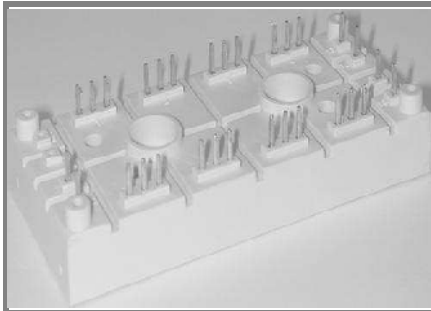




SEMIPONT™ 6

3-Phase Bridge Rectifier + IGBT braking chopper

SKD116/...-L140

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
- IGBT Trench4 inside; max $T_j=175^{\circ}\text{C}$
- CAL4F inside, max $T_j=175^{\circ}\text{C}$
- $I_{CM}/I_{FM} = 3 \times I_{C,nom}/I_{F,nom}$
- Rectifier diode, max $T_j=150^{\circ}\text{C}$

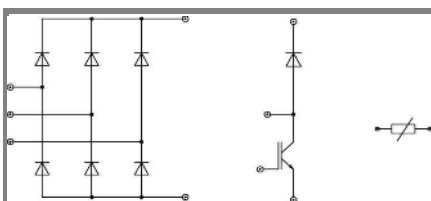
Typical Applications*

- 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) ($T_s = 85^{\circ}\text{C}$)
1300	1200	SKD 116/12-L140
1700	1600	SKD116/16-L140

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	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 ² s
IGBT - Chopper			
V_{CES}/V_{GES}	$T_s = 25$ (70) $^{\circ}\text{C}$	1200 / 20	V
I_C	$t_p = 1$ ms; $T_s = 25$ (70) $^{\circ}\text{C}$	150 (120)	A
I_{CM}	$t_p = 1$ ms; $T_s = 25$ (70) $^{\circ}\text{C}$	520	A
Freewheeling - CAL Diode			
V_{RRM}	$T_s = 25$ (70) $^{\circ}\text{C}$	1200	V
I_F	$t_p = 1$ ms; $T_s = 25$ (70) $^{\circ}\text{C}$	130 (105)	A
I_{FM}	$t_p = 1$ ms; $T_s = 25$ (70) $^{\circ}\text{C}$	450	A
T_{vj}	Diode & IGBT (Thyristor)	- 40 ... + 175 (-40...+ 125)	$^{\circ}\text{C}$
T_{stg}	terminals, 10 s	- 40 ... + 125	$^{\circ}\text{C}$
T_{solder}	a.c. (50) Hz, RMS 1 min. / 1 s	260	$^{\circ}\text{C}$
V_{isol}		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 / 7	V / mΩ
$R_{th(j-s)}$	per diode			1 K/W
IGBT - Chopper				
$V_{CE(sat)}$	$I_C = 140$ A, $T_j = 25^{\circ}\text{C}$; $V_{GE} = 15$ V		1,85	2,1 V
$R_{th(j-s)}$	per IGBT		0,38	K/W
$t_{d(on)} / t_r$	valid for all values: $V_{CC} = 600$ V; $V_{GE} = 15$ V; $I_C = 140$ A; $T_j = 150^{\circ}\text{C}$;		97 / 185	ns
$t_{d(off)} / t_f$			443 / 82	ns
$E_{on}+E_{off}$	$T_j = 150^{\circ}\text{C}$; $R_G = 4 \Omega$; inductive load		63,3	mJ
CAL - Diode - Freewheeling				
$V_{T(TO)} / r_t$	$T_j = 150^{\circ}\text{C}$		0,9 / 7,8	1,1 / 8,6 V / mΩ
$R_{th(j-s)}$	per diode		0,56	K/W
I_{RRM}	valid for all values: $I_F = 140$ A; $V_R = - 600$ V; $di_F/dt = - 1700$ A/μs		30	A
Q_{rr}			9	μC
E_{off}	$V_{GE} = 0$ V; $T_j = 150^{\circ}\text{C}$		7,92	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



D

