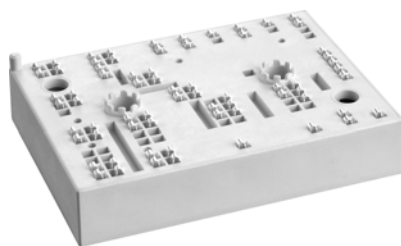


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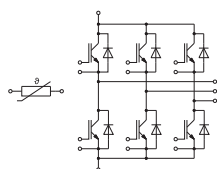
SKiiP 38AC12T7V1

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

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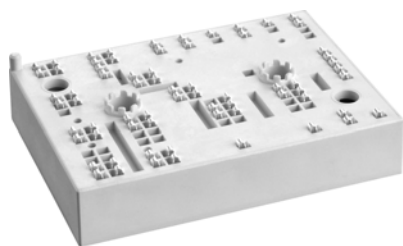


AC

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	96	A
	T _j = 175 °C	T _s = 100 °C	77	A
I _C	λ _{paste} =2.5 W/(mK)	T _s = 70 °C	114	A
	T _j = 175 °C	T _s = 100 °C	92	A
I _{Cnom}			100	A
I _{CRM}			200	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	76	A
	T _j = 175 °C	T _s = 100 °C	61	A
I _F	λ _{paste} =2.5 W/(mK)	T _s = 70 °C	89	A
	T _j = 175 °C	T _s = 100 °C	71	A
I _{FRM}			200	A
I _{FSM}	t _p = 10 ms, sin 180°, T _j = 150 °C		550	A
T _j			-40 ... 175	°C
Module				
I _{t(RMS)}	T _{terminal} = 80 °C, 20 A per spring		160	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 = 100 A	T _j = 25 °C		1.55	1.70	V
	V _{GE} = 15 V	T _j = 150 °C		1.73	1.88	V
	chiplevel	T _j = 175 °C		1.77	1.92	V
V _{CE0}		T _j = 25 °C		1.00	1.05	V
	chiplevel	T _j = 150 °C		0.80	0.85	V
		T _j = 175 °C		0.75	0.80	V
r _{CE}		T _j = 25 °C		5.5	6.5	mΩ
	V _{GE} = 15 V	T _j = 150 °C		9.3	10	mΩ
	chiplevel	T _j = 175 °C		10	11	mΩ
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 2.05 mA		5.15	5.8	6.45	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		20.00		nF
C _{oes}		f = 1 MHz		0.25		nF
C _{res}		f = 1 MHz		0.07		nF
Q _G	V _{GE} = - 8V ... + 15 V			1400		nC
R _{Gint}	T _j = 25 °C			1.5		Ω

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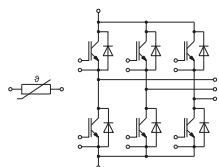
SKiiP 38AC12T7V1

Features*

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Remarks

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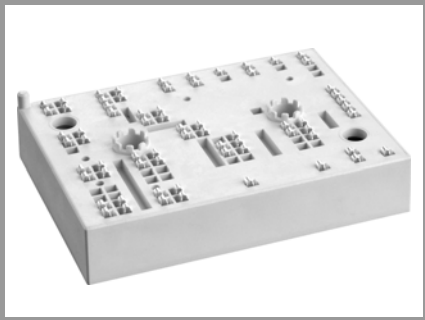


