

SEMITOP[®] 3

IGBT Module

SK45GD063

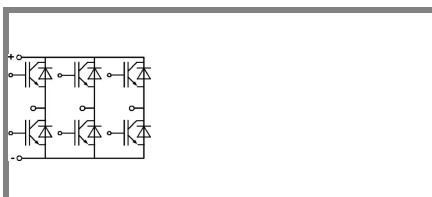
Preliminary Data

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

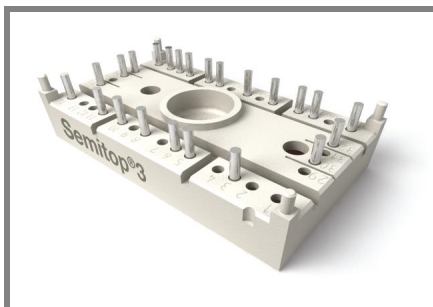
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS



GD

Absolute Maximum Ratings		$T_s = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	Values			Units
IGBT					
V_{CES}	$T_j = 25\text{ °C}$	600			V
I_C	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$	45		A
		$T_s = 80\text{ °C}$	30		A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	100			A
V_{GES}		± 20			V
t_{psc}	$V_{CC} = 300\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ °C}$ $V_{CES} < 600\text{ V}$	10			μs
Inverse Diode					
I_F	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$	36		A
		$T_s = 80\text{ °C}$	24		A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$				A
I_{FSM}	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150\text{ °C}$	200			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		$T_s = 25\text{ °C}$, 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}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25\text{ °C}$	0,15		mA
		$T_j = 125\text{ °C}$			mA
I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 30\text{ V}$	$T_j = 25\text{ °C}$	120		nA
		$T_j = 125\text{ °C}$			nA
V_{CE0}		$T_j = 25\text{ °C}$	1		V
		$T_j = 125\text{ °C}$	1,1		V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	20		$\text{m}\Omega$
		$T_j = 125\text{ °C}$			$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 50\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	2,1	2,5	V
		$T_j = 125\text{ °C}_{chiplev.}$			V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	2,2		nF	
C_{oes}				nF	
C_{res}		0,2		nF	
Q_G	$V_{GE} = 0 \dots 20\text{ V}$	155		nC	
$t_{d(on)}$	$R_{Gon} = 22\ \Omega$	$V_{CC} = 300\text{ V}$ $I_{Cnom} = 30\text{ A}$	45		ns
t_r			40		ns
E_{on}	$R_{Goff} = 22\ \Omega$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	1,4		mJ
$t_{d(off)}$			250		ns
t_f			30		ns
E_{off}			1,2		mJ
$R_{th(j-s)}$	per IGBT	1			K/W



