

SEMITOP® 3

IGBT Module

SK60GB128

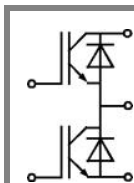
Preliminary Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- High short circuit capability
- SPT= Soft-Punch-Through technology
- $V_{ce,sat}$ with positive coefficient

Typical Applications

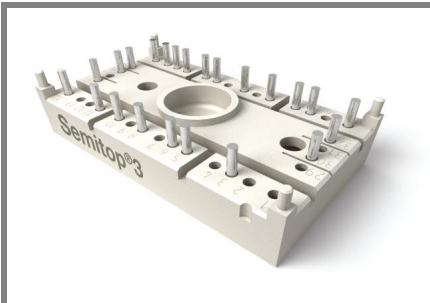
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS



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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	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$	63	A
		$T_s = 80\text{ °C}$	44	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	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	57	A
		$T_s = 80\text{ °C}$	38	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$			A
I_{FSM}	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150\text{ °C}$	550		A
Module				
$I_{t(RMS)}$				A
T_{vj}		-40 ... +150		°C
T_{stg}		-40 ... +125		°C
V_{isol}	AC, 1 min.	2500		V

Characteristics		$T_s = 25\text{ °C}$, unless otherwise specified				
Symbol	Conditions	min.	typ.	max.	Units	
IGBT						
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 2\text{ mA}$	4,5	5,5	6,5	V	
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25\text{ °C}$		0,1	mA	
		$T_j = 125\text{ °C}$		0,2	mA	
I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$	$T_j = 25\text{ °C}$		200	nA	
		$T_j = 125\text{ °C}$			nA	
V_{CE0}		$T_j = 25\text{ °C}$	1,1	1,3	V	
		$T_j = 125\text{ °C}$	1	1,2	V	
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	16		mΩ	
		$T_j = 125\text{ °C}$	18		mΩ	
$V_{CE(sat)}$	$I_{Cnom} = 50\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	1,7	1,9	2,3	V
		$T_j = 125\text{ °C}_{chiplev.}$		1,9	2,3	V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	4,46		nF	
C_{oes}			0,33		nF	
C_{res}			0,21		nF	
$t_{d(on)}$	$R_{Gon} = 15\text{ } \Omega$	$V_{CC} = 600\text{ V}$ $I_{Cnom} = 50\text{ A}$	80		ns	
t_r			50		ns	
E_{on}	$R_{Goff} = 15\text{ } \Omega$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	5,8		mJ	
$t_{d(off)}$			420		ns	
t_f			40		ns	
E_{off}			4,8		mJ	
$R_{th(j-s)}$	per IGBT			0,6	K/W	



