



SEMITOP® 2

IGBT Module

SK60GAL125

SK60GAR125

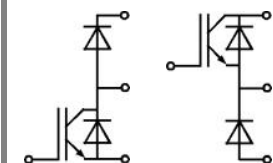
Target Data

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				$T_s = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions		Values	Units	
IGBT					
V_{CES}	$T_j = 25^\circ\text{C}$		1200	V	
I_C	$T_j = 125^\circ\text{C}$	$T_s = 25^\circ\text{C}$	51	A	
		$T_s = 80^\circ\text{C}$	35	A	
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$		100	A	
V_{GES}			± 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	μs	
Inverse Diode					
I_F	$T_j = 150^\circ\text{C}$	$T_s = 25^\circ\text{C}$	43	A	
		$T_s = 80^\circ\text{C}$	29	A	
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$			A	
I_{FSM}	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 25^\circ\text{C}$		110	A	
Freewheeling Diode					
I_F	$T_j = 150^\circ\text{C}$	$T_s = 25^\circ\text{C}$	57	A	
		$T_s = 80^\circ\text{C}$	38	A	
I_{FRM}				A	
I_{FSM}	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150^\circ\text{C}$		550	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 °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 I _C = 45A		8,36		ns		
t _r						ns		
E _{on}	R _{Goff} = 33 Ω	T _j = 125 °C V _{GE} = ±15V				3,32		mJ
t _{d(off)}								ns
t _f			ns					
E _{off}					mJ			
R _{th(j-s)}	per IGBT				0,6	K/W		

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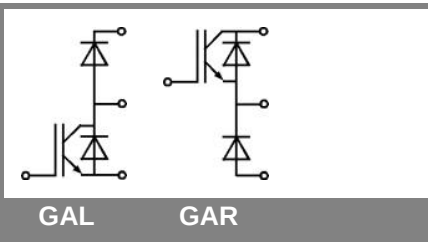
Typical Applications

