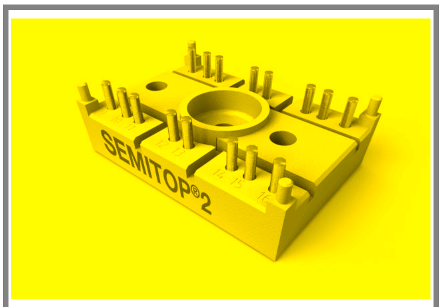
SK60GAL125



SEMITOP® 2

IGBT Module

SK60GAL125

SK60GAR125

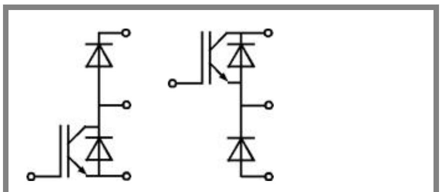
Target Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- High short circuit capability
- Ultra Fast NPT IGBT technology
- $V_{ce,sat}$ with positive coefficient

Typical Applications*

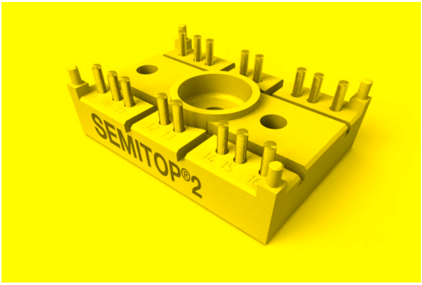
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS



GAL GAR

Absolute Maximum Ratings		T_s = 25 °C, unless otherwise specified		
Symbol	**Conditions**		**Values**	**Units**
IGBT				
V_{CES}	T_j = 25 °C		1200	V
I_C	T_j = 125 °C	T_s = 25 °C	51	A
		T_s = 80 °C	35	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}		100	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 300 V; $V_{GE} \leq$ 20 V; VCES < 600 V	T_j = 125 °C	10	µs
Inverse Diode				
I_F	T_j = 150 °C	T_s = 25 °C	43	A
		T_s = 80 °C	29	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}			A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 25 °C	110	A
Freewheeling Diode				
I_F	T_j = 150 °C	T_s = 25 °C	57	A
		T_s = 80 °C	38	A
I_{FRM}				A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	550	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 = 2 mA		4,5	5,5	6,5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C			0,006	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			300	nA
V_{CE0}		T_j = 25 °C		1,4	1,9	V
		T_j = 125 °C		1,7	2,2	V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		36		mΩ
		T_j = 125°C		43		mΩ
$V_{CE(sat)}$	I_{Cnom} = 50 A, V_{GE} = 15 V	T_j = 25°$C_{chiplev.}$		3,2	3,7	V
		T_j = 125°$C_{chiplev.}$		3,85		V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		3,3		nF
C_{oes}				0,5		nF
C_{res}				0,22		nF
$t_{d(on)}$	R_{Gon} = 33 Ω	V_{CC} = 600V				ns
t_r		I_C= 45A				ns
E_{on}		T_j = 125 °C		8,36		mJ
$t_{d(off)}$	R_{Goff} = 33 Ω	V_{GE}=±15V				ns
t_f						ns
E_{off}				3,32		mJ
$R_{th(j-s)}$	per IGBT				0,6	K/W



SEMITOP® 2

IGBT Module

SK60GAL125

SK60GAR125

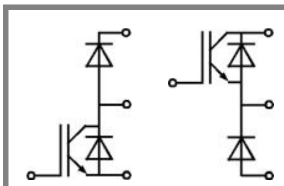
Target Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- High short circuit capability
- Ultra Fast NPT IGBT technology
- $V_{ce,sat}$ with positive coefficient

