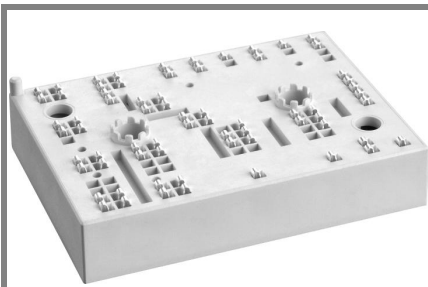


SKiiP 38AC12T4V1



MiniSKiiP®3

3-phase bridge inverter

SKiiP 38AC12T4V1

Features

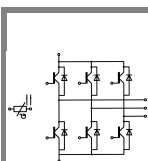
- Trench 4 IGBT's
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications*

- Inverter up to 41 kVA
- Typical motor power 22 kW

Remarks

- V_{CEsat} , V_F = chip level value
- Case temp. limited to $T_C = 125^\circ\text{C}$ max. (for baseplateless modules $T_C = T_S$)
- product rel. results valid for $T_j \leq 150$ (recomm. $T_{op} = -40 \dots +150^\circ\text{C}$)
- For short circuit: Soft R_{Goff} recommended

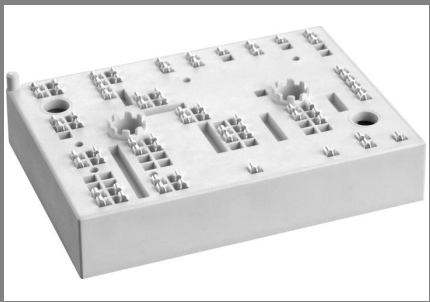


AC

Absolute Maximum Ratings			T _s = 25 °C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 175 °C	T _c = 25 °C	115	A
		T _c = 70 °C	93	A
I _{CRM}	I _{CRM} = 3xI _{Cnom}		300	A
V _{GES}			±20	V
t _{psc}	V _{CC} = 800 V; V _{GE} ≤ 15 V; T _j = 150 °C V _{CES} < 1200 V		10	μs
Inverse Diode				
I _F	T _j = 175 °C	T _c = 25 °C	99	A
		T _c = 70 °C	79	A
I _{FRM}	I _{CRM} = 3xI _{Cnom}		300	A
I _{FSM}	t _p = 10 ms; sin	T _j = 150 °C	548	A
Module				
I _{t(RMS)}			160	A
T _{vj}			-40...+150	°C
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						
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 4 mA		5	5,8	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C				0,3	mA
V _{CE0}	T _j = 25 °C			0,8	0,9	V
	T _j = 150 °C			0,7	0,8	V
r _{CE}	V _{GE} = 15 V T _j = 25°C			10	11	mΩ
	T _j = 150°C			15	16	mΩ
V _{CE(sat)}	I _{Cnom} = 100 A, V _{GE} = 15 V T _j = 25°C _{chiplev.}			1,8	2	V
	T _j = 150°C _{chiplev.}			2,2	2,4	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			6,2		nF
C _{oes}				0,41		nF
C _{res}				0,35		nF
Q _G	V _{GE} = -8...+15V			565		nC
R _{Gint}	T _j = 25 °C			7,5		Ω
t _{d(on)}	R _{Gon} = 1 Ω di/dt = 2080 A/μs	V _{CC} = 600V I _C = 100A T _j = 150 °C V _{GE} = ±15V		160		ns
t _r				45		ns
E _{on}				13,7		mJ
t _{d(off)}	R _{Goff} = 1 Ω			395		ns
t _f	di/dt = 1240 A/μs			73		ns
E _{off}				9,7		mJ
R _{th(j-s)}	per IGBT			0,48		K/W

SKiiP 38AC12T4V1



MiniSKiiP®3

3-phase bridge inverter

SKiiP 38AC12T4V1

Features

- Trench 4 IGBT's
- 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 41 kVA
- Typical motor power 22 kW

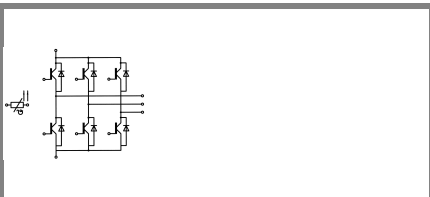
Remarks

- V_{CEsat} , V_F = chip level value
- Case temp. limited to $T_C = 125^{\circ}C$ max. (for baseplateless modules $T_C = T_S$)
- product rel. results valid for $T_j \leq 150$ (recomm. $T_{op} = -40 \dots +150^{\circ}C$)
- For short circuit: Soft R_{Goff} recommended

