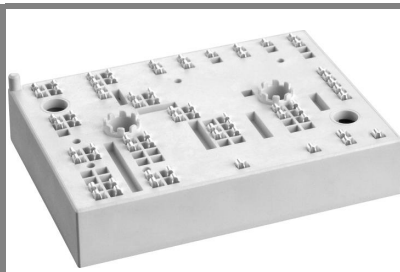


SKiiP 38AC12T4V1



MiniSKiiP®3

3-phase bridge inverter

SKiiP 38AC12T4V1

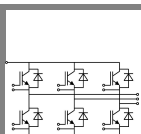
Features

- 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

Remarks

- Product reliability valid for $T_j \leq 150^\circ\text{C}$
- For short circuit: Soft R_{Goff} recommended $R_{\text{Goff}} > 20 \Omega$

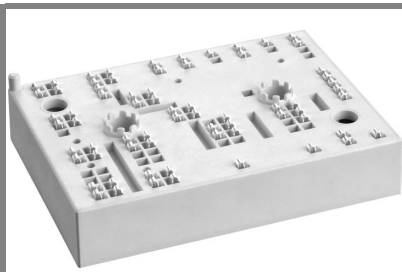


AC

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		160		ns
t _r				45		ns
E _{on}				13,7		mJ
t _{d(off)}	R _{Goff} = 1 Ω di/dt = 1240 A/μs	T _j = 150 °C V _{GE} = ±15V		395		ns
t _f				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

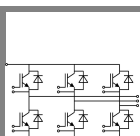
Features

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

Typical Applications

Remarks

- Product reliability valid for $T_j \leq 150^\circ\text{C}$
- For short circuit: Soft R_{Goff} recommended $R_{\text{Goff}} > 20 \Omega$



AC

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 100 \text{ A}; V_{GE} = 15 \text{ V}$		$T_j = 25^\circ\text{C}_{\text{chiplev.}}$	2,2	V
			$T_j = 150^\circ\text{C}_{\text{chiplev.}}$	2,1	V
V_{F0}			$T_j = 25^\circ\text{C}$	1,3	V
			$T_j = 150^\circ\text{C}$	0,9	V
r_F			$T_j = 25^\circ\text{C}$	9	mΩ
			$T_j = 150^\circ\text{C}$	12	mΩ
I_{RRM}	$I_F = 100 \text{ A}$		$T_j = 125^\circ\text{C}$	112	A
Q_{rr}	$di/dt = 2680 \text{ A}/\mu\text{s}$			16	μC
E_{rr}	$V_{GE} = \pm 15 \text{ V}$			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%, $T_r = 25^\circ\text{C}$			1000	Ω
R_{ts}	3%, $T_r = 100^\circ\text{C}$			1670	Ω

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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

