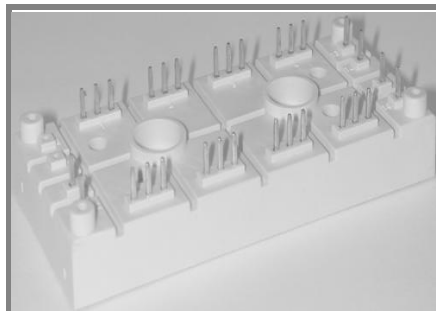




SEMIPONT™ 6

3-Phase Bridge Rectifier + IGBT braking chopper

SKD 146/..-L100

Preliminary 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
- UL recognized, file no. E 63 532

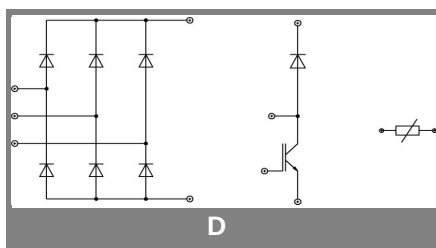
Typical Applications*

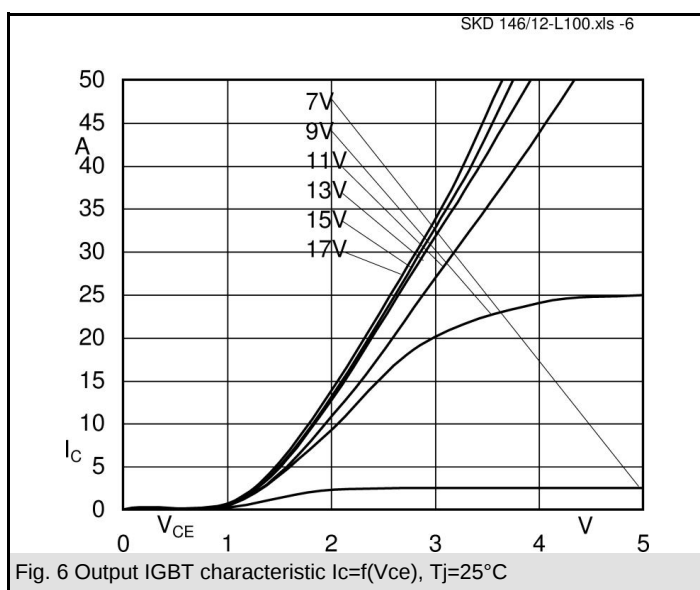
