

# SK25GAD063T



SEMITOP® 3

## IGBT Module

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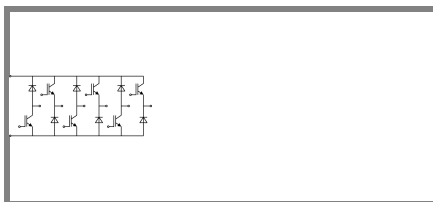
Preliminary Data

### 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\*

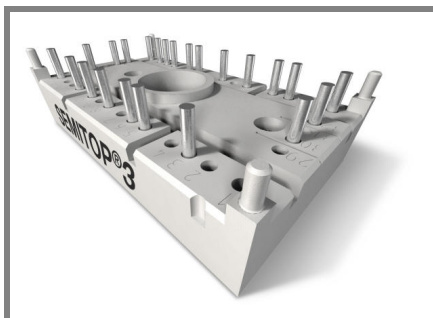
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS



GAD

Absolute Maximum Ratings		$T_s = 25\text{ °C}$ , unless otherwise specified		
Symbol	Conditions	Values		Units
<b>IGBT</b>				
$V_{CES}$	$T_j = 25\text{ °C}$	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
<b>Inverse Diode</b>				
$I_F$	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$		A
		$T_s = 80\text{ °C}$		A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$			A
<b>Freewheeling Diode</b>				
$I_F$	$T_j = 150\text{ °C}$	$T_{case} = 25\text{ °C}$	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
<b>Module</b>				
$I_{t(RMS)}$				A
$T_{vj}$		-40 ... +150		°C
$T_{stg}$		-40 ... +125		°C
$V_{isol}$	AC, 1 min.	2500		V

Characteristics		$T_s = 25\text{ °C}$ , unless otherwise specified				
Symbol	Conditions	min.	typ.	max.	Units	
<b>IGBT</b>						
$V_{GE(th)}$	$V_{GE} = V_{CE}$ , $I_C = 0,7\text{ mA}$	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	mΩ
		$T_j = 125\text{ °C}$			47	mΩ
$V_{CE(sat)}$	$I_{Cnom} = 30\text{ A}$ , $V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	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
$t_{d(on)}$	$R_{Gon} = 33\text{ Ω}$	$V_{CC} = 300\text{ V}$ $I_C = 25\text{ A}$			40	ns
$t_r$					50	ns
$E_{on}$	$R_{Goff} = 33\text{ Ω}$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$			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	



