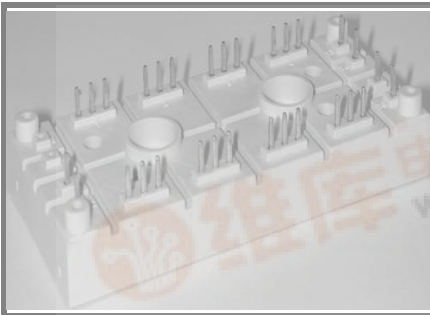


## SKD 146/16-L140



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

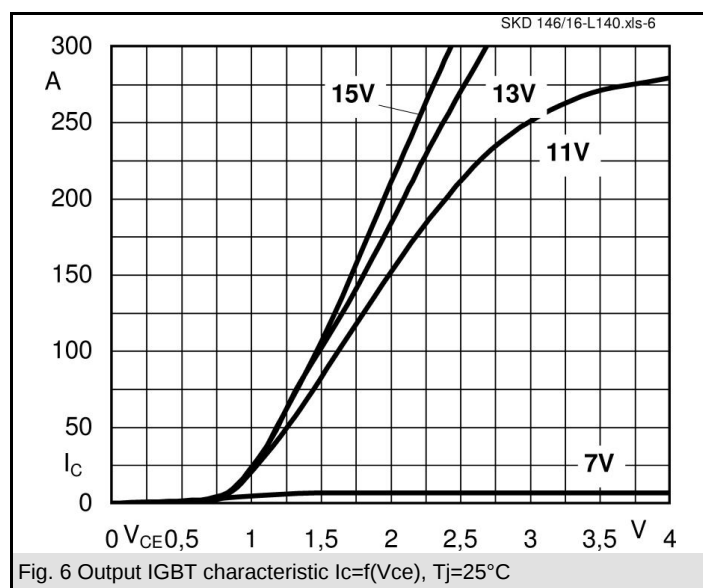
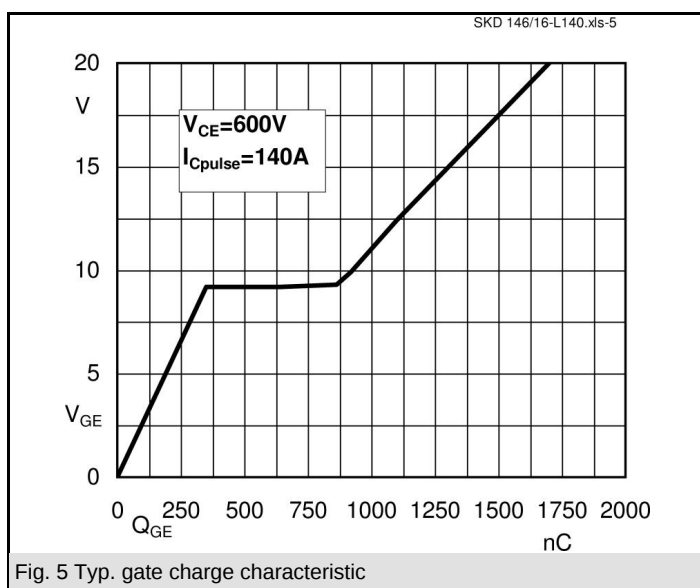
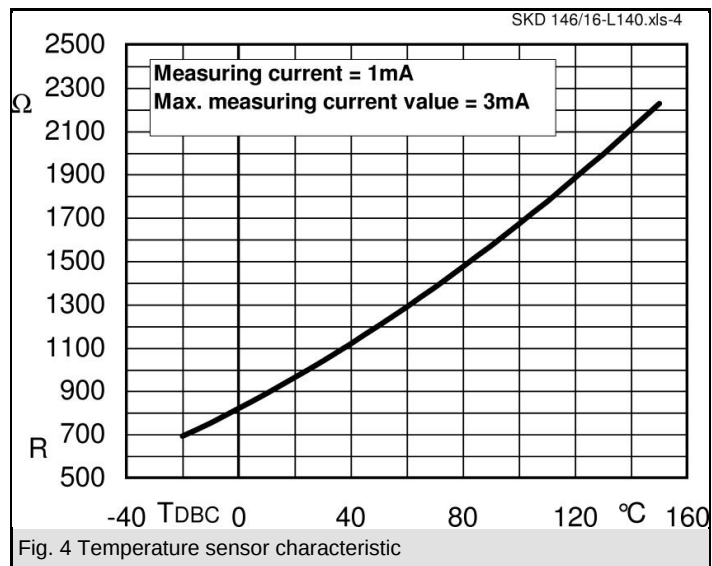
