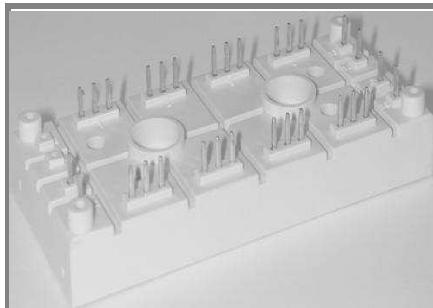


# SKDH146/...-L140



SEMIPONT™ 6

## 3-Phase Bridge Rectifier + IGBT braking chopper

SKDH146/...-L140

### Features

- Compact design
- Two screws mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- High surge currents
- Up to 1600V reverse voltage
- IGBT Trench4 inside; max  $T_j=175^\circ\text{C}$
- CAL4F diode inside, max  $T_j=175^\circ\text{C}$
- $I_{CM}/I_{FM} = 3 \times I_{C,nom}/I_{F,nom}$
- Rectifier diode, max  $T_j=150^\circ\text{C}$

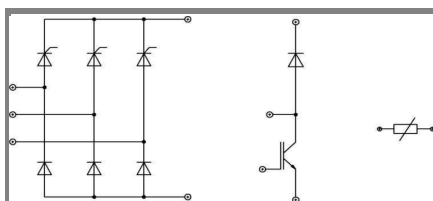
### Typical Applications\*

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

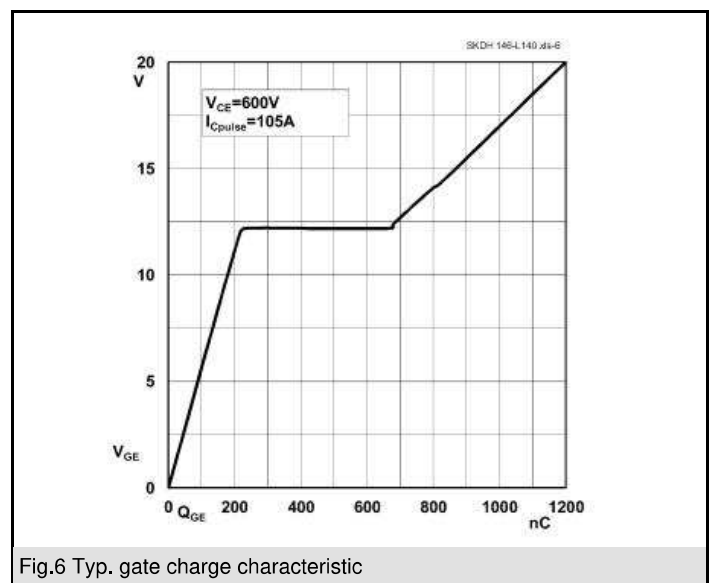
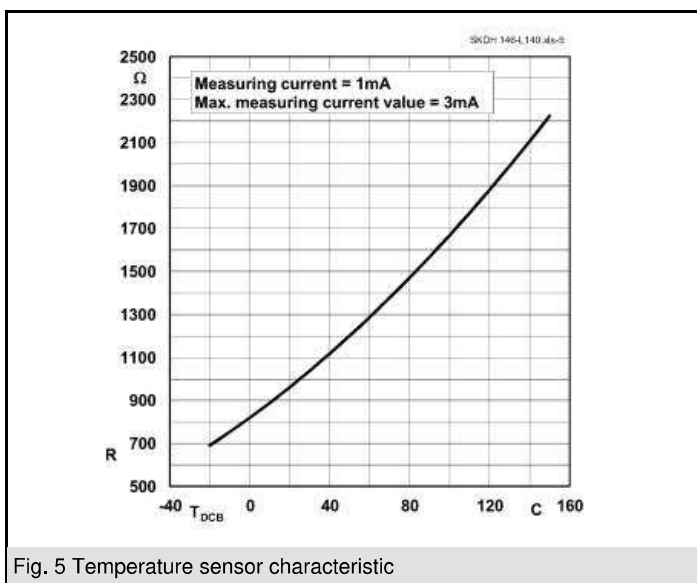
