

SEMITOP® 3

IGBT Module

SK25GAD063T

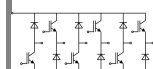
Preliminary Data

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 punchthrough IGBT)
- High short circuit capability
- Low tail current with low temperature dependence
- UL recognized, file no. E63 532
- Integrated PTC temperature sensor

Typical Applications*

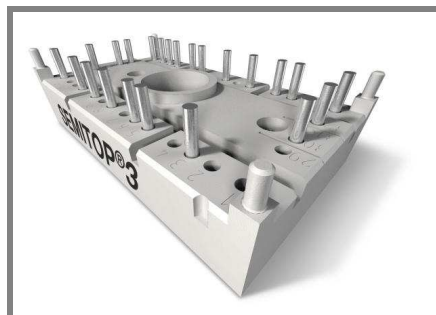
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS



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Absolute Maximum Ratings				$T_s = 25\text{ °C}$, unless otherwise specified	
Symbol	Conditions			Values	Units
IGBT					
V_{CES}	$T_j = 25\text{ °C}$			600	V
I_C	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$		30	A
		$T_s = 80\text{ °C}$		21	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$			60	A
V_{GES}				± 20	V
t_{psc}	$V_{CC} = 300\text{ V}$; $V_{GE} \leq 20\text{ V}$; $T_j = 125\text{ °C}$ $V_{CES} < 600\text{ V}$			10	μs
Inverse Diode					
I_F	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$			A
		$T_s = 80\text{ °C}$			A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$				A
Freewheeling Diode					
I_F	$T_j = 150\text{ °C}$	$T_{case} = 25\text{ °C}$		36	A
		$T_{case} = 80\text{ °C}$		24	A
I_{FRM}					A
I_{FSM}	$t_p = 10\text{ ms}$; half sine wave	$T_j = 150\text{ °C}$		200	A
Module					
$I_{t(RMS)}$					A
T_{vj}				-40 ... +150	$^{\circ}\text{C}$
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						
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 0,7\text{ mA}$			4,5	5,5	6,5 V
I_{CES}	$V_{GE} = 0\text{ V}$, $V_{CE} = V_{CES}$	$T_j = 25\text{ °C}$				0,1 mA
		$T_j = 125\text{ °C}$				mA
I_{GES}	$V_{CE} = 0\text{ V}$, $V_{GE} = 30\text{ V}$	$T_j = 25\text{ °C}$				120 nA
		$T_j = 125\text{ °C}$				nA
V_{CE0}		$T_j = 25\text{ °C}$			1,2	V
		$T_j = 125\text{ °C}$			0,8	V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$			30	m Ω
		$T_j = 125\text{ °C}$			47	m Ω
$V_{CE(sat)}$	$I_{Cnom} = 30\text{ A}$, $V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$			2,1	2,5 V
		$T_j = 125\text{ °C}_{chiplev.}$			2,2	V
C_{ies}	$V_{CE} = 25$, $V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$			1,35	nF
C_{oes}						nF
C_{res}					0,12	nF
$t_{d(on)}$	$R_{Gon} = 33\text{ }\Omega$	$V_{CC} = 300\text{ V}$ $I_C = 25\text{ A}$			40	ns
t_r					50	ns
E_{on}	$R_{Goff} = 33\text{ }\Omega$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$			1,3	mJ
$t_{d(off)}$					200	ns
t_f					25	ns
E_{off}					0,9	mJ
$R_{th(j-s)}$	per IGBT				1,4	K/W