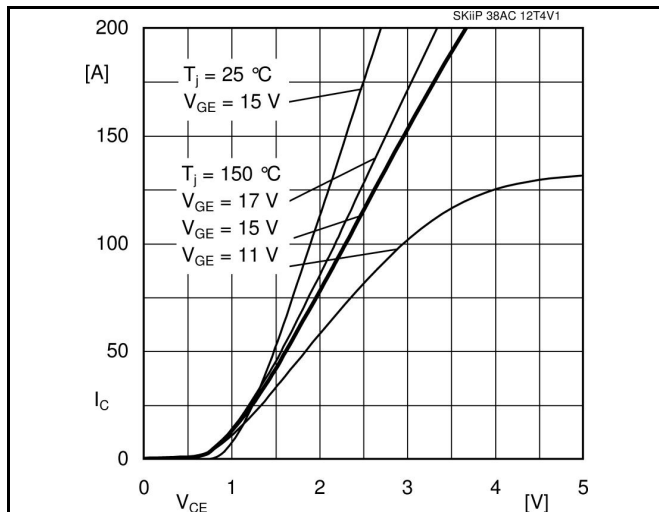


Fig. 1 Typ. output characteristic

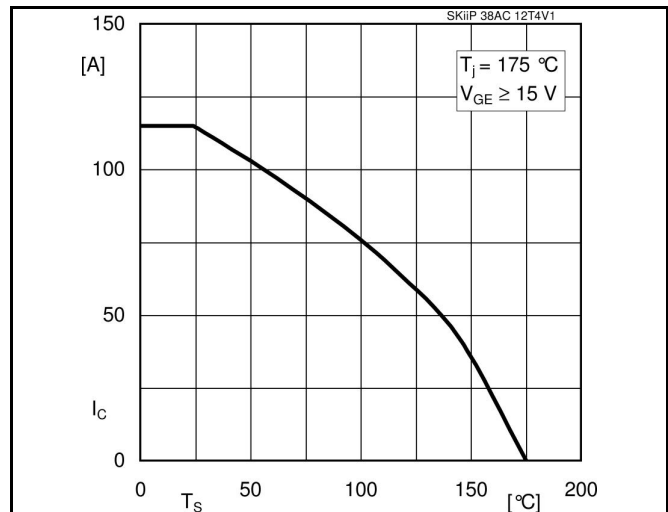


Fig. 2 Rated current vs. temperature $I_C = f(T_S)$

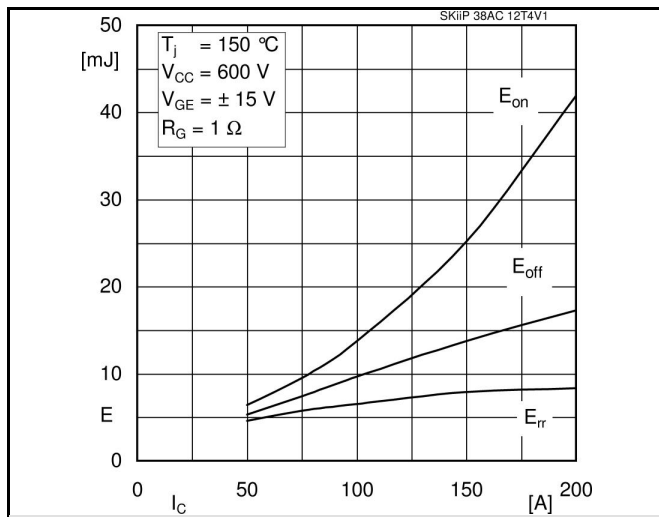


