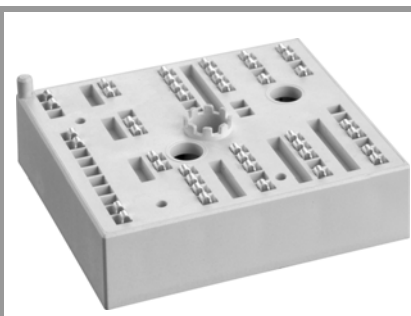


SKiiP 23ACC12T7V1



MiniSKiiP® 2

Twelvepack

SKiiP 23ACC12T7V1

Features*

- 1200V Generation 7 IGBTs (T7)
- Robust and soft switching freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognized: File no. E63532

Remarks

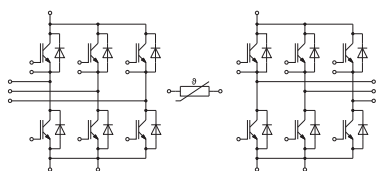
- Max. case temperature limited to $T_C = T_S = 125^\circ\text{C}$
- Product reliability results valid for $T_j \leq 150^\circ\text{C}$; $T_{j,op} > 150^\circ\text{C}$ during overload (Details see AN19-002)
- MiniSKiiP "Technical Explanations" and "Mounting Instructions" are part of the data sheet. Please refer to both documents for further information.
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- Inverter-IGBT: T1-T12
- Inverse-Diode: D1-D12

Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
Inverter - IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	λ _{paste} =0.8 W/(mK)	T _s = 70 °C	33	A
	T _j = 175 °C	T _s = 100 °C	27	A
I _C	λ _{paste} =2.5 W/(mK)	T _s = 70 °C	37	A
	T _j = 175 °C	T _s = 100 °C	30	A
I _{Cnom}			25	A
I _{CRM}			50	A
V _{GES}			-20 ... 20	V
t _{psc}	V _{CC} = 800 V V _{GE} ≤ 15 V V _{CES} ≤ 1200 V	T _j = 175 °C	7	μs
T _j			-40 ... 175	°C
Inverse - Diode				
V _{RRM}	T _j = 25 °C		1200	V
I _F	λ _{paste} =0.8 W/(mK)	T _s = 70 °C	24	A
	T _j = 175 °C	T _s = 100 °C	20	A
I _F	λ _{paste} =2.5 W/(mK)	T _s = 70 °C	27	A
	T _j = 175 °C	T _s = 100 °C	22	A
I _{FRM}			50	A
I _{FSM}	t _p = 10 ms, sin 180°, T _j = 150 °C		100	A
T _j			-40 ... 175	°C
Module				
I _{t(RMS)}	T _{terminal} = 80 °C, 20 A per spring		40	A
T _{stg}	module without TIM		-40 ... 125	°C
V _{isol}	AC sinus 50 Hz, t = 1 min		2500	V