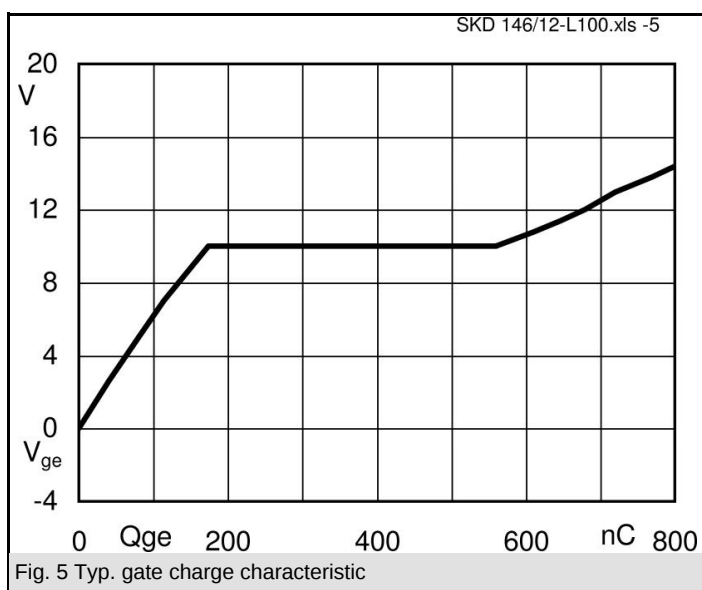
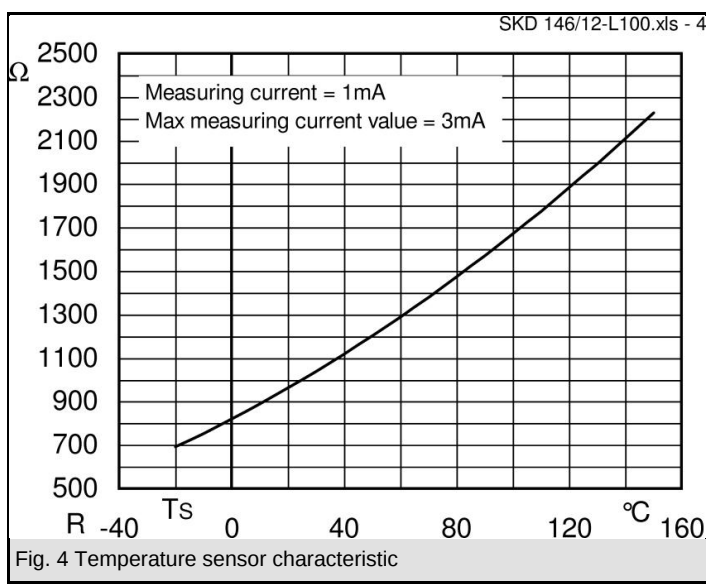
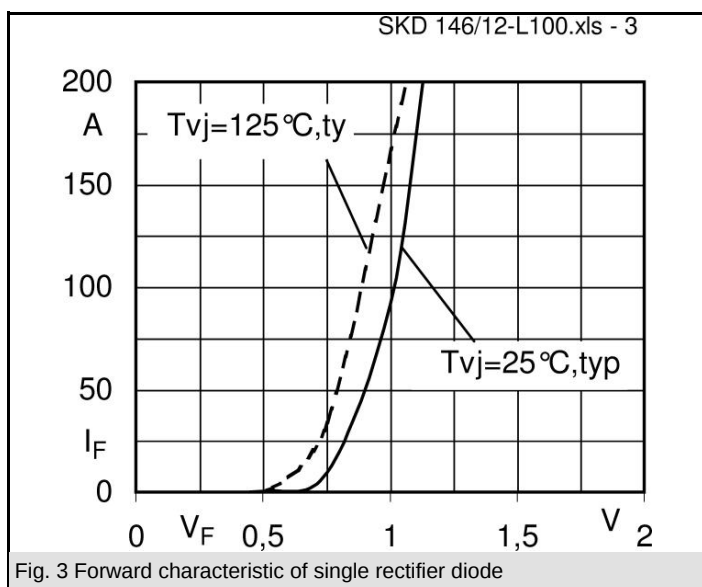
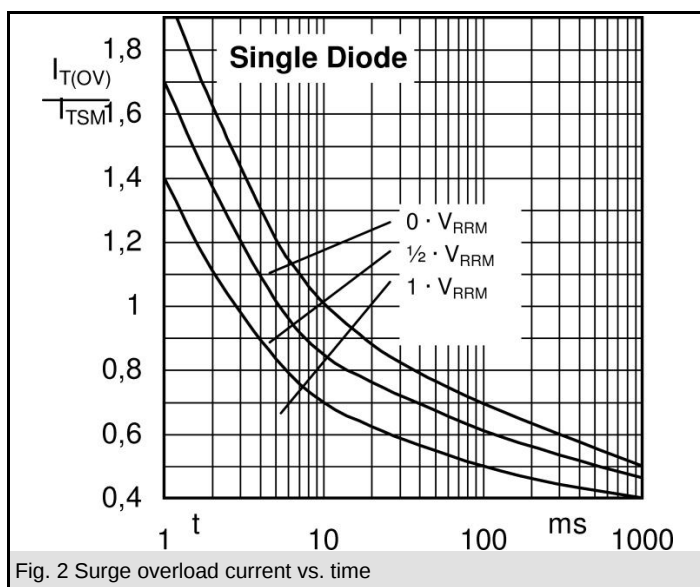
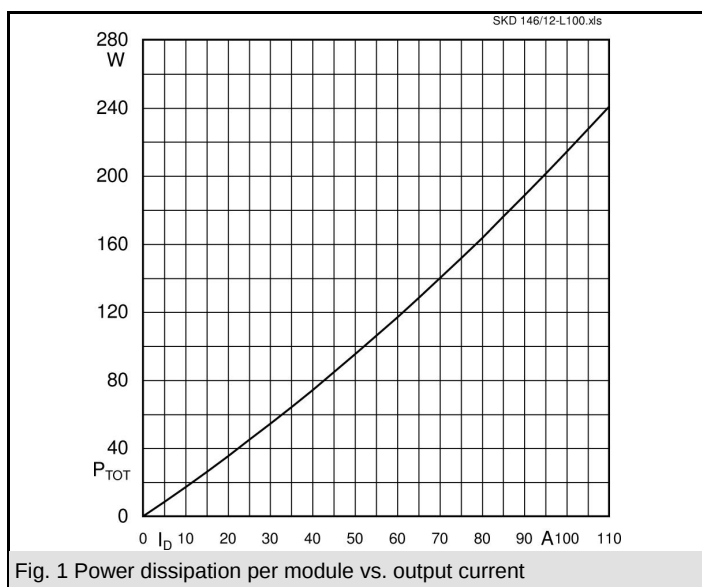
- DC drives
- Controlled filed rectifiers for DC motors
- Controlled battery charger