Fig. 3 Typ. turn-on /-off energy = $f(I_C)$

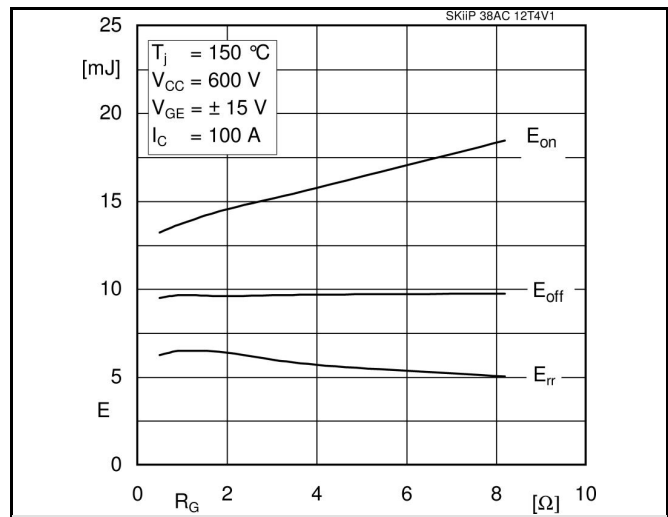


Fig. 4 Typ. turn-on /-off energy = $f(R_G)$

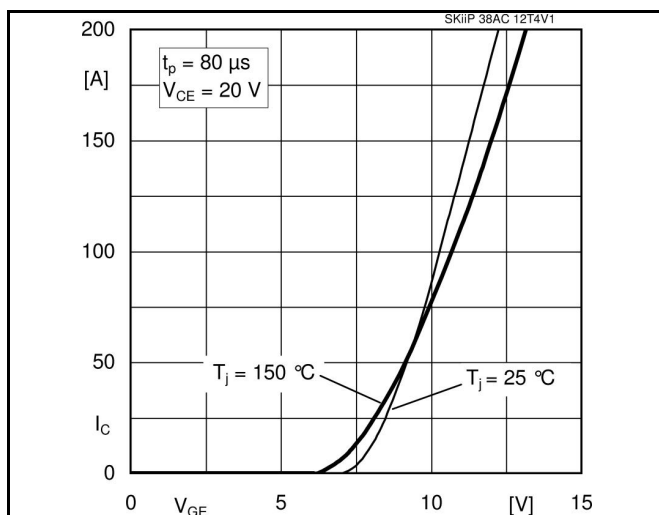


