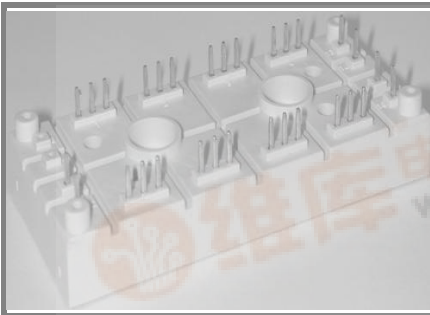


SKD 146/..-L75



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) ($T_s = 85^\circ\text{C}$)
1200	1300	SKD 146/12-L75
1600	1700	SKD 146/16-L75

Absolute Maximum Ratings $T_s = 25^\circ\text{C}$, unless otherwise specified

Symbol	Conditions	Values	Units
Bridge - Rectifier			
I_D	$T_s = 85^\circ\text{C}$; 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) $^\circ\text{C}$	1200 / 20	V
I_C	$T_s = 25$ (70) $^\circ\text{C}$	100 (75)	A
I_{CM}	$t_p = 1$ ms; $T_s = 25$ (70) $^\circ\text{C}$	200 (150)	A

Freewheeling - CAL Diode			
V_{RRM}	$T_s = 25$ (70) $^\circ\text{C}$	1200	V
I_F	$T_s = 25$ (70) $^\circ\text{C}$	90 (70)	A
I_{FM}	$t_p = 1$ ms; $T_s = 25$ (70) $^\circ\text{C}$	180 (140)	A
T_{vj}	Diode & IGBT (Thyristor)	- 40 ... + 150 (0 ... + 125)	$^\circ\text{C}$
T_{stg}		- 40 ... + 125	$^\circ\text{C}$
T_{solder}	terminals, 10 s	260	$^\circ\text{C}$
V_{isol}	a.c. (50) Hz, RMS 1 min. / 1 s	3000 / 3600	V

Characteristics $T_s = 25^\circ\text{C}$, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
Diode - Rectifier					
V_{TO} / r_t	$T_j = 125^\circ\text{C}$		0,8 / 4		V / mΩ
$R_{th(j-s)}$	per diode			0,8	K/W

IGBT - Chopper					
$V_{CE(sat)}$	$I_C = 75$ A, $T_j = 25^\circ\text{C}$; $V_{GE} = 15$ V		2,35		V
$R_{th(j-s)}$	per IGBT			0,4	K/W
$t_{d(on)} / t_r$	valid for all values: $V_{CC} = 600$ V; $V_{GE} = 15$ V; $I_C = 90$ A; $T_j = 125^\circ\text{C}$;		113,8 / 94,4		ns
$t_{d(off)} / t_f$			845,4 / 94,4		ns
$E_{on}+E_{off}$	$T_j = 125^\circ\text{C}$; $R_G = 16$ Ω; inductive load		18,3		mJ

CAL - Diode - Freewheeling					
$V_{T(TO)} / r_t$	$T_j = 125^\circ\text{C}$		1 / 11	1,2 / 15	V / mΩ
$R_{th(j-s)}$	per diode			0,8	K/W
I_{RRM}	valid for all values: $I_F = 75$ A; $V_R = -600$ V; $di_F/dt = -800$ A/μs		75		A
Q_{rr}			11		μC
E_{off}	$V_{GE} = 0$ V; $T_j = 125^\circ\text{C}$				mJ

