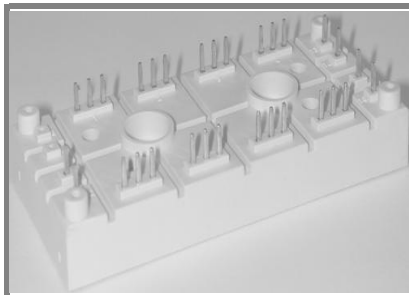


# SKD 116/.. -L75



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

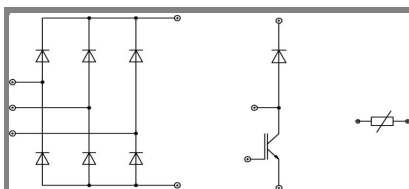
### Typical Applications\*

- 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
<b>Bridge - Rectifier</b>			
$I_D$	$T_s = 85$ °C; inductive load	110	A
$I_{FSM}/I_{TSM}$	$t_p = 10$ ms; $\sin 180^\circ$ ; $T_{jmax}$	1050	A
$i^2t$	$t_p = 10$ ms; $\sin 180^\circ$ ; $T_{jmax}$	5500	A <sup>2</sup> s
<b>IGBT - Chopper</b>			
$V_{CES}/V_{GES}$		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
<b>Freewheeling - CAL Diode</b>			
$V_{RRM}$		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
<b>Diode - Rectifier</b>					
$V_{TO} / r_t$	$T_j = 125$ °C		0,8 / 7		V / mΩ
$R_{th(j-s)}$	per diode			1	K/W
<b>IGBT - Chopper</b>					
$V_{CE(sat)}$	$I_C = 75$ 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
<b>CAL - Diode - Freewheeling</b>					
$V_{T(TO)} / r_t$	$T_j = 125$ °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; $V_B = - -600$ V; $dI_F/dt = - -1000$ A/μs		15		μC
$E_{off}$	$V_{GE} = 0$ V; $T_j = 125$ °C				mJ
<b>Temperature Sensor</b>					
$R_{TS}$	$T = 25$ (100) °C;		1000 (1670)		Ω
<b>Mechanical data</b>					
$M_S$	mounting Torque		2,55	3,45	Nm



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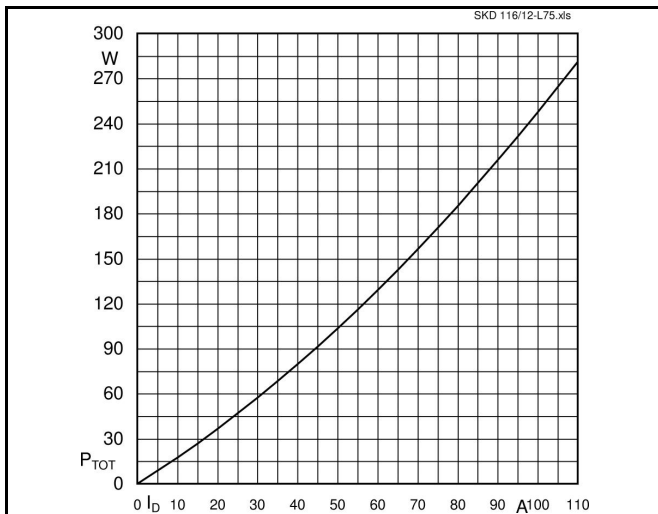