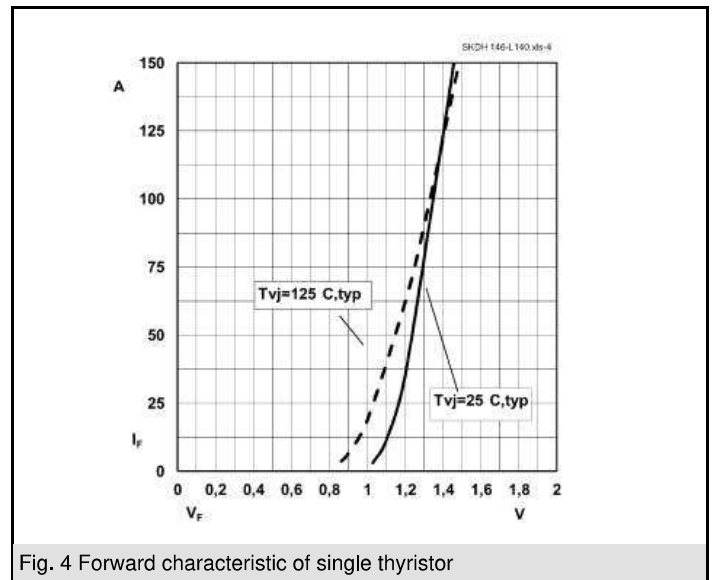
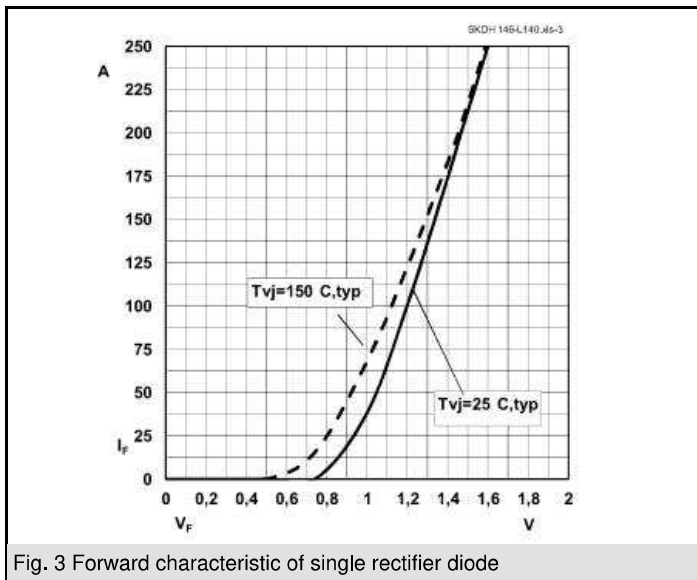
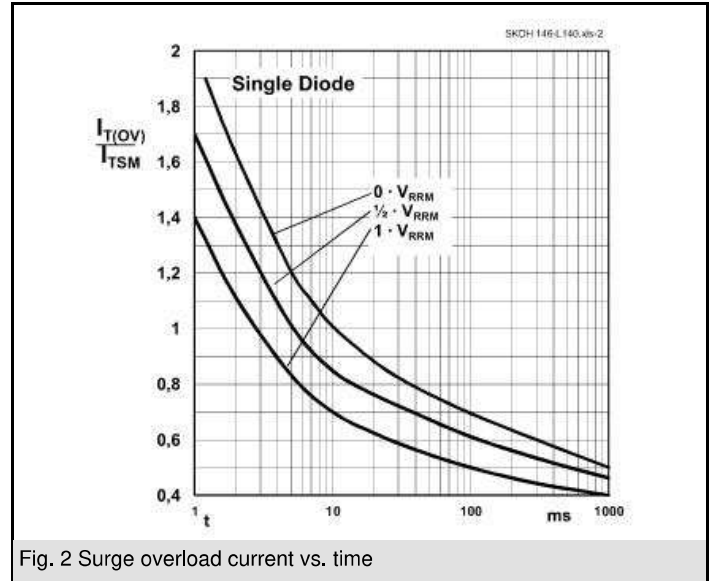
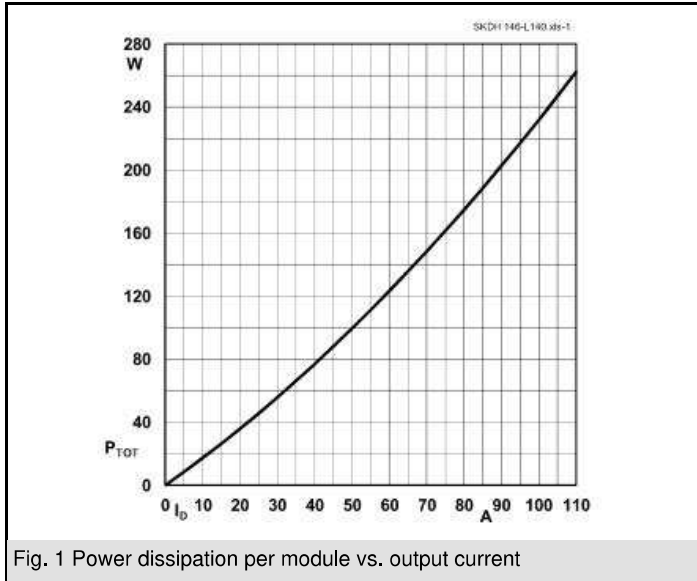
$V_{RSM}$ V	$V_{RRM}, V_{DRM}$ V	$I_D = 140 \text{ A}$ (maximum value for continuous operation) ( $T_s = 80^\circ\text{C}$ )
1300	1200	SKDH146/12-L140
1700	1600	SKDH146/16-L140

