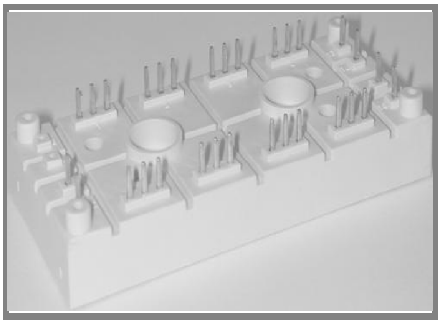
SKD 146/16-L140



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: $V_{CE,sat}$ = chip level value

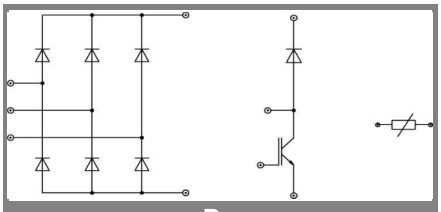
Typical Applications

- 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 = 85 °C)
1700	1600	SKD146/16-L140

Absolute Maximum Ratings		T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
Bridge - Rectifier			
I_D	T_s = 85 °C; inductive load	140	A
I_{FSM}/I_{TSM}	t_p = 10 ms; sin 180° ; T_{jmax}	1250	A
i²t	t_p = 10 ms; sin 180° ; T_{jmax}	7800	A²s
IGBT - Chopper			
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
Freewheeling - CAL Diode			
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**
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		1,65	2,05	V
$R_{th(j-s)}$	per IGBT			0,35	K/W
$t_{d(on)}$ / t_r	valid for all values:				ns
$t_{d(off)}$ / t_f	V_{CC} = 600 V; V_{GE} = 15 V; I_C = 140 A; T_j = 125 °C;				ns
E_{on}+E_{off}	T_j = 125 °C; R_G = 5 Ω; inductive load		37		mJ
CAL - Diode - Freewheeling					
$V_{T(TO)}$ / 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:				A
Q_{rr}	I_F = 140 A; V_R = - 600 V; dI_F/dt = - 4300 A/µs				µC
E_{off}	V_{GE} = 0 V; T_j = 125 °C		16,2		mJ
Temperature Sensor					
R_{TS}	T = 25 (100) °C;		1000 (1670)		Ω
Mechanical data					
M_S	mounting Torque	2,55		3,45	Nm



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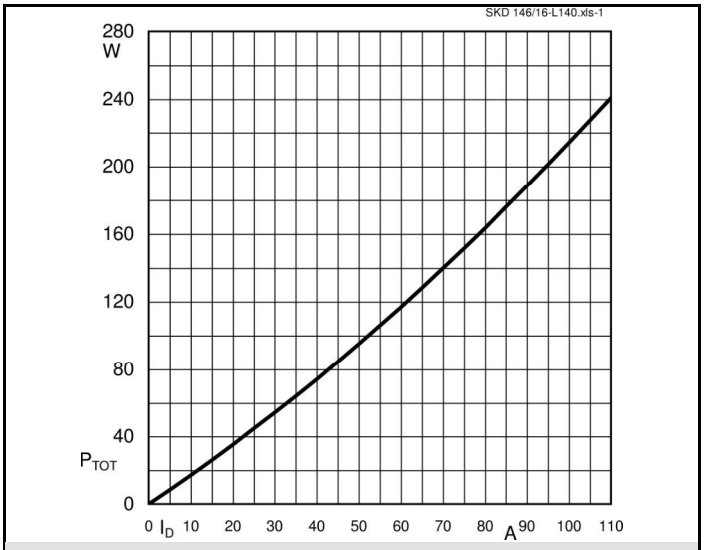

