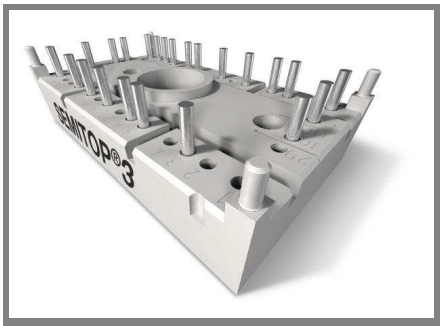
SK25GAD063T



SEMITOP® 3

IGBT Module

SK25GAD063T

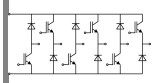
Preliminary Data

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

Characteristics	T_s = 25 °C, unless otherwise specified					
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
IGBT						
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 0,7 mA		4,5	5,5	6,5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C			0,1	mA
		T_j = 125 °C				mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 30 V	T_j = 25 °C			120	nA
		T_j = 125 °C				nA
V_{CE0}		T_j = 25 °C		1,2		V
		T_j = 125 °C		0,8		V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		30		mΩ
		T_j = 125°C		47		mΩ
$V_{CE(sat)}$	I_{Cnom} = 30 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$		2,1	2,5	V
		T_j = 125°C$_{chiplev.}$		2,2		V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		1,35		nF
C_{oes}						nF
C_{res}				0,12		nF
$t_{d(on)}$	R_{Gon} = 33 Ω	V_{CC} = 300V		40		ns
t_r		I_C= 25A		50		ns
E_{on}		T_j = 125 °C		1,3		mJ
$t_{d(off)}$	R_{Goff} = 33 Ω	V_{GE}=±15V		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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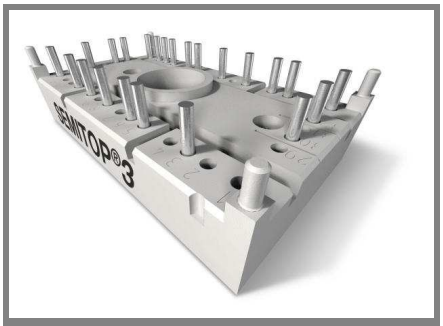

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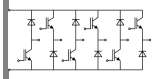

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Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
$V_F = V_{EC}$	I_{Fnom} = 10 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,45	1,7	V
		T_j = 125 °$C_{chiplev.}$		1,4	1,7	V
V_{F0}		T_j = 125 °C		0,85	0,9	V
r_F		T_j = 125 °C		55	80	mΩ
I_{RRM}	I_F = 10 A	T_j = 125 °C		6,5		A
Q_{rr}	di/dt = 200 A/µs			1		µC
E_{rr}	V_{CC}= 300V			0,1		mJ
$R_{th(j-s)D}$	per diode				2,3	K/W
Freewheeling Diode						
$V_F = V_{EC}$	I_{Fnom} = 25 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,45	1,7	V
		T_j = 125 °$C_{chiplev.}$		1,4	1,75	V
V_{F0}		T_j = 25 °C				V
		T_j = 125 °C		0,85	0,9	V
r_F		T_j = 25 °C				V
		T_j = 125 °C		22	32	V
I_{RRM}	I_F = 25 A	T_j = 125 °C		16		A
Q_{rr}	di/dt = -500 A/µs			2		µC
E_{rr}	V_R=300V			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)°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.

