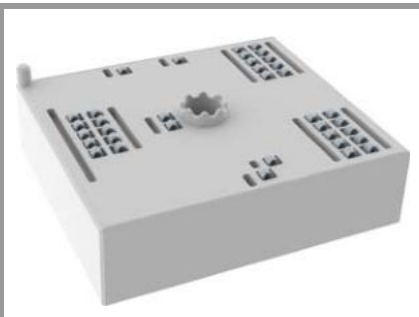




MiniSKiiP® 2 Dual

Half-Bridge

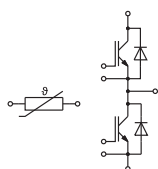
SKiiP 26GB12T7V1

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
- NTC T-Sensor

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)
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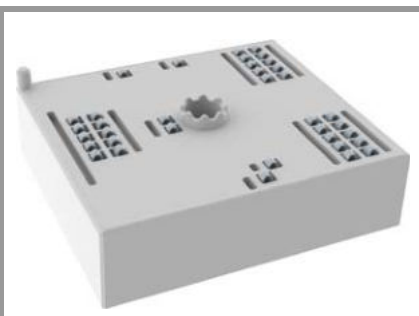
GB

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	168	A
	T _j = 175 °C	T _s = 100 °C	134	A
I _C	λ _{paste} =2.5 W/(mK)	T _s = 70 °C	212	A
	T _j = 175 °C	T _s = 100 °C	171	A
I _{Cnom}			200	A
I _{CRM}			400	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	129	A
	T _j = 175 °C	T _s = 100 °C	102	A
I _F	λ _{paste} =2.5 W/(mK)	T _s = 70 °C	148	A
	T _j = 175 °C	T _s = 100 °C	118	A
I _{FRM}			400	A
I _{FSM}	t _p = 10 ms, sin 180°, T _j = 150 °C		990	A
T _j			-40 ... 175	°C
Module				
I _{t(RMS)}	T _{terminal} = 80 °C, 20 A per spring		200	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					
$V_{CE(sat)}$	$I_C = 200\text{ A}$	$T_j = 25^\circ\text{C}$	1.55	1.70	V
	$V_{GE} = 15\text{ V}$	$T_j = 150^\circ\text{C}$	1.73	1.88	V
	chiplevel	$T_j = 175^\circ\text{C}$	1.77	1.92	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}	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	2.8	3.3	$\text{m}\Omega$
	chiplevel	$T_j = 150^\circ\text{C}$	4.7	5.2	$\text{m}\Omega$
		$T_j = 175^\circ\text{C}$	5.1	5.6	$\text{m}\Omega$
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 4.1\text{ mA}$	5.15	5.8	6.45	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = 1200\text{ V}, T_j = 25^\circ\text{C}$			2.0	mA
C_{ies}	$V_{CE} = 25\text{ V}$	$f = 1\text{ MHz}$	40.00		nF
C_{oes}	$V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	0.51		nF
C_{res}		$f = 1\text{ MHz}$	0.14		nF
Q_G	$V_{GE} = -8\text{ V} \dots +15\text{ V}$		2800		nC
R_{Gint}	$T_j = 25^\circ\text{C}$		0.8		Ω



MiniSKiiP® 2 Dual

Half-Bridge

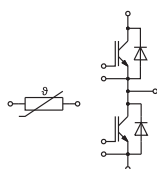
SKiiP 26GB12T7V1

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
- NTC T-Sensor

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)
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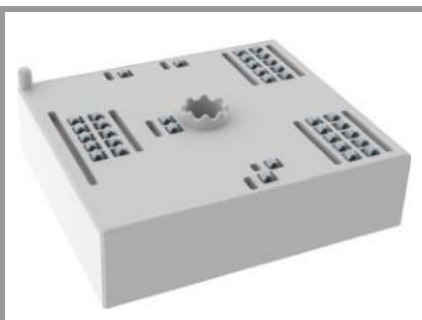


