

SEMITOP® 3

IGBT Module

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SK20GD123

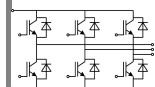
Preliminary Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- N-channel homogeneous silicon structure (NPT-Non punch-through IGBT)
- High short circuit capability
- Low tail current with low temperature dependence
- UL recognized, file no. E63532

Typical Applications

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

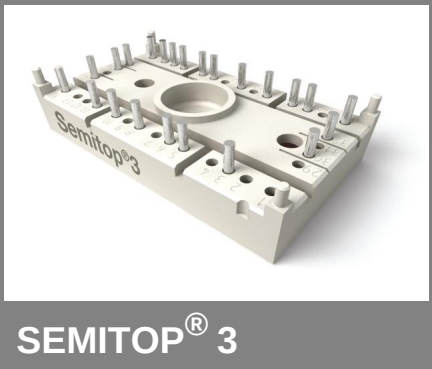


GD

Absolute Maximum Ratings		T _s = 25 °C, unless otherwise specified		
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 125 °C	T _s = 25 °C	23	A
		T _s = 80 °C	15	A
I _{CRM}	I _{CRM} = 2 x I _{Cnom}		30	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 600 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 1200 V		10	µs
Inverse Diode				
I _F	T _j = 150 °C	T _s = 25 °C	24	A
		T _s = 80 °C	17	A
I _{FRM}	I _{FRM} = 2 x I _{Fnom}			A
I _{FSM}	t _p = 10 ms; half sine wave T _j = 150 °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		$T_s = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0,6\text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$			0,1	mA
					mA
I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 30\text{ V}$			480	nA
					nA
V_{CE0}			1,2		V
					V
r_{CE}	$V_{GE} = 15\text{ V}$		86		$\text{m}\Omega$
					$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 15\text{ A}, V_{GE} = 15\text{ V}$	2	$T_j = 25^\circ\text{C}_{chiplev.}$	3	V
			$T_j = 125^\circ\text{C}_{chiplev.}$	3,7	V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$		1		nF
C_{oes}					nF
C_{res}					nF
Q_G	$V_{GE} = 0 \dots 20\text{ V}$		90		nC
$t_{d(on)}$	$R_{Gon} = 40\ \Omega$		35		ns
t_r			45		ns
E_{on}	$R_{Goff} = 40\ \Omega$		2		mJ
$t_{d(off)}$			250		ns
t_f			70		ns
E_{off}			1,8		mJ
$R_{th(j-s)}$	per IGBT			1,4	K/W

