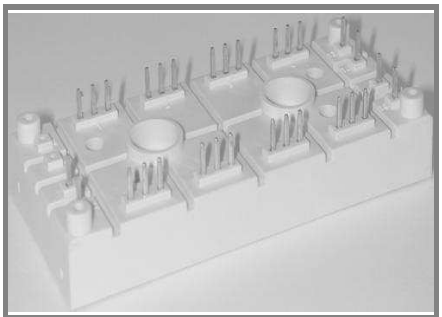
SKD 146/..L140 T4



SEMIPONT™ 6

3-Phase Bridge Rectifier + IGBT braking chopper

SKD146-L140T4

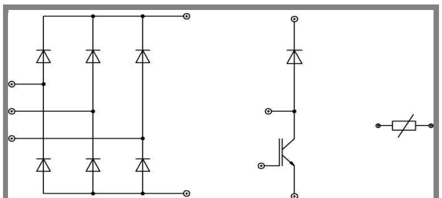
Data

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

Typical Applications*

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



D

V_{RSM} V	V_{RRM}, V_{DRM} V	I_D = 120 A (maximum value for continuous operation) (T_s = 70 °C)
1300	1200	SKD146/12-L140T4
1700	1600	SKD146/16-L140T4

Absolute Maximum Ratings		T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
Bridge - Rectifier			
I_D	T_s = °C; inductive load	140	A
I_{FSM}/I_{TSM}	t_p = ms; ;T_{jmax}	1250	A
i²t	t_p = ms; ;T_{jmax}	7800	A²s
IGBT - Chopper			
V_{CES}/V_{GES}		1200 / 20	V
I_C	T_s = °C	150 (120)	A
I_{CM}	t_p = ms; T_s = °C	420	A
Freewheeling - CAL Diode			
V_{RRM}		1200	V
I_F	T_s = °C	130 (105)	A
I_{FM}	t_p = ms; T_s = °C	450	A
T_{vj}	Diode & IGBT (Thyristor)	- 40 ... + 175 (0 ... + 125)	°C
T_{stg}		- 40 ... + 125	°C
T_{solder}	terminals, s	260	°C
V_{isol}	a.c. Hz, RMS min. / 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 = °C		0,8 / 4		V / mΩ
$R_{th(j-s)}$	per diode			0,8	K/W
IGBT - Chopper					
$V_{CE(sat)}$	I_C = A, T_j = °C; V_{GE} = 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		52,3		mJ
CAL - Diode - Freewheeling					
$V_{T(TO)}$ / r_t	T_j = °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 = °C;		1000 (1670)		Ω
Mechanical data					
M_S	mounting Torque	2,55		3,45	Nm