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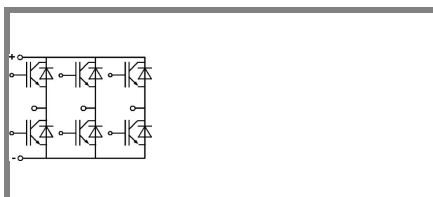
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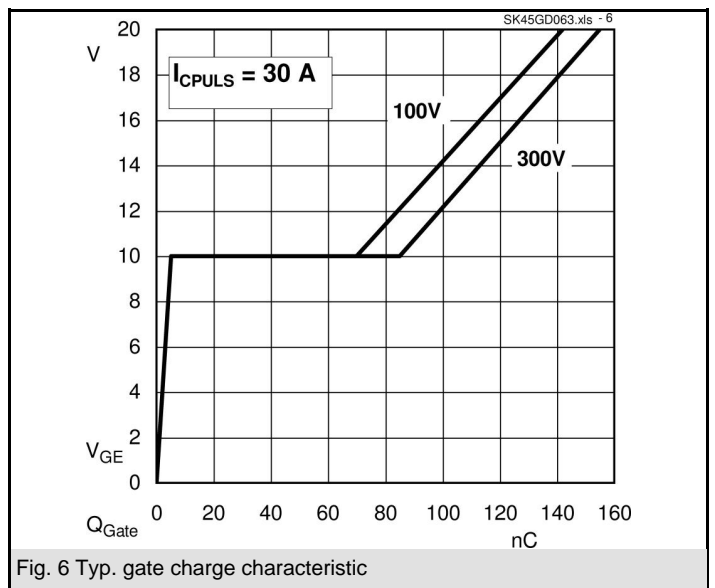
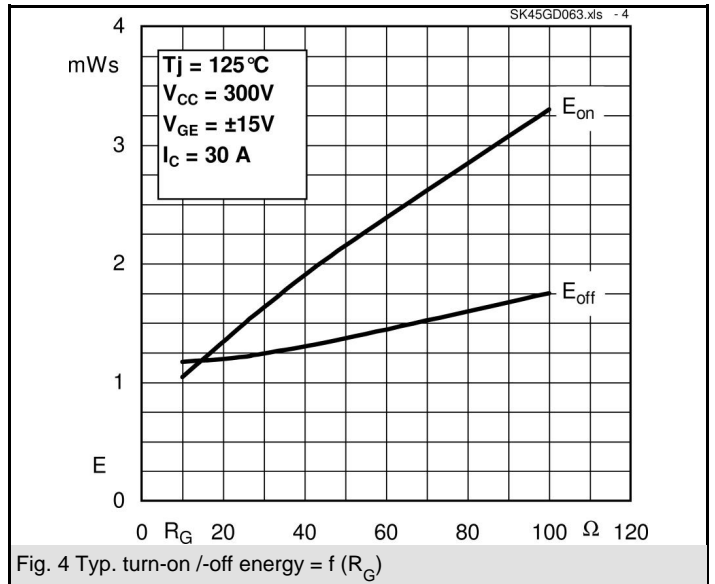
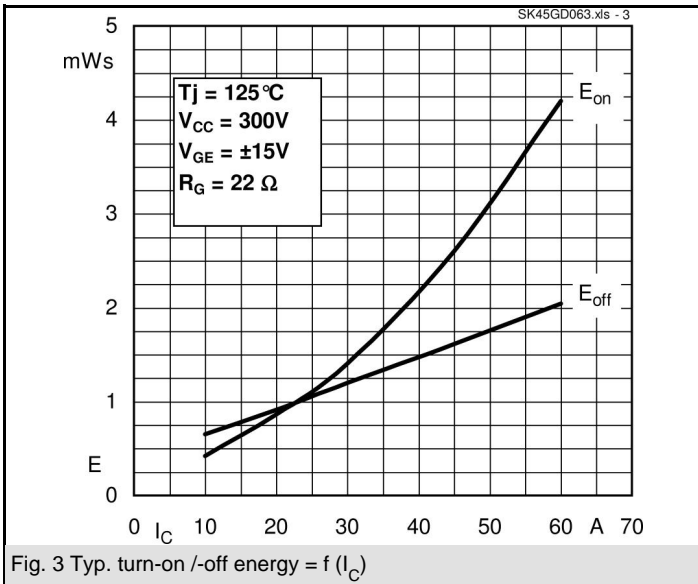
