

SEMITOP[®] 3

IGBT Module

SK30GD128

Preliminary Data

Features

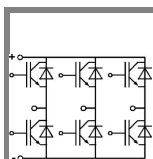
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- High short circuit capability
- SPT = Soft-Punch-Through technology
- $V_{CE,sat}$ with positive coefficient

Typical Applications

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

Remarks

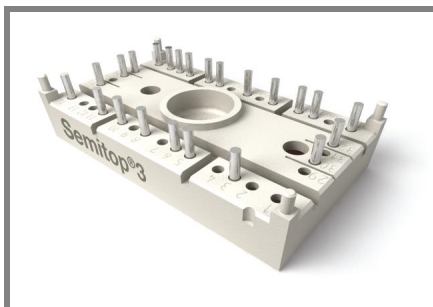
- V_F = chip level value



GD

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	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$	35	A
		$T_s = 80\text{ °C}$	25	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	50		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	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	37	A
		$T_s = 80\text{ °C}$	25	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$			A
I_{FSM}	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150\text{ °C}$	180		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					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1\text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 1200\text{ V}, V_{CE} = V_{CES}$	$T_j = 25\text{ °C}$	0,1		mA
		$T_j = 125\text{ °C}$	0,1		mA
I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$			200	nA
V_{CE0}		$T_j = 25\text{ °C}$	1,15		V
		$T_j = 125\text{ °C}$	1		V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	24		mΩ
		$T_j = 125\text{ °C}$	44		mΩ
$V_{CE(sat)}$	$I_{Cnom} = 25\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	1,9		V
		$T_j = 125\text{ °C}_{chiplev.}$	2,1		V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	1,9		nF
C_{oes}			0,16		nF
C_{res}			0,09		nF
Q_G	$V_{GE} = 0...20\text{ V}$	296		nC	
$t_{d(on)}$	$R_{Gon} = 15\text{ } \Omega$	$V_{CC} = 600\text{ V}$ $I_{Cnom} = 30\text{ A}$	55		ns
t_r			26		ns
E_{on}	$R_{Goff} = 15\text{ } \Omega$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	2,8		mJ
$t_{d(off)}$			284		ns
t_f			40		ns
E_{off}			2,19		mJ
$R_{th(j-s)}$	per IGBT			1	K/W



