



**SEMITOP<sup>®</sup> 2**

## IGBT Module

**SK15GH063**

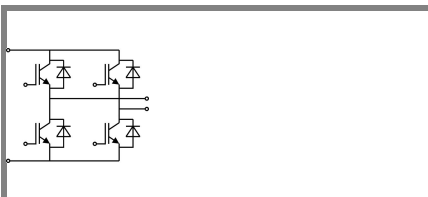
Preliminary Data

### 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. E63 532

### Typical Applications\*

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



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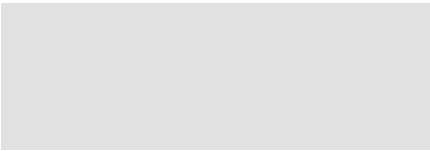
Absolute Maximum Ratings		$T_s = 25\text{ }^\circ\text{C}$ , unless otherwise specified		
Symbol	Conditions	Values		Units
<b>IGBT</b>				
$V_{CES}$	$T_j = 25\text{ }^\circ\text{C}$	600		V
$I_C$	$T_j = 125\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	20	A
		$T_s = 80\text{ }^\circ\text{C}$	14	A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	30		A
$V_{GES}$		$\pm 20$		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		$\mu\text{s}$
<b>Inverse Diode</b>				
$I_F$	$T_j = 150\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	20	A
		$T_s = 80\text{ }^\circ\text{C}$	15	A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$	28		A
$I_{FSM}$	$t_p = 10\text{ ms}; \text{half sine wave } T_j = 150\text{ }^\circ\text{C}$	100		A
<b>Module</b>				
$I_{t(RMS)}$				A
$T_{vj}$		-40 ... +150		$^\circ\text{C}$
$T_{stg}$		-40 ... +125		$^\circ\text{C}$
$V_{isol}$	AC, 1 min.	2500		V