Temperature Sensor					
R_{TS}	$T = 25$ (100) $^\circ\text{C}$;		1000 (1670)		Ω

Mechanical data					
M_S	mounting Torque		2,55	3,45	Nm



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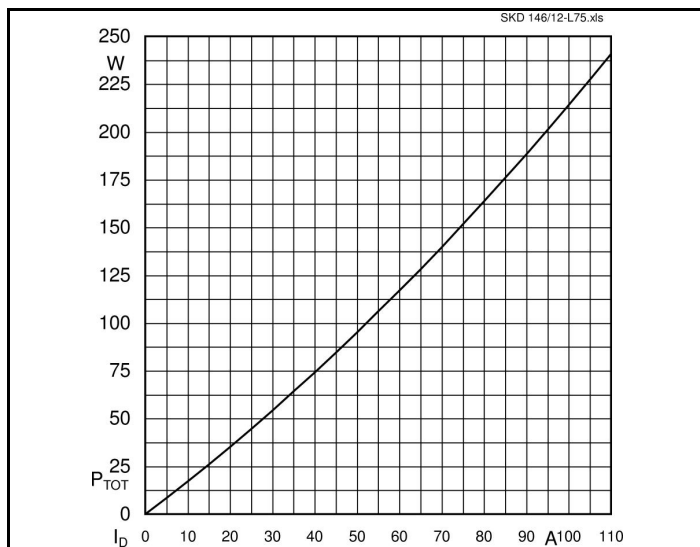