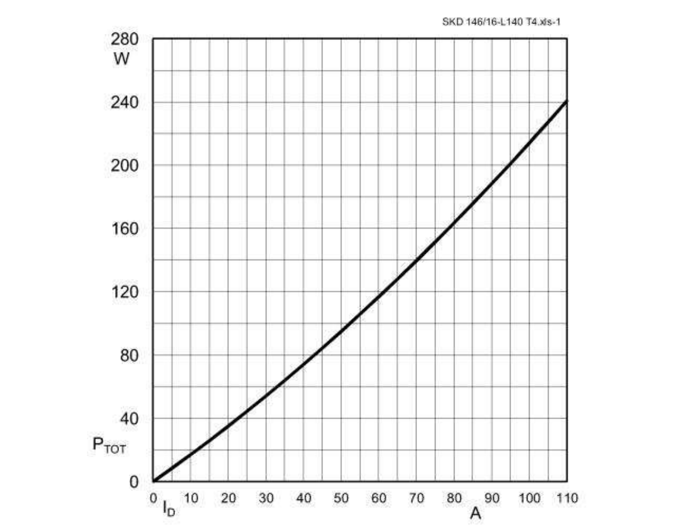


Fig. 1 Power dissipation per module vs. output current

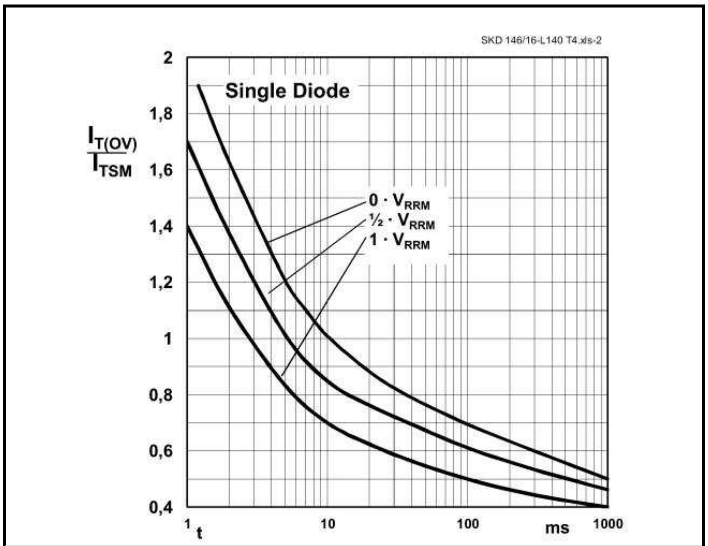


Fig. 2 Surge overload current vs. time

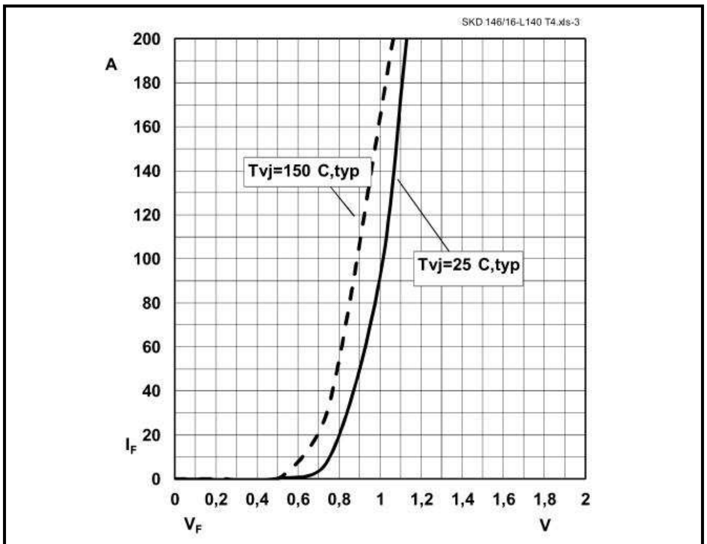


Fig. 3 Forward characteristic of single rectifier diode

