SKiiP 16GH066V1

MiniSKiiP®1

H-bridge inverter

SKiiP 16GH066V1

Features

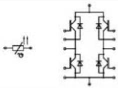
- Trench IGBTs
- Robust and soft freewheeling diode in CAL technology
- Highly reliable spring contacts for electrical connection
- UL recognised file no. E63532

Typical Applications*

- Single-phase inverter up to 9.5 kVA
- Single-phase motor power 4 kW

Remarks

- Case temperature limited to T_C = 125°C
- Product reliability results are valid for T_j = 150°C
- SC data: t_p ≤6 µs; V_{GE} ≤ 15 V; T_j = 150°C; V_{CC} = 360 V
- V_{CEsat}, V_F = chip level value



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Absolute Maximum Ratings	T_S = 25 °C, unless otherwise specified		
Symbol	**Conditions**	**Values**	**Units**
IGBT - Inverter			
V_{CES}		600	V
I_C	T_s = 25 (70) °C ,T_j = 150 °C	59 (40)	A
I_C	T_s = 25 (70) °C ,T_j = 175 °C	65 (49)	A
I_{CRM}	t_p = 1 ms	100	A
V_{GES}		±20	V
T_j		-40...+175	°C
Diode - Inverter			
I_F	T_s = 25 (70) °C ,T_j = 150 °C	47 (31)	A
I_F	T_s = 25 (70) °C ,T_j = 175 °C	56 (40)	A
I_{FRM}	t_p = 1 ms	100	A
T_j		-40...+175	°C
I_{tRMS}	per power terminal (20 A / spring)	60	A
T_{stg}	$T_{op} \le T_{stg}$	-40...+125	°C
V_{isol}	AC, 1 min.	2500	V

Characteristics		T_S = 25 °C, unless otherwise specified			
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT - Inverter					
V_{CEsat}	I_{Cnom} = 50 A ,T_j = 25 (150) °C	1,05	1,45 (1,65)	1,85 (2,05)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$, I_C = 1 mA		5,8		V
$V_{CE(TO)}$	T_j = 25 (150) °C		0,9 (0,8)	1,1 (1)	V
r_T	T_j = 25 (150) °C		11 (17)	15 (21)	mΩ
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		2,87		nF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,6		nF
C_{res}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,46		nF
$R_{CC'+EE'}$	spring contact-chip T_s = 25 (150)°C				mΩ
$R_{th(j-s)}$	per IGBT		0,95		K/W
$t_{d(on)}$	under following conditions		40		ns
t_r	V_{CC} = 300 V, V_{GE} = -8V/+15V		40		ns
$t_{d(off)}$	I_{Cnom} = 50 A, T_j = 150 °C		425		ns
t_f	$R_{Gon} = R_{Goff}$ = 18 Ω		40		ns
$E_{on}(E_{off})$	inductive load		1,7 (1,7)		mJ
Diode - Inverter					
$V_F = V_{EC}$	I_{Fnom} = 50 A ,T_j = 25 (150) °C		1,5 (1,5)	1,7 (1,7)	V
$V_{(TO)}$	T_j = 25 (150) °C		1 (0,9)	1,1 (1)	V
r_T	T_j = 25 (150) °C		10 (12)	12 (14)	mΩ
$R_{th(j-s)}$	per diode		1,6		K/W
I_{RRM}	under following conditions		44		A
Q_{rr}	I_{Fnom} = 50 A, V_R = 300 V		5,5		µC
E_{rr}	V_{GE} = 0 V, T_j = 150 °C		1,3		mJ
	di_F/dt = 1400 A/µs				
Temperature Sensor					
R_{ts}	3 %, T_r = 25 (100) °C		1000(1670)		Ω
Mechanical Data					
m			35		g
M_s	Mounting torque	2		2,5	Nm

