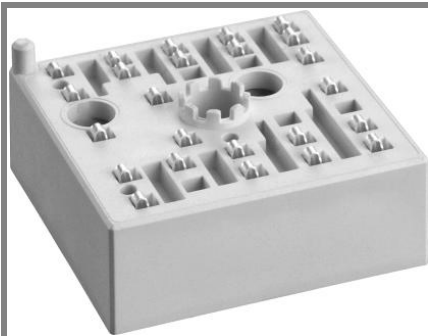


SKiiP 13AC12T4V1



MiniSKiiP®1

3-phase bridge inverter

SKiiP 13AC12T4V1

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*

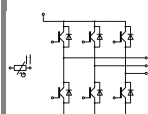
- Inverter up to 14 kVA
- Typical motor power 7,5 kW

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. $T_{op} = -40 \dots +150^\circ\text{C}$)

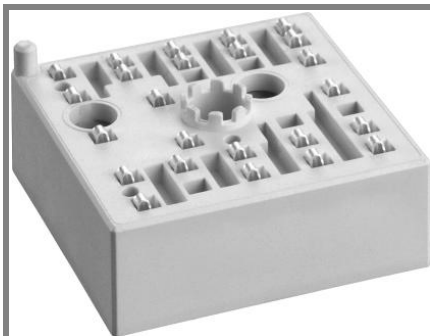
Absolute Maximum Ratings			T _c = 25 °C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 175 °C	T _c = 25 °C	41	A
		T _c = 70 °C	34	A
I _{CRM}	I _{CRM} = 3xI _{Cnom}		75	A
V _{GES}			±20	V
t _{psc}	V _{CC} = 800 V; V _{GE} ≤ 15 V; T _j = 150 °C V _{CES} < 1200 V		10	µs
Inverse Diode				
I _F	T _j = 175 °C	T _c = 25 °C	30	A
		T _c = 70 °C	26	A
I _{FRM}	I _{CRM} = 3xI _{Cnom}		75	A
I _{FSM}	t _p = 10 ms; sin.	T _j = 150 °C	100	A
Module				
I _{t(RMS)}			40	A
T _{vj}			-40...+175	°C
T _{stg}			-40...+125	°C
V _{isol}	AC, 1 min.		2500	V

Characteristics			T _c = 25 °C, unless otherwise specified			
Symbol	Conditions		min.	typ.	max.	Units
IGBT						
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 1 mA		5	5,8	6,5	V
I _{CES}	V _{GE} = V, V _{CE} = V _{CES} T _j = °C					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			42	46	mΩ
	T _j = 150°C			62	66	mΩ
V _{CE(sat)}	I _{Cnom} = 25 A, V _{GE} = 15 V T _j = 25°C _{chiplev.}			1,85	2,05	V
	T _j = 150°C _{chiplev.}			2,25	2,45	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			1,43		nF
C _{oes}				0,12		nF
C _{res}				0,09		nF
Q _G	V _{GE} = -8 .. +15 V			140		nC
R _{Gint}	T _j = 25 °C			0		Ω
t _{d(on)}	R _{Gon} = 39 Ω V _{CC} = 600V di/dt = 465 A/μs I _C = 25A			44		ns
t _r				46		ns
E _{on}				3,7		mJ
t _{d(off)}	R _{Goff} = 39 Ω T _j = 150 °C di/dt = 350 A/μs V _{GE} = ±15V			330		ns
t _f				62		ns
E _{off}				2,4		mJ
R _{th(i-s)}	per IGBT			1		K/W



AC

SKiiP 13AC12T4V1



MiniSKiiP®1

3-phase bridge inverter

SKiiP 13AC12T4V1

Features

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- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications*

- Inverter up to 14 kVA
- Typical motor power 7,5 kW

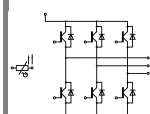
Remarks

- 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. $T_{op} = -40 \dots +150^\circ\text{C}$)

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 25 \text{ A}; V_{GE} = 0 \text{ V}$				
	$T_j = 25^\circ\text{C}_{chiplev.}$		2,4	2,75	V
	$T_j = 150^\circ\text{C}_{chiplev.}$		2,45	2,8	V
V_{F0}					
	$T_j = 25^\circ\text{C}$		1,3	1,5	V
	$T_j = 150^\circ\text{C}$		0,9	1,1	V
r_F					
	$T_j = 25^\circ\text{C}$		44	50	mΩ
	$T_j = 150^\circ\text{C}$		62	68	mΩ
I_{RRM}	$I_F = 25 \text{ A}$		19		A
Q_{rr}	$di/dt = 640 \text{ A}/\mu\text{s}$		4		μC
E_{rr}	$V_{GE} = \pm 15 \text{ V}$		1,64		mJ
$R_{th(j-s)}$	per diode		1,52		K/W
M_s	to heat sink	2		2,5	Nm
w			35		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.