Fig. 5 Typ. transfer characteristic

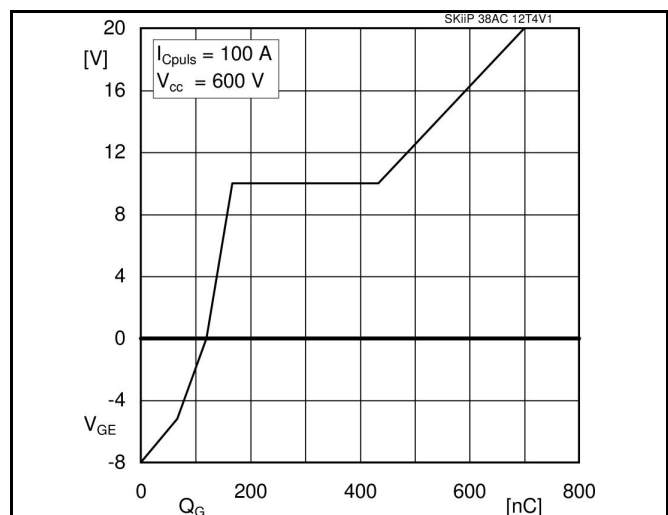
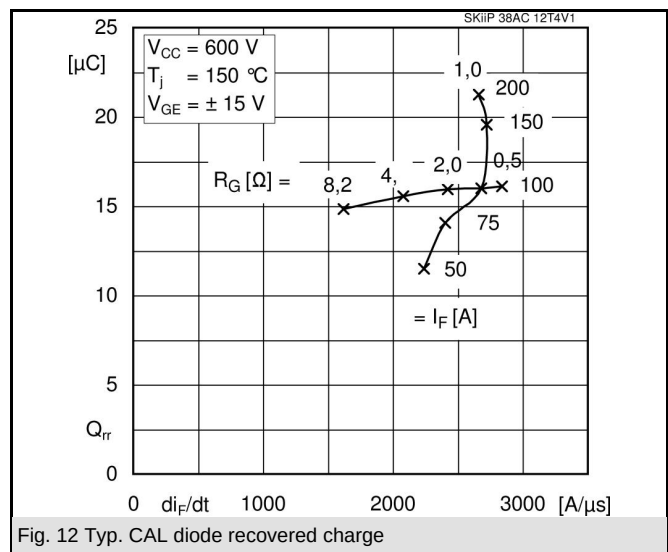
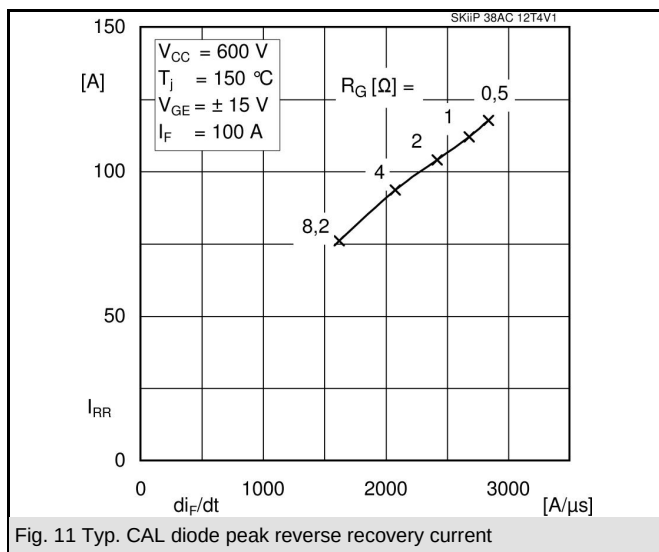
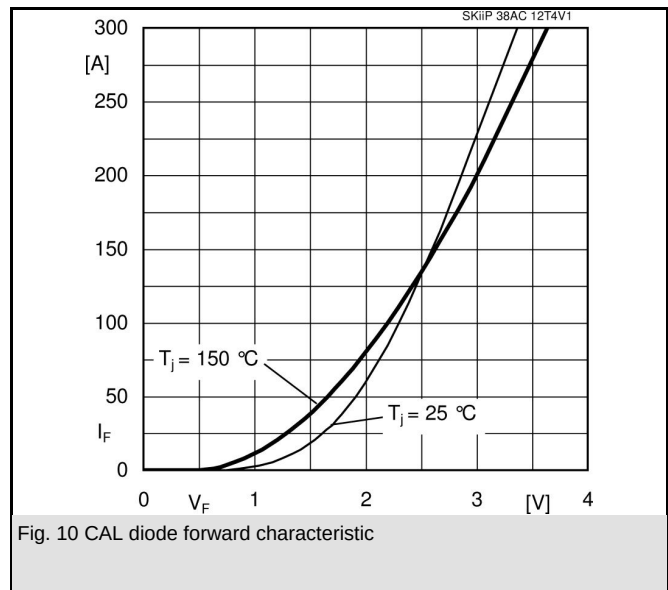