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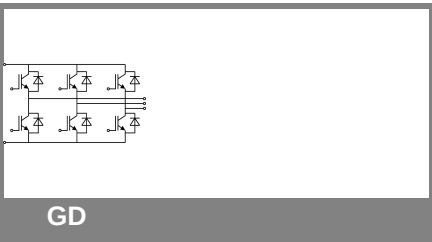
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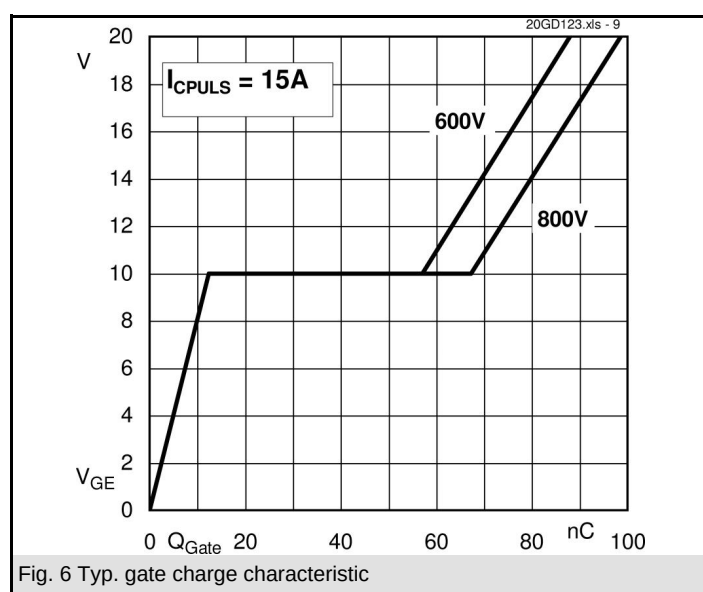
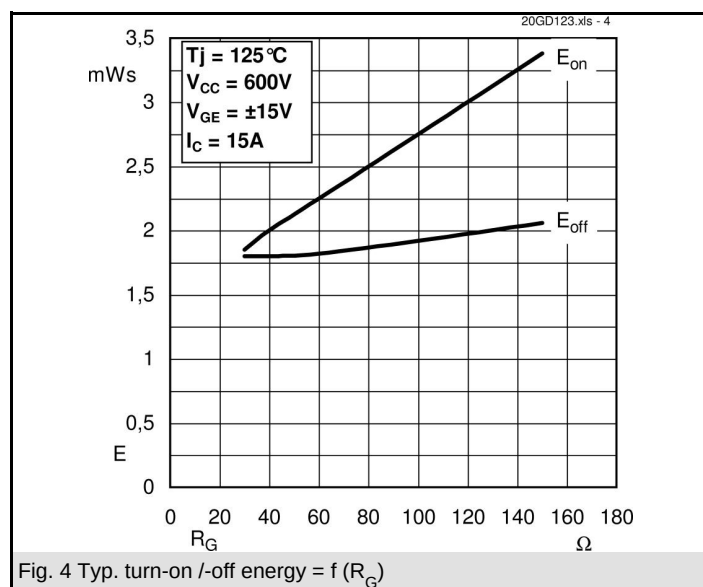
