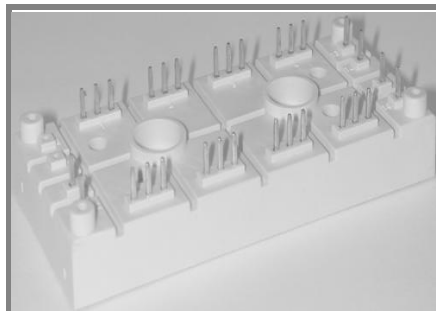


# SKD 146/16-L140



SEMIPONT™ 6

## 3-Phase Bridge Rectifier + IGBT braking chopper

SKD 146/16-L140

Target Data

### Features

- Compact design
- Two screws mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- High surge currents
- 1600V reverse voltage
- UL recognized, file no. E 63 532
- Integrated PTC temperature sensor
- Remarks:  $V_{CE,sat}$ ,  $V_F$  = chip level value

### Typical Applications

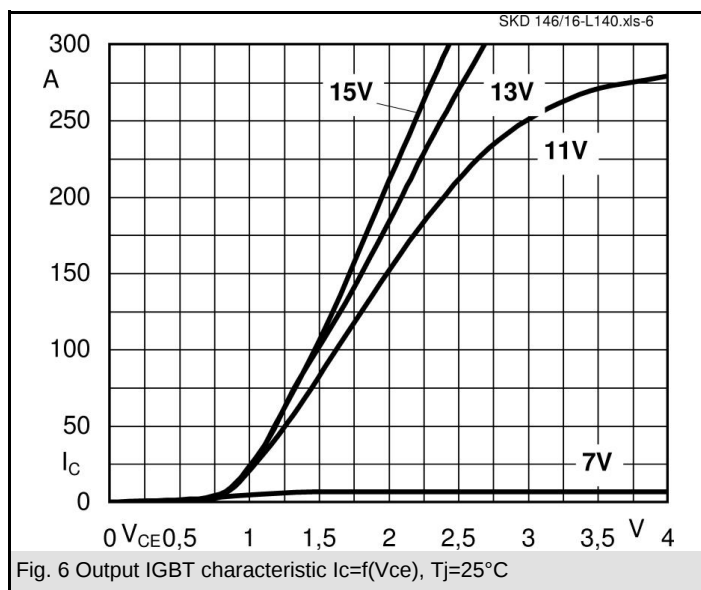
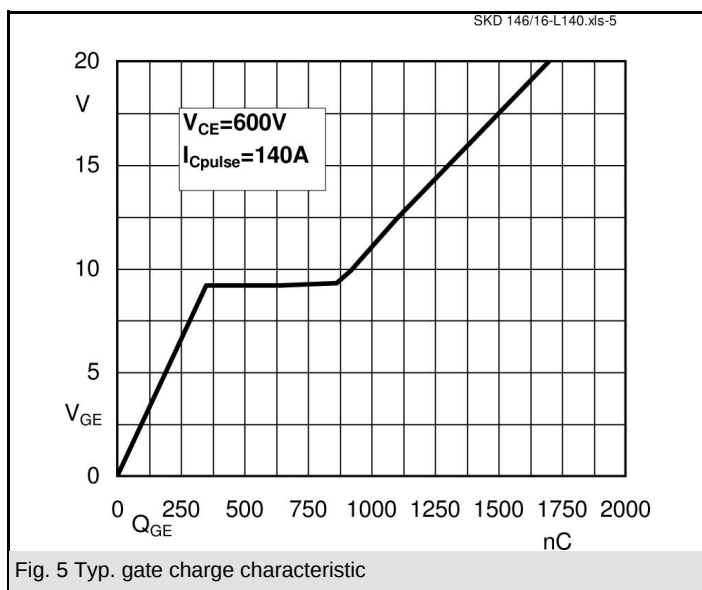
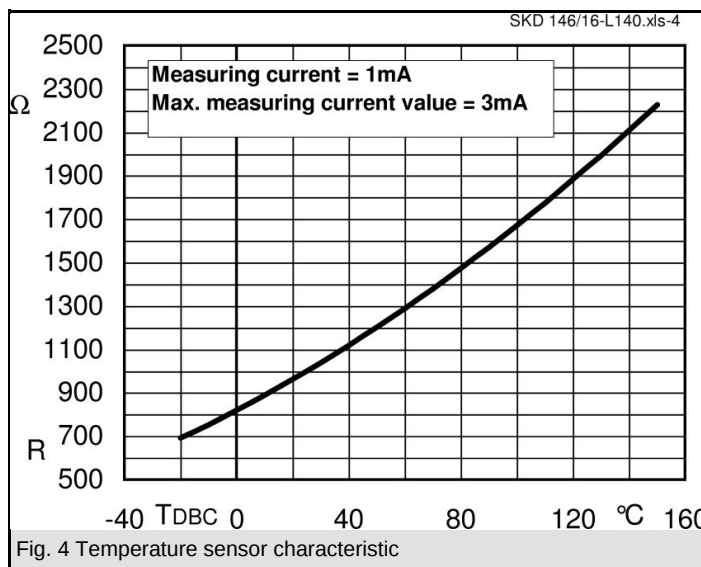
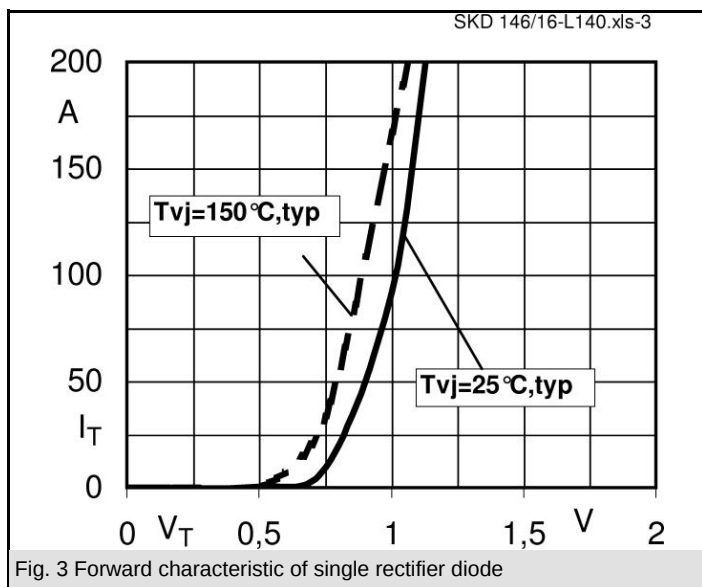
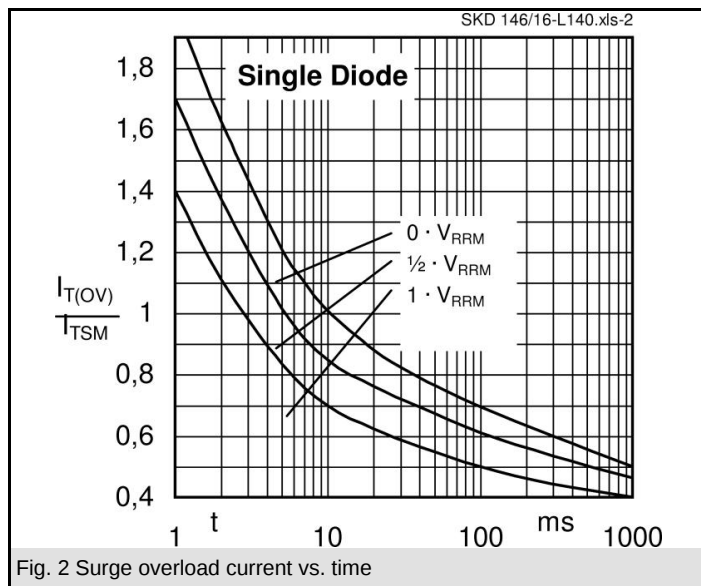
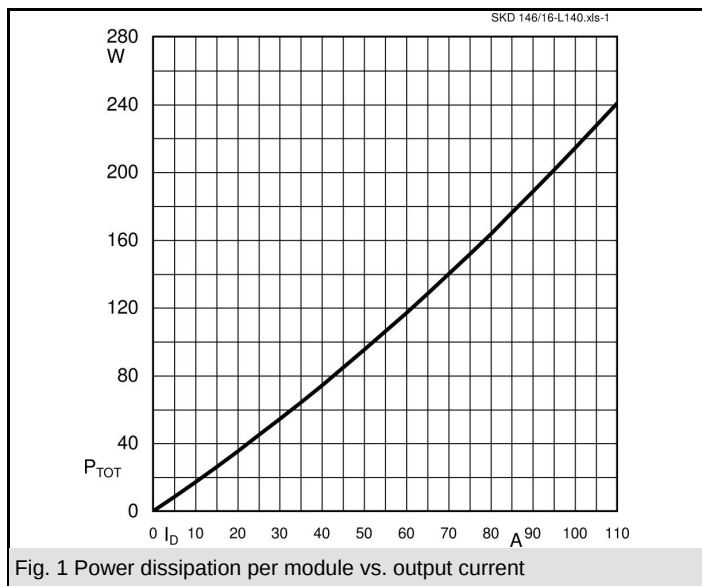
- DC drives
- Controlled filed rectifiers for DC motors
- Controlled battery charger