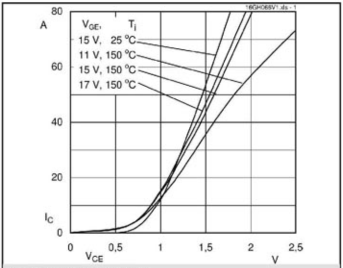


Fig. 1 Typ. output characteristic

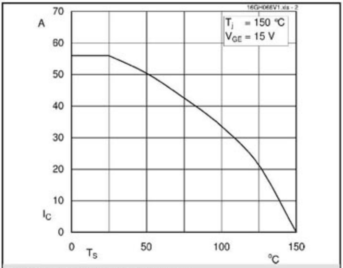


Fig. 2 Typ. rated current vs. temperature

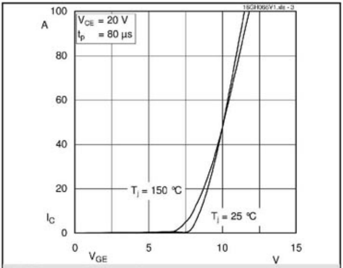


Fig. 3 Typ. transfer characteristic

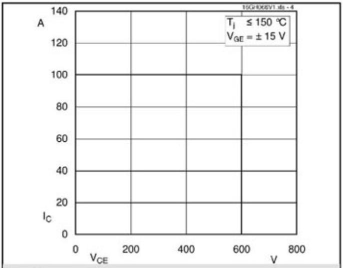


Fig. 4 Reverse bias safe operating area

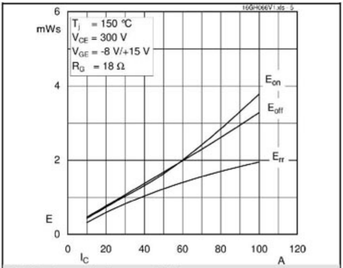


Fig. 5 Typ. turn-on /-off energy = f (I_C)

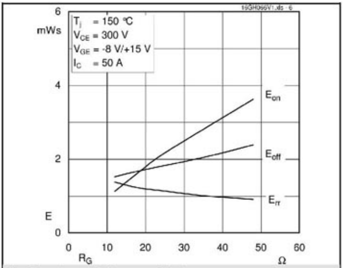


Fig. 6 Typ. turn-on /-off energy = f (R_G)

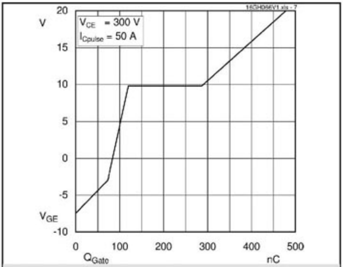


Fig. 7 Typ. Gate charge characteristic

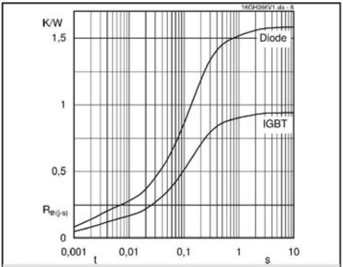


Fig. 8 Typ. thermal impedance

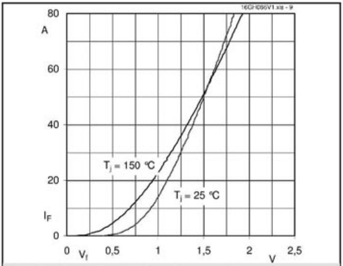
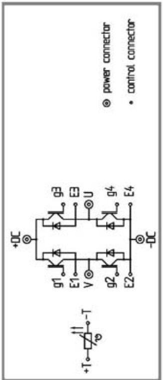
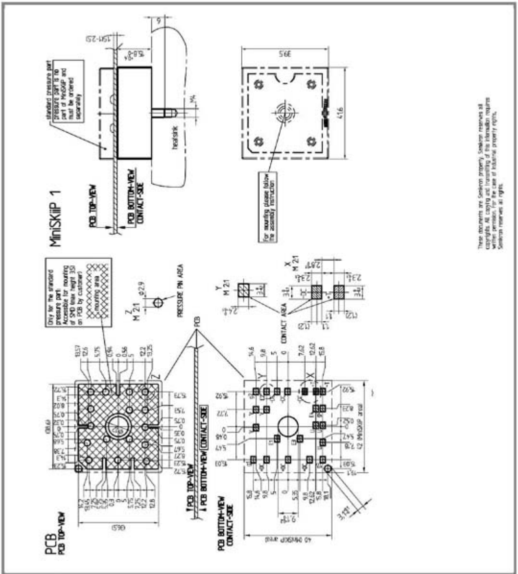


Fig. 9 Typ. freewheeling diode forward characteristic



circuit



pinout, dimensions

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.