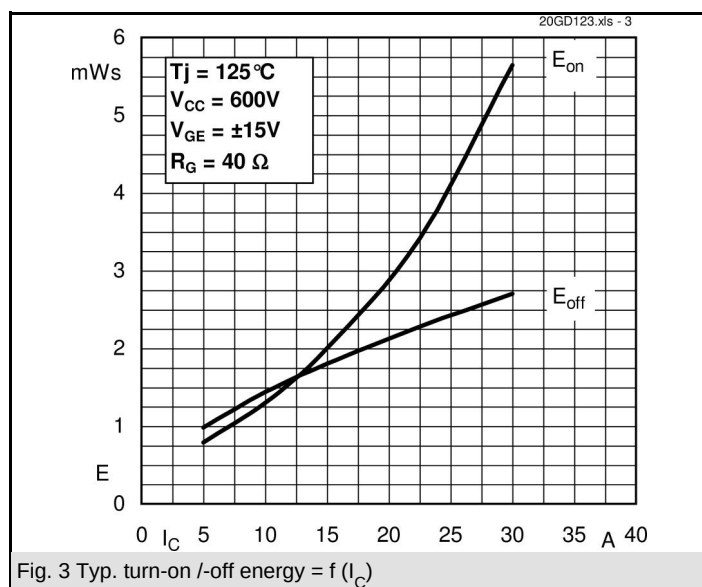
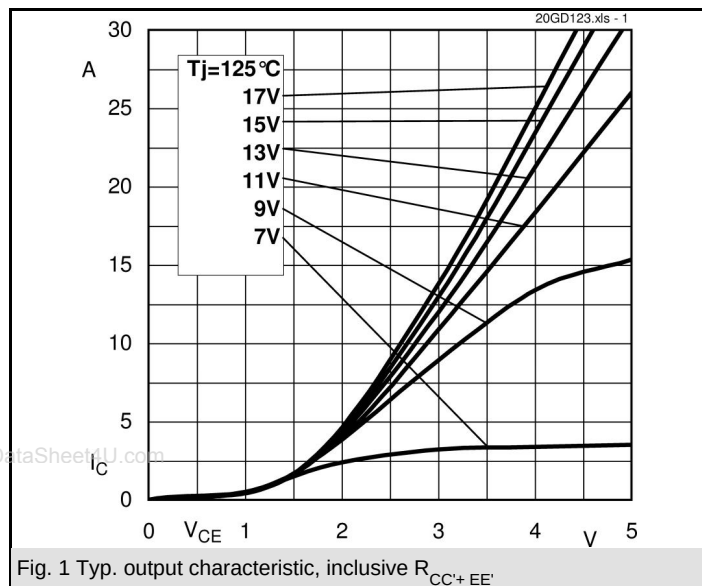
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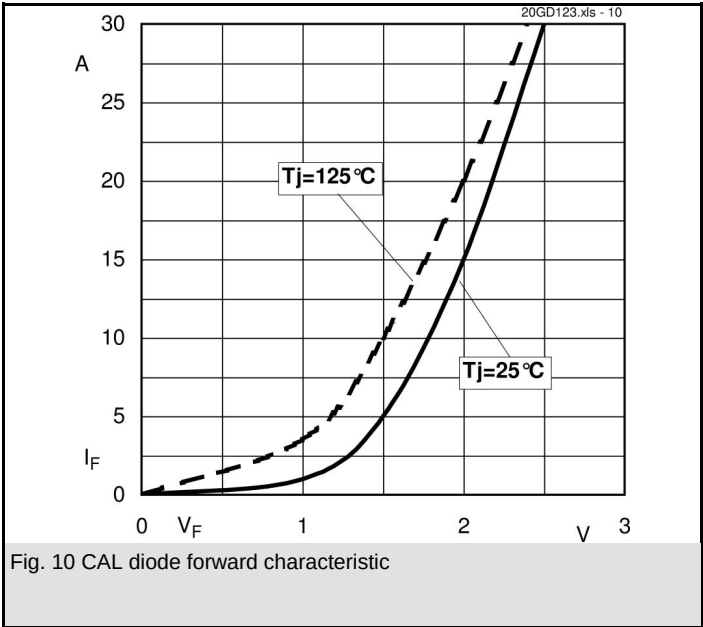
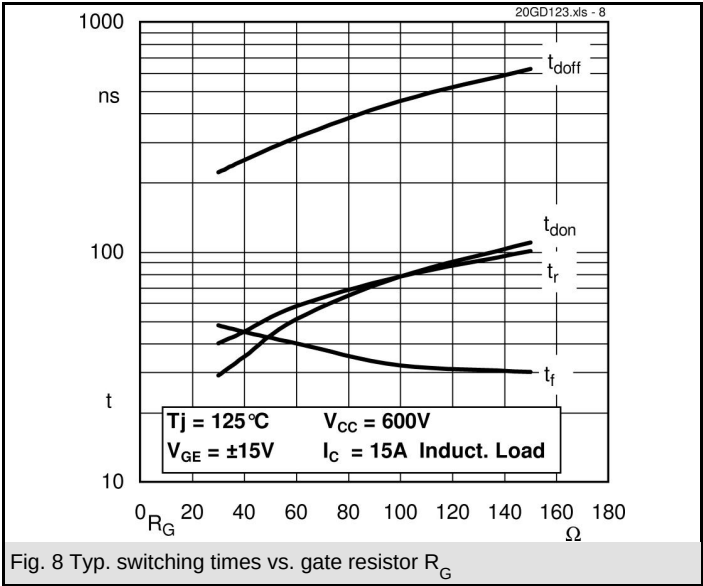
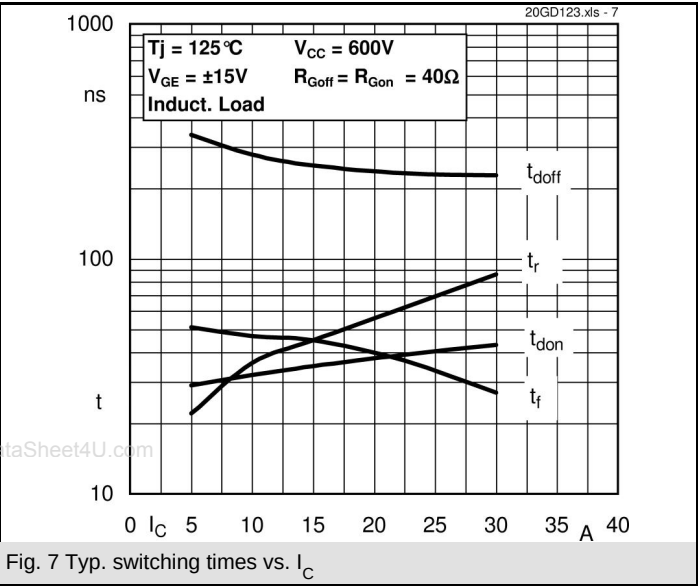


