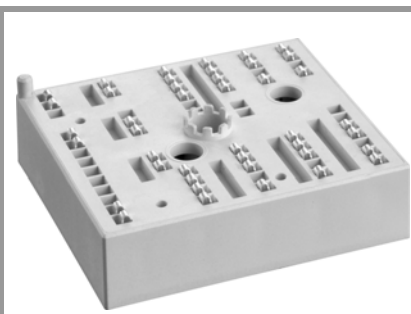




MiniSKiiP® 2

Twin 6-pack

SKiiP 24ACC12T4V1

Features*

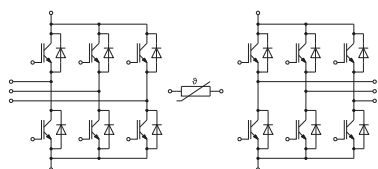
- Trench 4 IGBTs
- Robust and soft switching freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognized: File no. E63532

Typical Applications

- 4Q inverters

Remarks

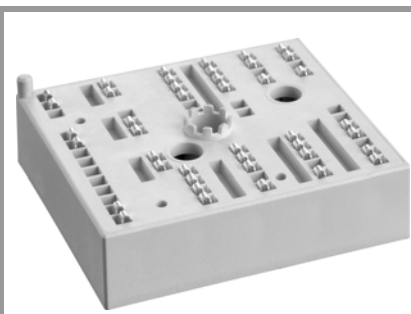
- Max. case temperature limited to $T_C=125^\circ\text{C}$
- Product reliability results valid for $T_j \leq 150^\circ\text{C}$ (recommended $T_{j,op} = -40 \dots +150^\circ\text{C}$)
- Terminal distances sufficient for basic insulation in 3-phase 480VAC TN systems
- DC-link voltage $V_{DC} \leq 800\text{V}$
- Temperature sensor: no basic insulation to main circuit, signal processing with reference to -DC potential
- Please refer to MiniSKiiP "Technical Explanations" and "Mounting Instructions" for further information
- Inverter - IGBT=T1-T12
- Inverse - Diode=D1-D12



ACC

Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
IGBT 1 - 6				
V _{CES}				V
I _C	λ _{paste} =0.8 W/(mK) T _j = 175 °C	T _s = 25 °C		A
		T _s = 70 °C		A
I _C	λ _{paste} =2.5 W/(mK)			A
		T _s = 70 °C		A
I _{Cnom}				A
I _{CRM}				A
V _{GES}				V
t _{psc}	V _{GE} ≤ V V _{CES} ≤ V		n.c.	μs
T _j				°C
IGBT 7 - 12				
V _{CES}	T _j = 25 °C		1200	V
I _C	λ _{paste} =0.8 W/(mK) T _j = 175 °C	T _s = 25 °C	38	A
		T _s = 70 °C	31	A
I _C	λ _{paste} =2.5 W/(mK) T _j = 175 °C	T _s = 25 °C	42	A
		T _s = 70 °C	35	A
I _{Cnom}			25	A
I _{CRM}			75	A
V _{GES}			-20 ... 20	V
t _{psc}	V _{CC} = 800 V V _{GE} ≤ 15 V V _{CES} ≤ 1200 V	T _j = 150 °C	10	μs
T _j			-40 ... 175	°C
Diode 1 - 6				
V _{RRM}				V
I _F	λ _{paste} =0.8 W/(mK)	T _s = 25 °C		A
		T _s = 70 °C		A
I _F	λ _{paste} =2.5 W/(mK)	T _s = 25 °C		A
		T _s = 70 °C		A
I _{FRM}				A
I _{FSM}	, ,			A
T _j			175	°C
Diode 7 - 12				
V _{RRM}	T _j = 25 °C		1200	V
I _F	λ _{paste} =0.8 W/(mK) T _j = 175 °C	T _s = 25 °C	31	A
		T _s = 70 °C	25	A
I _F	λ _{paste} =2.5 W/(mK) T _j = 175 °C	T _s = 25 °C	34	A
		T _s = 70 °C	27	A
I _{FRM}			50	A
I _{FSM}	10 ms, sin 180°, T _j = 150 °C		100	A
T _j			-40 ... 175	°C
Module				
I _{t(RMS)}	20 A per spring		40	A
T _{stg}	module without TIM		-40 ... 125	°C
V _{isol}	AC sinus 50 Hz, 1 min		2500	V