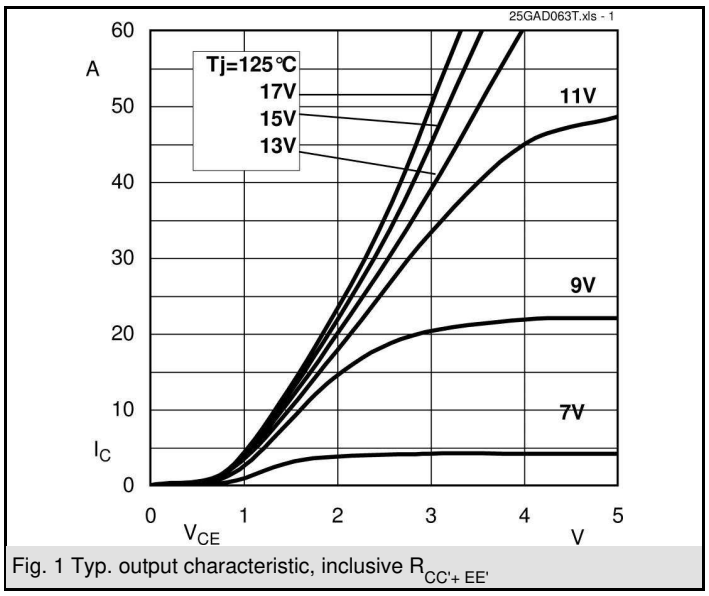


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

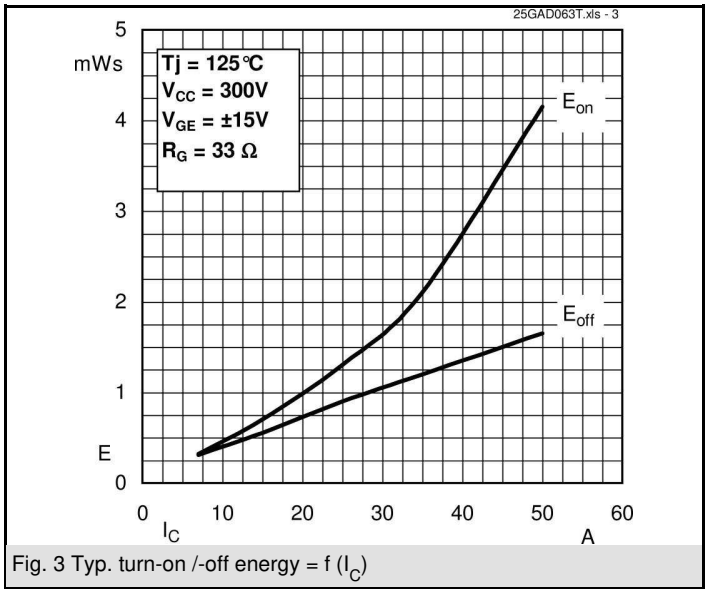


Fig. 3 Typ. turn-on /-off energy = f (I_C)

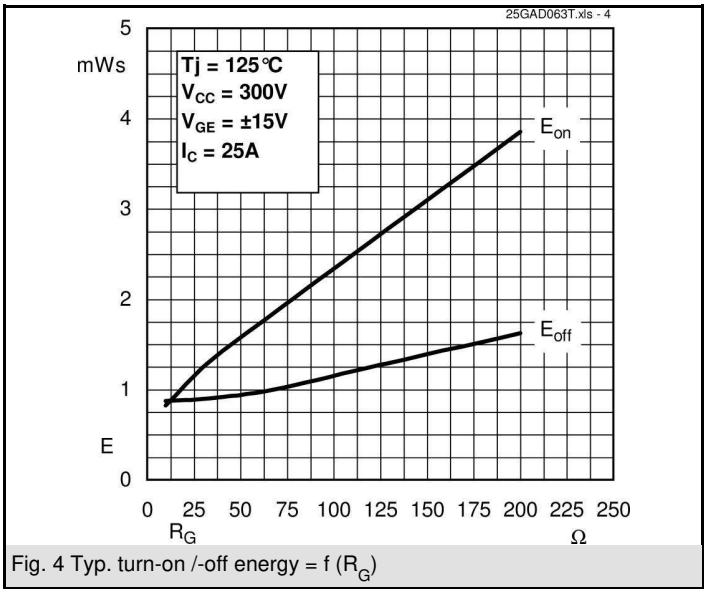


Fig. 4 Typ. turn-on /-off energy = f (R_G)