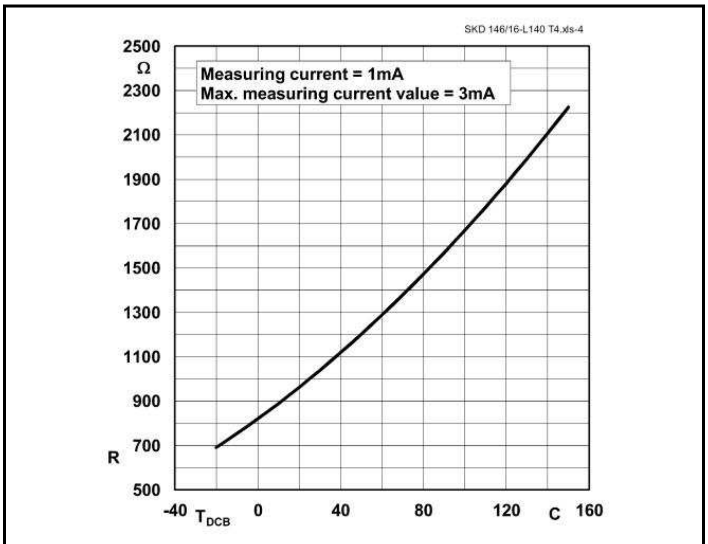


Fig. 4 Temperature sensor characteristic

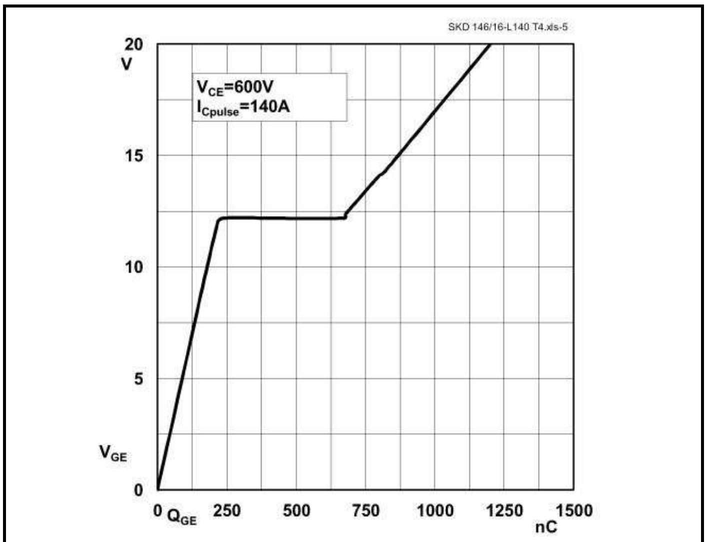


Fig. 5 Typ. gate charge characteristic

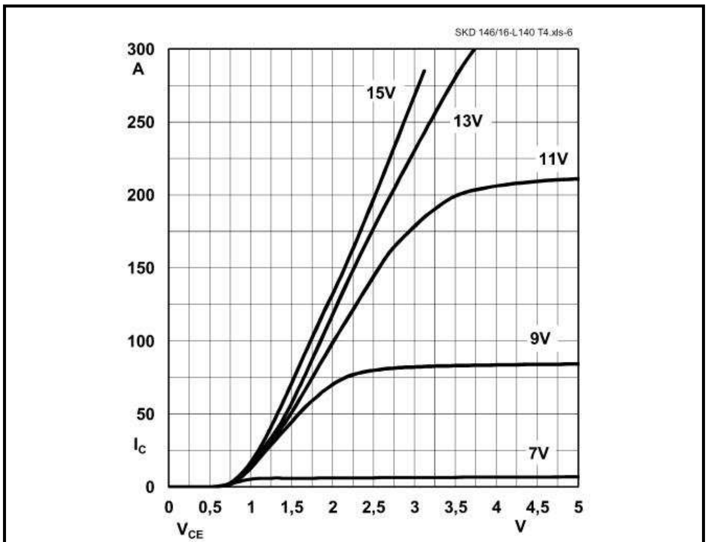


Fig. 6 Output IGBT characteristic Ic=f(Vce), Tj=25°C