Fig. 1 Power dissipation per module vs. output current

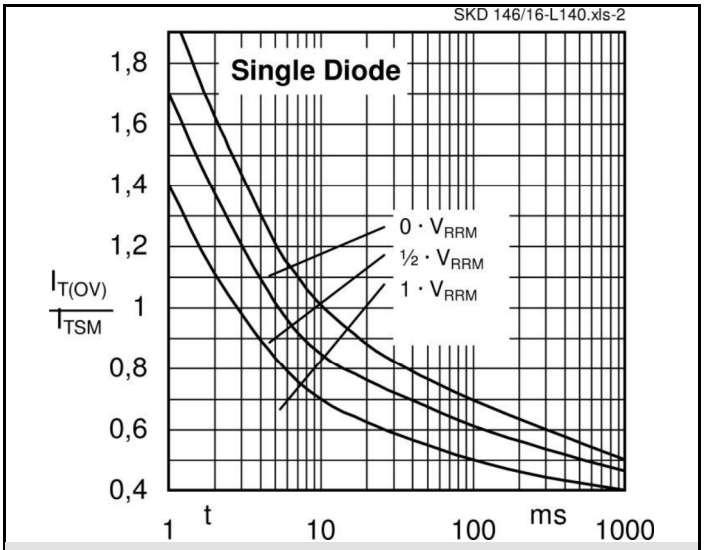

Fig. 2 Surge overload current vs. time

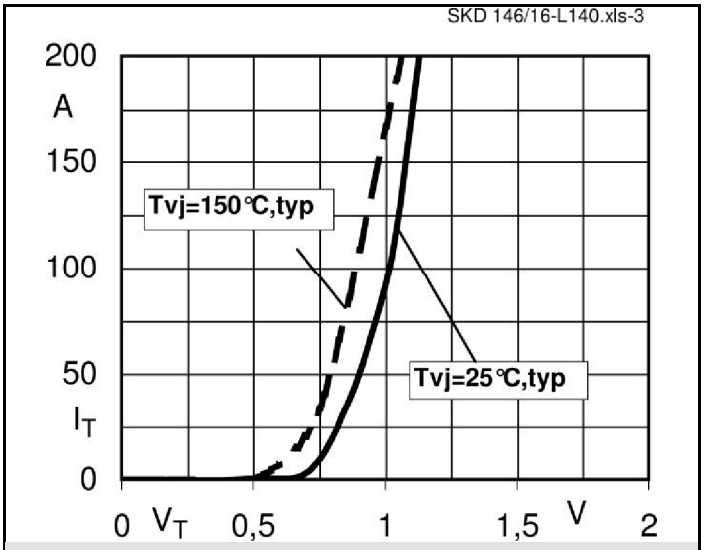

Fig. 3 Forward characteristic of single rectifier diode

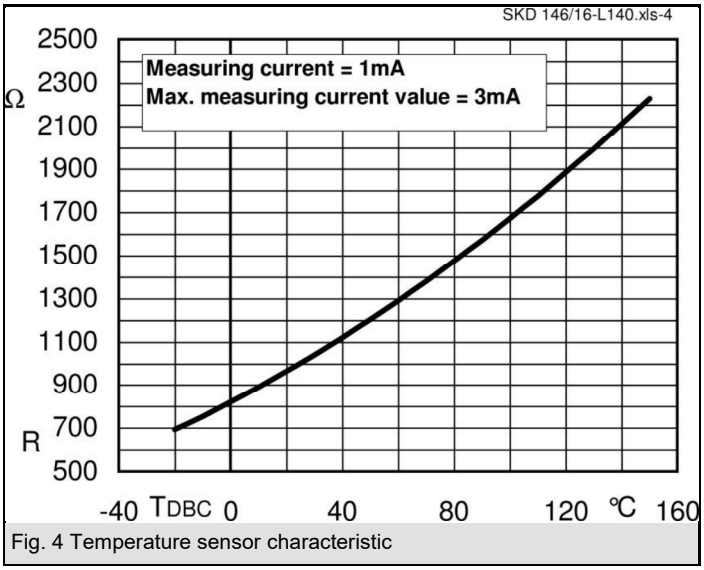

