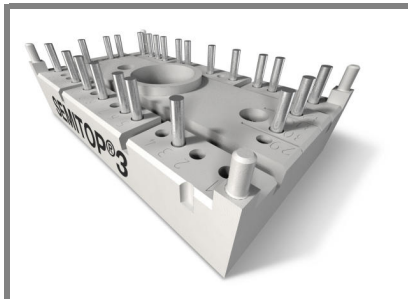


# SK25GAD063T



SEMITOP® 3

## IGBT Module

SK25GAD063T

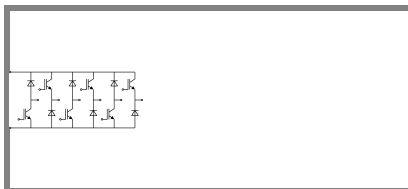
Preliminary Data

### 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

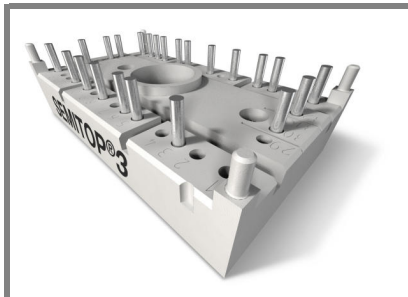


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Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	Values			Units
<b>IGBT</b>					
$V_{CES}$	$T_j = 25^\circ\text{C}$	600			V
$I_C$	$T_j = 125^\circ\text{C}$	$T_s = 25^\circ\text{C}$	30		A
		$T_s = 80^\circ\text{C}$	21		A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	60			A
$V_{GES}$		$\pm 20$			V
$t_{psc}$	$V_{CC} = 300\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 600\text{ V}$	10			$\mu\text{s}$
<b>Inverse Diode</b>					
$I_F$	$T_j = 150^\circ\text{C}$	$T_s = 25^\circ\text{C}$			A
		$T_s = 80^\circ\text{C}$			A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$				A
<b>Freewheeling Diode</b>					
$I_F$	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	36		A
		$T_{case} = 80^\circ\text{C}$	24		A
$I_{FRM}$					A
$I_{FSM}$	$t_p = 10\text{ ms}; \text{half sine wave}$	$T_j = 150^\circ\text{C}$	200		A
<b>Module</b>					
$I_{t(RMS)}$					A
$T_{vj}$		-40 ... +150			$^\circ\text{C}$
$T_{stg}$		-40 ... +125			$^\circ\text{C}$
$V_{isol}$	AC, 1 min.	2500			V

Characteristics		$T_s = 25^\circ\text{C}$ , 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	
$I_{CES}$	$V_{GE} = 0\text{ V}; V_{CE} = V_{CES}$	$T_j = 25^\circ\text{C}$			0,1	mA
		$T_j = 125^\circ\text{C}$				mA
$I_{GES}$	$V_{CE} = 0\text{ V}; V_{GE} = 30\text{ V}$	$T_j = 25^\circ\text{C}$			120	nA
		$T_j = 125^\circ\text{C}$				nA
$V_{CE0}$		$T_j = 25^\circ\text{C}$	1,2		V	
		$T_j = 125^\circ\text{C}$	0,8		V	
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	30		m $\Omega$	
		$T_j = 125^\circ\text{C}$	47		m $\Omega$	
$V_{CE(sat)}$	$I_{Cnom} = 30\text{ A}; V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	2,1	2,5	V	
		$T_j = 125^\circ\text{C}_{chiplev.}$	2,2		V	
$C_{ies}$	$V_{CE} = 25\text{ V}; V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	1,35		nF	
$C_{oes}$					nF	
$C_{res}$			0,12		nF	
$t_{d(on)}$	$R_{Gon} = 33\ \Omega$	$V_{CC} = 300\text{ V}$ $I_C = 25\text{ A}$	40		ns	
$t_r$			50		ns	
$E_{on}$			1,3		mJ	
$t_{d(off)}$	$R_{Goff} = 33\ \Omega$	$T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	200		ns	
$t_f$			25		ns	
$E_{off}$			0,9		mJ	
$R_{th(j-s)}$	per IGBT	1,4			K/W	

