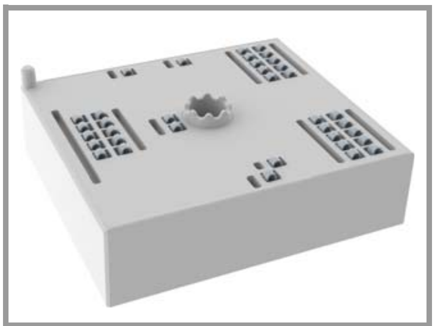

MiniSKiiP® 2 Dual

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
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Remarks

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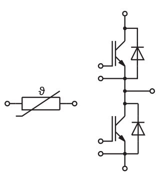


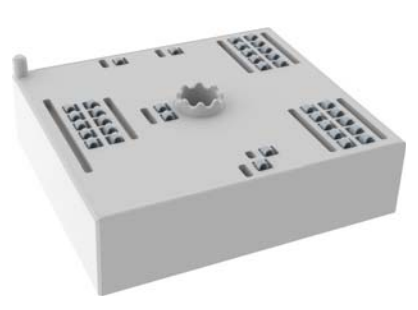
GB

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 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		2.8	3.3	mΩ
	V_{GE} = 15 V chiplevel	T_j = 150 °C		4.7	5.2	mΩ
		T_j = 175 °C		5.1	5.6	mΩ
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 4.1 mA		5.15	5.8	6.45	V
I_{CES}	V_{GE} = 0 V, V_{CE} = 1200 V, T_j = 25 °C				2.0	mA
C_{ies}		f = 1 MHz		40.00		nF
C_{oes}	V_{CE} = 25 V V_{GE} = 0 V	f = 1 MHz		0.51		nF
C_{res}		f = 1 MHz		0.14		nF
Q_G	V_{GE} = - 8V ... + 15 V			2800		nC
R_{Gint}	T_j = 25 °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
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Remarks

-)Max. case temperature limited to TC=TS=125 °C
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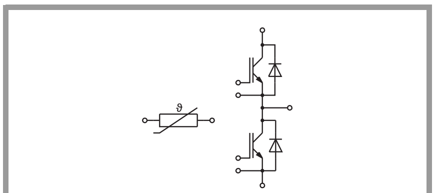


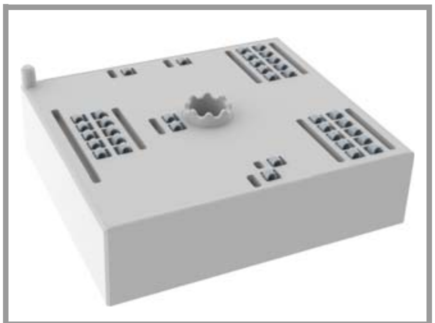
GB

Characteristics

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

Characteristics

Symbol	Conditions		min.	typ.	max.	Unit
Inverse - Diode						
$V_F = V_{EC}$	I_F = 200 A V_{GE} = 0 V chiplevel	T_j = 25 °C		2.20	2.52	V
		T_j = 150 °C		2.15	2.47	V
		T_j = 175 °C		2.00	2.31	V
V_{F0}	chiplevel	T_j = 25 °C		1.30	1.50	V
		T_j = 150 °C		0.90	1.10	V
		T_j = 175 °C		0.82	0.98	V
r_F	chiplevel	T_j = 25 °C		4.5	5.1	mΩ
		T_j = 150 °C		6.3	6.9	mΩ
		T_j = 175 °C		5.9	6.7	mΩ
I_{RRM}	I_F = 200 A V_{GE} = +15/-15 V V_{CC} = 600 V @ T_j = 150 °C: di/dt_{off} = 5670 A/µs	T_j = 25 °C		191		A
		T_j = 150 °C		242		A
		T_j = 175 °C		282		A
Q_{rr}		T_j = 25 °C		13		µC
		T_j = 150 °C		33		µC
		T_j = 175 °C		32		µC
E_{rr}		T_j = 25 °C		5.5		mJ
		T_j = 150 °C		13		mJ
		T_j = 175 °C		16		mJ
$R_{th(j-s)}$	per Diode, λ_{paste}=0.8 W/(mK)			0.44		K/W
$R_{th(j-s)}$	per Diode, λ_{paste}=2.5 W/(mK)			0.36		K/W
Module						
L_{CE}				20		nH
M_s	to heat sink		2		2.5	Nm
w				50		g