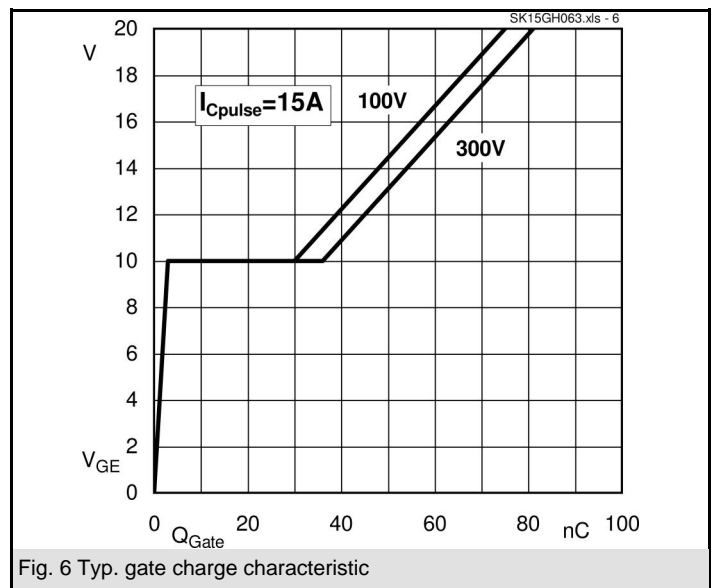
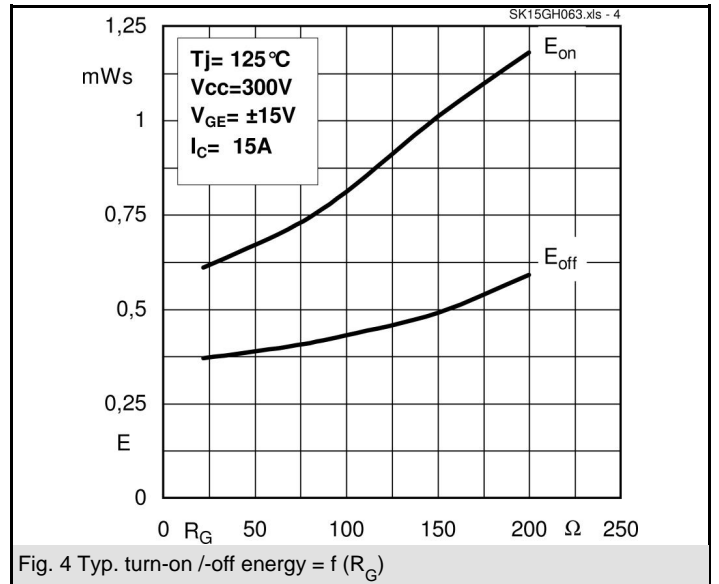
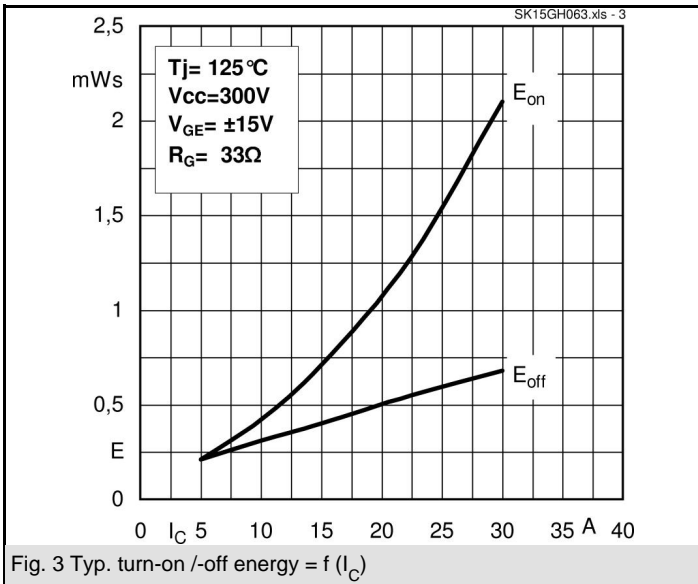
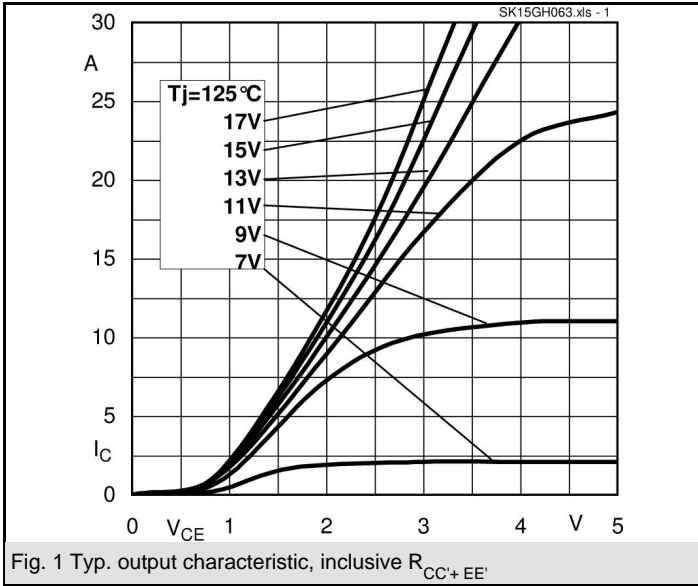
Characteristics		$T_s = 25\text{ }^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0,4\text{ mA}$	4,5	5,5	6,5	V
$I_{CES}$	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25\text{ }^\circ\text{C}$	0,05		mA
		$T_j = 125\text{ }^\circ\text{C}$			mA
$I_{GES}$	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	120		nA
		$T_j = 125\text{ }^\circ\text{C}$			nA
$V_{CE0}$		$T_j = 25\text{ }^\circ\text{C}$	1,2		V
		$T_j = 125\text{ }^\circ\text{C}$	1		V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	53		$\text{m}\Omega$
		$T_j = 125\text{ }^\circ\text{C}$			$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 15\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}_{\text{chiplev.}}$	2	2,5	V
		$T_j = 125\text{ }^\circ\text{C}_{\text{chiplev.}}$			V
$C_{ies}$	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	0,8		nF
$C_{oes}$					nF
$C_{res}$			0,06		nF
$t_{d(on)}$	$R_{Gon} = 68\text{ }\Omega$	$V_{CC} = 300\text{ V}$ $I_C = 15\text{ A}$	35		ns
$t_r$			50		ns
$E_{on}$	$R_{Goff} = 68\text{ }\Omega$	$T_j = 125\text{ }^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	0,71		mJ
$t_{d(off)}$			250		ns
$t_f$			20		ns
$E_{off}$			0,4		mJ
$R_{th(j-s)}$	per IGBT			1,9	K/W