* 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

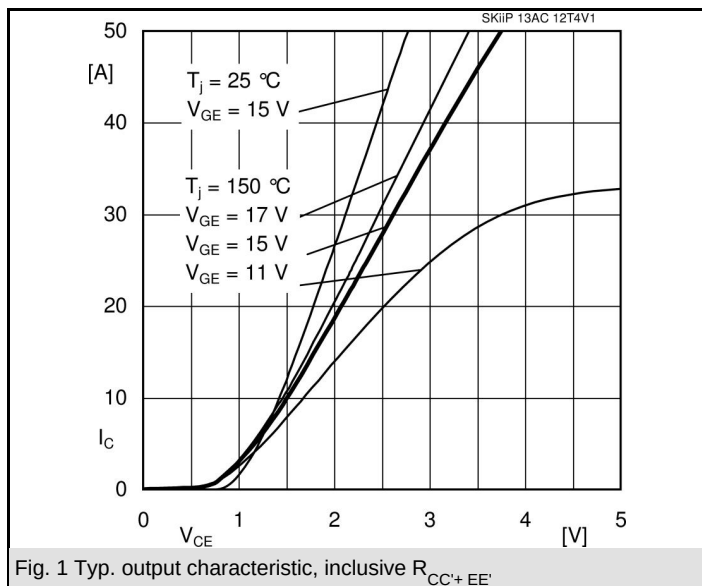


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

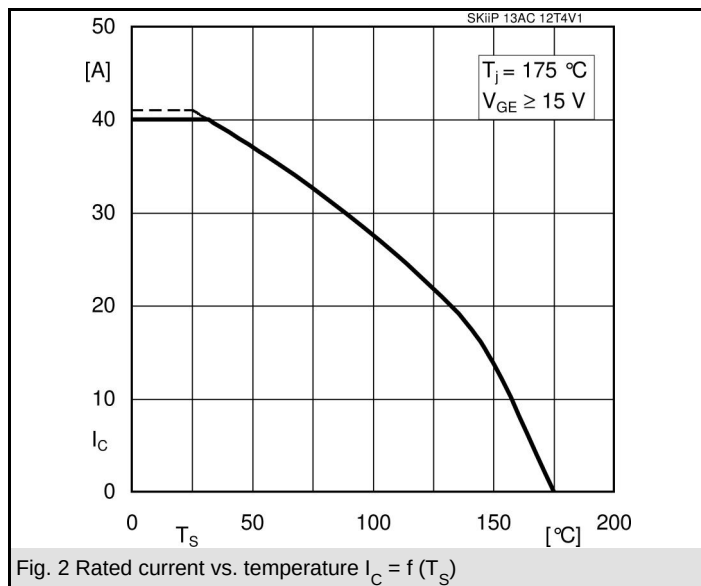