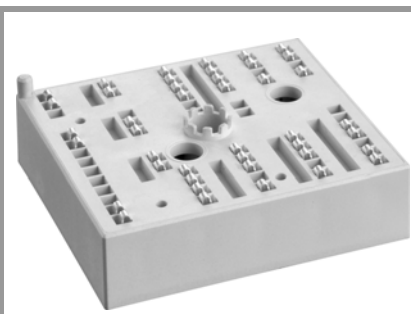
Characteristics

Symbol	Conditions	min.	typ.	max.	Unit
Inverter - IGBT					
$V_{CE(sat)}$	$I_C = 25\text{ A}$	$T_j = 25^\circ\text{C}$	1.60	1.75	V
	$V_{GE} = 15\text{ V}$	$T_j = 150^\circ\text{C}$	1.78	1.93	V
	chiplevel	$T_j = 175^\circ\text{C}$	1.82	1.97	V
V_{CE0}		$T_j = 25^\circ\text{C}$	1.00	1.05	V
	chiplevel	$T_j = 150^\circ\text{C}$	0.80	0.85	V
		$T_j = 175^\circ\text{C}$	0.75	0.80	V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	24	28	$\text{m}\Omega$
	chiplevel	$T_j = 150^\circ\text{C}$	39	43	$\text{m}\Omega$
		$T_j = 175^\circ\text{C}$	43	47	$\text{m}\Omega$
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0.53\text{ mA}$	5.15	5.8	6.45	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = 1200\text{ V}, T_j = 25^\circ\text{C}$			1	mA
C_{ies}	$V_{CE} = 25\text{ V}$	$f = 1\text{ MHz}$	4.80		nF
C_{oes}	$V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	0.06		nF
C_{res}		$f = 1\text{ MHz}$	0.02		nF
Q_G	$V_{GE} = -8\text{ V} \dots +15\text{ V}$		350		nC
R_{Gint}	$T_j = 25^\circ\text{C}$		0		Ω



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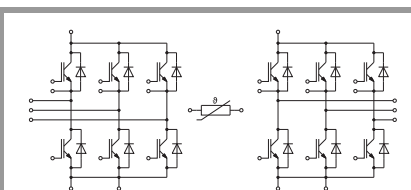
SKiiP 23ACC12T7V1

Features*

- 1200V Generation 7 IGBTs (T7)
- Robust and soft switching freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognized: File no. E63532

Remarks

- Max. case temperature limited to $T_C = T_S = 125^\circ\text{C}$
- Product reliability results valid for $T_j \leq 150^\circ\text{C}$; $T_{j,op} > 150^\circ\text{C}$ during overload (Details see AN19-002)
- MiniSKiiP "Technical Explanations" and "Mounting Instructions" are part of the data sheet. Please refer to both documents for further information.
- For storage and case temperature with TIM see document "Technical Explanations Thermal Interface Materials"
- Inverter-IGBT: T1-T12
- Inverse-Diode: D1-D12

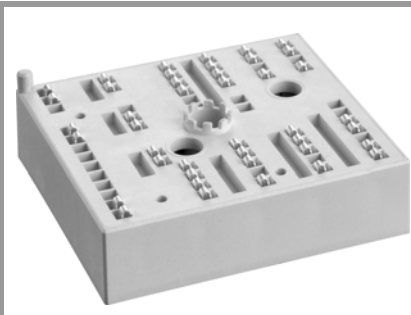


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Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Inverter - IGBT					
$t_{d(on)}$	$V_{CC} = 600\text{ V}$ $I_C = 25\text{ A}$ $R_{G\ on} = 12.8\ \Omega$ $R_{G\ off} = 12.8\ \Omega$ $V_{GE} = +15/-15\text{ V}$	$T_j = 25^\circ\text{C}$	40		ns
		$T_j = 150^\circ\text{C}$	42		ns
		$T_j = 175^\circ\text{C}$	43		ns
t_r		$T_j = 25^\circ\text{C}$	38		ns
		$T_j = 150^\circ\text{C}$	44		ns
		$T_j = 175^\circ\text{C}$	47		ns
E_{on}	$T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ $T_j = 175^\circ\text{C}$		2		mJ
			2.8		mJ
			3		mJ
$t_{d(off)}$		$T_j = 25^\circ\text{C}$	218		ns
		$T_j = 150^\circ\text{C}$	308		ns
		$T_j = 175^\circ\text{C}$	333		ns
t_f	$@ T_j = 150^\circ\text{C}$: $di/dt_{on} = 590\text{ A}/\mu\text{s}$ $di/dt_{off} = 280\text{ A}/\mu\text{s}$ $dv/dt = 3600\text{ V}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	46		ns
		$T_j = 150^\circ\text{C}$	71		ns
		$T_j = 175^\circ\text{C}$	87		ns
E_{off}		$T_j = 25^\circ\text{C}$	1.6		mJ
		$T_j = 150^\circ\text{C}$	2.8		mJ
		$T_j = 175^\circ\text{C}$	3		mJ
$R_{th(j-s)}$	per IGBT, $\lambda_{paste} = 0.8\text{ W}/(\text{mK})$		1.32		K/W
$R_{th(j-s)}$	per IGBT, $\lambda_{paste} = 2.5\text{ W}/(\text{mK})$		1.11		K/W

