



SEMITOP® 3

IGBT Module

SK15GD12T4ET

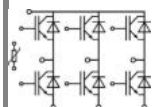
Features

- One screw mounting module
- Trench4 IGBT technology
- CAL4 technology FWD
- Integrated NTC temperature sensor

Typical Applications*

Remarks

- $V_{CE,sat}$, V_F = chip level value

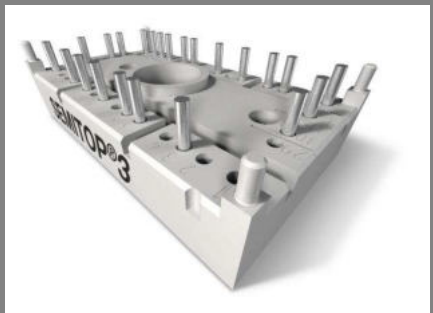


GD-ET

Absolute Maximum Ratings		$T_s = 25\text{ }^{\circ}\text{C}$, unless otherwise specified		
Symbol	Conditions		Values	Units
IGBT				
V_{CES}	$T_j = 25\text{ }^{\circ}\text{C}$		1200	V
I_C	$T_j = 175\text{ }^{\circ}\text{C}$	$T_s = 25\text{ }^{\circ}\text{C}$	27	A
		$T_s = 70\text{ }^{\circ}\text{C}$	21	A
I_{CRM}	$I_{CRM} = 3 \times I_{Cnom}$		45	A
V_{GES}			± 20	V
t_{psc}	$V_{CC} = 800\text{ V}$; $V_{GE} \leq 15\text{ V}$; $T_j = 150\text{ }^{\circ}\text{C}$ $V_{CES} < 1200\text{ V}$		10	μs
Inverse Diode				
I_F	$T_j = 175\text{ }^{\circ}\text{C}$	$T_s = 25\text{ }^{\circ}\text{C}$	21	A
		$T_s = 70\text{ }^{\circ}\text{C}$	17	A
I_{FRM}	$I_{FRM} = 3 \times I_{Fnom}$		45	A
I_{FSM}	$t_p = 10\text{ ms}$; half sine wave $T_j = 150\text{ }^{\circ}\text{C}$		90	A
Module				
$I_{t(RMS)}$				A
T_{vj}			-40 ... +175	$^{\circ}\text{C}$
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					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 0,5\text{ mA}$	5	5,8	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}$, $V_{CE} = V_{CES}$			1,0	mA
					mA
I_{GES}	$V_{CE} = 0\text{ V}$, $V_{GE} = 20\text{ V}$			120	nA
					nA
V_{CE0}			0,8	0,9	V
					V
r_{CE}	$V_{GE} = 15\text{ V}$		70	77	$\text{m}\Omega$
					$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 15\text{ A}$, $V_{GE} = 15\text{ V}$		1,85	2,05	V
					V
C_{ies}	$V_{CE} = 25$, $V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	0,9		nF
C_{oes}			0,08		nF
C_{res}			0,055		nF
Q_G	$V_{GE} = -7\text{ V} \dots +15\text{ V}$		65		nC
$t_{d(on)}$	$R_{Gon} = 16\text{ }\Omega$	$V_{CC} = 600\text{ V}$	16		ns
t_r			14		ns
E_{on}	$di/dt = 2750\text{ A}/\mu\text{s}$	$I_C = 15\text{ A}$	0,83		mJ
$t_{d(off)}$	$R_{Goff} = 16\text{ }\Omega$	$T_j = 150\text{ °C}$	273		ns
t_f			85		ns
E_{off}	$di/dt = 2750\text{ A}/\mu\text{s}$	$V_{GE} = -7 \dots +15\text{ V}$	1,52		mJ
$R_{th(j-s)}$	per IGBT		1,65		K/W