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Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Inverter - IGBT					
$t_{d(on)}$	$V_{CC} = 600\text{ V}$ $I_C = 200\text{ A}$ $R_{G on} = 1.3\ \Omega$ $R_{G off} = 1.3\ \Omega$ $V_{GE} = +15/-15\text{ V}$	$T_j = 25^\circ\text{C}$	161		ns
		$T_j = 150^\circ\text{C}$	170		ns
		$T_j = 175^\circ\text{C}$	167		ns
t_r		$T_j = 25^\circ\text{C}$	39		ns
		$T_j = 150^\circ\text{C}$	45		ns
		$T_j = 175^\circ\text{C}$	48		ns
E_{on}	$T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ $T_j = 175^\circ\text{C}$		8.5		mJ
			14		mJ
			16		mJ
$t_{d(off)}$		$T_j = 25^\circ\text{C}$	367		ns
		$T_j = 150^\circ\text{C}$	457		ns
		$T_j = 175^\circ\text{C}$	482		ns
t_f	$@ T_j = 150^\circ\text{C}$: $di/dt_{on} = 5770\text{ A}/\mu\text{s}$ $di/dt_{off} = 1890\text{ A}/\mu\text{s}$ $dv/dt = 3700\text{ V}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	69		ns
		$T_j = 150^\circ\text{C}$	106		ns
		$T_j = 175^\circ\text{C}$	133		ns
E_{off}		$T_j = 25^\circ\text{C}$	14		mJ
		$T_j = 150^\circ\text{C}$	23		mJ
		$T_j = 175^\circ\text{C}$	25		mJ
$R_{th(j-s)}$	per IGBT, $\lambda_{paste} = 0.8\text{ W}/(\text{mK})$		0.36		K/W
$R_{th(j-s)}$	per IGBT, $\lambda_{paste} = 2.5\text{ W}/(\text{mK})$		0.25		K/W

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Inverse - Diode					
$V_F = V_{EC}$	$I_F = 200\text{ A}$ $V_{GE} = 0\text{ V}$ chipelevel	$T_j = 25^\circ\text{C}$	2.20	2.52	V
		$T_j = 150^\circ\text{C}$	2.15	2.47	V
		$T_j = 175^\circ\text{C}$	2.00	2.31	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	$T_j = 25^\circ\text{C}$	4.5	5.1	m Ω
		$T_j = 150^\circ\text{C}$	6.3	6.9	m Ω
		$T_j = 175^\circ\text{C}$	5.9	6.7	m Ω
I_{RRM}	$I_F = 200\text{ A}$ $V_{GE} = +15/-15\text{ V}$ $V_{CC} = 600\text{ V}$	$T_j = 25^\circ\text{C}$	191		A
		$T_j = 150^\circ\text{C}$	242		A
		$T_j = 175^\circ\text{C}$	282		A
Q_{rr}		$T_j = 25^\circ\text{C}$	13		μC
		$T_j = 150^\circ\text{C}$	33		μC
		$T_j = 175^\circ\text{C}$	32		μC
E_{rr}	$@ T_j = 150^\circ\text{C}$: $di/dt_{off} = 5670\text{ A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	5.5		mJ
		$T_j = 150^\circ\text{C}$	13		mJ
		$T_j = 175^\circ\text{C}$	16		mJ
$R_{th(j-s)}$	per Diode, $\lambda_{paste} = 0.8\text{ W}/(\text{mK})$		0.44		K/W
$R_{th(j-s)}$	per Diode, $\lambda_{paste} = 2.5\text{ W}/(\text{mK})$		0.36		K/W
Module					
L_{CE}			20		nH
M_s	to heat sink	2		2.5	Nm
w			50		g

SKiiP 26GB12T7V1



MiniSKiiP® 2 Dual

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Temperature Sensor					
R_{100}	$T_c=100^{\circ}\text{C}$ ($R_{25}=5\text{ k}\Omega$)		$493 \pm 5\%$		Ω
$B_{100/125}$	$R(T)=R_{100}\exp[B_{100/125}(1/T-1/T_{100})]$; $T[\text{K}]$		$3550 \pm 2\%$		K

