

# SKiiP 03AC066V1



MiniSKiiP®0

## 3-phase bridge inverter

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### Target Data

### Features

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

### Typical Applications

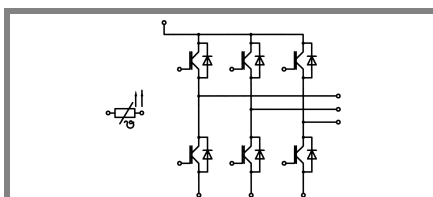
- Inverter up to 5,6 kVA
- Typical motor power 3,0 kW

### Remarks

- Case temperature limited to  $T_C = 125^\circ\text{C}$  max.
- Product reliability results are valid for  $T_j = 150^\circ\text{C}$
- SC data:  $t_p \leq 6 \mu\text{s}$ ;  $V_{GE} \leq 15 \text{ V}$ ;  $T_j = 150^\circ\text{C}$ ;  $V_{CC} = 360 \text{ V}$
- $V_{CEsat}$ ,  $V_F =$  chip level value

Absolute Maximum Ratings		$T_S = 25^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT - Inverter</b>			
$V_{CES}$		600	V
$I_C$	$T_S = 25 (70)^\circ\text{C}, T_j = 150^\circ\text{C}$	24 (17)	A
$I_C$	$T_S = 25 (70)^\circ\text{C}, T_j = 150^\circ\text{C}$	27 (21)	A
$I_{CRM}$	$t_p = 1 \text{ ms}$	30	A
$V_{GES}$		$\pm 20$	V
$T_j$		-40...+175	$^\circ\text{C}$
<b>Diode - Inverter</b>			
$I_F$	$T_S = 25 (70)^\circ\text{C}, T_j = 150^\circ\text{C}$	24 (16)	A
$I_F$	$T_S = 25 (70)^\circ\text{C}, T_j = 175^\circ\text{C}$	28 (21)	A
$I_{FRM}$	$t_p = 1 \text{ ms}$	30	A
$T_j$		-40...+175	$^\circ\text{C}$
$I_{RMS}$	per power terminal (20 A / spring)	20	A
$T_{stg}$	$T_{op} \leq T_{stg}$	-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
<b>IGBT - Inverter</b>					
$V_{CEsat}$	$I_{Cnom} = 15 \text{ A}, T_j = 25 (150)^\circ\text{C}$	1,1	1,45 (1,65)	1,85 (2,05)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1 \text{ mA}$		5,8		V
$V_{CE(TO)}$	$T_j = 25 (150)^\circ\text{C}$		0,9 (0,85)	1 (0,9)	V
$r_T$	$T_j = 25 (150)^\circ\text{C}$		40 (56,7)	60 (80)	m $\Omega$
$C_{ies}$	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,86		nF
$C_{oes}$	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,18		nF
$C_{res}$	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,12		nF
$R_{CC+EE'}$	spring contact-chip $T_S = 25 (150)^\circ\text{C}$				m $\Omega$
$R_{th(j-s)}$	per IGBT		1,8		K/W
$t_{d(on)}$	under following conditions		20		ns
$t_r$	$V_{CC} = 300 \text{ V}, V_{GE} = \pm 15 \text{ V}$		30		ns
$t_{d(off)}$	$I_{Cnom} = 15 \text{ A}, T_j = 150^\circ\text{C}$		155		ns
$t_f$	$R_{Gon} = R_{Goff} = 22 \Omega$		40		ns
$E_{on}(E_{off})$	inductive load		0,6 (0,5)		mJ
<b>Diode - Inverter</b>					
$V_F = V_{EC}$	$I_{Fnom} = 15 \text{ A}, T_j = 25 (150)^\circ\text{C}$		1,4 (1,4)	1,7 (1,7)	V
$V_{(TO)}$	$T_j = 25 (150)^\circ\text{C}$		1 (0,9)	1,1 (1)	V
$r_T$	$T_j = 25 (150)^\circ\text{C}$		26,7 (33,3)	40 (46,7)	m $\Omega$
$R_{th(j-s)}$	per diode		2,5		K/W
$I_{RRM}$	under following conditions		20		A
$Q_{rr}$	$I_{Fnom} = 15 \text{ A}, V_R = 300 \text{ V}$		1,8		$\mu\text{C}$
$E_{rr}$	$V_{GE} = 0 \text{ V}, T_j = 150^\circ\text{C}$		0,5		mJ
	$di_F/dt = 930 \text{ A}/\mu\text{s}$				
<b>Temperature Sensor</b>					
$R_{ts}$	3 %, $T_r = 25 (100)^\circ\text{C}$		1000(1670)		$\Omega$
<b>Mechanical Data</b>					
m			21,5		g
$M_s$	Mounting torque	2		2,5	Nm



AC

