

**SEMITOP<sup>®</sup> 2**

## IGBT Module

**SK80GM063**

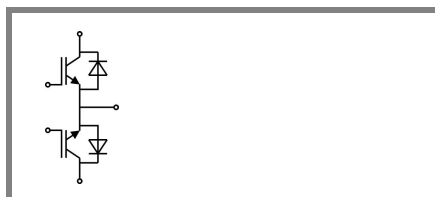
Preliminary Data

### Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- High short circuit capability
- Low tail current with low temperature dependence

### Typical Applications

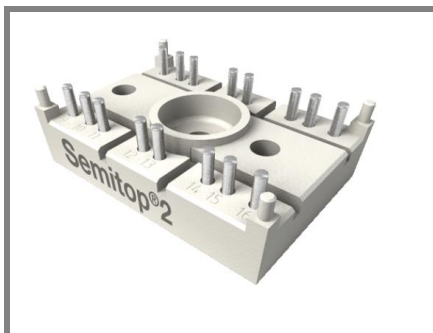
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS



**GM**

Absolute Maximum Ratings		T <sub>s</sub> = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
V <sub>CES</sub>	T <sub>j</sub> = 25 °C	600	V
I <sub>C</sub>	T <sub>j</sub> = 125 °C	T <sub>s</sub> = 25 °C	81 A
		T <sub>s</sub> = 80 °C	57 A
I <sub>CRM</sub>	I <sub>CRM</sub> = 2 × I <sub>Cnom</sub>	200	A
V <sub>GES</sub>		± 20	V
t <sub>psc</sub>	V <sub>CC</sub> = 300 V; V <sub>GE</sub> ≤ 20 V; T <sub>j</sub> = 125 °C V <sub>CES</sub> < 600 V	10	µs
<b>Inverse Diode</b>			
I <sub>F</sub>	T <sub>j</sub> = 150 °C	T <sub>s</sub> = 25 °C	105 A
		T <sub>s</sub> = 80 °C	75 A
I <sub>FRM</sub>	I <sub>FRM</sub> = 2 × I <sub>Fnom</sub>		A
I <sub>FSM</sub>	t <sub>p</sub> = 10 ms; half sine wave T <sub>j</sub> = 150 °C	880	A
<b>Module</b>			
I <sub>t(RMS)</sub>			A
T <sub>vj</sub>		-40 ... +150	°C
T <sub>stg</sub>		-40 ... +125	°C
V <sub>isol</sub>	AC, 1 min.	2500	V

Characteristics		T <sub>s</sub> = 25 °C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
V <sub>GE(th)</sub>	V <sub>GE</sub> = V <sub>CE</sub> , I <sub>C</sub> = 2 mA	4,5	5,5	6,5	V
I <sub>CES</sub>	V <sub>GE</sub> = 0 V, V <sub>CE</sub> = V <sub>CES</sub>	T <sub>j</sub> = 25 °C		0,3	mA
		T <sub>j</sub> = 125 °C			mA
I <sub>GES</sub>	V <sub>CE</sub> = 0 V, V <sub>GE</sub> = 30 V	T <sub>j</sub> = 25 °C		240	nA
		T <sub>j</sub> = 125 °C			nA
V <sub>CE0</sub>		T <sub>j</sub> = 25 °C	0,9		V
		T <sub>j</sub> = 125 °C	0,9		V
r <sub>CE</sub>	V <sub>GE</sub> = 15 V	T <sub>j</sub> = 25 °C	11		mΩ
		T <sub>j</sub> = 125 °C	15		mΩ
V <sub>CE(sat)</sub>	I <sub>Cnom</sub> = 100 A, V <sub>GE</sub> = 15 V	T <sub>j</sub> = 25 °C <sub>chiplev.</sub>	2	2,5	V
		T <sub>j</sub> = 125 °C <sub>chiplev.</sub>	2,4		V
C <sub>ies</sub>	V <sub>CE</sub> = 25, V <sub>GE</sub> = 0 V	f = 1 MHz	4,4		nF
C <sub>oes</sub>					nF
C <sub>res</sub>			0,4		nF
Q <sub>G</sub>	V <sub>GE</sub> = 0 ... 20 V		310		nC
t <sub>d(on)</sub>	R <sub>Gon</sub> = 11 Ω	V <sub>CC</sub> = 300V I <sub>Cnom</sub> = 60A	45	60	ns
t <sub>r</sub>			35	50	ns
E <sub>on</sub>			3		mJ
t <sub>d(off)</sub>	R <sub>Goff</sub> = 11 Ω	T <sub>j</sub> = 125 °C V <sub>GE</sub> = ±15V	250	300	ns
t <sub>f</sub>			25	40	ns
E <sub>off</sub>			2,3		mJ
R <sub>th(j-s)</sub>	per IGBT			0,6	K/W



