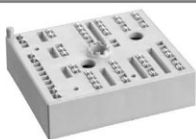


SKiiP 24NAB126V1



MiniSKiiP® 2

3-phase bridge rectifier +
brake chopper + 3-phase
bridge inverter
SKiiP 24NAB126V1

Features

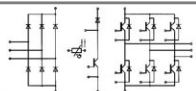
- Fast Trench IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications

- Inverter up to 19 kVA
- Typical motor power 11 kW

Remarks

- V_{CEsat} , V_F = chip level value



NAB

Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT - Inverter, Chopper			
V_{CES}		1200	V
I_C	$T_s = 25 (70)^\circ\text{C}$	52 (40)	A
I_{CRM}	$t_p \leq 1 \text{ ms}$	70	A
V_{GES}		± 20	V
T_j		-40 ... +150	$^\circ\text{C}$
Diode - Inverter, Chopper			
I_F	$T_s = 25 (70)^\circ\text{C}$	38 (29)	A
I_{FRM}	$t_p \leq 1 \text{ ms}$	70	A
T_j		-40 ... +150	$^\circ\text{C}$
Diode - Rectifier			
V_{RRM}		1600	V
I_F	$T_s = 70^\circ\text{C}$	46	A
I_{FSM}	$t_p = 10 \text{ ms, sin } 180^\circ, T_j = 25^\circ\text{C}$	370	A
i^2t	$t_p = 10 \text{ ms, sin } 180^\circ, T_j = 25^\circ\text{C}$	680	A^2s
T_j		-40 ... +150	$^\circ\text{C}$
I_{RMS}	per power terminal (20 A / spring)	40	A
T_{stg}	$T_{op} \leq T_{stg}$	-40 ... +125	$^\circ\text{C}$
V_{Rct}	AC, 1 min.	2500	V

Characteristics		$T_s = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT - Inverter, Chopper					
V_{CEsat}	$I_{Cnom} = 35 \text{ A}, T_j = 25 (125)^\circ\text{C}$		1,7 (2)	2,1 (2,4)	V
$V_{GE(Th)}$	$V_{GE} = V_{CE}, I_C = 1,5 \text{ mA}$	5	5,8	6,5	V
$V_{CE(TO)}$	$T_j = 25 (125)^\circ\text{C}$		1 (0,9)	1,2 (1,1)	V
r_T	$T_j = 25 (125)^\circ\text{C}$		20 (31)	26 (37)	m Ω
C_{ies}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		2,4		nF
C_{oes}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,5		nF
C_{ms}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,3		nF
$R_{\theta(j-s)}$	per IGBT		0,75		K/W
$t_{j(on)}$	under following conditions		80		ns
t_r	$V_{CC} = 600 \text{ V}, V_{GE} = \pm 15 \text{ V}$		30		ns
$t_{j(off)}$	$I_{Cnom} = 35 \text{ A}, T_j = 125^\circ\text{C}$		410		ns
t_f	$R_{C(on)} = R_{C(off)} = 15 \Omega$		120		ns
E_{on}	inductive load		4,6		mJ
E_{off}			4		mJ
Diode - Inverter, Chopper					
$V_F = V_{EC}$	$I_{Fnom} = 35 \text{ A}, T_j = 25 (125)^\circ\text{C}$		1,8 (1,8)	2,1 (2,2)	V
$V_{(TO)}$	$T_j = 25 (125)^\circ\text{C}$		1 (0,8)	1,1 (0,9)	V
r_T	$T_j = 25 (125)^\circ\text{C}$		23 (31)	29 (37)	m Ω
$R_{\theta(j-s)}$	per diode		1,5		K/W
I_{FRM}	under following conditions		43		A
O_{rr}	$I_{Fnom} = 35 \text{ A}, V_R = 600 \text{ V}$		7		μC
E_{rr}	$V_{GE} = 0 \text{ V}, T_j = 125^\circ\text{C}$		3,3		mJ
	$di_F/dt = 1450 \text{ A}/\mu\text{s}$				
Diode - Rectifier					
V_F	$I_{Fnom} = 25 \text{ A}, T_j = 25^\circ\text{C}$		1,1		V
$V_{(TO)}$	$T_j = 150^\circ\text{C}$		0,8		V
r_T	$T_j = 150^\circ\text{C}$		13		m Ω
$R_{\theta(j-s)}$	per diode		1,25		K/W
Temperature Sensor					
R_{ts}	3 %, $T_s = 25 (100)^\circ\text{C}$		1000(1670)		Ω
Mechanical Data					
w			65		g
M_b	Mounting torque	2		2,5	Nm

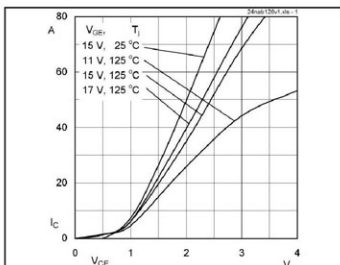


Fig. 1 Typ. output characteristic

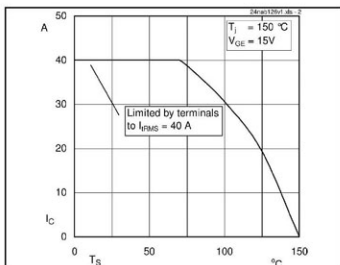


Fig. 2 Typ. rated current vs. temperature

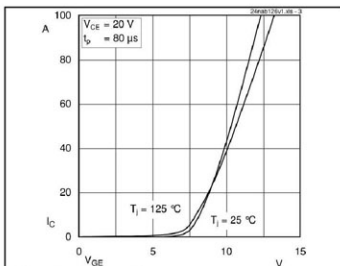


Fig. 3 Typ. transfer characteristic

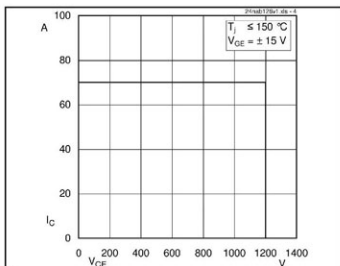


Fig. 4 Reverse bias safe operating area

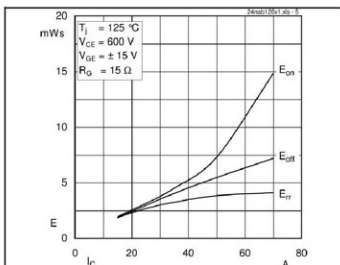


Fig. 5 Typ. Turn-on / off energy = $f(I_C)$

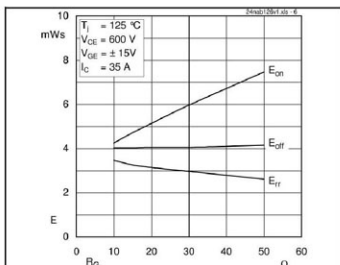


Fig. 6 Typ. Turn-on / off energy = $f(R_G)$