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 100\text{ A}; V_{GE} = 15\text{ V}$		$T_j = 25^{\circ}C_{chiplev.}$	2,2	2,5
			$T_j = 150^{\circ}C_{chiplev.}$	2,1	2,45
V_{F0}			$T_j = 25^{\circ}C$	1,3	1,5
			$T_j = 150^{\circ}C$	0,9	1,1
r_F			$T_j = 25^{\circ}C$	9	10
			$T_j = 150^{\circ}C$	12	13,5
I_{RRM}	$I_F = 100\text{ A}$		$T_j = 125^{\circ}C$	112	A
Q_{rr}	$di/dt = 2680\text{ A}/\mu s$			16	μC
E_{rr}	$V_{GE} = \pm 15V$			6,5	mJ
$R_{th(j-s)}$	per diode			0,66	K/W
M_s	to heat sink	2		2,5	Nm
w				95	g
Temperature sensor					
R_{ts}	3%, $T_r = 25^{\circ}C$			1000	Ω
R_{ts}	3%, $T_r = 100^{\circ}C$			1670	Ω

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.



AC

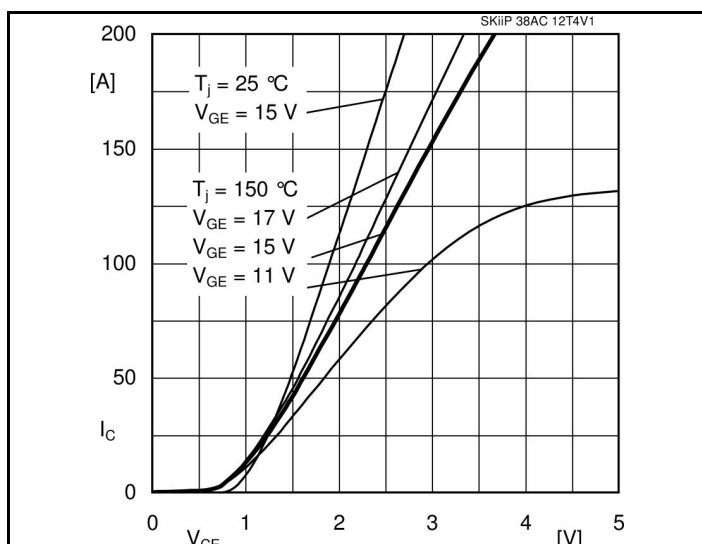


Fig. 1 Typ. output characteristic

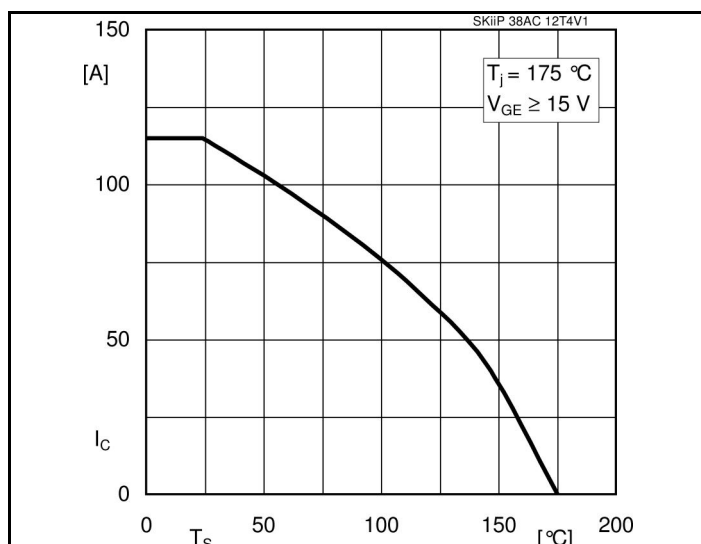


Fig. 2 Rated current vs. temperature $I_C = f(T_S)$

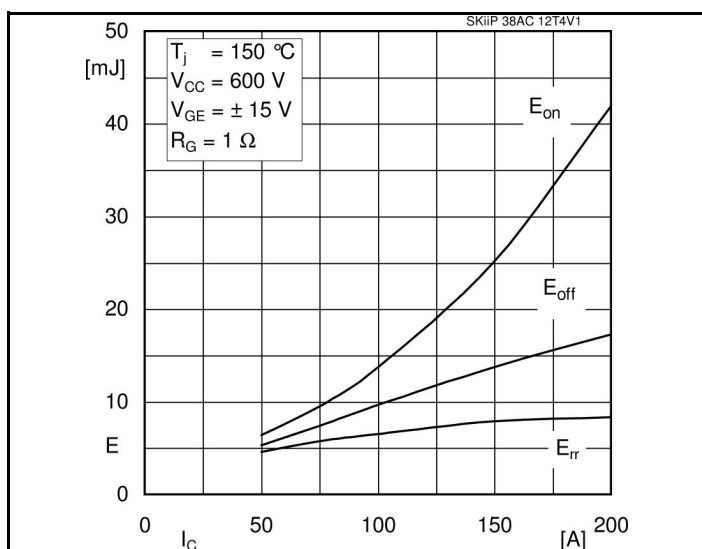


Fig. 3 Typ. turn-on /off energy = $f(I_C)$

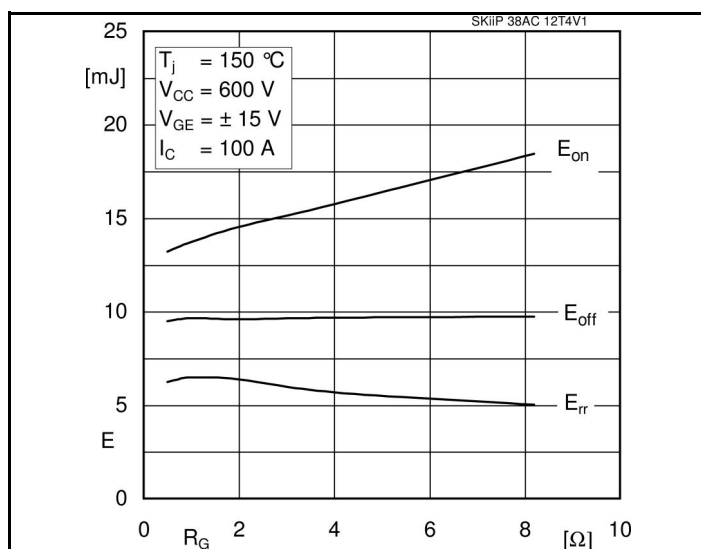


Fig. 4 Typ. turn-on /off energy = $f(R_G)$

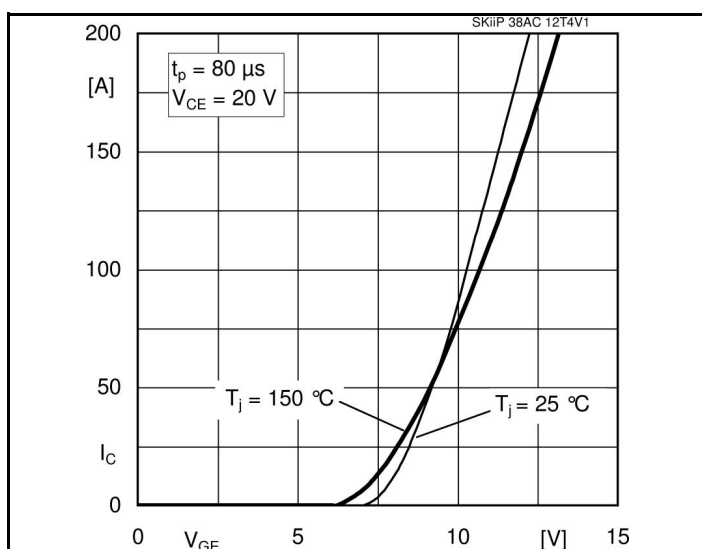


Fig. 5 Typ. transfer characteristic

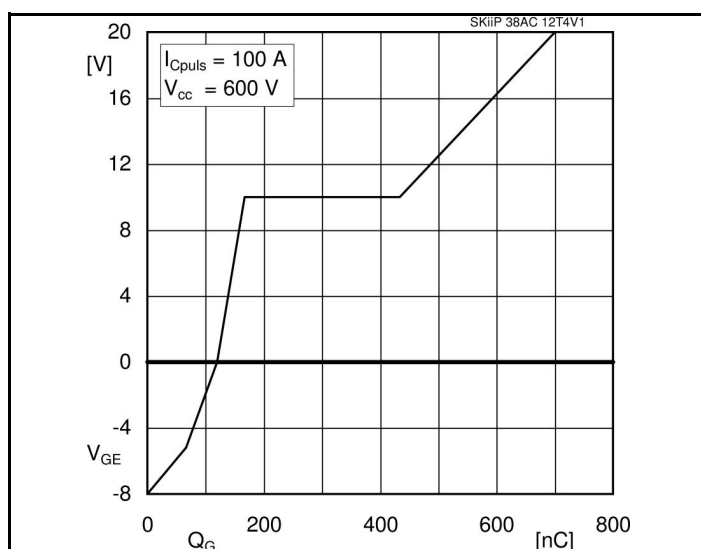


Fig. 6 Typ. gate charge characteristic

