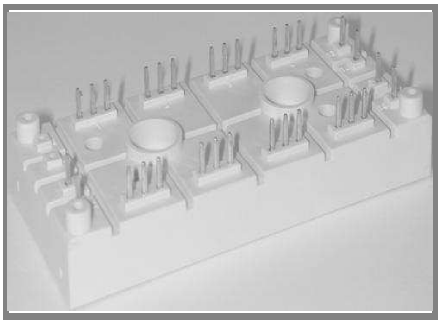
SKDH146/...-L140



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 Tj=175°C
- CAL4F diode inside, max Tj=175°C
- $I_{CM}/I_{FM} = 3xI_{C,nom}/I_{F,nom}$
- Rectifier diode, max Tj=150°C

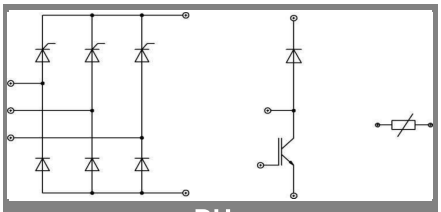
Typical Applications*

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

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

Absolute Maximum Ratings		T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
Bridge - Rectifier			
I_D	T_s = 80 °C; inductive load	140	A
I_{FSM}/I_{TSM}	t_p = 10 ms; sin 180° ; T_{jmax}	1250	A
i^2t	t_p = 10 ms; sin 180° ; T_{jmax}	7800	A^2s
IGBT - Chopper			
V_{CES}/V_{GES}		1200 / 20	V
I_C	T_s = 25 (70) °C	110 (80)	A
I_{CM}	t_p = 1 ms; T_s = °C	315	A
Freewheeling - CAL Diode			
V_{RRM}		1200	V
I_F	T_s = 25 (70) °C	90 (60)	A
I_{FM}	t_p = 1 ms; T_s = °C	300	A
T_{vj}	Diode & IGBT (Thyristor)	- 40 ... + 175 (-40...+ 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**
Diode - Rectifier					
V_{TO} / r_t	T_j = 125 °C		0,8 / 4		V / mΩ
$R_{th(j-s)}$	per diode			0,8	K/W
IGBT - Chopper					
$V_{CE(sat)}$	I_C = 140 A, T_j = 25 °C; V_{GE} = 15 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 V; V_{GE} = 15 V; I_C = 140 A; T_j = 150 °C;		443 / 82		ns
$E_{on}+E_{off}$	T_j = 150 °C; R_G = 4 Ω; inductive load		63,3		mJ
CAL - Diode - Freewheeling					
$V_{T(TO)}$ / r_t	T_j = 150 °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 A; V_R = - -600 V; dI_F/dt = - -1700 A/µs		9		µC
E_{off}	V_{GE} = 0 V; T_j = 150 °C		7,92		mJ
Temperature Sensor					
R_{TS}	T = 25 (100) °C;		1000 (1670)		Ω
Mechanical data					
M_S	mounting Torque	2,55		3,45	Nm



DH

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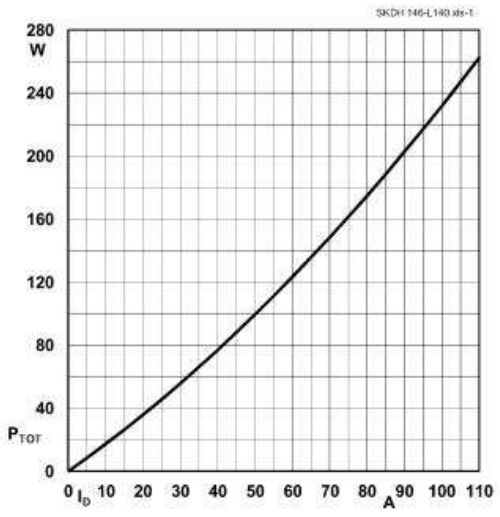