Typical Applications*

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



GAL GAR

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 10 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		2	2,5	V
		T_j = 150 °$C_{chiplev.}$		1,79	2,3	V
V_{F0}		T_j = 25 °C				V
		T_j = 125 °C		1,18		V
r_F		T_j = 25 °C				mΩ
		T_j = 125 °C		31,5		mΩ
I_{RRM}	I_F = 30 A	T_j = 125 °C				A
Q_{rr}	di/dt = -100 A/µs					µC
E_{rr}	V_{CC}= 400V					mJ
$R_{th(j-s)D}$	per diode				1,16	K/W
Freewheeling Diode						
$V_F = V_{EC}$	I_{Fnom} = 50 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		2	2,5	V
		T_j = 125 °$C_{chiplev.}$		1,8		V
V_{F0}		T_j = 125 °C		1	1,2	V
r_F		T_j = 125 °C		16	22	V
I_{RRM}	I_F = 50 A	T_j = 125 °C				A
Q_{rr}	di/dt = -800 A/µs					µC
E_{rr}	V_R=600V					mJ
$R_{th(j-s)FD}$	per diode				0,9	K/W
M_s	to heat sink				2	Nm
w				19		g

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.

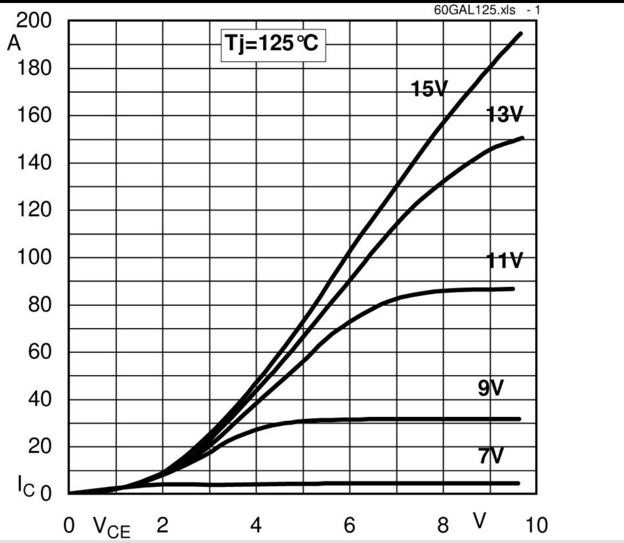


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+ EE'}$

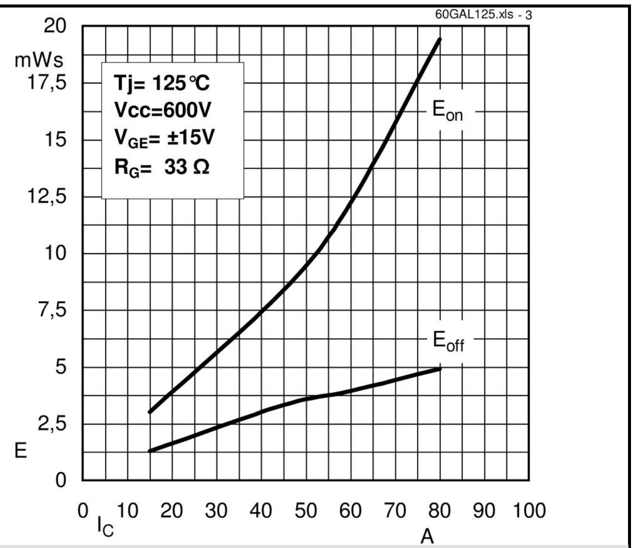


Fig. 3 Typ. turn-on /-off energy = f (I_C)