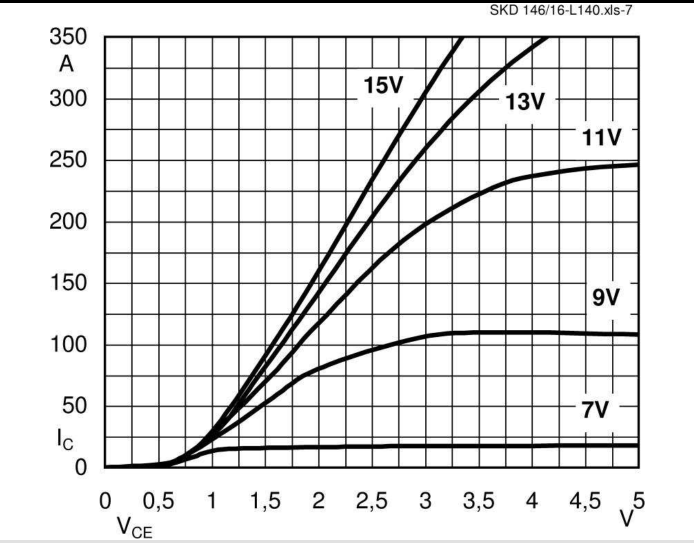


Fig. 7 Output IGBT characteristic Ic=f(Vce), Tj=125°C

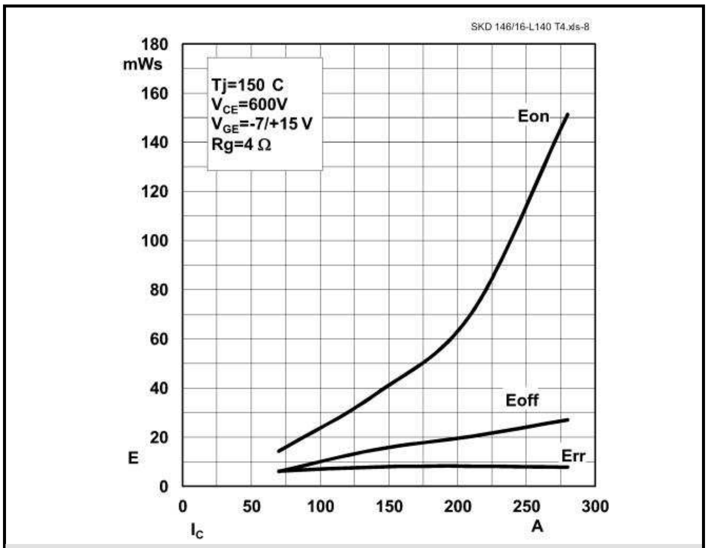


Fig. 8 Turn-on/-off energy =f(Ic)

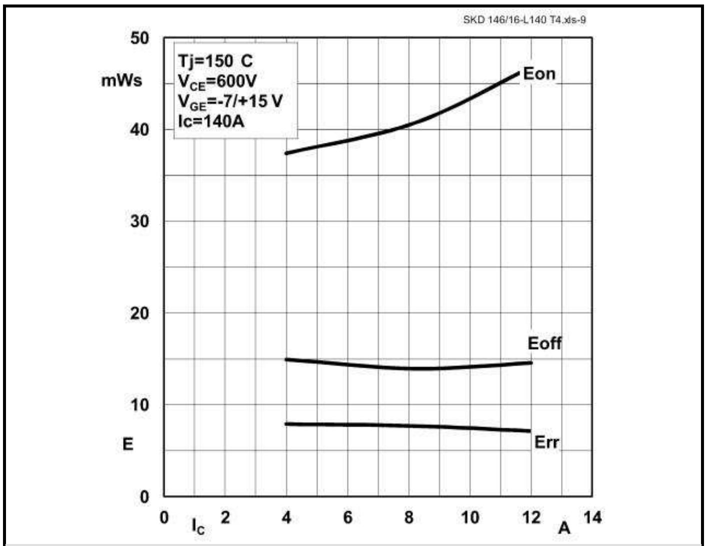


Fig. 9 Turn-on/-off energy =f(Rg)

