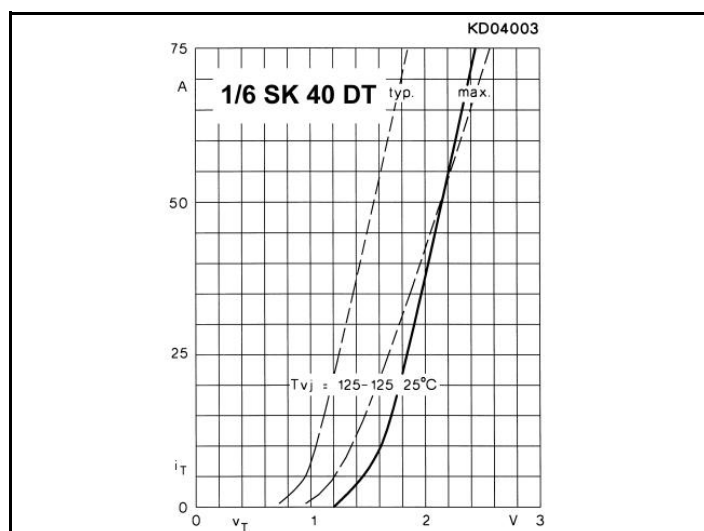


Fig. 3 Forward characteristics of single thyristor

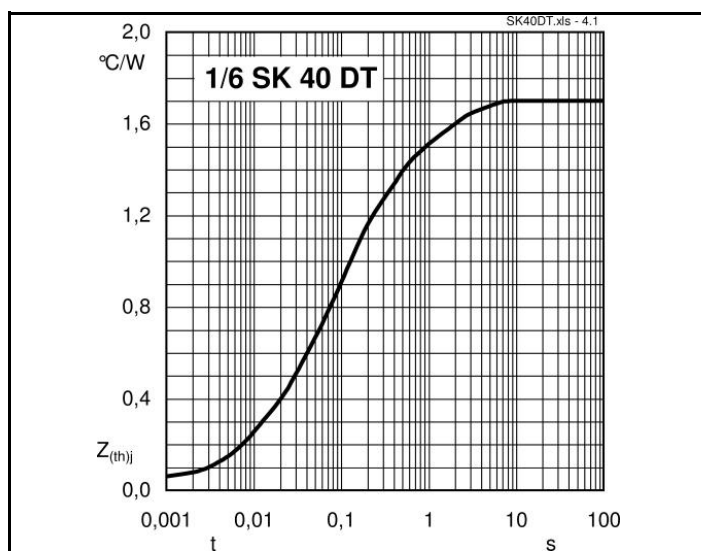


Fig. 4 Transient thermal impedance vs. time for single thyristor

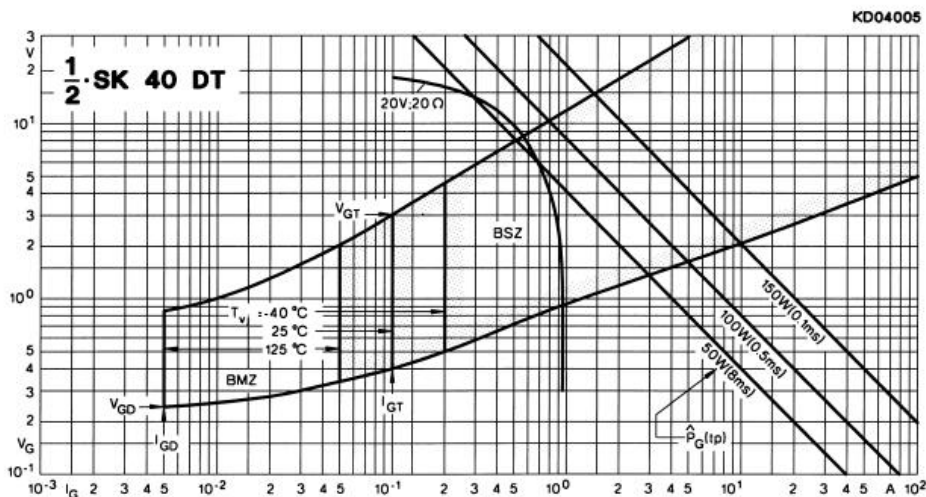
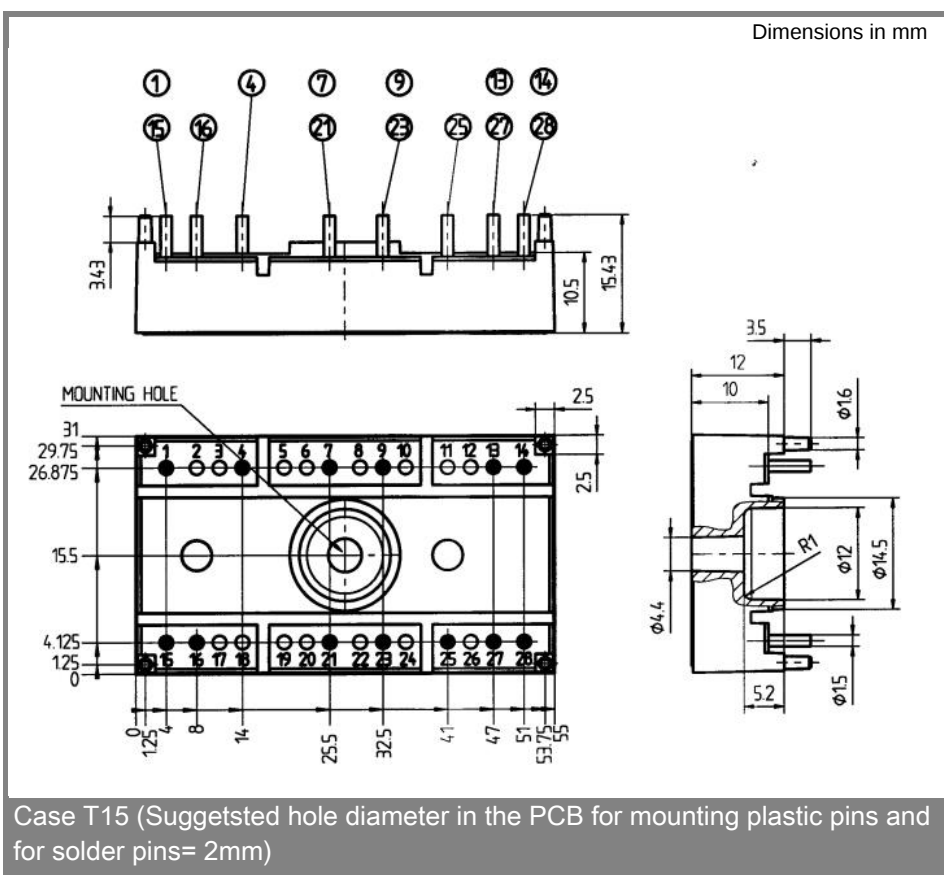
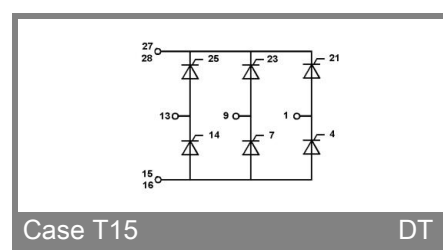


Fig. 5 Gate trigger characteristics



Case T15 (Suggested hole diameter in the PCB for mounting plastic pins and for solder pins= 2mm)



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