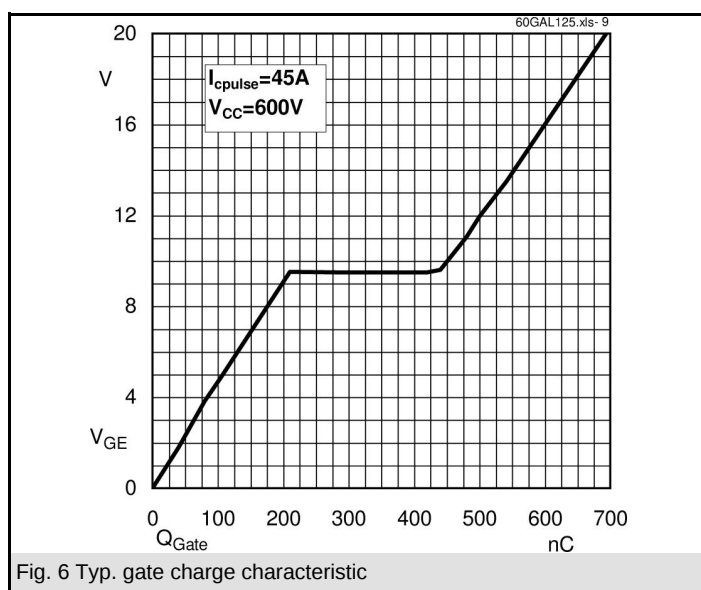
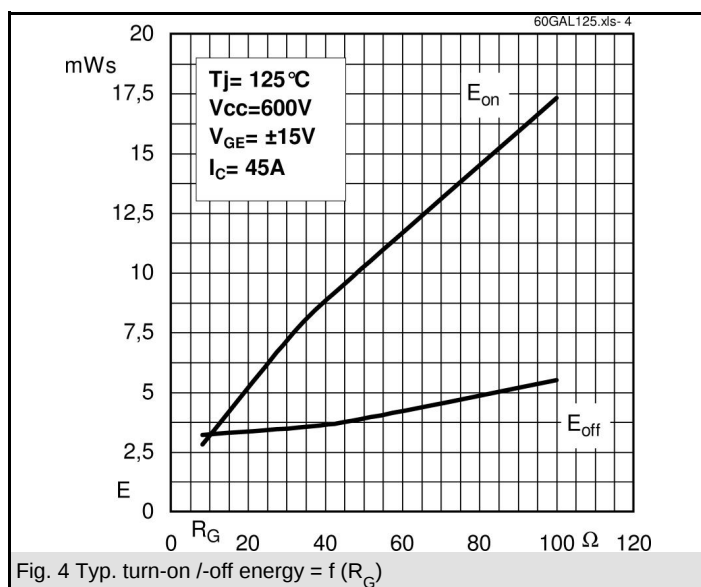
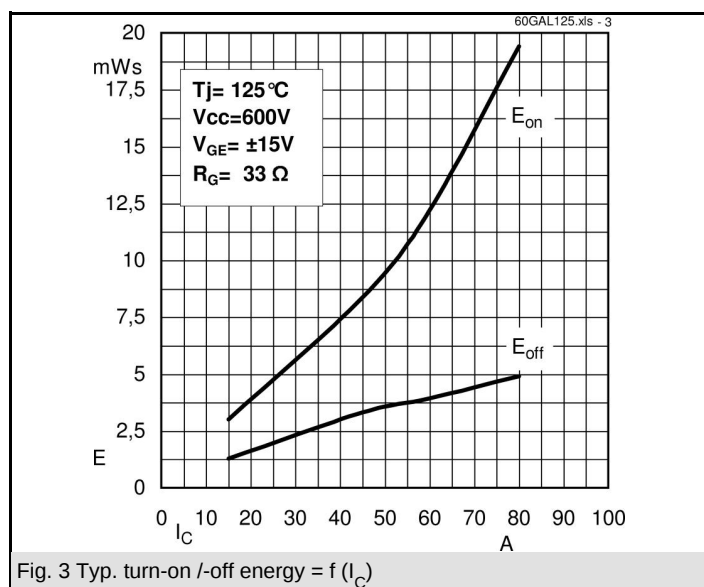
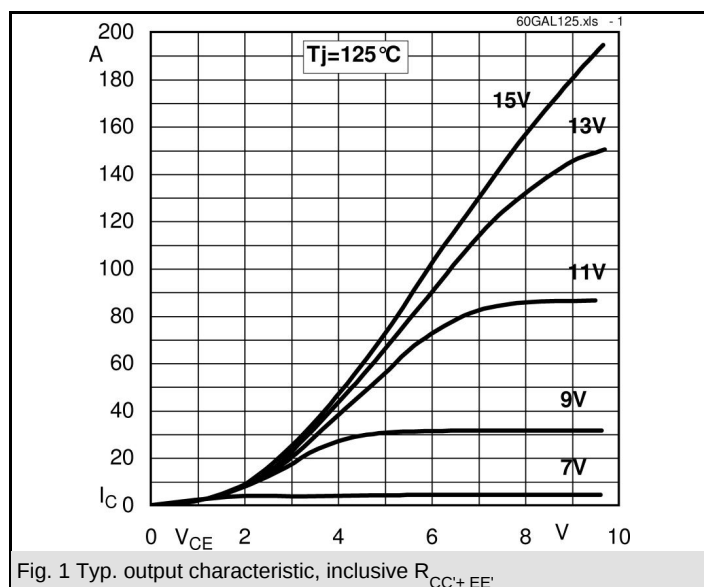
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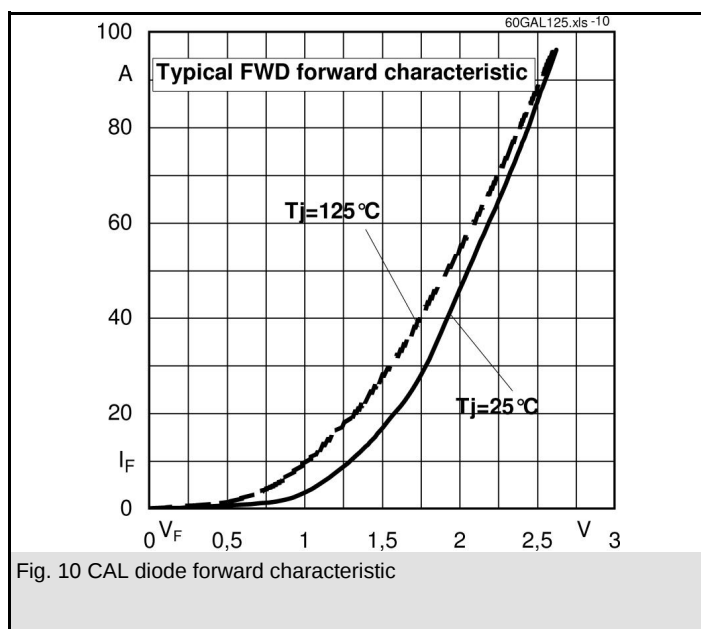
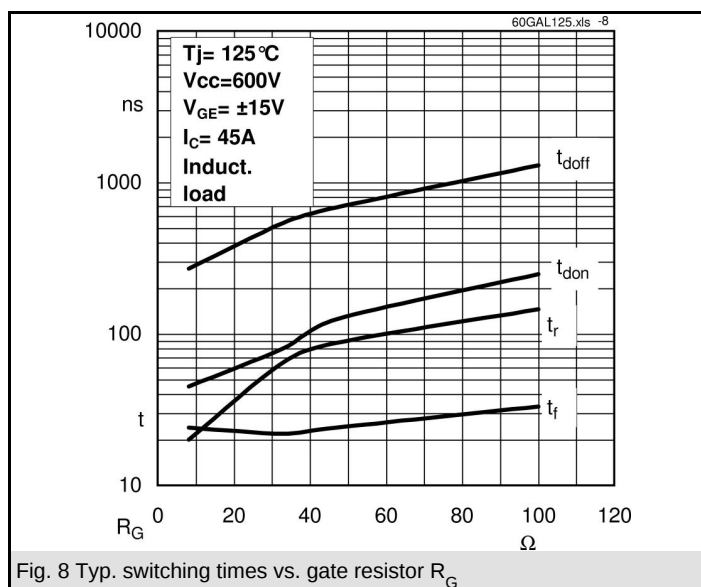
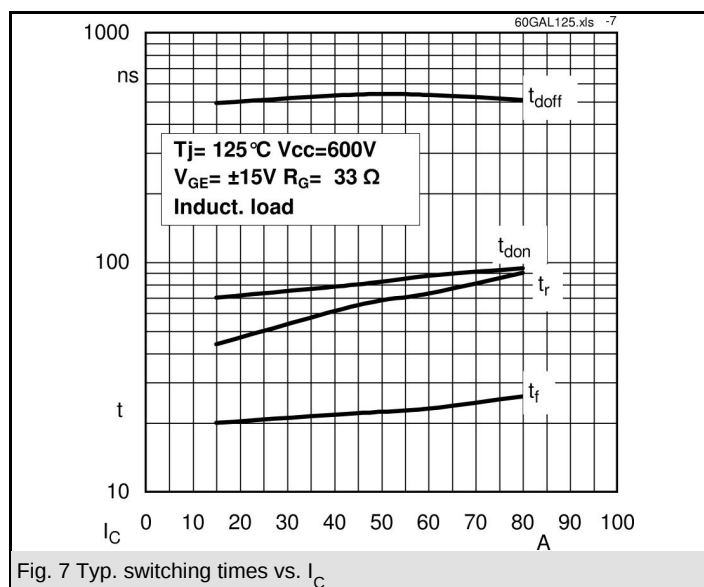
Characteristics		min.	typ.	max.	Units
Symbol	Conditions				
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 10\text{ A}; V_{GE} = 0\text{ V}$	$T_j = 25\text{ }^{\circ}\text{C}_{chiplev.}$	2	2,5	V
		$T_j = 150\text{ }^{\circ}\text{C}_{chiplev.}$	1,79	2,3	V
V_{F0}		$T_j = 25\text{ }^{\circ}\text{C}$			V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

