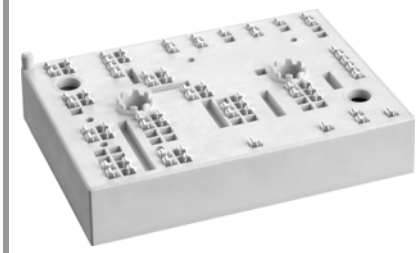
SKiiP 34NAB176V3



MiniSKiiP® 3

3-phase bridge rectifier + brake chopper + 3-phase bridge inverter

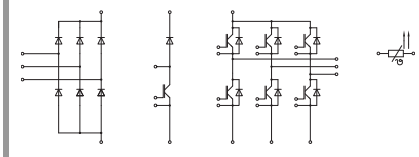
SKiiP 34NAB176V3

Features

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

Remarks

- Max. case temperature limited to T_C=125°C
- Product reliability results valid for T_j≤125°C (recommended $T_{j,op}$=-40...+125°C)
- $I_{t(RMS)}$ limited to 40A for L1, L2, L3, U, V, W, -B, +B, B power connectors
- $I_{t(RMS)}$ limited to 20A for -DC/U, -DC/V, -DC/W power connectors
- Distance between terminals +Tl-T and –DC/W; +B and +DC; -Bl-DC/UlDC/V and –DC/W is not sufficient for basic insulation
- Please refer to MiniSKiiP “Technical Explanations” and “Mounting Instructions” for further information

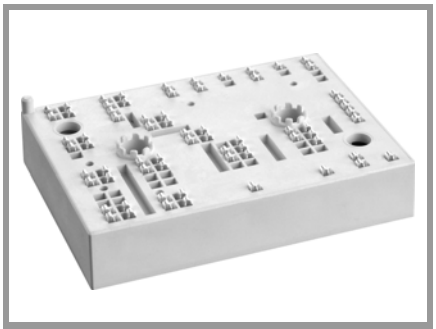


NAB

Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
Inverter - IGBT				
V_{CES}	T_j = 25 °C		1700	V
I_C	λ_{paste}=0.8 W/(mK)	T_s = 25 °C	67	A
	T_j = 150 °C	T_s = 70 °C	51	A
I_C	λ_{paste}=2.5 W/(mK)	T_s = 25 °C	80	A
	T_j = 150 °C	T_s = 70 °C	61	A
I_{Cnom}			58	A
I_{CRM}	I_{CRM} = 2 x I_{Cnom}		116	A
V_{GES}			-20 ... 20	V
t_{psc}	V_{CC} = 1200 V V_{GE} ≤ 20 V V_{CES} ≤ 1700 V	T_j = 125 °C	10	µs
T_j			-55 ... 150	°C
Chopper - IGBT				
V_{CES}	T_j = 25 °C		1700	V
I_C	λ_{paste}=0.8 W/(mK)	T_s = 25 °C	67	A
	T_j = 150 °C	T_s = 70 °C	51	A
I_C	λ_{paste}=2.5 W/(mK)	T_s = 25 °C	80	A
	T_j = 150 °C	T_s = 70 °C	61	A
I_{Cnom}			58	A
I_{CRM}	I_{CRM} = 2 x I_{Cnom}		116	A
V_{GES}			-20 ... 20	V
t_{psc}	V_{CC} = 1200 V V_{GE} ≤ 20 V V_{CES} ≤ 1700 V	T_j = 125 °C	10	µs
T_j			-55 ... 150	°C
Inverse - Diode				
V_{RRM}	T_j = 25 °C		1700	V
I_F	λ_{paste}=0.8 W/(mK)	T_s = 25 °C	66	A
	T_j = 150 °C	T_s = 70 °C	47	A
I_F	λ_{paste}=2.5 W/(mK)	T_s = 25 °C	77	A
	T_j = 150 °C	T_s = 70 °C	55	A
I_{Fnom}			55	A
I_{FRM}	I_{FRM} = 2 x I_{Fnom}		110	A
I_{FSM}	t_p = 10 ms, sin 180°, T_j = 150 °C		550	A
T_j			-40 ... 150	°C
Freewheeling - Diode				
V_{RRM}	T_j = 25 °C		1700	V
I_F	λ_{paste}=0.8 W/(mK)	T_s = 25 °C	66	A
	T_j = 150 °C	T_s = 70 °C	47	A
I_F	λ_{paste}=2.5 W/(mK)	T_s = 25 °C	77	A
	T_j = 150 °C	T_s = 70 °C	55	A
I_{Fnom}			55	A
I_{FRM}	I_{FRM} = 2 x I_{Fnom}		110	A
I_{FSM}	t_p = 10 ms, sin 180°, T_j = 150 °C		550	A
T_j			-40 ... 150	°C

