

SEMIPONT™ 6

3-Phase Bridge Rectifier + IGBT braking chopper

SKD 146/..-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	$I_D = 140$ A (maximum value for continuous operation) ($T_s = 85$ °C)
1200	1300	SKD 146/12-L75
1600	1700	SKD 146/16-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	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	100 (75)	A	
I_{CM}	$t_p = 1$ ms; $T_s = 25$ (70) °C	200 (150)	A	
Freewheeling - CAL Diode				
V_{RRM}	$T_s = 25$ (70) °C	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 (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					
$V_{CE(sat)}$	$I_C = 75$ 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 / 11	1,2 / 15	V / mΩ
$R_{th(j-s)}$	per diode			0,8	K/W
I_{RRM}	valid for all values:		75		A
Q_{rr}	$I_F = 75$ A; $V_R = - -600$ V; $di_F/dt = - -800$ A/μs		11		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



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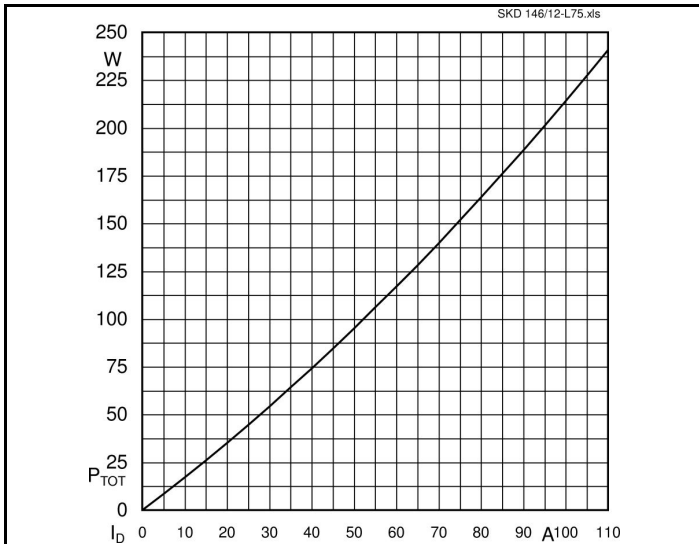