Fig. 1 Power dissipation per module vs. output current

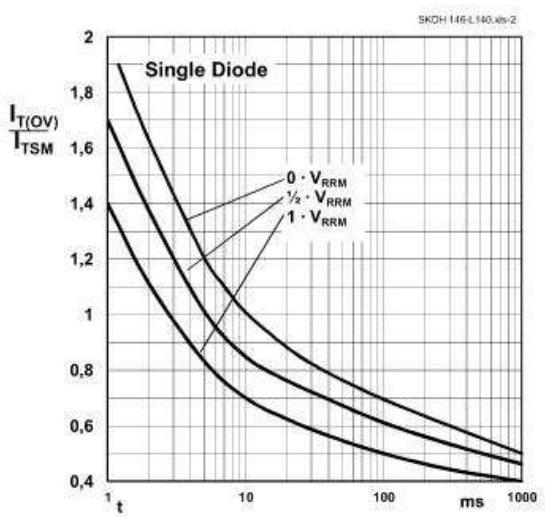

Fig. 2 Surge overload current vs. time

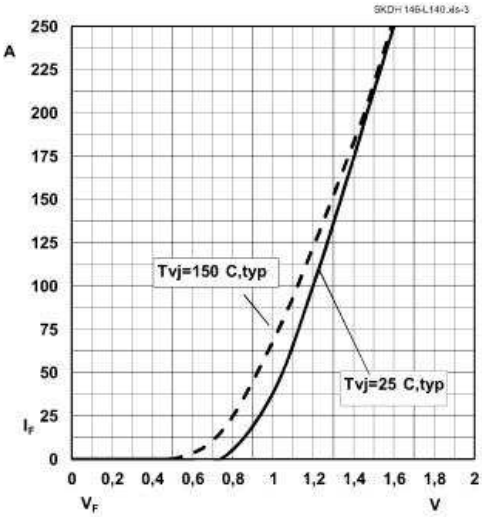

Fig. 3 Forward characteristic of single rectifier diode

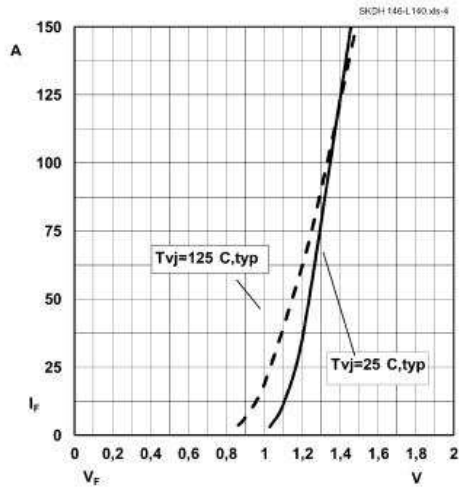