V_{RSM} V	V_{RRM}, V_{DRM} V	$I_D = 140$ A (maximum value for continuous operation) ($T_s = 85$ °C)
1300	1200	SKD 146/12-L100
1700	1600	SKD 146/16-L100

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; $\sin 180^\circ$; T_{jmax}	1250	A
i^2t	$t_p = 10$ ms; $\sin 180^\circ$; T_{jmax}	7800	A ² s
IGBT - Chopper			
V_{CES}/V_{GES}	$T_s = 25$ (70) °C	1200 / 20	V
I_C	$T_s = 25$ (70) °C	125 (100)	A
I_{CM}	$t_p = 1$ ms; $T_s = 25$ (70) °C	250 (200)	A
Freewheeling - CAL Diode			
V_{RRM}	$T_s = 25$ (70) °C	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				
$V_{CE(sat)}$	$I_C = 100$ A, $T_j = 25$ °C; $V_{GE} = 15$ V		2,35	V
$R_{th(j-s)}$	per IGBT			0,3 K/W
$t_{d(on)} / t_r$	valid for all values:		113,8 / 94,4	ns
$t_{d(off)} / t_f$	$V_{CC} = 600$ V; $V_{GE} = 15$ V; $I_C = 120$ A; $T_j = 125$ °C;		845,4 / 94,4	ns
$E_{on}+E_{off}$	$T_j = 125$ °C; $R_G = 16$ Ω; inductive load		24,4	mJ
CAL - Diode - Freewheeling				
$V_{T(TO)} / r_t$	$T_j = 125$ °C		1 / 8	1,2 / 11 V / mΩ
$R_{th(j-s)}$	per diode			0,6 K/W
I_{RRM}	valid for all values:		65	A
Q_{rr}	$I_F = 100$ A; $V_R = -600$ V; $di_F/dt = -1000$ A/μs		15	μC
E_{off}	$V_{GE} = 0$ V; $T_j = 125$ °C			mJ
Temperature Sensor				
R_{TS}	$T = 25$ (100) °C;		1000 (1670)	Ω
Mechanical data				
M_S	mounting Torque	2,55	3,45	Nm