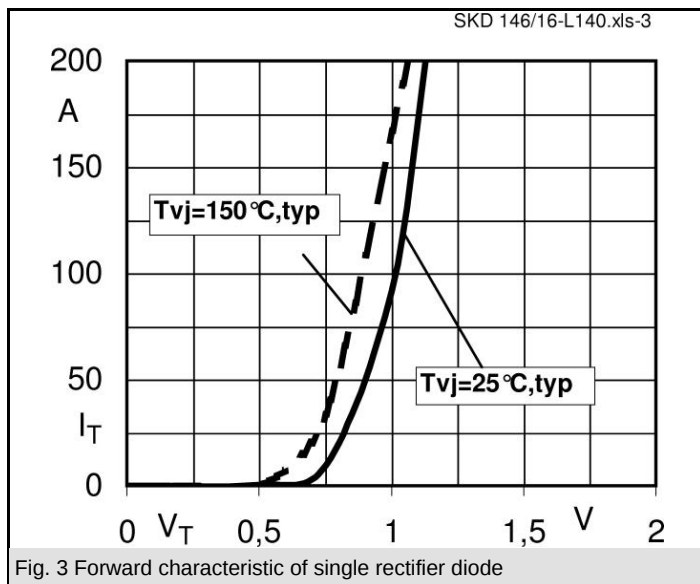
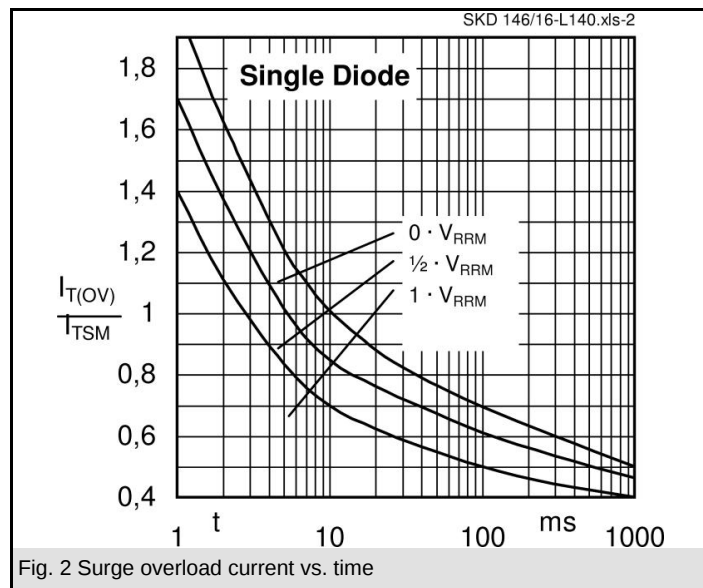
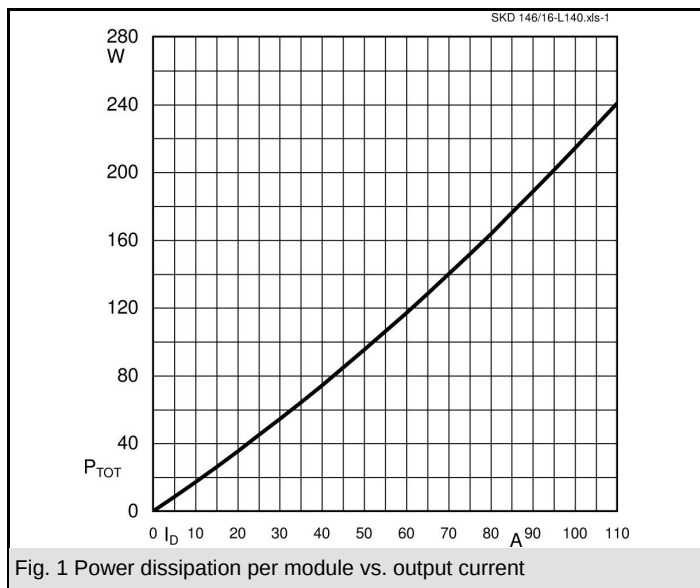
- DC drives
- Controlled filed rectifiers for DC motors
- Controlled battery charger