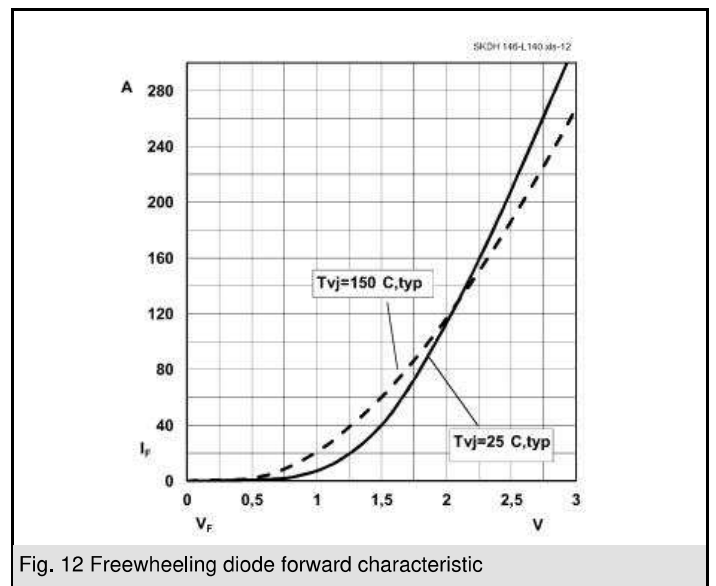
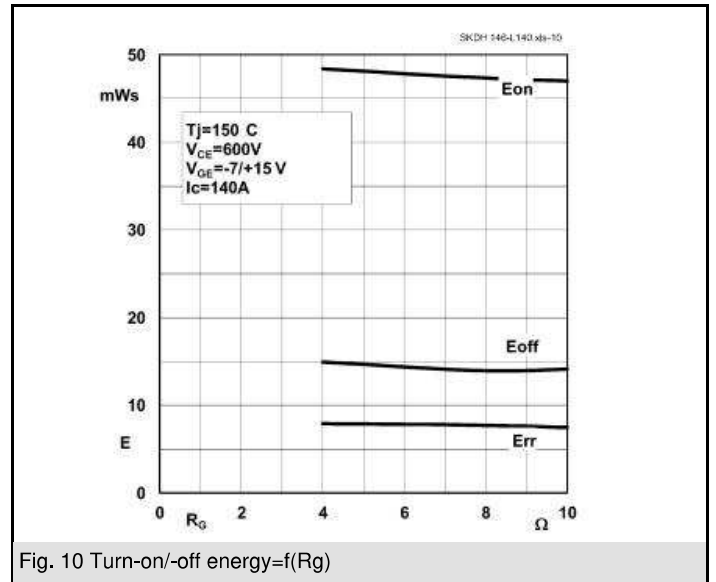
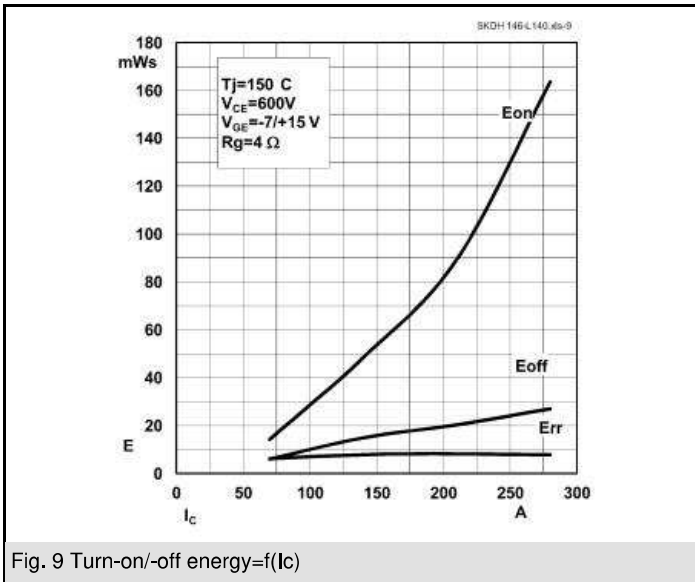
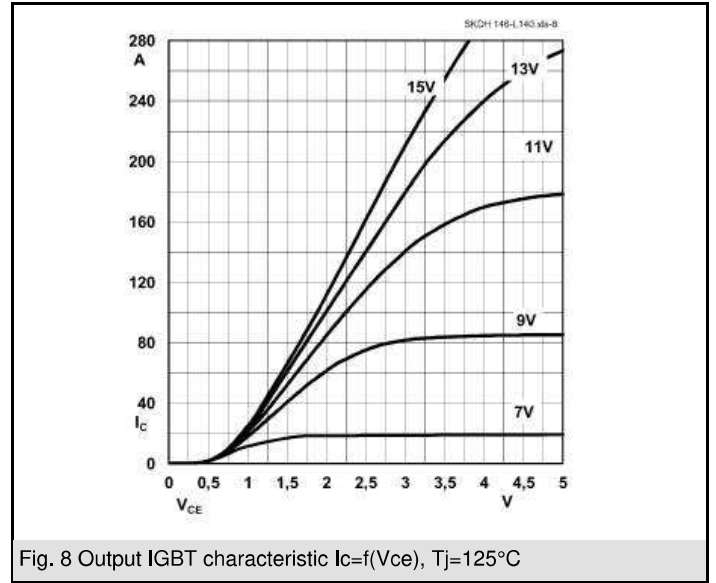
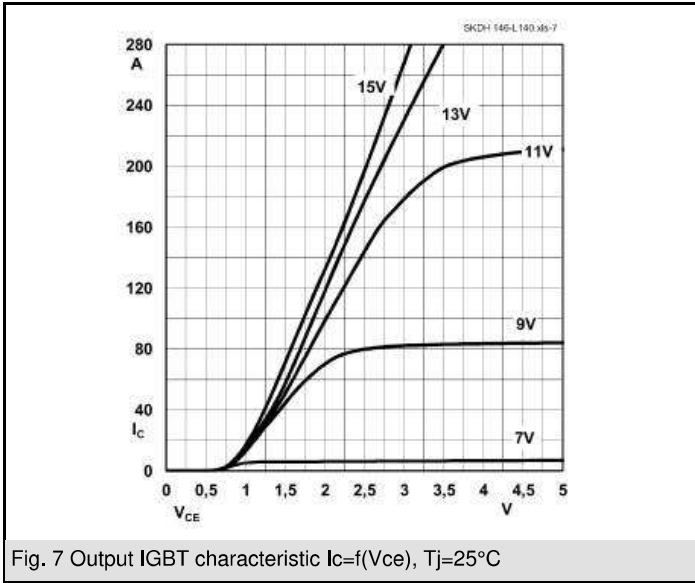
Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>Bridge - Rectifier</b>			
$I_D$	$T_s = 80^\circ\text{C}$ ; inductive load	140	A
$I_{FSM}/I_{TSM}$	$t_p = 10 \text{ ms}$ ; $\sin 180^\circ$ ; $T_{jmax}$	1250	A
$i^2t$	$t_p = 10 \text{ ms}$ ; $\sin 180^\circ$ ; $T_{jmax}$	7800	A <sup>2</sup> s
<b>IGBT - Chopper</b>			
$V_{CES}/V_{GES}$		1200 / 20	V
$I_C$	$T_s = 25 (70)^\circ\text{C}$	110 (80)	A
$I_{CM}$	$t_p = 1 \text{ ms}$ ; $T_s = ^\circ\text{C}$	315	A
<b>Freewheeling - CAL Diode</b>			
$V_{RRM}$		1200	V
$I_F$	$T_s = 25 (70)^\circ\text{C}$	90 (60)	A
$I_{FM}$	$t_p = 1 \text{ ms}$ ; $T_s = ^\circ\text{C}$	300	A
$T_{vj}$	Diode & IGBT (Thyristor)	- 40 ... + 175 (-40...+ 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>					