SKD 146/12-L100.xls -7

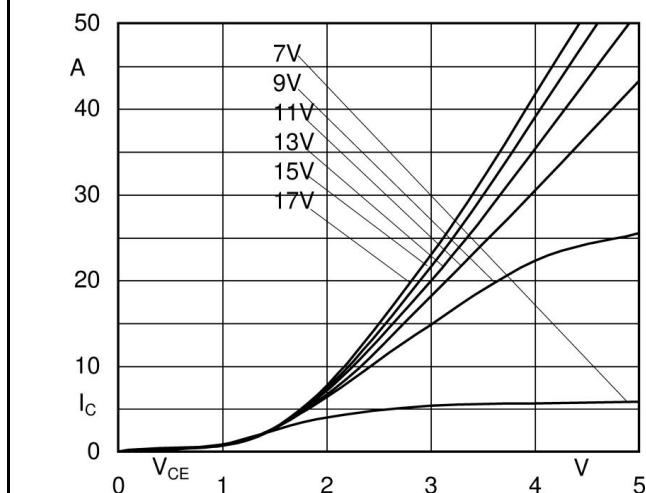


Fig. 7 Output IGBT characteristic $I_c = f(V_{ce})$, $T_j = 125^\circ\text{C}$

SKD 146/12-L100.xls - 8

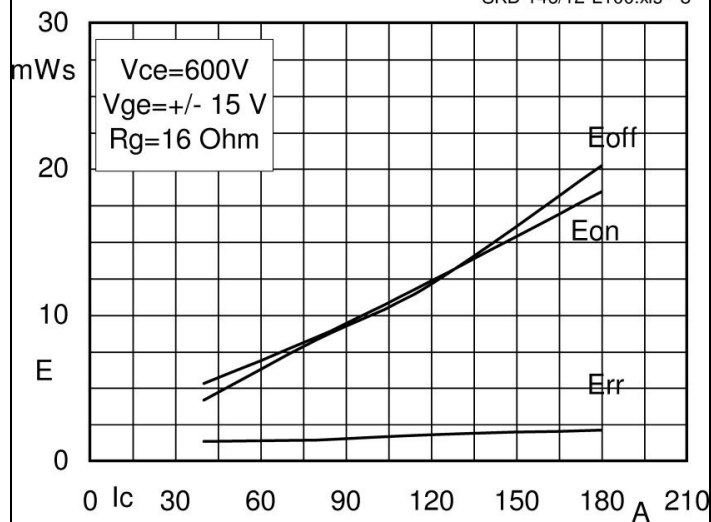


Fig. 8 Turn-on/-off energy $=f(I_c)$

SKD 146/12-L100.xls - 9

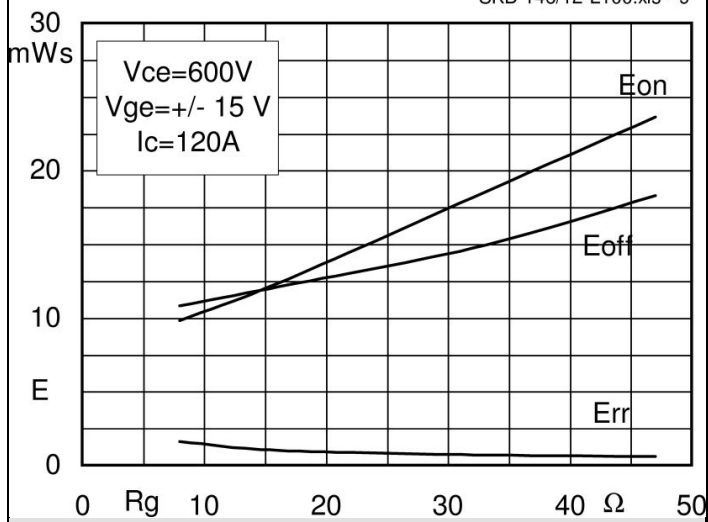


