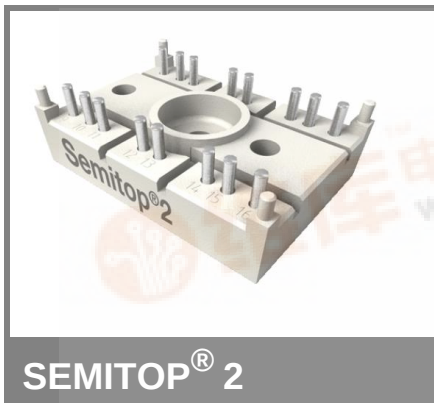


SK60GAL123



IGBT Module

SK60GAL123

SK60GAR123

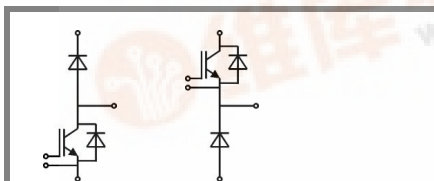
Preliminary Data

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 punch-through IGBT)
- High short circuit capability
- $V_{ce,sat}$ with positive coefficient
- Low tail current with low temperature dependence

Typical Applications

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



Absolute Maximum Ratings		$T_s = 25\text{ }^{\circ}\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}	$T_j = 25\text{ }^{\circ}\text{C}$	1200	V
I_C	$T_j = 125\text{ }^{\circ}\text{C}$	$T_s = 25\text{ }^{\circ}\text{C}$	58
		$T_s = 80\text{ }^{\circ}\text{C}$	40
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	100	A
V_{GES}		± 20	V
t_{psc}	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ }^{\circ}\text{C}$ $V_{CES} < 1200\text{ V}$	10	μs
Inverse Diode			
I_F	$T_j = 150\text{ }^{\circ}\text{C}$	$T_s = 25\text{ }^{\circ}\text{C}$	33
		$T_s = 80\text{ }^{\circ}\text{C}$	23
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$		A
I_{FSM}	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150\text{ }^{\circ}\text{C}$	110	A
Freewheeling Diode			
I_F	$T_j = 150\text{ }^{\circ}\text{C}$	$T_{case} = 25\text{ }^{\circ}\text{C}$	57
		$T_{case} = 80\text{ }^{\circ}\text{C}$	38
I_{FRM}			A
I_{FSM}	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150\text{ }^{\circ}\text{C}$	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 T _j = 125 °C		0,3			mA mA	
I _{GES}	V _{CE} = 0 V, V _{GE} = 30 V T _j = 25 °C T _j = 125 °C		300			nA nA	
V _{CE0}	T _j = 25 °C T _j = 125 °C		1,2 1,2			V V	
r _{CE}	V _{GE} = 15 V T _j = 25°C T _j = 125°C		26 38			mΩ mΩ	
V _{CE(sat)}	I _{Cnom} = 50 A, V _{GE} = 15 V T _j = 25°C _{chiplev.} T _j = 125°C _{chiplev.}		2,5 3,1			3 3,7	
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	
Q _G	V _{GE} =0 ... 20 V		285			nC	
t _{d(on)} t _r E _{on}	R _{Gon} = 22 Ω R _{Goff} = 22 Ω	V _{CC} = 600V I _{Cnom} = 50A T _j = 125 °C V _{GE} =±15V	70 90 9,9			ns ns mJ	
t _{d(off)} t _f E _{off}			460 30 5,3			ns ns mJ	
R _{th(i-s)}			per IGBT	0,6			K/W

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IGBT Module

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Preliminary Data

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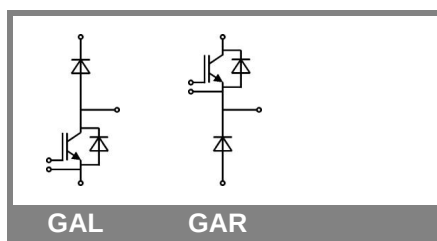
Typical Applications