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Inverse - Diode					
$V_F = V_{EC}$	$I_F = 25\text{ A}$ $V_{GE} = 0\text{ V}$ chipelevel	$T_j = 25^\circ\text{C}$	2.41	2.74	V
		$T_j = 150^\circ\text{C}$	2.45	2.79	V
		$T_j = 175^\circ\text{C}$	2.30	2.62	V
V_{F0}	chipelevel	$T_j = 25^\circ\text{C}$	1.30	1.50	V
		$T_j = 150^\circ\text{C}$	0.90	1.10	V
		$T_j = 175^\circ\text{C}$	0.82	0.98	V
r_F	chipelevel	$T_j = 25^\circ\text{C}$	44	50	m Ω
		$T_j = 150^\circ\text{C}$	62	68	m Ω
		$T_j = 175^\circ\text{C}$	59	66	m Ω
I_{RRM}	$I_F = 25\text{ A}$ $V_{GE} = +15/-15\text{ V}$ $V_{CC} = 600\text{ V}$	$T_j = 25^\circ\text{C}$	15		A
		$T_j = 150^\circ\text{C}$	20		A
		$T_j = 175^\circ\text{C}$	23		A
Q_{rr}		$T_j = 25^\circ\text{C}$	1.5		μC
		$T_j = 150^\circ\text{C}$	3.7		μC
		$T_j = 175^\circ\text{C}$	4.1		μC
E_{rr}	$@ T_j = 150^\circ\text{C}$: $di/dt_{off} = 610\text{ A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	0.48		mJ
		$T_j = 150^\circ\text{C}$	1.4		mJ
		$T_j = 175^\circ\text{C}$	1.9		mJ
$R_{th(j-s)}$	per Diode, $\lambda_{paste} = 0.8\text{ W}/(\text{mK})$		1.68		K/W
$R_{th(j-s)}$	per Diode, $\lambda_{paste} = 2.5\text{ W}/(\text{mK})$		1.44		K/W
Module					
L_{CE}			-		nH
M_s	to heat sink	2		2.5	Nm
w			55		g

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MiniSKiiP® 2

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Temperature Sensor					
R_{100}	$T_r=100^{\circ}\text{C}$ ($R_{25}=1000\Omega$)		$1670 \pm 3\%$		Ω
$R_{(T)}$	$R_{(T)}=1000\Omega[1+A(T-25^{\circ}\text{C})+B(T-25^{\circ}\text{C})^2]$ $A = 7.635 \cdot 10^{-3}^{\circ}\text{C}^{-1}$, $B = 1.731 \cdot 10^{-5}^{\circ}\text{C}^{-2}$				

