



SEMITOP® 3

IGBT Module

SK75GB066T

Target Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- Trench IGBT technology
- CAL HD technology FWD
- Integrated NTC temperature sensor

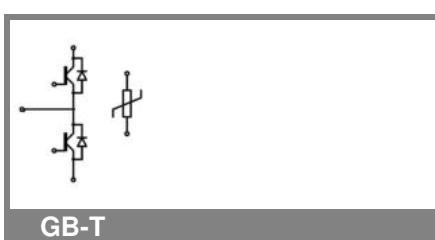
Typical Applications*

Remarks

- $V_{\text{isol}} = 3000\text{V AC, 50Hz, 1s}$

Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values		Units
IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	600		V
I_C	$T_j = 175^\circ\text{C}$ $T_s = 25^\circ\text{C}$ $T_s = 70^\circ\text{C}$	77 60		A A
I_{CRM}	$I_{\text{CRM}} = 2 \times I_{\text{Cnom}}$	150		A
V_{GES}		± 20		V
t_{psc}	$V_{\text{CC}} = 360\text{ V}; V_{\text{GE}} \leq 20\text{ V}; T_j = 150^\circ\text{C}$ $V_{\text{CES}} < 600\text{ V}$	6		μs
Inverse Diode				
I_F	$T_j = 175^\circ\text{C}$ $T_s = 25^\circ\text{C}$ $T_s = 70^\circ\text{C}$	62 47		A A
I_{FRM}	$I_{\text{FRM}} = 2 \times I_{\text{Fnom}}$	150		A
I_{FSM}	$t_p = 10\text{ ms}; \text{half sine wave}$ $T_j = 150^\circ\text{C}$	395		A
Module				
$I_{\text{t(RMS)}}$				A
T_{vj}		-40 ... +175		$^\circ\text{C}$
T_{stg}		-40 ... +125		$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500		V

Characteristics		$T_s = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	
IGBT					
$V_{\text{GE(th)}}$	$V_{\text{GE}} = V_{\text{CE}}, I_C = 1,2\text{ mA}$	5	5,8	6,5	V
I_{CES}	$V_{\text{GE}} = 0\text{ V}, V_{\text{CE}} = V_{\text{CES}}$ $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$			0,0038	mA mA
I_{GES}	$V_{\text{CE}} = 0\text{ V}, V_{\text{GE}} = 20\text{ V}$ $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$		600		nA nA
V_{CE0}		0,8 0,7	1,1 1		V V
r_{CE}	$V_{\text{GE}} = 15\text{ V}$ $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$	8 12,7	10 14		$\text{m}\Omega$ $\text{m}\Omega$
$V_{\text{CE(sat)}}$	$I_{\text{Cnom}} = 75\text{ A}, V_{\text{GE}} = 15\text{ V}$ $T_j = 25^\circ\text{C}_{\text{chiplev.}}$ $T_j = 150^\circ\text{C}_{\text{chiplev.}}$	1,45 1,65	1,85 2,05		V V
C_{ies} C_{oes} C_{res}	$V_{\text{CE}} = 25, V_{\text{GE}} = 0\text{ V}$ $f = 1\text{ MHz}$		4,7 0,3 0,145		nF nF nF
Q_G	$V_{\text{GE}} = -7\text{V...+15V}$	700			nC
$t_{\text{d(on)}}$ t_r E_{on}	$R_{\text{Gon}} = 16\text{ }\Omega$ $\text{di/dt} = 2250\text{ A}/\mu\text{s}$		95 50 3,1		ns ns mJ
$t_{\text{d(off)}}$ t_f E_{off}	$R_{\text{Goff}} = 16\text{ }\Omega$ $\text{di/dt} = 2250\text{ A}/\mu\text{s}$ $V_{\text{GE}} = -7/+15\text{ V}$		541 70 2,8		ns ns mJ
$R_{\text{th(j-s)}}$	per IGBT	0,94			K/W