SKiiP 24ACC12T4V1



MiniSKiiP® 2

Twin 6-pack

SKiiP 24ACC12T4V1

Features*

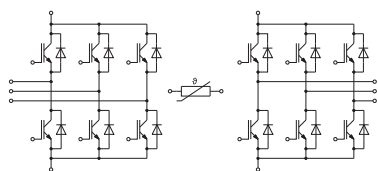
- Trench 4 IGBTs
- Robust and soft switching freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognized: File no. E63532

Typical Applications

- 4Q inverters

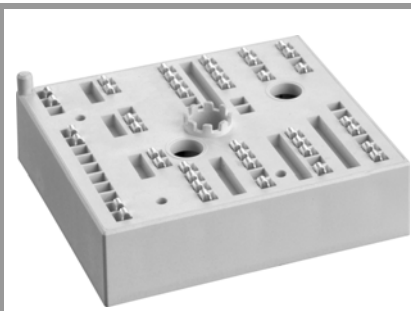
Remarks

- Max. case temperature limited to $T_C=125^\circ\text{C}$
- Product reliability results valid for $T_j \leq 150^\circ\text{C}$ (recommended $T_{j,op} = -40 \dots +150^\circ\text{C}$)
- Terminal distances sufficient for basic insulation in 3-phase 480VAC TN systems
- DC-link voltage $V_{DC} \leq 800\text{V}$
- Temperature sensor: no basic insulation to main circuit, signal processing with reference to $-DC$ potential
- Please refer to MiniSKiiP "Technical Explanations" and "Mounting Instructions" for further information
- Inverter - IGBT=T1-T12
- Inverse - Diode=D1-D12



ACC

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
IGBT 1 - 6						
V _{CE(sat)}	chipselevel					V
						V
V _{CE0}						V
						V
r _{CE}						mΩ
						mΩ
V _{GE(th)}	,					V
I _{CES}					0.3	mA
						mA
C _{ies}						nF
C _{oes}						nF
C _{res}						nF
Q _G						nC
R _{Gint}				0		Ω
t _{d(on)}						ns
t _r						ns
E _{on}						mJ
t _{d(off)}						ns
t _f						ns
E _{off}		V _{GE} = +15/-15 V				
R _{th(j-s)}	per IGBT, λ _{paste} =0.8 W/(mK)					K/W
R _{th(j-s)}	per IGBT, λ _{paste} =2.5 W/(mK)					K/W
IGBT 7 - 12						
V _{CE(sat)}	I _C = 25 A V _{GE} = 15 V chipselevel	T _j = 25 °C		1.85	2.10	V
		T _j = 150 °C		2.25	2.45	V
V _{CE0}	chipselevel	T _j = 25 °C		0.80	0.90	V
		T _j = 150 °C		0.70	0.80	V
r _{CE}	V _{GE} = 15 V chipselevel	T _j = 25 °C		42	48	mΩ
		T _j = 150 °C		62	66	mΩ
V _{GE(th)}	V _{GE} = V _{CE} V, I _C = 1 mA		5.3	5.8	6.3	V
I _{CES}	V _{GE} = 0 V V _{CE} = 1200 V	T _j = 25 °C			1	mA
					-	
C _{ies}	V _{CE} = 25 V V _{GE} = 0 V	f = 1 MHz		1.45		nF
C _{oes}		f = 1 MHz		0.12		nF
C _{res}		f = 1 MHz		0.05		nF
Q _G	V _{GE} = - 8 V...+ 15 V			142		nC
R _{Gint}	T _j = 25 °C			0		Ω
t _{d(on)}	V _{CC} = 600 V	T _j = 150 °C		39		ns
t _r	I _C = 25 A	T _j = 150 °C		32		ns
E _{on}	R _{G on} = 27 Ω R _{G off} = 27 Ω	T _j = 150 °C		3.2		mJ
t _{d(off)}	di/dt _{on} = 780 A/μs	T _j = 150 °C		333		ns
t _f	di/dt _{off} = 360 A/μs dv/dt = 3400 V/μs	T _j = 150 °C		91		ns
E _{off}	V _{GE} = +15/-15 V L _s = 21 nH	T _j = 150 °C		3		mJ
R _{th(j-s)}	per IGBT, λ _{paste} =0.8 W/(mK)			1.13		K/W
R _{th(j-s)}	per IGBT, λ _{paste} =2.5 W/(mK)			0.94		K/W