AC

Characteristics					
Symbol	Conditions		min.	typ.	max. Unit
Inverter - IGBT					
$t_{d(on)}$	$V_{CC} = 600\text{ V}$ $I_C = 100\text{ A}$ $R_{G\ on} = 1.7\ \Omega$ $R_{G\ off} = 1.7\ \Omega$ $V_{GE} = +15/-15\text{ V}$	$T_j = 25^\circ\text{C}$		151	ns
		$T_j = 150^\circ\text{C}$		157	ns
		$T_j = 175^\circ\text{C}$		156	ns
t_r		$T_j = 25^\circ\text{C}$		34	ns
		$T_j = 150^\circ\text{C}$		40	ns
		$T_j = 175^\circ\text{C}$		42	ns
E_{on}		$T_j = 25^\circ\text{C}$		5.7	mJ
		$T_j = 150^\circ\text{C}$		10	mJ
		$T_j = 175^\circ\text{C}$		12	mJ
$t_{d(off)}$		$T_j = 25^\circ\text{C}$		282	ns
		$T_j = 150^\circ\text{C}$		372	ns
		$T_j = 175^\circ\text{C}$		397	ns
t_f	$@ T_j = 150^\circ\text{C}:$ $di/dt_{on} = 2620\text{ A}/\mu\text{s}$ $di/dt_{off} = 1030\text{ A}/\mu\text{s}$ $dv/dt = 3680\text{ V}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		60	ns
		$T_j = 150^\circ\text{C}$		92	ns
		$T_j = 175^\circ\text{C}$		112	ns
E_{off}		$T_j = 25^\circ\text{C}$		6.5	mJ
		$T_j = 150^\circ\text{C}$		11	mJ
		$T_j = 175^\circ\text{C}$		12	mJ
$R_{th(j-s)}$	per IGBT, $\lambda_{paste} = 0.8\text{ W}/(\text{mK})$			0.59	K/W
$R_{th(j-s)}$	per IGBT, $\lambda_{paste} = 2.5\text{ W}/(\text{mK})$			0.45	K/W

Characteristics					
Symbol	Conditions		min.	typ.	max. Unit
Inverse - Diode					
$V_F = V_{EC}$	$I_F = 100\text{ A}$ $V_{GE} = 0\text{ V}$ chiplevel	$T_j = 25^\circ\text{C}$		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}	chiplevel	$T_j = 25^\circ\text{C}$		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	chiplevel	$T_j = 25^\circ\text{C}$		9.0	10 mΩ
		$T_j = 150^\circ\text{C}$		13	14 mΩ
		$T_j = 175^\circ\text{C}$		12	13 mΩ
I_{RRM}	$I_F = 100\text{ A}$ $V_{GE} = +15/-15\text{ V}$ $V_{CC} = 600\text{ V}$	$T_j = 25^\circ\text{C}$		69	A
		$T_j = 150^\circ\text{C}$		92	A
		$T_j = 175^\circ\text{C}$		110	A
Q_{rr}		$T_j = 25^\circ\text{C}$		5.2	μC
		$T_j = 150^\circ\text{C}$		15.7	μC
		$T_j = 175^\circ\text{C}$		16.3	μC
E_{rr}	$@ T_j = 150^\circ\text{C}:$ $di/dt_{off} = 2590\text{ A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		1.7	mJ
		$T_j = 150^\circ\text{C}$		5.7	mJ
		$T_j = 175^\circ\text{C}$		7.6	mJ
$R_{th(j-s)}$	per Diode, $\lambda_{paste} = 0.8\text{ W}/(\text{mK})$			0.7	K/W
$R_{th(j-s)}$	per Diode, $\lambda_{paste} = 2.5\text{ W}/(\text{mK})$			0.55	K/W
Module					
L_{CE}				-	nH
M_s	to heat sink		2		2.5 Nm
w				82	g

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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
$R_{(T)}$	$R_{(T)}=1000\Omega[1+A(T-25^{\circ}\text{C})+B(T-25^{\circ}\text{C})^2]$, $A = 7.635 \cdot 10^{-3} \text{ }^{\circ}\text{C}^{-1}$, $B = 1.731 \cdot 10^{-5} \text{ }^{\circ}\text{C}^{-2}$				

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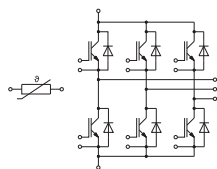
SKiiP 38AC12T7V1