Twelvepack

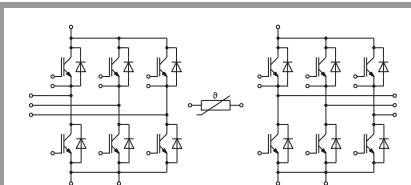
SKiiP 23ACC12T7V1

Features*

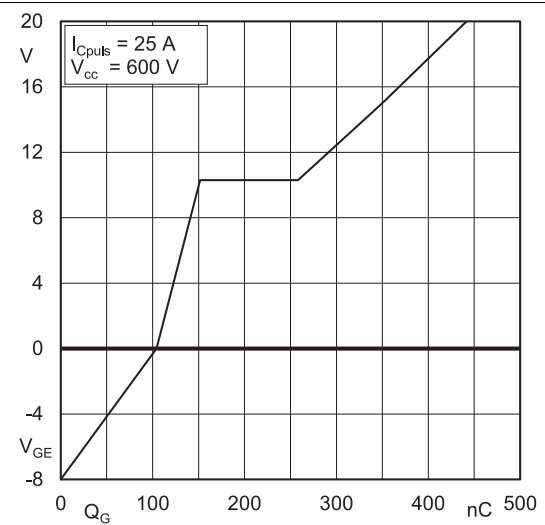
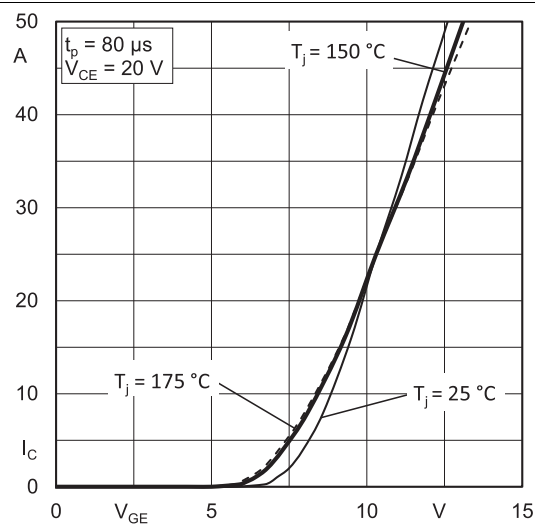
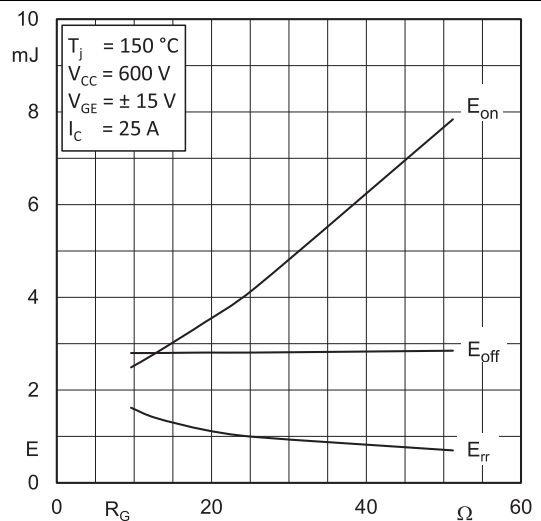
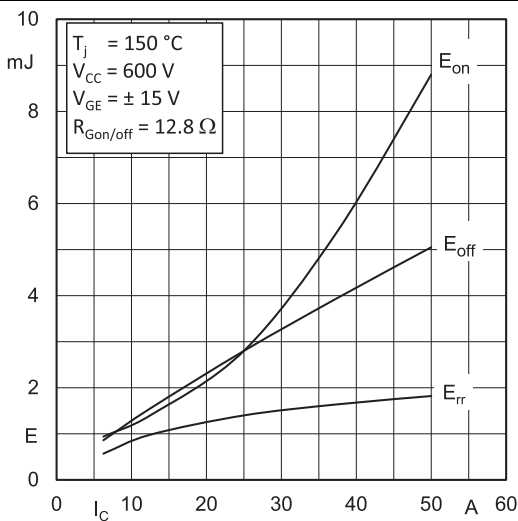
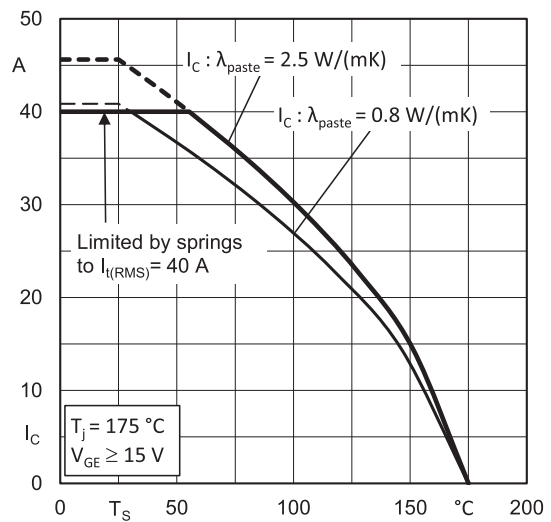
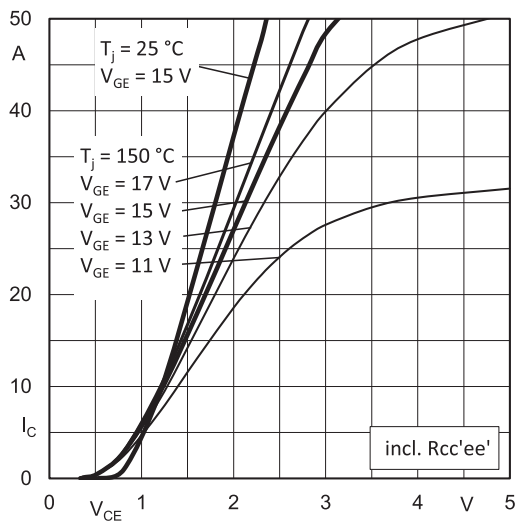
