

SEMITOP® 4

IGBT Module

SK50GD126T

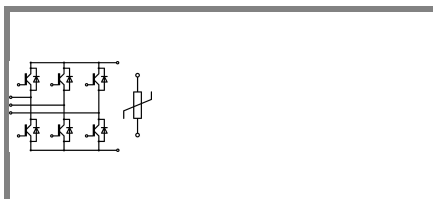
Target Data

Features

- One screw mounting module
- Fully compatible with SEMITOP®1,2,3
- Improved thermal performances by aluminium oxide substrate
- Trench IGBT technology
- CAL technology FWD
- Integrated NTC temperature sensor

Typical Applications

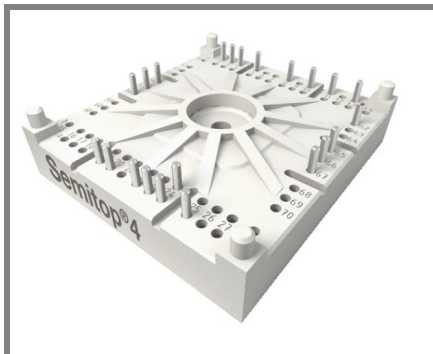
- Inverter up to 28 kVA
- Typ. motor power 15 kW



GD-T

Absolute Maximum Ratings		$T_s = 25\text{ °C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}	$T_j = 25\text{ °C}$	1200	V
I_C	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	68 A
		$T_s = 70\text{ °C}$	52 A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	100	A
V_{GES}		± 20	V
t_{psc}	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ °C}$ $V_{CES} < 1200\text{ V}$	10	μs
Inverse Diode			
I_F	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	62 A
		$T_s = 70\text{ °C}$	46 A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	100	A
Module			
$I_{t(RMS)}$			A
T_{vj}		-40 ... +150	$^{\circ}\text{C}$
T_{stg}		-40 ... +125	$^{\circ}\text{C}$
V_{isol}	AC, 1 min.	2500	V

Characteristics		$T_s = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 2\text{ mA}$	5	5,8	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25\text{ °C}$			mA
		$T_j = 125\text{ °C}$			mA
I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$	$T_j = 25\text{ °C}$		600	nA
		$T_j = 125\text{ °C}$			nA
V_{CE0}		$T_j = 25\text{ °C}$	1	1,2	V
		$T_j = 125\text{ °C}$	0,9	1,1	V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	14	19	$\text{m}\Omega$
		$T_j = 125\text{ °C}$	22	27	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 50\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	1,7	2,1	V
		$T_j = 125\text{ °C}_{chiplev.}$	2	2,45	V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	3,6		nF
C_{oes}			0,188		nF
C_{res}			0,163		nF
$t_{d(on)}$	$R_{Gon} = 8\ \Omega$	$V_{CC} = 600\text{ V}$ $I_{Cnom} = 50\text{ A}$	115		ns
t_r			28		ns
E_{on}	$R_{Goff} = 8\ \Omega$	$T_j = 125\text{ °C}$ $V_{GE} = -7 / +15\text{ V}$	4,6		mJ
$t_{d(off)}$			509		ns
t_f			100		ns
E_{off}			6,3		mJ
$R_{th(j-s)}$	per IGBT		0,6		K/W