Fig. 2 Rated current vs. temperature $I_C = f(T_s)$

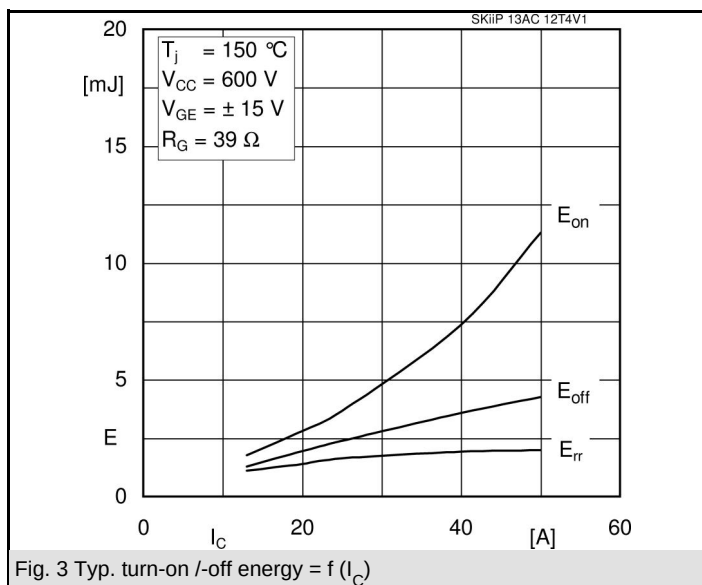


Fig. 3 Typ. turn-on /-off energy = $f(I_C)$

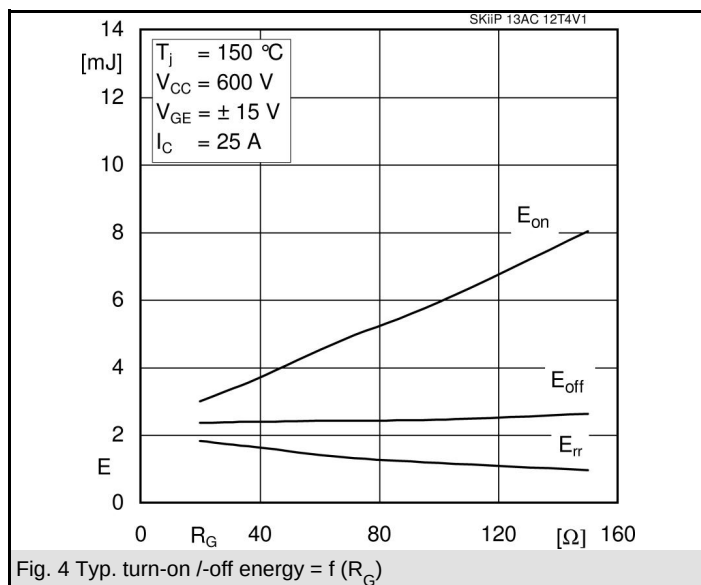


