

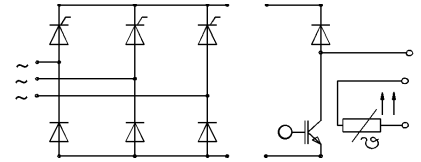
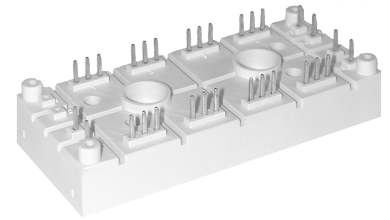
SKDH 146/.. - L75

SEMIPONT™ 6

SKDH 146/.. - L75

half controlled
3-phase bridge rectifier +
IGBT braking chopper

Preliminary Data



- Specifications of temperature sensor see part A

Features

- Compact design
- Two screws mounting
- Heat transfer and isolation through direct copper board (low R_{th})
- Low resistance in steady- state and high reliability
- High surge currents
- Up to 1600 V reverse voltage
- UL recognized, file no. E 63 532

Typical Applications

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

- ¹⁾ $T_{heatsink} = 25\text{ °C}$, unless otherwise specified
²⁾ CAL = Controlled Axial Lifetime Technology (soft and fast recovery)

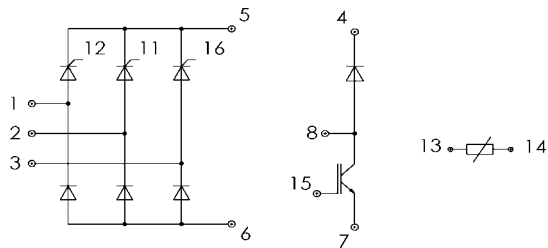
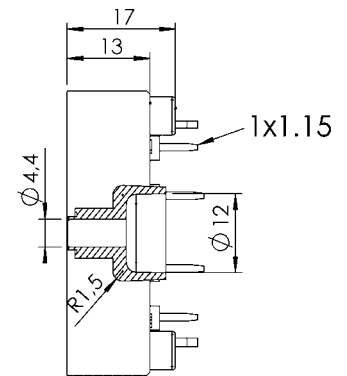
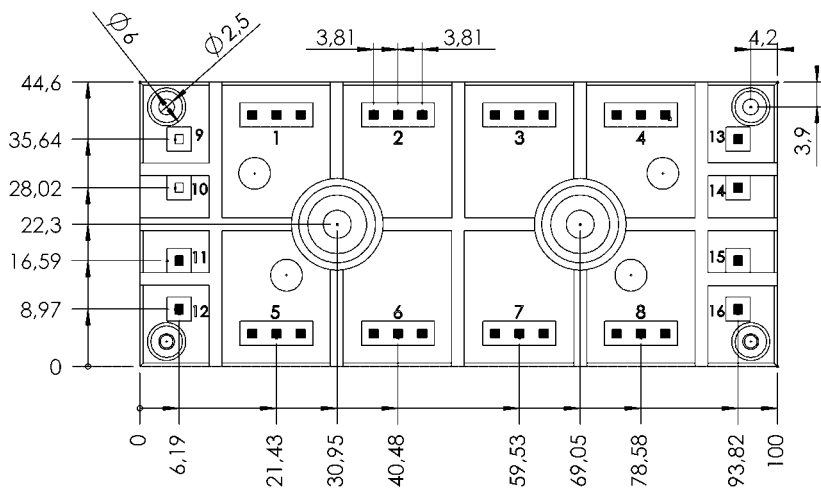
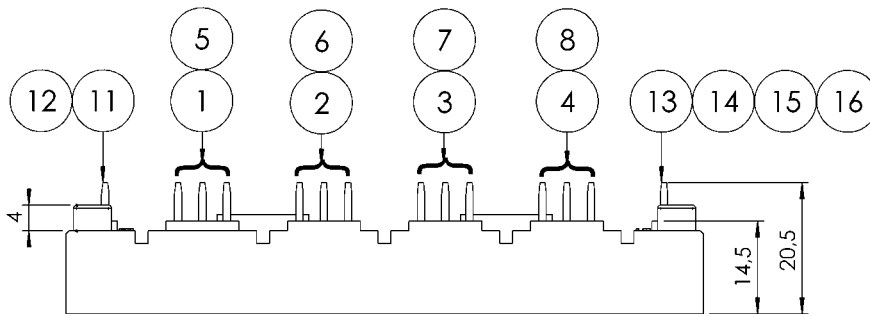
V_{RSM}	V_{RRM} V_{DRM}	I_{RMS} (maximum values for continuous operation) ($T_h = 80\text{ °C}$) 140 A
V	V	
1300 1700	1200 1600	SKDH 146/12-L75 SKDH 146/16-L75