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Features

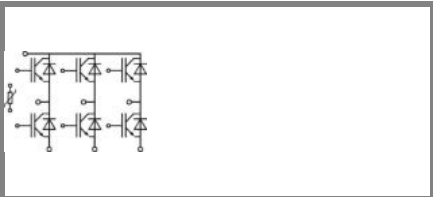
- One screw mounting module
- Trench4 IGBT technology
- CAL4 technology FWD
- Integrated NTC temperature sensor

Typical Applications*

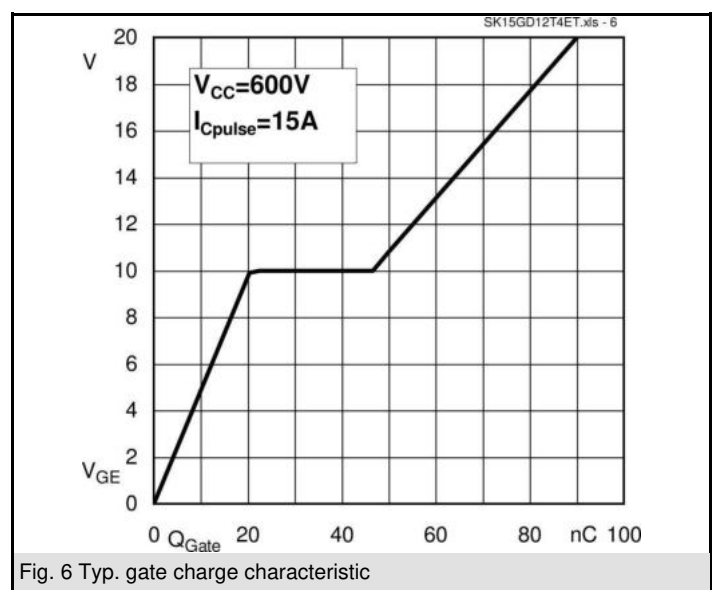
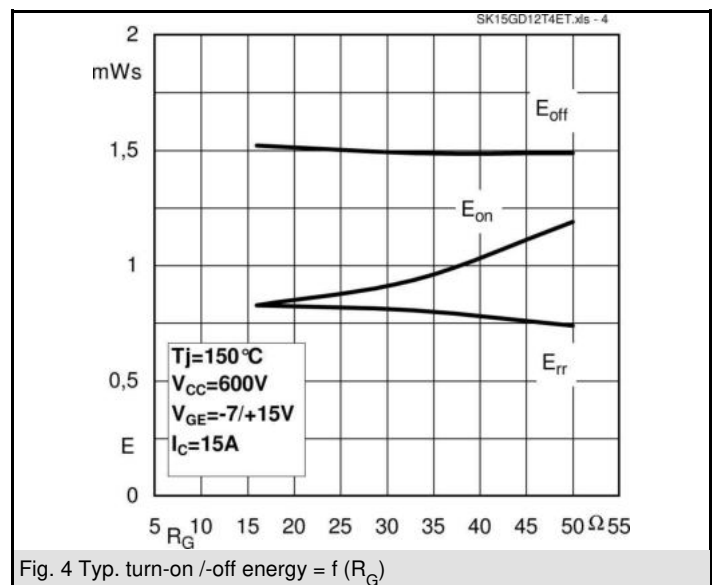
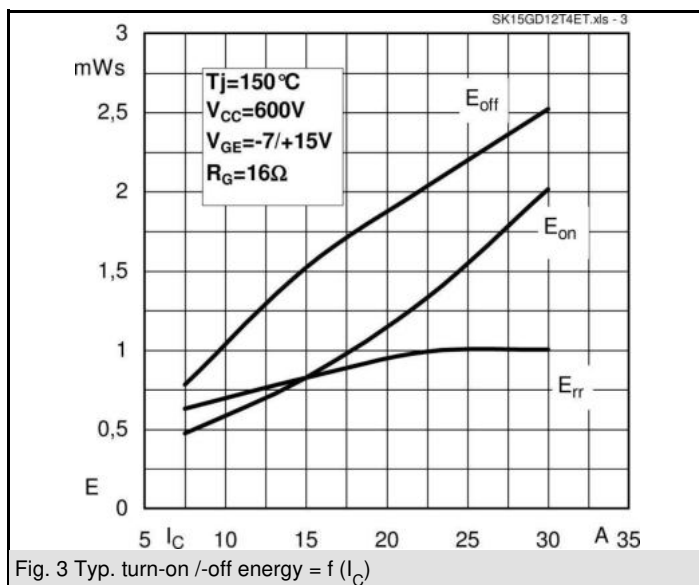
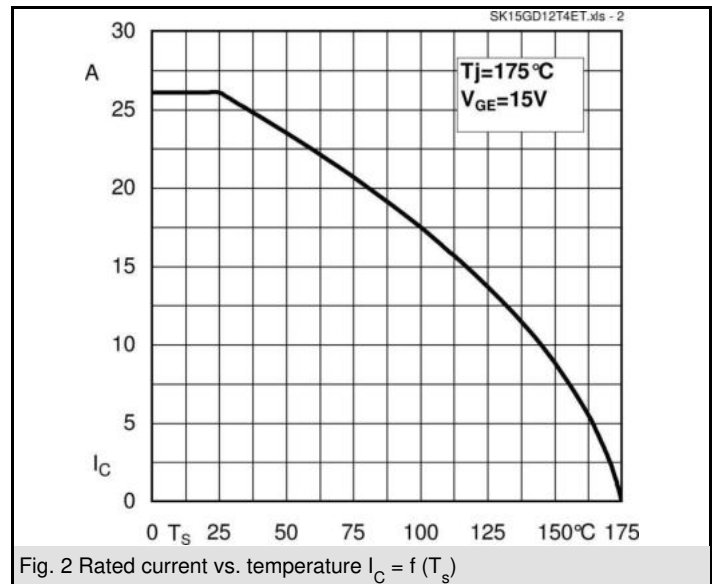
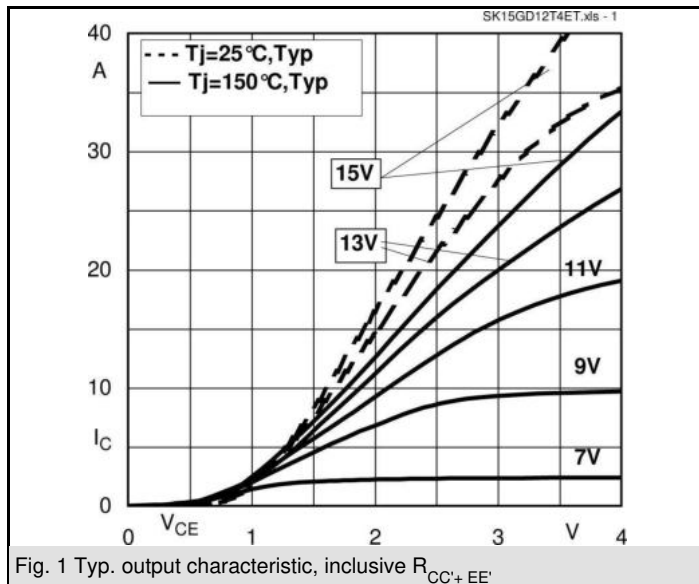
Remarks