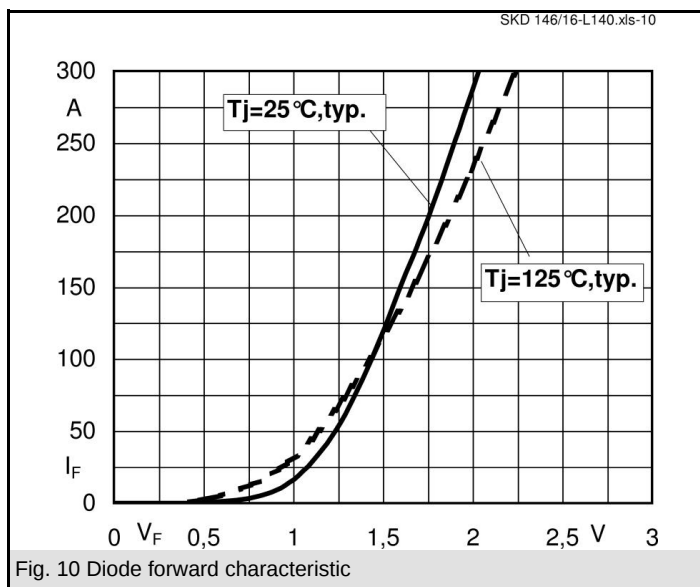
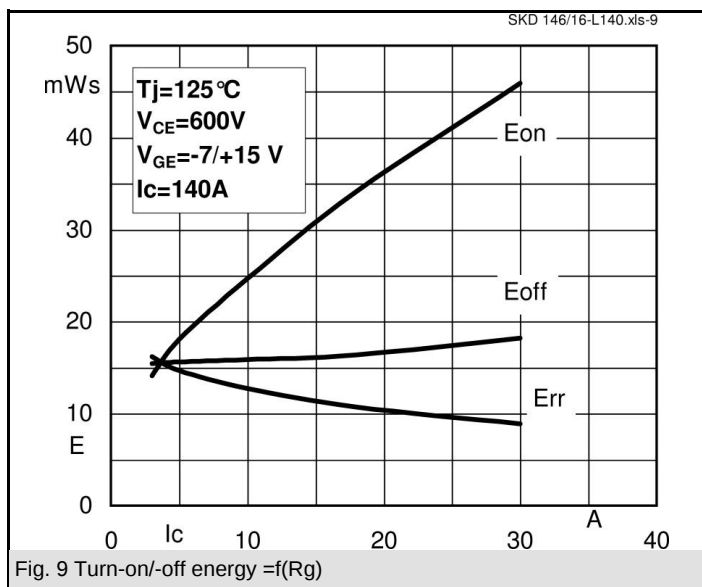
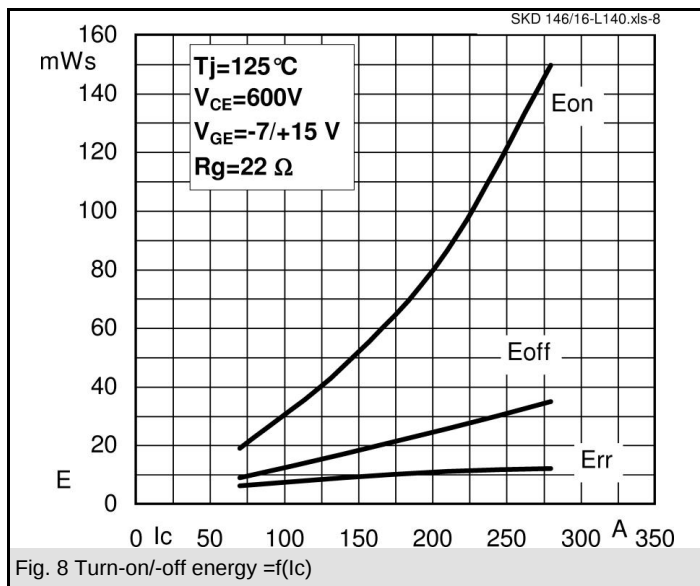
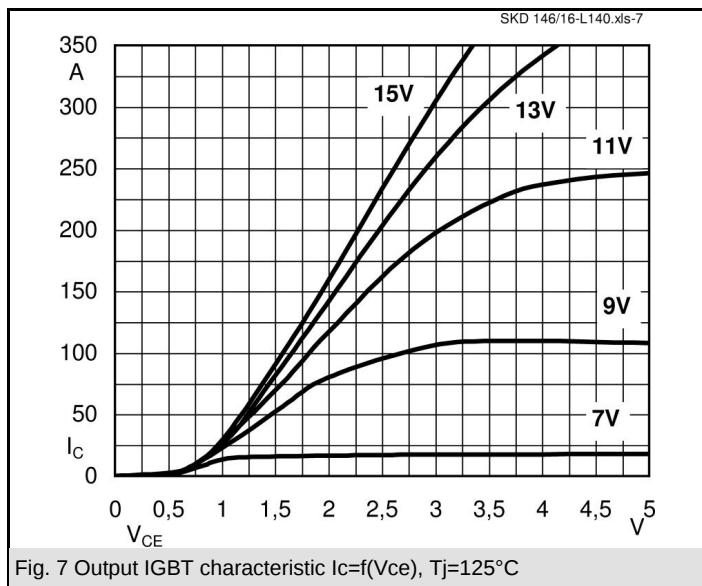
| $V_{RSM}$<br>V | $V_{RRM}$ , $V_{DRM}$<br>V | $I_D = 140$ A (maximum value for continuous operation)<br>( $T_s = 85$ °C) |
|----------------|----------------------------|----------------------------------------------------------------------------|
| 1700           | 1600                       | SKD146/16-L140                                                             |