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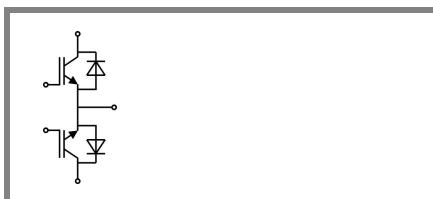
#### Preliminary Data

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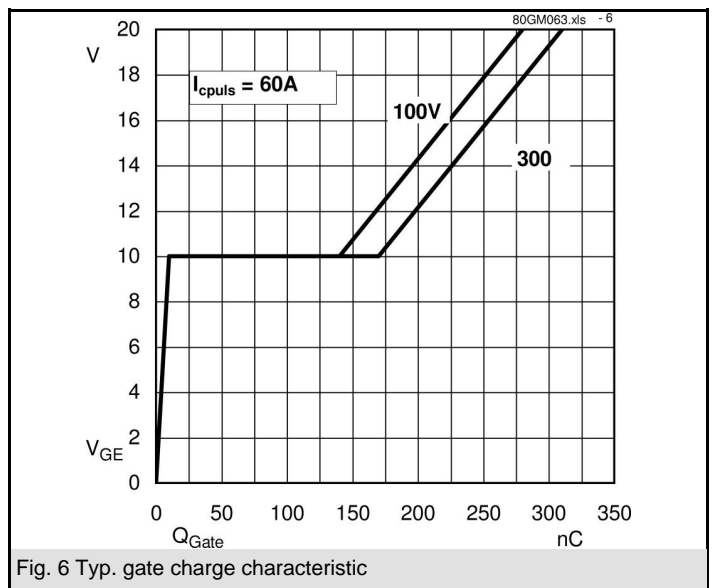
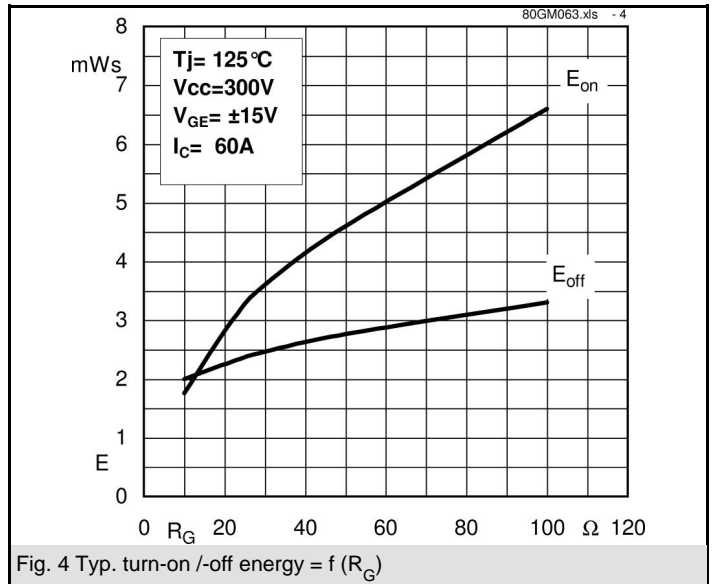
