

IGBT Module

SK45GB063

SK45GAL063

SK45GAR063

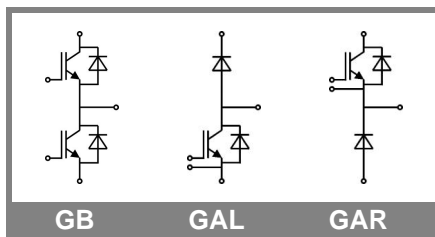
Preliminary Data

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. E63532

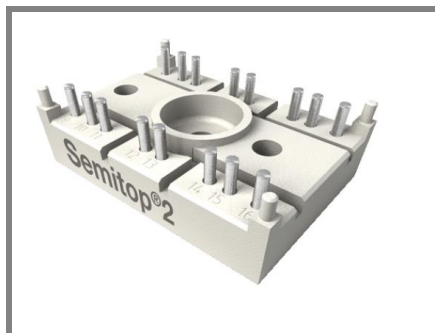
Typical Applications

- 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}	$T_j = 25\text{ }^\circ\text{C}$	600		V
I_C	$T_j = 125\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	45	
		$T_s = 80\text{ }^\circ\text{C}$	30	
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	100		A
V_{GES}		± 20		V
t_{psc}	$V_{CC} = 300\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ }^\circ\text{C}$ $V_{CES} < 600\text{ V}$	10		μs
Inverse Diode				
I_F	$T_j = 150\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	57	
		$T_s = 80\text{ }^\circ\text{C}$	38	
I_{FRM}				A
I_{FSM}	$t_p = 10\text{ ms}$; half sine wave $T_j = 150\text{ }^\circ\text{C}$	440		A
Freewheeling Diode				
I_F	$T_j = 150\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	57	
		$T_s = 80\text{ }^\circ\text{C}$	38	
I_{FRM}				A
I_{FSM}	$t_p = 150\text{ ms}$; $T_j = \text{ }^\circ\text{C}$	440		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		$T_s = 25\text{ }^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1\text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25\text{ }^\circ\text{C}$	0,15		mA
		$T_j = 125\text{ }^\circ\text{C}$			
I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 30\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	120		nA
		$T_j = 125\text{ }^\circ\text{C}$			
V_{CE0}		$T_j = 25\text{ }^\circ\text{C}$	1		V
		$T_j = 125\text{ }^\circ\text{C}$	1,1		
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	20		m Ω
		$T_j = 125\text{ }^\circ\text{C}$			
$V_{CE(sat)}$	$I_{Cnom} = 50\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}_{chiplev.}$	2,1	2,5	V
		$T_j = 125\text{ }^\circ\text{C}_{chiplev.}$			V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	2,2		nF
C_{oes}					nF
C_{res}			0,2		nF
Q_G	$V_{GE} = 0 \dots 20\text{ V}$		155		nC
$t_{d(on)}$	$R_{Gon} = 22\text{ }^\circ\Omega$	$V_{CC} = 300\text{ V}$ $I_{Cnom} = 30\text{ A}$ $T_j = 125\text{ }^\circ\text{C}$	45		ns
t_r			35		
E_{on}			1,4		mJ
$t_{d(off)}$	$R_{Goff} = 22\text{ }^\circ\Omega$	$T_j = 125\text{ }^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	250		
t_f			25		
E_{off}			1,2		mJ
$R_{th(j-s)}$	per IGBT		1		K/W



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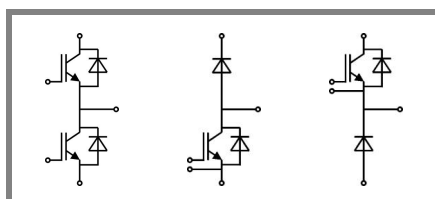
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GB