SKiiP 34NAB176V3



MiniSKiiP® 3

3-phase bridge rectifier + brake chopper + 3-phase bridge inverter

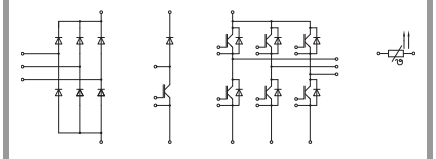
SKiiP 34NAB176V3

Features

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

Remarks

- Max. case temperature limited to T_C=125°C
- Product reliability results valid for T_j≤125°C (recommended $T_{j,op}$=-40...+125°C)
- $I_{t(RMS)}$ limited to 40A for L1, L2, L3, U, V, W, -B, +B, B power connectors
- $I_{t(RMS)}$ limited to 20A for -DC/U, -DC/V, -DC/W power connectors
- Distance between terminals +Tl-T and –DC/W; +B and +DC; -Bl-DC/UlDC/V and –DC/W is not sufficient for basic insulation
- Please refer to MiniSKiiP “Technical Explanations” and “Mounting Instructions” for further information



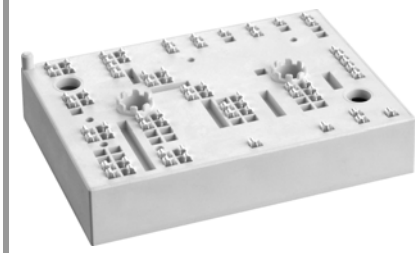
NAB

Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
Rectifier - Diode				
V_{RRM}	T_j = 25 °C		1800	V
I_F	λ_{paste}=0.8 W/(mK)	T_s = 25 °C	97	A
	T_j = 150 °C	T_s = 70 °C	70	A
I_F	λ_{paste}=2.5 W/(mK)	T_s = 25 °C	110	A
	T_j = 150 °C	T_s = 70 °C	80	A
I_{Fnom}	DC current		57	A
I_{FSM}	10 ms	T_j = 25 °C	635	A
	sin 180°	T_j = 150 °C	490	A
I^2t	10 ms	T_j = 25 °C	2000	A^2s
	sin 180°	T_j = 150 °C	1200	A^2s
T_j			-40 ... 150	°C
Module				
$I_{t(RMS)}$	$T_{terminal}$ = 80 °C, 20 A per spring		60	A
T_{stg}			-40 ... 125	°C
V_{isol}	AC sinus 50 Hz, 1 min		2500	V

Characteristics

Symbol	Conditions		min.	typ.	max.	Unit
Inverter - IGBT						
$V_{CE(sat)}$	I_C = 58 A	T_j = 25 °C		2.00	2.45	V
	V_{GE} = 15 V chiplevel	T_j = 125 °C		2.45	2.90	V
V_{CE0}	chiplevel	T_j = 25 °C		1.00	1.20	V
		T_j = 125 °C		0.90	1.10	V
r_{CE}	V_{GE} = 15 V	T_j = 25 °C		17	22	mΩ
	chiplevel	T_j = 125 °C		27	31	mΩ
$V_{GE(th)}$	V_{GE} = V_{CE} V, I_C = 2.4 mA		5.2	5.8	6.4	V
I_{CES}	V_{GE} = 0 V, V_{CE} = 1700 V, T_j = 25 °C			0.1	0.3	mA
C_{ies}	V_{CE} = 25 V	f = 1 MHz		5.00		nF
C_{oes}	V_{GE} = 0 V	f = 1 MHz		0.21		nF
C_{res}		f = 1 MHz		0.17		nF
Q_G	- 8 V...+ 15 V			480		nC
R_{Gint}	T_j = 25 °C			16		Ω
$t_{d(on)}$	V_{CC} = 900 V	T_j = 125 °C		290		ns
t_r	I_C = 40 A	T_j = 125 °C		40		ns
E_{on}	$R_{G\ on}$ = 1 Ω	T_j = 125 °C		11.2		mJ
$t_{d(off)}$	$R_{G\ off}$ = 1 Ω di/dt_{on} = 990 A/µs	T_j = 125 °C		650		ns
t_f	di/dt_{off} = 250 A/µs	T_j = 125 °C		100		ns
E_{off}	du/dt = 4000 V/µs V_{GE} = +15/-15 V L_s = 45 nH	T_j = 125 °C		12.8		mJ
$R_{th(j-s)}$	per IGBT, λ_{paste}=0.8 W/(mK)			0.57		K/W
$R_{th(j-s)}$	per IGBT, λ_{paste}=2.5 W/(mK)			0.42		K/W



MiniSKiiP® 3

3-phase bridge rectifier + brake chopper + 3-phase bridge inverter

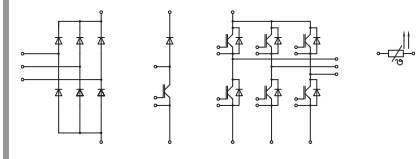
SKiiP 34NAB176V3

Features

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

Remarks

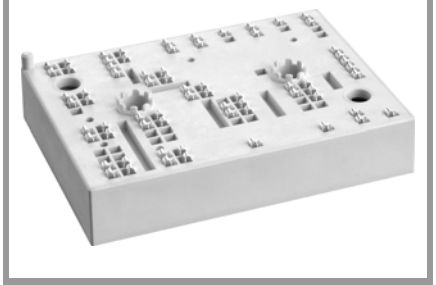
- Max. case temperature limited to T_C=125°C
- Product reliability results valid for T_j≤125°C (recommended $T_{j,op}$=-40...+125°C)
- $I_{t(RMS)}$ limited to 40A for L1, L2, L3, U, V, W, -B, +B, B power connectors
- $I_{t(RMS)}$ limited to 20A for -DC/U, -DC/V, -DC/W power connectors
- Distance between terminals +Tl-T and –DC/W; +B and +DC; -Bl-DC/UlDC/V and –DC/W is not sufficient for basic insulation
- Please refer to MiniSKiiP “Technical Explanations” and “Mounting Instructions” for further information