MiniSKiiP® 2 Dual

Characteristics					
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
Temperature Sensor					
R_{100}	T_c=100°C (R_{25}=5 kΩ)		493 ± 5%		Ω
$B_{100/125}$	$R_{(T)}=R_{100}exp[B_{100/125}(1/T-1/T_{100})]$; T[K];		3550 ±2%		K

Half-Bridge

SKiiP 26GB12T7V1

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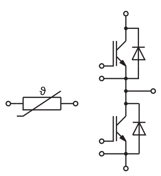

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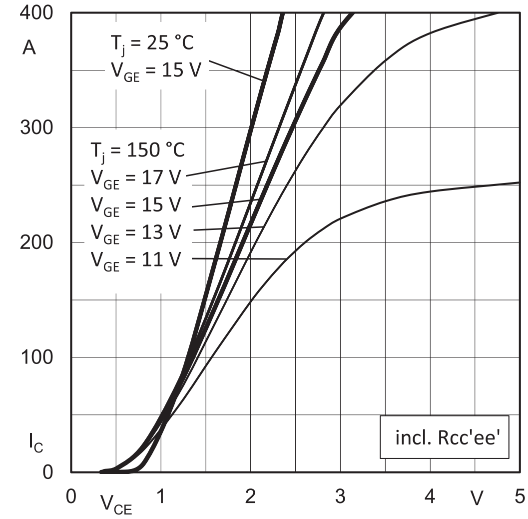


Fig. 1: Typ. output characteristic

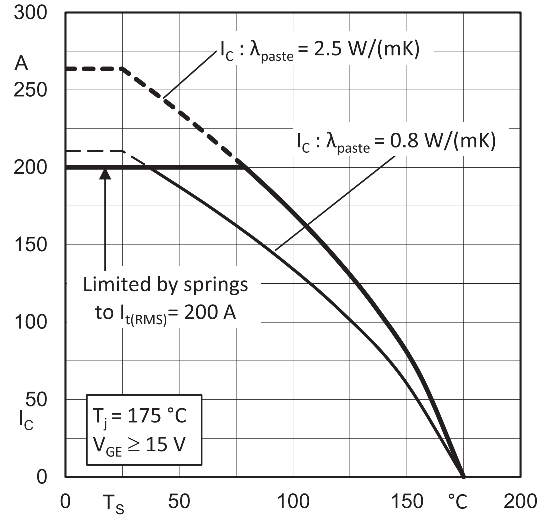


Fig. 2: Rated current vs. temperature Ic = f (Ts)

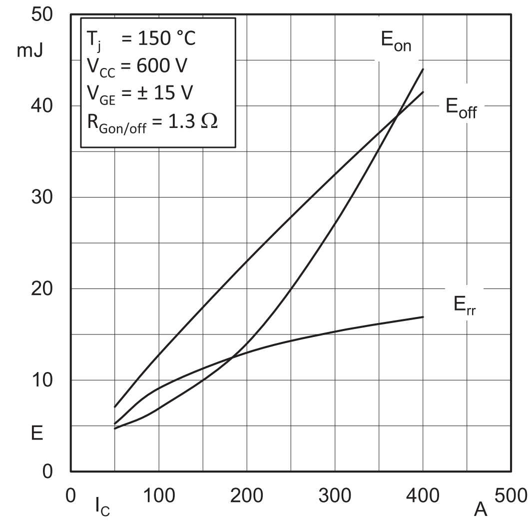


Fig. 3: Typ. turn-on /-off energy = f (I_C)