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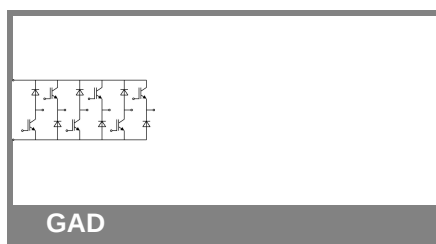
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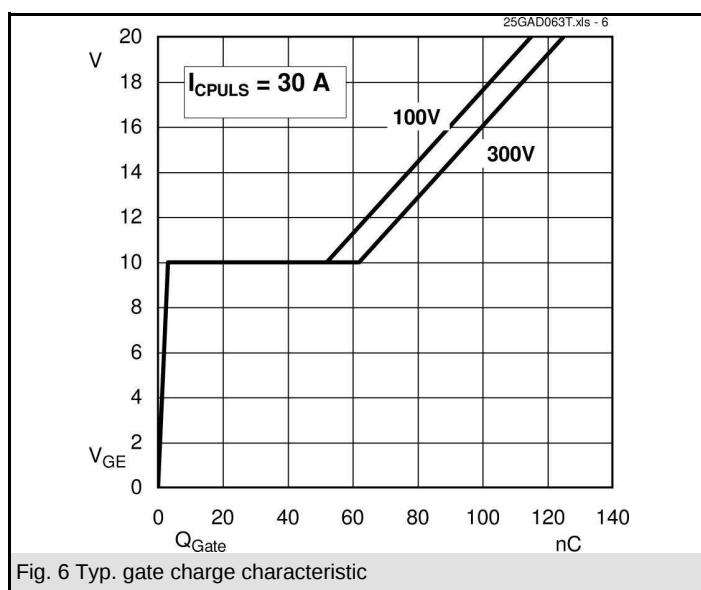
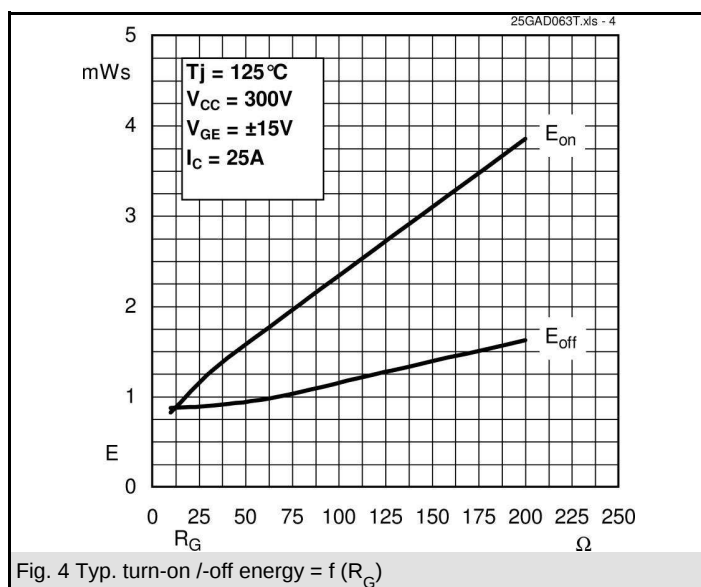
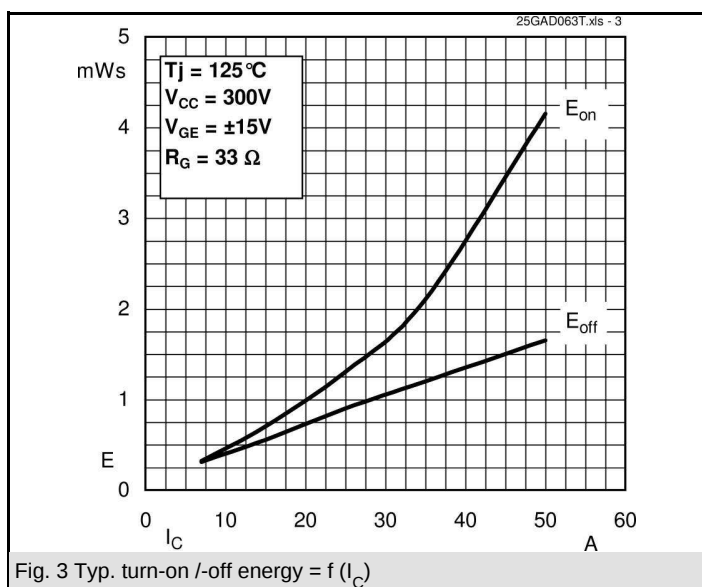
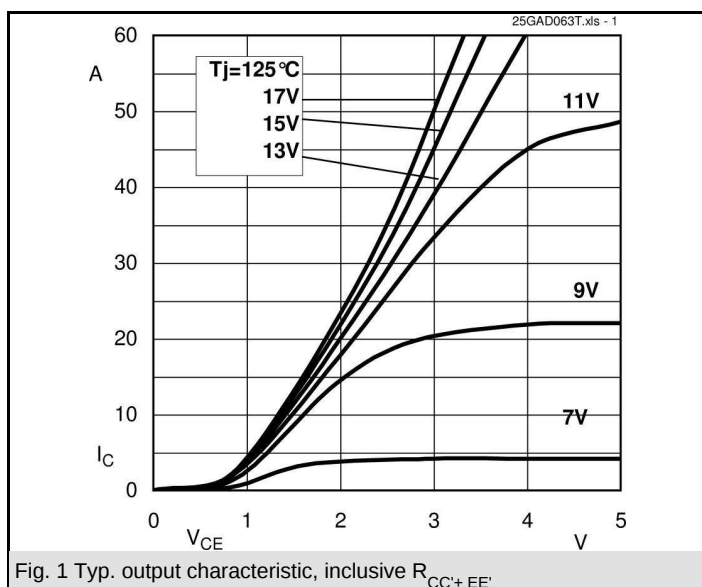