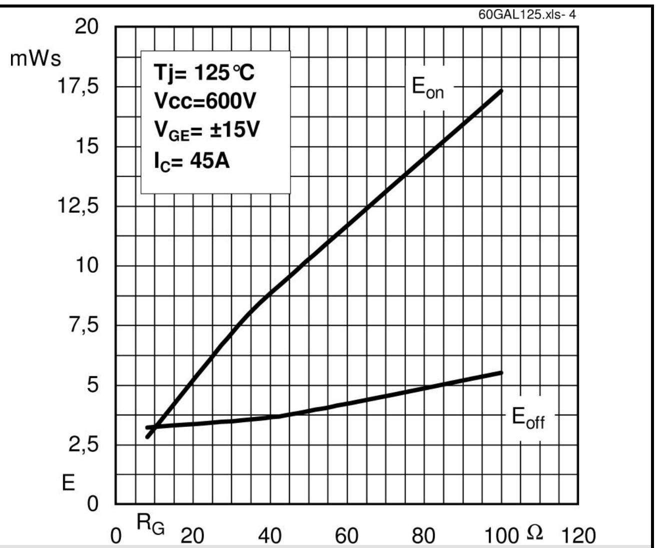


Fig. 4 Typ. turn-on /-off energy = f (R_G)

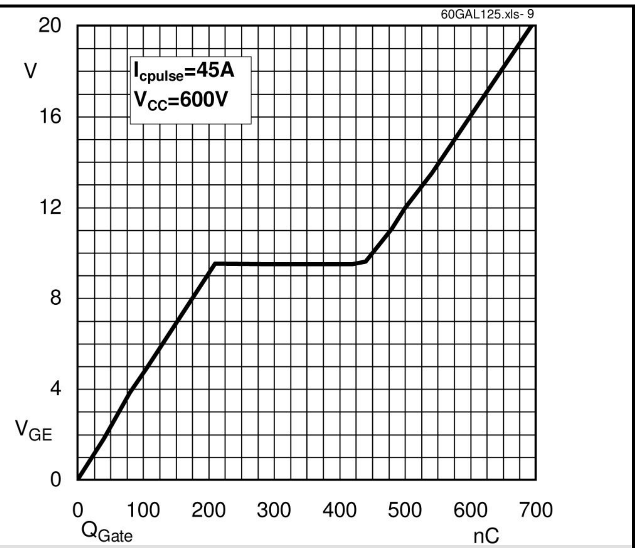


Fig. 6 Typ. gate charge characteristic

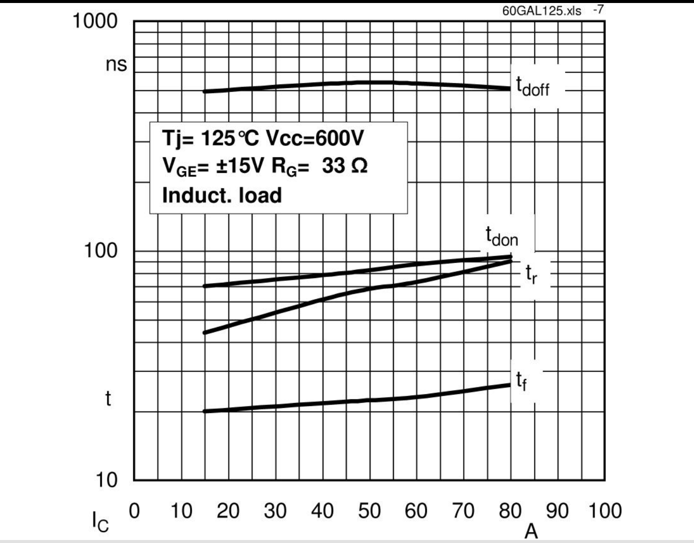


Fig. 7 Typ. switching times vs. I_C