NAB

Characteristics

Symbol	Conditions		min.	typ.	max.	Unit
Chopper - IGBT						
$V_{CE(sat)}$	I_C = 58 A, V_{GE} = 15 V, chiplevel	T_j = 25 °C		2.00	2.45	V
		T_j = 125 °C		2.45	2.90	V
V_{CE0}	chiplevel	T_j = 25 °C		1.00	1.20	V
		T_j = 125 °C		0.90	1.10	V
r_{CE}	V_{GE} = 15 V, chiplevel	T_j = 25 °C		17	22	mΩ
		T_j = 125 °C		27	31	mΩ
$V_{GE(th)}$	V_{GE} = V_{CE} V, I_C = 2.4 mA		5.2	5.8	6.4	V
I_{CES}	V_{GE} = 0 V, V_{CE} = 1700 V, T_j = 25 °C			0.1	0.3	mA
Q_G	- 8 V...+ 15 V			480		nC
R_{Gint}	T_j = 25 °C			16		Ω
$t_{d(on)}$	V_{CC} = 900 V, I_C = 40 A, $R_{G\,on}$ = 1 Ω, $R_{G\,off}$ = 1 Ω, di/dt$_{on}$ = 990 A/µs, di/dt$_{off}$ = 250 A/µs, du/dt = 4000 V/µs, V_{GE} = +15/-15 V, L_s = 45 nH	T_j = 125 °C		290		ns
t_r		T_j = 125 °C		40		ns
E_{on}		T_j = 125 °C		11.2		mJ
$t_{d(off)}$		T_j = 125 °C		650		ns
t_f		T_j = 125 °C		100		ns
E_{off}		T_j = 125 °C		12.8		mJ
$R_{th(j-s)}$	per IGBT, λ_{paste}=0.8 W/(mK)			0.57		K/W
$R_{th(j-s)}$	per IGBT, λ_{paste}=2.5 W/(mK)			0.42		K/W
Inverse - Diode						
V_F = V_{EC}	I_F = 55 A, V_{GE} = 0 V, chiplevel	T_j = 25 °C		2.06	2.51	V
		T_j = 125 °C		1.79	2.22	V
V_{F0}	chiplevel	T_j = 25 °C		1.52	1.94	V
		T_j = 125 °C		1.17	1.57	V
r_F	chiplevel	T_j = 25 °C		9.7	10	mΩ
		T_j = 125 °C		11	12	mΩ
I_{RRM}	I_F = 40 A, di/dt$_{off}$ = 1050 A/µs, V_{GE} = -15 V, V_{CC} = 900 V	T_j = 125 °C		62		A
Q_{rr}		T_j = 125 °C		13.5		µC
E_{rr}		T_j = 125 °C		6.6		mJ
$R_{th(j-s)}$	per Diode, λ_{paste}=0.8 W/(mK)			0.84		K/W
$R_{th(j-s)}$	per Diode, λ_{paste}=2.5 W/(mK)			0.68		K/W
Freewheeling - Diode						
V_F = V_{EC}	I_F = 55 A, V_{GE} = 0 V, chiplevel	T_j = 25 °C		2.06	2.51	V
		T_j = 125 °C		1.79	2.22	V
V_{F0}	chiplevel	T_j = 25 °C		1.52	1.94	V
		T_j = 125 °C		1.17	1.57	V
r_F	chiplevel	T_j = 25 °C		9.7	10	mΩ
		T_j = 125 °C		11	12	mΩ
I_{RRM}	I_F = 40 A, di/dt$_{off}$ = 1050 A/µs, V_{GE} = -15 V, V_{CC} = 900 V	T_j = 125 °C		62		A
Q_{rr}		T_j = 125 °C		13.5		µC
E_{rr}		T_j = 125 °C		6.6		mJ
$R_{th(j-s)}$	per Diode, λ_{paste}=0.8 W/(mK)			0.84		K/W
$R_{th(j-s)}$	per Diode, λ_{paste}=2.5 W/(mK)			0.68		K/W



MiniSKiiP® 3

3-phase bridge rectifier + brake chopper + 3-phase bridge inverter

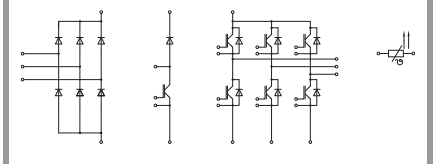
SKiiP 34NAB176V3

Features

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

Remarks

- Max. case temperature limited to T_C=125°C
- Product reliability results valid for T_j≤125°C (recommended $T_{j,op}$=-40...+125°C)
- $I_{t(RMS)}$ limited to 40A for L1, L2, L3, U, V, W, -B, +B, B power connectors
- $I_{t(RMS)}$ limited to 20A for -DC/U, -DC/V, -DC/W power connectors
- Distance between terminals +Tl-T and –DC/W; +B and +DC; -Bl-DC/UlDC/V and –DC/W is not sufficient for basic insulation
- Please refer to MiniSKiiP “Technical Explanations” and “Mounting Instructions” for further information