Fig. 1 Power dissipation per module vs. output current

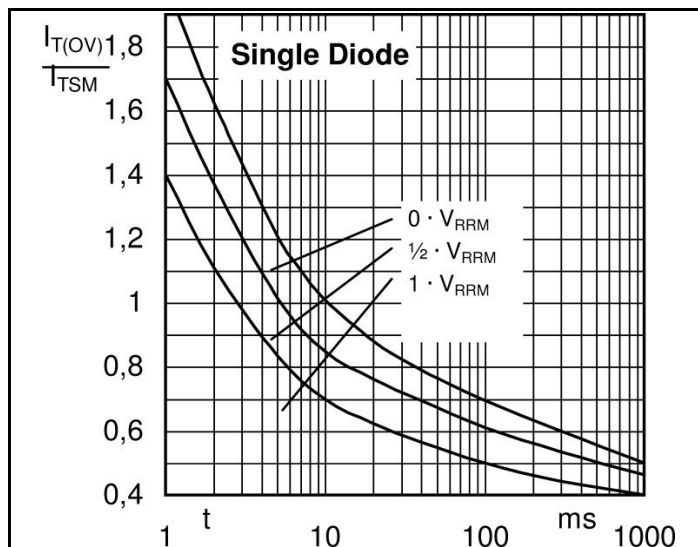


Fig. 2 Surge overload current vs. time

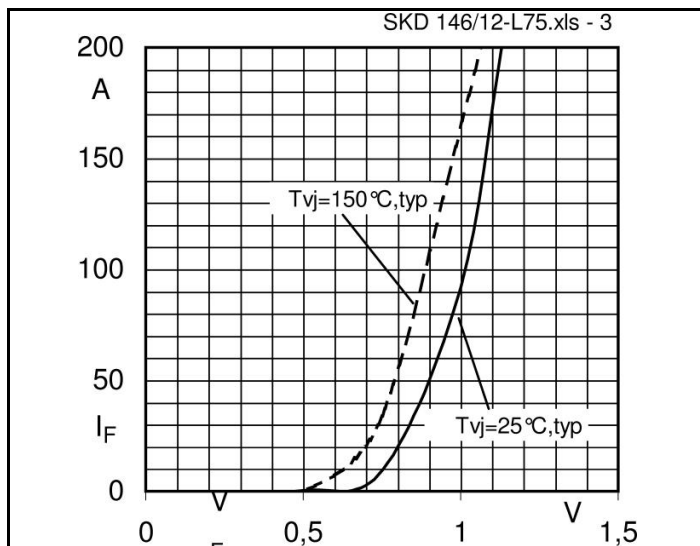


Fig. 3 Forward characteristic of a single rectifier diode

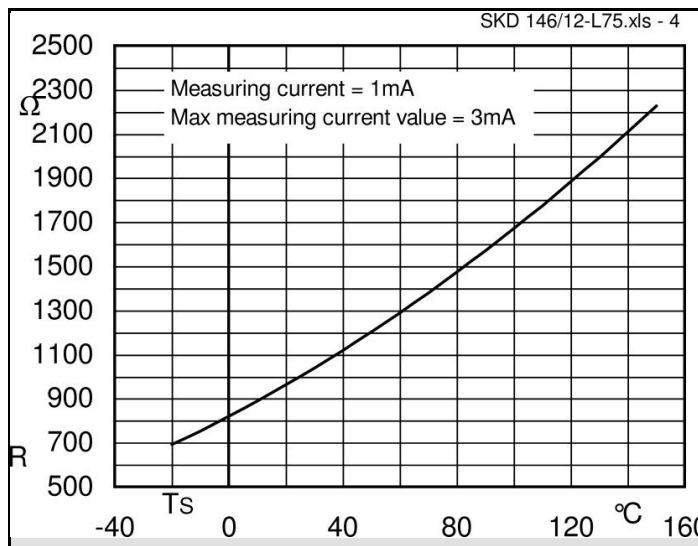


Fig. 4 Temperature sensor characteristic

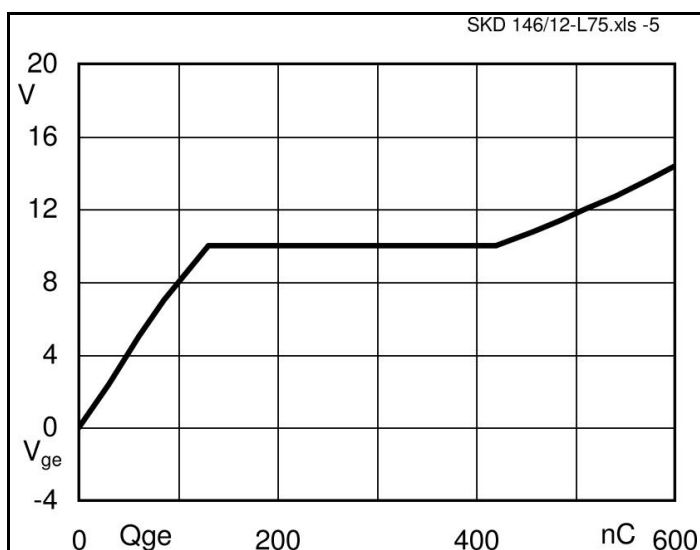


Fig. 5 Typ. gate charge characteristic

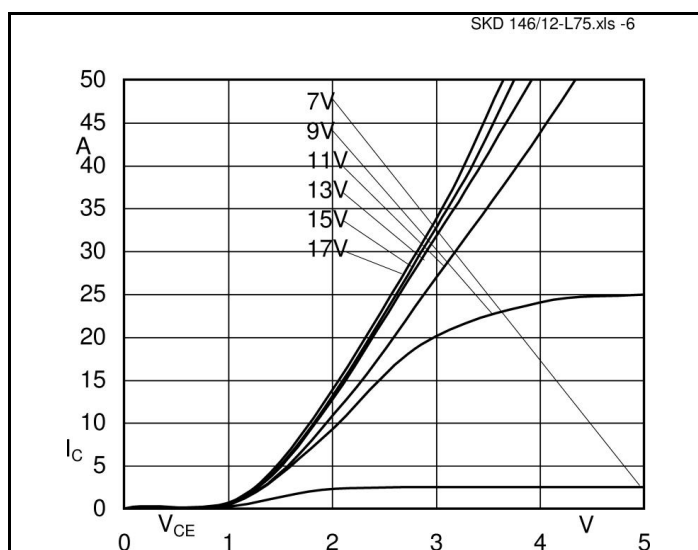


Fig. 6 Output IGBT characteristic $I_C=f(V_{ce})$, $T_J=25^\circ\text{C}$

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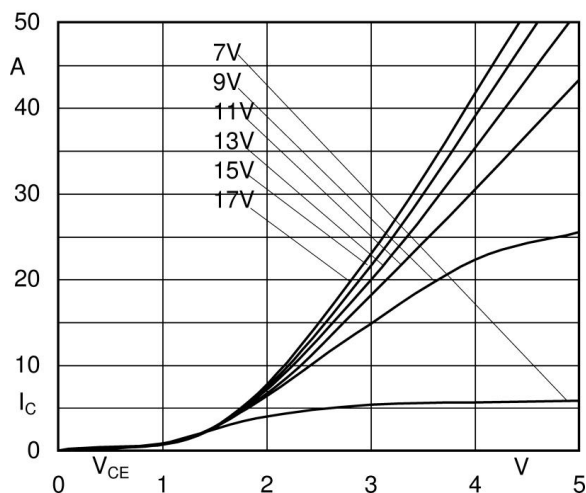