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Typical Applications*

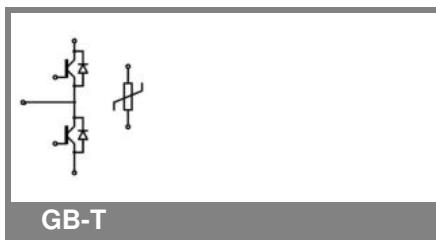
Remarks

- $V_{\text{isol}} = 3000V \text{ AC}, 50\text{Hz}, 1\text{s}$

Characteristics		Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode							
$V_F = V_{EC}$	$I_{Fnom} = 75 \text{ A}; V_{GE} = 0 \text{ V}$		$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$ $T_j = 150 \text{ }^\circ\text{C}_{\text{chiplev.}}$		1,35 1,31		V V
V_{F0}			$T_j = 25 \text{ }^\circ\text{C}$ $T_j = 150 \text{ }^\circ\text{C}$		0,85		V V
r_F			$T_j = 25 \text{ }^\circ\text{C}$ $T_j = 150 \text{ }^\circ\text{C}$		7,8		$\text{m}\Omega$ $\text{m}\Omega$
I_{RRM} Q_{rr} E_{rr}	$I_F = 75 \text{ A}$ $\text{di/dt} = 2250 \text{ A}/\mu\text{s}$ $V_{CC} = 300 \text{ V}$		$T_j = 150 \text{ }^\circ\text{C}$	60 6 0,85		A μC mJ	
$R_{th(j-s)D}$	per diode			1,55			K/W
M_s	to heat sink			2,5	2,75		Nm
w				60			g
Temperature sensor							
R_{100}	$T_s = 100 \text{ }^\circ\text{C}$ ($R_{25} = 5 \text{ k}\Omega$)				493 \pm 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.