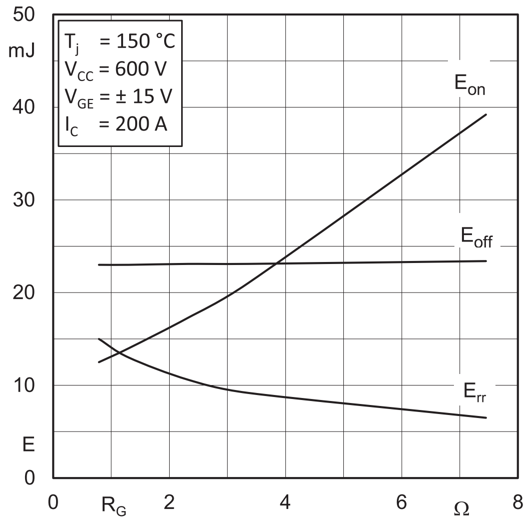


Fig. 4: Typ. turn-on /-off energy = f (R_G)

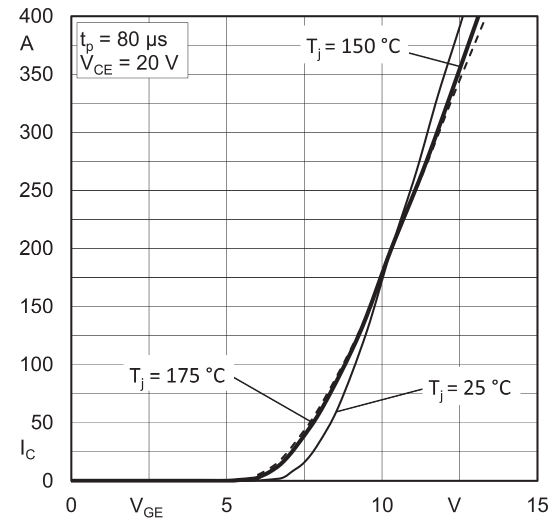


Fig. 5: Typ. transfer characteristic

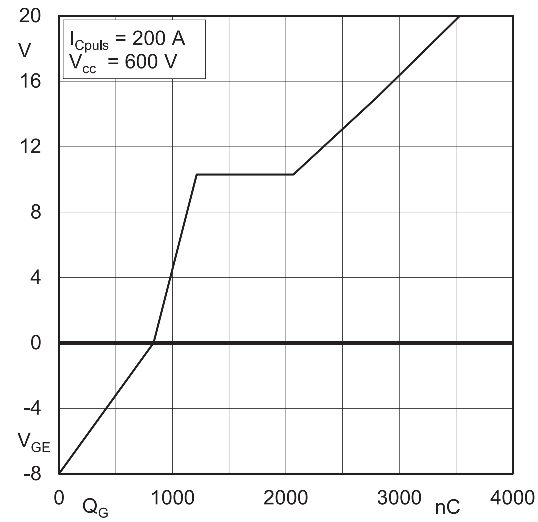


Fig. 6: Typ. gate charge characteristic

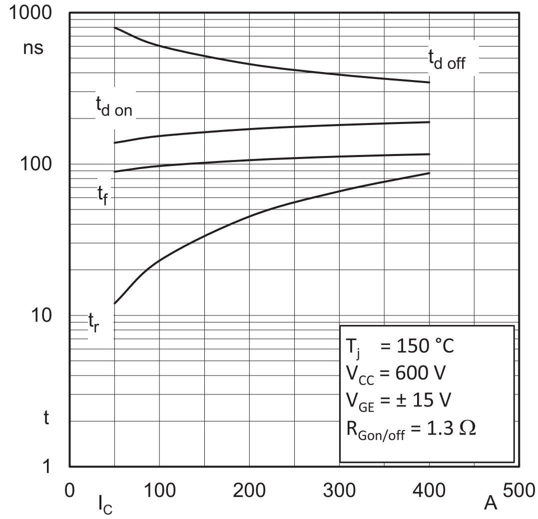


Fig. 7: Typ. switching times vs. I_C