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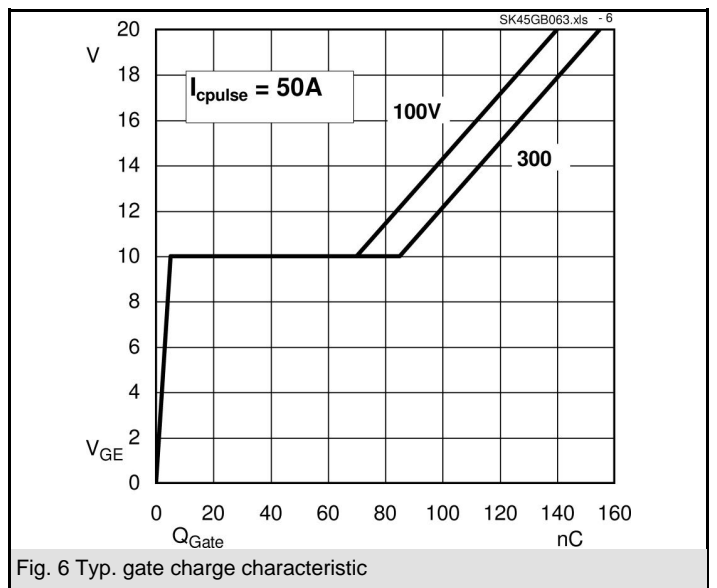
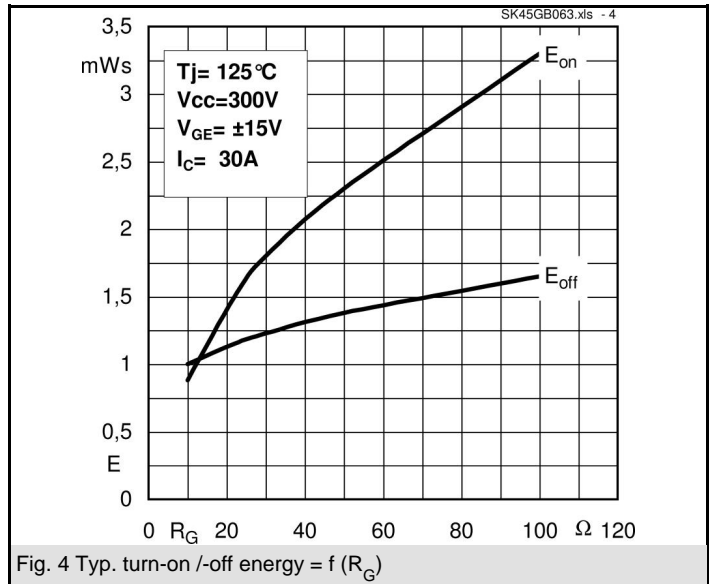
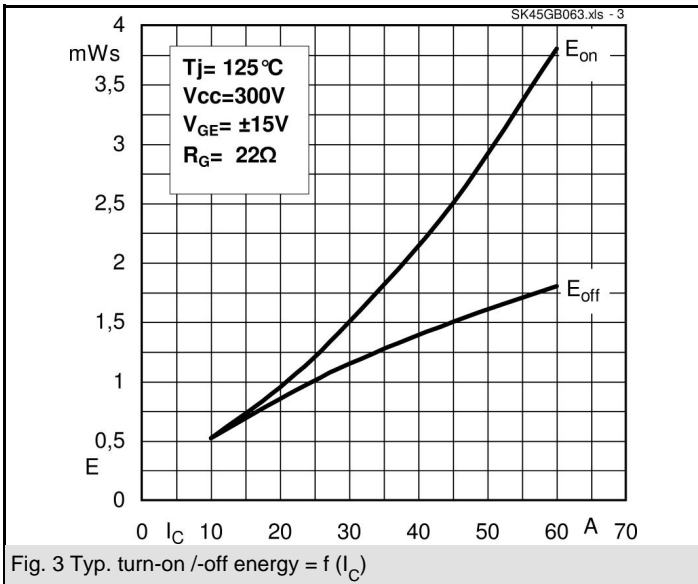
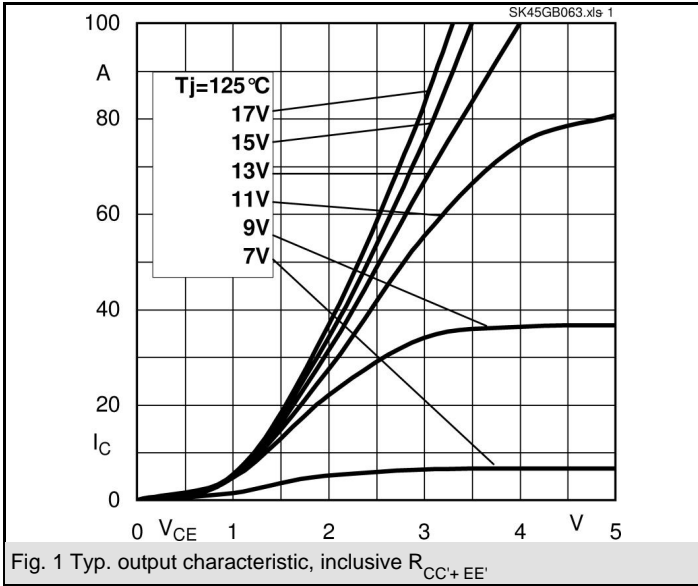
GAR