Fig. 1 Power dissipation per module vs. output current

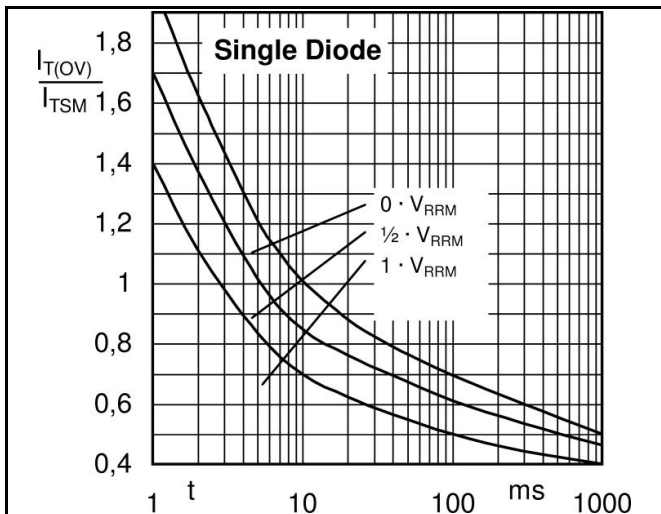


Fig. 2 Surge overload current vs. time

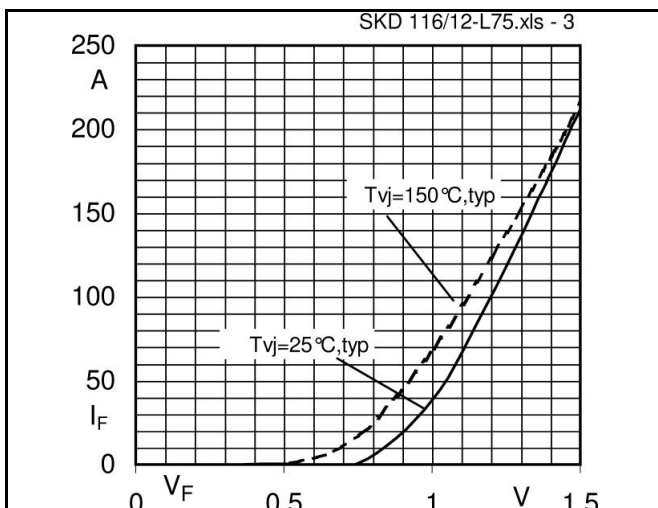


Fig. 3 Forward characteristic of single rectifier diode

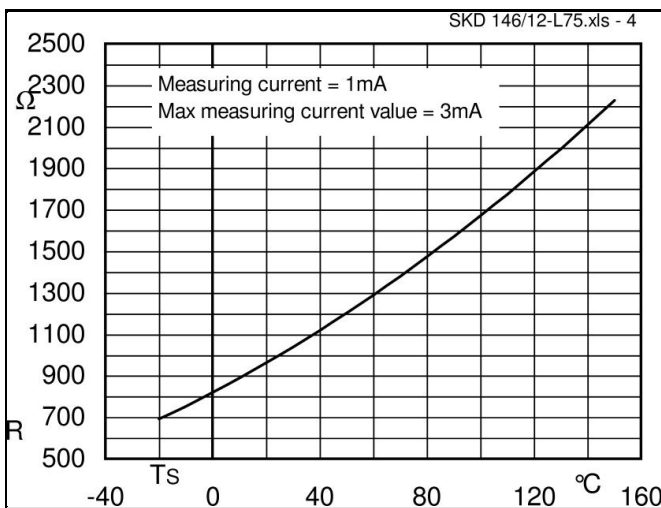


Fig. 4 Temperature sensor characteristic