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

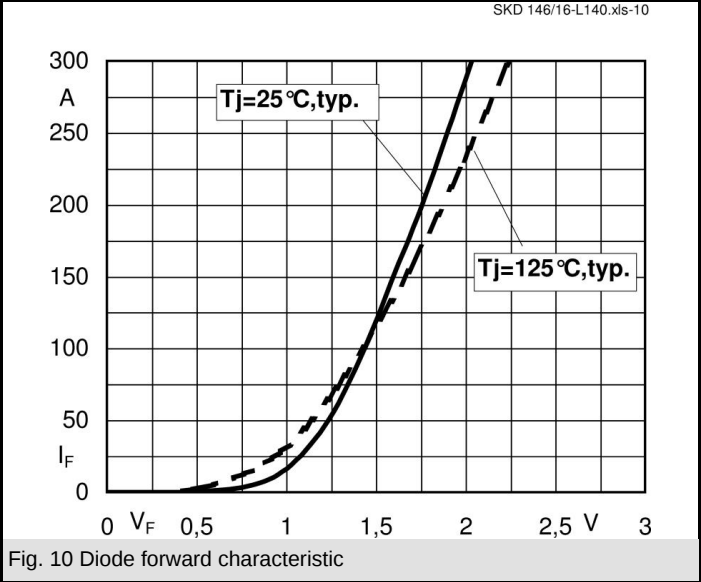
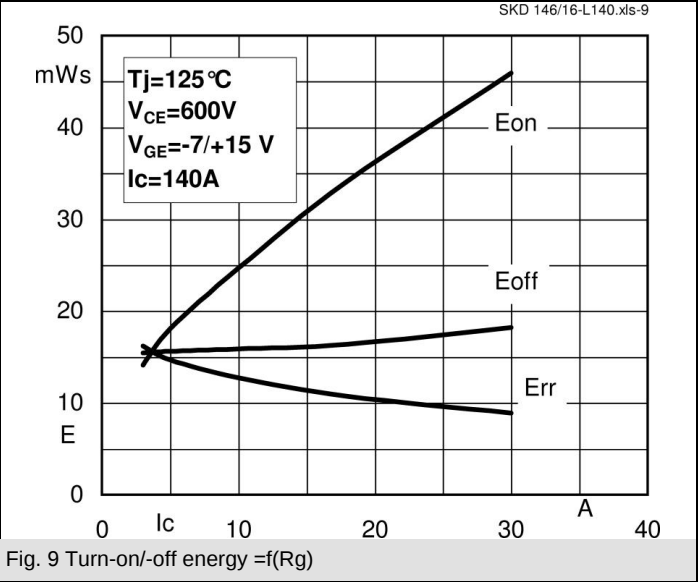
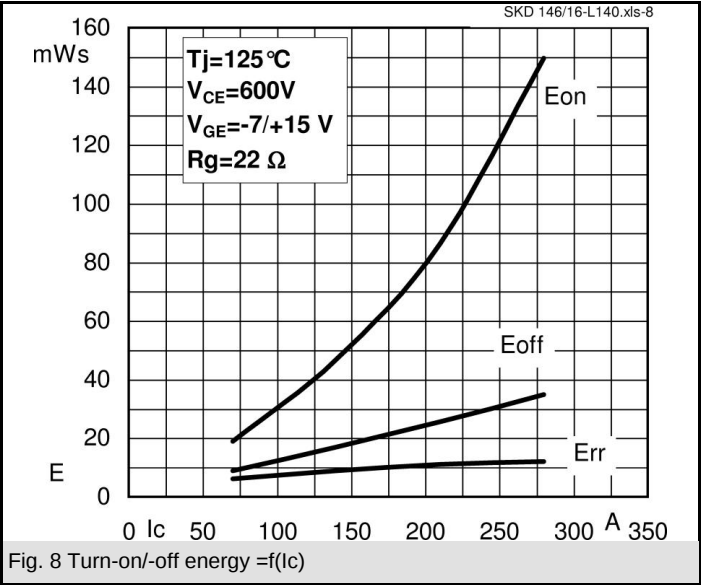
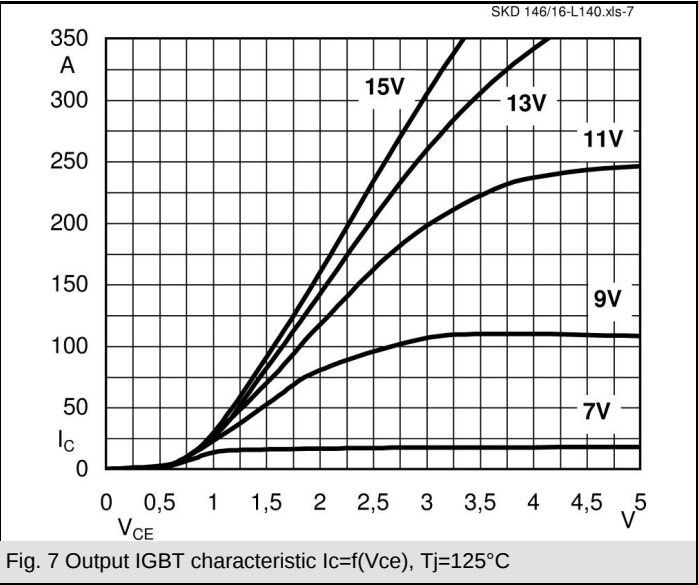
| Absolute Maximum Ratings        |                                                | $T_s = 25^\circ\text{C}$ , unless otherwise specified |                  |
|---------------------------------|------------------------------------------------|-------------------------------------------------------|------------------|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