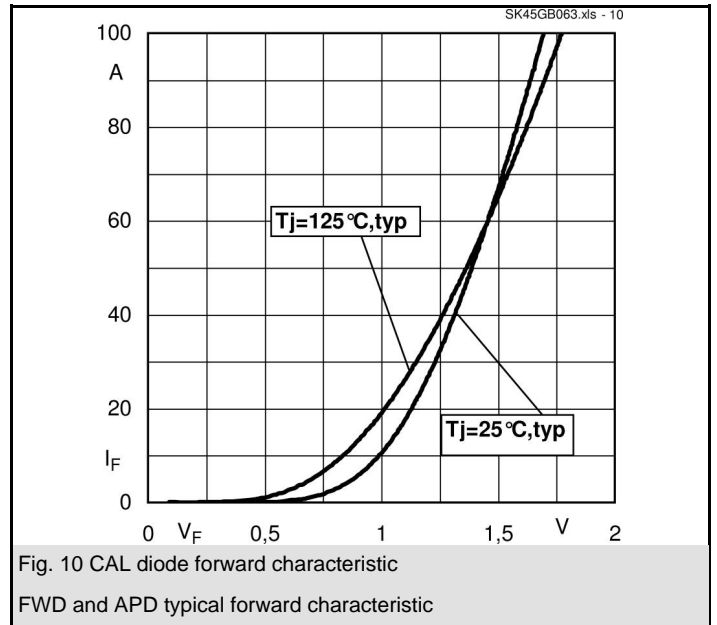
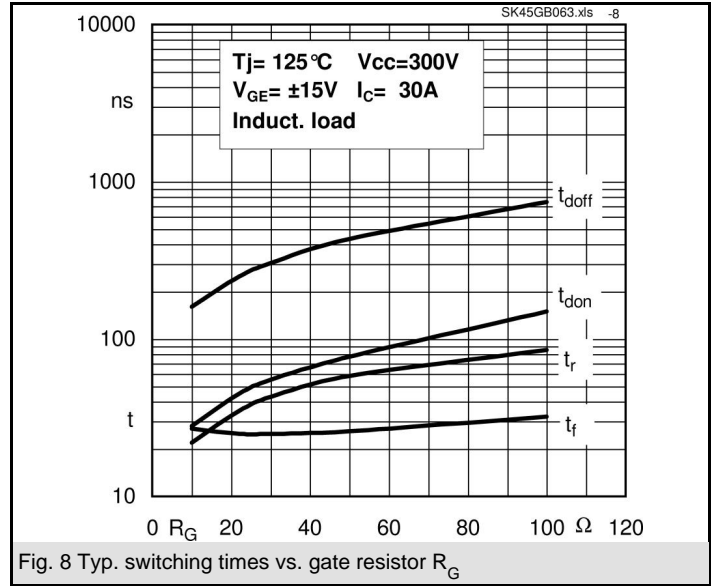
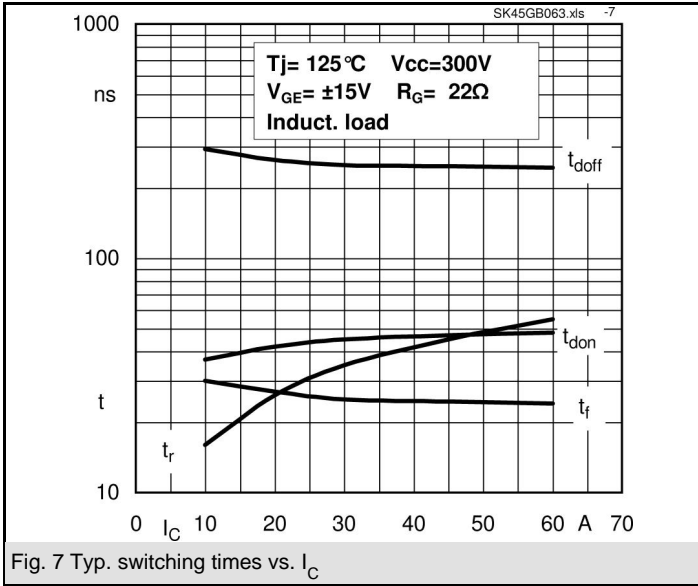
Characteristics