MiniSKiiP® 2

Twin 6-pack

SKiiP 24ACC12T4V1

Features*

- Trench 4 IGBTs
- Robust and soft switching freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognized: File no. E63532

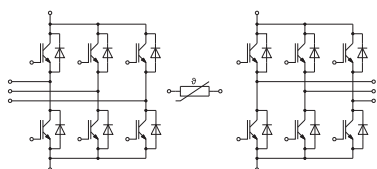
Typical Applications

- 4Q inverters

Remarks

- Max. case temperature limited to $T_C=125^{\circ}\text{C}$
- Product reliability results valid for $T_j \leq 150^{\circ}\text{C}$ (recommended $T_{j,op} = -40 \dots +150^{\circ}\text{C}$)
- Terminal distances sufficient for basic insulation in 3-phase 480VAC TN systems
- DC-link voltage $V_{DC} \leq 800\text{V}$
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- Please refer to MiniSKiiP "Technical Explanations" and "Mounting Instructions" for further information
- Inverter - IGBT=T1-T12
- Inverse - Diode=D1-D12

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Diode 1 - 6						
V _F = V _{EC}	I _F = 25 A	T _j = 25 °C				V
	V _{GE} = 0 V					V
V _{F0}	chiplevel	T _j = 25 °C				V
						V
r _F	chiplevel	T _j = 25 °C		0.00	0.00	mΩ
				0.00	0.00	mΩ
I _{RRM}	V _{GE} = -15 V	T _j = 150 °C		t.b.d.		A
Q _{rr}		T _j = 150 °C		t.b.d.		μC
E _{rr}		T _j = 150 °C		t.b.d.		mJ
R _{th(j-s)}	per Diode, λ _{paste} =0.8 W/(mK)					K/W
R _{th(j-s)}	per Diode, λ _{paste} =2.5 W/(mK)					K/W
Diode 7 - 12						
V _F = V _{EC}	I _F = 25 A	T _j = 25 °C		2.41	2.74	V
	V _{GE} = 0 V	T _j = 150 °C		2.45	2.79	V
	chiplevel					
V _{F0}	chiplevel	T _j = 25 °C		1.30	1.50	V
		T _j = 150 °C		0.90	1.10	V
r _F	chiplevel	T _j = 25 °C		44	50	mΩ
		T _j = 150 °C		62	68	mΩ
I _{RRM}	I _F = 25 A	T _j = 150 °C		23		A
Q _{rr}	di/dt _{off} = 732 A/μs	T _j = 150 °C		3.8		μC
E _{rr}	V _{GE} = -15 V	T _j = 150 °C		1.4		mJ
	V _{CC} = 600 V					
R _{th(j-s)}	per Diode, λ _{paste} =0.8 W/(mK)			1.6		K/W
R _{th(j-s)}	per Diode, λ _{paste} =2.5 W/(mK)			1.37		K/W
Module						
L _{CE}				-		nH
M _s	to heat sink		2		2.5	Nm
w				55		g
Temperature Sensor						
R ₁₀₀	T _r =100°C (R ₂₅ =1000Ω)			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 °C ⁻¹ , B = 1.731*10 ⁻⁵ °C ⁻² °C ⁻²					