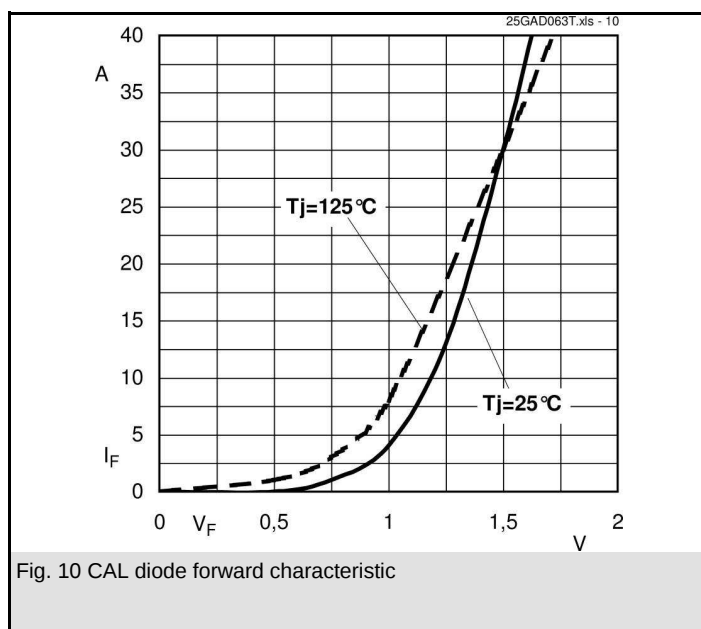
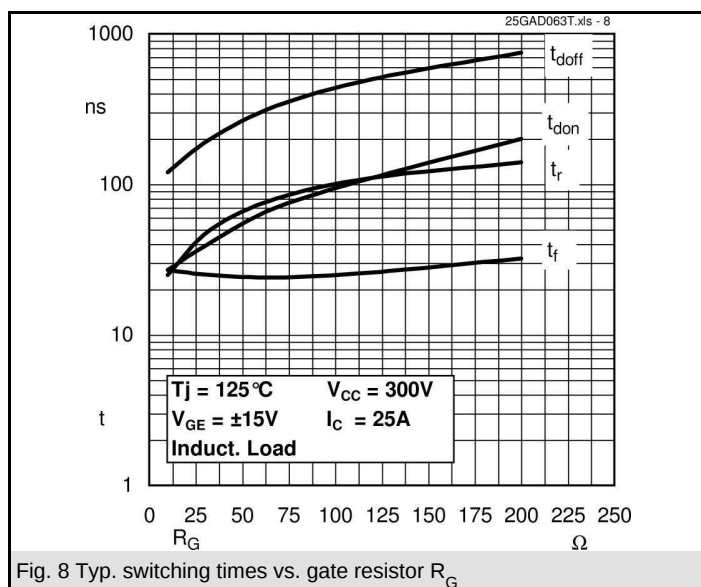
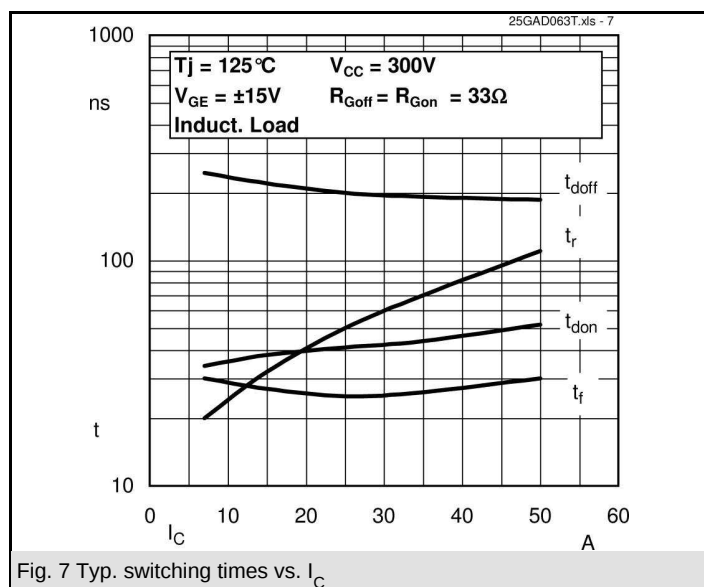
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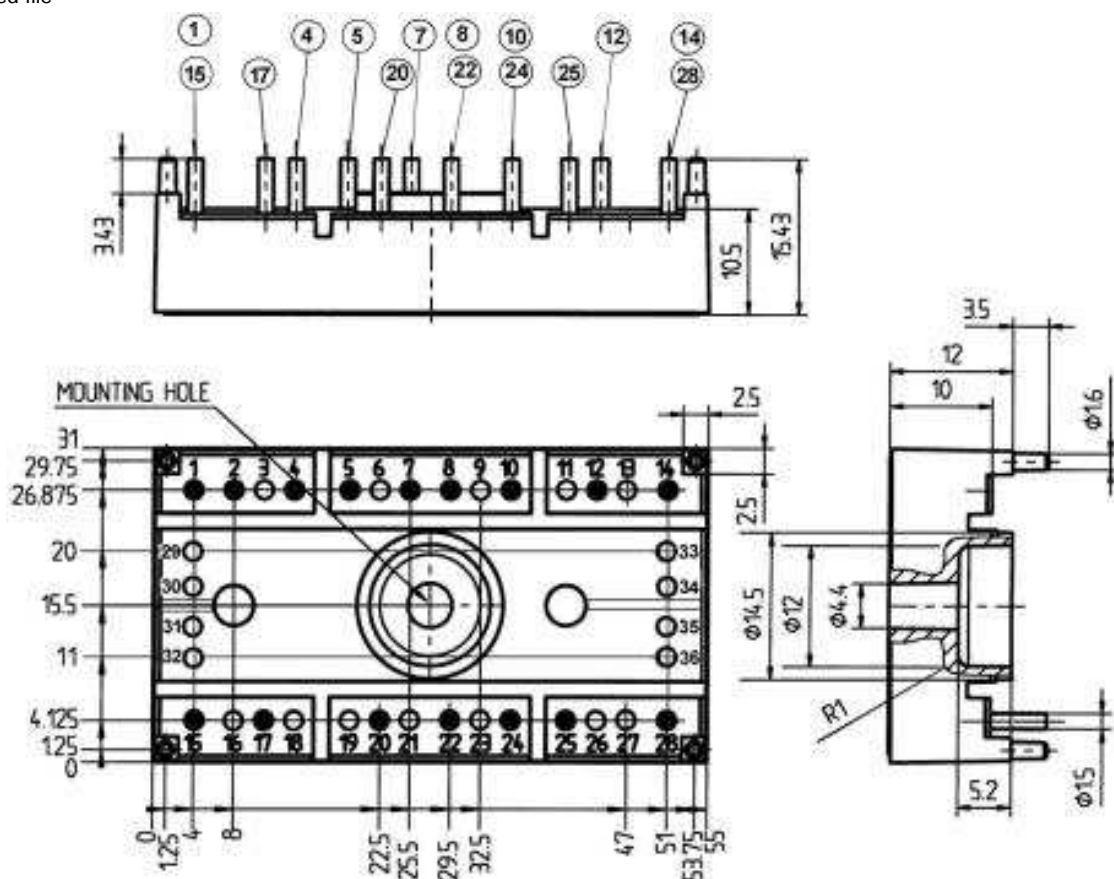
Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
$V_F = V_{EC}$	$I_{Fnom} = 10 \text{ A}; V_{GE} = 0 \text{ V}$		$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	1,45	1,7
			$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,4	1,7
V_{F0}			$T_j = 125 \text{ }^\circ\text{C}$	0,85	0,9
r_F			$T_j = 125 \text{ }^\circ\text{C}$	55	80
I_{RRM}	$I_F = 10 \text{ A}$ $di/dt = 200 \text{ A}/\mu\text{s}$ $V_{CC} = 300 \text{ V}$		$T_j = 125 \text{ }^\circ\text{C}$	6,5	A
Q_{rr}				1	μC
E_{rr}				0,1	mJ
$R_{th(j-s)D}$	per diode			2,3	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 25 \text{ A}; V_{GE} = 0 \text{ V}$		$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	1,45	1,7