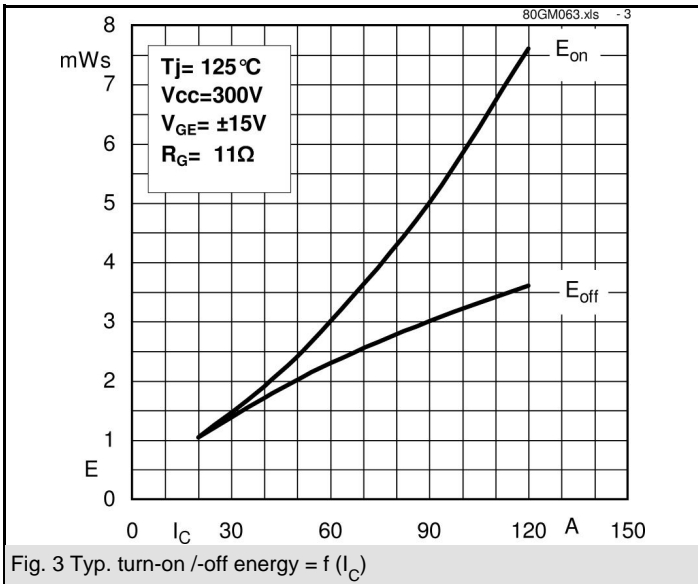
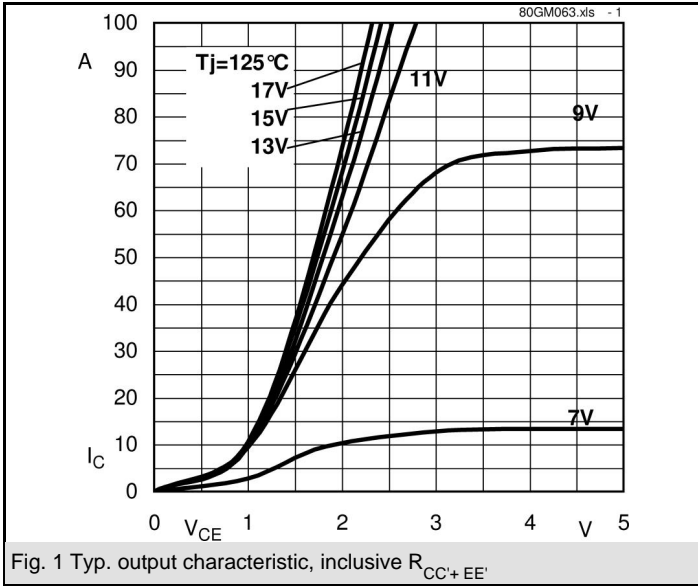
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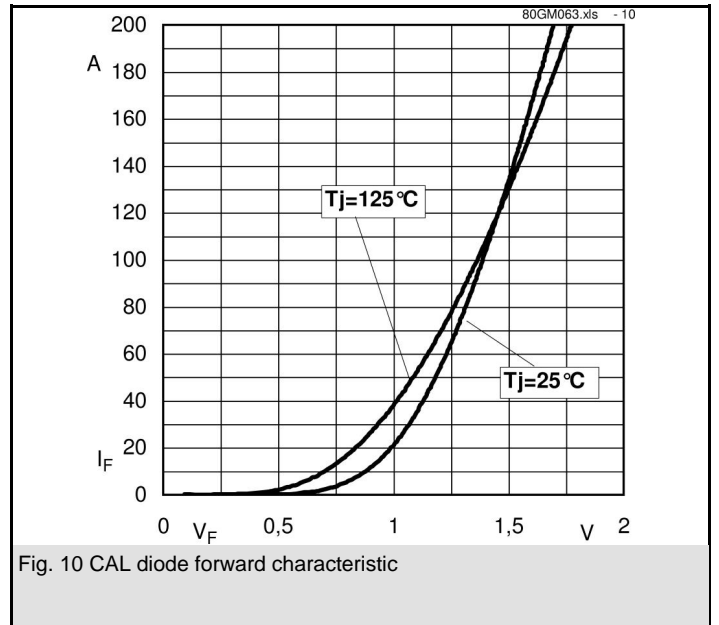
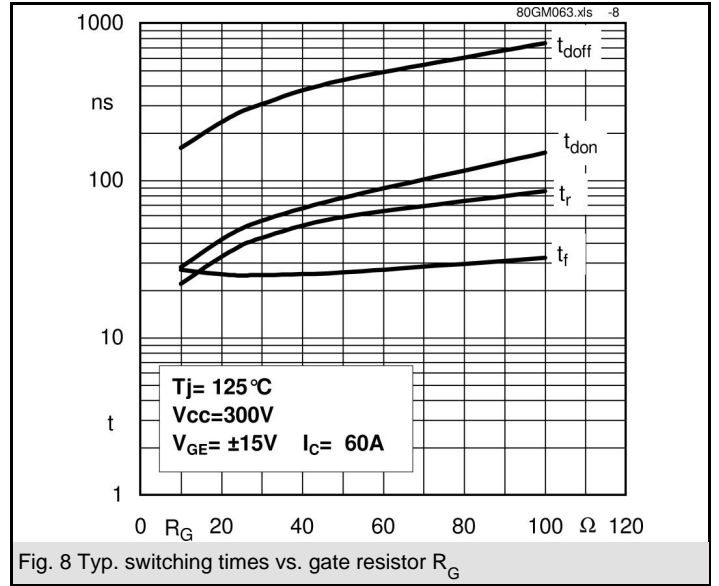
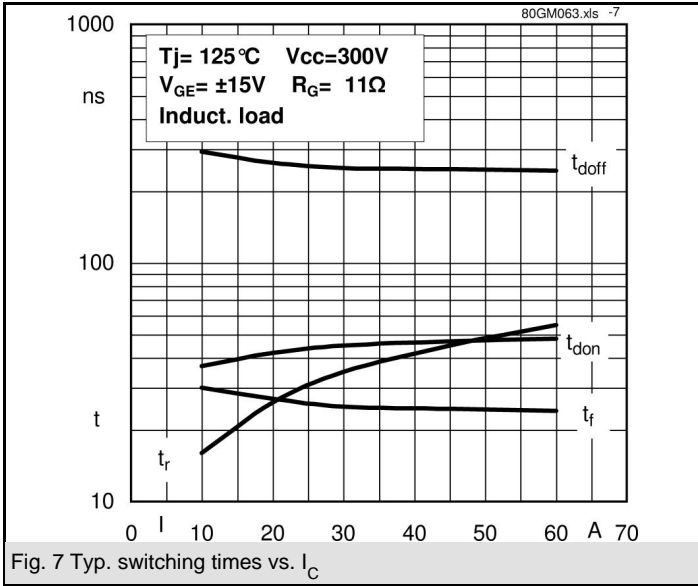
#### Characteristics