Fig. 4 Typ. turn-on /-off energy = $f(R_G)$

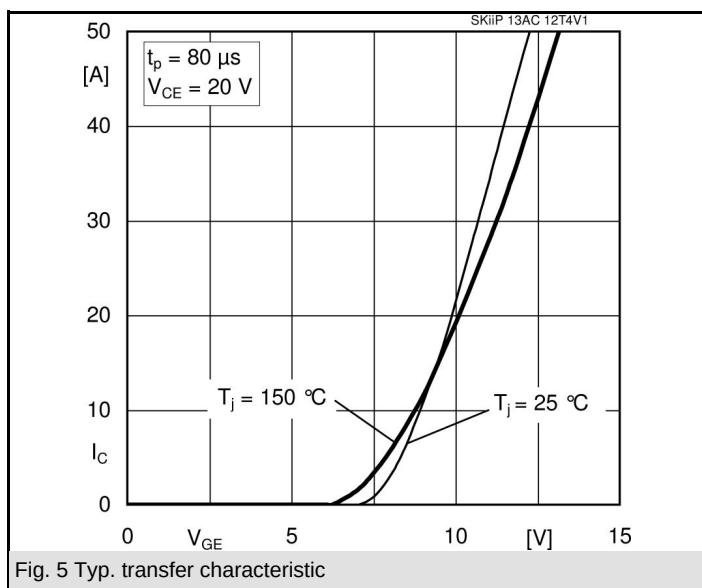


Fig. 5 Typ. transfer characteristic

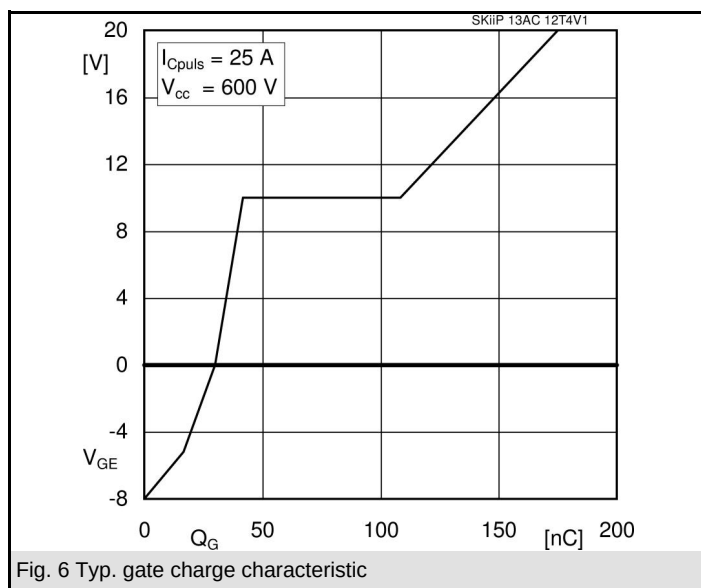
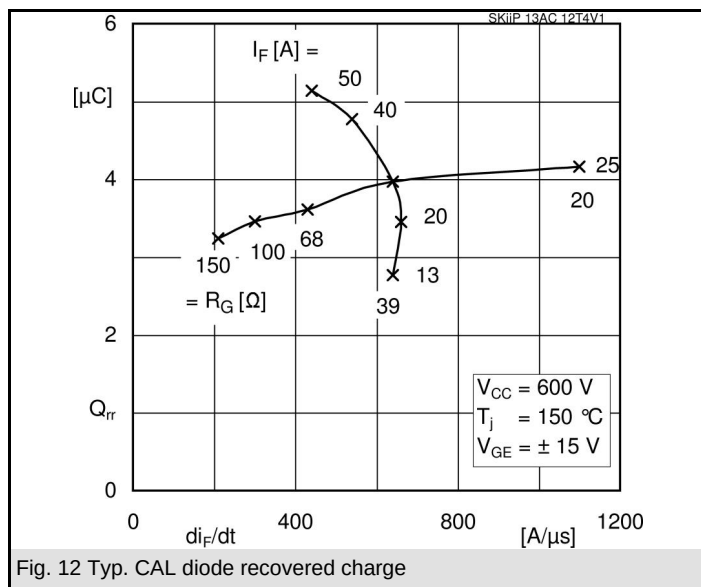