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

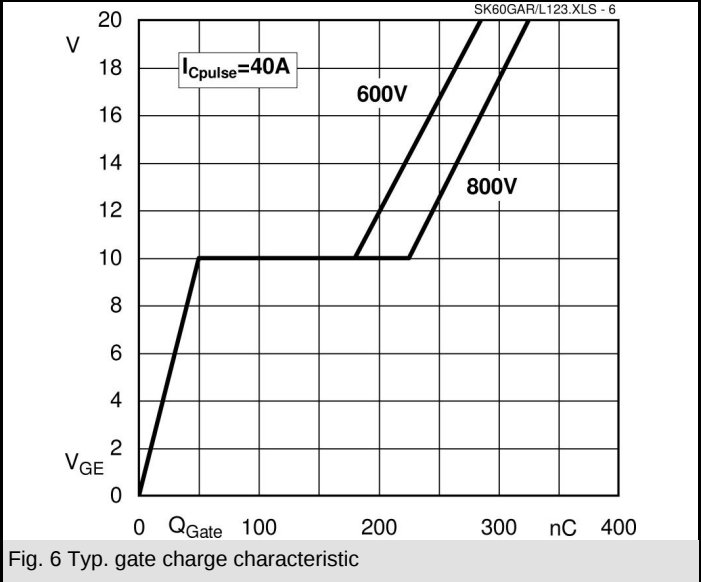
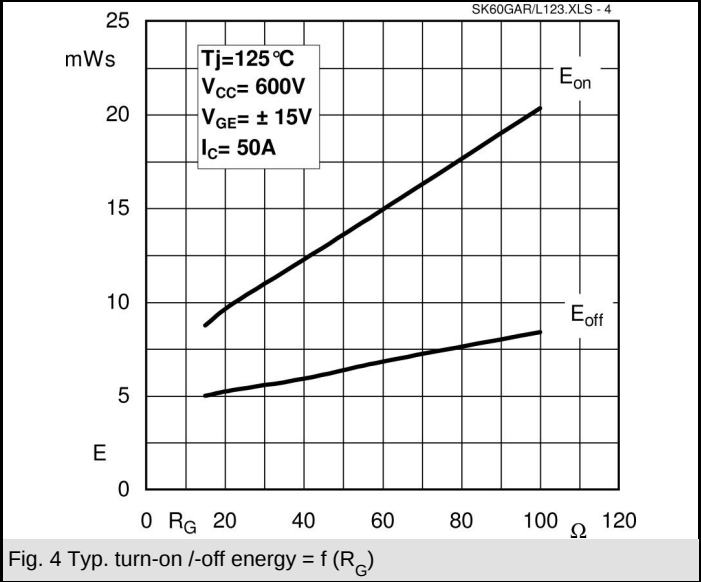
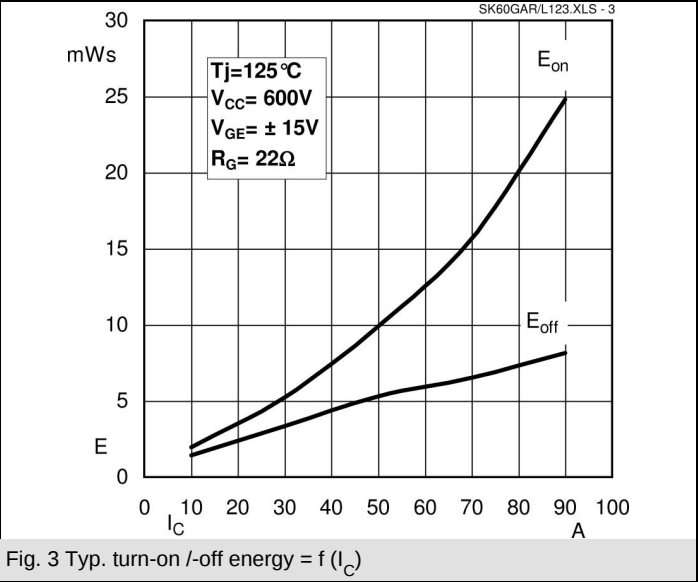
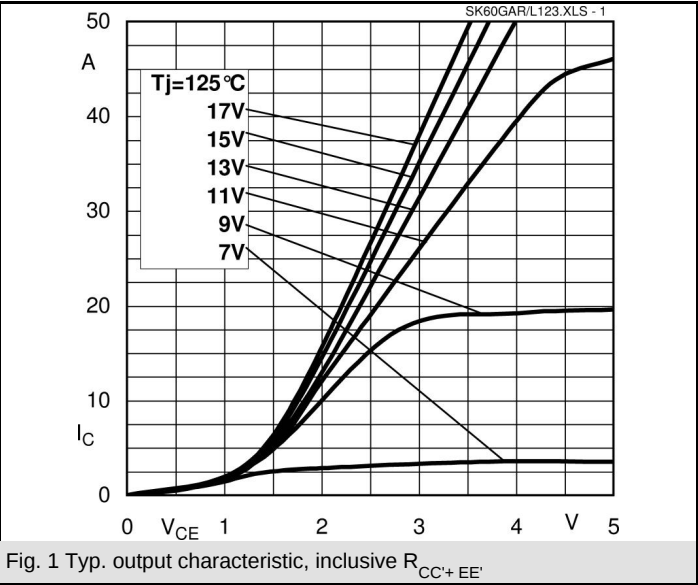
Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 10 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2	2,5	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,8	2,3	V
V_{F0}		$T_j = 125 \text{ }^\circ\text{C}$	1	1,2	V
r_F		$T_j = 125 \text{ }^\circ\text{C}$	80		mΩ
I_{RRM}	$I_{Fnom} = 10 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	12		A
Q_{rr}	$di/dt = -300 \text{ A}/\mu\text{s}$		1,8		μC
E_{rr}	$V_{CC} = 600 \text{ V}$		0,4		mJ
$R_{th(j-s)D}$	per diode			2,1	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 50 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	1	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		$T_j = 125 \text{ }^\circ\text{C}$	18	22	V
I_{RRM}	$I_{Fnom} = 50 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	40		A
Q_{rr}	$di/dt = -800 \text{ A}/\mu\text{s}$		8		μC
E_{rr}	$V_R = 600 \text{ V}$		2,3		mJ
$R_{th(j-s)FD}$	per diode			0,9	K/W
M_s	to heat sink M1			2	Nm
w			21		g