**SEMISTOP<sup>®</sup> 3**

## IGBT Module

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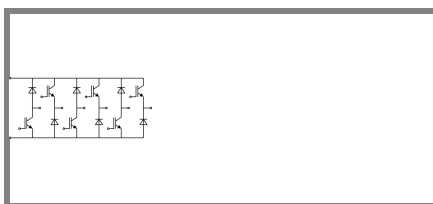
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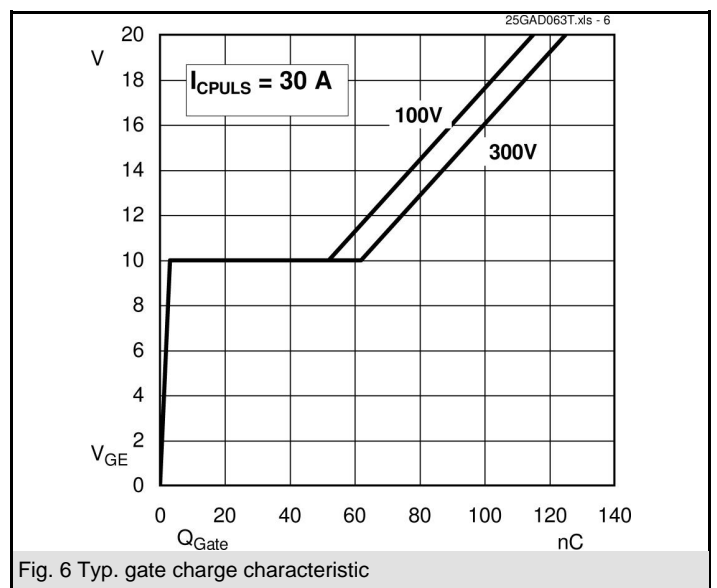
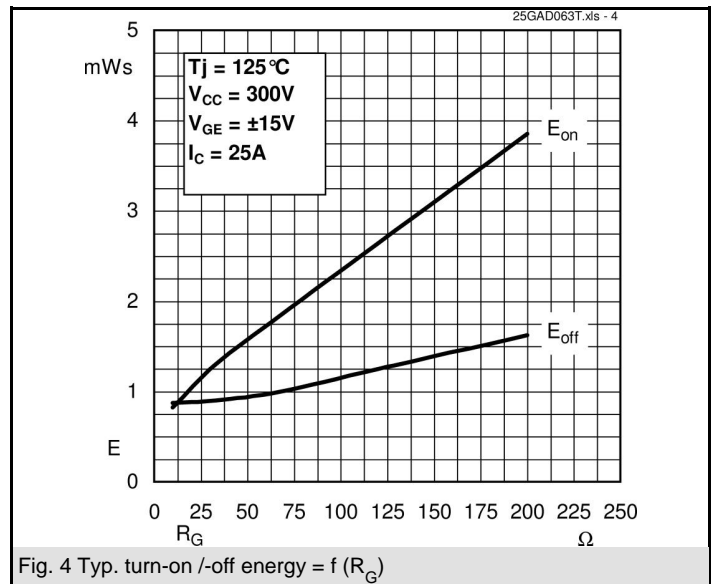
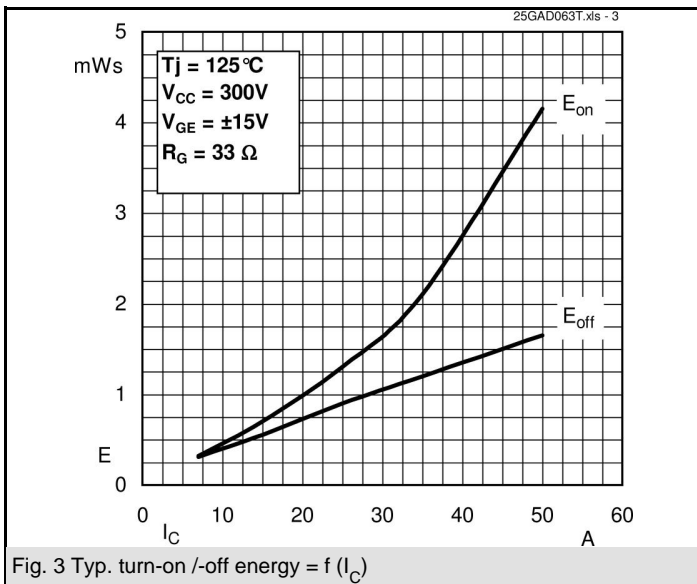
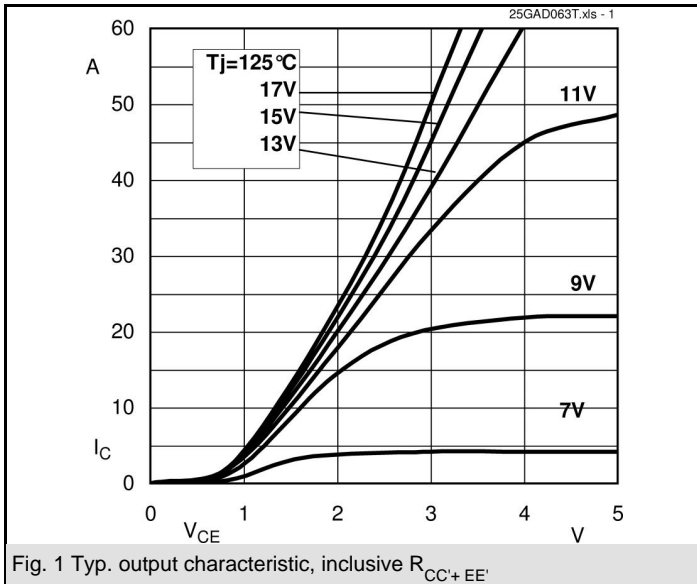