$V_{CE(sat)}$	$I_C = 140 \text{ A}$ , $T_j = 25^\circ\text{C}$ ; $V_{GE} = 15 \text{ V}$		1,85	2,1	V
$R_{th(j-s)}$	per IGBT		0,38		K/W
$t_{d(on)} / t_r$	valid for all values:		97 / 185		ns
$t_{d(off)} / t_f$	$V_{CC} = 600 \text{ V}$ ; $V_{GE} = 15 \text{ V}$ ; $I_C = 140 \text{ A}$ ; $T_j = 150^\circ\text{C}$ ;		443 / 82		ns
$E_{on}+E_{off}$	$T_j = 150^\circ\text{C}$ ; $R_G = 4 \Omega$ ; inductive load		63,3		mJ
<b>CAL - Diode - Freewheeling</b>					
$V_{T(TO)} / r_t$	$T_j = 150^\circ\text{C}$		0,9 / 7,8	1,1 / 8,6	V / mΩ
$R_{th(j-s)}$	per diode		0,56		K/W
$I_{RRM}$	valid for all values:		30		A
$Q_{rr}$	$I_F = 140 \text{ A}$ ; $V_R = - -600 \text{ V}$ ; $di_F/dt = - -1700 \text{ A}/\mu\text{s}$		9		$\mu\text{C}$
$E_{off}$	$V_{GE} = 0 \text{ V}$ ; $T_j = 150^\circ\text{C}$		7,92		mJ
<b>Temperature Sensor</b>					
$R_{TS}$	$T = 25 (100)^\circ\text{C}$ ;		1000 (1670)		$\Omega$
<b>Mechanical data</b>					
$M_S$	mounting Torque		2,55	3,45	Nm



