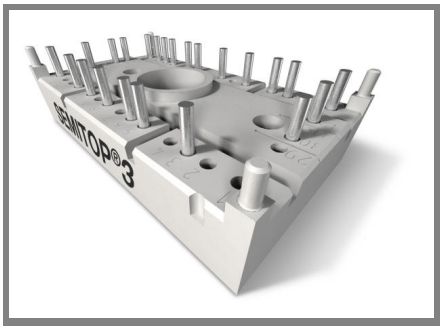
SK15GD12T4ET



SEMITOP® 3

IGBT Module

SK15GD12T4ET

Target Data

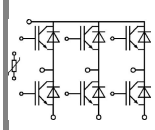
Features

- 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

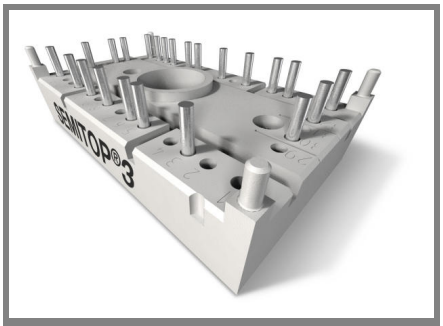


GD-ET

Absolute Maximum Ratings			T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**		**Values**	**Units**
IGBT				
V_{CES}	T_j = 25 °C		1200	V
I_C	T_j = 175 °C	T_s = 25 °C	27	A
		T_s = 70 °C	21	A
I_{CRM}	I_{CRM}= 3 x I_{Cnom}		45	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 800 V; $V_{GE} \leq$ 15 V; V_{CES} < 1200 V	T_j = 150 °C	10	µs
Inverse Diode				
I_F	T_j = 175 °C	T_s = 25 °C	21	A
		T_s = 70 °C	17	A
I_{FRM}	I_{FRM}= 3 x I_{Fnom}		45	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	90	A
Module				
$I_{t(RMS)}$				A
T_{vj}			-40 ... +175	°C
T_{stg}			-40 ... +125	°C
V_{isol}	AC, 1 min.		2500	V

Characteristics			T_s = 25 °C, unless otherwise specified			
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
IGBT						
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 0,5 mA		5	5,8	6,5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C			0,002	mA
		T_j = 125 °C				mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			120	nA
		T_j = 125 °C				nA
V_{CE0}		T_j = 25 °C		0,8	0,9	V
		T_j = 150 °C		0,7	0,8	V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		70	77	mΩ
		T_j = 150°C		100	110	mΩ
$V_{CE(sat)}$	I_{Cnom} = 15 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$		1,85	2,05	V
		T_j = 150°C$_{chiplev.}$		2,25	2,45	V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		0,9		nF
C_{oes}				0,08		nF
C_{res}				0,055		nF
Q_G	V_{GE}=-7V...+15V			65		nC
$t_{d(on)}$	R_{Gon} = 16 Ω di/dt = 2750 A/µs	V_{CC} = 600V I_C= 15A T_j = 150 °C V_{GE}= -7...+15 V		16		ns
t_r				14		ns
E_{on}				0,83		mJ
$t_{d(off)}$	R_{Goff} = 16 Ω di/dt = 2750 A/µs			273		ns
t_f				85		ns
E_{off}				1,52		mJ
$R_{th(j-s)}$	per IGBT			1,65		K/W

SK15GD12T4ET



SEMITOP® 3

IGBT Module

SK15GD12T4ET

Target Data

Features

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- Trench4 IGBT technology
- CAL4 technology FWD
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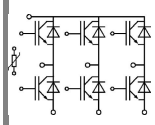
Typical Applications*

Remarks

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



GD-ET

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

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

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.