ACC

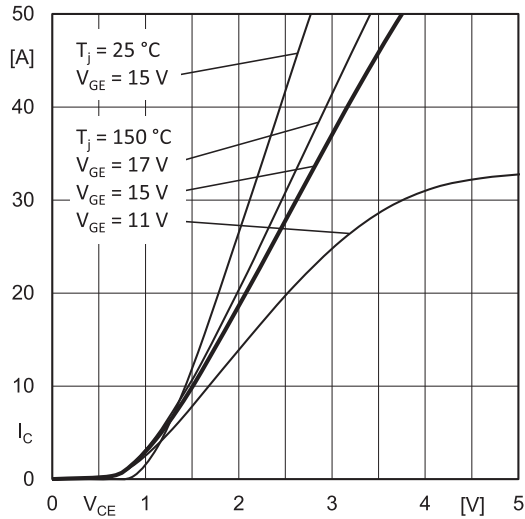


Fig. 1: Typ. output characteristic

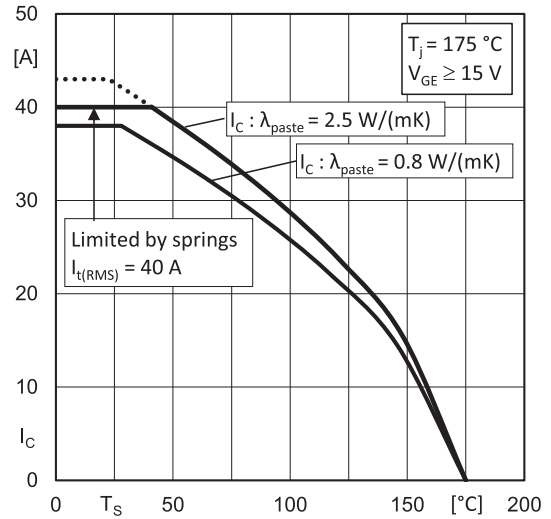


Fig. 2: Rated current vs. temperature $I_C = f(T_s)$

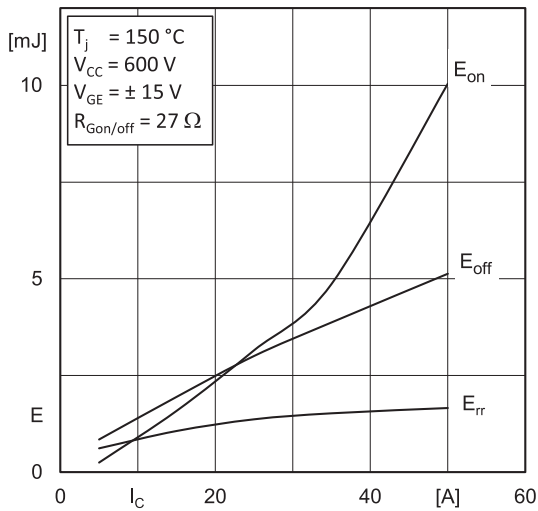


Fig. 3: Typ. turn-on /-off energy = $f(I_C)$

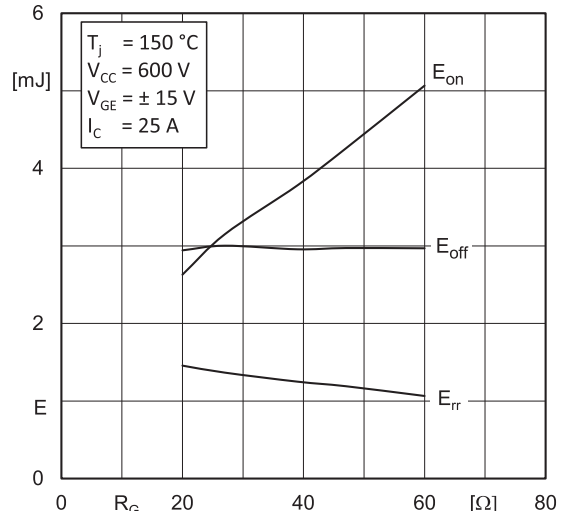


Fig. 4: Typ. turn-on /-off energy = $f(R_G)$