| Characteristics                   |                                                                                                           | $T_s = 25^\circ\text{C}$ , unless otherwise specified |             |                  |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------|------------------|
| Symbol                            | Conditions                                                                                                | min.                                                  | typ.        | max. Units       |
| <b>Diode - Rectifier</b>          |                                                                                                           |                                                       |             |                  |
| $V_{TO} / r_t$                    | $T_j = 125^\circ\text{C}$                                                                                 |                                                       | 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, $T_j = 25^\circ\text{C}$ ;<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:<br>$V_{CC} = 600$ V; $V_{GE} = 15$ V;<br>$I_C = 140$ A; $T_j = 125^\circ\text{C}$ ; |                                                       | 118 / 104   | ns               |
| $t_{d(off)} / t_f$                |                                                                                                           |                                                       | 1008 / 95   | ns               |
| $E_{on}+E_{off}$                  | $T_j = 125^\circ\text{C}$ ; $R_G = 22 \Omega$ ;<br>inductive load                                         |                                                       | 64          | mJ               |
| <b>CAL - Diode - Freewheeling</b> |                                                                                                           |                                                       |             |                  |
| $V_{T(TO)} / r_t$                 | $T_j = 125^\circ\text{C}$                                                                                 |                                                       | 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; $T_j = 125^\circ\text{C}$                                                                 |                                                       | 8,8         | mJ               |
| <b>Temperature Sensor</b>         |                                                                                                           |                                                       |             |                  |
| $R_{TS}$                          | $T = 25$ (100) $^\circ\text{C}$ ;                                                                         |                                                       | 1000 (1670) | Ω                |
| <b>Mechanical data</b>            |                                                                                                           |                                                       |             |                  |
| $M_S$                             | mounting Torque                                                                                           |                                                       | 2,55        | 3,45 Nm          |