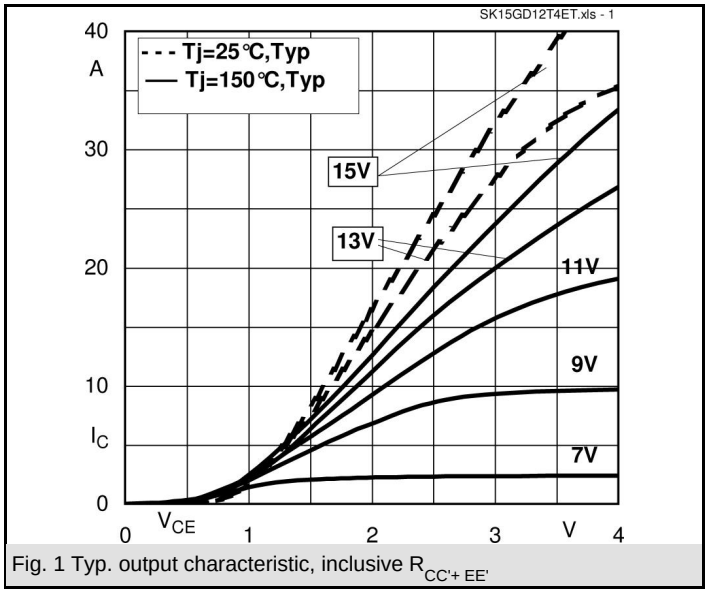


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

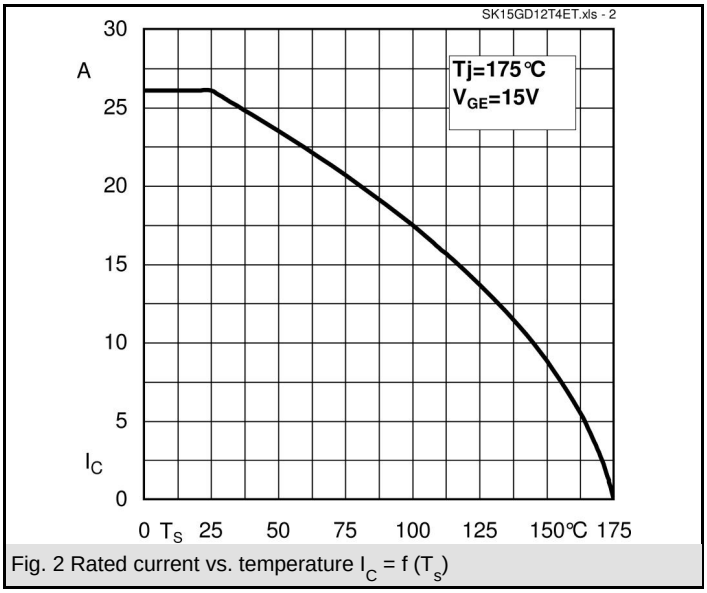


Fig. 2 Rated current vs. temperature $I_C = f(T_s)$

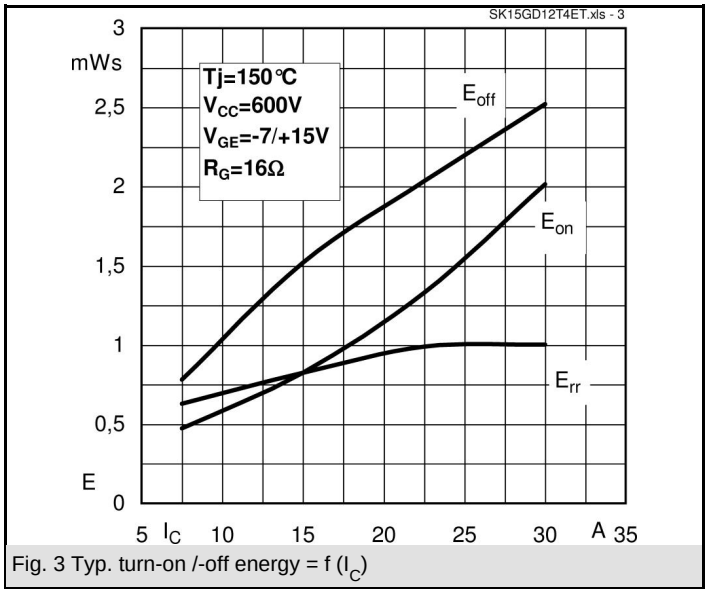


Fig. 3 Typ. turn-on /-off energy = f (I_C)

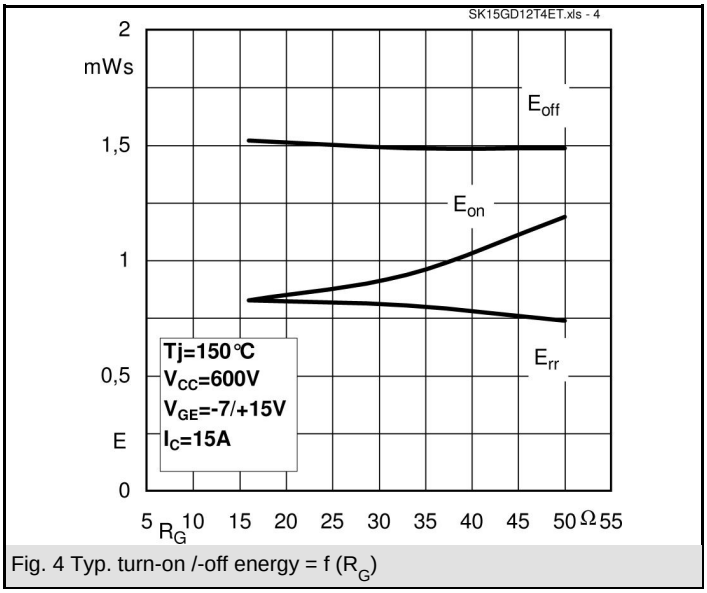


Fig. 4 Typ. turn-on /-off energy = f (R_G)