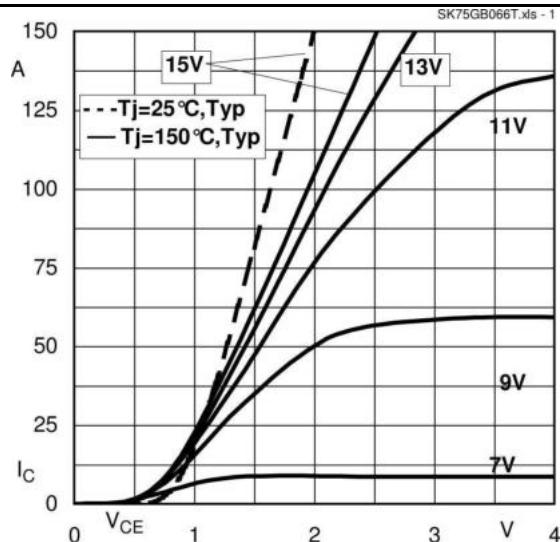
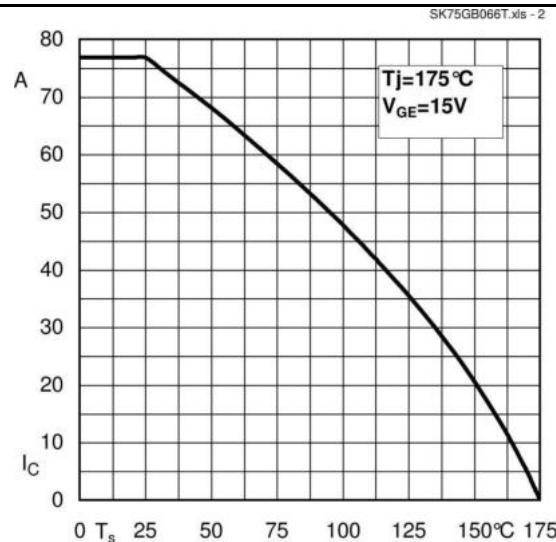
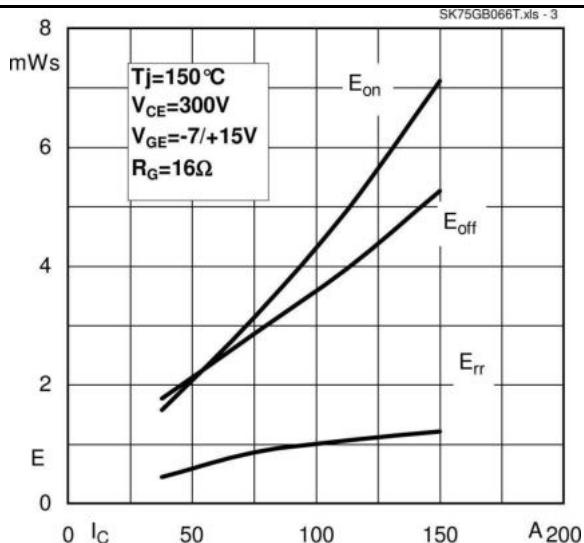
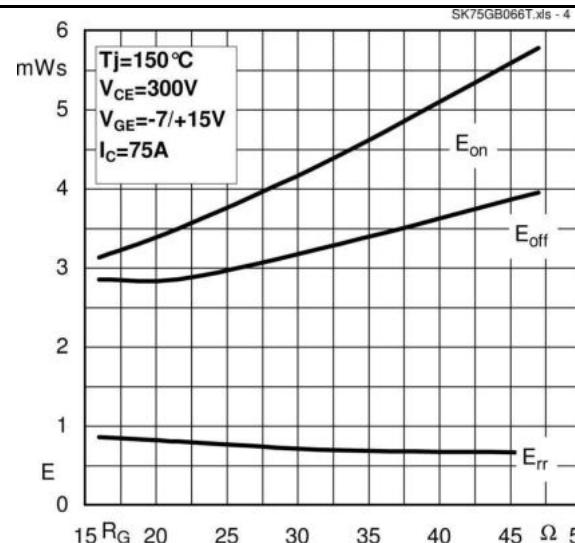
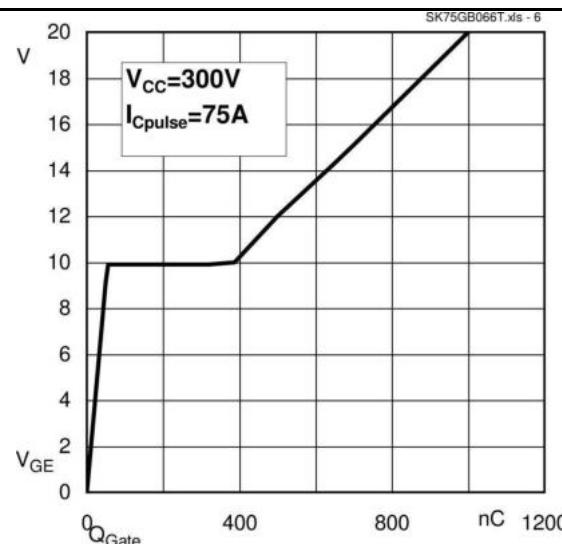
Fig. 1 Typ. output characteristic, inclusive $R_{CC} + EE'$ Fig. 2 Rated current vs. temperature $I_C = f(T_s)$ Fig. 3 Typ. turn-on /-off energy = f (I_C)Fig. 4 Typ. turn-on /-off energy = f (R_G)