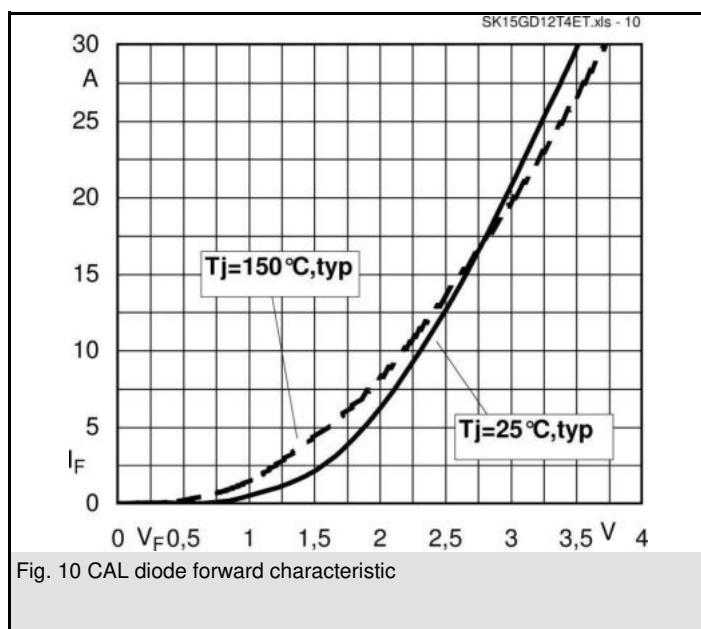
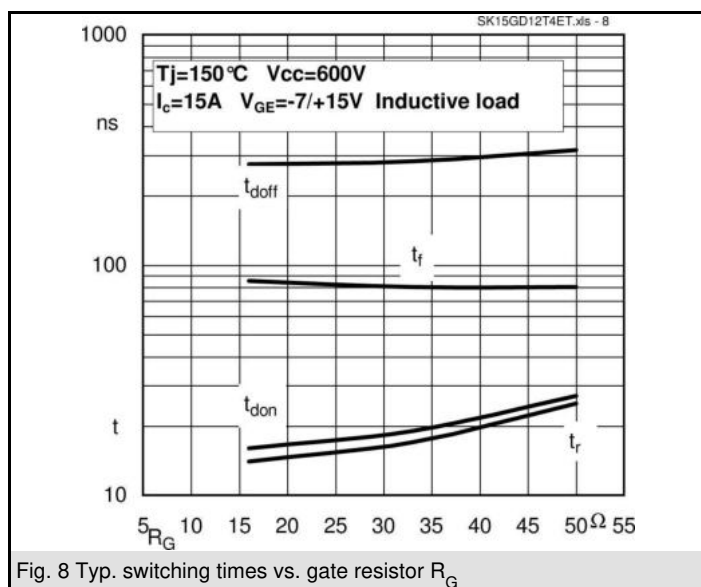
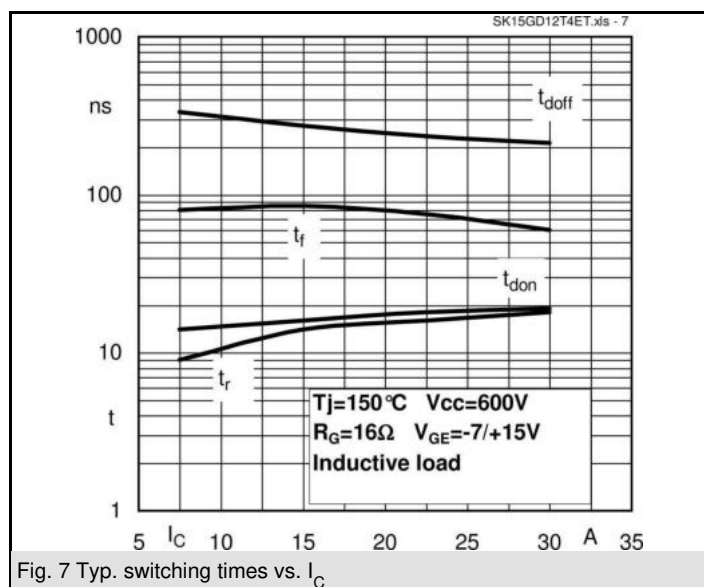
- $V_{CE,sat}$, V_F = chip level value

