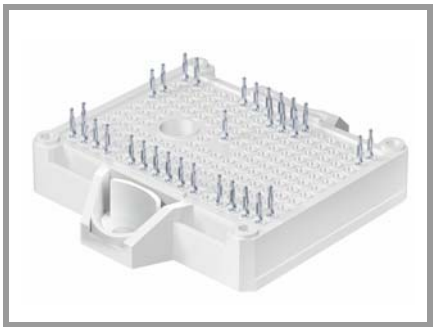
SK225GH07H5TD1E2



SEMITOP®E2

H-Bridge

Engineering Sample

SK225GH07H5TD1E2

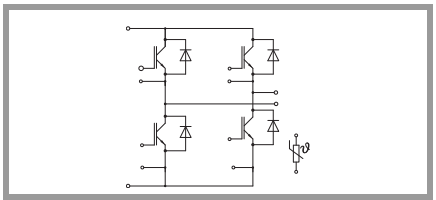
Target Data

Features*

- Optimized design for superior thermal performances
- Low inductive design
- Press-Fit contact technology
- 650V Trench5 IGBT (H5)
- Rapid switching diode technology
- Integrated NTC temperature sensor
- UL recognized file no. E 63 532

Typical Applications

- Electric Vehicle charging
- Switched Mode Power Supply
- Welding



GH-T

Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
Inverter - IGBT				
V_{CES}	T_j = 25 °C		650	V
I_C	λ_{paste}=0.8 W/(mK)	T_s = 25 °C	162	A
	T_j = 175 °C	T_s = 70 °C	126	A
I_C	λ_{paste}=2.5 W/(mK)	T_s = 25 °C	215	A
	T_j = 175 °C	T_s = 70 °C	169	A
I_{Cnom}			225	A
I_{CRM}			450	A
V_{GES}			-20 ... 20	V
t_{psc}	V_{CC} = 360 V $V_{GE} \leq$ 15 V $V_{CES} \leq$ 650 V	T_j = 150 °C		µs
T_j			-40 ... 175	°C
Inverse - Diode				
I_F	λ_{paste}=0.8 W/(mK)	T_s = 25 °C	63	A
	T_j = 175 °C	T_s = 70 °C	49	A
I_F	λ_{paste}=2.5 W/(mK)	T_s = 25 °C	75	A
	T_j = 175 °C	T_s = 70 °C	59	A
I_{FRM}			150	A
I_{FSM}	t_p = 10 ms, sin 180°, T_j = 150 °C		380	A
T_j			-40 ... 175	°C
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

Characteristics

Symbol	Conditions		min.	typ.	max.	Unit
Inverter - IGBT						
$V_{CE(sat)}$	I_C = 225 A V_{GE} = 15 V chiplevel	T_j = 25 °C		1.65	2.22	V
		T_j = 150 °C		1.86	2.43	V
V_{CE0}	chiplevel	T_j = 25 °C		1.00	1.28	V
		T_j = 150 °C		0.92	1.20	V
r_{CE}	V_{GE} = 15 V chiplevel	T_j = 25 °C		2.9	4.2	mΩ
				4.2	5.5	mΩ
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 2.25 mA		3.3	4	4.7	V
I_{CES}	V_{GE} = 0 V, V_{CE} = 650 V, T_j = 25 °C				1	mA
C_{ies}	V_{CE} = 25 V V_{GE} = 0 V	f = 1 MHz		12.9		nF
C_{oes}		f = 1 MHz		0.225		nF
C_{res}		f = 1 MHz		0.048		nF
Q_G	V_{GE} = 0V ... +15V			489		nC
R_{Gint}	T_j = 25 °C			1.6		Ω
$t_{d(on)}$	V_{CC} = 300 V I_C = 100 A $R_{G\ on}$ = 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		1.85		mJ
$t_{d(off)}$		T_j = 150 °C		t.b.d.		ns
t_f		T_j = 150 °C		t.b.d.		ns
E_{off}	V_{GE} = +15/-15 V	T_j = 150 °C		1.25		mJ
$R_{th(j-s)}$	per IGBT, λ_{paste}=0.8 W/(mK)			0.44		K/W
$R_{th(j-s)}$	per IGBT, λ_{paste}=2.5 W/(mK)			0.29		K/W

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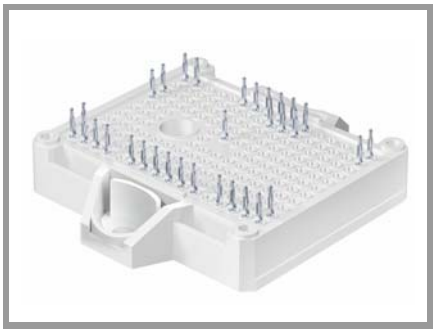

SEMITOP®E2

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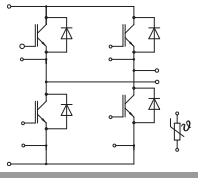