Features*

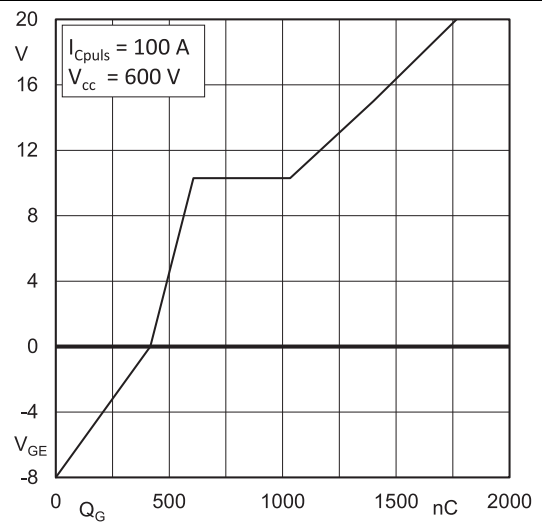
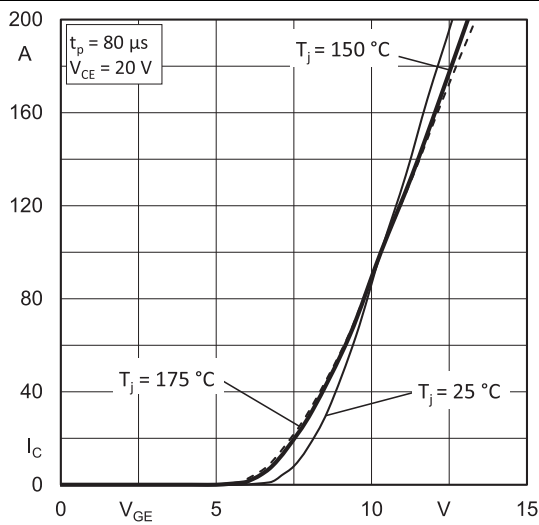
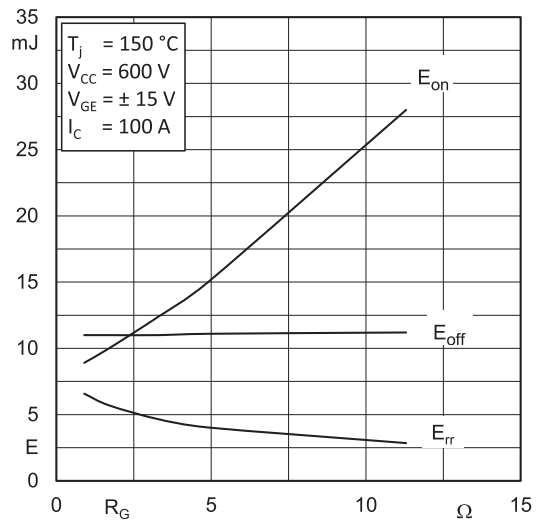
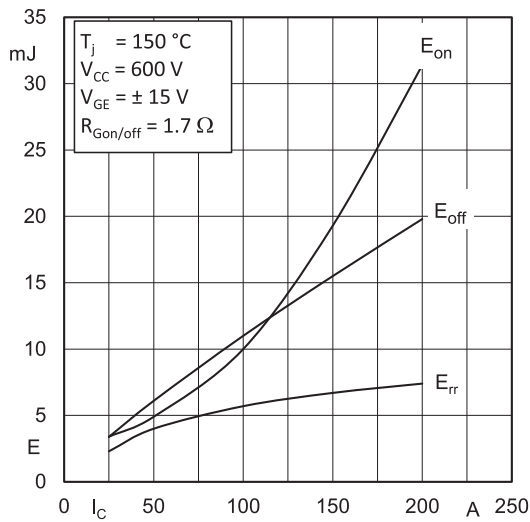
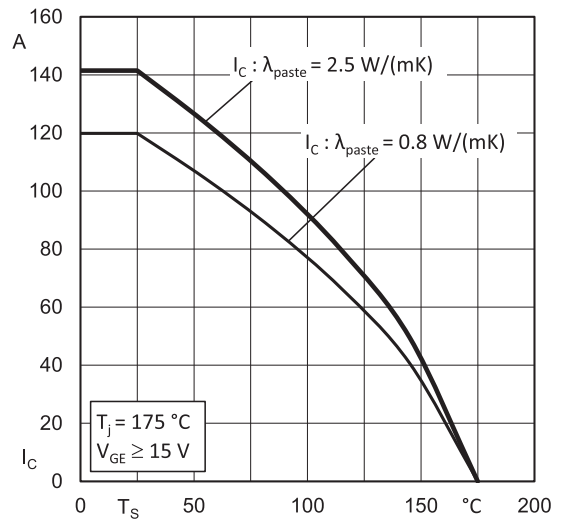
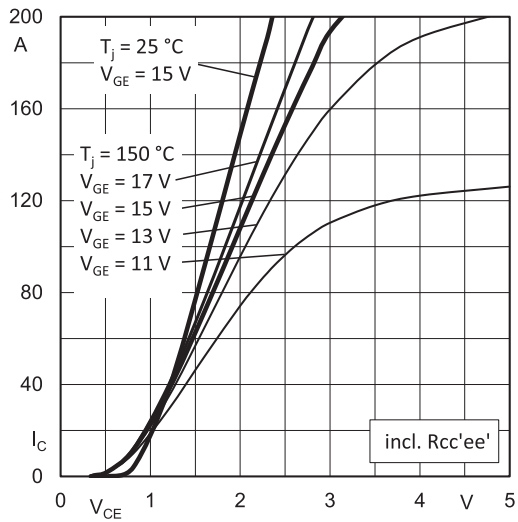
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AC