Fig. 7 Output IGBT characteristic $I_c = f(V_{ce})$, $T_j = 125^\circ\text{C}$

SKDH 146/12-L75.xls - 8

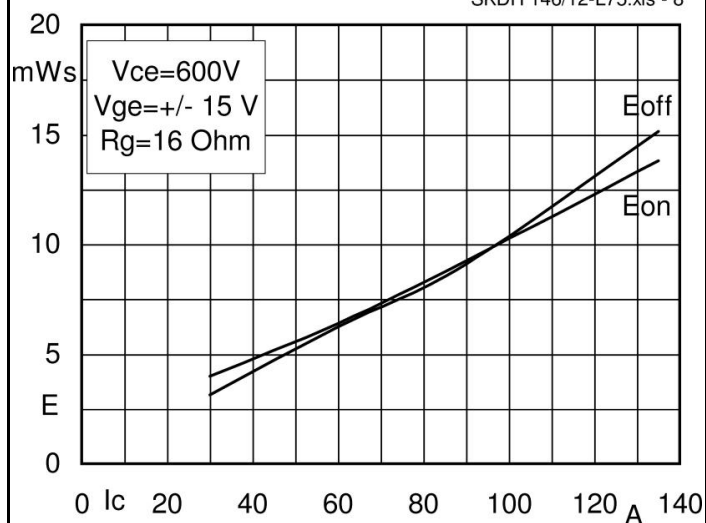


Fig. 8 Turn-on/-off energy $=f(I_c)$

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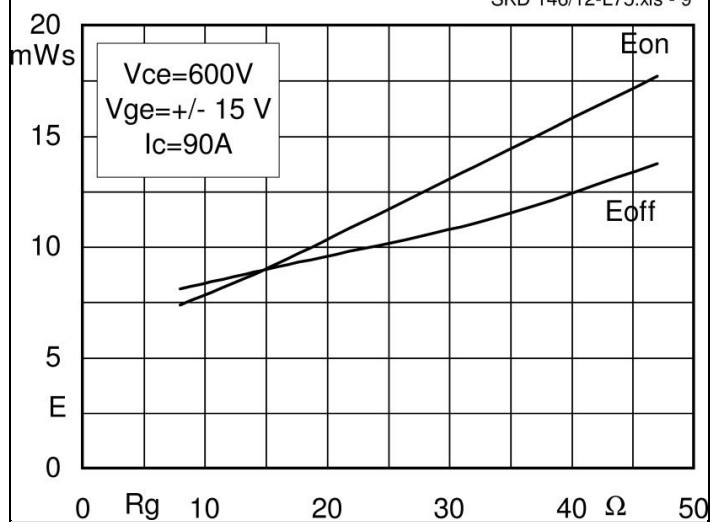