| Absolute Maximum Ratings        |                                              | $T_s = 25$ °C, unless otherwise specified |       |
|---------------------------------|----------------------------------------------|-------------------------------------------|-------|
| Symbol                          | Conditions                                   | Values                                    | Units |
| <b>Bridge - Rectifier</b>       |                                              |                                           |       |
| $I_D$                           | $T_s = 85$ °C; inductive load                | 140                                       | A     |
| $I_{FSM}/I_{TSM}$               | $t_p = 10$ ms; $\sin 180^\circ$ ; $T_{jmax}$ | 1250                                      | A     |
| $i^2t$                          | $t_p = 10$ ms; $\sin 180^\circ$ ; $T_{jmax}$ | 7800                                      | A²s   |
| <b>IGBT - Chopper</b>           |                                              |                                           |       |
| $V_{CES}/V_{GES}$               |                                              | 1200 / 20                                 | V     |
| $I_C$                           | $T_s = 25$ (70) °C                           | 165 (110)                                 | A     |
| $I_{CM}$                        | $t_p = 1$ ms; $T_s = 25$ (70) °C             | 330 (220)                                 | A     |
| <b>Freewheeling - CAL Diode</b> |                                              |                                           |       |
| $V_{RRM}$                       |                                              | 1200                                      | V     |
| $I_F$                           | $T_s = 25$ (70) °C                           | 130 (90)                                  | A     |
| $I_{FM}$                        | $t_p = 1$ ms; $T_s = 25$ (70) °C             | 240 (180)                                 | A     |
| $T_{vj}$                        | Diode & IGBT (Thyristor)                     | - 40 ... + 150 (0 ... + 125)              | °C    |
| $T_{stg}$                       |                                              | - 40 ... + 125                            | °C    |
| $T_{solder}$                    | terminals, 10 s                              | 260                                       | °C    |
| $V_{isol}$                      | a.c. (50) Hz, RMS 1 min. / 1 s               | 3000 / 3600                               | V     |