NAB

Characteristics

Symbol	Conditions		min.	typ.	max.	Unit
Rectifier - Diode						
$V_F = V_{EC}$	I_F = 57 A V_{GE} = 0 V chiplevel	T_j = 25 °C		1.09	1.34	V
		T_j = 125 °C		1.04	1.29	V
V_{F0}	chiplevel	T_j = 25 °C	0.6	0.87	1.10	V
		T_j = 125 °C		0.75	0.97	V
r_F	chip	T_j = 25 °C		4.0	4.3	mΩ
		T_j = 125 °C		5.1	5.6	mΩ
$R_{th(j-s)}$	per Diode, λ_{paste}=0.8 W/(mK)			0.86		K/W
$R_{th(j-s)}$	per Diode, λ_{paste}=2.5 W/(mK)			0.72		K/W
Module						
M_s	to heat sink		2		2.5	Nm
w				82		g
L_{CE}				26		nH
Temperature Sensor						
R_{100}	T_r = 100 °C, tolerance = 3 %			1670 ± 3%		Ω
R(T)	R(T)=1000Ω[1+A(T-25°C)+B(T-25°C)^2], A = 7.635*10^{-3} °C^{-1}, B = 1.731*10^{-5} °C^{-2}					

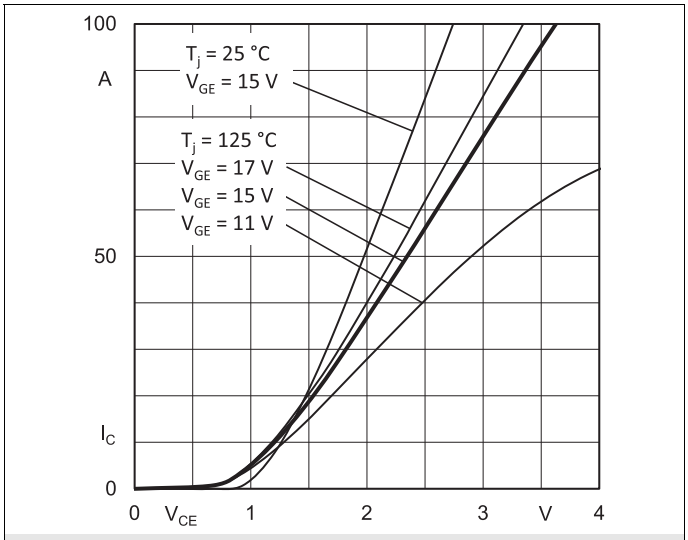


Fig. 1: Typ. output characteristic, inclusive $R_{CC'+EE'}$

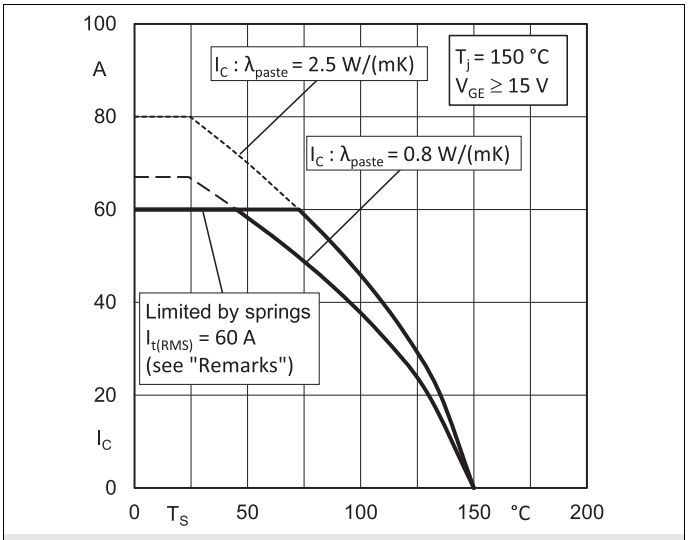


Fig. 2: Typ. rated current vs. temperature $I_C = f(T_S)$

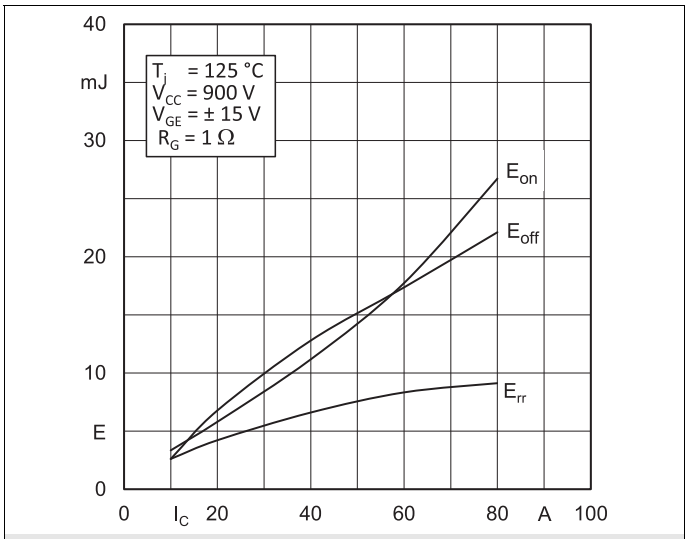


Fig. 3: Typ. turn-on /-off energy = f (I_C)

