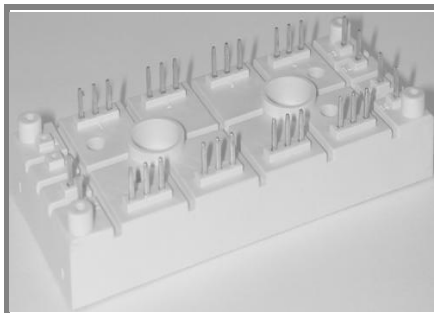# SKD 116/.. -L75

SEMIPONT™ 6

3-Phase Bridge Rectifier + IGBT braking chopper

SKD 116/.. -L75

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
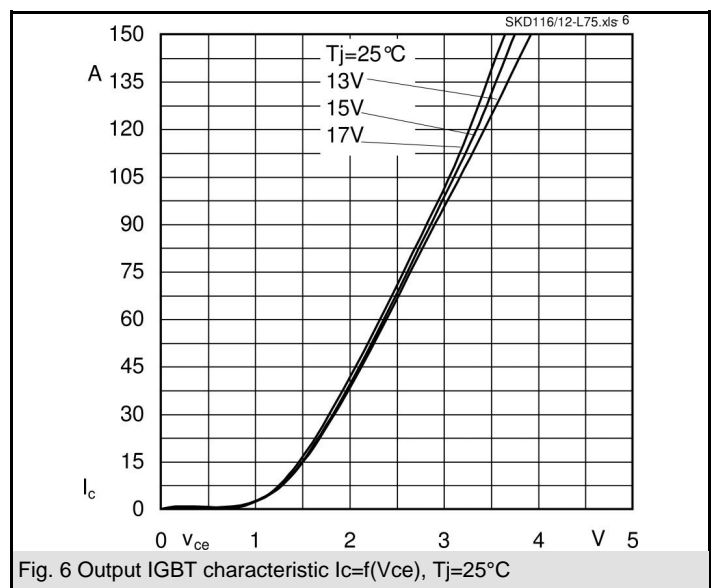