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

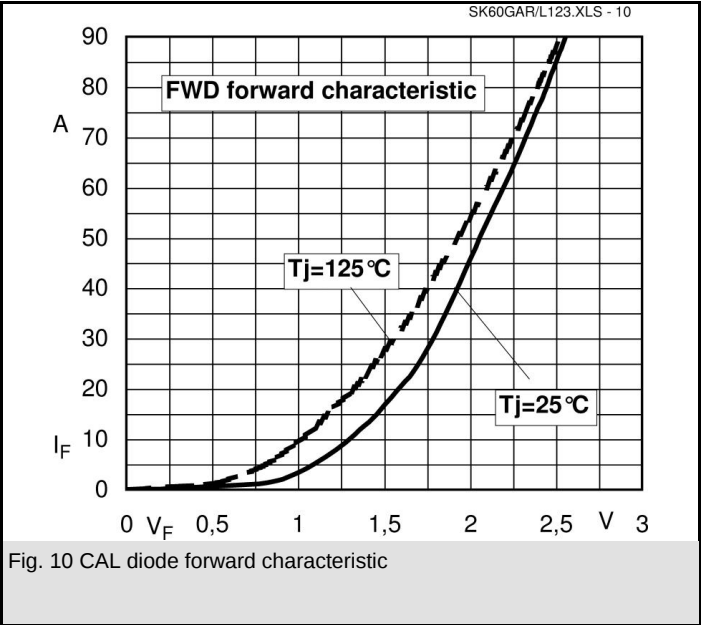
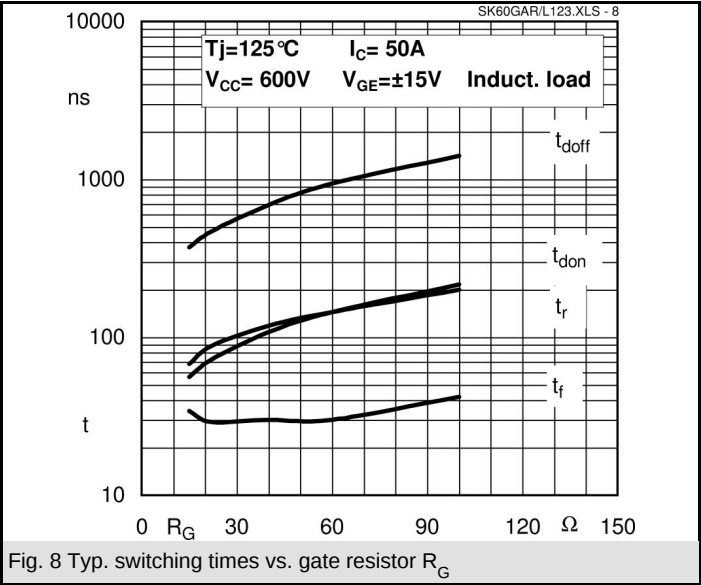
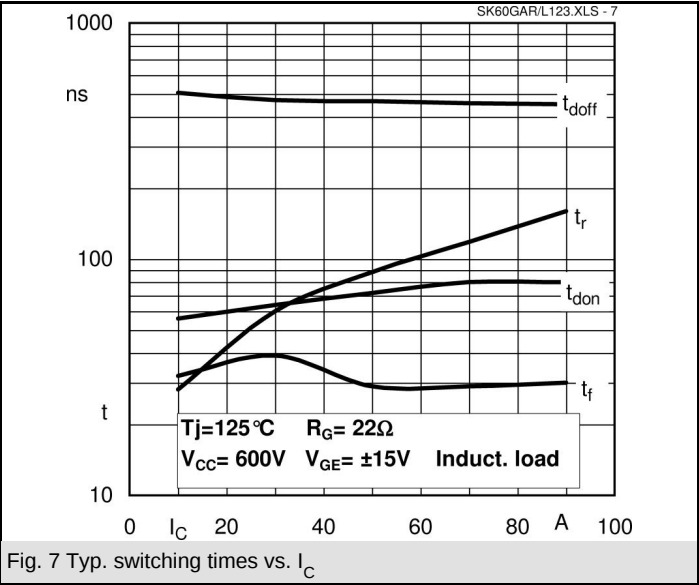
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SK60GAL123