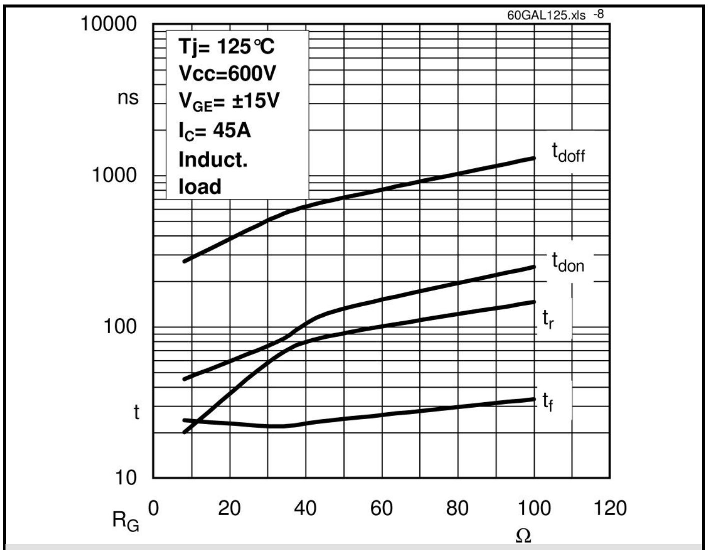


Fig. 8 Typ. switching times vs. gate resistor R_G

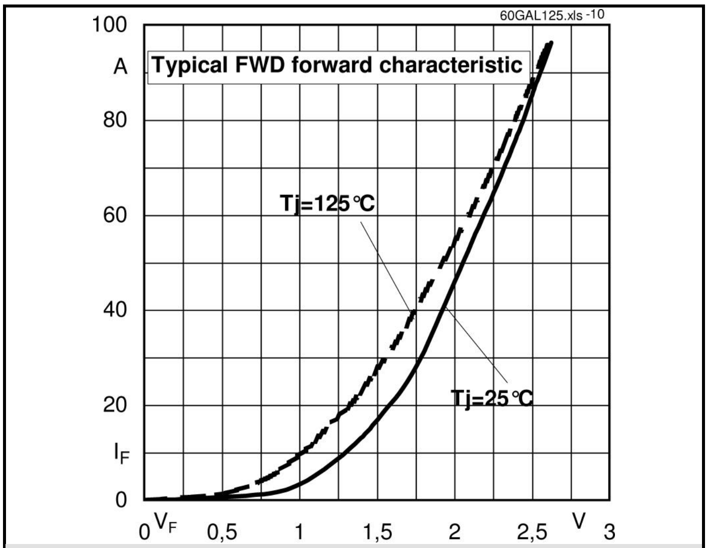
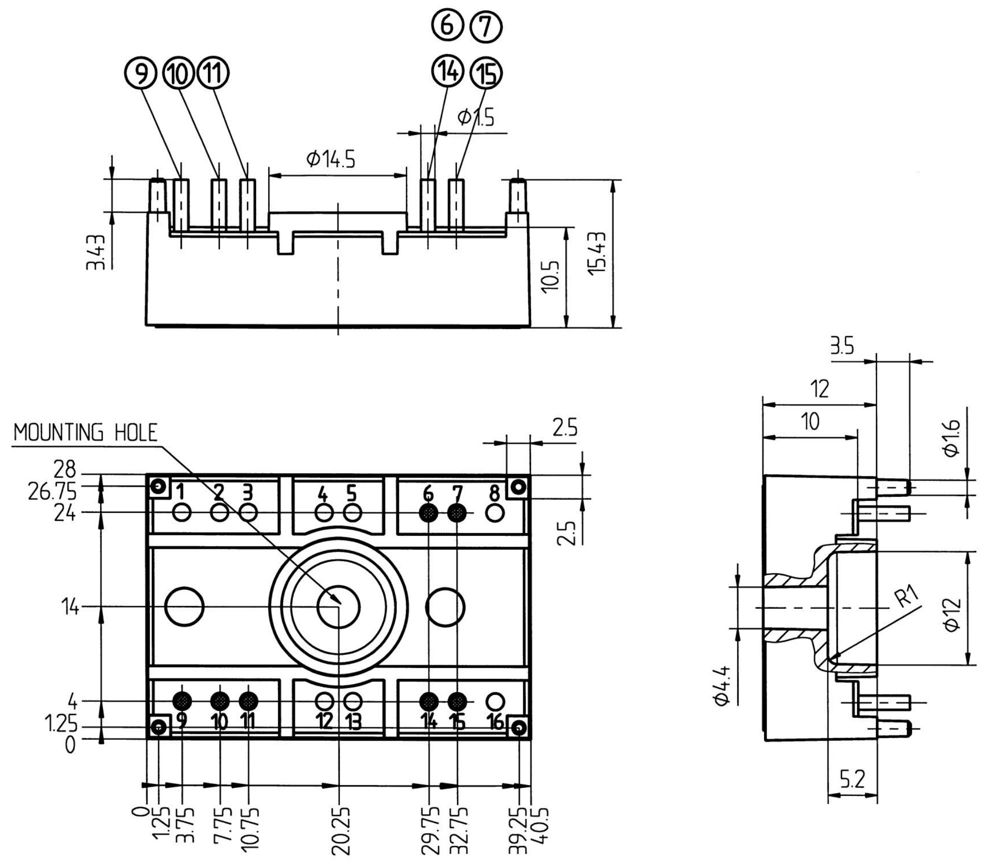
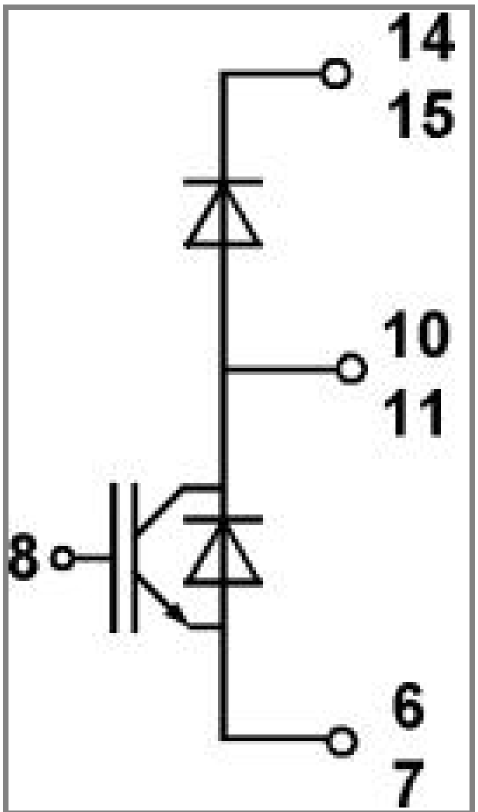