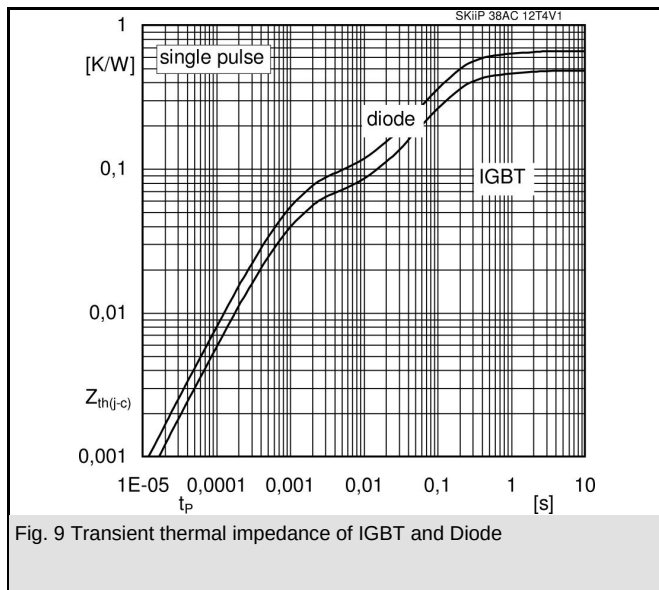
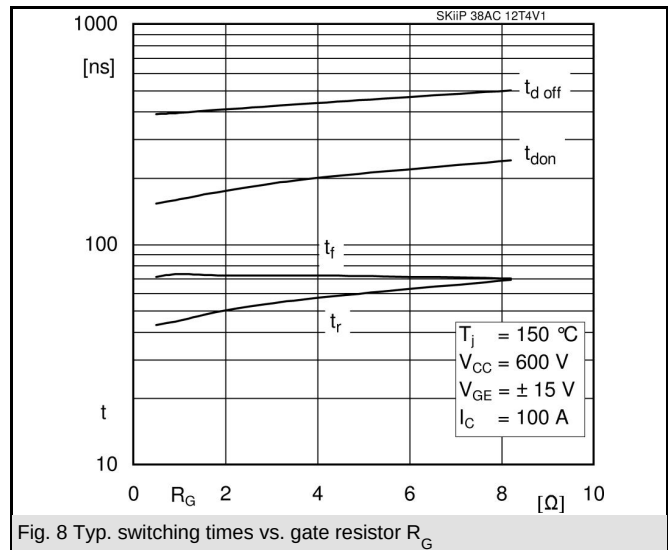
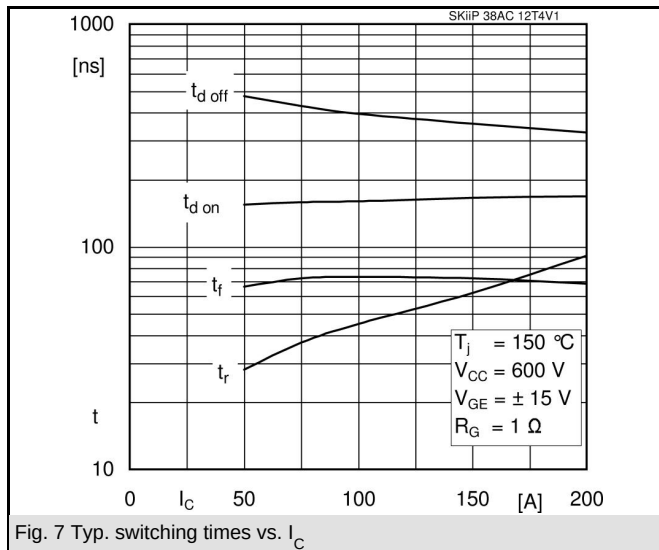
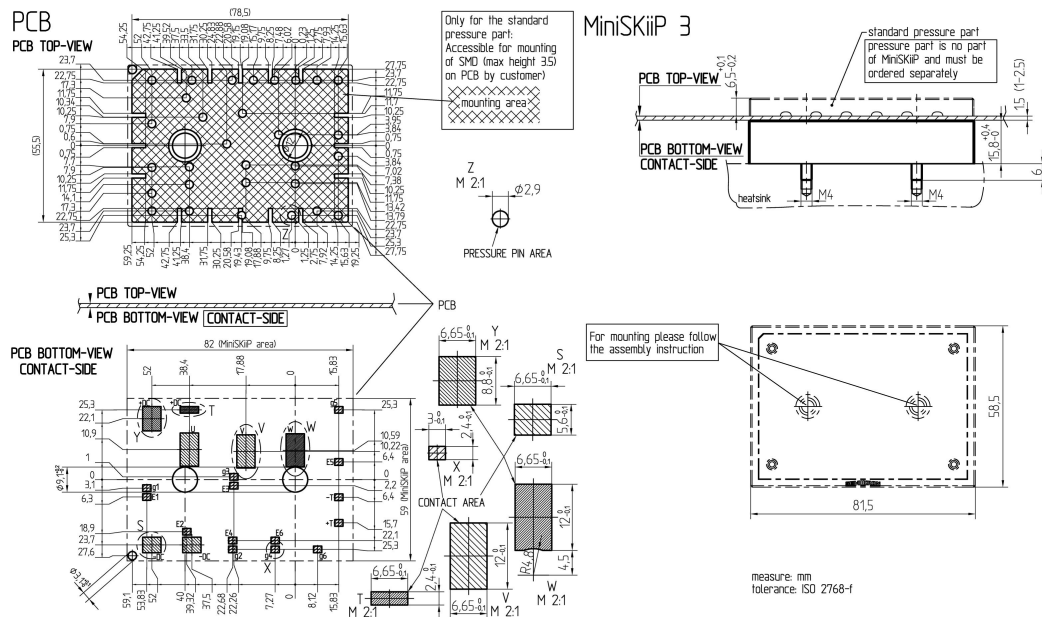


Fig. 6 Typ. gate charge characteristic





case