Fig. 4 Temperature sensor characteristic

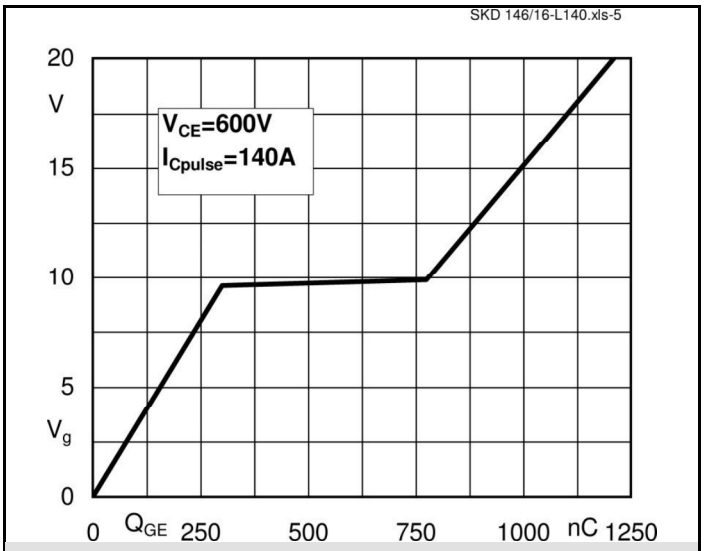

Fig. 5 Typ. gate charge characteristic

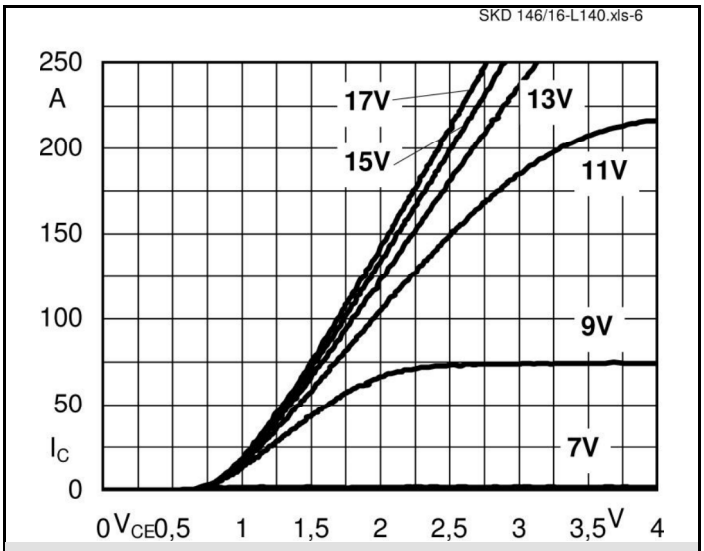

Fig. 6 Output IGBT characteristic Ic=f(Vce), Tj=25°C

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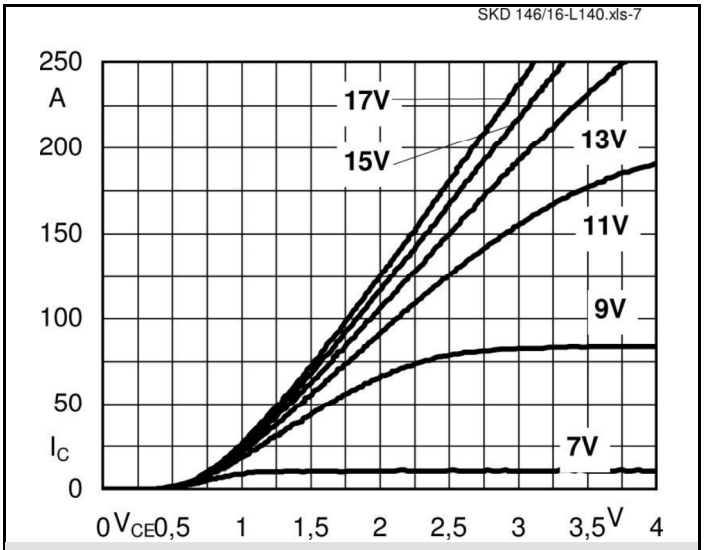