Fig. 9 Turn-on/-off energy $=f(R_g)$

SKD 146/12-L100.xls -12

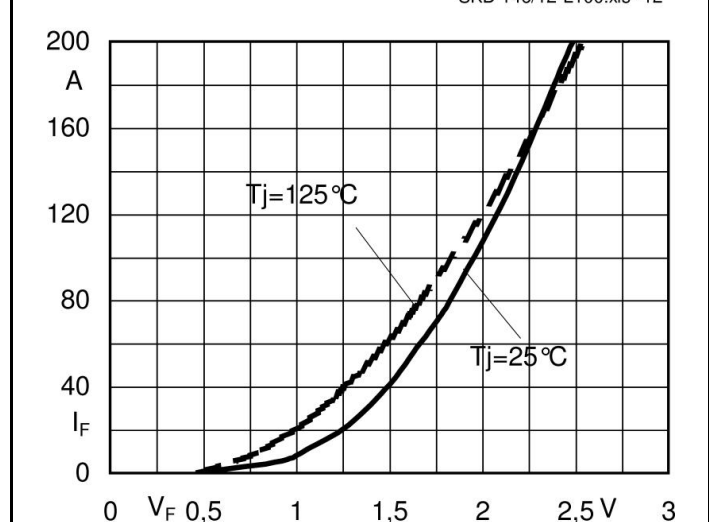
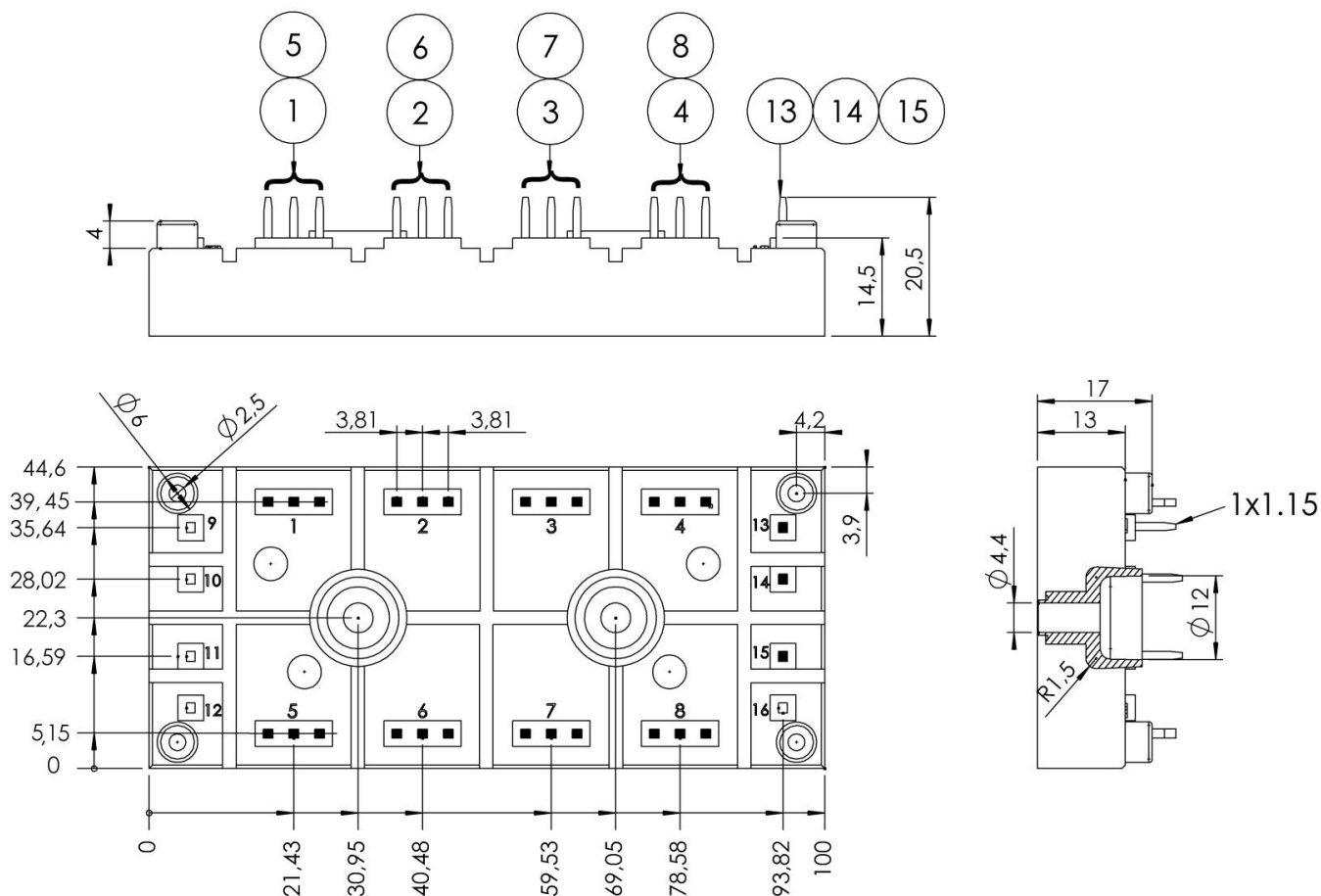


Fig. 10 Diode forward characteristic

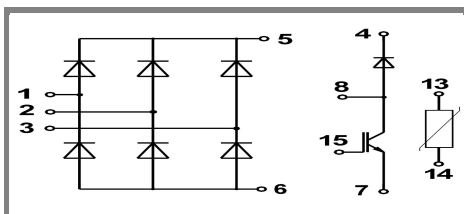
SKD 146/..-L100

UL recognized
File n#176; E63 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 personal.