Half-Bridge

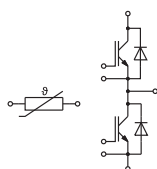
SKiiP 26GB12T7V1

Features*

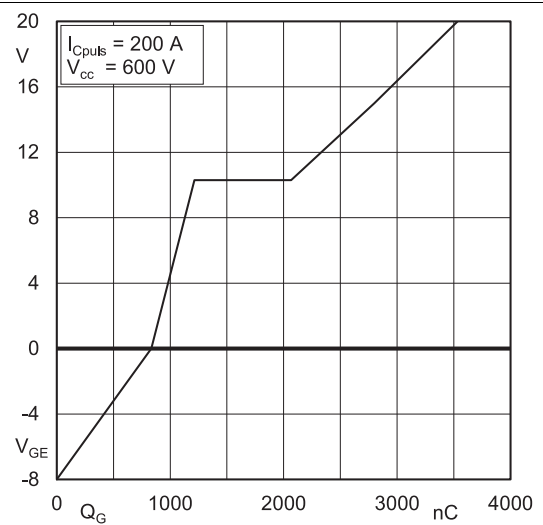
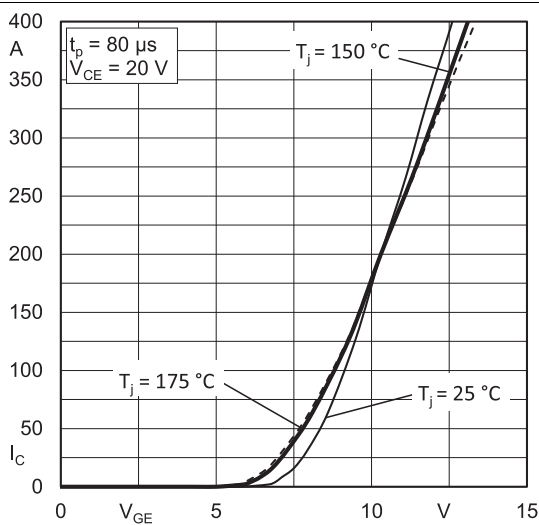
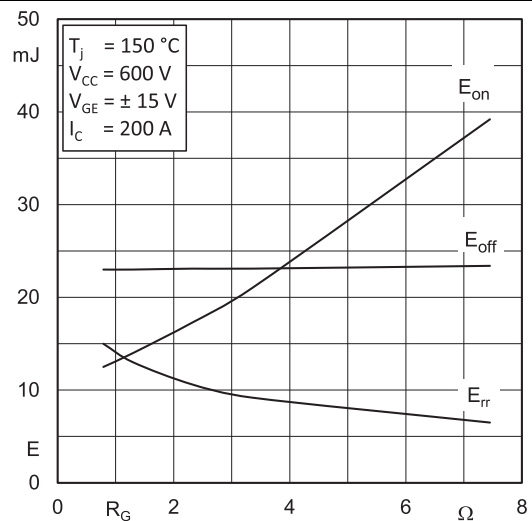
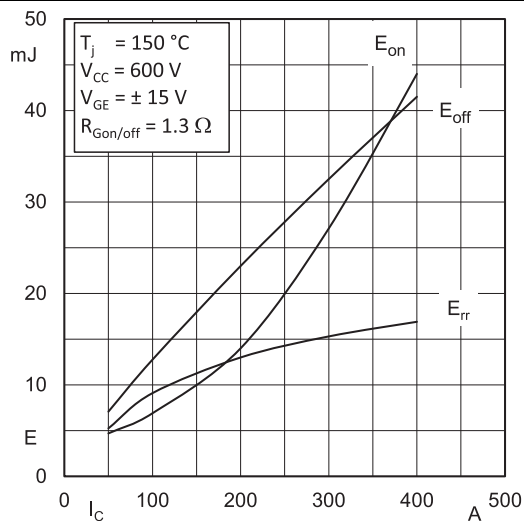
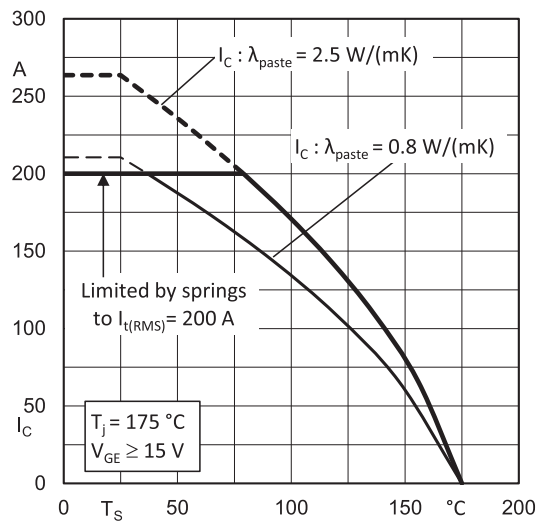
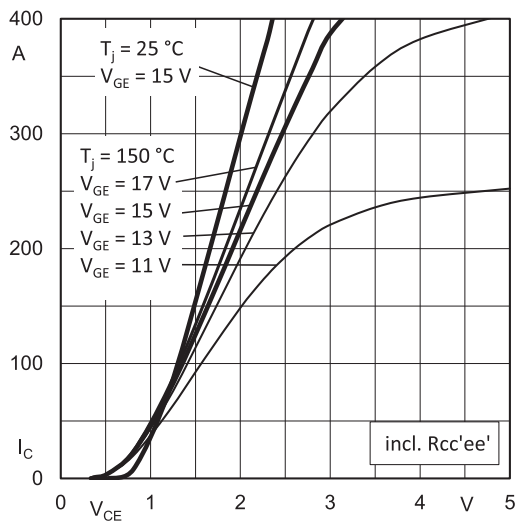
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Remarks