# SKD 146/16-L140



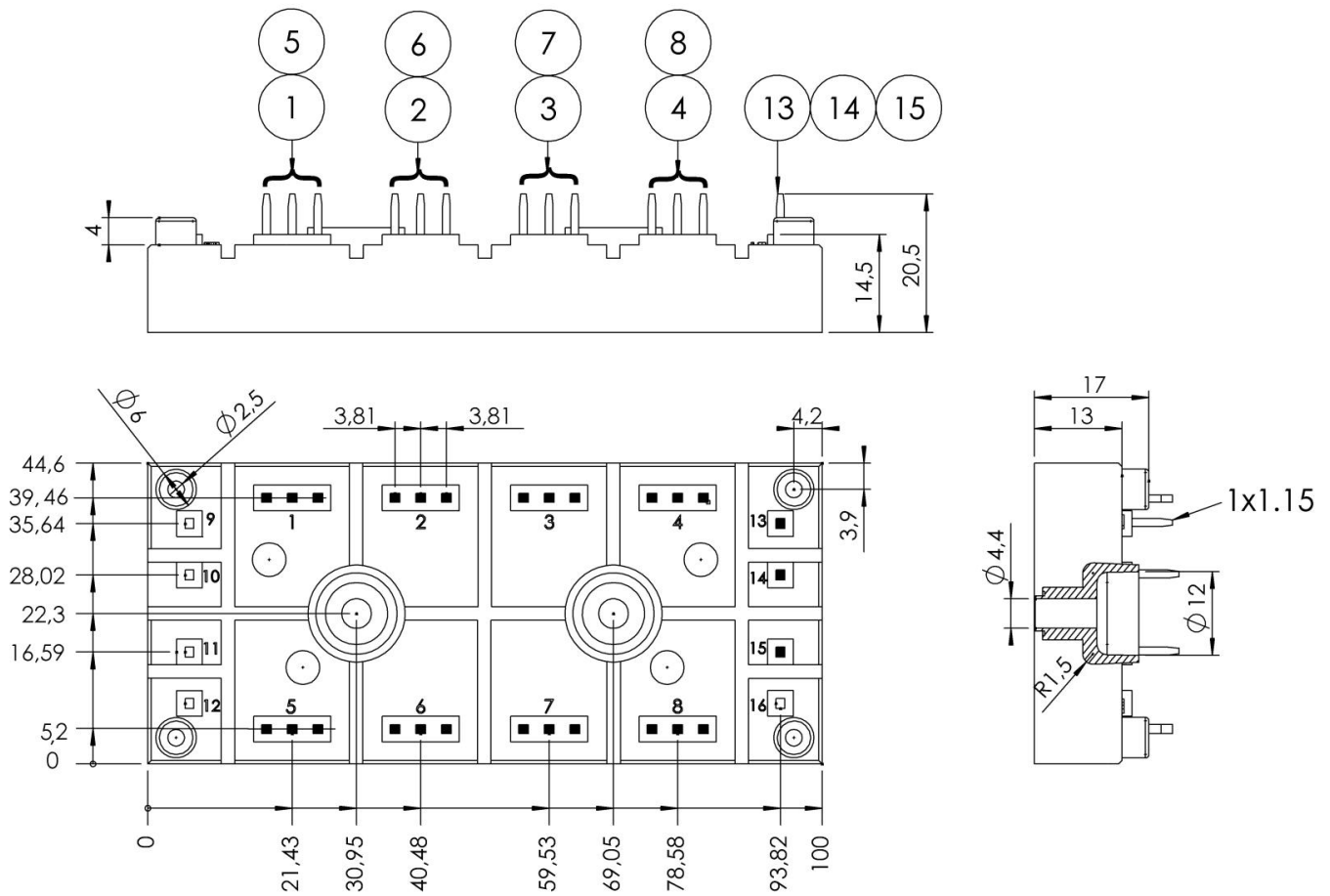
# SKD 146/16-L140



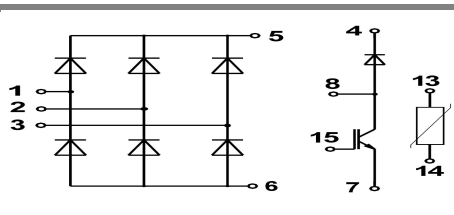
# SKD 146/16-L140

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.

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