Fig. 1 Power dissipation per module vs. output current

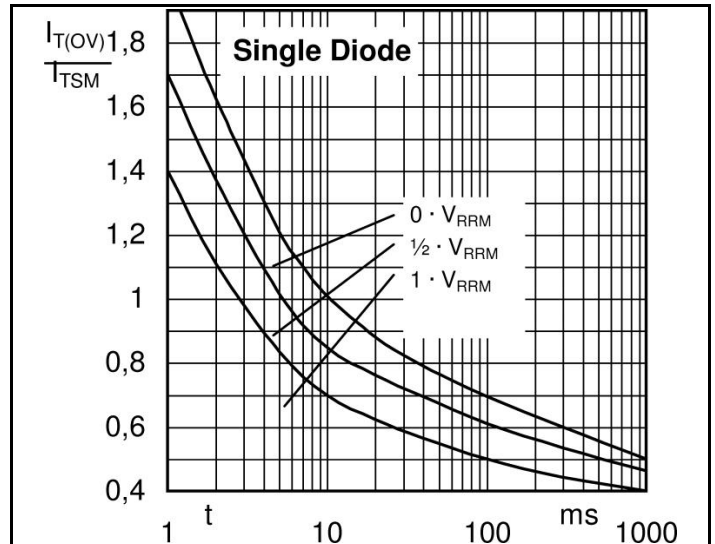


Fig. 2 Surge overload current vs. time

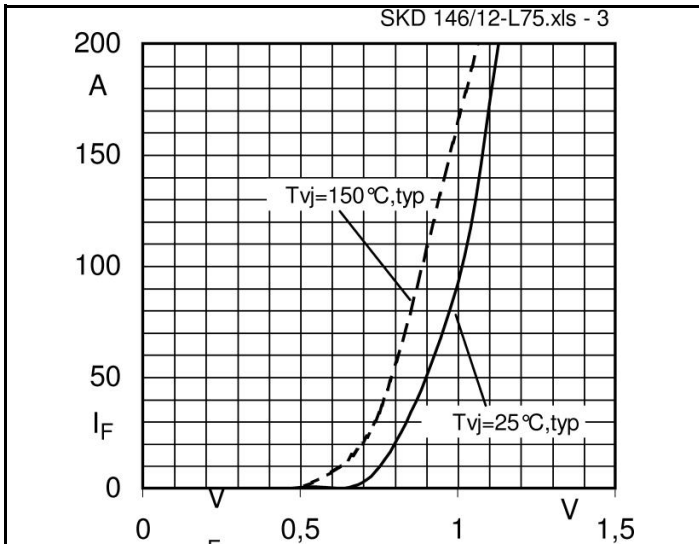


Fig. 3 Forward characteristic of a single rectifier diode

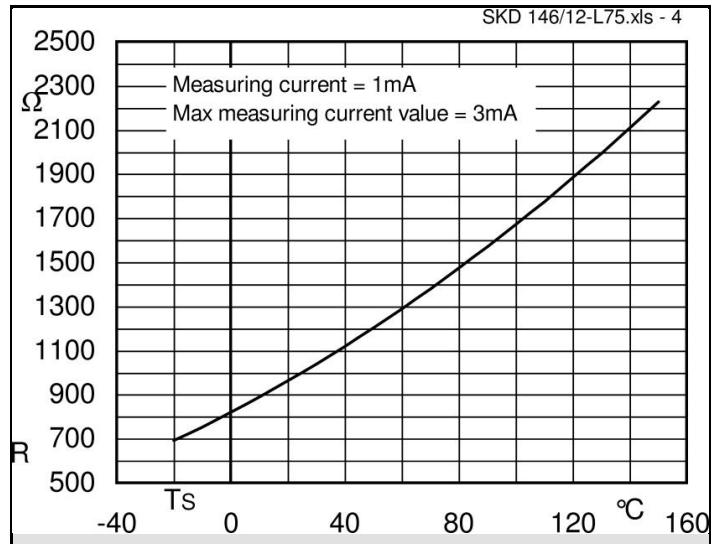


Fig. 4 Temperature sensor characteristic