Absolute Maximum Ratings		Values	Units
Symbol	Conditions ¹⁾		
Bridge Rectifier			
I_D	$T_{heatsink} = 85\text{ °C}$; inductive load	140	A
I_{FSM}/I_{TSM}	$t_p = 10\text{ ms}$; sin. 180 °C , T_{jmax}	1250	A
I^2t	$t_p = 10\text{ ms}$, sin. 180 °C , T_{jmax}	7800	A ² s
IGBT Chopper			
V_{CES}		1200	V
V_{GES}		± 20	V
I_C	$T_{heatsink} = 25 / 70\text{ °C}$	100 / 75	A
I_{CM}	$t_p = 1\text{ ms}$; $T_{heatsink} = 25 / 70\text{ °C}$	200 / 150	A
Freewheeling Diode ²⁾			
V_{RRM}		1200	V
I_F	$T_{heatsink} = 25 / 70\text{ °C}$	90 / 70	A
I_{FM}	$t_p = 1\text{ ms}$; $T_{heatsink} = 25 / 70\text{ °C}$	180 / 140	A
T_j	Diode & IGBT	- 40 ... + 150	°C
T_j	Thyristor	- 40 ... + 125	°C
T_{stg}		- 40 ... + 125	°C
V_{isol}	AC, 1 min.	2500	V

Characteristics		min.	typ.	max.	Units
Symbol	Conditions ¹⁾				
Diode - Rectifier					
V_F	$I_F = 150\text{ A}$ $T_j = 125\text{ °C}$	-	1,3	-	V
V_{TO}	$T_j = 125\text{ °C}$	-	0,8	-	V
r_T	$T_j = 125\text{ °C}$	-	4	-	m Ω
R_{thjh}	per diode	-	-	0,6	K/W
Thyristor - Rectifier					
V_T	$I_T = 150\text{ A}$ $T_j = 25\text{ °C}$	-	1,55	-	V
$V_{T(TO)}$	$T_j = 125\text{ °C}$	-	-	0,9	V
r_T	$T_j = 125\text{ °C}$	-	-	4,5	m Ω
R_{thjh}	per thyristor	-	-	0,6	°C/W
I_{GD}	$T_j = 125\text{ °C}$; dc	6	-	-	mA
V_{GT}	} $T_j = 25\text{ °C}$	-	-	3	V
I_{GT}		-	-	150	mA
I_H	} $T_j = 25\text{ °C}$	-	250	-	mA
I_L		-	600	-	mA
dv/dt_{CR}	} $T_j = 125\text{ °C}$	500	-	-	V/ μ s
di/dt_{CR}		-	-	125	A/ μ s
IGBT - Chopper					
V_{CEsat}	$I_C = 75\text{ A}$ $T_j = 25\text{ °C}$, $V_{GE} = 15\text{ V}$	-	2,35	2,85	V
$t_{d(on)}$	} $V_{CC} = 600\text{ V}$; $V_{GE} = \pm 15\text{ V}$	-	70	-	ns
t_r		$I_C = 75\text{ A}$; $T_j = 125\text{ °C}$	-	50	-
$t_{d(off)}$	} $R_{gon} = R_{goff} = 12\text{ }\Omega$	-	450	-	ns
t_f		inductive load	-	45	-
$E_{on} + E_{off}$	} $V_{CE} = 25\text{ V}$; $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$	-	16	-	mJ
C_{ies}		-	5,8	-	nF
R_{thjh}		per IGBT	-	-	0,37

Characteristics		min.	typ.	max.	Units
Symbol	Conditions ¹⁾				
Diode ²⁾ - Freewheeling					
V_F	$I_F = 75 \text{ A}$ $T_j = 25 \text{ °C}$	–	2,0	2,5	V
V_{TO}	$T_j = 125 \text{ °C}$	–	1,1	1,2	V
r_T	$T_j = 125 \text{ °C}$	–		15	m Ω
I_{RRM}	$I_F = 75 \text{ A}; V_R = -600 \text{ V}$ $di_F/dt = -800 \text{ A}/\mu\text{s}$ $V_{GE} = 0 \text{ V}, T_j = 125 \text{ °C}$	–	75	–	A
Q_{rr}		–	11	–	μC
E_{off}		–	TBD	–	mJ
R_{thjh}		per diode	–	–	0,7
Temperature Sensor					
R_{TS}	$T = 25 / 100 \text{ °C}$	1000 / 1670			Ω
Mechanical Data					
M_1	case to heatsink, SI Units	2,5	–	3,5	Nm
Case			G 59		

SEMIPONT™ 6
SKDH 146/.. - L75
 Case G 59



Dimensions in mm

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