# SK25GAD063T



SEMITOP® 3

## IGBT Module

SK25GAD063T

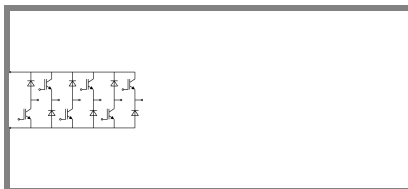
### Preliminary Data

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### Typical Applications\*

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- Switched mode power supplies
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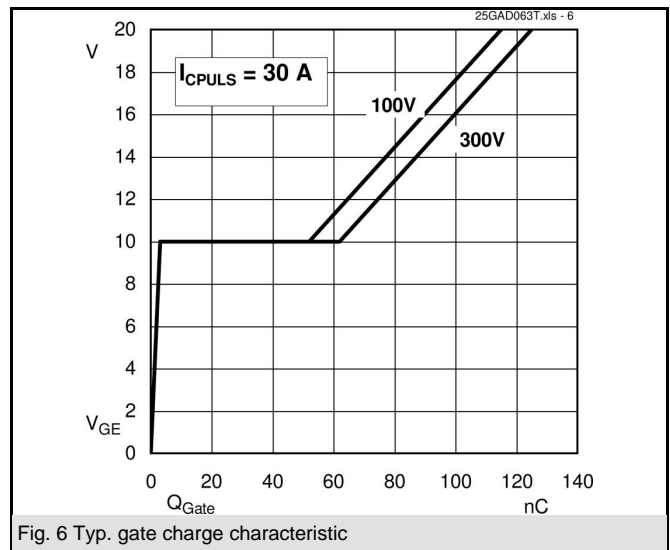
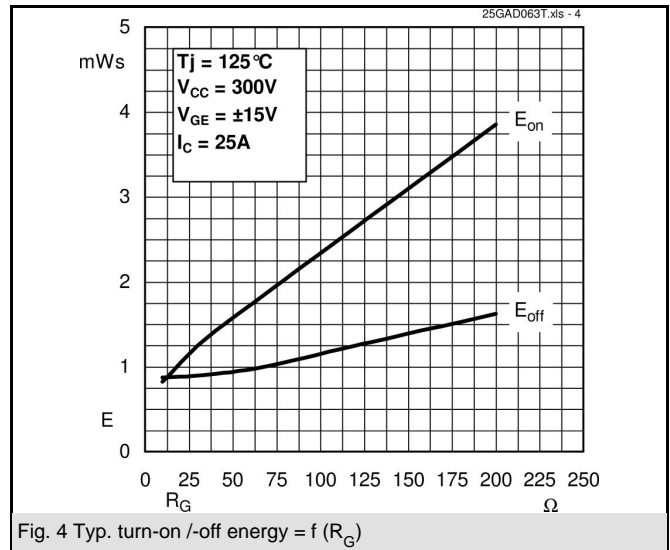
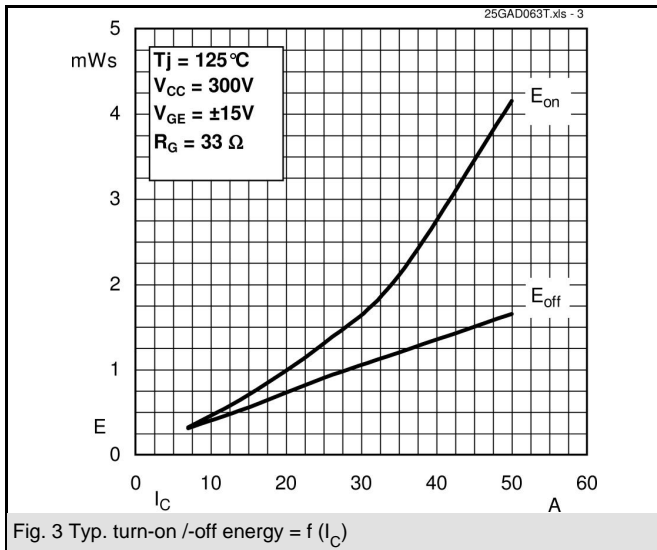
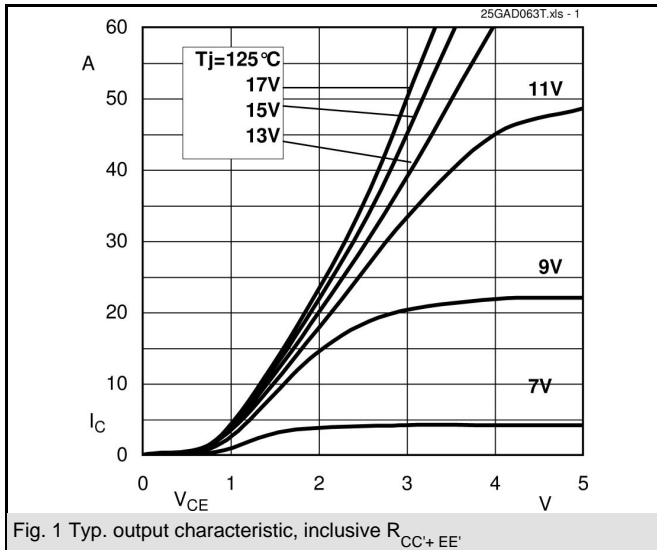