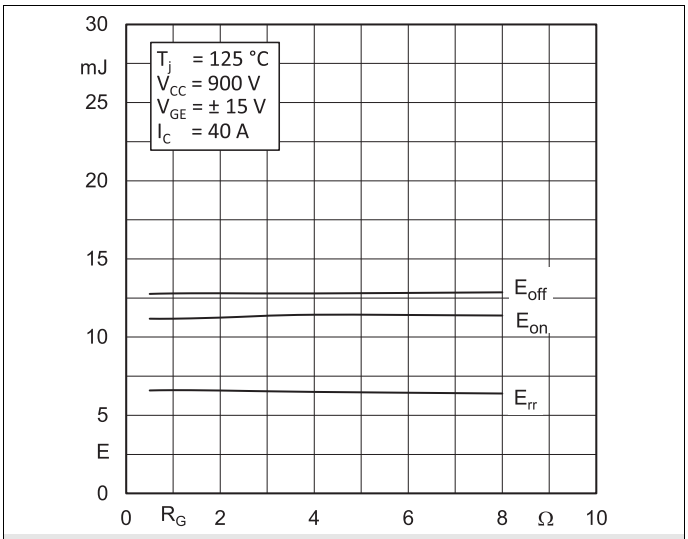


Fig. 4: Typ. turn-on /-off energy = f (R_G)