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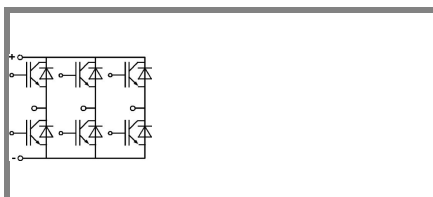
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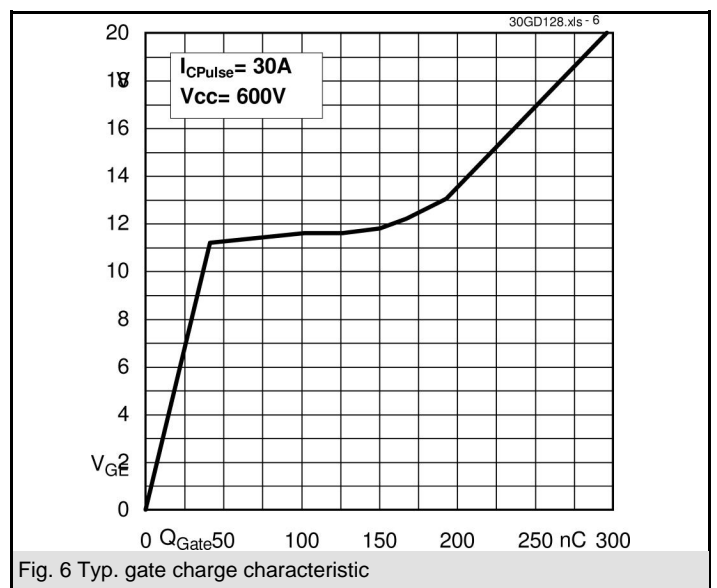
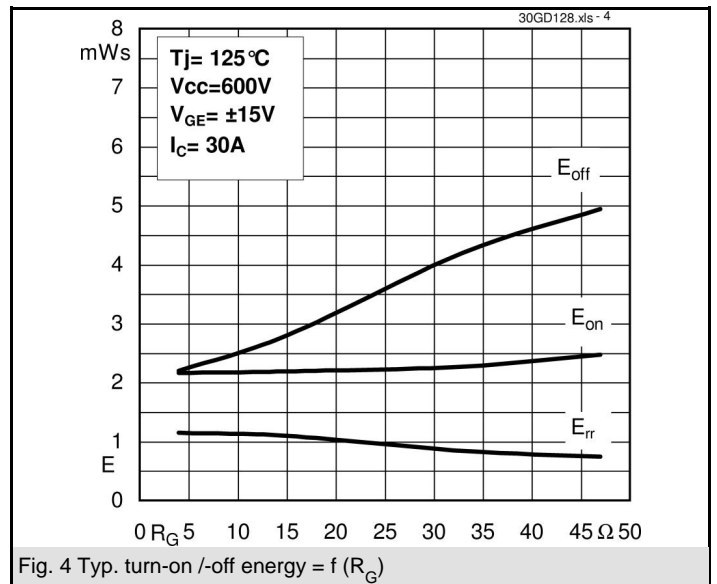
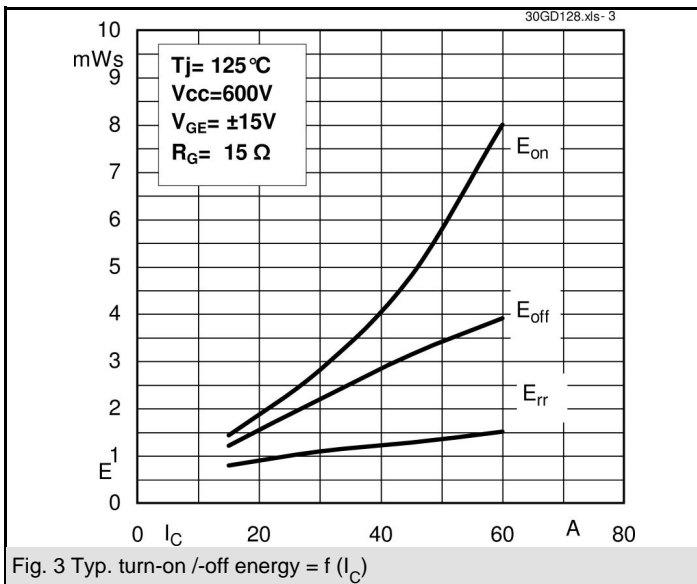