| Characteristics                   |                                                                      | $T_s = 25$ °C, unless otherwise specified |             |                  |
|-----------------------------------|----------------------------------------------------------------------|-------------------------------------------|-------------|------------------|
| Symbol                            | Conditions                                                           | min.                                      | typ.        | max. Units       |
| <b>Diode - Rectifier</b>          |                                                                      |                                           |             |                  |
| $V_{TO} / r_t$                    | $T_j = 125$ °C                                                       |                                           | 0,8 / 4     | V / mΩ           |
| $R_{th(j-s)}$                     | per diode                                                            |                                           |             | 0,8 K/W          |
| <b>IGBT - Chopper</b>             |                                                                      |                                           |             |                  |
| $V_{CE(sat)}$                     | $I_C = 140$ A, $T_j = 25$ °C;<br>$V_{GE} = 15$ V                     |                                           | 1,65        | 2,05 V           |
| $R_{th(j-s)}$                     | per IGBT                                                             |                                           |             | 0,35 K/W         |
| $t_{d(on)} / t_r$                 | valid for all values:                                                |                                           | 118 / 104   | ns               |
| $t_{d(off)} / t_f$                | $V_{CC} = 600$ V; $V_{GE} = 15$ V;<br>$I_C = 140$ A; $T_j = 125$ °C; |                                           | 1008 / 95   | ns               |
| $E_{on} + E_{off}$                | $T_j = 125$ °C; $R_G = 22$ Ω;<br>inductive load                      |                                           | 64          | mJ               |
| <b>CAL - Diode - Freewheeling</b> |                                                                      |                                           |             |                  |
| $V_{T(TO)} / r_t$                 | $T_j = 125$ °C                                                       |                                           | 0,8 / 5     | 0,9 / 5,7 V / mΩ |
| $R_{th(j-s)}$                     | per diode                                                            |                                           |             | 0,6 K/W          |
| $I_{RRM}$                         | valid for all values:                                                |                                           | 40          | A                |
| $Q_{rr}$                          | $I_F = 140$ A; $V_R = - 600$ V;<br>$di_F/dt = - 1000$ A/μs           |                                           | 20          | μC               |
| $E_{off}$                         | $V_{GE} = 0$ V; $T_j = 125$ °C                                       |                                           | 8,8         | mJ               |
| <b>Temperature Sensor</b>         |                                                                      |                                           |             |                  |
| $R_{TS}$                          | $T = 25$ (100) °C;                                                   |                                           | 1000 (1670) | Ω                |
| <b>Mechanical data</b>            |                                                                      |                                           |             |                  |
| $M_S$                             | mounting Torque                                                      | 2,55                                      |             | 3,45 Nm          |