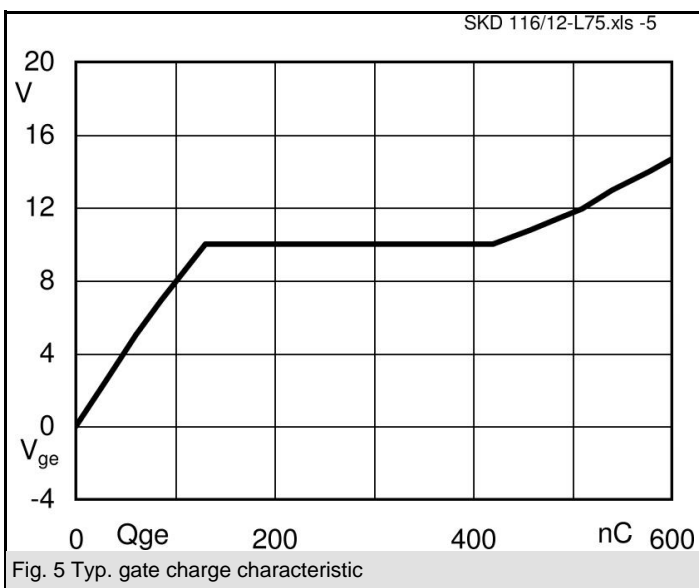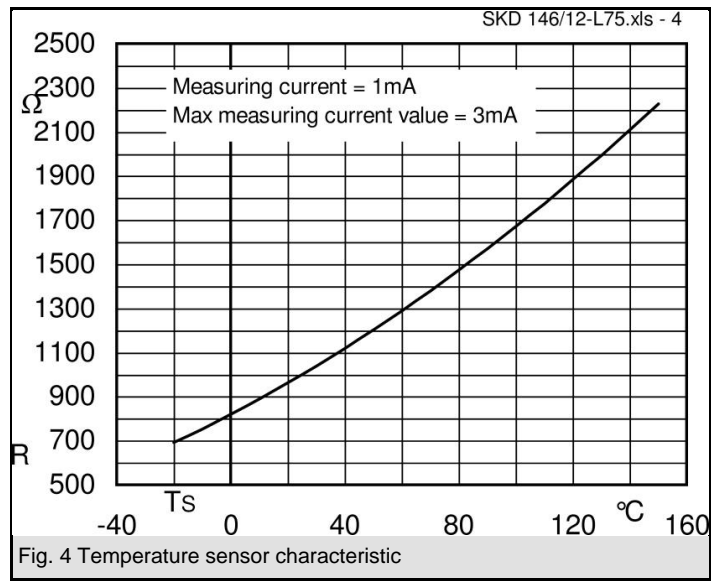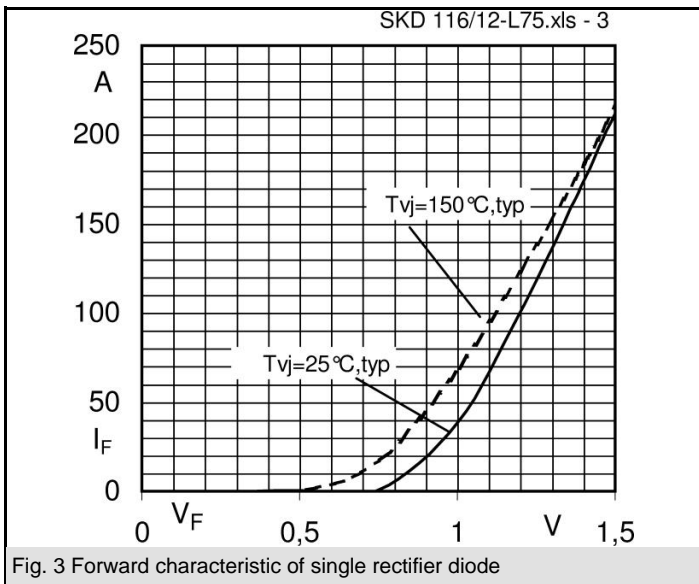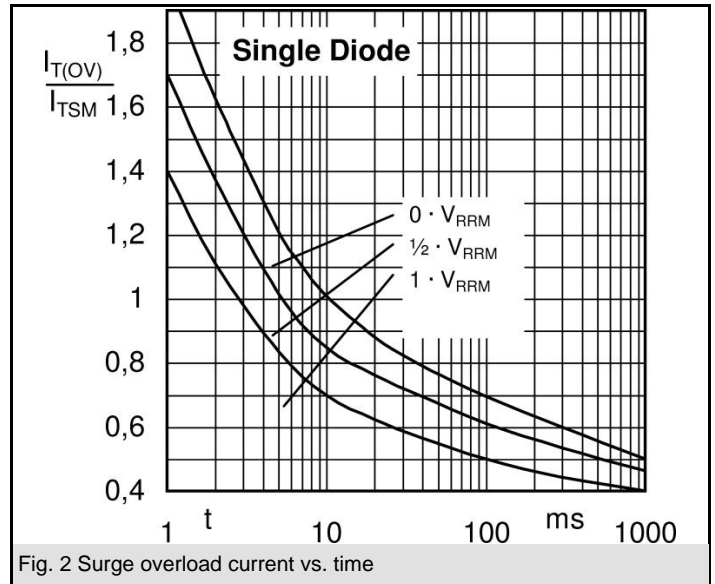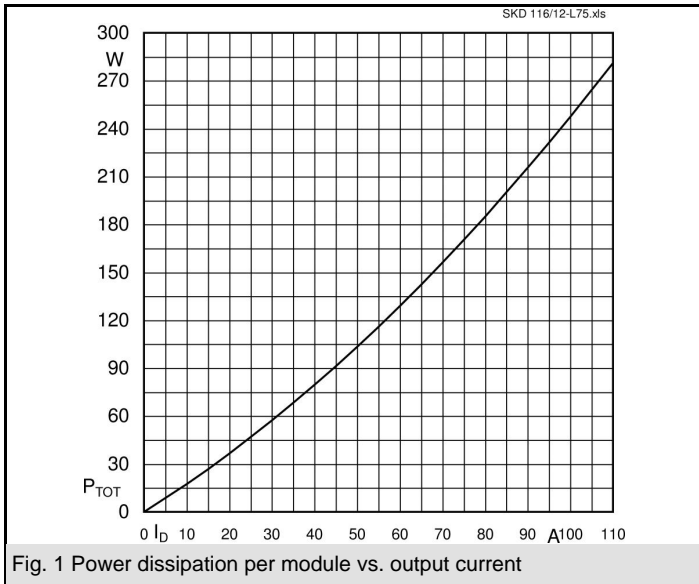- UL recognized, file no. E 63 532