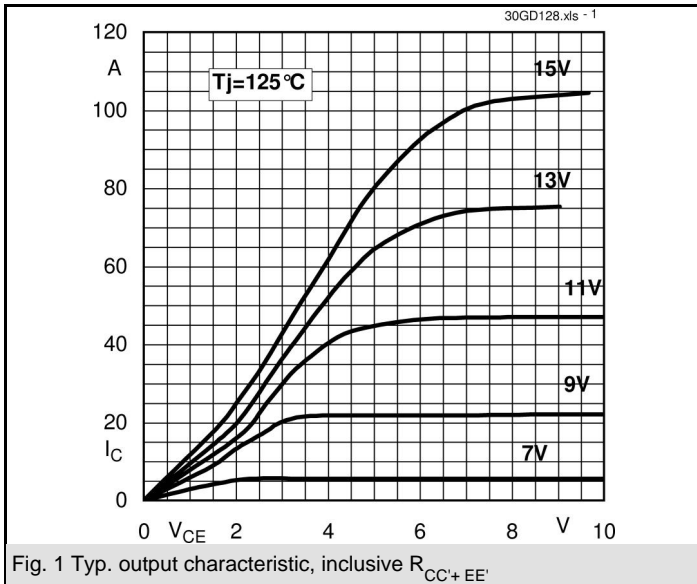
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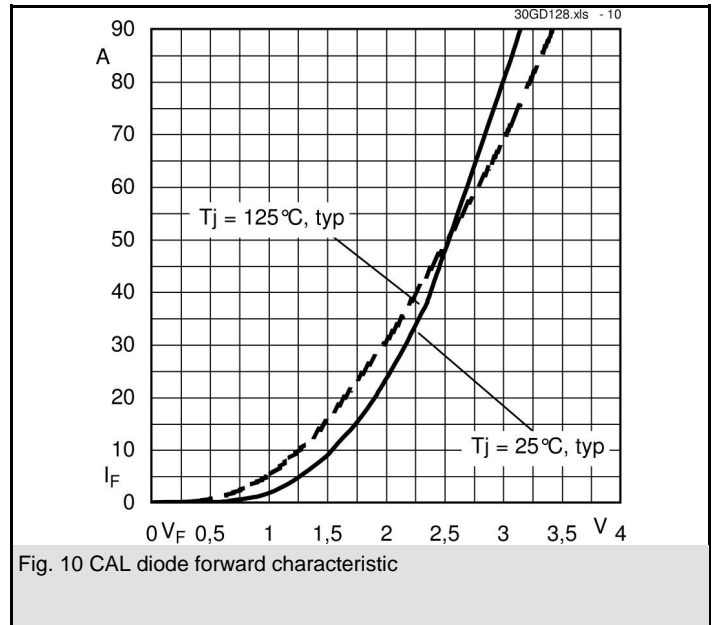
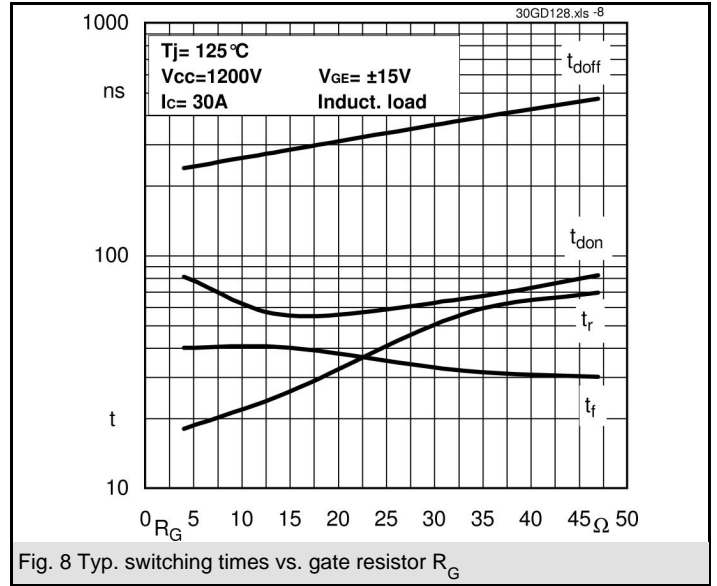
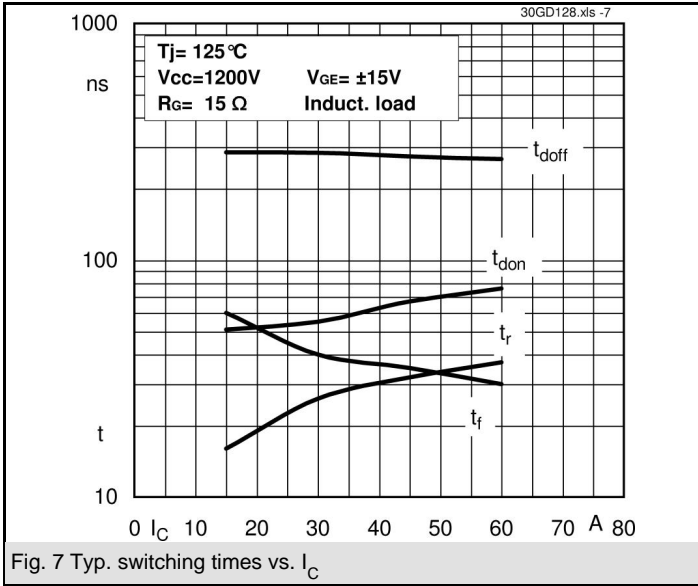
Characteristics