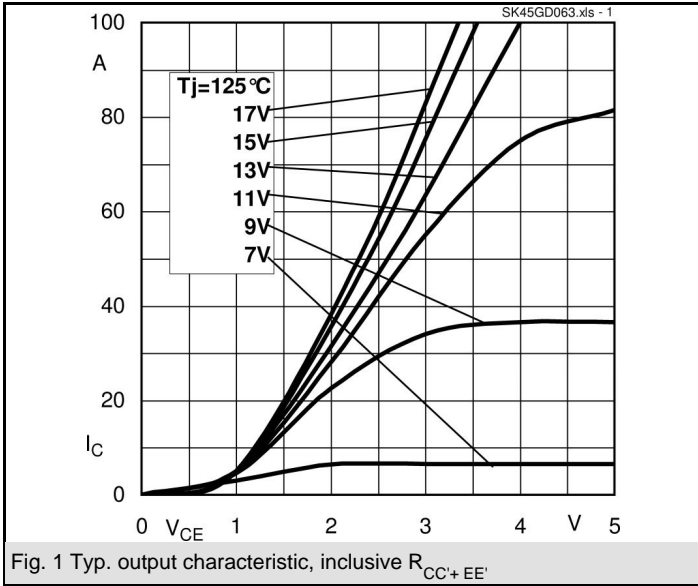
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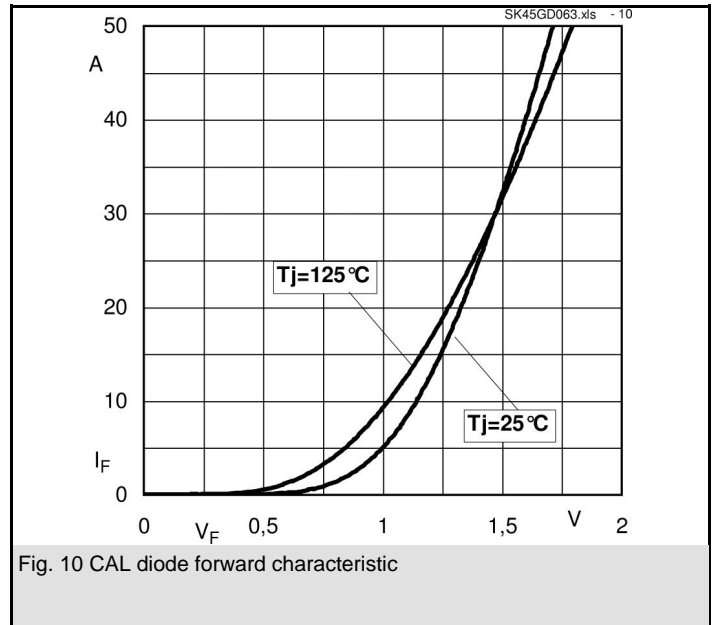
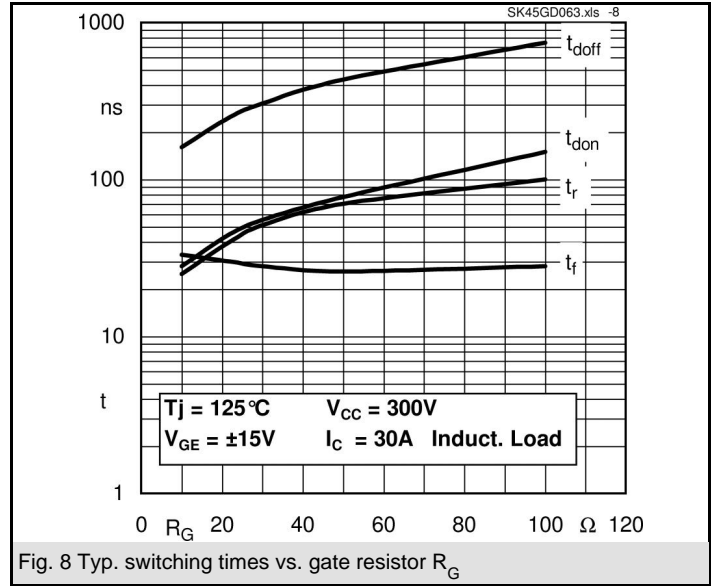
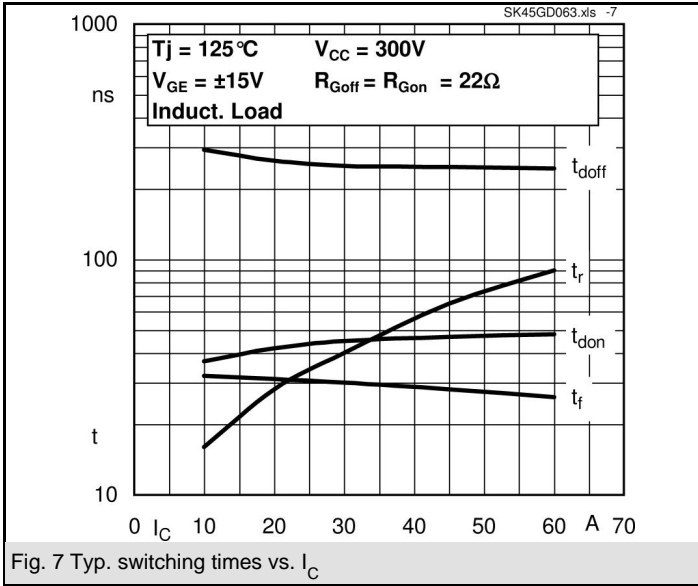
Characteristics