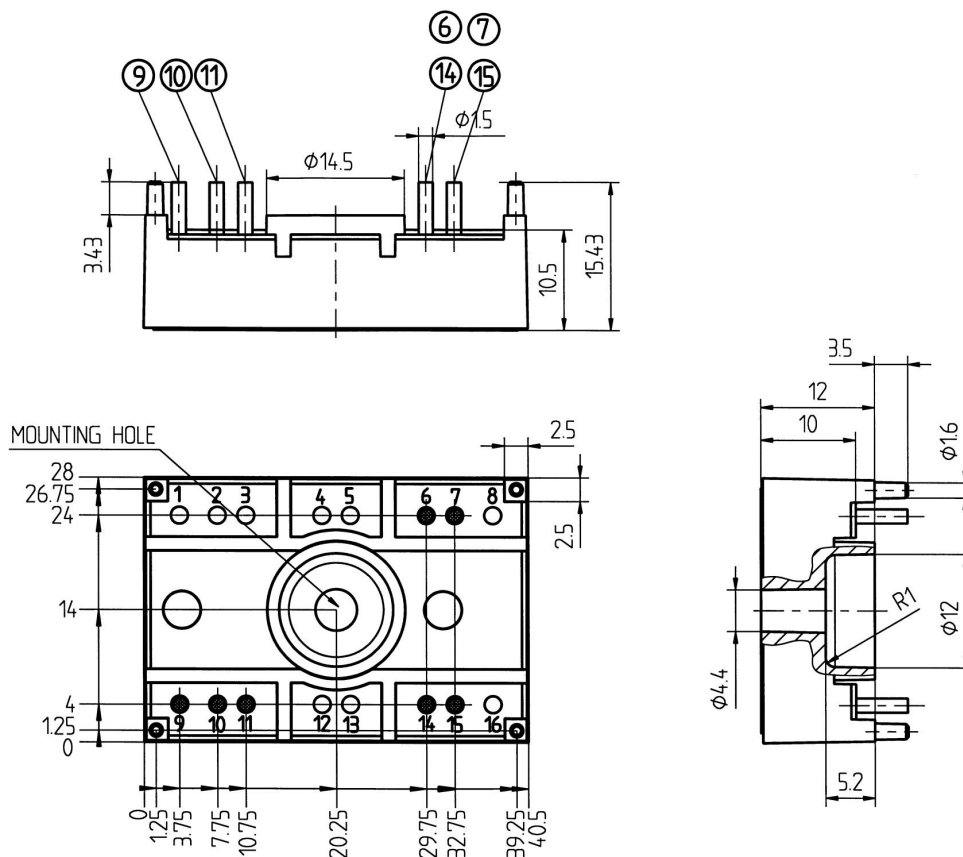
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