D

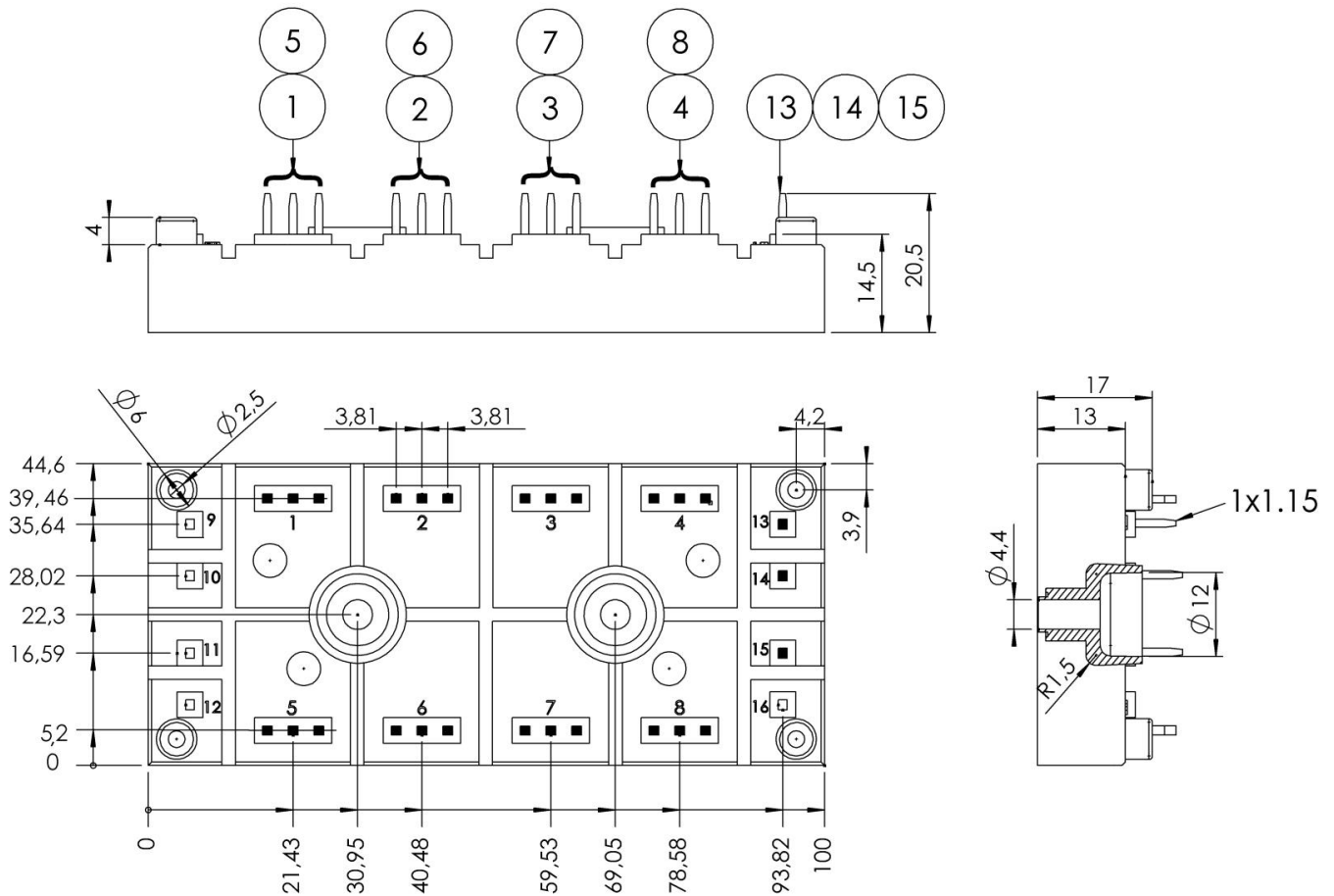




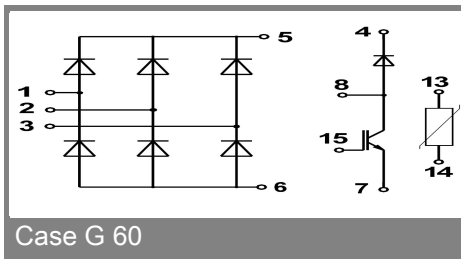
# SKD 146/16-L140

UL recognized  
File n&#176; E 63 532

Dimensions in mm



Case G 60



Case G 60

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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