Fig. 4 Forward characteristic of single thyristor

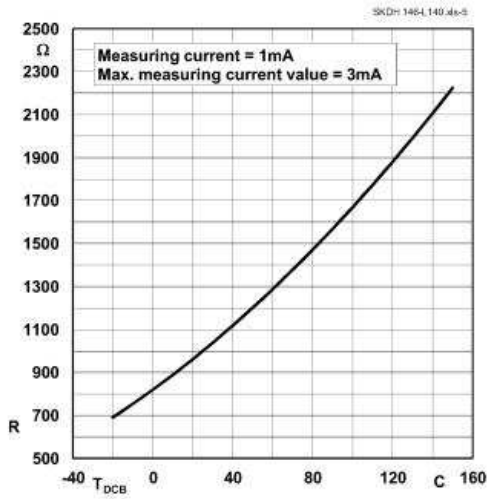

Fig. 5 Temperature sensor characteristic

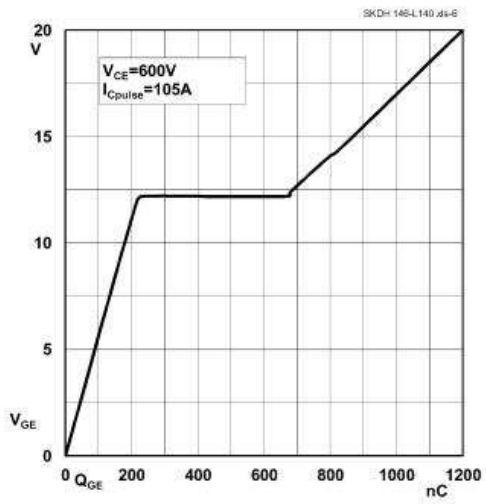

Fig.6 Typ. gate charge characteristic

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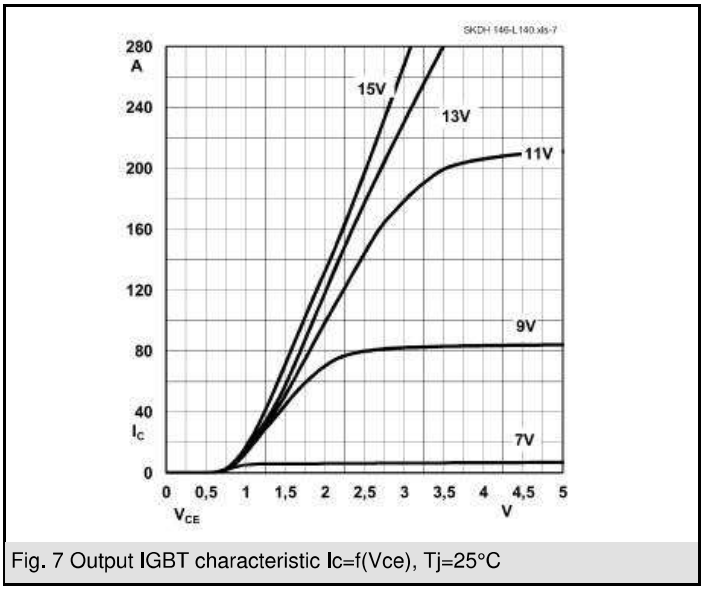