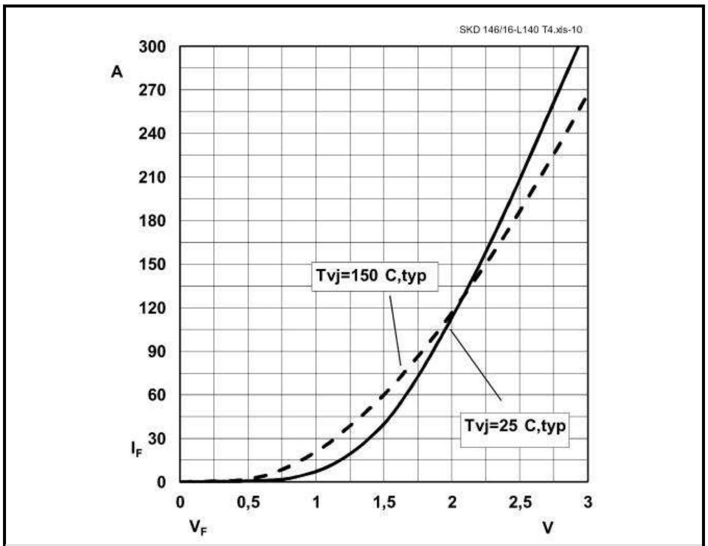
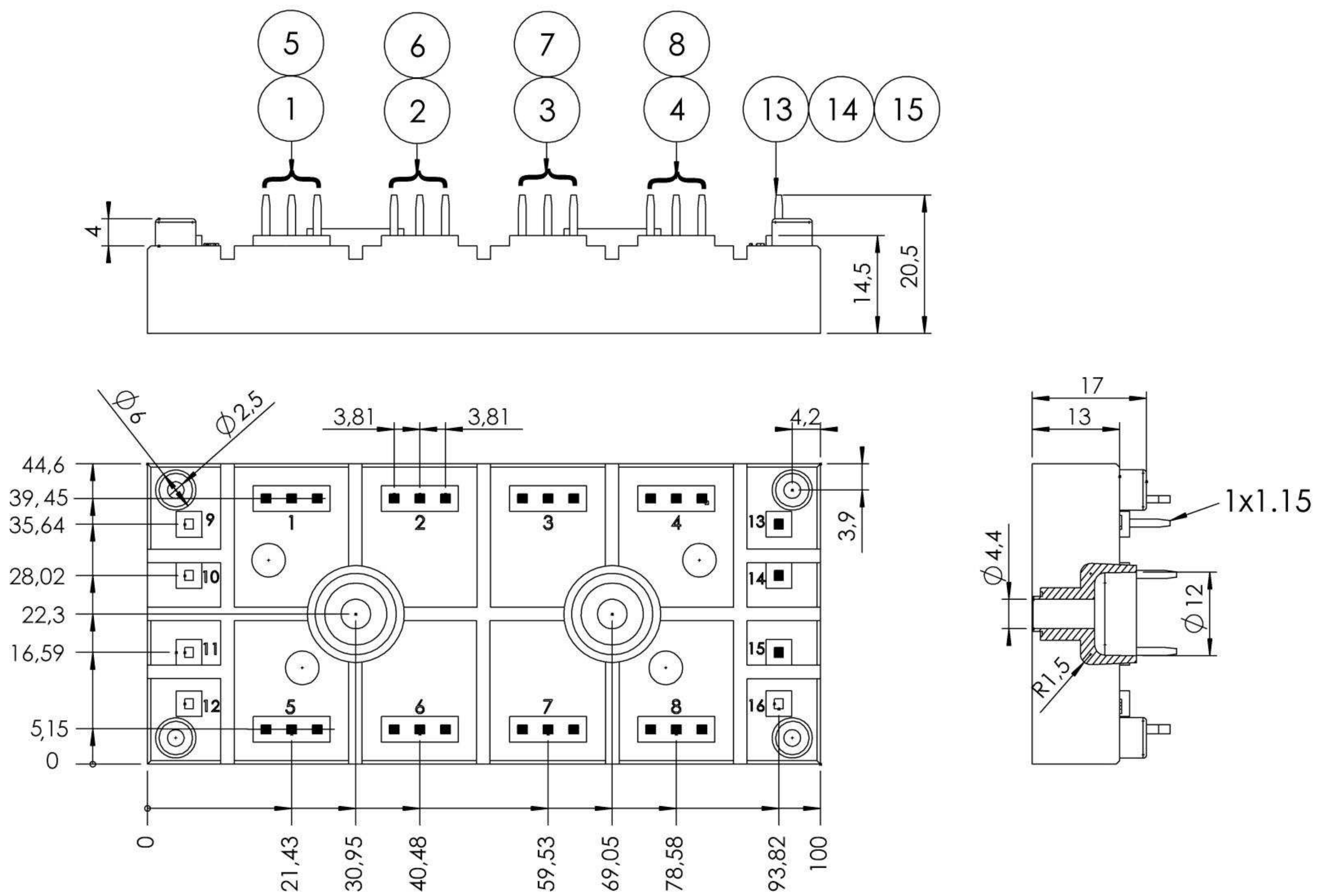


Fig. 10 Diode forward characteristic

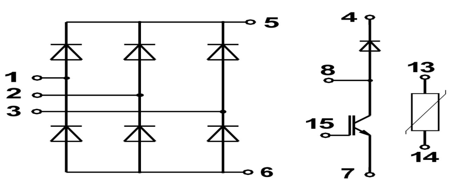
SKD 146/..L140 T4

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.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our staff.

