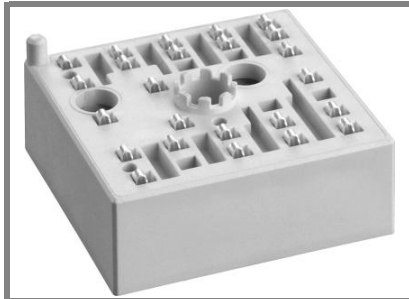


SKiiP 10NAB12T4V1



MiniSKiiP[®] 1

3-phase bridge rectifier +
brake chopper + 3-phase
bridge inverter
SKiiP 10NAB12T4V1

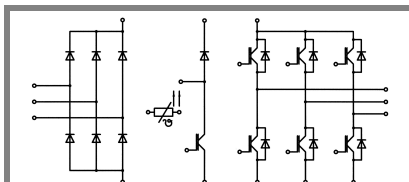
Preliminary Data

Features

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

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}	$T_s = 25 (70)^\circ\text{C}$	1200	V	
I_C		6 (6)	A	
I_{CRM}		12	A	
V_{GES}		± 20	V	
T_j		- 40 ... + 175	$^\circ\text{C}$	
Diode - Inverter, Chopper				
I_F	$T_s = 25 (70)^\circ\text{C}$	15 (12)	A	
I_{FRM}		24	A	
T_j		- 40 ... + 175	$^\circ\text{C}$	
Diode - Rectifier				
V_{RRM}	$T_s = 70^\circ\text{C}$	1600	V	
I_F		35	A	
I_{FSM}		$t_p = 10 \text{ ms, sin } 180^\circ, T_j = 25^\circ\text{C}$	220	A
i^2t		$t_p = 10 \text{ ms, sin } 180^\circ, T_j = 25^\circ\text{C}$	240	A^2s
T_j		- 40 ... + 150	$^\circ\text{C}$	
Module				
I_{RMS}	per power terminal (20 A / spring)	20	A	
T_{stg}		- 40 ... + 125	$^\circ\text{C}$	
V_{isol}	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}	$I_{Cnom} = 4 \text{ A}, T_j = 25 (150)^\circ\text{C}$		1,85 (2,25)	2,05 (2,45)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1 \text{ mA}$	5	5,8	6,5	V
$V_{CE(TO)}$	$T_j = 25 (150)^\circ\text{C}$		0,8 (0,7)	0,9 (0,8)	V
r_T	$T_j = 25 (150)^\circ\text{C}$		260 (390)	290 (410)	$\text{m}\Omega$
C_{ies}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,25		nF
C_{oes}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,025		nF
C_{res}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,015		nF
$R_{th(j-s)}$	per IGBT		2,49		K/W
$t_{d(on)}$	under following conditions		65		ns
t_r	$V_{CC} = 600 \text{ V}, V_{GE} = \pm 15 \text{ V}$		45		ns
$t_{d(off)}$	$I_{Cnom} = 4 \text{ A}, T_j = 150^\circ\text{C}$		300		ns
t_f	$R_{Gon} = R_{Goff} = 150 \Omega$		110		ns
E_{on}	inductive load		0,66		mJ
E_{off}			0,37		mJ
Diode - Inverter, Chopper					
$V_F = V_{EC}$	$I_{Fnom} = 4 \text{ A}, T_j = 25 (150)^\circ\text{C}$		2,05 (1,85)	2,35 (2,15)	V
$V_{(TO)}$	$T_j = 25 (150)^\circ\text{C}$		1,25 (0,85)	1,45 (1,05)	V
r_T	$T_j = 25 (150)^\circ\text{C}$		200 (250)	225 (275)	$\text{m}\Omega$
$R_{th(j-s)}$	per diode		2,53		K/W
I_{RRM}	under following conditions		3,4		A
Q_{rr}	$I_{Fnom} = 4 \text{ A}, V_R = 600 \text{ V}$		0,95		μC
E_{rr}	$V_{GE} = 0 \text{ V}, T_j = 150^\circ\text{C}$ $di_F/dt = 110 \text{ A}/\mu\text{s}$		0,34		mJ
Diode - Rectifier					
V_F	$I_{Fnom} = 15 \text{ A}, T_j = 25^\circ\text{C}$		1,1		V
$V_{(TO)}$	$T_j = 150^\circ\text{C}$		0,8		V
r_T	$T_j = 150^\circ\text{C}$		20		$\text{m}\Omega$
$R_{th(j-s)}$	per diode		1,5		K/W
Temperature Sensor					
R_{ts}	3 %, $T_r = 25 (100)^\circ\text{C}$		1000(1670)		Ω
Mechanical Data					
w			35		g
M_s	Mounting torque	2		2,5	Nm