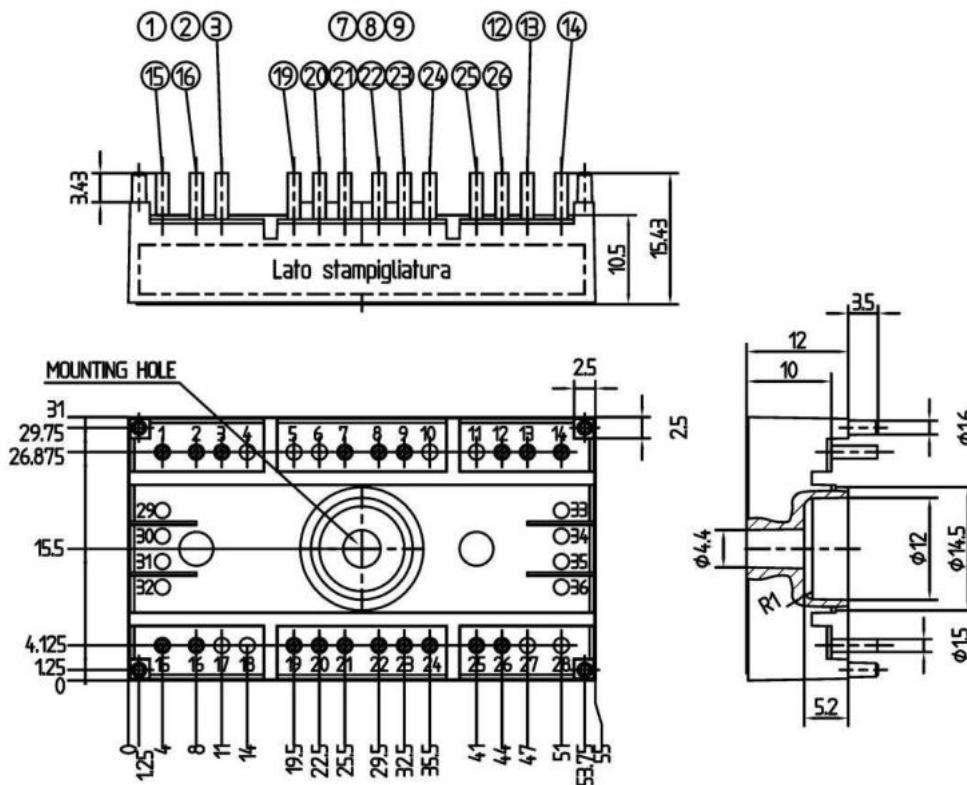
Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
V _F = V _{EC}	I _{Fnom} = 15 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.}	2,38	2,71	V
		T _j = 150 °C _{chiplev.}	2,44	2,77	V
V _{F0}		T _j = 25 °C	1,3	1,5	V
		T _j = 150 °C	0,9	1,1	V
r _F		T _j = 25 °C	72	80,6	mΩ
		T _j = 150 °C	102,7	111,3	mΩ
I _{RRM}	I _F = 15 A	T _j = 150 °C	28		A
Q _{rr}	di/dt = 2750 A/μs		0,3		μC
E _{rr}	V _{CC} = 600V		0,82		mJ
R _{th(j-s)D}	per diode		2,34		K/W
M _s	to heat sink	2,25		2,5	Nm
w			30		g
Temperature sensor					
R ₁₀₀	T _s =100°C (R ₂₅ =5kΩ)		493±5%		Ω



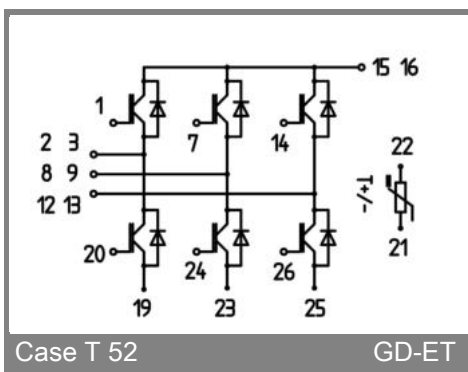
GD-ET







Case T52 (Suggested hole diameter for solder pins and plastic mounting pins: 2mm)



Case T 52

GD-ET

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

*IMPORTANT INFORMATION AND WARNINGS

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