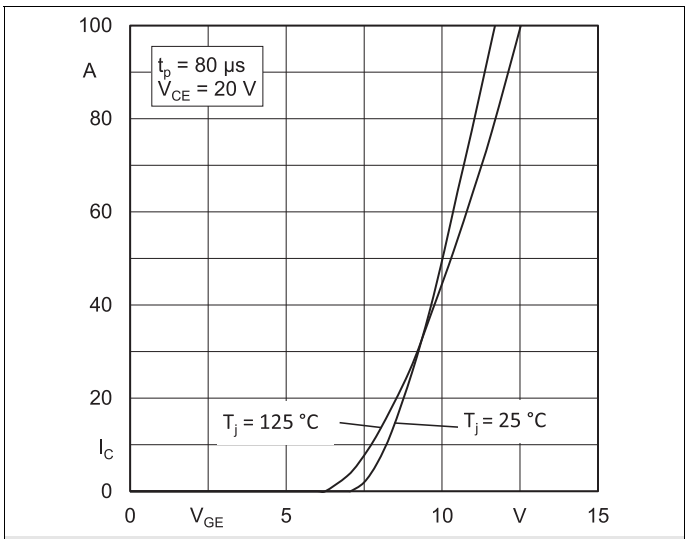


Fig. 5: Typ. transfer characteristic

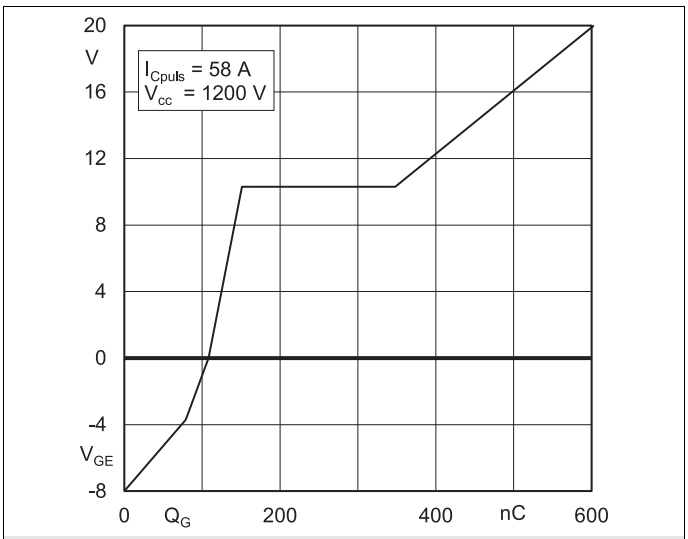


Fig. 6: Typ. gate charge characteristic

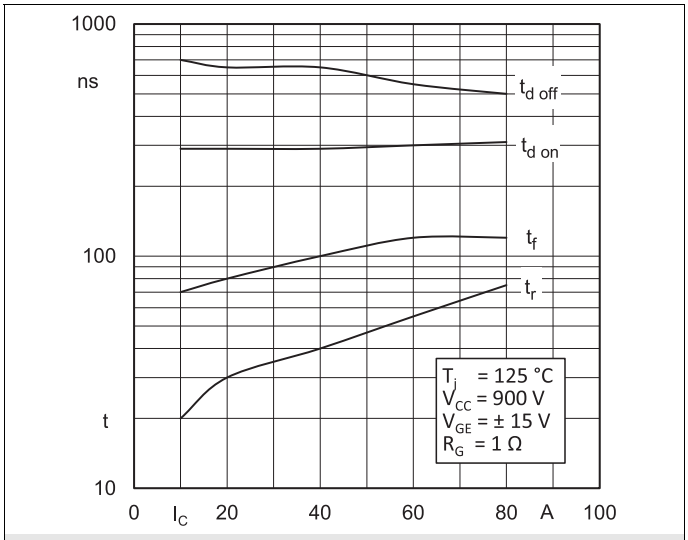


Fig. 7: Typ. switching times vs. I_C

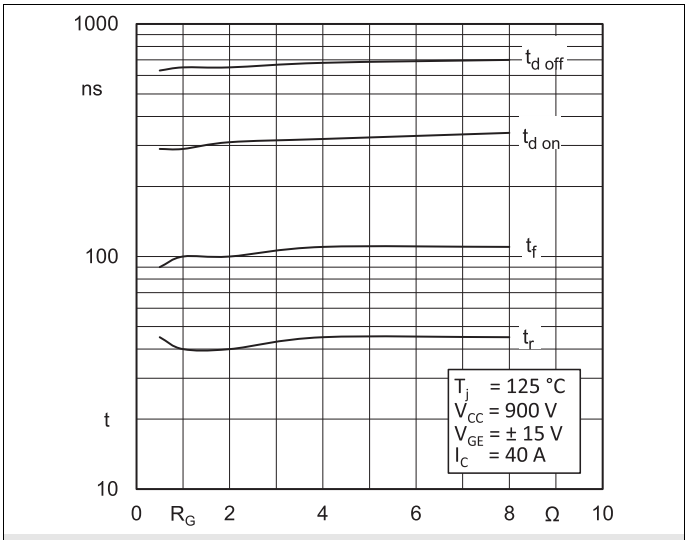


Fig. 8: Typ. switching times vs. gate resistor R_G

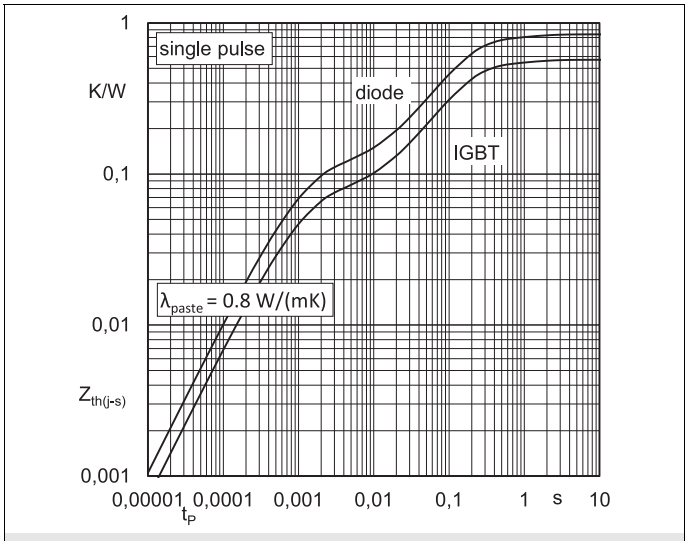


