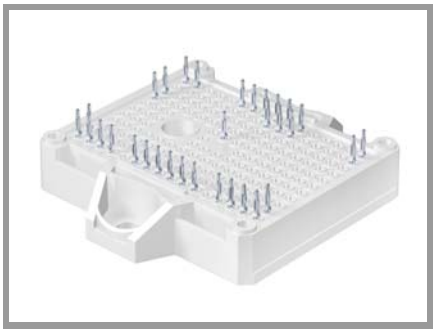
SK100GD12T7ETE2



SEMITOP®E2

Sixpack Open Emitter

Evaluation Sample

SK100GD12T7ETE2

Target Data

Features*

- Low inductive design
- Press-Fit contact technology
- 1200V Generation 7 IGBT (T7)
- Robust and soft switching CAL4F diode technology
- Integrated NTC temperature sensor
- UL recognized file no. E 63 532

Typical Applications

- Motor drives
- Servo drives
- Air conditioning
- Auxiliary Inverters
- UPS

Absolute Maximum Ratings

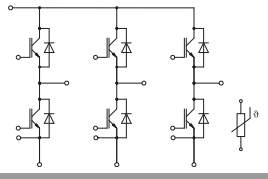
Symbol	Conditions		Values	Unit
IGBT 1				
V_{CES}	T_j = 25 °C		1200	V
I_C	λ_{paste}=0.8 W/(mK)	T_s = 25 °C	109	A
	T_j = 175 °C	T_s = 70 °C	88	A
I_C	λ_{paste}=2.5 W/(mK)	T_s = 25 °C	140	A
	T_j = 175 °C	T_s = 70 °C	113	A
I_{Cnom}			100	A
I_{CRM}			200	A
V_{GES}			-20 ... 20	V
t_{psc}	V_{CC} = 800 V $V_{GE} \leq$ 15 V $V_{CES} \leq$ 1200 V	T_j = 175 °C	7	µs
T_j			-40 ... 175	°C

Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
Diode 1				
V_{RRM}	T_j = 25 °C		1200	V
I_F	λ_{paste}=0.8 W/(mK)	T_s = 25 °C	93	A
	T_j = 175 °C	T_s = 70 °C	73	A
I_F	λ_{paste}=2.5 W/(mK)	T_s = 25 °C	120	A
	T_j = 175 °C	T_s = 70 °C	96	A
I_{FRM}			200	A
I_{FSM}	10 ms	T_j = 25 °C	550	A
	sin 180°	T_j = 150 °C	550	A
T_j			-40 ... 175	°C

Absolute Maximum Ratings

Symbol	Conditions	Values	Unit
Module			
$I_{t(RMS)}$	$\Delta T_{terminal}$ at PCB joint = 30 K, per pin	30	A
T_{stg}		-40 ... 125	°C
V_{isol}	AC, sinusoidal, t = 1 min	2500	V



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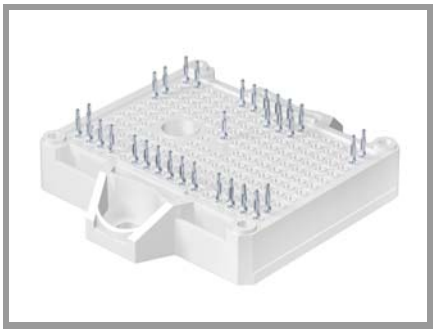

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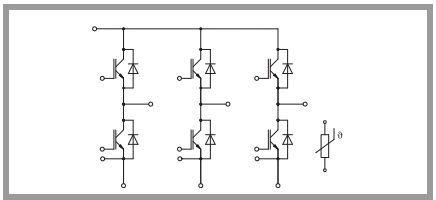

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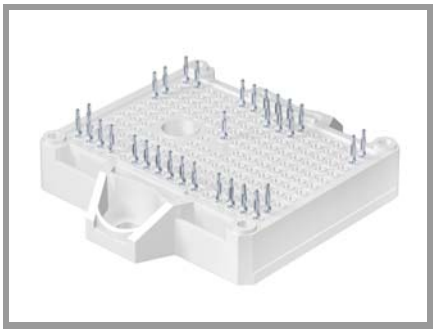
Characteristics

Symbol	Conditions		min.	typ.	max.	Unit
IGBT 1						
$V_{CE(sat)}$	I_C = 100 A V_{GE} = 15 V chiplevel	T_j = 25 °C		1.58	1.74	V
		T_j = 150 °C		1.70	2.03	V
V_{CE0}	chiplevel	T_j = 25 °C		0.90	1.00	V
		T_j = 150 °C		0.75	0.83	V
r_{CE}	V_{GE} = 15 V chiplevel	T_j = 25 °C		6.8	7.4	mΩ
		T_j = 150 °C		9.5	12	mΩ
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 2.5 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		19.5		nF
C_{oes}		f = 1 MHz		t.b.d.		nF
C_{res}		f = 1 MHz		0.068		nF
Q_G	V_{GE} = -15V...+15V			1600		nC
R_{Gint}	T_j = 25 °C			1.5		Ω
$t_{d(on)}$	V_{CC} = 600 V I_C = 100 A V_{GE} = +15/-15 V $R_{G\,on}$ = 2.2 Ω $R_{G\,off}$ = 2.2 Ω	T_j = 150 °C		t.b.d.		ns
t_r		T_j = 150 °C		t.b.d.		ns
E_{on}		T_j = 150 °C		7.28		mJ
$t_{d(off)}$		T_j = 150 °C		t.b.d.		ns
t_f		T_j = 150 °C		t.b.d.		ns
E_{off}		T_j = 150 °C		11.69		mJ
$R_{th(j-s)}$	per IGBT, λ_{paste}=0.8 W/(mK)			0.62		K/W
$R_{th(j-s)}$	per IGBT, λ_{paste}=2.5 W/(mK)			0.41		K/W