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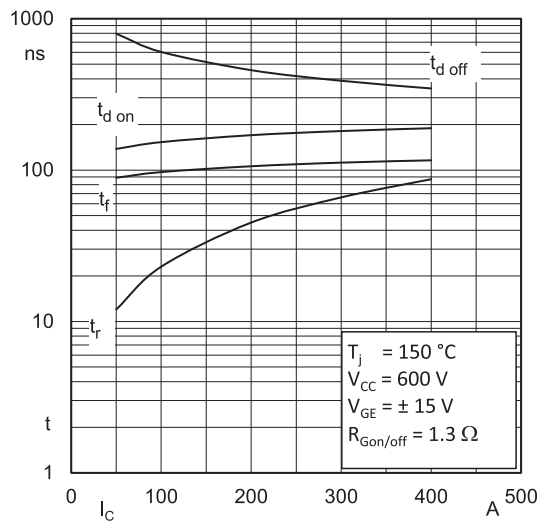


Fig. 7: Typ. switching times vs. I_C

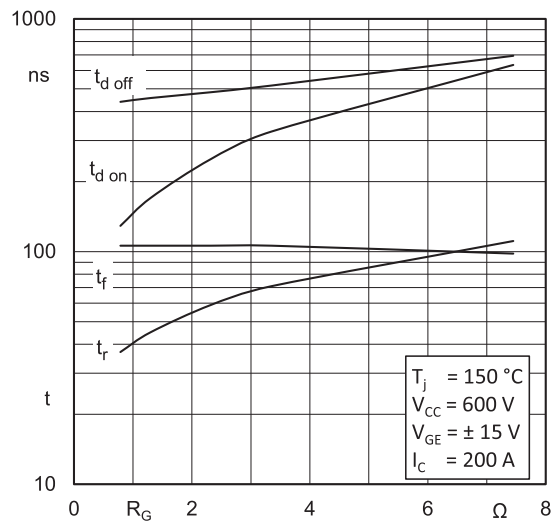


Fig. 8: Typ. switching times vs. gate resistor R_G

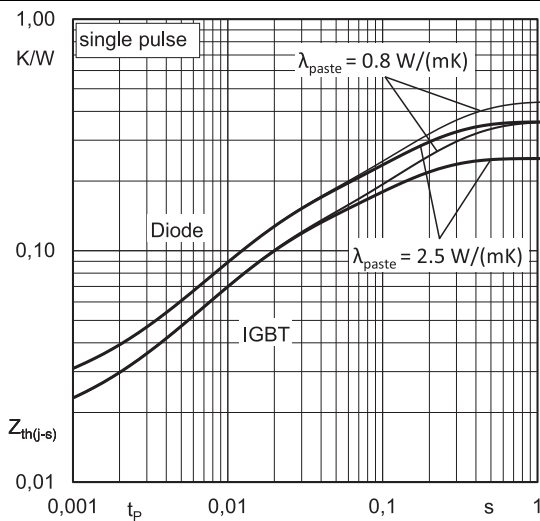


Fig. 9: Typ. transient thermal impedance

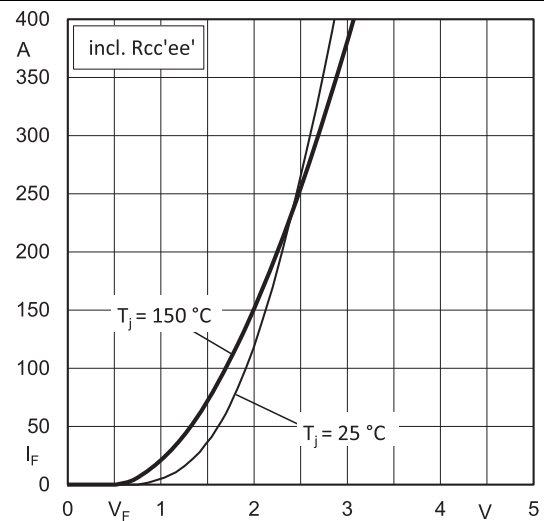


Fig. 10: Typ. CAL diode forward characteristic

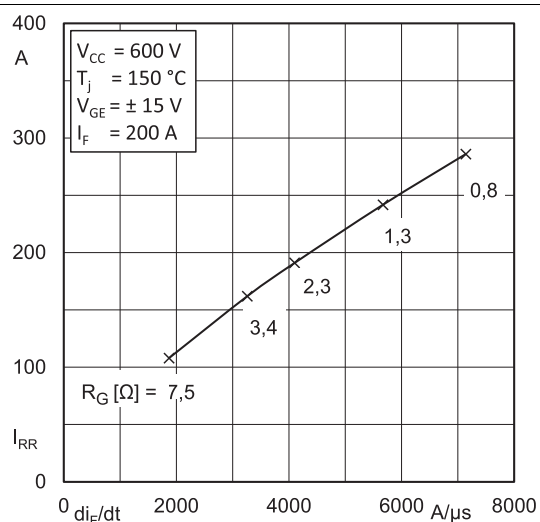


Fig. 11: Typ. CAL diode peak reverse recovery current