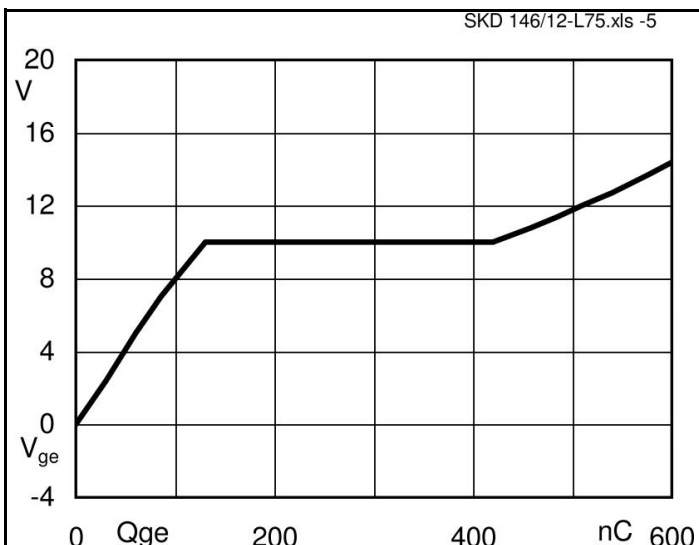


Fig. 5 Typ. gate charge characteristic

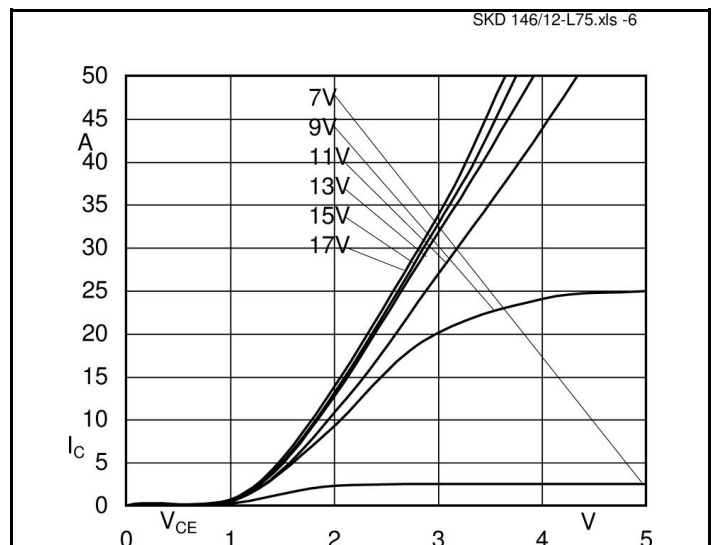
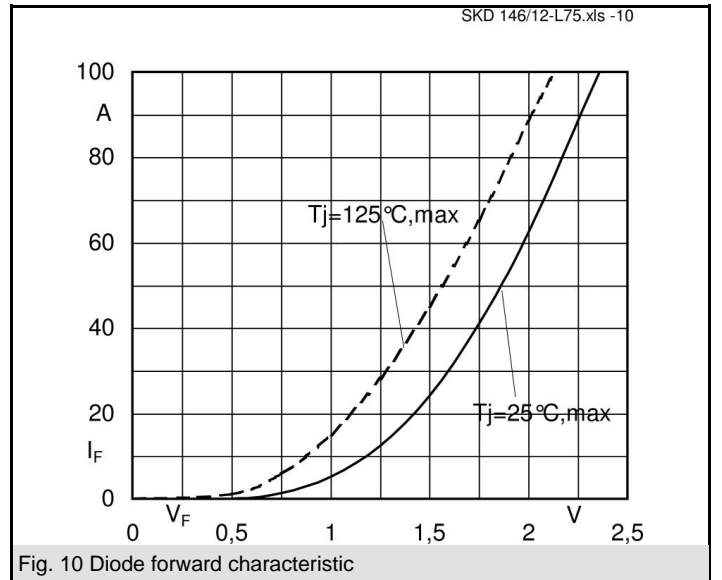
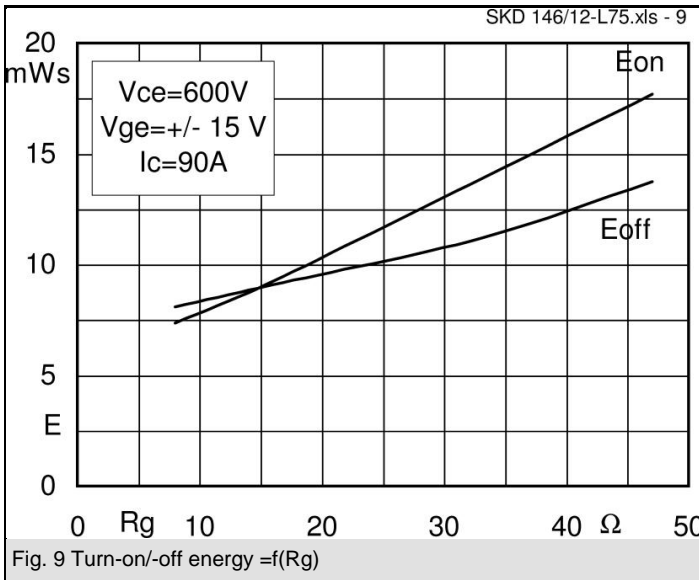
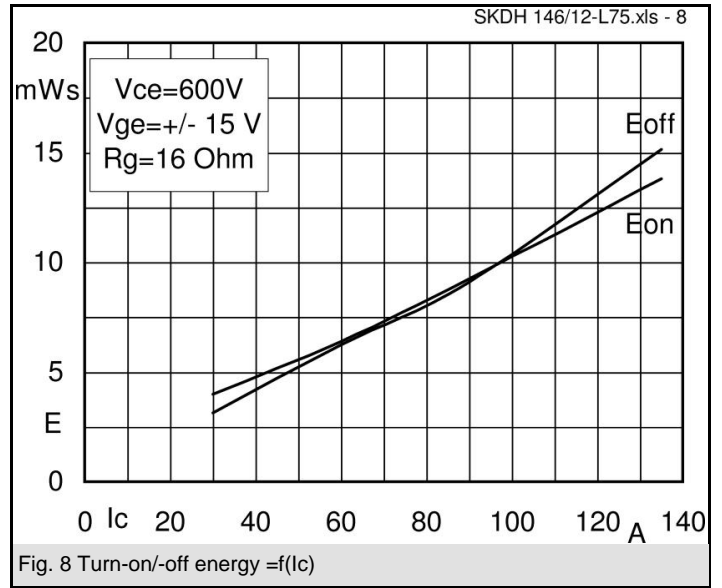
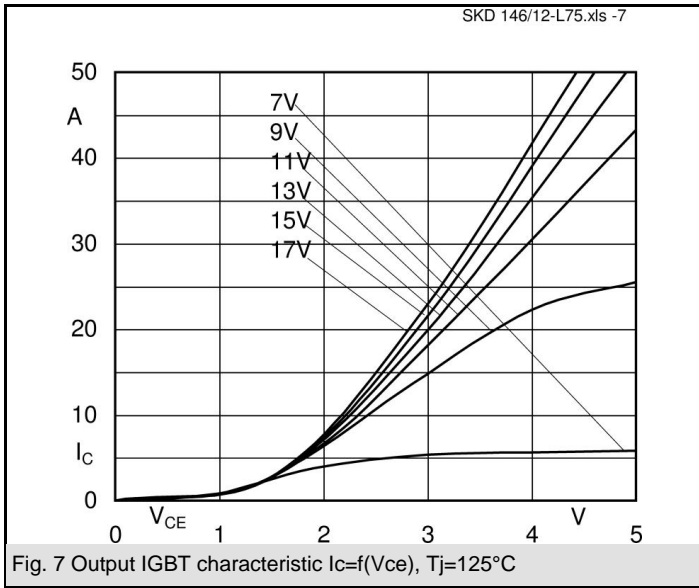