GH-T

Characteristics

Symbol	Conditions		min.	typ.	max.	Unit
Inverse - Diode						
$V_F = V_{EC}$	I_F = 75 A	T_j = 25 °C		1.35	1.92	V
	chiplevel	T_j = 150 °C		1.30	1.89	V
V_{F0}	chiplevel	T_j = 25 °C		0.90	1.10	V
		T_j = 150 °C		0.71	0.94	V
r_F	chiplevel	T_j = 25 °C		6.0	11	mΩ
		T_j = 150 °C		7.9	13	mΩ
I_{RRM}	I_F = 75 A			t.b.d.		A
Q_{rr}	V_{GE} = -15 V			t.b.d.		µC
E_{rr}	V_{CC} = 300 V			0.7		mJ
$R_{th(j-s)}$	per Diode, λ_{paste}=0.8 W/(mK)			1.39		K/W
$R_{th(j-s)}$	per Diode, λ_{paste}=2.5 W/(mK)			1.06		K/W
Module						
L_{CE}				6		nH
M_s	to heatsink		1.6		2.3	Nm
w				35		g
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

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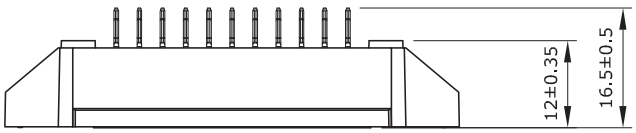
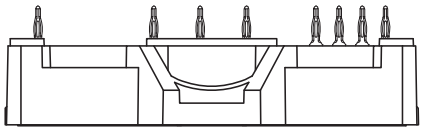
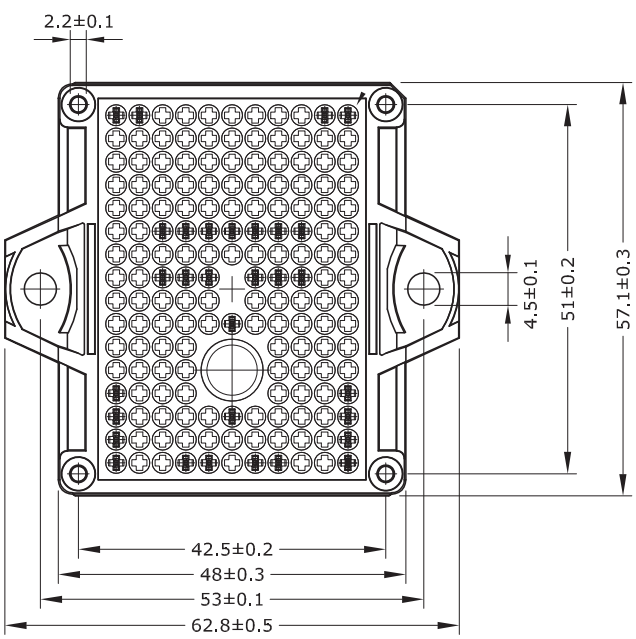
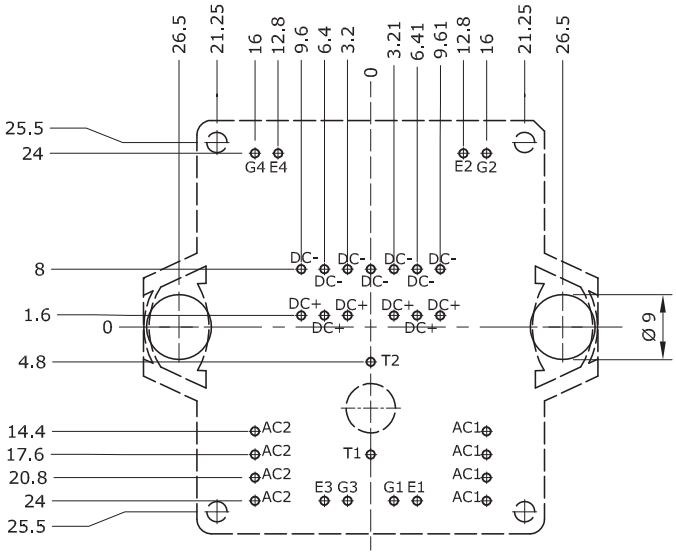


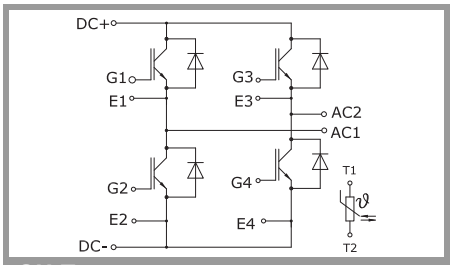






- Pin-Grid 3.2 mm
- Tolerance of PCB hole pattern ⌖ Ø0.1
- Diameters of drill ∅ 1.15mm
- Copper thickness in hole 25 - 50 µm
- Hole specification for contacts:
  refer to SEMITOP E1/E2 Mounting Instruction

SEMITOP®E2



GH-T

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

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