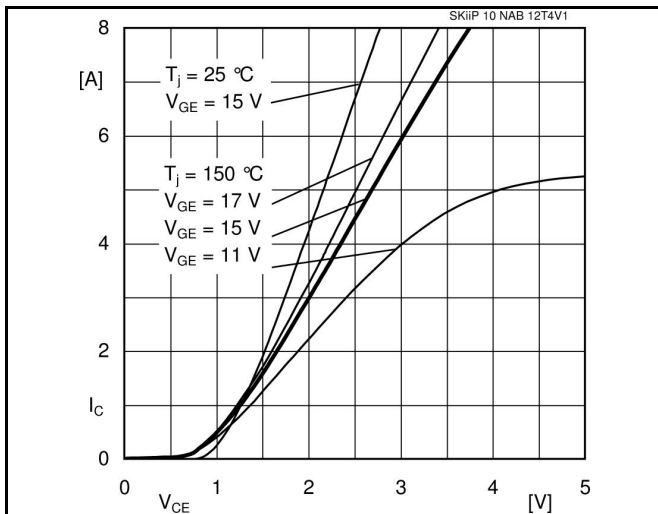


Fig. 1 Typ. output characteristic

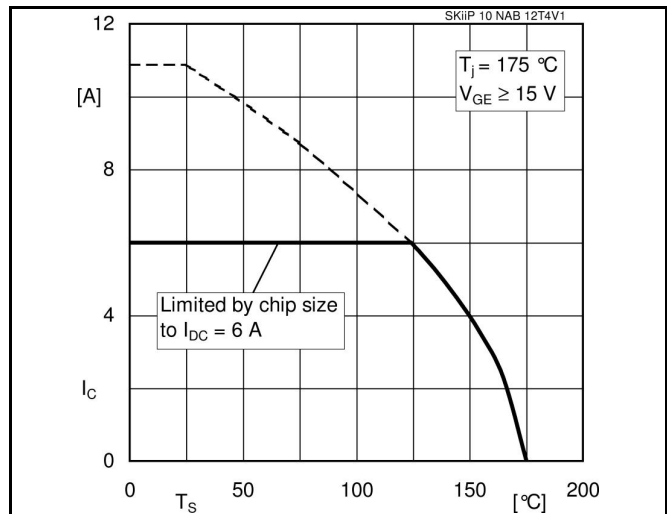


Fig. 2 Typ. rated current vs. temperature $I_C = f(T_S)$

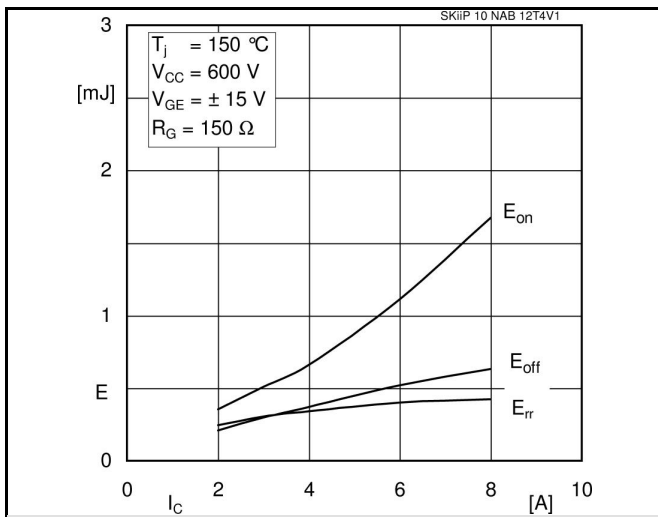


Fig. 3 Typ. turn-on /-off energy = $f(I_C)$