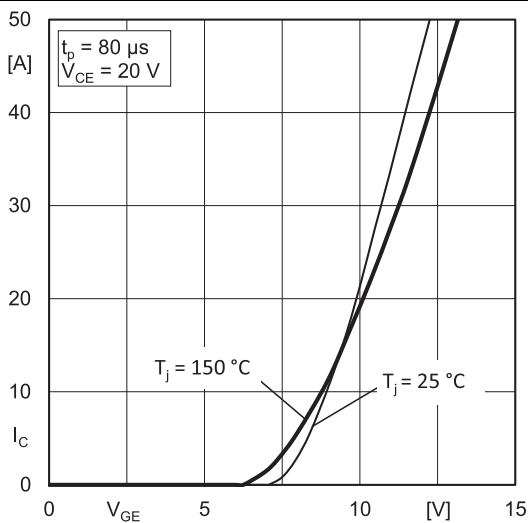


Fig. 5: Typ. transfer characteristic

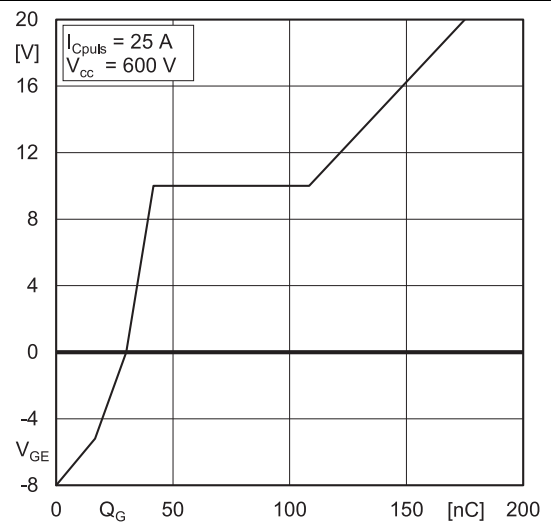


Fig. 6: Typ. gate charge characteristic

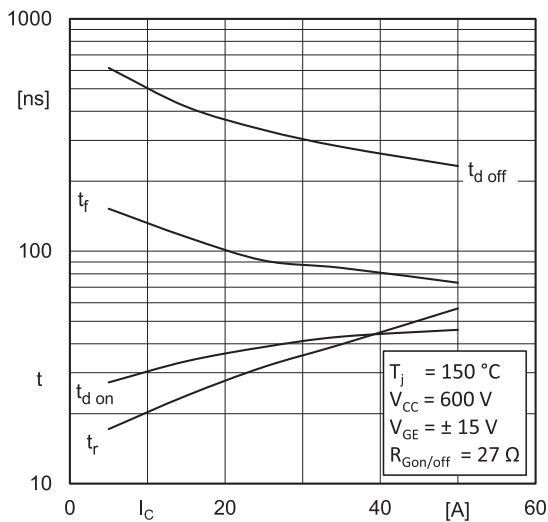


Fig. 7: Typ. switching times vs. I_C

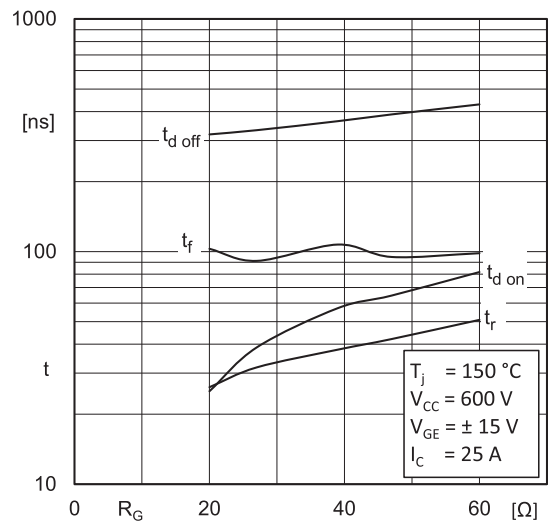


Fig. 8: Typ. switching times vs. gate resistor R_G