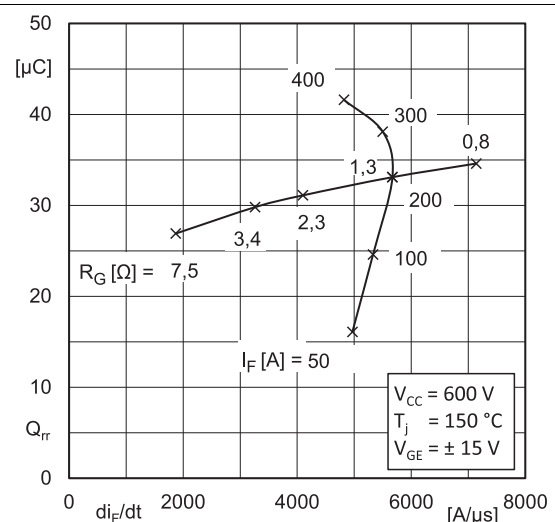
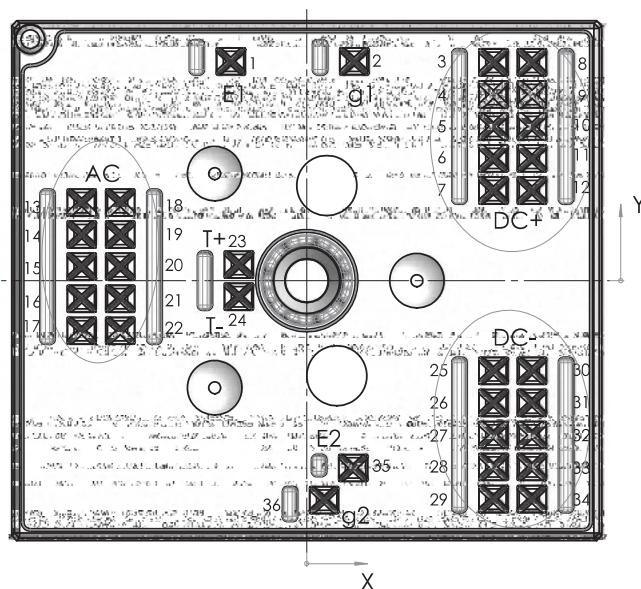


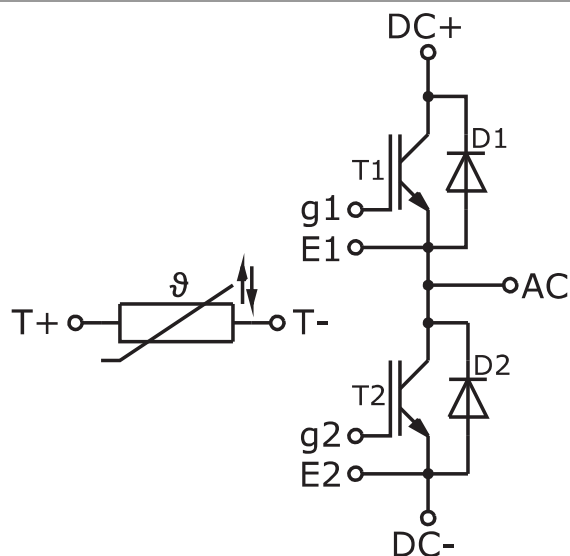
Fig. 12: Typ. CAL diode recovery charge

Pin out							
Pin	X	Y	Function	Pin	X	Y	Function
1	-7,58	21,9	E1	19	-18,62	4,6	AC
2	4,72	21,9	g1	20	-18,62	1,4	AC
3	18,62	21,8	DC+	21	-18,62	-1,8	AC
4	18,62	18,6	DC+	22	-18,62	-5	AC
5	18,62	15,4	DC+	23	-6,78	1,6	T+
6	18,62	12,2	DC+	24	-6,78	-1,6	T-
7	18,62	9	DC+	25	18,62	-9	DC-
8	22,48	21,8	DC+	26	18,62	-12,2	DC-
9	22,48	18,6	DC+	27	18,62	-15,4	DC-
10	22,48	15,4	DC+	28	18,62	-18,6	DC-
11	22,48	12,2	DC+	29	18,62	-21,8	DC-
12	22,48	9	DC+	30	22,48	-9	DC-
13	-22,48	7,8	AC	31	22,48	-12,2	DC-
14	-22,48	4,6	AC	32	22,48	-15,4	DC-
15	-22,48	1,4	AC	33	22,48	-18,6	DC-
16	-22,48	-1,8	AC	34	22,48	-21,8	DC-
17	-22,48	-5	AC	35	4,62	-18,7	E2
18	-18,62	7,8	AC	36	1,72	-21,9	g2

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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