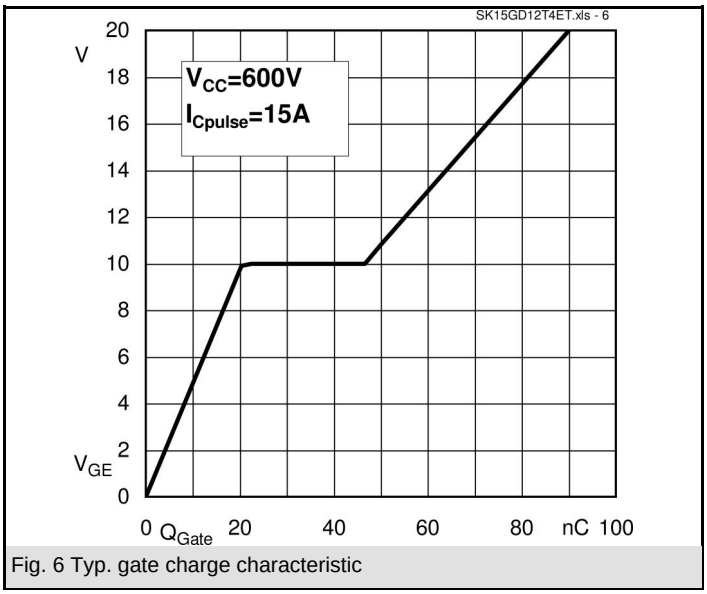


Fig. 6 Typ. gate charge characteristic

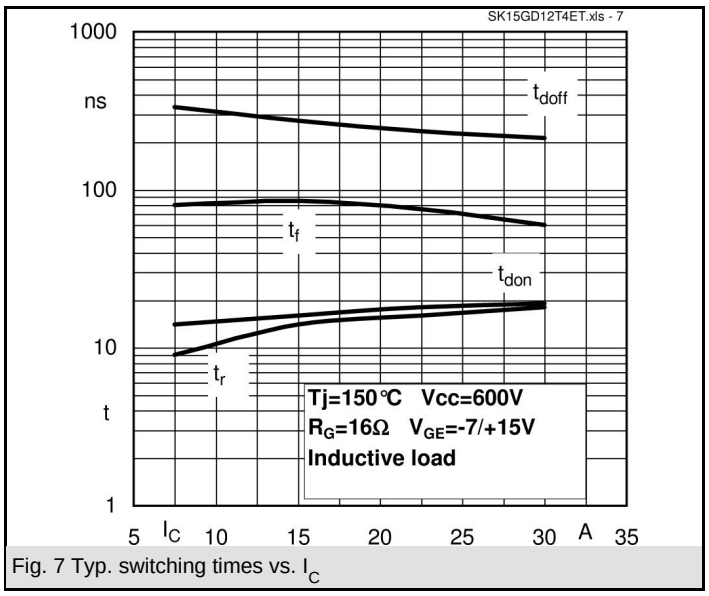


Fig. 7 Typ. switching times vs. I_C

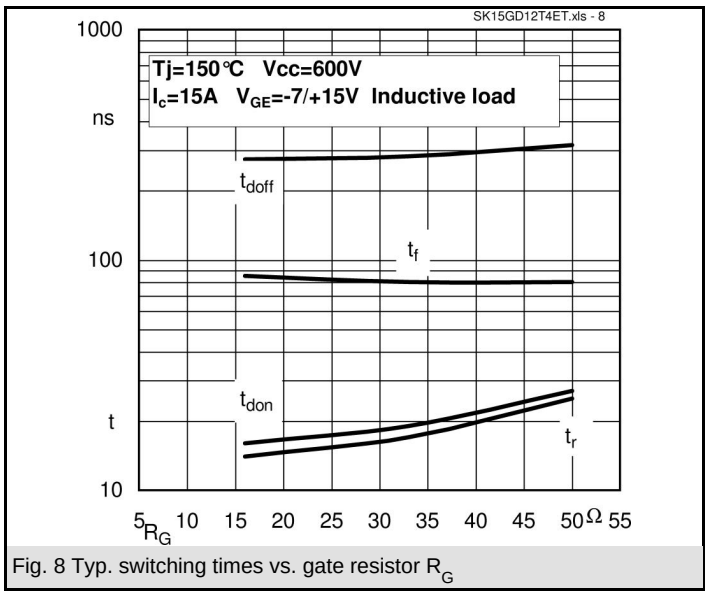


Fig. 8 Typ. switching times vs. gate resistor R_G