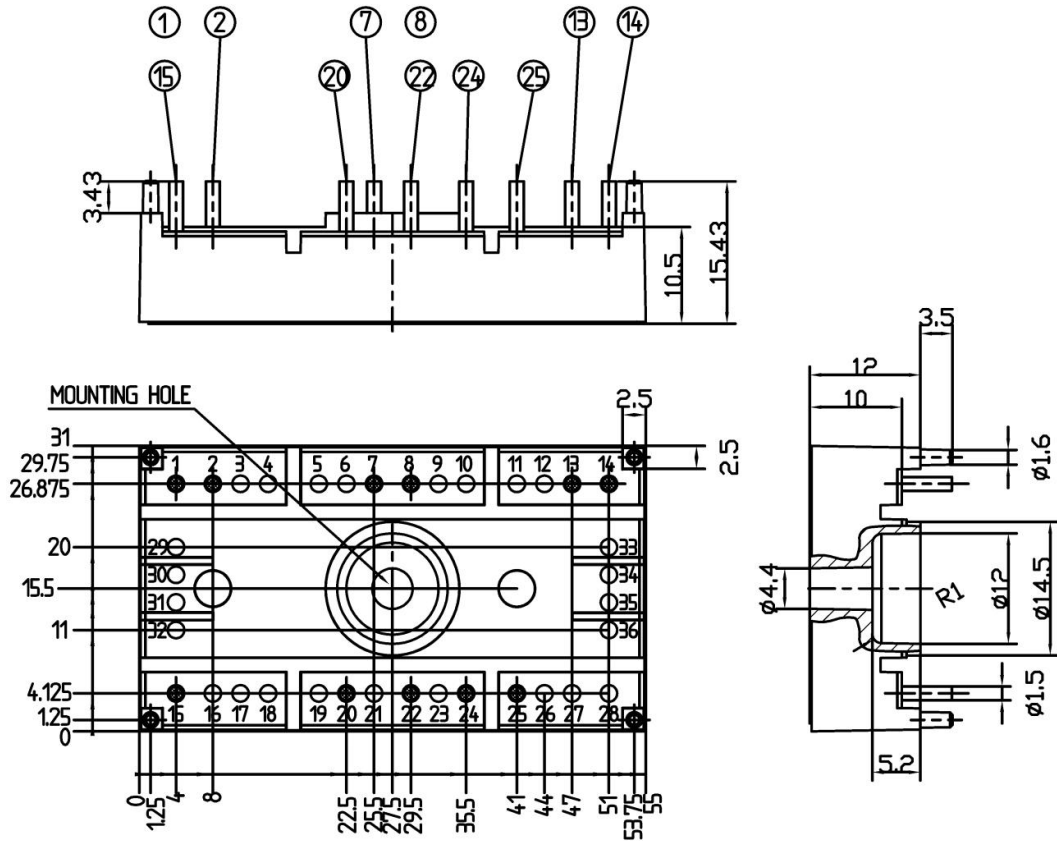
Symbol	Conditions	min.	typ.	max.	Units	
Inverse Diode						
$V_F = V_{EC}$	$I_{Fnom} = 25 \text{ A}; V_{GE} = 0 \text{ V}$		$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2	V	
			$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,8	V	
V_{F0}			$T_j = 125 \text{ }^\circ\text{C}$	1	1,2	V
r_F			$T_j = 125 \text{ }^\circ\text{C}$	32	44	m Ω
I_{RRM}	$I_{Fnom} = 22 \text{ A}$		$T_j = 125 \text{ }^\circ\text{C}$	25		A
Q_{rr}	$di/dt = -500 \text{ A}/\mu\text{s}$			4,5		μC
E_{rr}	$V_{CC} = 600\text{V}$			1		mJ
$R_{th(j-s)D}$	per diode			1,2		K/W
M_s	to heat sink M1			2		Nm
w				19		g

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

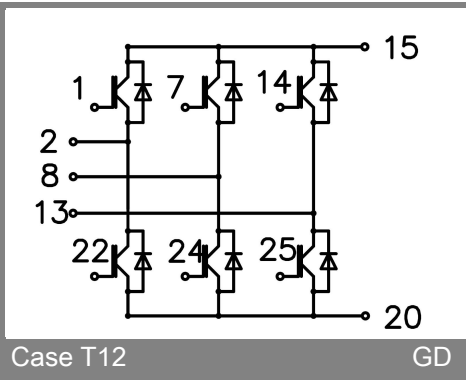
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Case T12 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T12

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