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Characteristics						
Symbol	Conditions	min.	typ.	max.	Units	
$V_F = V_{EC}$	$I_{Fnom} = 10 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	1,45	1,7	V	
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,4	1,7	V	
$V_{F0}$			0,85	0,9	V	
$r_F$			55	80	m $\Omega$	
$I_{RRM}$	$I_F = 10 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	6,5		A	
$Q_{rr}$	$di/dt = 200 \text{ A}/\mu\text{s}$		1		$\mu\text{C}$	
$E_{rr}$	$V_{CC} = 300\text{V}$		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	V	
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	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	
$I_{RRM}$	$I_F = 25 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	16		A	
$Q_{rr}$	$di/dt = -500 \text{ A}/\mu\text{s}$		2		$\mu\text{C}$	
$E_{rr}$	$V_R = 300\text{V}$		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.



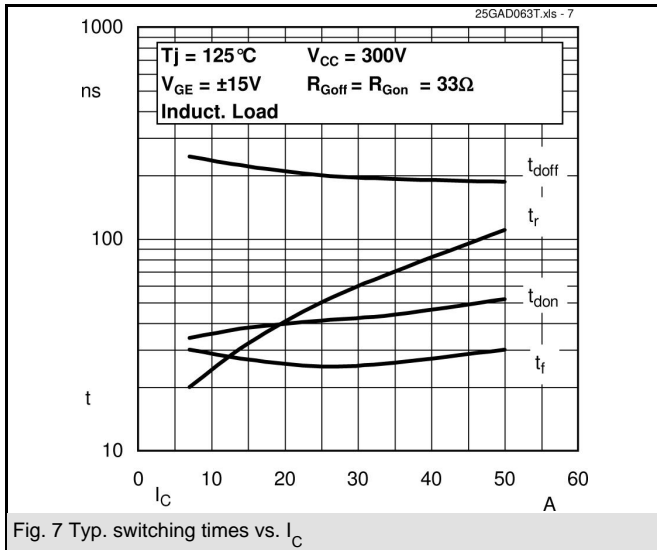


Fig. 7 Typ. switching times vs.  $I_C$

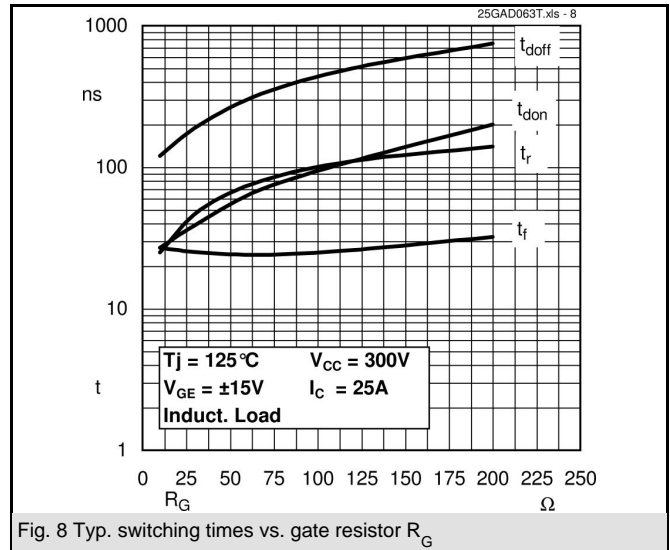


Fig. 8 Typ. switching times vs. gate resistor  $R_G$

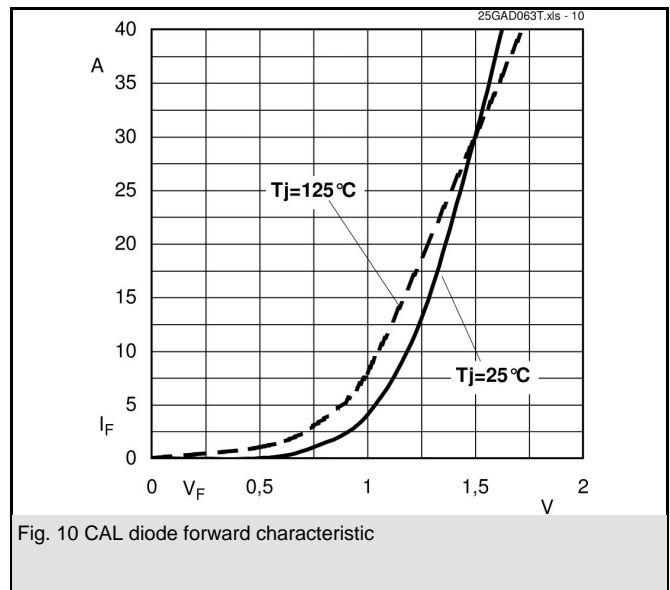
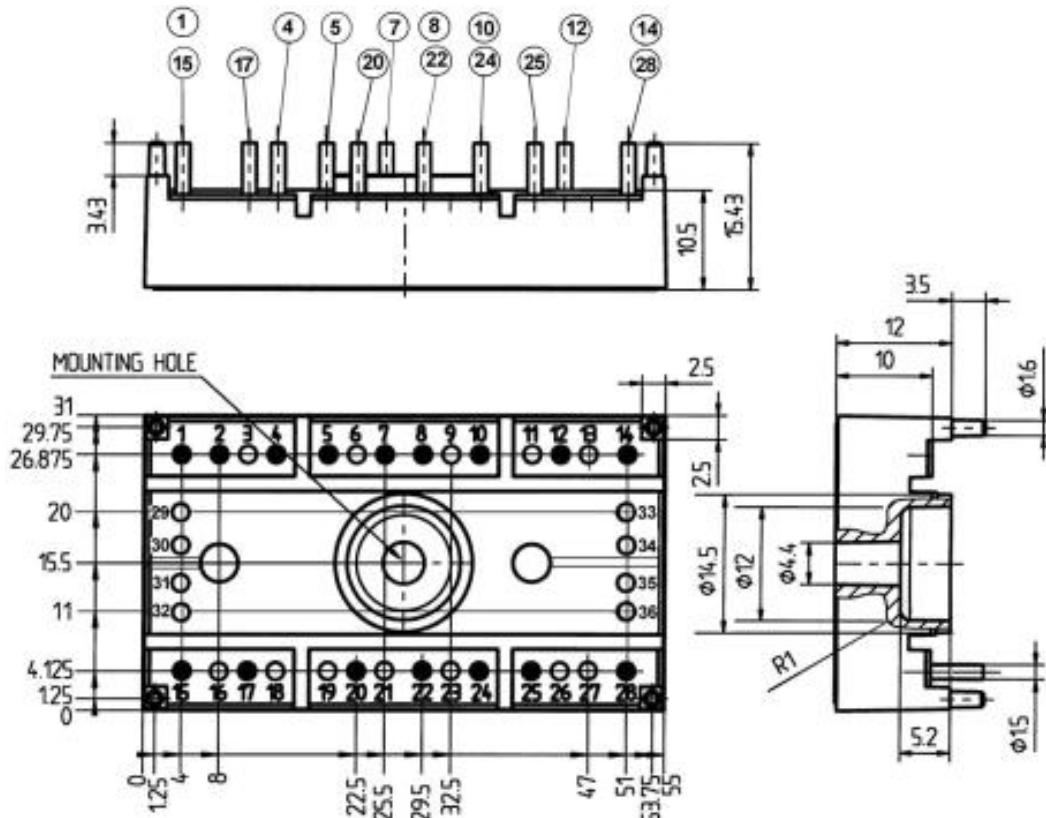


Fig. 10 CAL diode forward characteristic

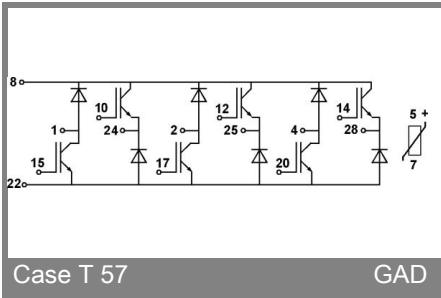
# SK25GAD063T

UL recognized file

no. E 63 532



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



Case T 57

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