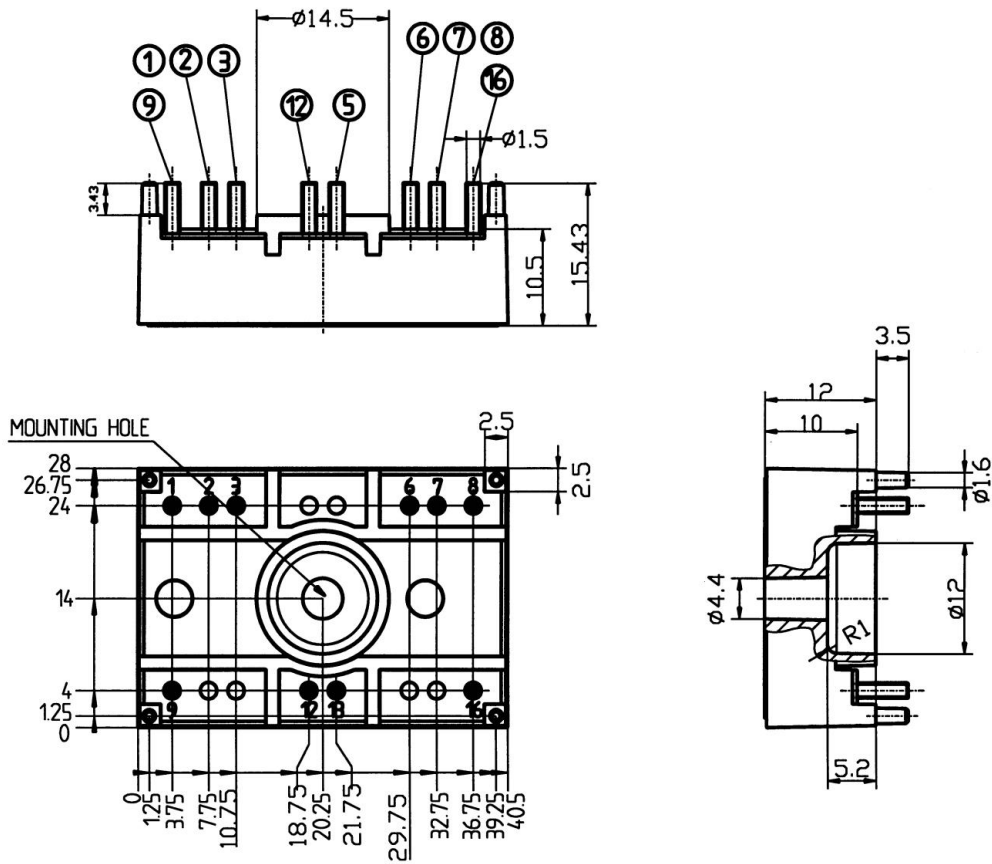
Symbol	Conditions	min.	typ.	max.	Units	
<b>Inverse Diode</b>						
$V_F = V_{EC}$	$I_{Fnom} = 60 \text{ A}; V_{GE} = 0 \text{ V}$		$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$	1,3	1,5	V
			$T_j = 125 \text{ }^\circ\text{C}_{\text{chiplev.}}$	1,2	1,45	V
$V_{F0}$			$T_j = 125 \text{ }^\circ\text{C}$	0,85	0,9	V
$r_F$			$T_j = 125 \text{ }^\circ\text{C}$	5,8	7,5	mΩ
$I_{RRM}$	$I_{Fnom} = 60 \text{ A}$		$T_j = 125 \text{ }^\circ\text{C}$	22	26	A
$Q_{rr}$	$di/dt = -500 \text{ A}/\mu\text{s}$			2,2	3,5	μC
$E_{rr}$	$V_{CC} = 300\text{V}$			0,2	0,3	mJ
$R_{th(j-s)D}$	per diode				1,2	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.

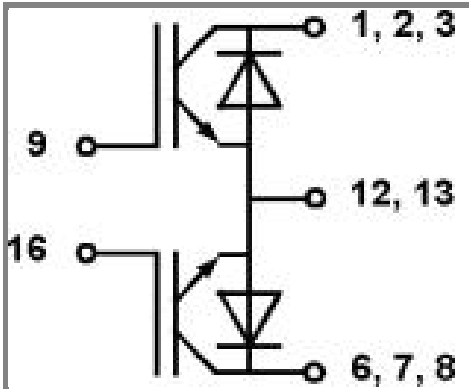
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Case T35 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 35

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