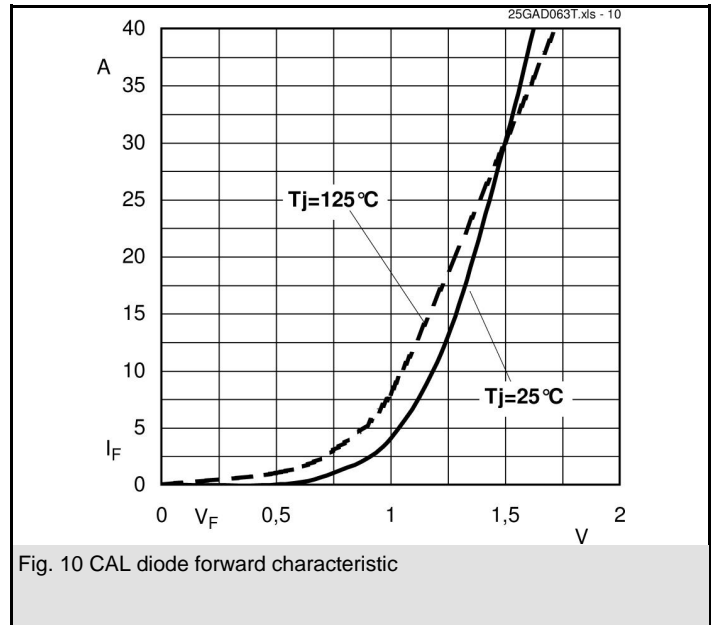
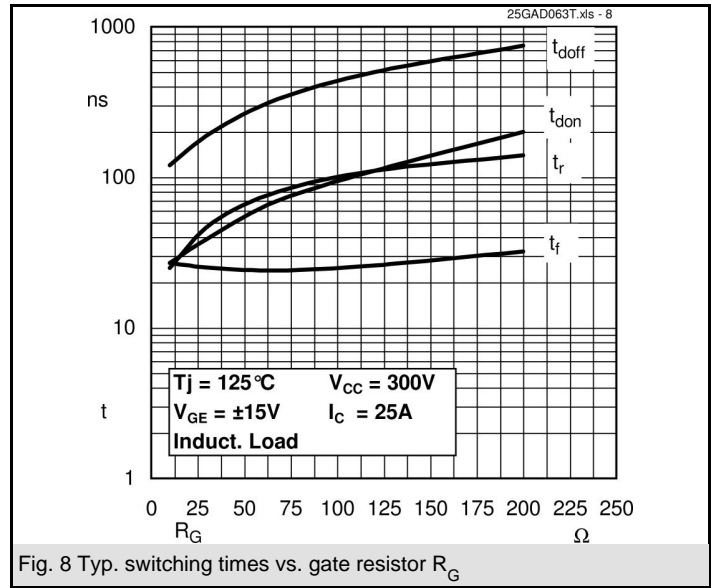
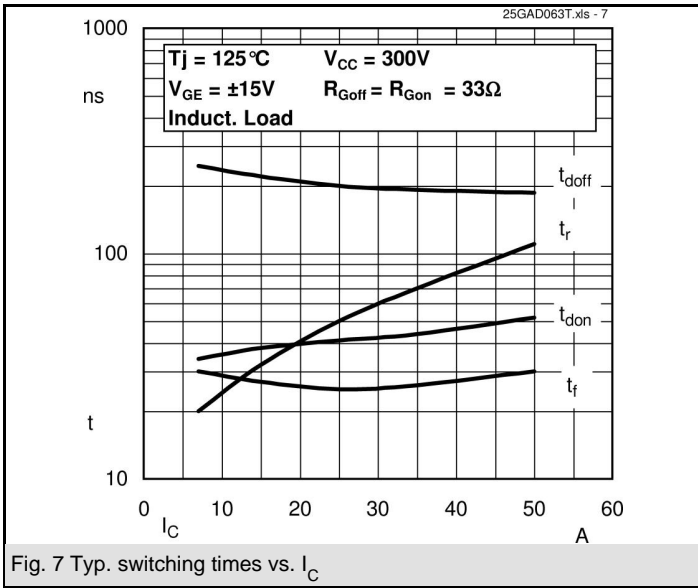
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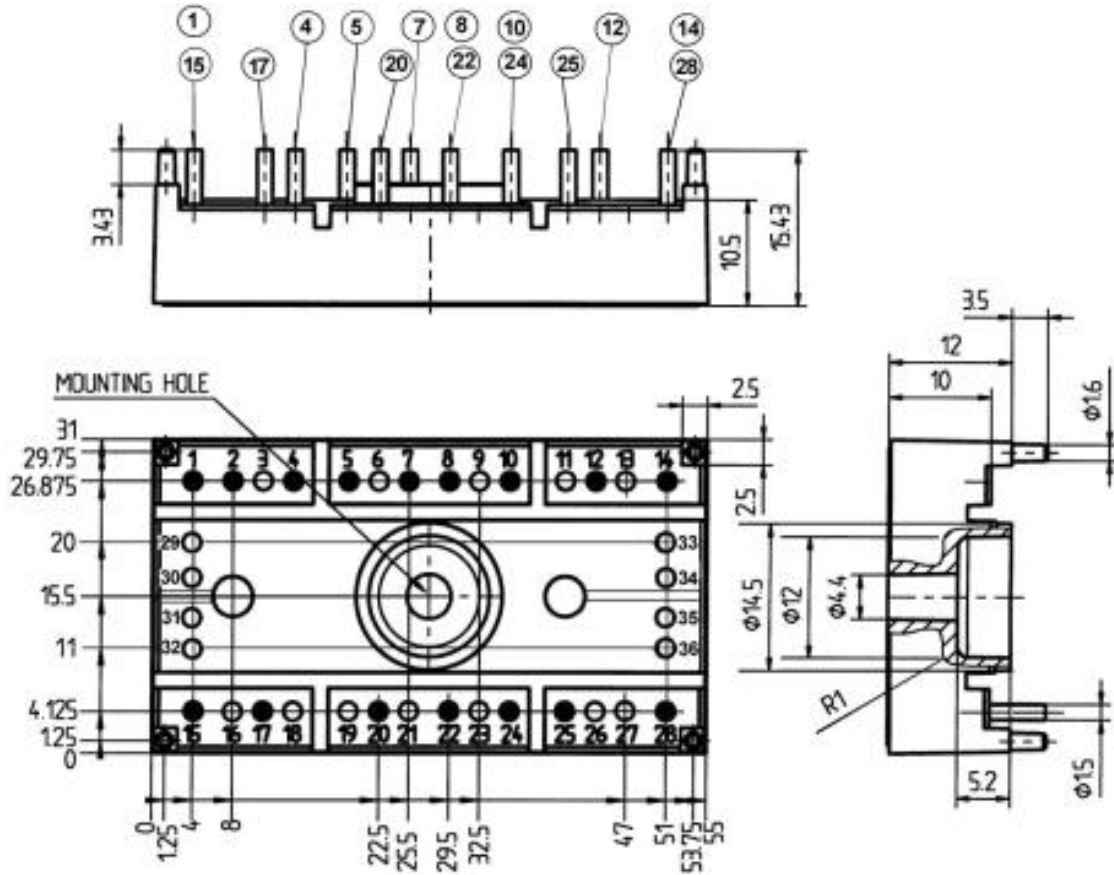
Characteristics						
Symbol	Conditions	min.	typ.	max.	Units	
$V_F = V_{EC}$	$I_{Fnom} = 10 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$	1,45	1,7	V	
		$T_j = 125 \text{ }^\circ\text{C}_{\text{chiplev.}}$	1,4	1,7	V	
$V_{F0}$			0,85	0,9	V	
$r_F$			55	80	m $\Omega$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

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

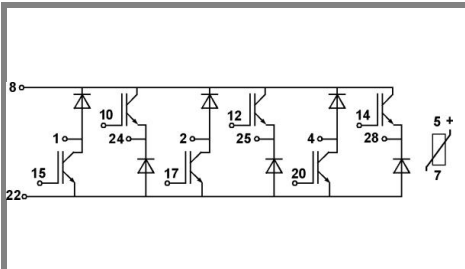
\* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification 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

GAD