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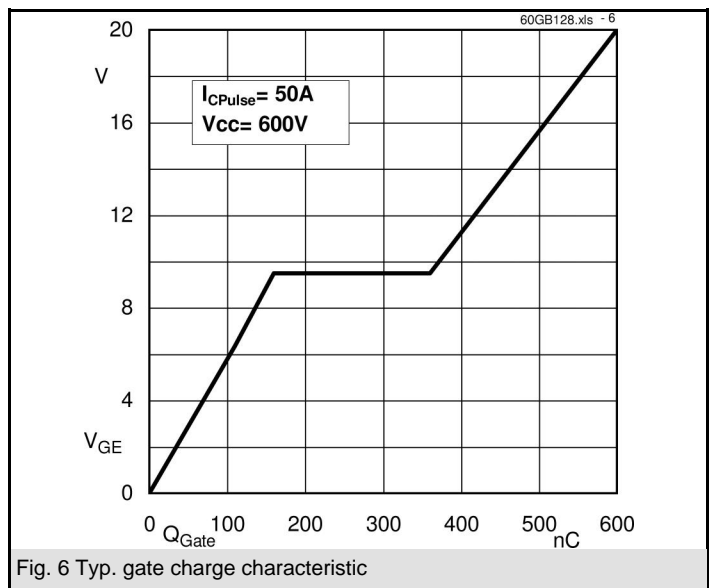
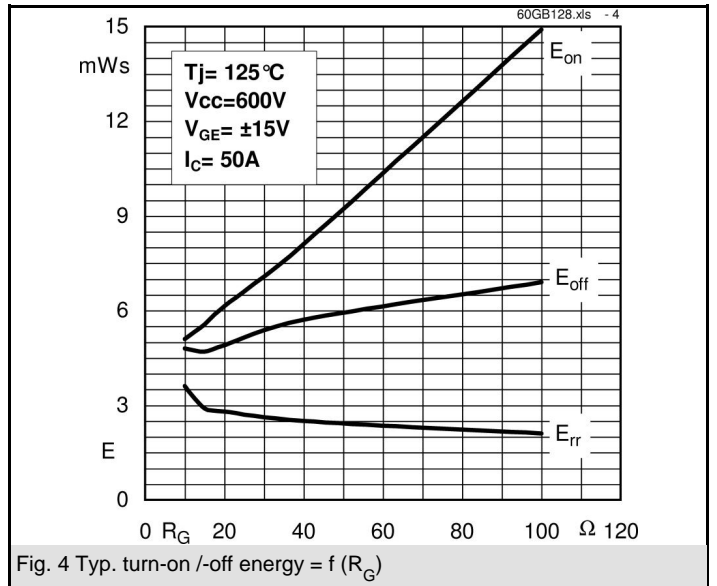
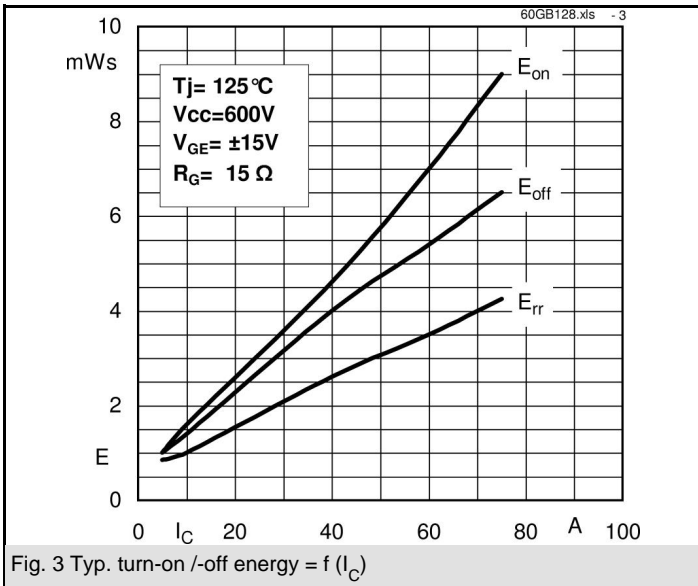
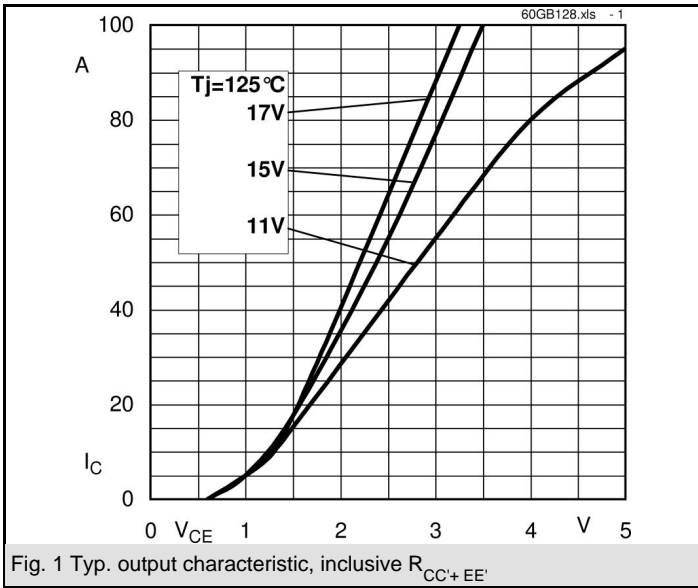