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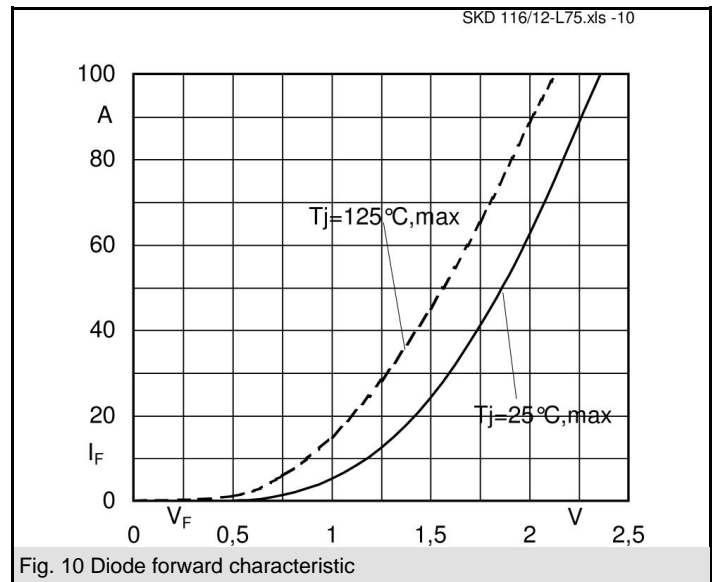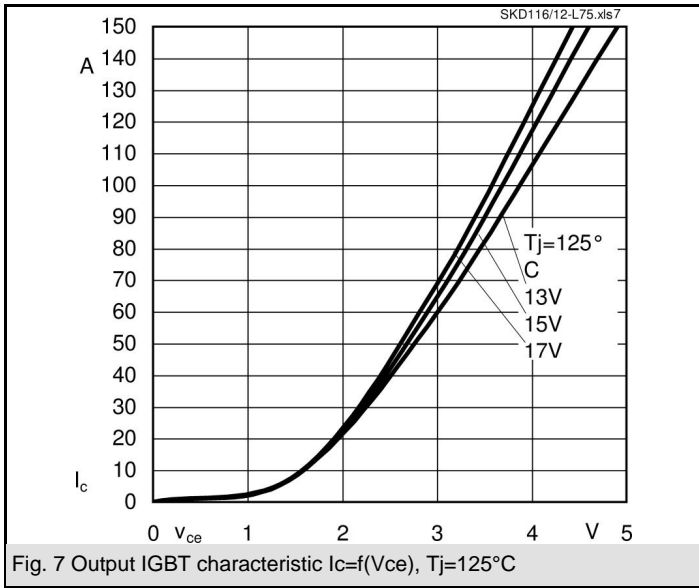- Controlled battery charger

V_{RSM} V	V_{RRM}, V_{DRM} V	I_D = 110 A (maximum value for continuous operation) (T_s = 85 °C)
1300	1200	SKD 116/12-L75
1700	1600	SKD 116/16-L75

Absolute Maximum Ratings		T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
Bridge - Rectifier			
I_D	T_s = 85 °C; inductive load	110	A
I_{FSM}/I_{TSM}	t_p = 10 ms; sin 180° ;T_{jmax}	1050	A
i²t	t_p = 10 ms; sin 180° ;T_{jmax}	5500	A²s
IGBT - Chopper			
V_{CES}/V_{GES}		1200 / 20	V
I_C	T_s = 25 (70) °C	100 (75)	A
I_{CM}	t_p = 1 ms; T_s = 25 (70) °C	200 (150)	A
Freewheeling - CAL Diode			
V_{RRM}		1200	V
I_F	T_s = 25 (70) °C	90 (70)	A
I_{FM}	t_p = 1 ms; T_s = 25 (70) °C	180 (140)	A
T_{vj}	Diode & IGBT (Thyristor)	- 40 ... + 150 (-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 / 7		V / mΩ
$R_{th(j-s)}$	per diode			1	K/W
IGBT - Chopper					
$V_{CE(sat)}$	I_C = 75 A, T_j = 25 °C; V_{GE} = 15 V		2,35		V
$R_{th(j-s)}$	per IGBT			0,4	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 = 90 A; T_j = 125 °C;		845,4 / 94,4		ns
$E_{on}+E_{off}$	T_j = 125 °C; R_G = 16 Ω; inductive load		18,3		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			0,8	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