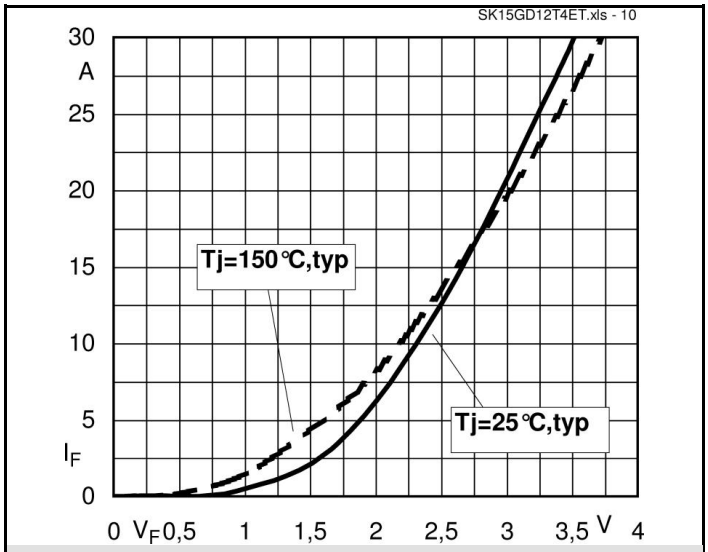
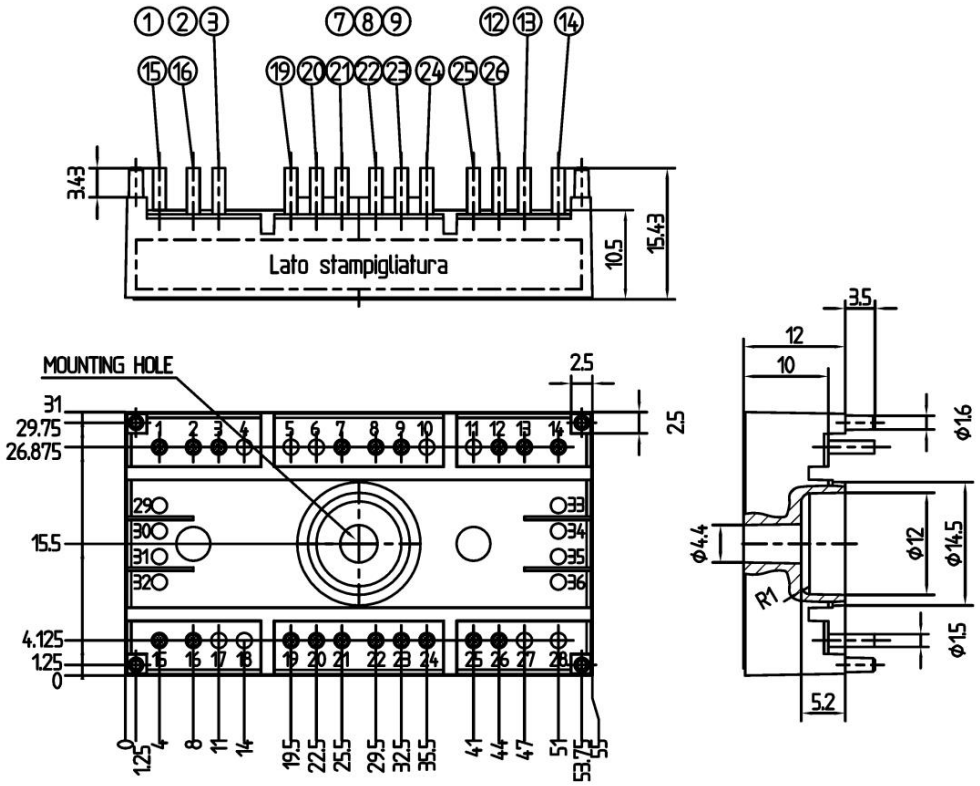
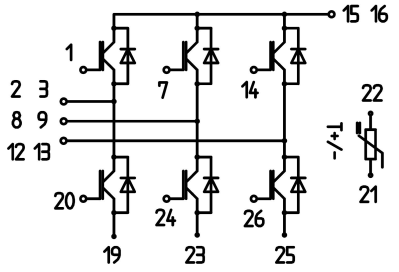


Fig. 10 CAL diode forward characteristic



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



Case T 52 GD-ET