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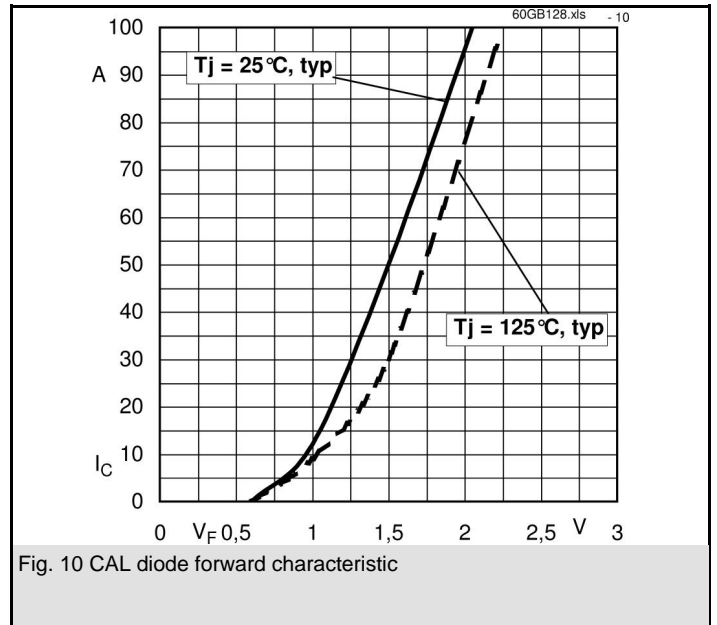
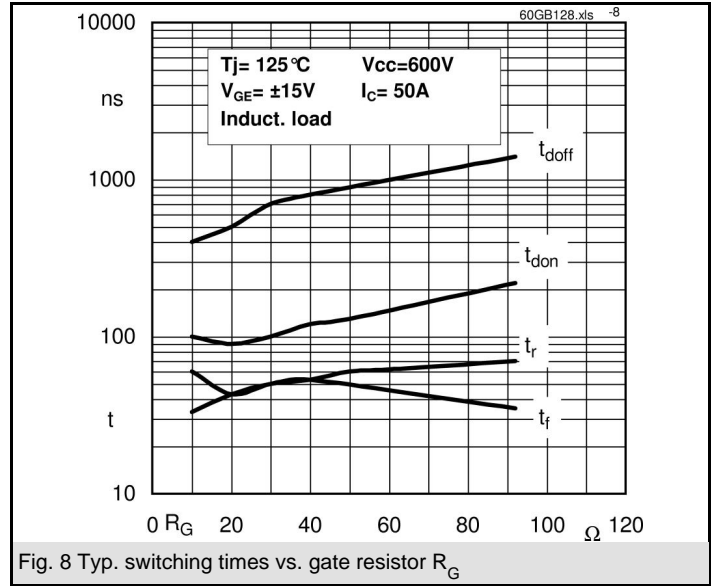
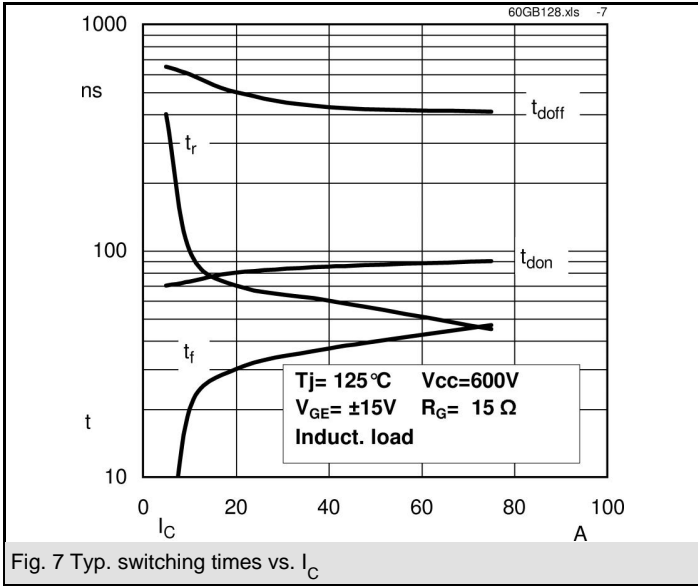
Characteristics