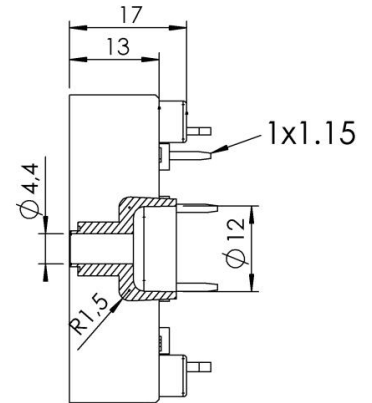
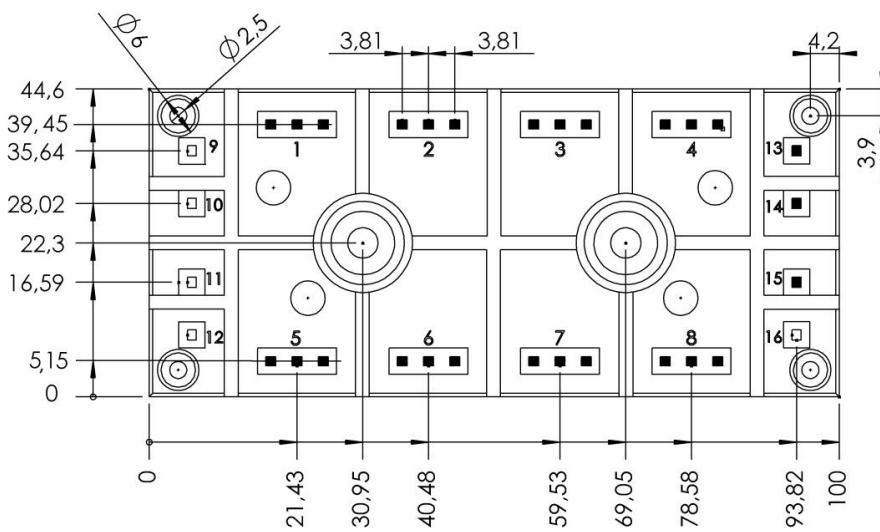
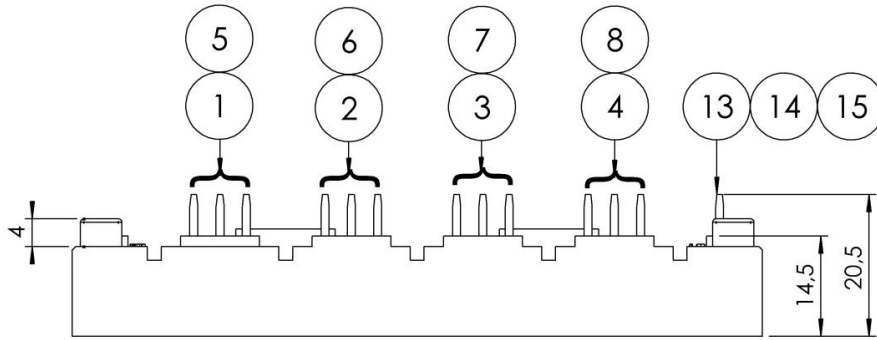
Fig. 6 Output IGBT characteristic $I_c=f(V_{ce})$, $T_j=25^\circ\text{C}$



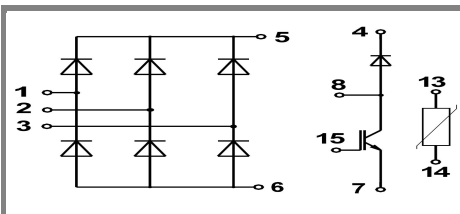
SKD 146/..-L75

UL recognized
File n#176; E63 532

Dimensions in mm



Case G 60



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

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