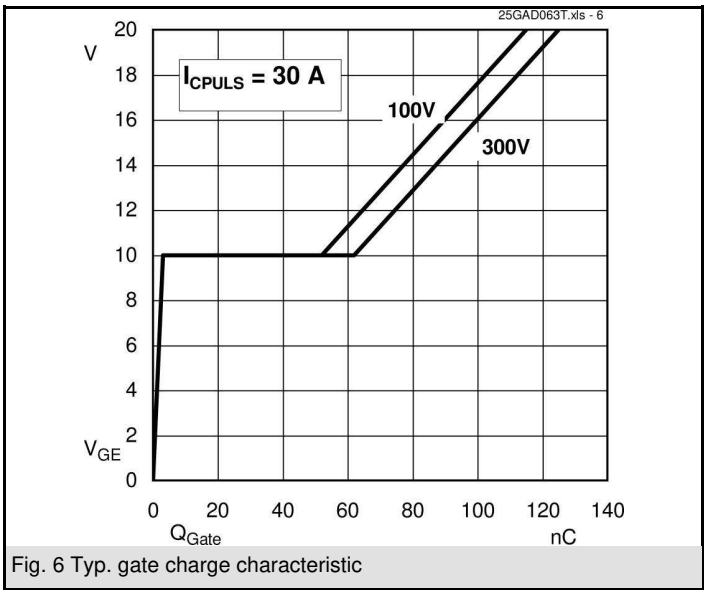


Fig. 6 Typ. gate charge characteristic

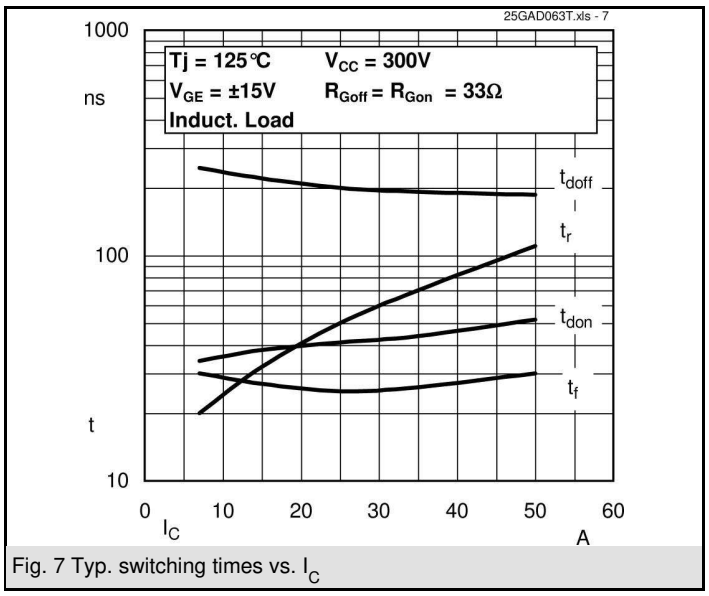


Fig. 7 Typ. switching times vs. I_C

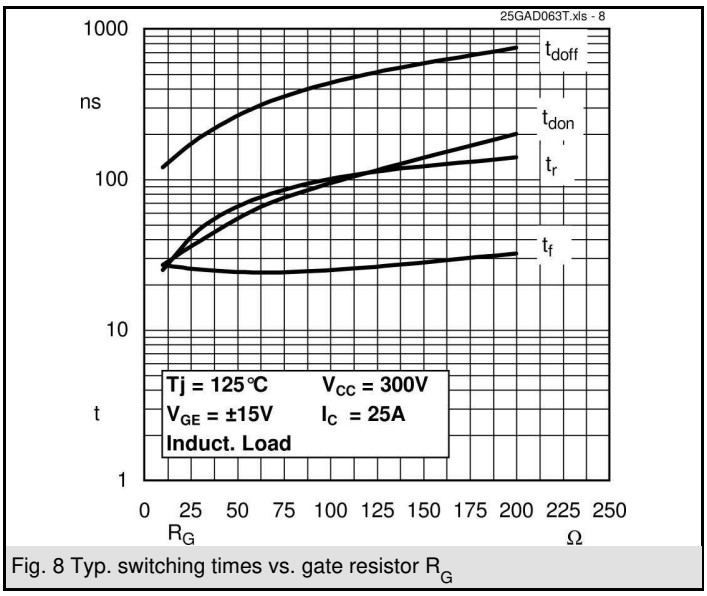


Fig. 8 Typ. switching times vs. gate resistor R_G