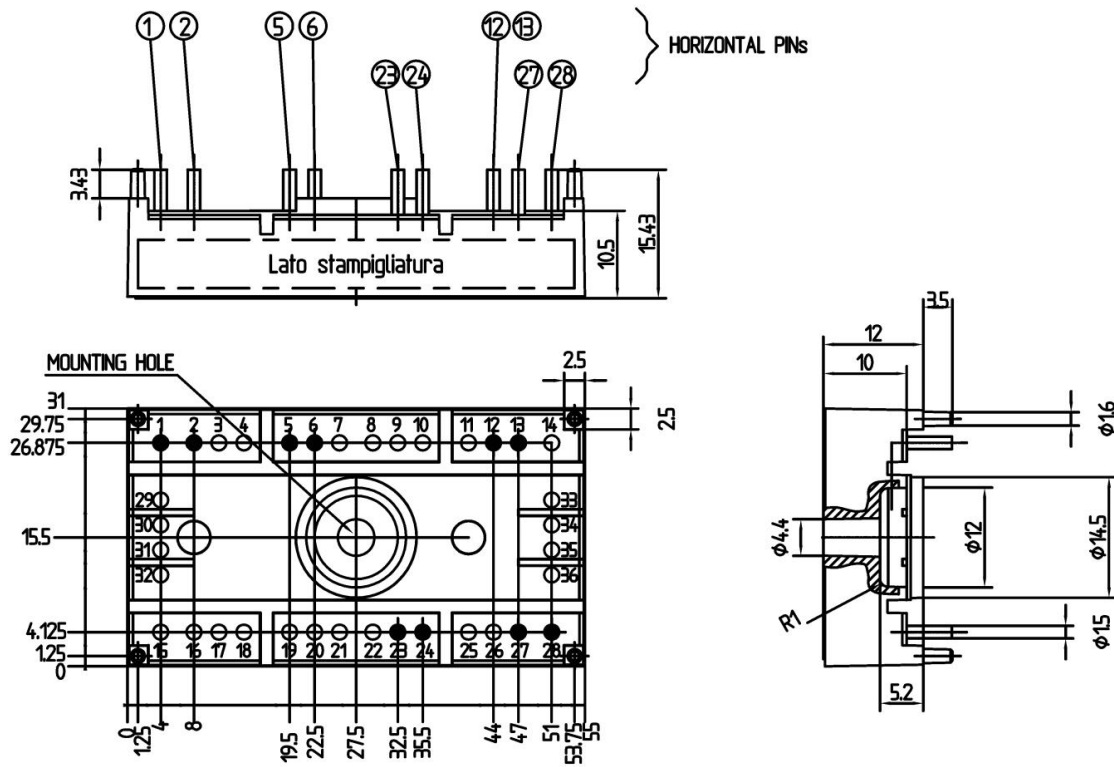
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 50 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2	2,5	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,8	2,3	V
V_{F0}			1	1,2	V
r_F			18	22	m Ω
I_{RRM}	$I_{Fnom} = 50 \text{ A}$		40		A
Q_{rr}	$di/dt = -800 \text{ A}/\mu\text{s}$		8		μC
E_{rr}	$V_{CC} = 600\text{V}$		2		mJ
$R_{th(j-s)D}$	per diode			0,9	K/W
M_s	to heat sink M1	2,25		2,5	Nm
w			29		g

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

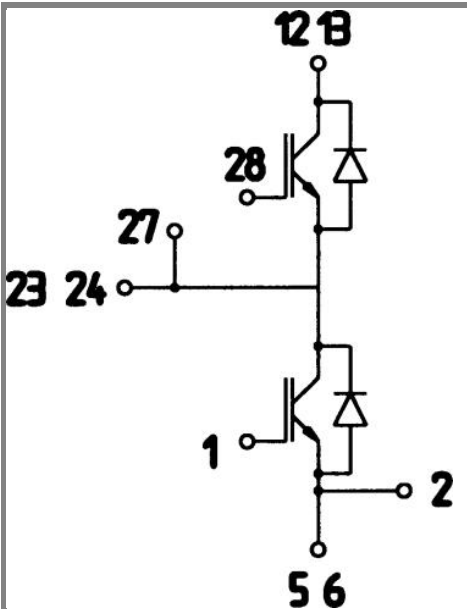
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Case T27 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T27

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