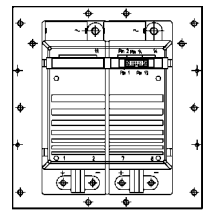
SKiiP 662 GB 060 - 251 WT

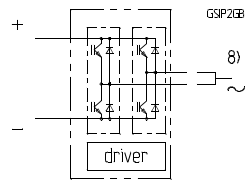
Absolute Maximum Ratings Symbol	Conditions [1]	Values	Units
IGBT & Inverse Diode			
V_{CES}		600	V
V_{CC} [10]	Operating DC link voltage	400	V
I_C	$T_{heatsink}$ = 25 °C	600	A
I_{CM}	$T_{heatsink}$ = 25 °C, t_p < 1 ms	1200	A
T_j [3]	IGBT & Diode	– 40 ... + 150	°C
V_{isol} [4]	AC, 1 min.	2500	V
I_F	$T_{heatsink}$ = 25 °C	600	A
I_{FM}	$T_{heatsink}$ = 25 °C; t_p < 1 ms	1200	A
I_{FSM}	t_p = 10 ms; sin.; T_j = 150 °C	4300	A
I^2t (Diode)	t_p = 10 ms; T_j = 150 °C	93	kA^2s
Driver			
V_{S1}	Stabilized power supply	18	V
V_{S2} [9]	Nonstabilized power supply	30	V
dv/dt	Primary to second. side	75	kV/µs
T_{op}, T_{stg}	Operating / stor. temperature	– 25 ... + 85	°C

Characteristics Symbol	Conditions [1]	min.	typ.	max.	Units
$V_{(BR)CES}$	Driver without power supply	≥ V_{CES}	–	–	V
I_{CES}	V_{GE} = 0; T_j = 25 °C	–	0,9	–	mA
	V_{CE} = V_{CES}; T_j = 125 °C	–	12	–	mA
V_{CEsat}	I_C = 450 A; T_j = 25 (125) °C	–	2,1(2,0)	–	V
V_{CEsat}	I_C = 600 A; T_j = 25 (125) °C	–	2,3(2,4)	–	V
I_{CETRIP}	T_j = 125 °C, V_s = 15 V ± 0,6 V	≥ 750	–	–	A
C_{CHC}	per SKiiPPACK AC side	–	1,6	–	nF
L_{CE}	Top (Bottom)	–	7,5	–	nH
$t_{d(on)}$	I_C = 600 A; T_j = 125 °C; V_{CC} = 300 V; inductive load	–	120	–	ns
$t_{d(on)Driver}$		–	1,2	–	µs
t_r		–	200	–	ns
$t_{d(off)}$		–	0,4	–	µs
$t_{d(off)Driver}$		–	1,2	–	µs
t_f		–	850	–	ns
E_{on} + E_{off}	V_{CC} = 300 / 400 V	–	100/138	–	mJ
Inverse Diode [2]					
V_F = V_{EC}	I_F = 450 A; T_j = 25 (125) °C	–	1,5(1,5)	–	V
	I_F = 600 A; T_j = 25 (125) °C	–	1,7(1,7)	–	V
E_{on} + E_{off}	I_F = 600 A; T_j =125 °C	–	18	–	mJ
IGBT / Inverse Diode [2]					
V_{TO}	T_j = 125 °C	–	0,9/0,74	–	V
r_T	T_j = 125 °C	–	2,6/1,7	–	mΩ
Thermal Characteristics					
R_{thjh}	per IGBT	–	0,08	–	K/W
R_{thjh}	per diode	–	0,13	–	K/W
T_{tp} [12]	Over temperature protection	109	115	121	°C
R_{thha} [6]	P16/200 F; v_{air} = 293 m^3 / h	–	0,044	–	K/W
Mechanical Data					
Mdc	for DC terminals, SI Units	4	–	6	Nm
Mac	for AC terminals, SI Units	8	–	10	Nm
Case			S2		

SKiiPPACK®
SK integrated intelligent Power PACK halfbridge
SKiiP 662 GB 060 + Driver 251 WT [7]
Preliminary Data