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IGBT Module





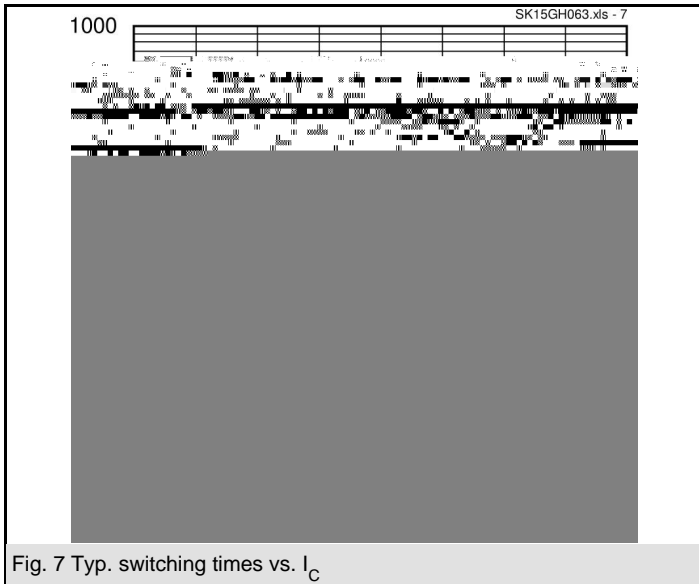


Fig. 7 Typ. switching times vs.  $I_C$

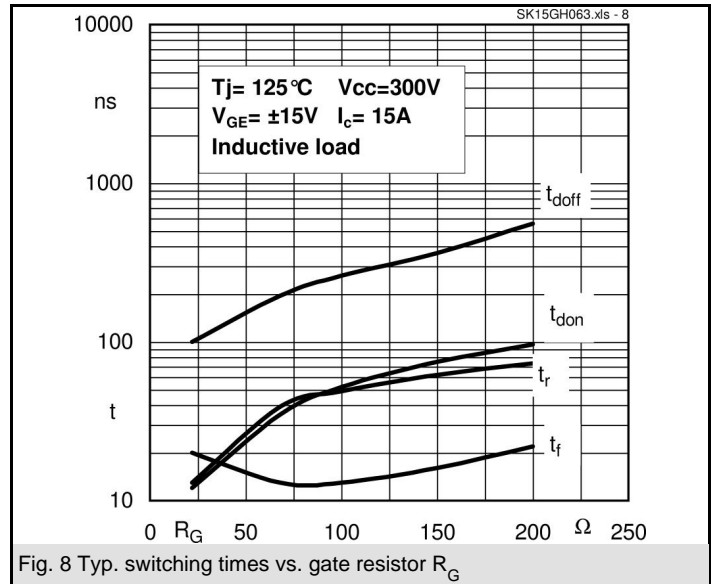


Fig. 8 Typ. switching times vs. gate resistor  $R_G$

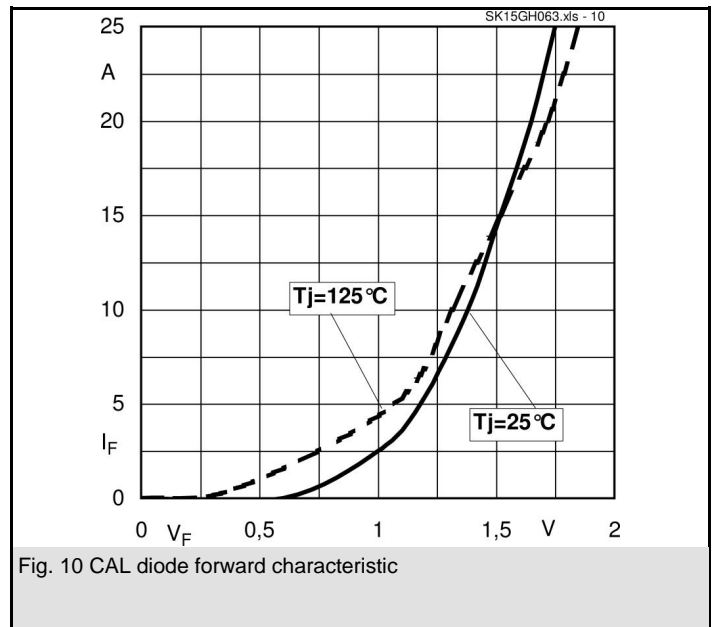


Fig. 10 CAL diode forward characteristic