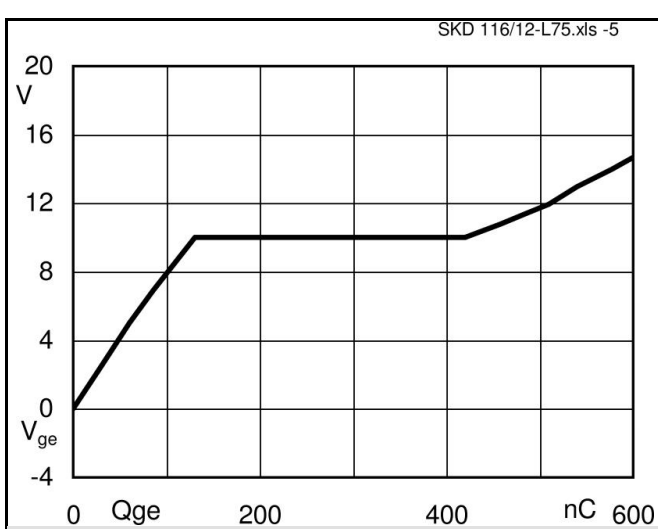


Fig. 5 Typ. gate charge characteristic

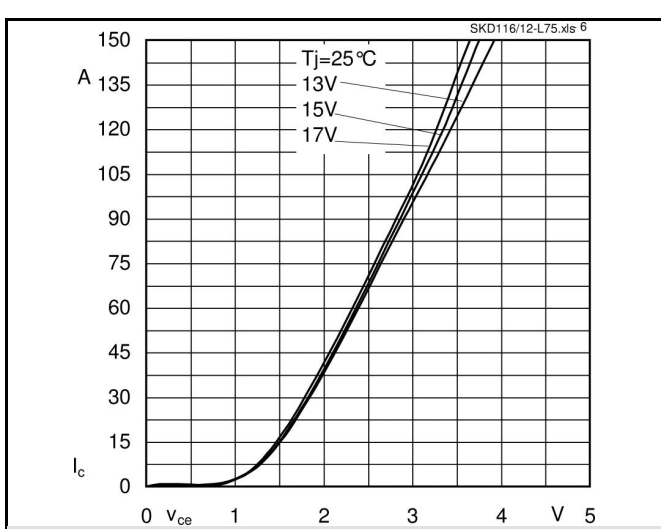
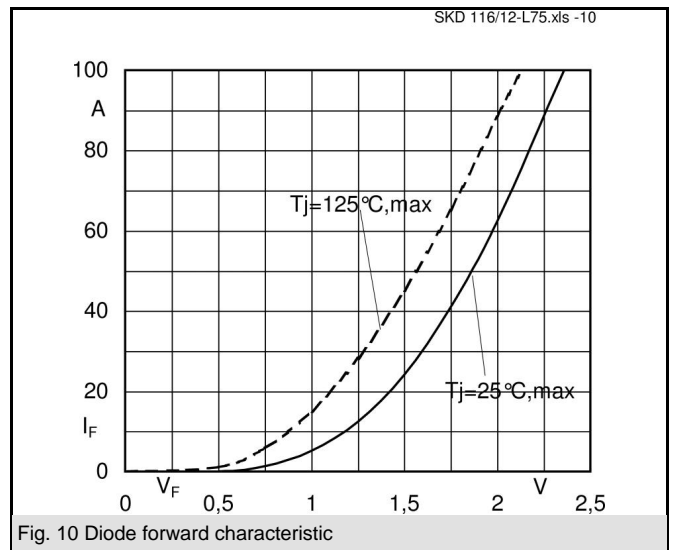
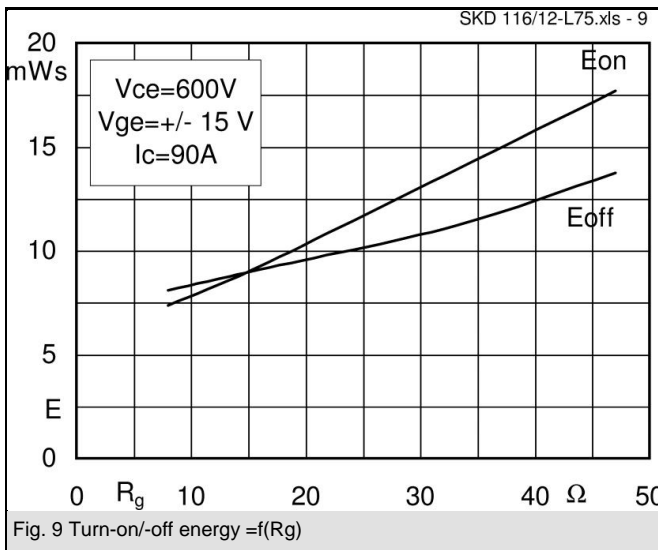
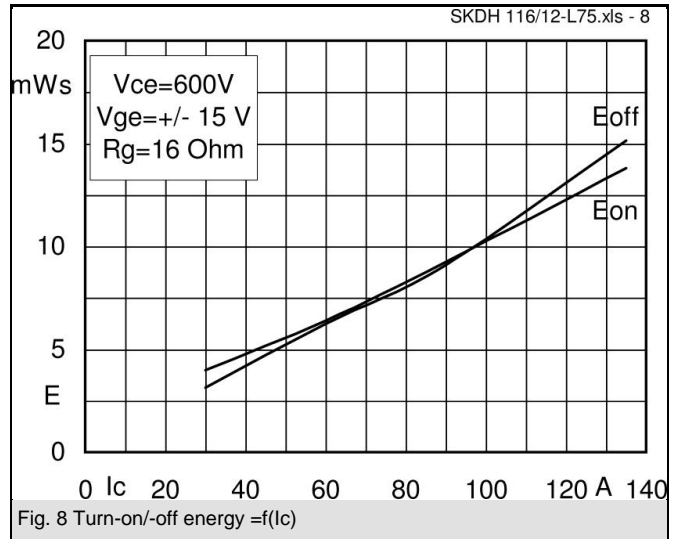
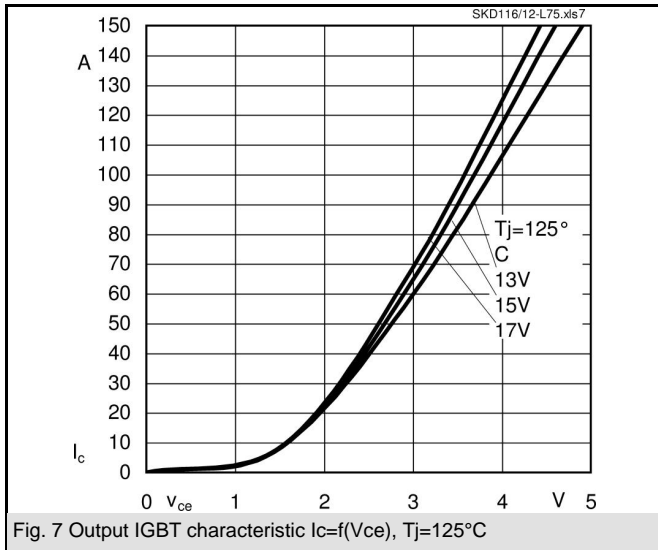