DH

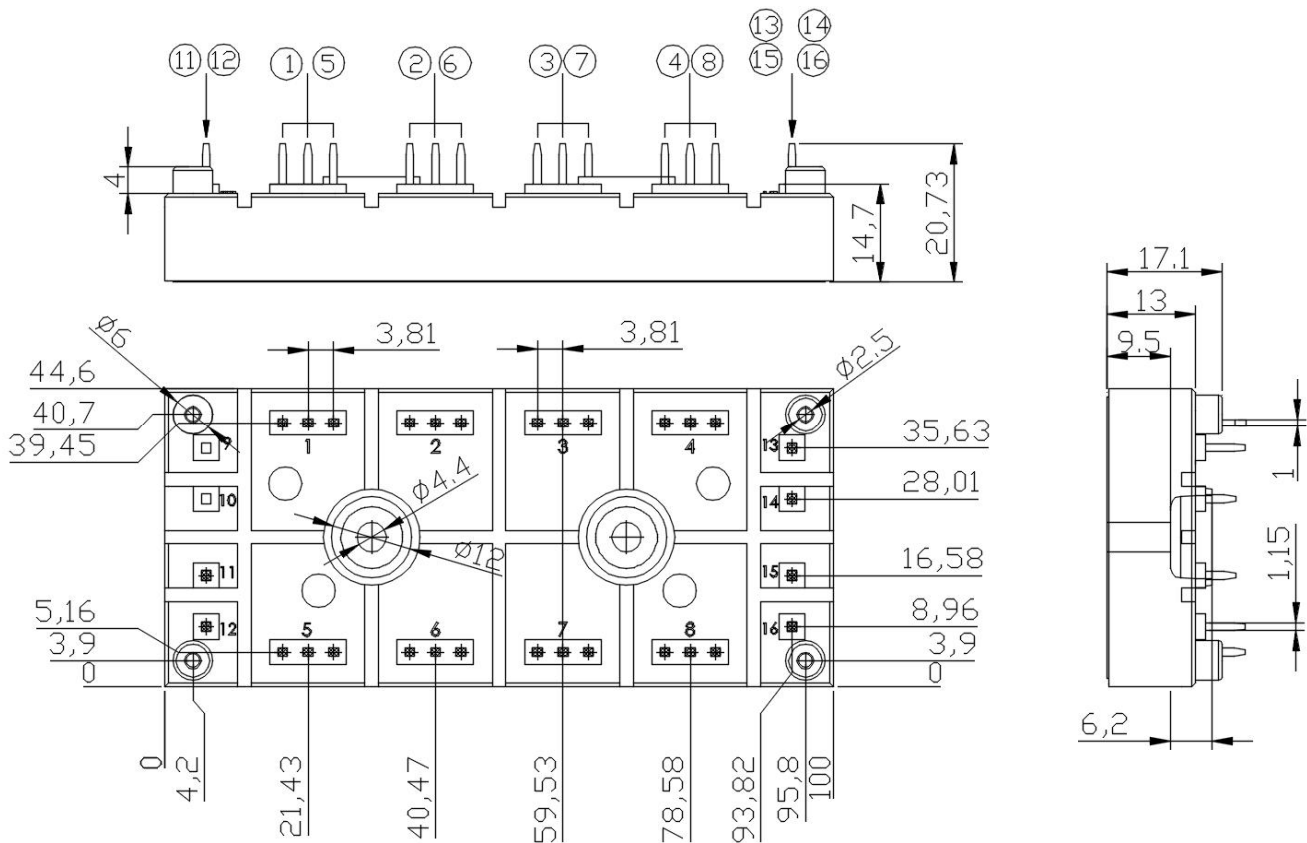




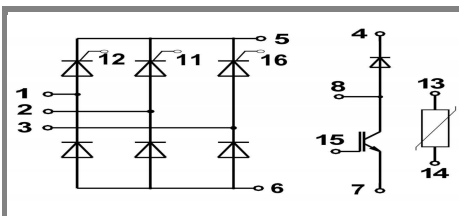
# SKDH146/...-L140

UL recognized  
file no. E 63 532

Dimensions in mm



Case G 59



Case G 59

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

## \*IMPORTANT INFORMATION AND WARNINGS

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