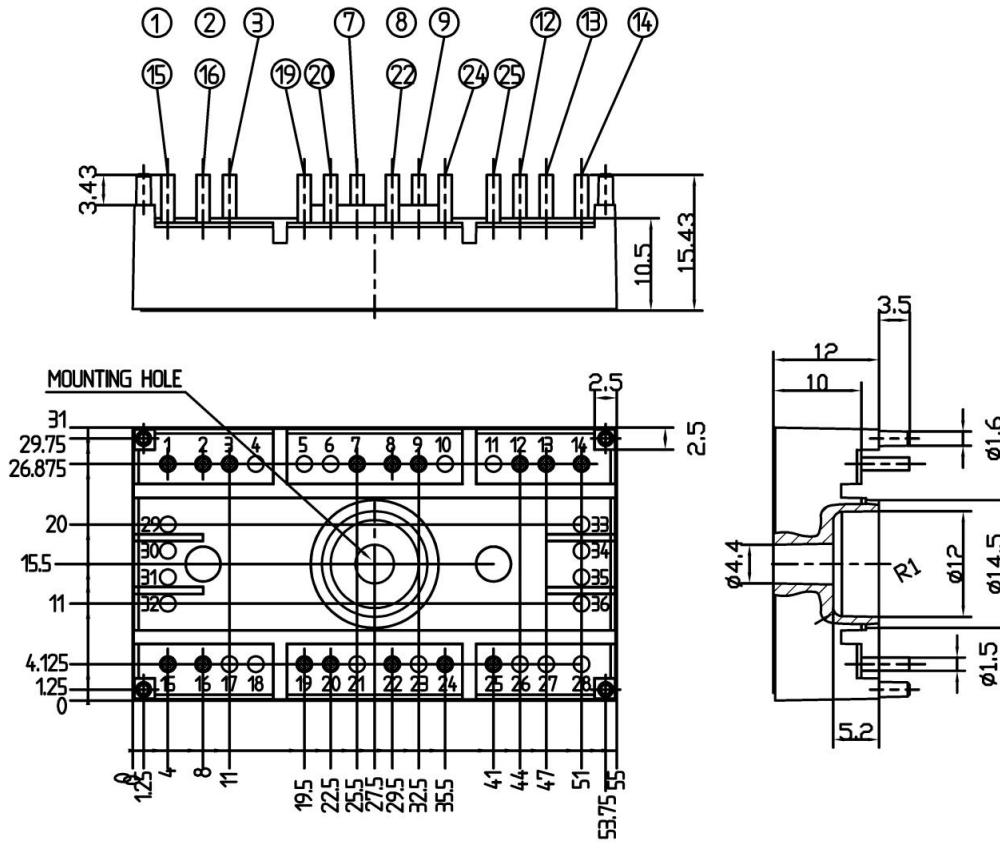
Symbol	Conditions	min.	typ.	max.	Units	
Inverse Diode						
$V_F = V_{EC}$	$I_{Fnom} = 25 \text{ A}; V_{GE} = 0 \text{ V}$		$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$	1,45	1,7	V
			$T_j = 125 \text{ }^\circ\text{C}_{\text{chiplev.}}$	1,4	1,75	V
V_{F0}			$T_j = 125 \text{ }^\circ\text{C}$	0,85	0,9	V
r_F			$T_j = 125 \text{ }^\circ\text{C}$	22	16	mΩ
I_{RRM}	$I_{Fnom} = 25 \text{ A}$		$T_j = 125 \text{ }^\circ\text{C}$	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			1,7		K/W
M_s	to heat sink M1	2,25		2,5		Nm
w			30			g

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

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Case T16 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)