Fig. 10 CAL diode forward characteristic

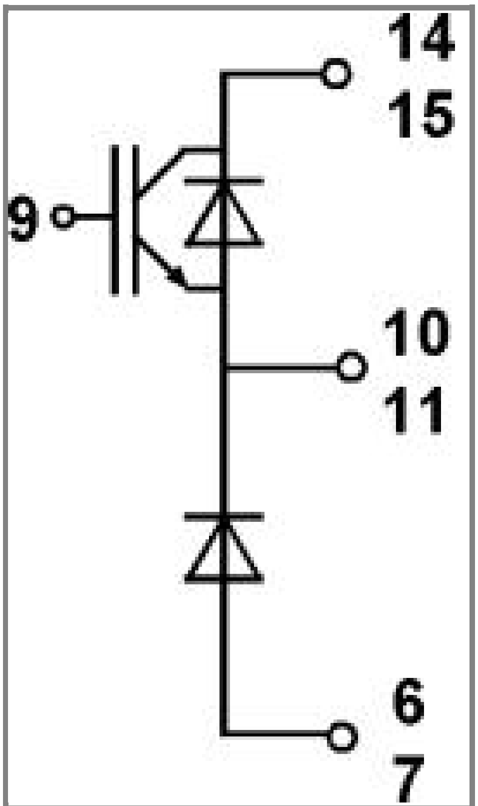
UL recognized file no. E 63 532



Case T18 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 18 GAL



Case T 18 GAR