D

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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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Tj=125° C
13V
15V
17V

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

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Vce=600V
Vge=+/- 15 V
Rg=16 Ohm

Eoff
Eon

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

SKD 116/12-L75.xls - 9

Vce=600V
Vge=+/- 15 V
Ic=90A

Eon
Eoff

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

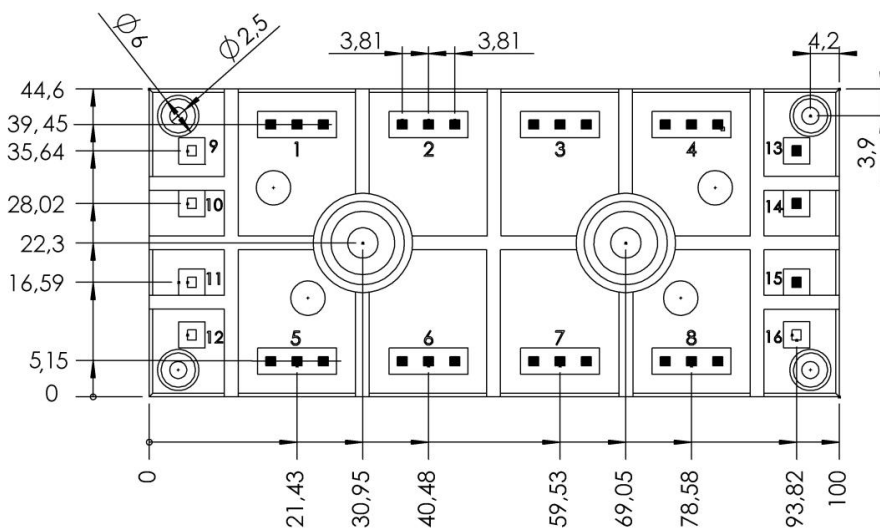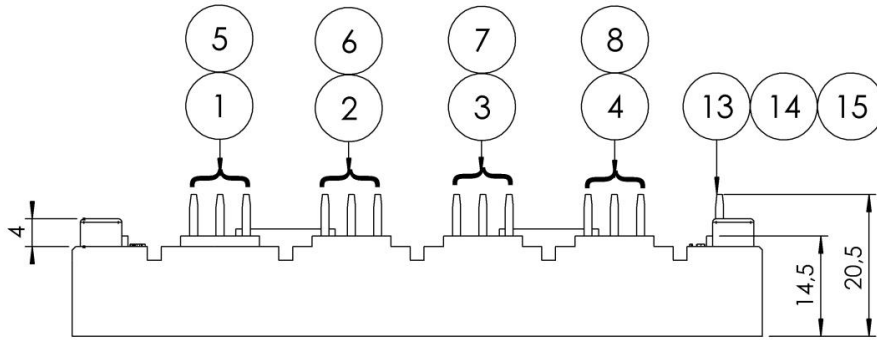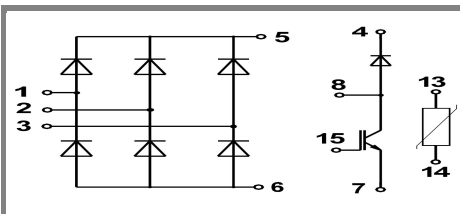SKD 116/12-L75.xls -10

Tj=125°C,max
Tj=25°C,max

Fig. 10 Diode forward characteristic

SKD 116/.. -L75

Dimensions in mm

Case G 60

Case G 60

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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

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