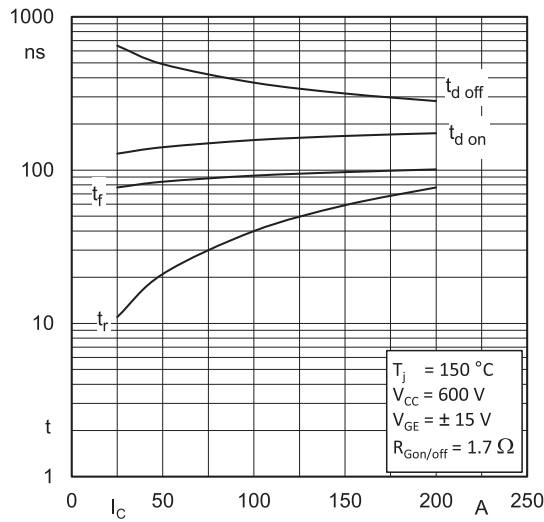


Fig. 7: Typ. switching times vs. I_C

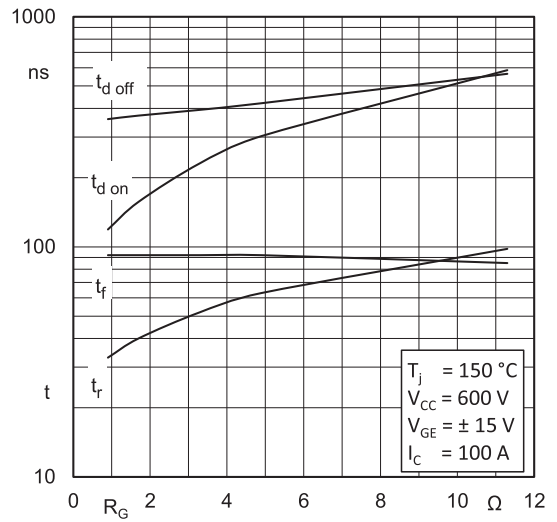


Fig. 8: Typ. switching times vs. gate resistor R_G

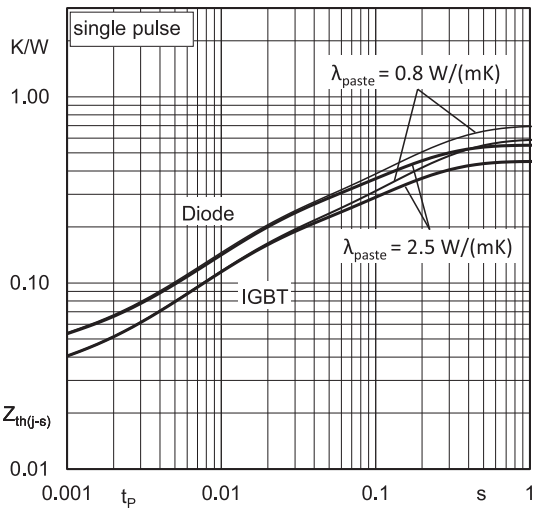


Fig. 9: Typ. transient thermal impedance