Fig. 9: Transient thermal impedance of IGBT and Diode

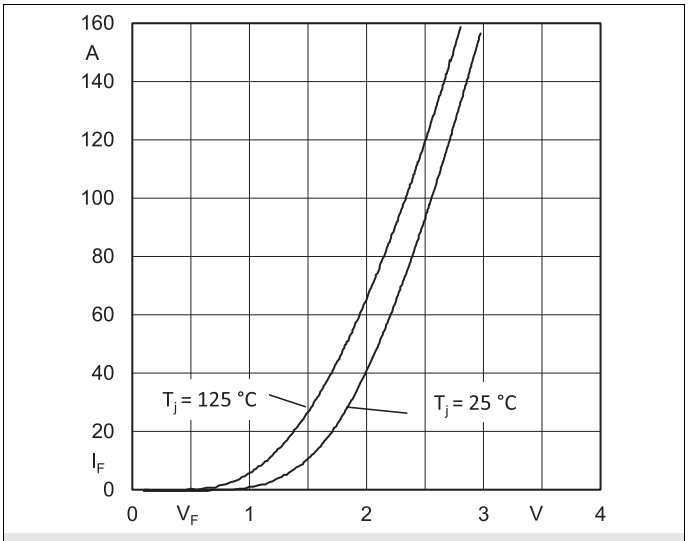


Fig. 10: CAL diode forward characteristic

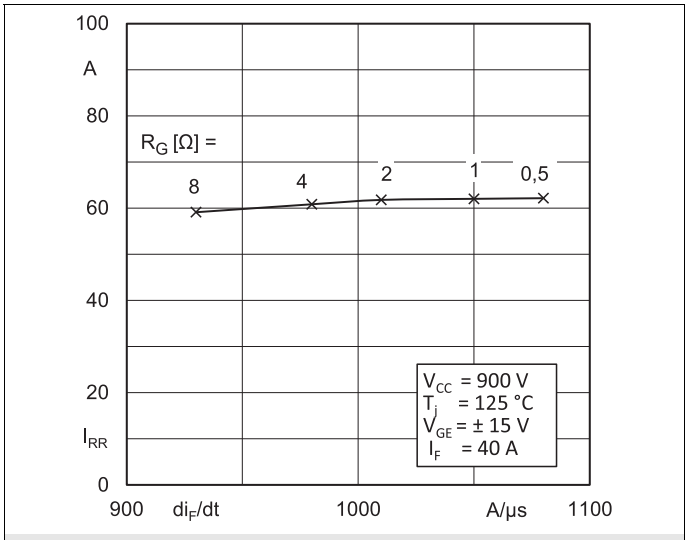


Fig. 11: Typ. CAL diode peak reverse recovery current

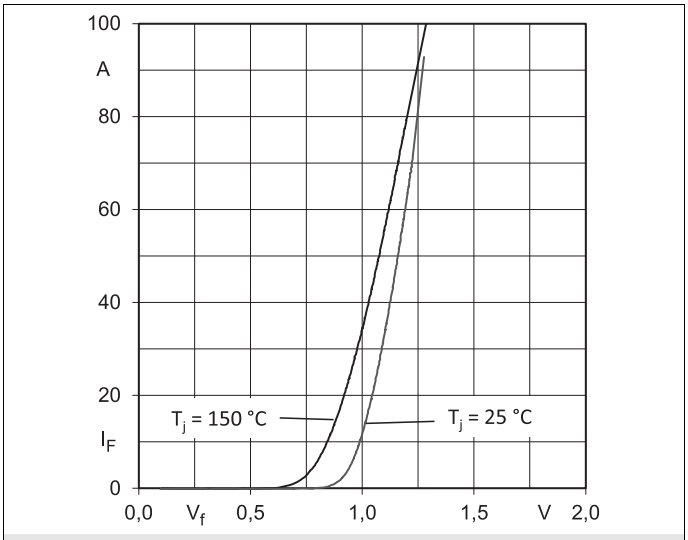
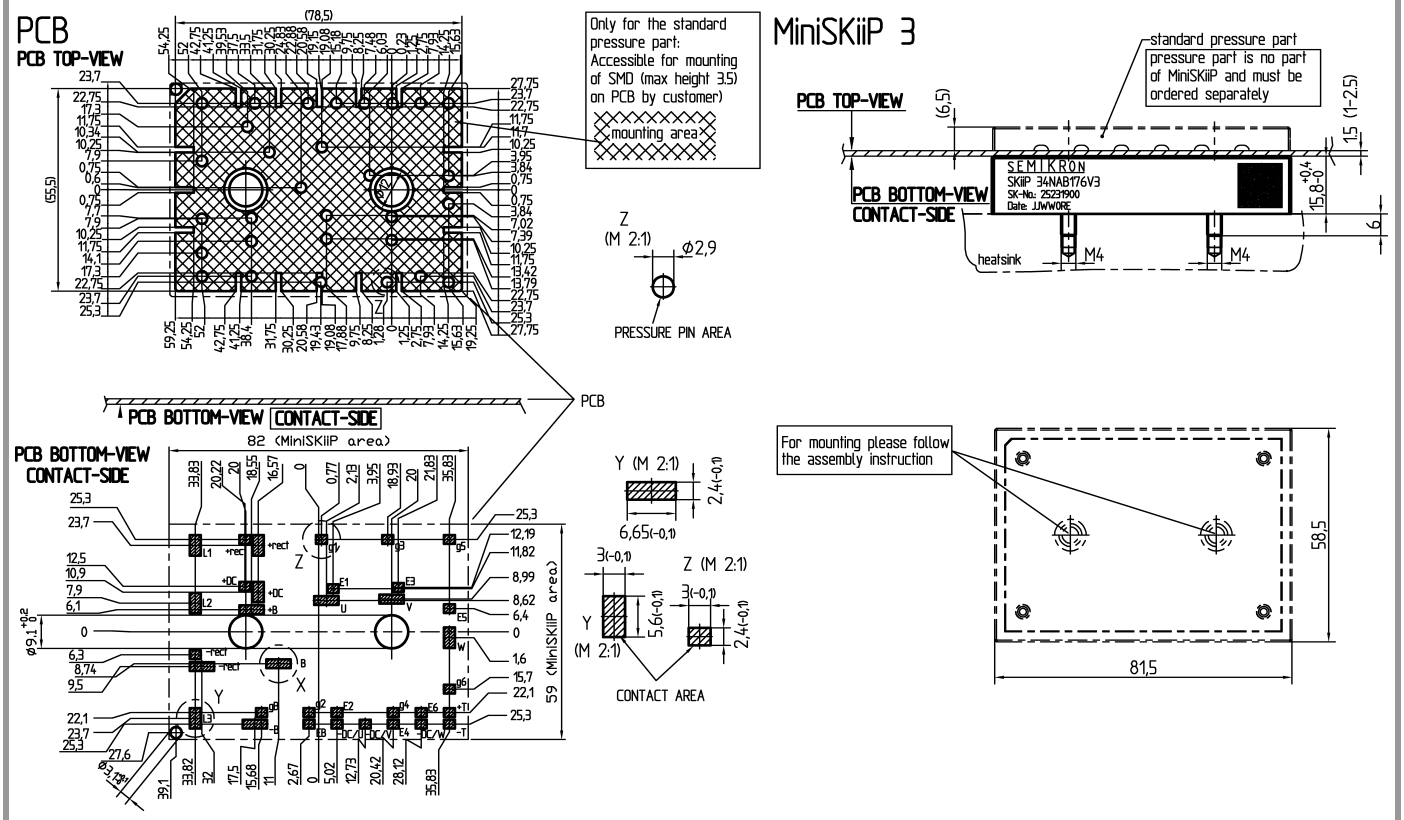
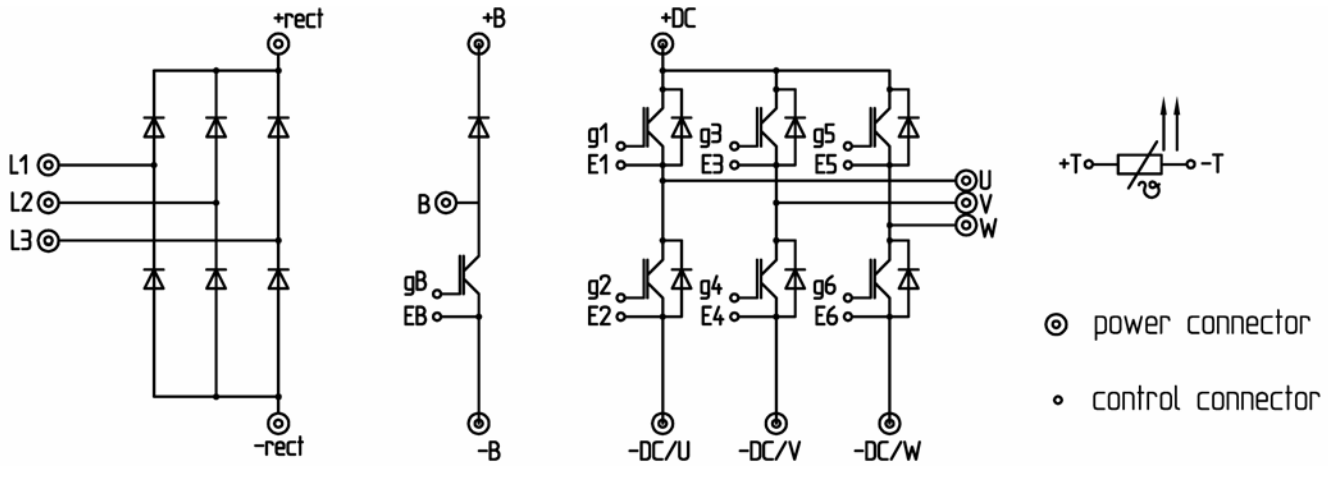