Fig. 6 Typ. gate charge characteristic

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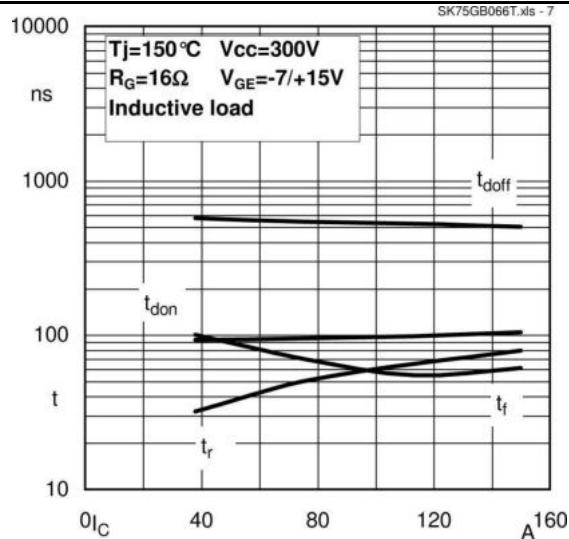


Fig. 7 Typ. switching times vs. I_C

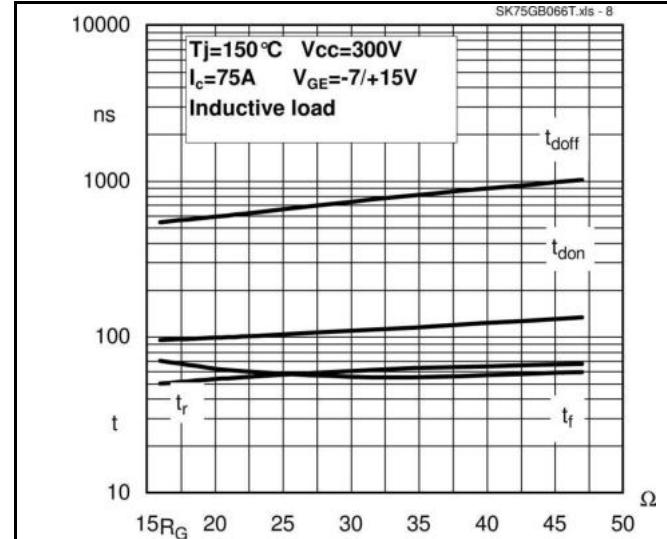


Fig. 8 Typ. switching times vs. gate resistor R_G