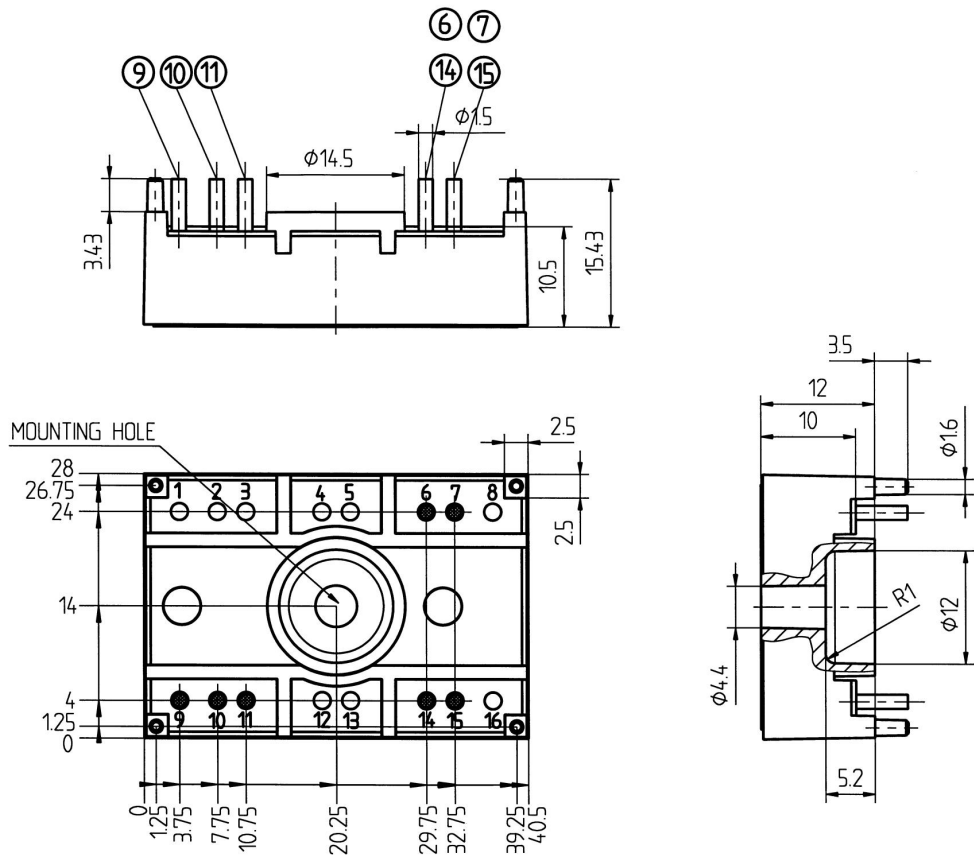
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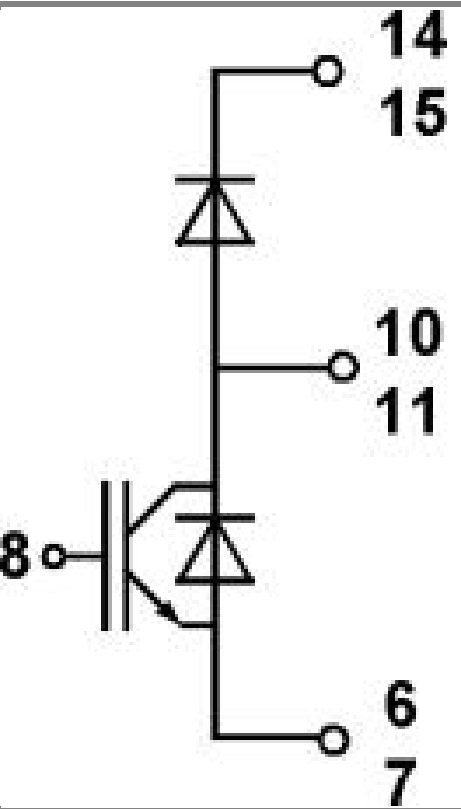
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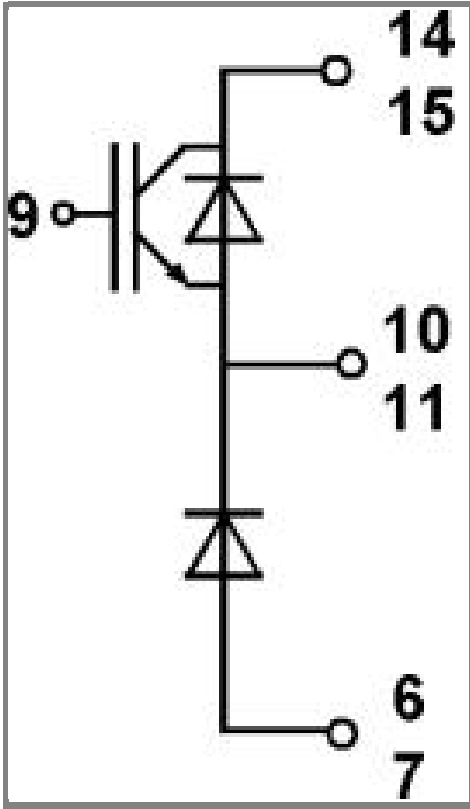


Case T18 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T18

GAL



Case T18

GAR