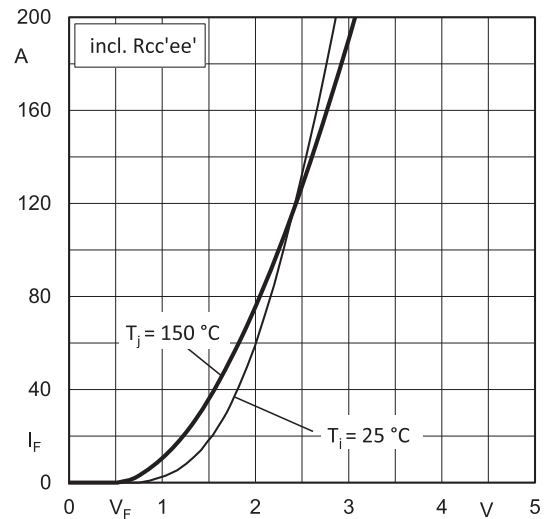


Fig. 10: Typ. CAL diode forward characteristic

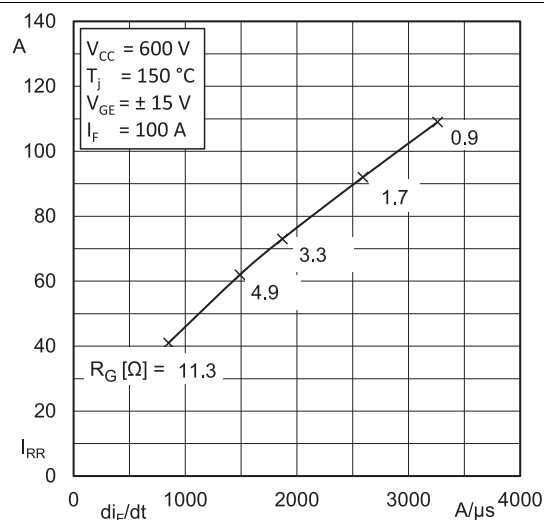


Fig. 11: Typ. CAL diode peak reverse recovery current

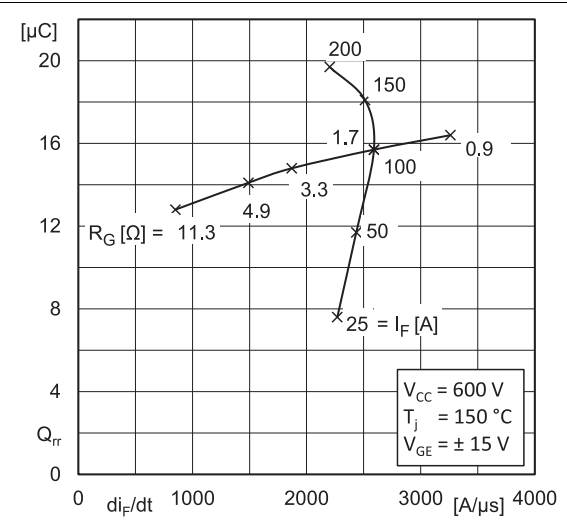
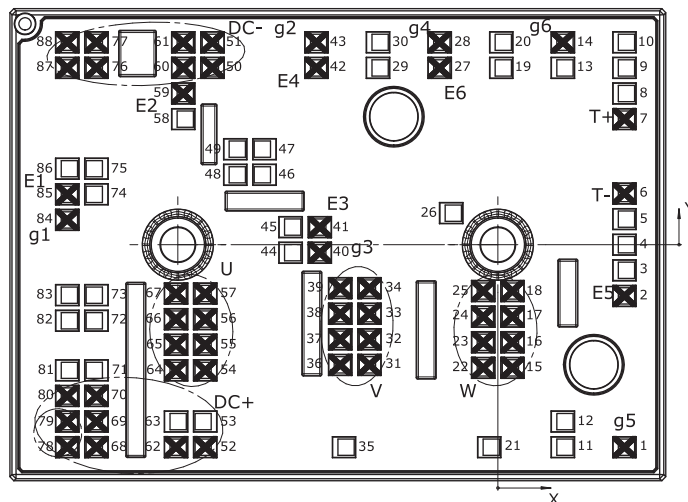