Fig. 7 Output IGBT characteristic Ic=f(Vce), Tj=125°C

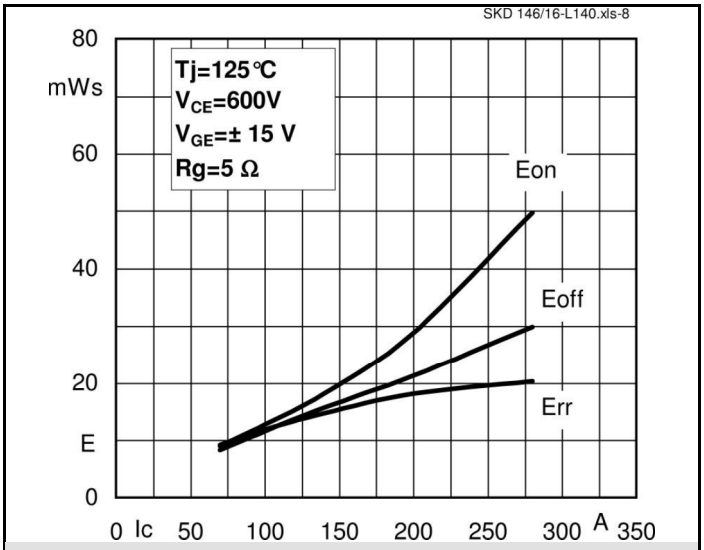

Fig. 8 Turn-on/-off energy =f(Ic)

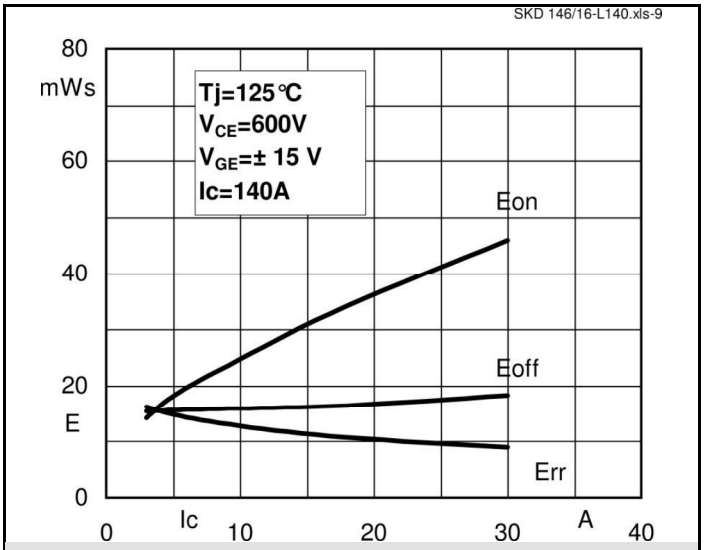

Fig. 9 Turn-on/-off energy =f(Rg)