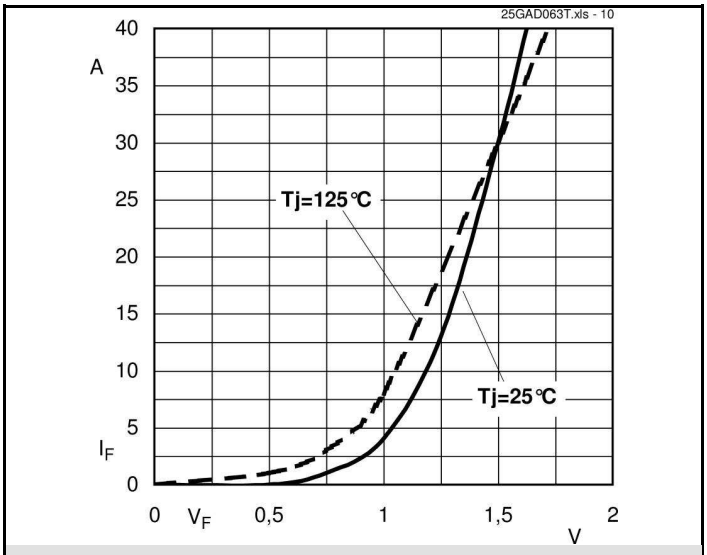
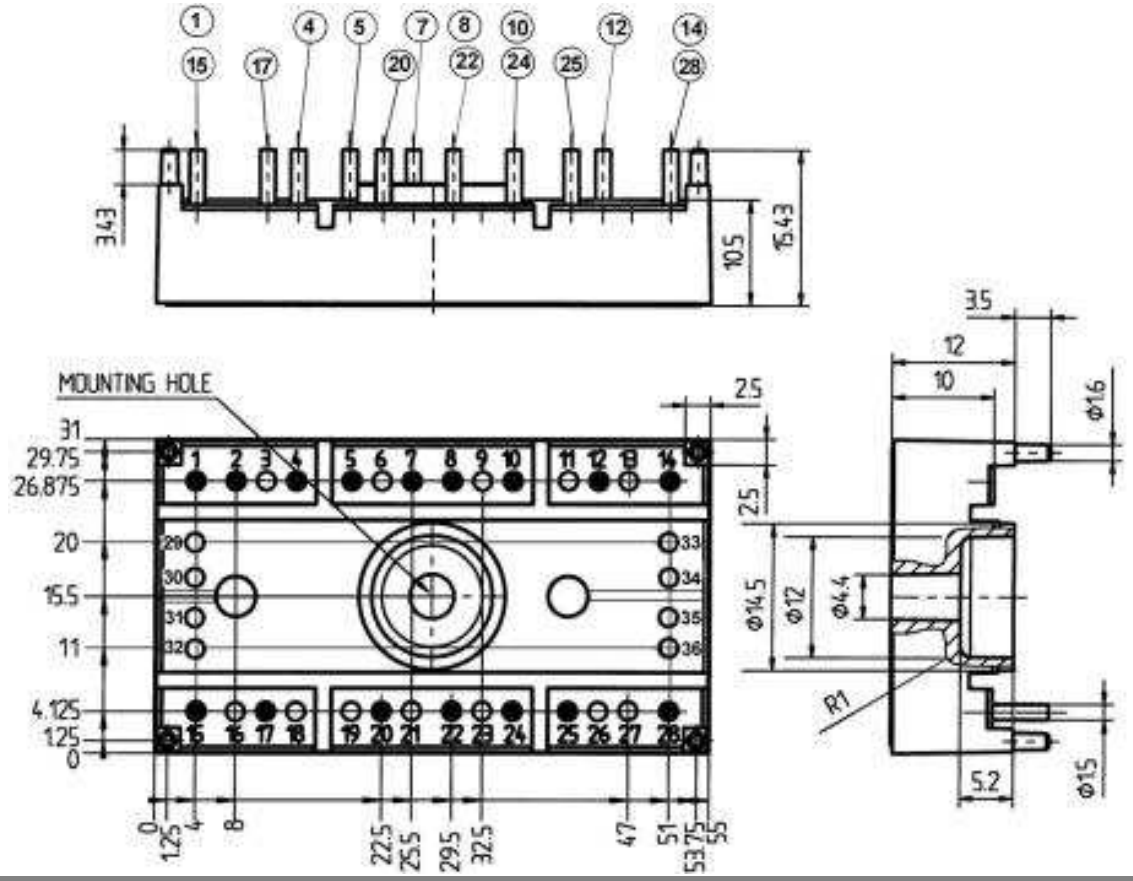
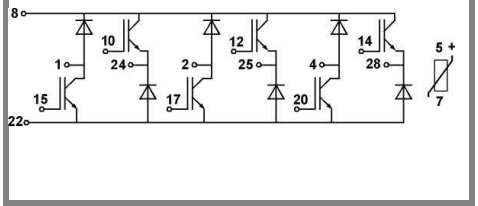


Fig. 10 CAL diode forward characteristic

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 GAD