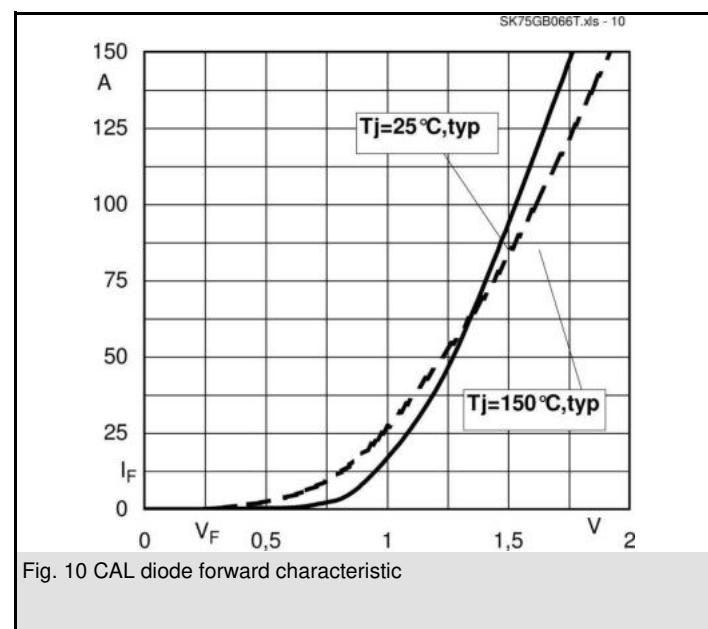
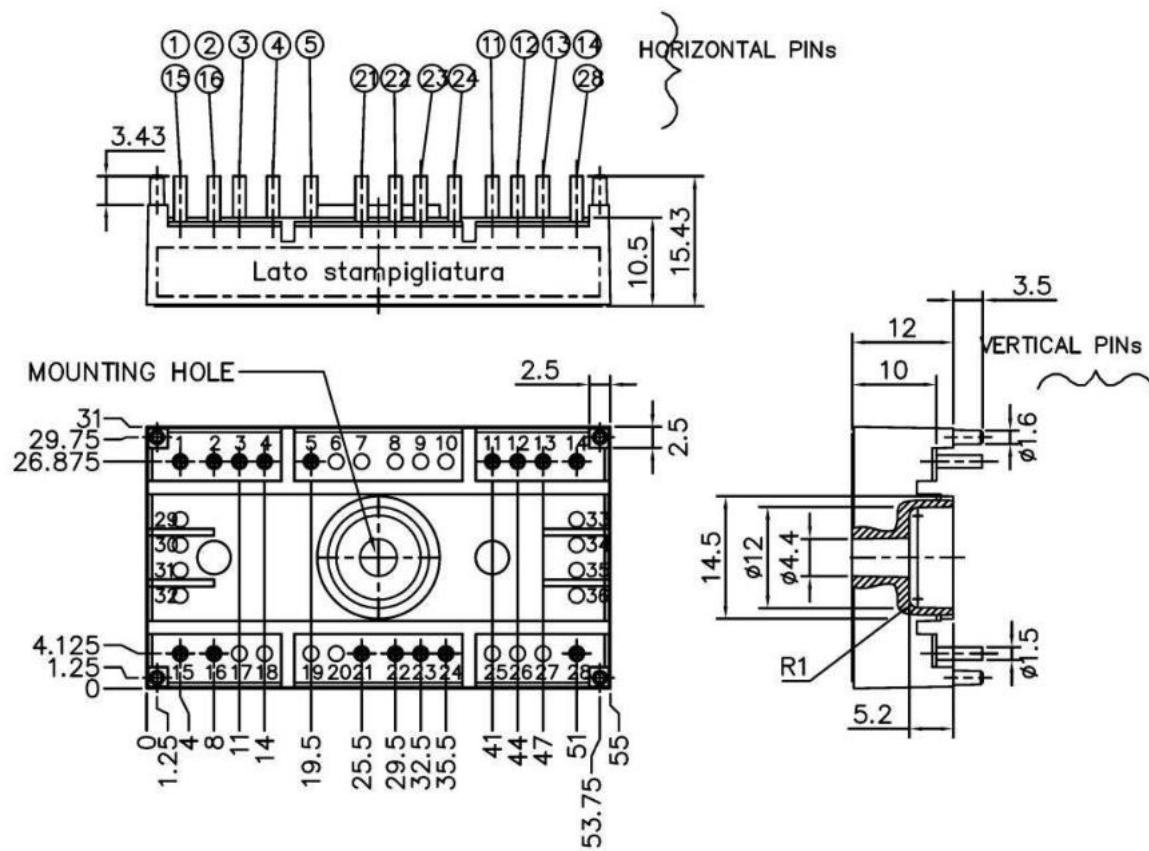


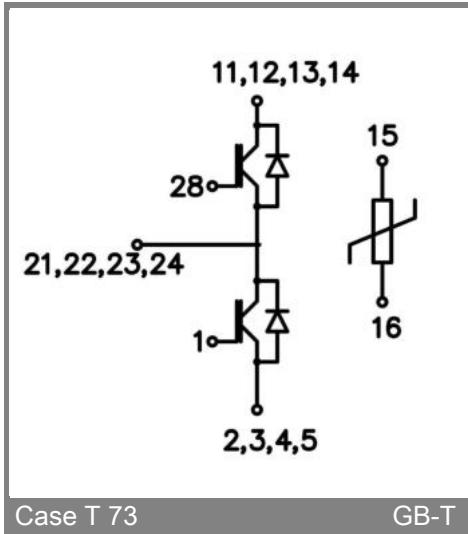
Fig. 10 CAL diode forward characteristic

UL recognized

file no. E 63 532



Case T73 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 73

GB-T