Fig. 12: Typ. input bridge forward characteristic



pinout, dimensions



pinout

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

***IMPORTANT INFORMATION AND WARNINGS**

The specifications of SEMIKRON products may not be considered as guarantee or assurance of product characteristics ("Beschaffenheitsgarantie"). The specifications of SEMIKRON products describe only the usual characteristics of products to be expected in typical applications, which may still vary depending on the specific application. Therefore, products must be tested for the respective application in advance. Application adjustments may be necessary. The user of SEMIKRON products is responsible for the safety of their applications embedding SEMIKRON products and must take adequate safety measures to prevent the applications from causing a physical injury, fire or other problem if any of SEMIKRON products become faulty. The user is responsible to make sure that the application design is compliant with all applicable laws, regulations, norms and standards. Except as otherwise explicitly approved by SEMIKRON in a written document signed by authorized representatives of SEMIKRON, SEMIKRON products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury. No representation or warranty is given and no liability is assumed with respect to the accuracy, completeness and/or use of any information herein, including without limitation, warranties of non-infringement of intellectual property rights of any third party. SEMIKRON does not assume any liability arising out of the applications or use of any product; neither does it convey any license under its patent rights, copyrights, trade secrets or other intellectual property rights, nor the rights of others. SEMIKRON makes no representation or warranty of non-infringement or alleged non-infringement of intellectual property rights of any third party which may arise from applications. Due to technical requirements our products may contain dangerous substances. For information on the types in question please contact the nearest SEMIKRON sales office. This document supersedes and replaces all information previously supplied and may be superseded by updates. SEMIKRON reserves the right to make changes.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for IGBT Modules ***category:***

Click to view products by Semikron ***manufacturer:***

Other Similar products are found below :

F3L100R07W2E3_B11 F3L15R12W2H3_B27 F3L400R07ME4_B22 F3L400R12PT4_B26 F4-100R12KS4 F4-50R07W2H3_B51 F4-75R12KS4_B11 FB15R06W1E3 FB20R06W1E3_B11 FD1000R33HE3-K FD300R06KE3 FD300R12KE3 FD300R12KS4_B5 FD400R12KE3 FD400R33KF2C-K FD401R17KF6C_B2 FD-DF80R12W1H3_B52 FF100R12KS4 FF1200R17KE3_B2 FF150R12KE3G FF200R06KE3 FF200R06YE3 FF200R12KT3 FF200R12KT3_E FF200R12KT4 FF200R17KE3 FF300R06KE3_B2 FF300R12KE4_E FF300R12KS4HOSA1 FF300R12ME4_B11 FF300R12MS4 FF300R17ME4 FF450R12ME4P FF450R17IE4 FF600R12IE4V FF600R12IP4V FF800R17KP4_B2 FF900R12IE4V MIXA30W1200TED MIXA450PF1200TSF FP06R12W1T4_B3 FP100R07N3E4 FP100R07N3E4_B11 FP10R06W1E3_B11 FP10R12W1T4_B11 FP10R12YT3 FP10R12YT3_B4 FP150R07N3E4 FP15R12KT3 FP15R12W2T4