

SKiiP 462 GB 060 - 250 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	400	A
I _{CM}	T _{heatsink} = 25 °C; t _p < 1 ms	800	A
T _J ³⁾	IGBT & Diode	- 40 ... + 150	°C
V _{ISOL} ⁴⁾	AC, 1 min.	2500	V
I _F	T _{heatsink} = 25 °C	400	A
I _{FM}	T _{heatsink} = 25 °C; t _p < 1 ms	800	A
I _{FSM}	t _p = 10 ms; sin.; T _J = 150 °C	4300	A
I ² t (Diode)	t _p = 10 ms; T _J = 150 °C	93	kA ² s
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

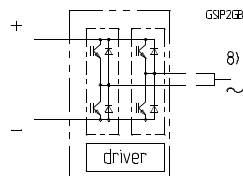
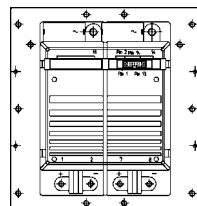
Characteristics		min.	typ.	max.	Units
Symbol	Conditions ¹⁾				
$V_{(BR)CES}$	Driver without power supply	$\geq V_{CES}$	-	-	V
I_{CES}	$V_{GE} = 0$ $\left\{ \begin{array}{l} T_J = 25^\circ\text{C} \\ V_{CE} = V_{CES} \end{array} \right. \left\{ \begin{array}{l} T_J = 25^\circ\text{C} \\ T_J = 125^\circ\text{C} \end{array} \right.$	-	0,6	-	mA
V_{CESat}	$I_C = 300\text{ A}$ $\left\{ \begin{array}{l} T_J = 25 (125)^\circ\text{C} \end{array} \right.$	-	2,1(2,0)	-	V
V_{CESat}	$I_C = 400\text{ A}$ $\left\{ \begin{array}{l} T_J = 25 (125)^\circ\text{C} \end{array} \right.$	-	2,3(2,4)	-	V
I_{CETrip}	$T_J = 125^\circ\text{C}$, $V_S = 15\text{ V} \pm 0,6\text{ V}$	≥ 500	-	-	A
C_{CHC}	per SKiiPPACK AC side	-	1,6	-	nF
L_{CE}	Top (Bottom)	-	7,5	-	nH
$t_{d(on)}$	$\left. \begin{array}{l} I_C = 400\text{ A} \\ T_J = 125^\circ\text{C} \\ \text{inductive load} \end{array} \right\} V_{CC} = 300\text{ V}$	-	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
$E_{on} + E_{off}$	$V_{CC} = 300 / 400\text{ V}$	-	66/92	-	mJ
Inverse Diode ²⁾					
$V_F = V_{EC}$	$I_F = 300\text{ A}$ $\left\{ \begin{array}{l} T_J = 25 (125)^\circ\text{C} \end{array} \right.$	-	1,5(1,5)	-	V
	$I_F = 400\text{ A}$ $\left\{ \begin{array}{l} T_J = 25 (125)^\circ\text{C} \end{array} \right.$	-	1,7(1,7)	-	V
$E_{on} + E_{off}$	$I_F = 400\text{ A}$; $T_J = 125^\circ\text{C}$	-	12	-	mJ
IGBT / Inverse Diode ²⁾					
V_{TO}	$T_J = 125^\circ\text{C}$	-	0,9/0,74	-	V
r_T	$T_J = 125^\circ\text{C}$	-	3,6/2,5	-	m Ω
Thermal Characteristics					
R_{thjh}	per IGBT	-	0,12	-	K/W
R_{thjd}	per diode	-	0,2	-	K/W
$T_{ip}^{12)}$	Over temperature protection	109	115	121	$^\circ\text{C}$
$R_{thha}^{6)}$	P16/200 F; $v_{\text{air}} = 293\text{ m}^3/\text{h}$	-	0,044	-	K/W
Mechanical Data					
M_{dc}	for DC terminals, SI Units	4	-	6	Nm
M_{ac}	for AC terminals, SI Units	8	-	10	Nm
Case			S2		

SKiiPPACK® SK integrated intelligent Power PACK halfbridge

SKiiP 462 GB 060 + Driver 250 WT ⁷⁾

Preliminary Data

Case S2



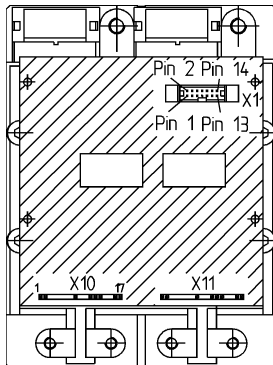
Features

- 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⁾ $T_{\text{heatsink}} = 25^\circ\text{C}$, 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 other heatsink on request
- ⁶⁾ W - Driver wire input
- ⁷⁾ T - Temperature protection
- ⁸⁾ AC connection busbars must be connected by user, copper busbars available on request
- ⁹⁾ 24 V supply voltage selective with SK-DC link (low inductance)
- ¹¹⁾ thermal reference for R_{thjh} ; R_{thha}
- ¹²⁾

SKiiPACK®
SK integrated
intelligent Power PACK
halfbridge

SKiiP 462 GB 060
+ Driver 250 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 462 GB 060 - 250 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.	20	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/ μ s	
$V_{isol IO}$	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	$15,0 \pm 4 \%$	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	μ s	typ.
$t_{d(off)}$	propagation delay time off	1,2	μ s	typ.
t_{TD}	dead time of interlock	3	μ s	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	μ s	typ.
$t_{p RESET}$	min. pulse width error memory RESET	5	μ s	
T_{err}	max. temperature	115 ± 6	°C	
I_{AOmax}	max. output current	± 5	mA	pin 12