Fig. 7 Output IGBT characteristic Ic=f(Vce), Tj=25°C

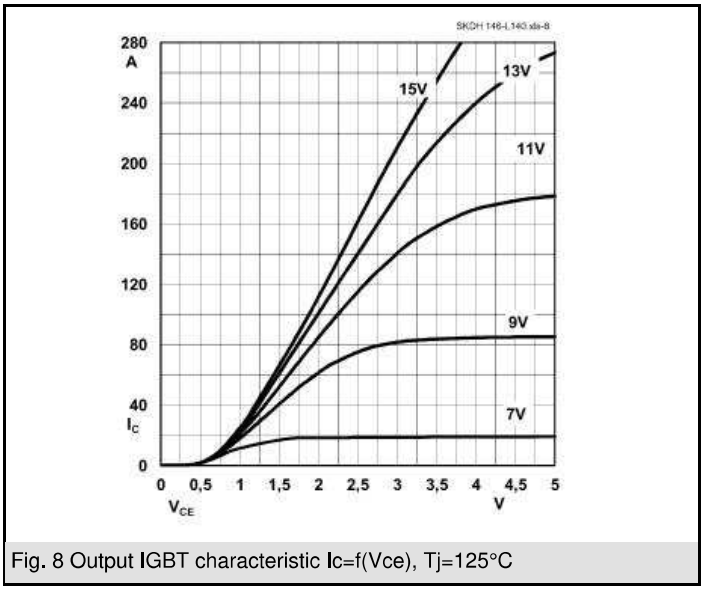

Fig. 8 Output IGBT characteristic Ic=f(Vce), Tj=125°C

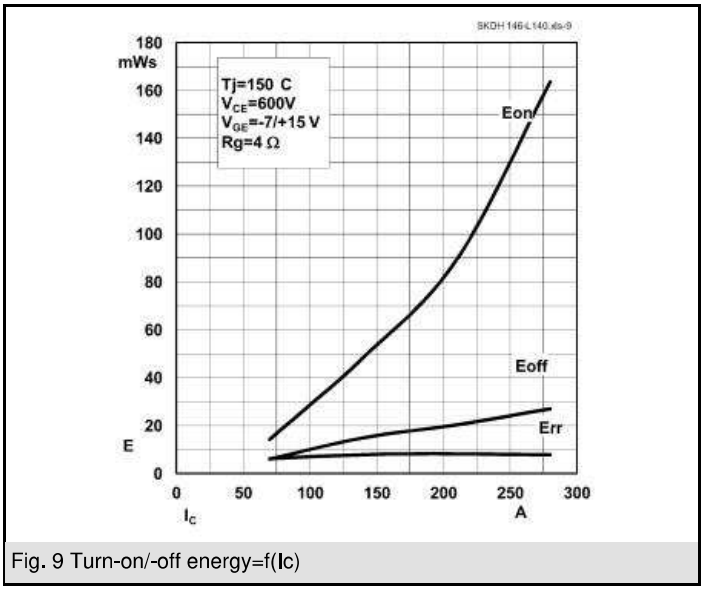

Fig. 9 Turn-on/-off energy=f(Ic)

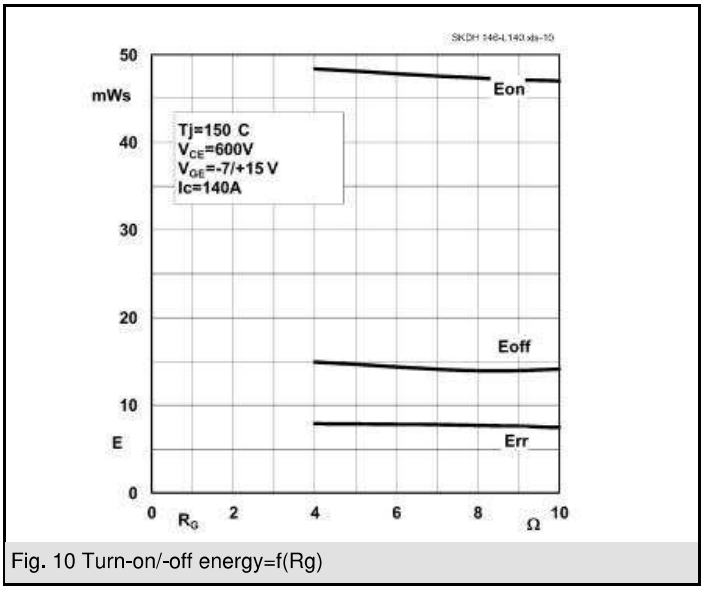

Fig. 10 Turn-on/-off energy=f(Rg)