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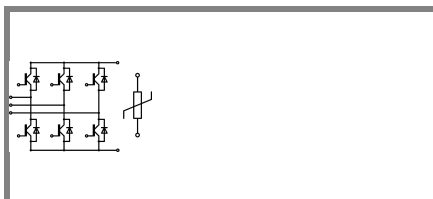
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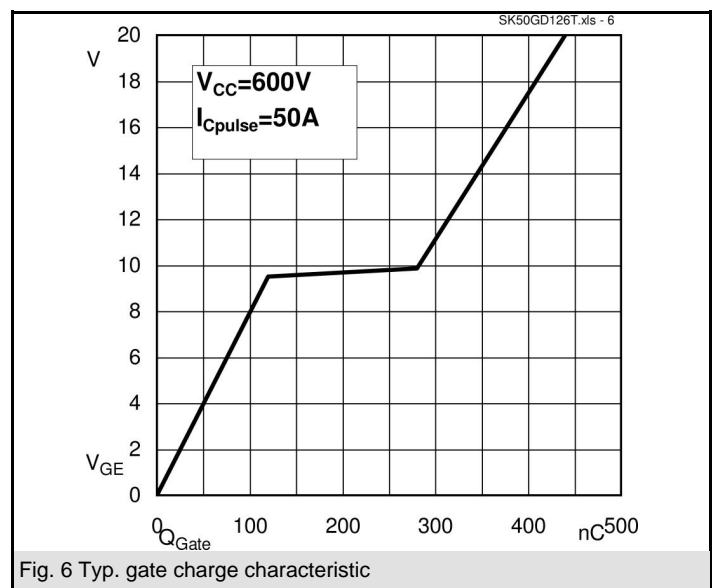
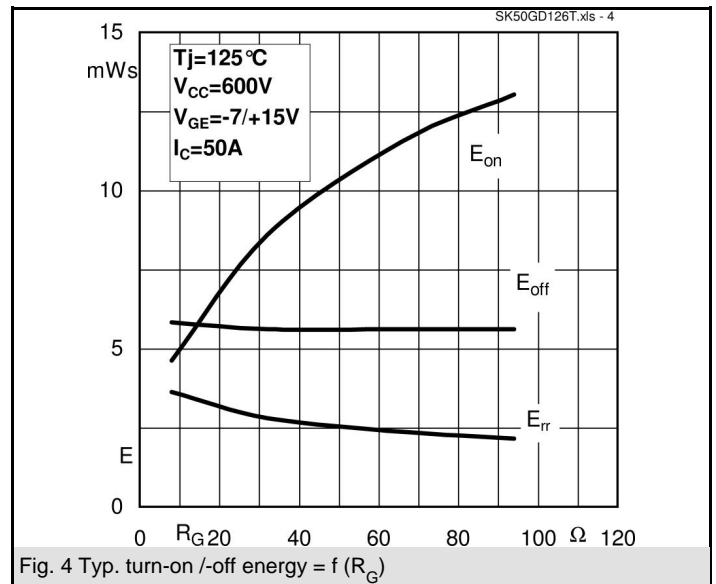
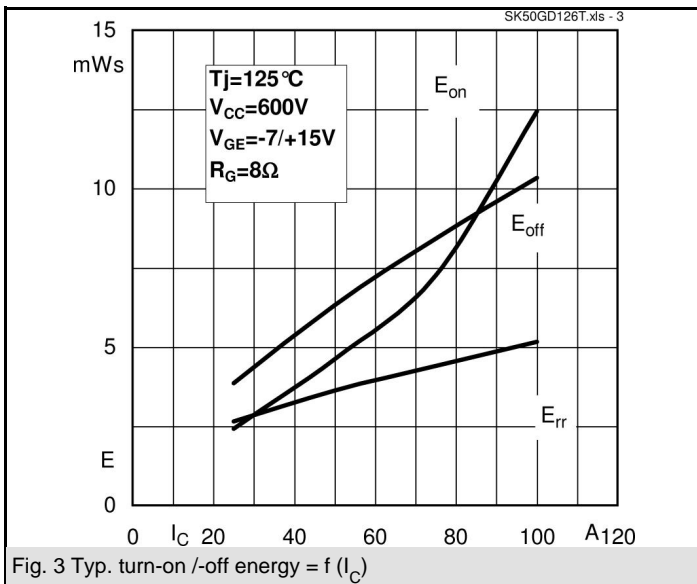
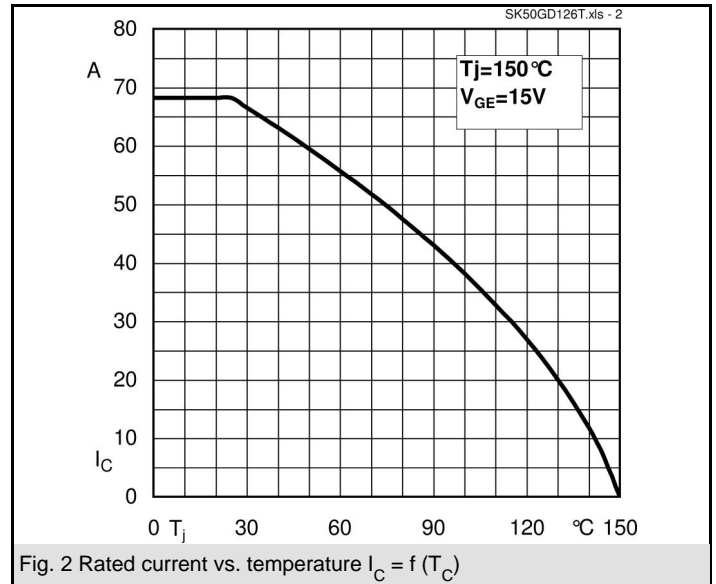
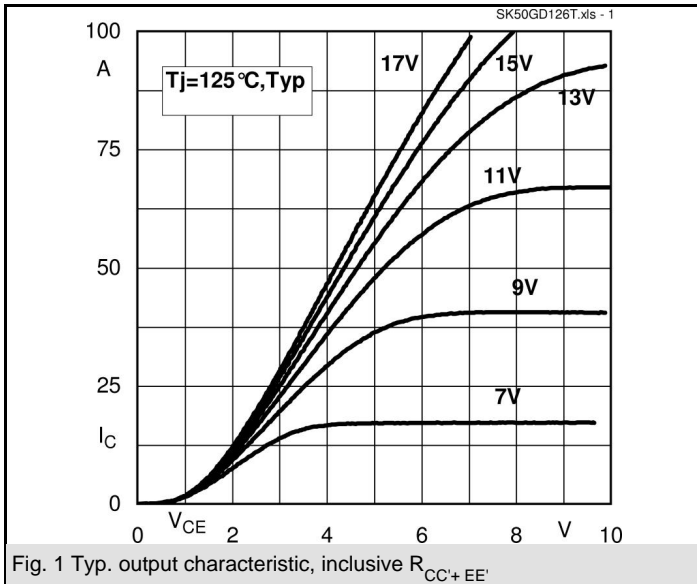