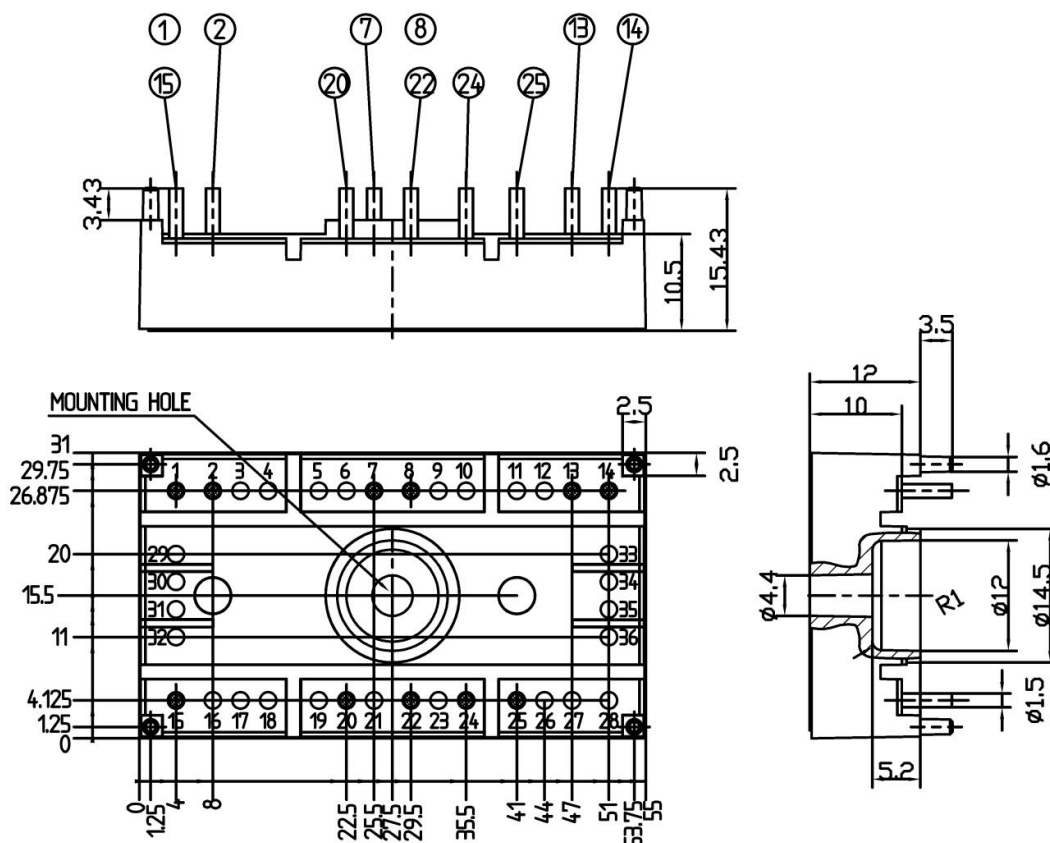
Characteristics						
Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
V _F = V _{EC}	I _{Fnom} = 15 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.}		2	2,5	V
		T _j = 125 °C _{chiplev.}		1,8	2,3	V
V _{F0}		T _j = 125 °C		1	1,2	V
r _F		T _j = 125 °C		53	73	mΩ
I _{RRM}	I _{Fnom} = 15 A di/dt = -200 A/μs V _{CC} = 600V	T _j = 125 °C		16		A
Q _{rr}				2,7		μC
E _{rr}				0,6		mJ
R _{th(j-s)D}	per diode				1,7	K/W
M _s	to heat sink M1		2,25		2,5	Nm
w				30		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)