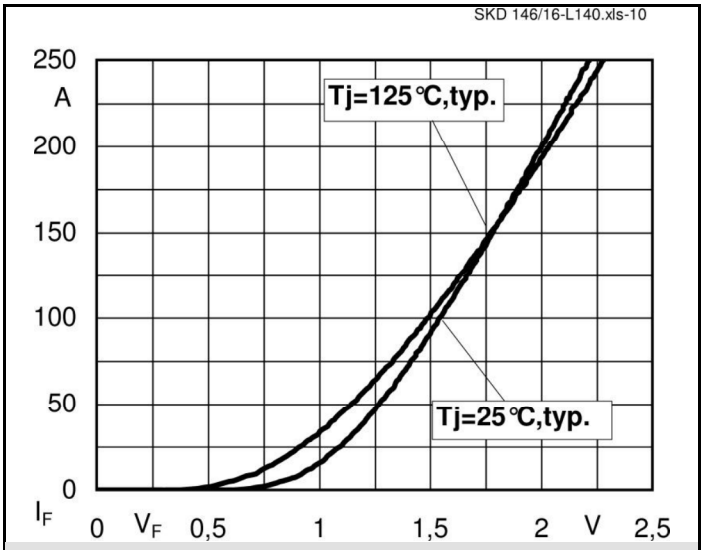

Fig. 10 Diode forward characteristic

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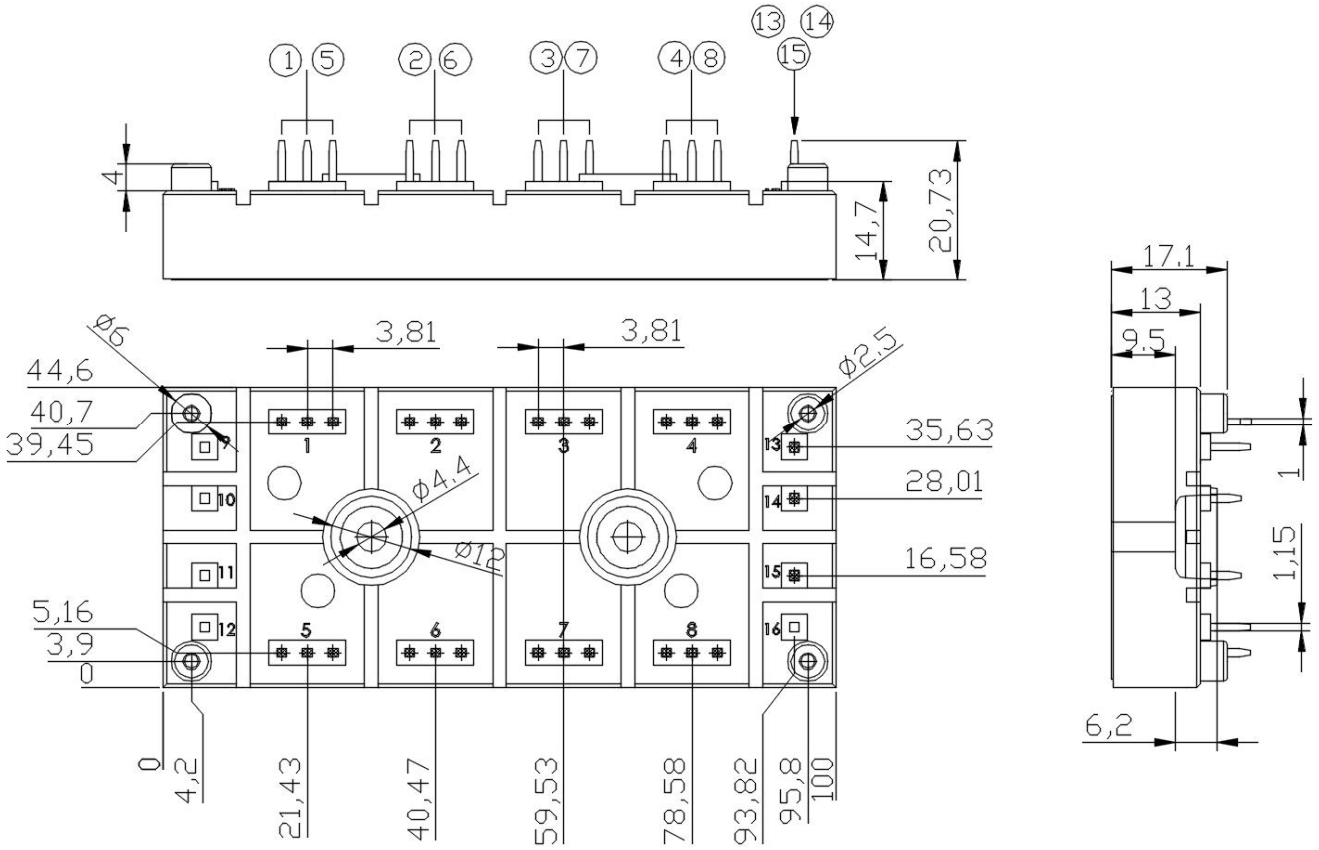
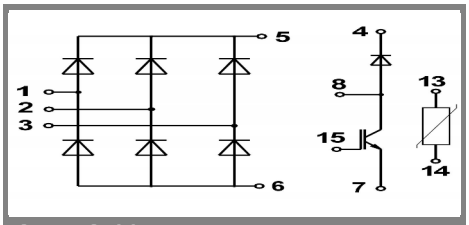
SKD 146/16-L140

UL Recognized
File no. 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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