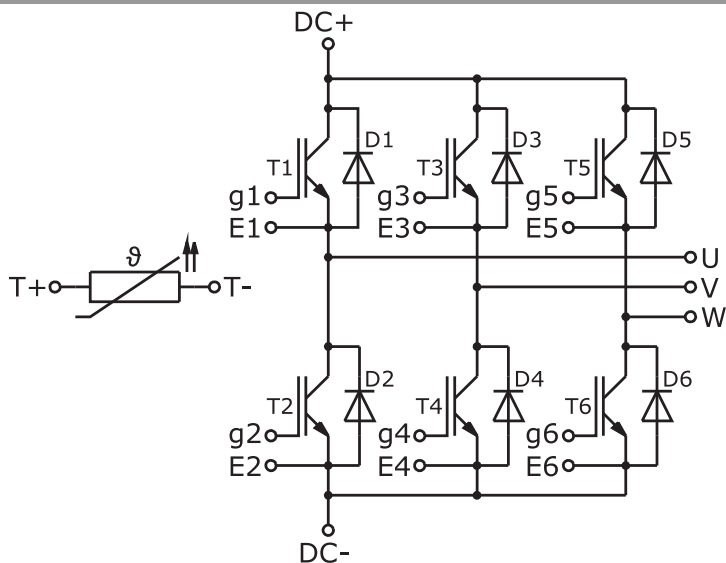
Fig. 12: Typ. CAL diode recovery charge

Pin out											
Pin	X	Y	Function	Pin	X	Y	Function	Pin	X	Y	Function
1	15,83	-25,30	g5	31	-16,05	-15,02	V	61	-39,33	25,30	DC-
2	15,83	-6,40	E5	32	-16,05	-11,82	V	62	-40,23	-25,30	DC+
3	15,83	-3,20		33	-16,05	-8,62	V	63	-40,23	-22,10	
4	15,83	0		34	-16,05	-5,42	V	64	-40,23	-15,70	U
5	15,83	3,20		35	-19,23	-25,30		65	-40,23	-12,50	U
6	15,83	6,40	T-	36	-19,70	-15,02	V	66	-40,23	-9,30	U
7	15,83	15,70	T+	37	-19,70	-11,82	V	67	-40,23	-6,10	U
8	15,83	18,90		38	-19,70	-8,62	V	68	-50,18	-25,30	DC+
9	15,83	22,10		39	-19,70	-5,42	V	69	-50,18	-22,10	DC+
10	15,83	25,30		40	-22,26	-1,00	g3	70	-50,18	-18,90	DC+
11	8,13	-25,30		41	-22,26	2,20	E3	71	-50,18	-15,70	
12	8,13	-22,10		42	-22,68	22,10	E4	72	-50,18	-9,50	
13	8,13	22,10		43	-22,68	25,30	g2	73	-50,18	-6,30	
14	8,13	25,30	g6	44	-25,91	-1,00		74	-50,18	6,30	
15	1,83	-15,39	W	45	-25,91	2,20		75	-50,18	9,50	
16	1,83	-12,19	W	46	-29,18	8,74		76	-50,18	22,10	DC-
17	1,83	-8,99	W	47	-29,18	11,94		77	-50,18	25,30	DC-
18	1,83	-5,79	W	48	-32,83	8,74		78	-53,83	-25,30	DC+
19	0,43	22,10		49	-32,83	11,94		79	-53,83	-22,10	DC+
20	0,43	25,30		50	-35,68	22,10	DC-	80	-53,83	-18,90	DC+
21	-1,08	-25,30		51	-35,68	25,30	DC-	81	-53,83	-15,70	
22	-1,83	-15,39	W	52	-36,58	-25,30	DC+	82	-53,83	-9,50	
23	-1,83	-12,19	W	53	-36,58	-22,10		83	-53,83	-6,30	
24	-1,83	-8,99	W	54	-36,58	-15,70	U	84	-53,83	3,10	g1
25	-1,83	-5,79	W	55	-36,58	-12,50	U	85	-53,83	6,30	E1
26	-5,83	3,95		56	-36,58	-9,30	U	86	-53,83	9,50	
27	-7,28	22,10	E6	57	-36,58	-6,10	U	87	-53,83	22,10	DC-
28	-7,28	25,30	g4	58	-39,33	15,70		88	-53,83	25,30	DC-
29	-14,98	22,10		59	-39,33	18,90	E2				
30	-14,98	25,30		60	-39,33	22,10	DC-				

all values in mm



Pinout and Dimensions



Pinout

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

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