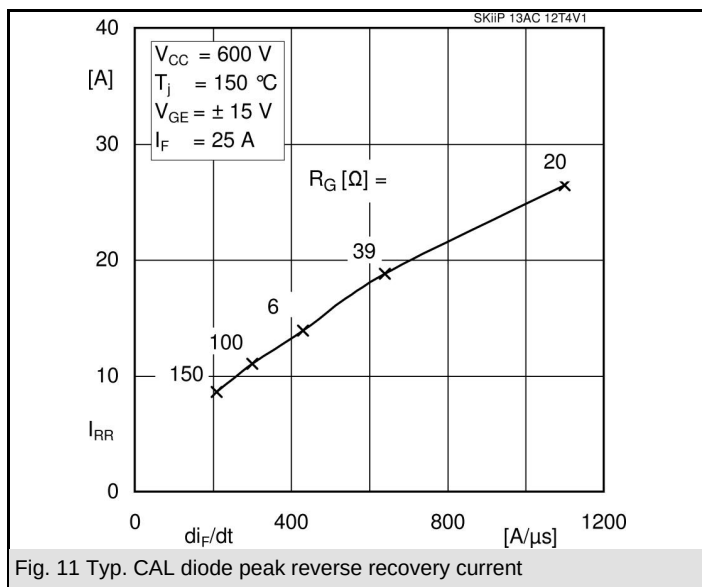
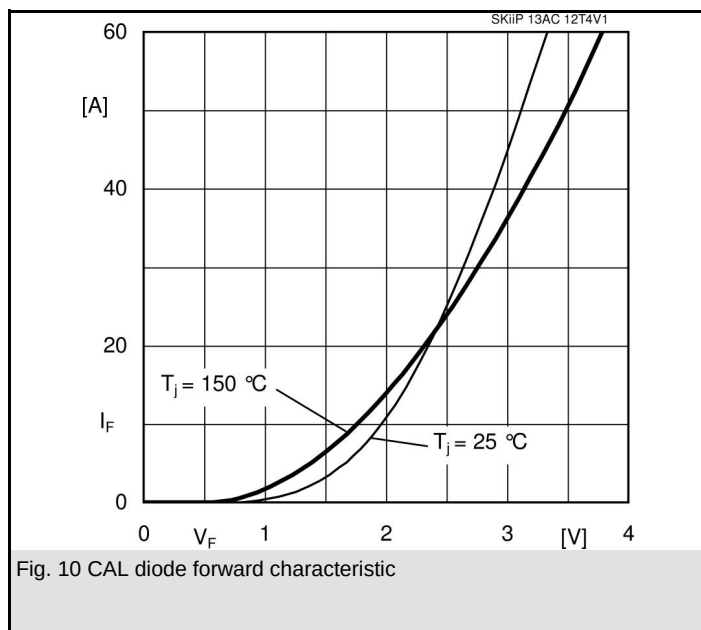
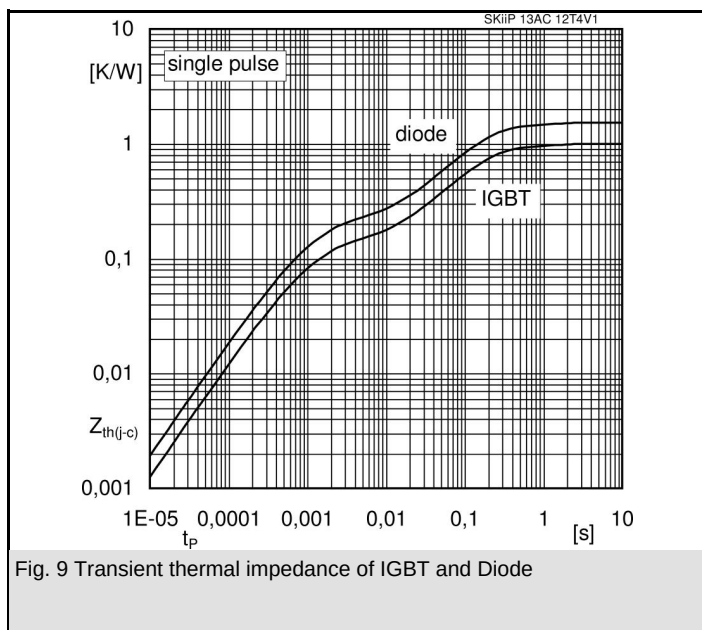
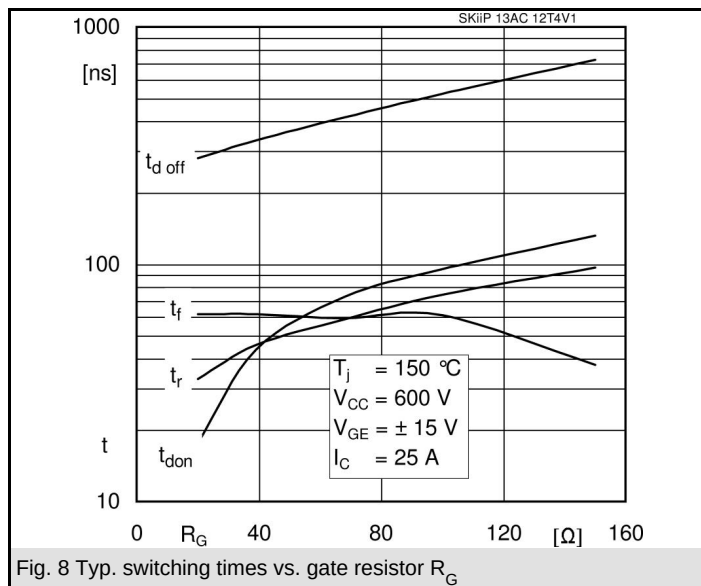
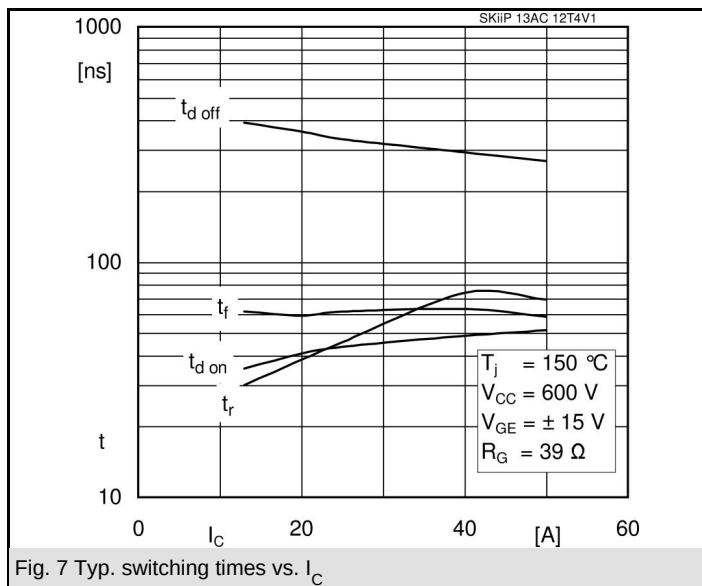