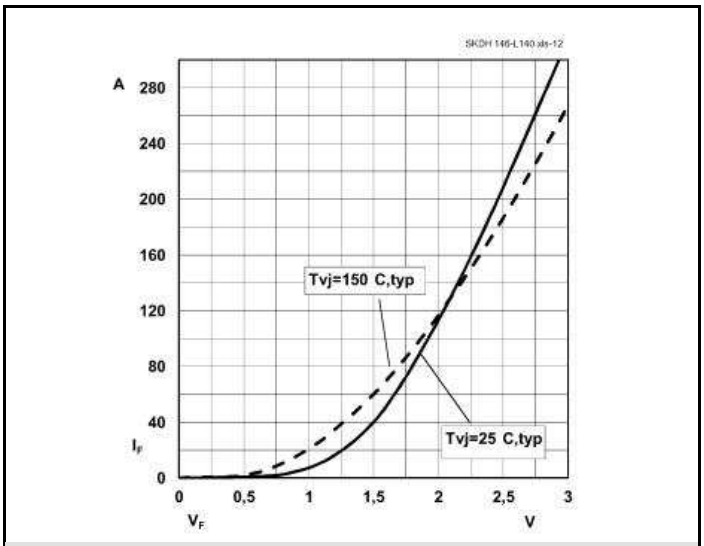

Fig. 12 Freewheeling diode forward characteristic

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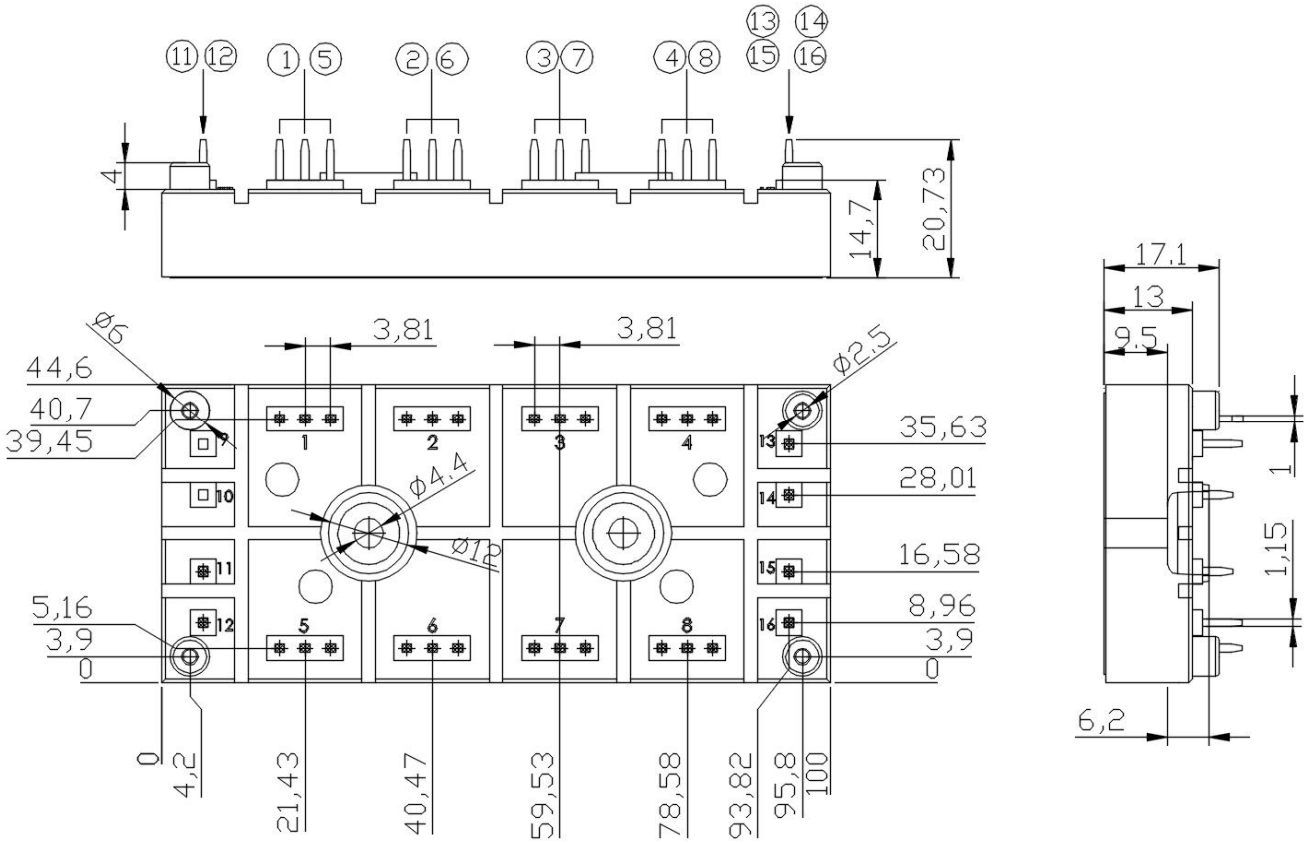
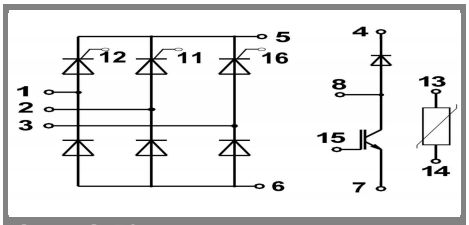
SKDH146/...-L140

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.

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