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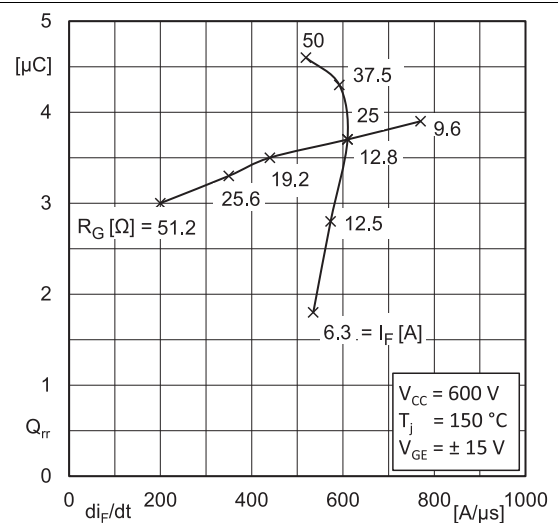
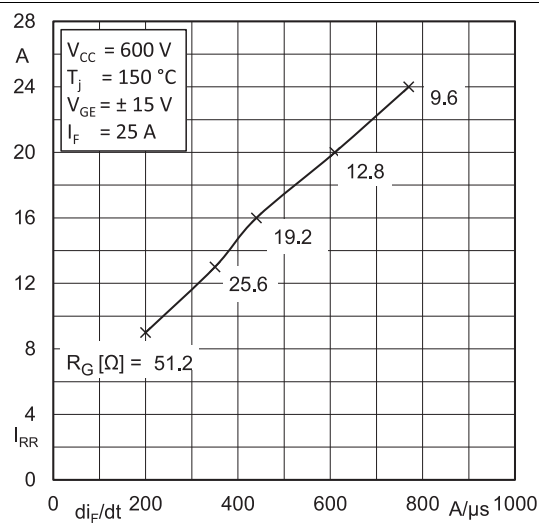
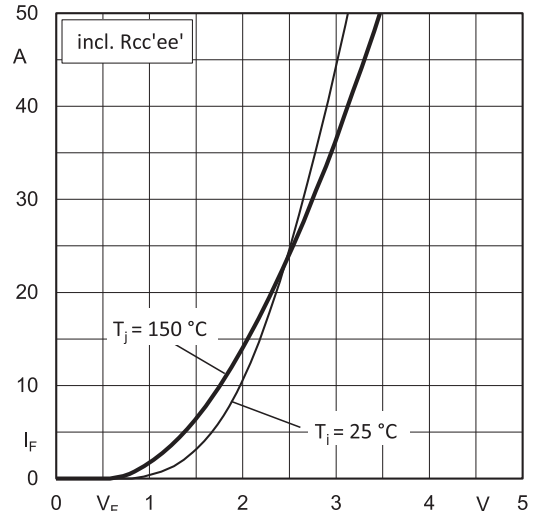
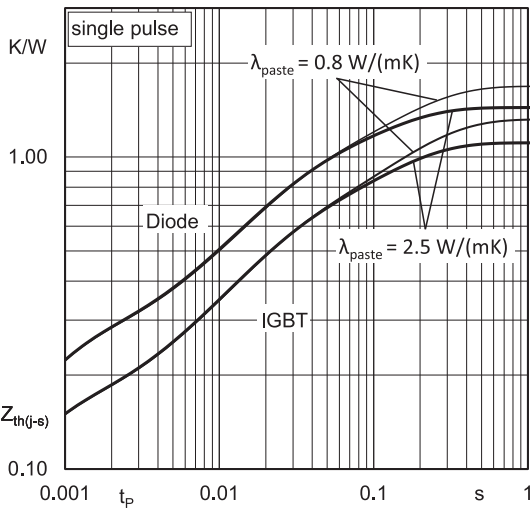
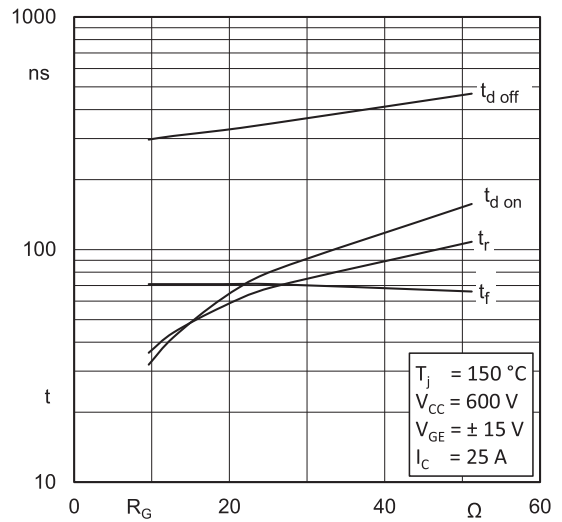
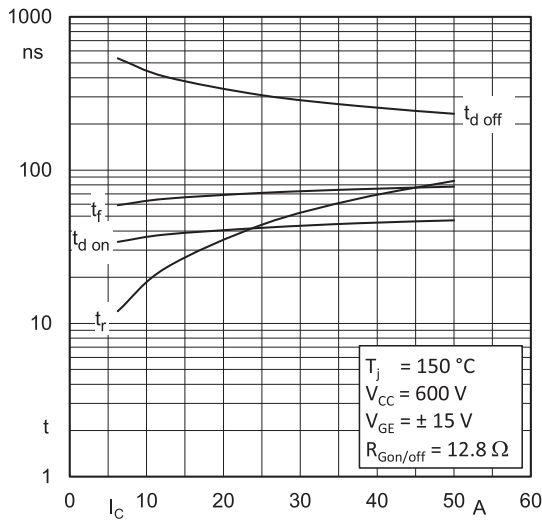
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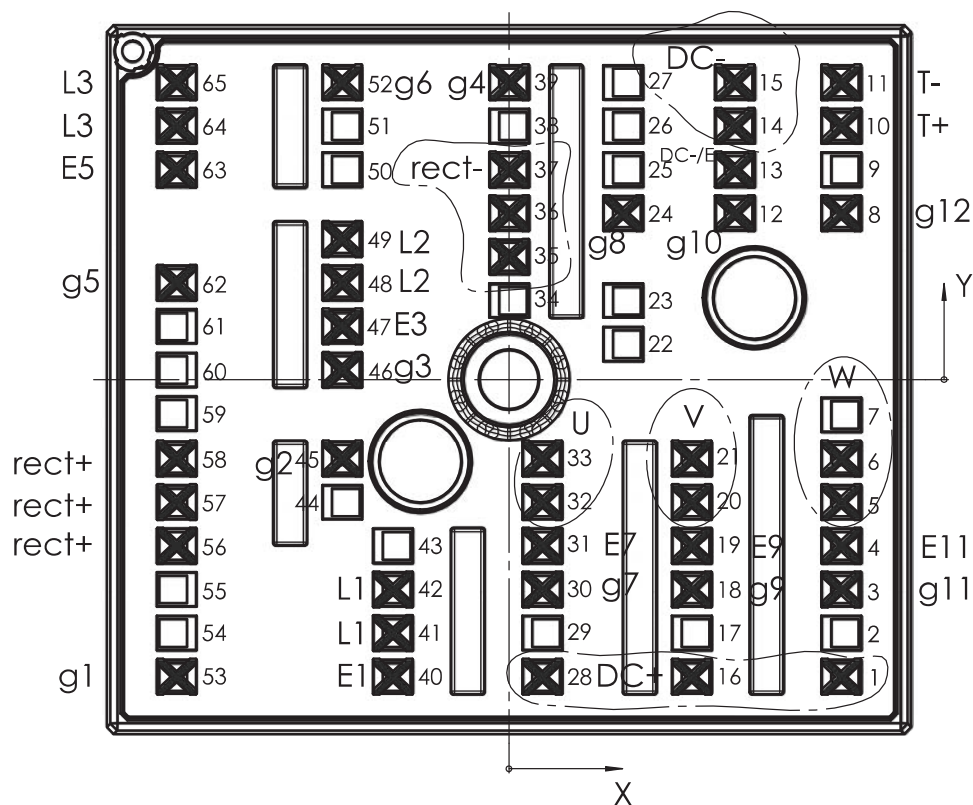