Case S2





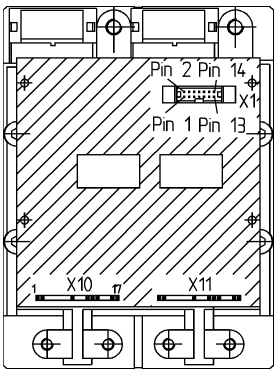
Features

- Low thermal impedance
- Optimal thermal management with integrated heatsink
- Pressure contact technology with increased power cycling capability, compact design
- Low stray inductance
- High power, small losses
- Overtemp. protection
- Short circuit protection
- Isolated power supply

1) $T_{heatsink}$ = 25 °C, unless otherwise specified
2) CAL = Controlled Axial Lifetime Technology (soft and fast)
3) without driver
4) Driver input to DC link/AC output or DC link/AC output to heatsink
6) other heatsink on request
7) W - Driver wire input
T - Temperature protection
8) AC connection busbars must be connected by user, copper busbars available on request
9) 24 V supply voltage selective
11) with SK-DC link (low inductance)
12) thermal reference for R_{thjh}; R_{thha}

SKiiPPACK®
SK integrated intelligent Power PACK
halfbridge
SKiiP 662 GB 060
+ Driver 251 WT [3]

Preliminary Driver Data



Features

- CMOS compatible inputs
- Short circuit protection by V_{CE} monitoring and soft switch off
- Drive interlock top/bottom
- Isolation by transformers
- Supply undervoltage protection
- Overtemperature protection

1) 24 V - supply voltage selective
2) Open collector output, external pull-up resistor necessary
3) W - Driver wire input
T - Temperature protection

SKiiP 662 GB 060 - 251 WT
Driver for Halfbridge

Absolute Maximum Ratings				
Symbol	**Conditions**	**Values**	**Units**	**remark**
V_{S1}	supply voltage primary	18	V	pin 8 / 9
V_{S2} 1)	supply voltage primary	30	V	pin 6 / 7
I_{outmax}	output peak current max.	± 10	A	
I_{outAV}	output average current	± 100	mA	
f_{swmax}	switching frequency max.	10	kHz	
V_{CE}	collector emitter voltage sense across IGBT	600	V	
dv/dt	rate of rise and fall of voltage (secondary to primary side)	75	kV/µs	
$V_{isol\ IO}$	Isol. test volt. IN/OUT (RMS; 1 min)	2,5	kV~	
$V_{isol\ 12}$	Isol. test volt. output 1 - output 2	1,5	kV=	
T_{op}, T_{stg}	operating / stor. temperature	– 25 ... + 85	°C	

Characteristics				
Symbol	**Conditions**	**Values**	**Units**	**remark**
V_{S1}	supply voltage primary	15,0 ± 4 %	V	pin 8 / 9
V_{S2} 1)	supply voltage primary	24,0 +25%/-15%	V	pin 6 / 7
V_{UVS}	supply voltage monitoring	13 / 19,5	V	15 V / 24 V
I_{S01}	sup.current pr.side (standby)	160	mA	15 V supply
I_{S02} 1)	sup.current pr.side (standby)	125	mA	24 V supply
I_{S1}	sup. current pr.side (max)	490	mA	15 V supply
I_{S2} 1)	sup. current pr.side (max)	380	mA	24 V supply
V_{iT+}	input thresh. volt. (high) min	12,9	V	
V_{iT-}	input thresh. volt. (low) max.	2,1	V	
$V_{GE(on)}$	turn-on output gate voltage	15	V	
$V_{GE(off)}$	turn-off output gate voltage	– 8	V	
$t_{d(on)}$	propagation delay time on	1,2	µs	typ.
$t_{d(off)}$	propagation delay time off	1,2	µs	typ.
t_{TD}	dead time of interlock	3	µs	typ.
V_{CEstat}	V_{CE}-thresh. st. monitoring	3,2	V	typ.
V_{ol} 2)	logic low output voltage	< 600	mV	15 mA
V_{oH} 2)	logic high output voltage	max. 30	V	
$t_{pdon-error}$	propag. delay time-on error	6	µs	typ.
$t_{p\ RESET}$	min. pulse width error memory RESET	5	µs	
T_{err}	max. temperature	115 ± 6	°C	
I_{AOmax}	max. output current	± 5	mA	pin 12