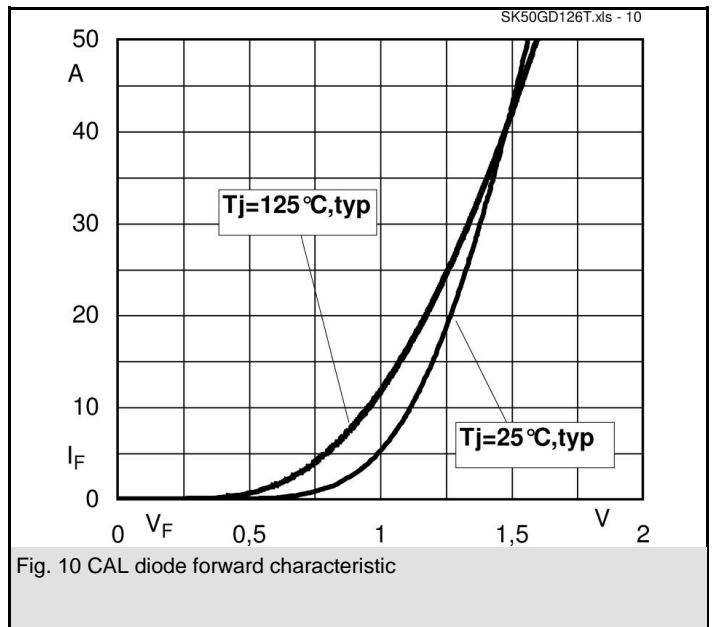
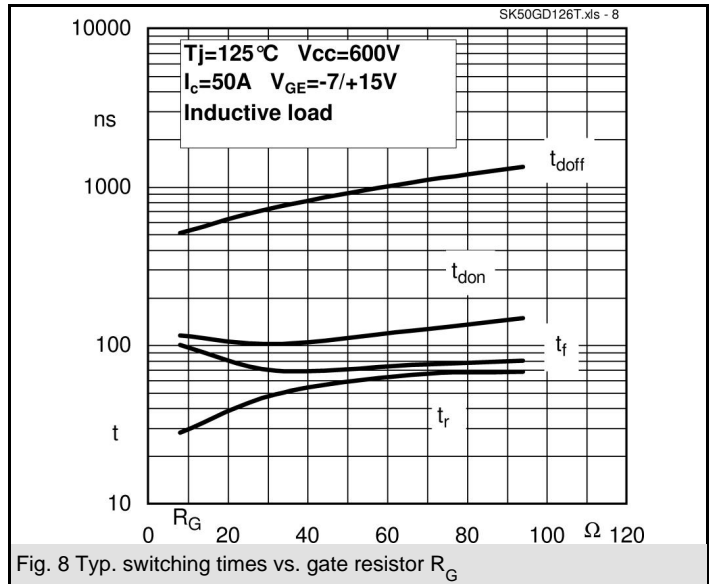
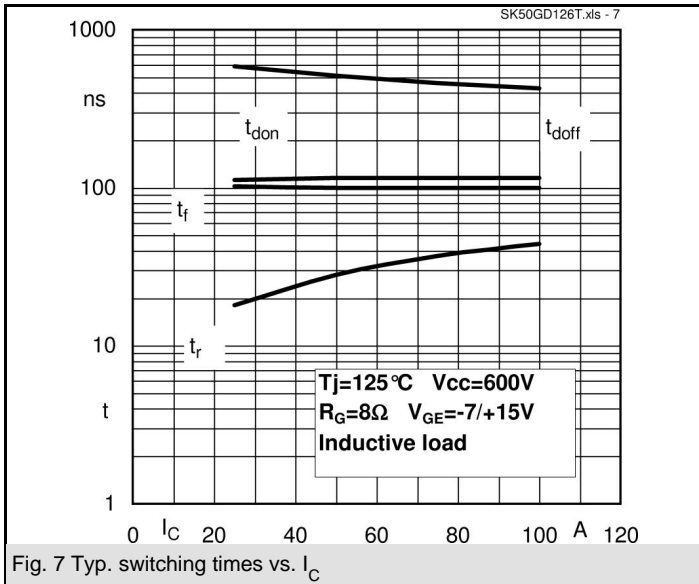
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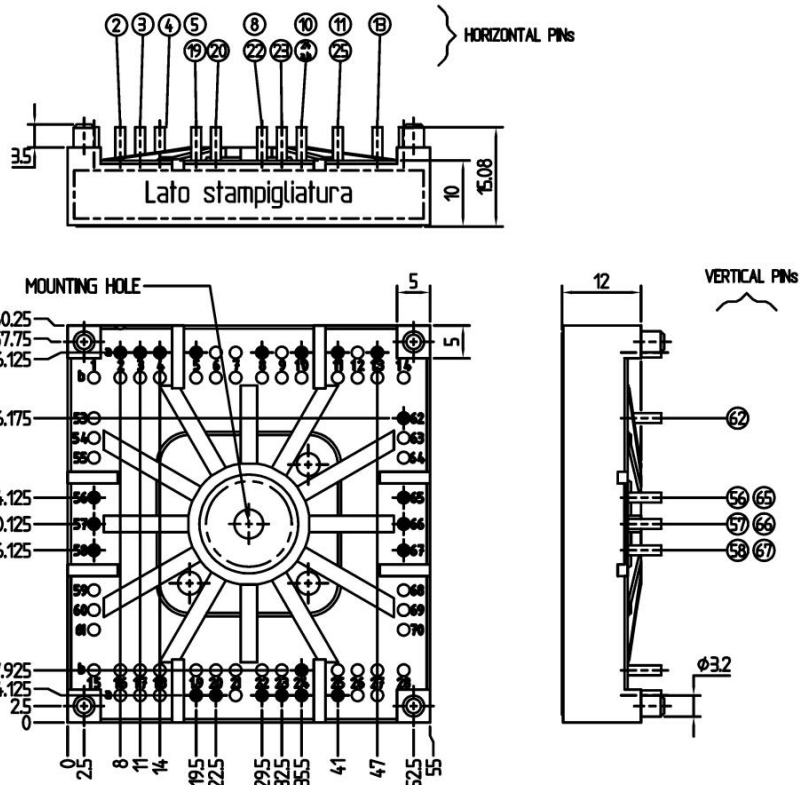
Characteristics			min.	typ.	max.	Units
Symbol	Conditions					
Inverse Diode						
$V_F = V_{EC}$	$I_{Fnom} = 50 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$		1,35		V
		$T_j = 125 \text{ }^\circ\text{C}_{\text{chiplev.}}$		1,35		V
V_{F0}		$T_j = 25 \text{ }^\circ\text{C}$		0,95		V
		$T_j = 125 \text{ }^\circ\text{C}$		0,85		V
r_F		$T_j = 25 \text{ }^\circ\text{C}$		8		mΩ
		$T_j = 125 \text{ }^\circ\text{C}$		10		mΩ
I_{RRM}	$I_{Fnom} = 50 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$		30		A
Q_{rr}	$di/dt = 500 \text{ A}/\mu\text{s}$			10		μC
E_{rr}	$V_{CC} = 600\text{V}$			3,6		mJ
$R_{th(j-s)D}$	per diode			1		K/W
M_s	to heat sink				3,5	Nm
w				60		g
Temperature sensor						
R_{100}	$T_s = 100^\circ\text{C} (R_{25} = 5\text{k}\Omega)$			493±5%		Ω

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

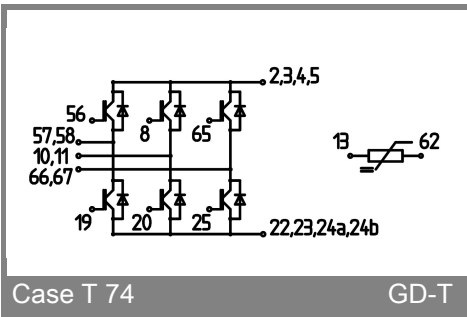
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Case T74 (Suggested hole diameter for the solder pins in the circuit board: 2mm. Suggested hole diameter for the mounting pins in the circuit board: 3,6mm)



Case T 74

GD-T