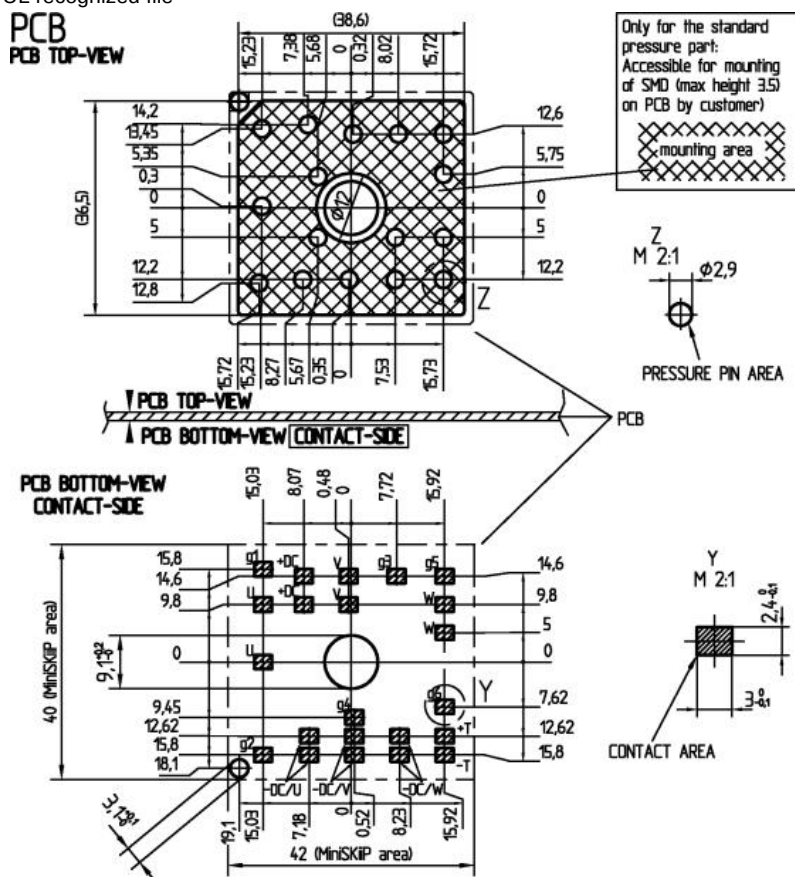
Fig. 6 Typ. gate charge characteristic



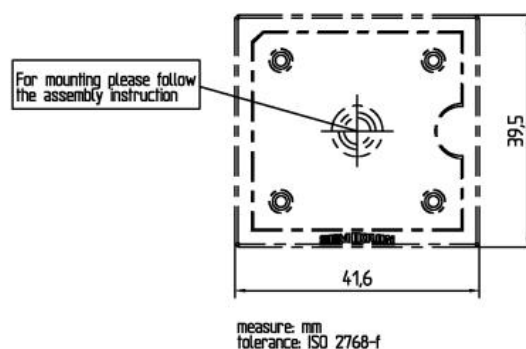
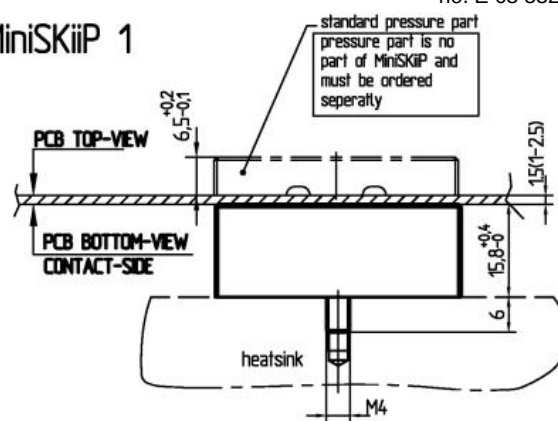
UL recognized file

no. E 63 532

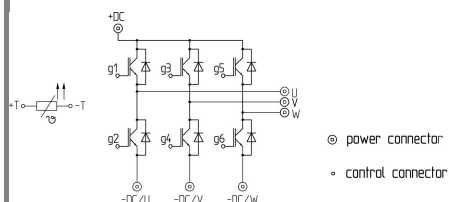
PCB
PCB TOP-VIEW



MiniSKiIP 1



case



pinout