Fig. 9 Turn-on/-off energy $=f(R_g)$

SKD 146/12-L75.xls -10

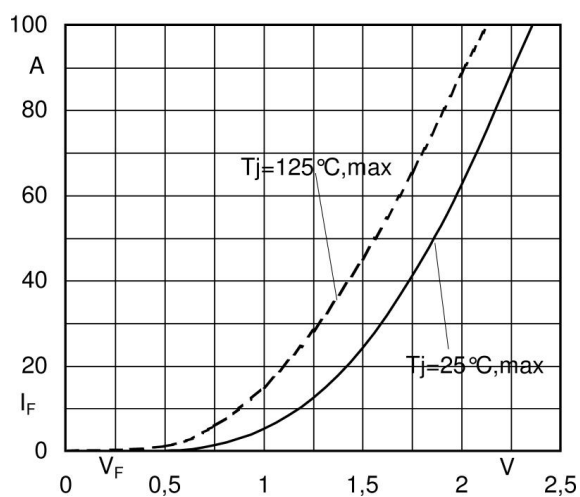
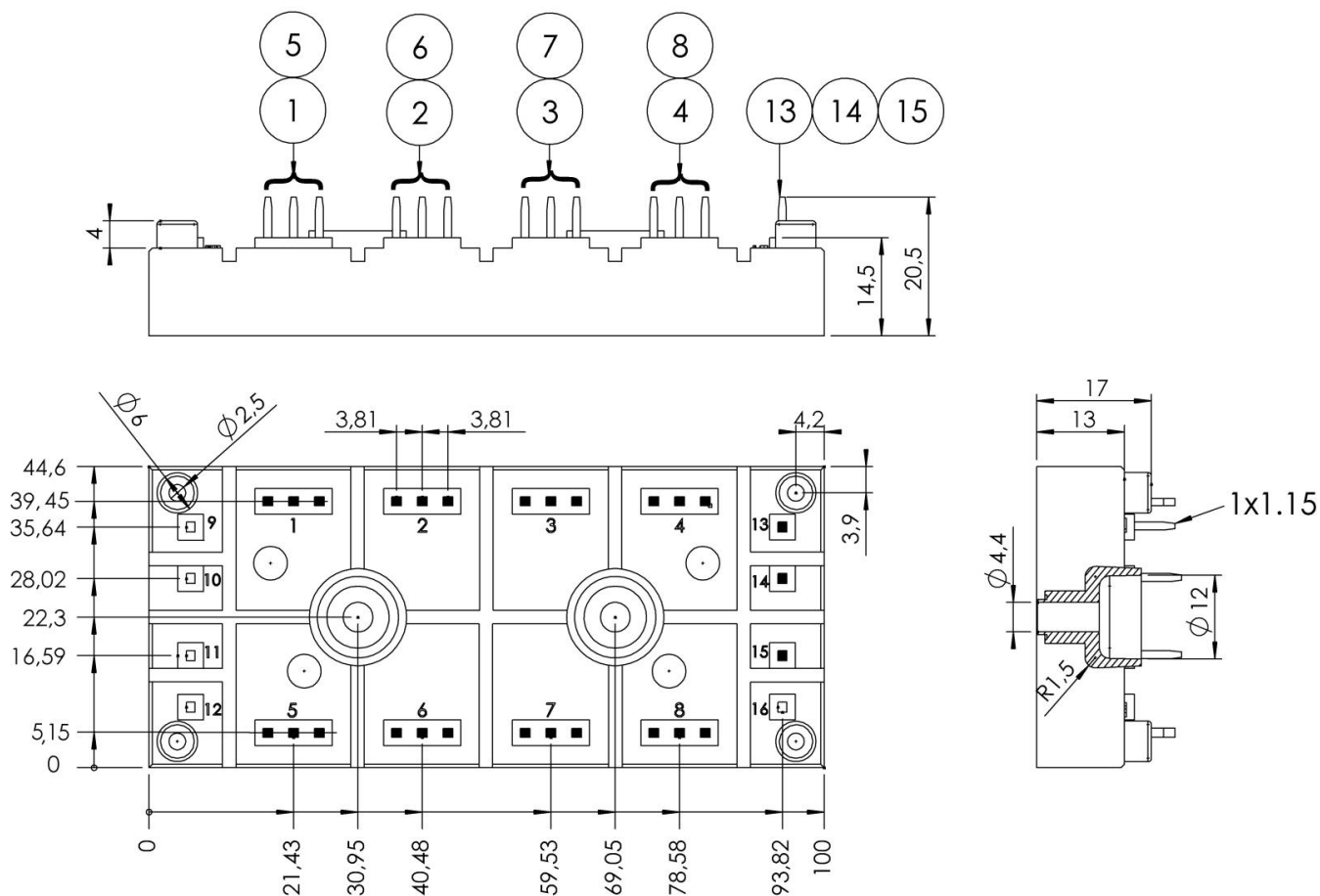


Fig. 10 Diode forward characteristic

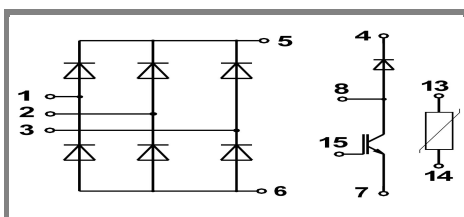
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UL recognized
File n°176; E63 532

Dimensions in mm



Case G 60



Case G 60

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

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