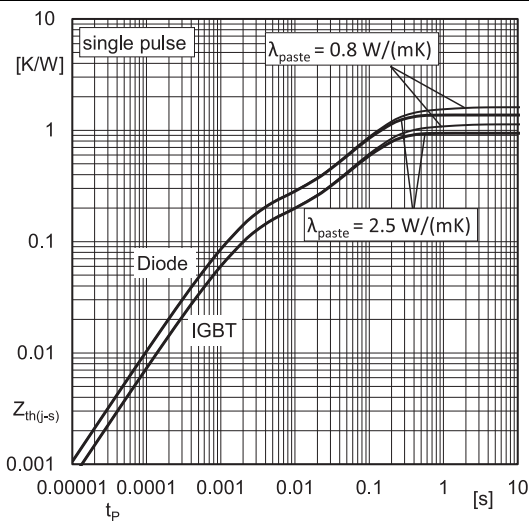


Fig. 9: Typ. transient thermal impedance

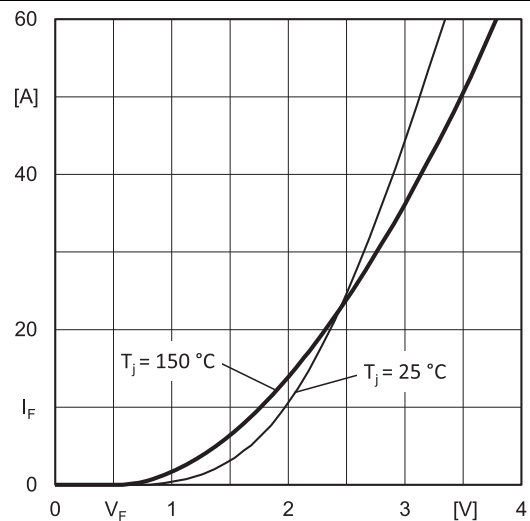


Fig. 10: Typ. CAL diode forward characteristic

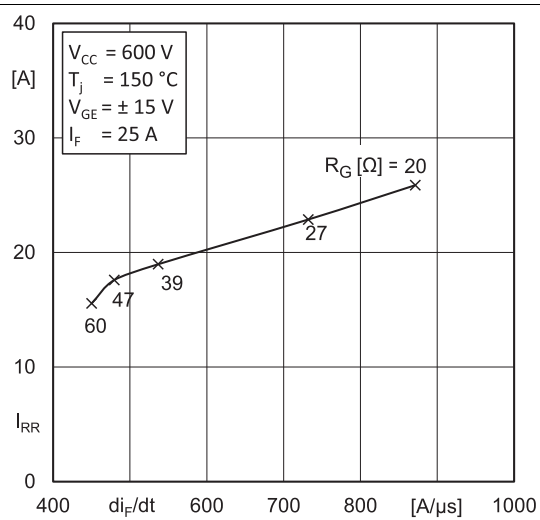


Fig. 11: Typ. CAL diode peak reverse recovery current

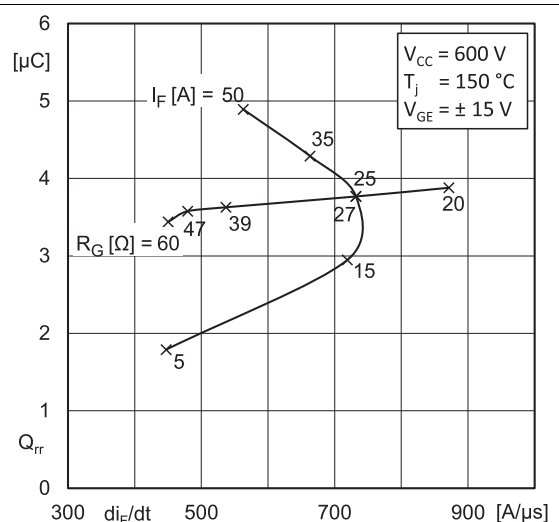
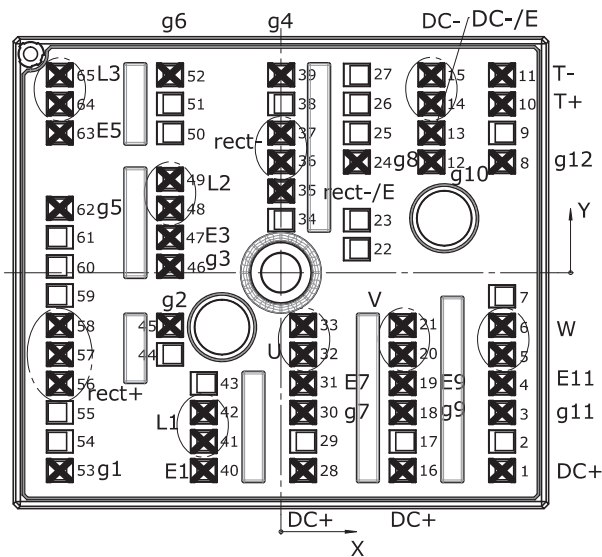