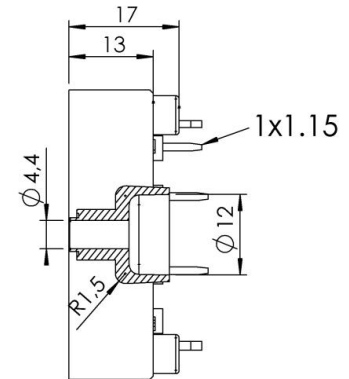
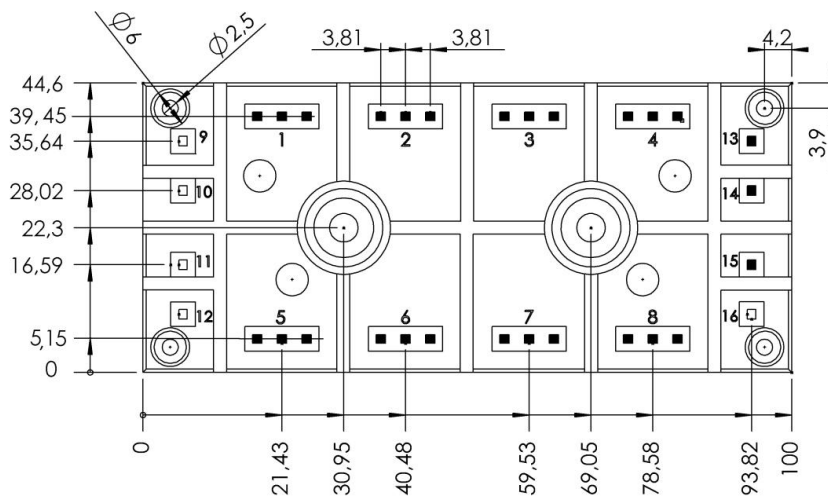
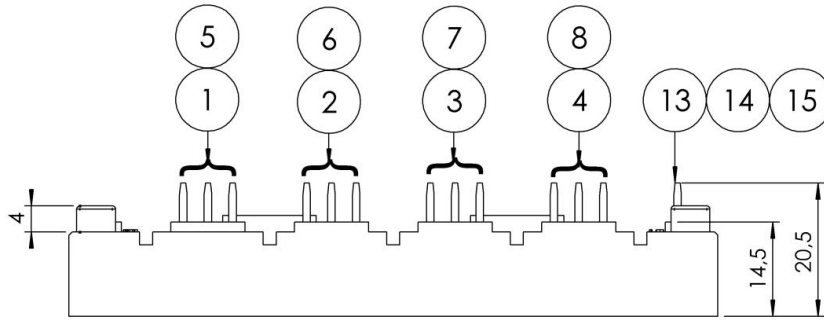
Fig. 6 Output IGBT characteristic  $I_c=f(V_{ce})$ ,  $T_j=25^\circ\text{C}$



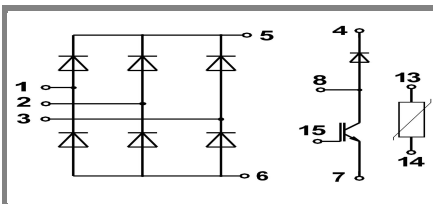
# SKD 116/.. -L75

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.