Characteristics

Symbol	Conditions		min.	typ.	max.	Unit
Diode 1						
V_F	I_F = 100 A	T_j = 25 °C		2.20	2.52	V
	chiplevel	T_j = 150 °C		2.15	2.47	V
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		9.0	10	mΩ
		T_j = 150 °C		13	14	mΩ
I_{RRM}	I_F = 100 A	T_j = 150 °C		t.b.d.		A
Q_{rr}	V_{GE} = -8 V V_{CC} = 600 V	T_j = 150 °C		t.b.d.		µC
E_{rr}		T_j = 150 °C		7.23		mJ
$R_{th(j-s)}$	per Diode, λ_{paste}=0.8 W/(mK)			0.74		K/W
$R_{th(j-s)}$	per Diode, λ_{paste}=2.5 W/(mK)			0.49		K/W



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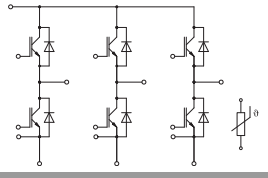
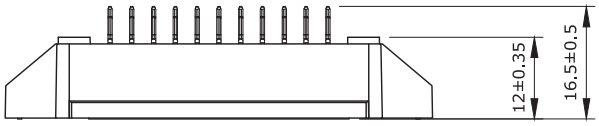
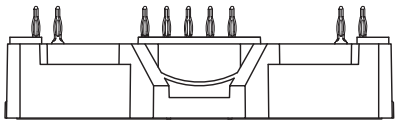


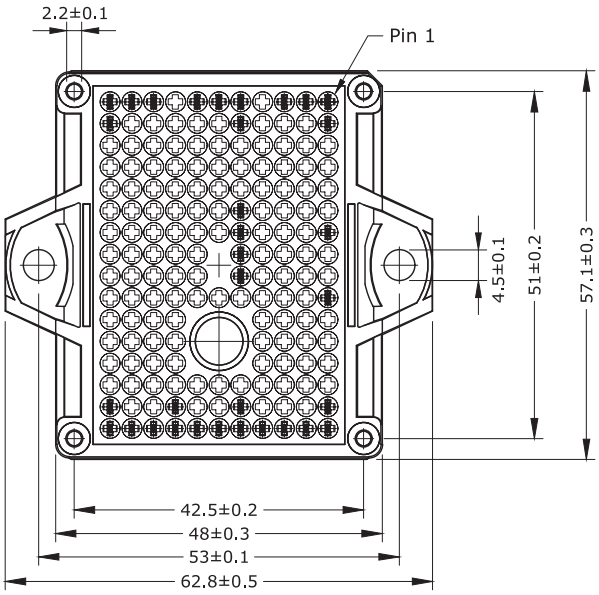
GD-ET

Characteristics					
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
Module					
M_s	to heatsink	1.6		2.3	Nm
w	weight		35		g

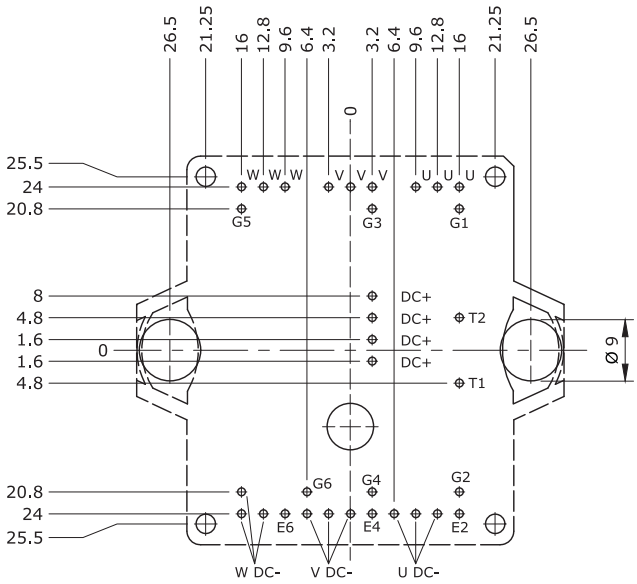
Characteristics					
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
Temperature Sensor					
R_{100}	T_r = 100 °C		493 ± 5%		Ω
$B_{100/125}$	$R_{(T)}=R_{100}\exp[B_{100/125}(1/T-1/T_{100})]$; T[K];		3550 ±2%		K



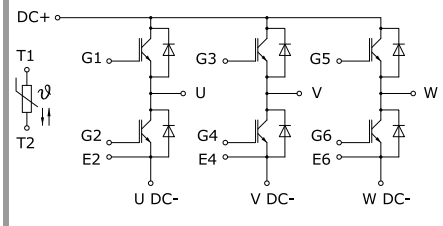




- Pin-Grid 3.2 mm
- Tolerance of PCB hole pattern ⌖ 0.025
- Diameters of drill ∅ 1.15mm
- Copper thickness in hole 25 - 50 µm
- Hole specification for contacts: refer to SEMITOP E1, E2 mounting instructions



SEMITOP®E2



GD-ET

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, chapter IX.

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