			$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,4	1,75
V_{F0}			$T_j = 25 \text{ }^\circ\text{C}$		
			$T_j = 125 \text{ }^\circ\text{C}$	0,85	0,9
r_F			$T_j = 25 \text{ }^\circ\text{C}$		
			$T_j = 125 \text{ }^\circ\text{C}$	22	32
I_{RRM}	$I_F = 25 \text{ A}$ $di/dt = -500 \text{ A}/\mu\text{s}$ $V_R = 300 \text{ V}$		$T_j = 125 \text{ }^\circ\text{C}$	16	A
Q_{rr}				2	μC
E_{rr}				0,25	mJ
$R_{th(j-s)FD}$	per diode			1,7	K/W
M_s	to heat sink M1			2,25	2,5
w				30	g
Temperature sensor					
R_{ts}	3%, $T_r = 25 (100)^\circ\text{C}$			1000 (1670)	Ω

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

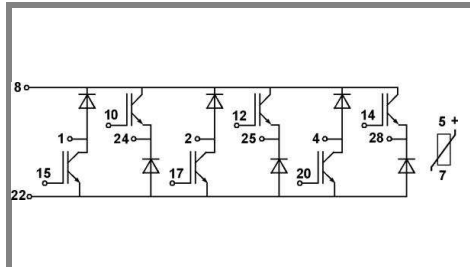
* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and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







Case T57 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 57

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