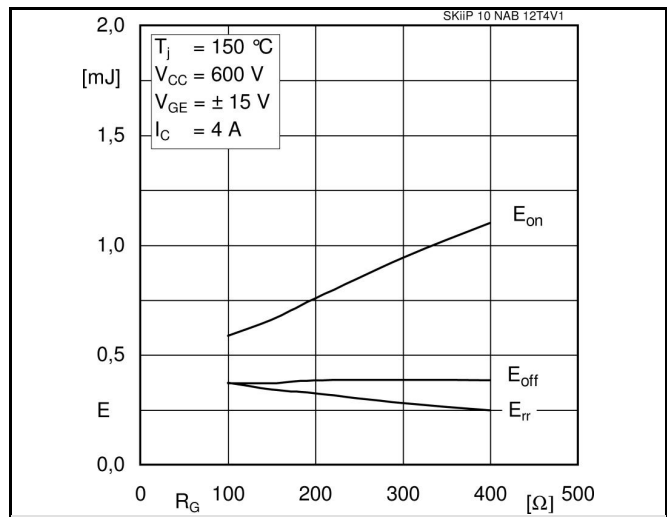


Fig. 4 Typ. turn-on /-off energy = $f(R_G)$

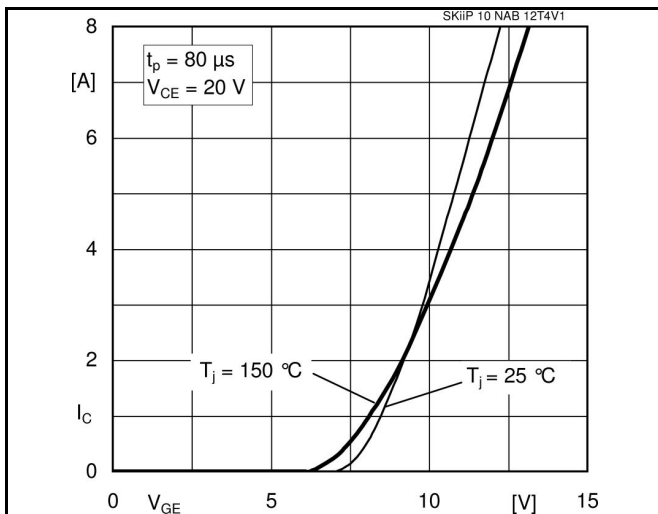


Fig. 5 Typ. transfer characteristic

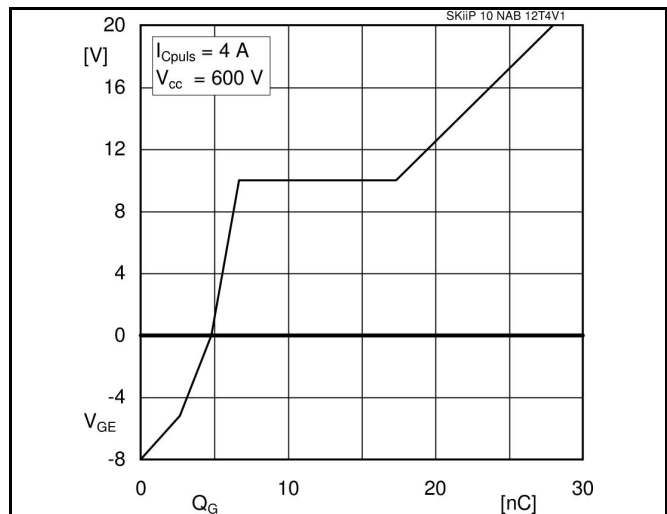


Fig. 6 Typ. gate charge characteristic