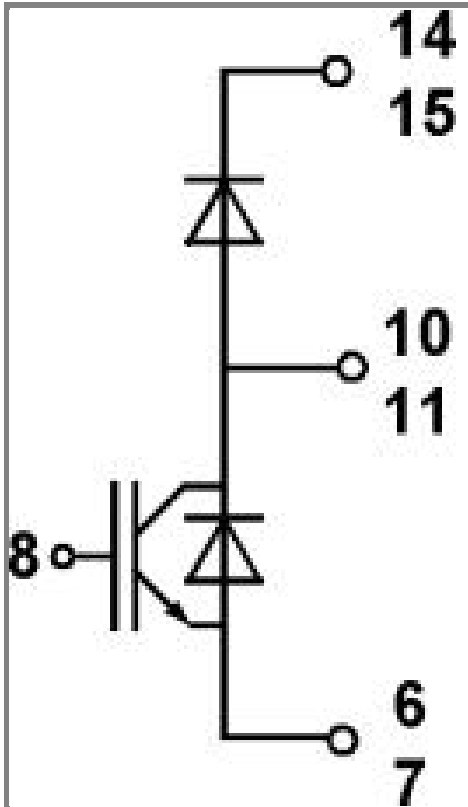






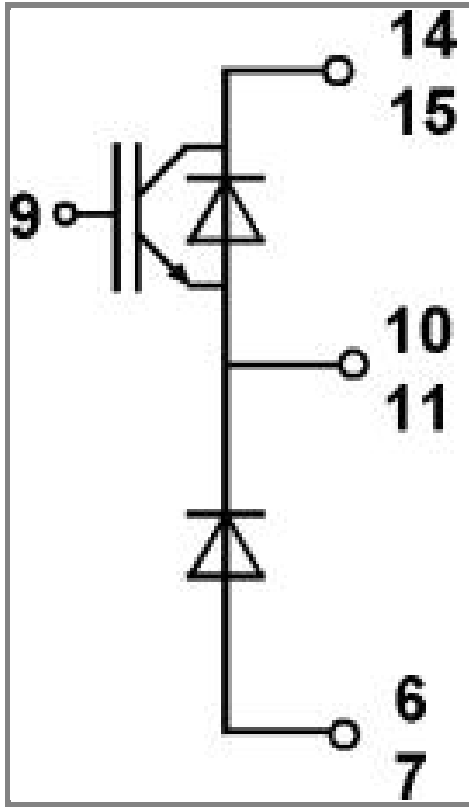


Case T18 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 18

GAL



Case T 18

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