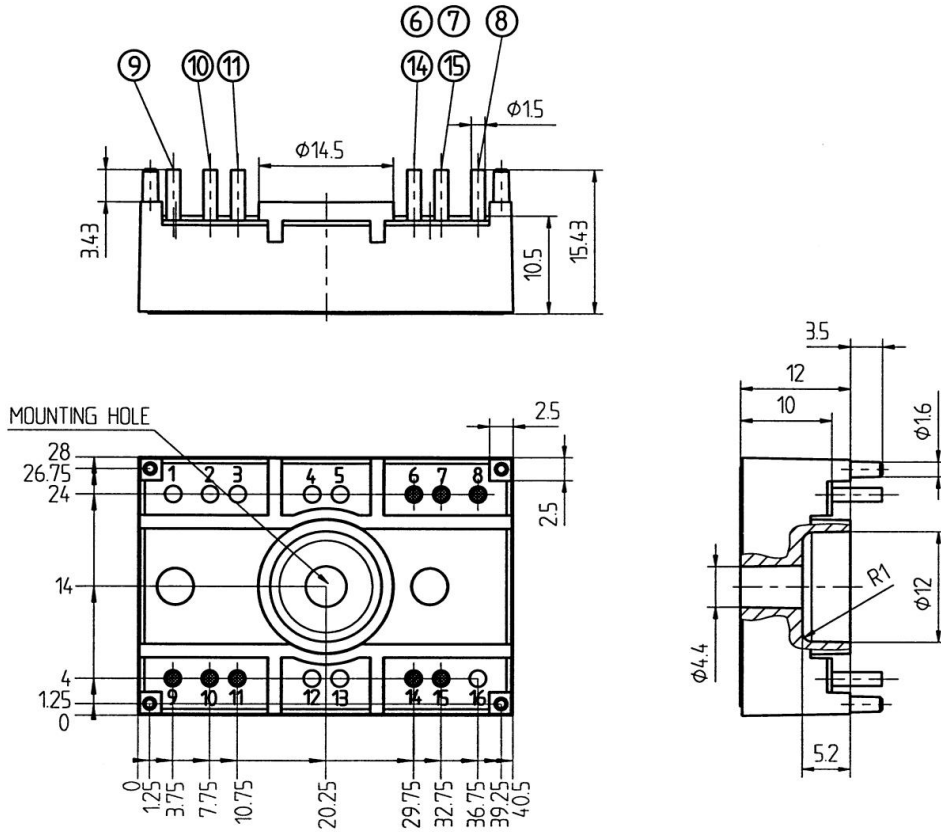
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 30 \text{ A}; V_{GE} = 0 \text{ V}$				
	$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$		1,45	1,7	V
	$T_j = 125 \text{ }^\circ\text{C}_{\text{chiplev.}}$		1,4	1,75	V
V_{F0}			0,85	0,9	V
r_F			9	16	mΩ
I_{RRM}	$I_{Fnom} = 30 \text{ A}$		16		A
Q_{rr}	$di/dt = -500 \text{ A}/\mu\text{s}$		2		μC
E_{rr}	$V_{CC} = 300 \text{ V}$		0,25		mJ
$R_{th(j-s)D}$	per diode			1,2	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 30 \text{ A}; V_{GE} = 0 \text{ V}$				
	$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$		1,45	1,7	V
	$T_j = 125 \text{ }^\circ\text{C}_{\text{chiplev.}}$		1,4	1,75	V
V_{F0}			0,85	0,9	V
r_F			9	16	V
I_{RRM}	$I_{Fnom} = 30 \text{ A}$		16		A
Q_{rr}	$di/dt = -500 \text{ A}/\mu\text{s}$		2		μC
E_{rr}	$V_{CC} = 300 \text{ V}$		0,25		mJ
$R_{th(j-s)FD}$	per diode			1,2	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 T4 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)