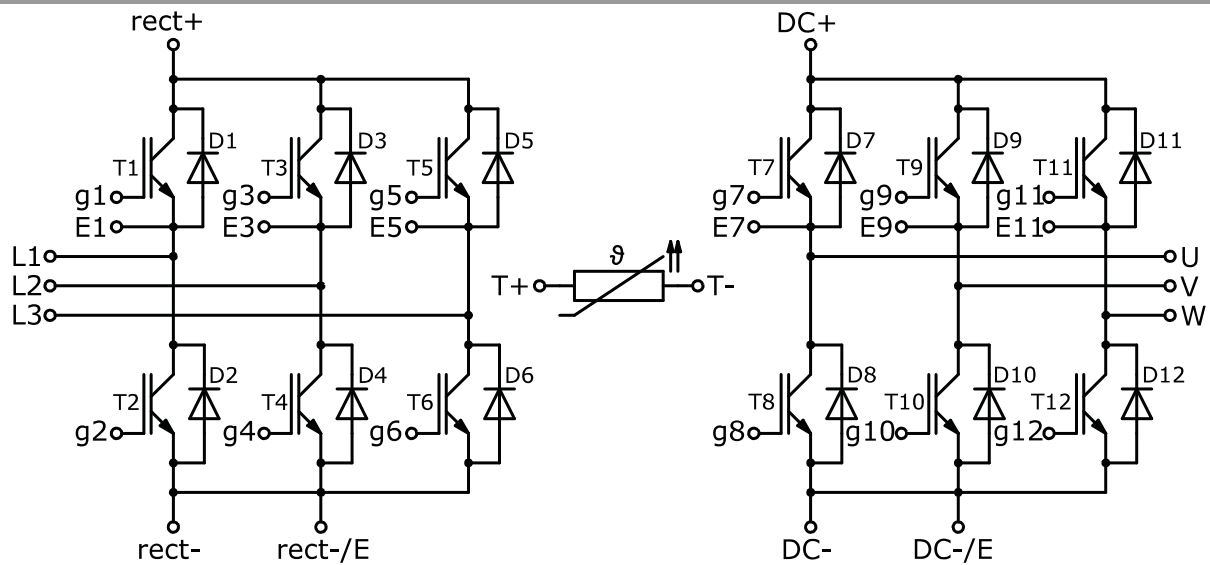
Fig. 12: Typ. CAL diode recovery charge

Pin out											
Pin	X	Y	Function	Pin	X	Y	Function	Pin	X	Y	Function
1	24,38	-21,80	DC+	23	8,38	5,80		45	-12,23	-5,80	g2
2	24,38	-18,60		24	8,38	12,20	g8	46	-12,23	0,70	g3
3	24,38	-15,40	g11	25	8,38	15,40		47	-12,23	3,90	E3
4	24,38	-12,20	E11	26	8,38	18,60		48	-12,23	7,10	L2
5	24,38	-9,00	W	27	8,38	21,80		49	-12,23	10,30	L2
6	24,38	-5,80	W	28	2,46	-21,80	DC+	50	-12,23	15,40	
7	24,38	-2,60		29	2,46	-18,60		51	-12,23	18,60	
8	24,38	12,20	g12	30	2,46	-15,40	g7	52	-12,23	21,80	g6
9	24,38	15,40		31	2,46	-12,20	E7	53	-24,38	-21,80	g1
10	24,38	18,60	T+	32	2,46	-9,00	U	54	-24,38	-18,60	
11	24,38	21,80	T-	33	2,46	-5,80	U	55	-24,38	-15,40	
12	16,58	12,20	g10	34	0,03	5,80		56	-24,38	-12,20	rect+
13	16,58	15,40	DC-/E	35	0,03	9,00	rect-/E	57	-24,38	-9,00	rect+
14	16,58	18,60	DC-	36	0,03	12,20	rect-	58	-24,38	-5,80	rect+
15	16,58	21,80	DC-	37	0,03	15,40	rect-	59	-24,38	-2,50	
16	13,42	-21,80	DC+	38	0,03	18,60		60	-24,38	0,70	
17	13,42	-18,60		39	0,03	21,80	g4	61	-24,38	3,90	
18	13,42	-15,40	g9	40	-8,51	-21,80	E1	62	-24,38	7,10	g5
19	13,42	-12,20	E9	41	-8,51	-18,60	L1	63	-24,38	15,40	E5
20	13,42	-9,00	V	42	-8,51	-15,40	L1	64	-24,38	18,60	L3
21	13,42	-5,80	V	43	-8,51	-12,20		65	-24,38	21,80	L3
22	8,38	2,60		44	-12,23	-9,00					

all values in mm



Pinout and Dimensions



Pinout

This is an electrostatic discharge sensitive device (ESDS) due to international standard IEC 61340.

***IMPORTANT INFORMATION AND WARNINGS**

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