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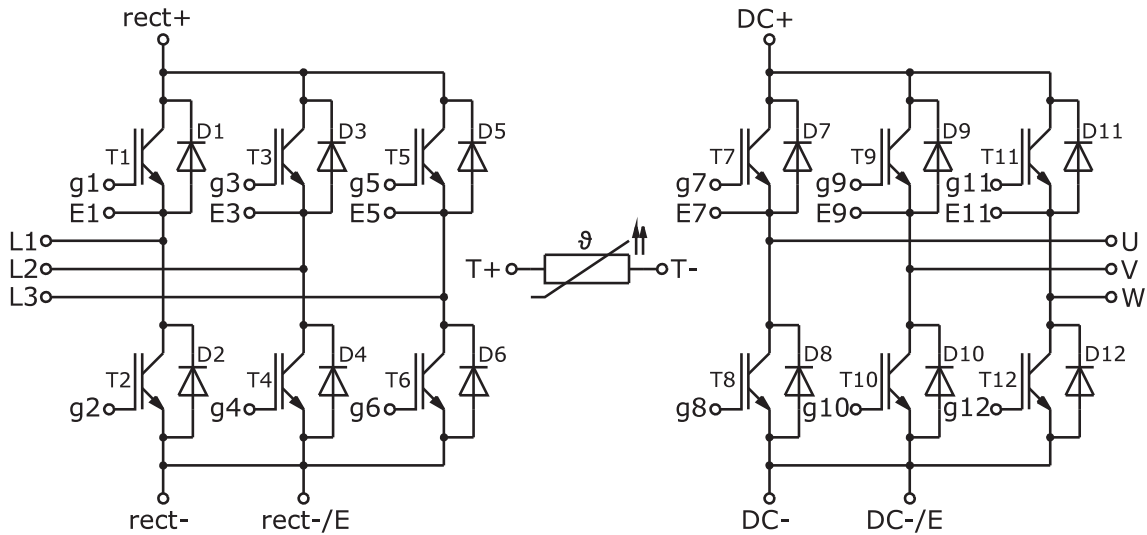


Pin out											
Pin	X	Y	Function	Pin	X	Y	Function	Pin	X	Y	Function
1	24,38	-21,8	DC+	23				45	-12,23	-5,8	g2
2				24	8,38	12,2	g8	46	-12,23	0,7	g3
3	24,38	-15,4	g11	25				47	-12,23	3,9	E3
4	24,38	-12,2	E11	26				48	-12,23	7,1	L2
5	24,38	-9	W	27				49	-12,23	10,3	L2
6	24,38	-5,8	W	28	2,46	-21,8	DC+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

all values in mm



Pinout



Pinout

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

*IMPORTANT INFORMATION AND WARNINGS

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