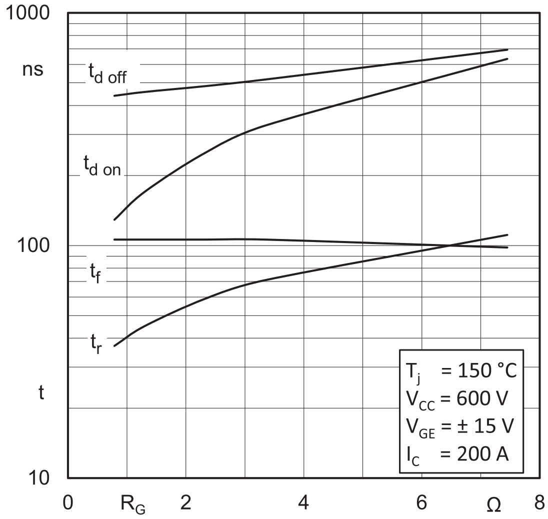


Fig. 8: Typ. switching times vs. gate resistor R_G

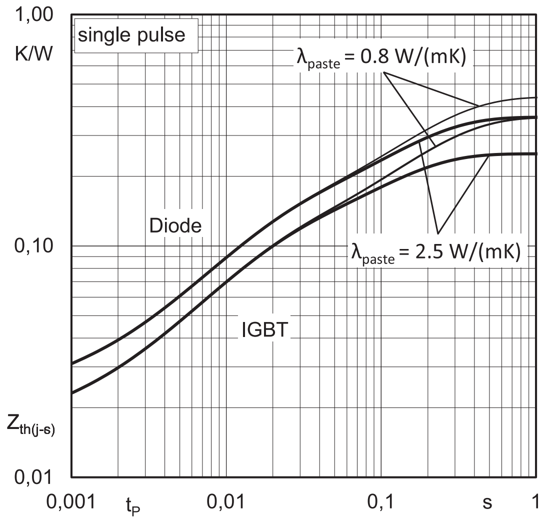


Fig. 9: Typ. transient thermal impedance

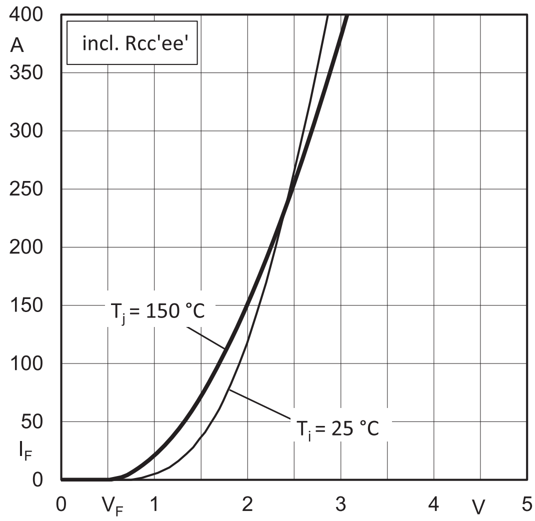


Fig. 10: Typ. CAL diode forward characteristic

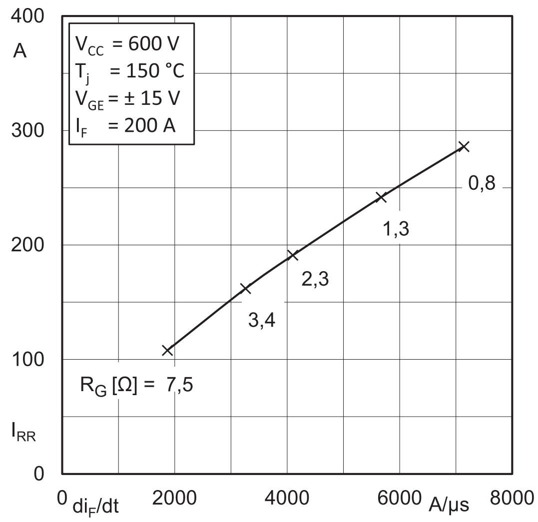


Fig. 11: Typ. CAL diode peak reverse recovery current

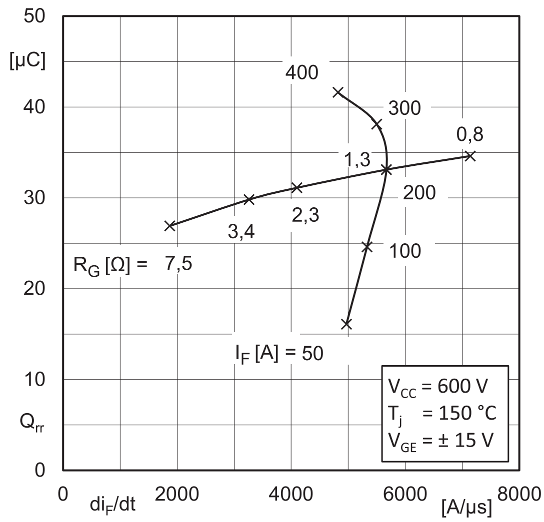
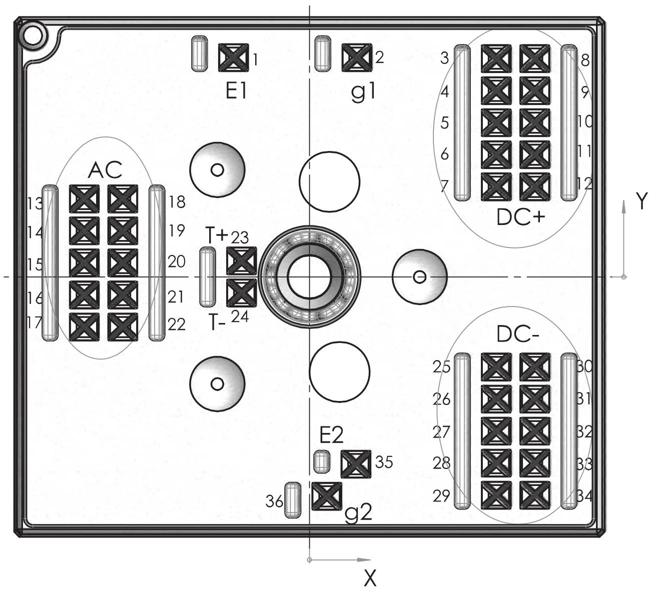


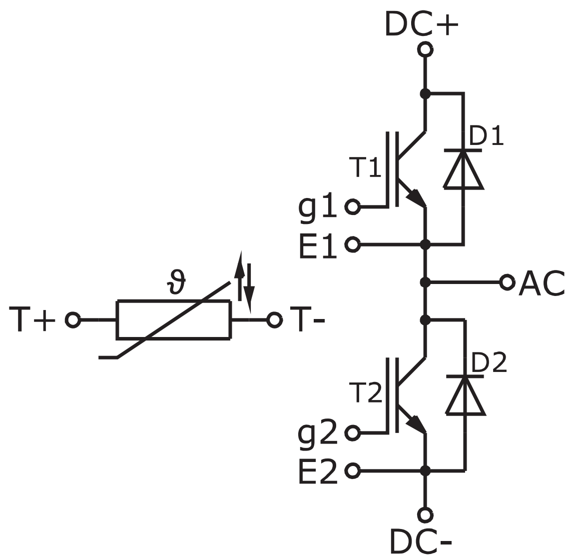
Fig. 12: Typ. CAL diode recovery charge

Pin out							
Pin	*X*	*Y*	*Function*	*Pin*	*X*	*Y*	*Function*
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.

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