



**SEMITOP<sup>®</sup> 2**

## IGBT Module

**SK 15GD126**

Preliminary Data

### Features

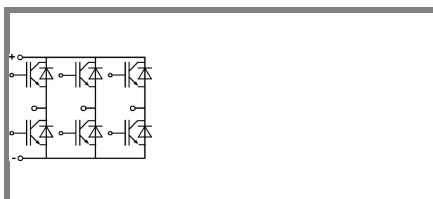
- Fast Trench IGBTs
- Soft freewheeling diodes in CAL High Density technology
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)

### Typical Applications

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

### Remarks

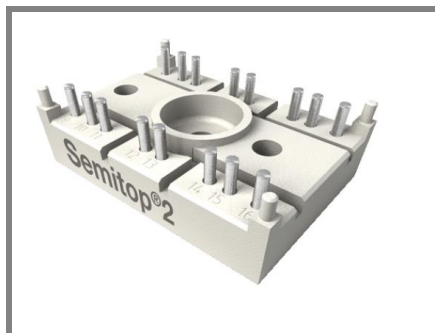
- $V_F$  = chip level value



**GD**

Absolute Maximum Ratings		$T_s = 25\text{ °C}$ , unless otherwise specified			
Symbol	Conditions	Values			Units
<b>IGBT</b>					
$V_{CES}$	$T_j = 25\text{ °C}$	1200			V
$I_C$	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	22		A
		$T_s = 80\text{ °C}$	15		A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	30			A
$V_{GES}$		$\pm 20$			V
$t_{psc}$	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ °C}$ $V_{CES} < 1200\text{ V}$	10			$\mu\text{s}$
<b>Inverse Diode</b>					
$I_F$	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	25		A
		$T_s = 80\text{ °C}$	17		A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$	30			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		$T_s = 25\text{ °C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0,6\text{ mA}$	5	5,8	6,5	V
$I_{CES}$	$V_{GE} = 1200\text{ V}, V_{CE} = V_{CES}$	$T_j = 25\text{ °C}$	0,1		mA
		$T_j = 125\text{ °C}$			mA
$I_{GES}$	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$			120	nA
$V_{CE0}$		$T_j = 25\text{ °C}$	1		V
		$T_j = 125\text{ °C}$	0,9		V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	45		$\text{m}\Omega$
		$T_j = 125\text{ °C}$	70		$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 15\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	1,7	2,1	V
		$T_j = 125\text{ °C}_{chiplev.}$	2		V
$C_{ies}$	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	1,2		nF
$C_{oes}$			0,058		nF
$C_{res}$			0,048		nF
$t_{d(on)}$	$R_{Gon} = 50\ \Omega$	$V_{CC} = 600\text{ V}$ $I_{Cnom} = 15\text{ A}$	35		ns
$t_r$			20		ns
$E_{on}$	$R_{Goff} = 50\ \Omega$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	2		mJ
$t_{d(off)}$			403		ns
$t_f$			192		ns
$E_{off}$			1,56		mJ
$R_{th(j-s)}$	per IGBT	1,6			K/W



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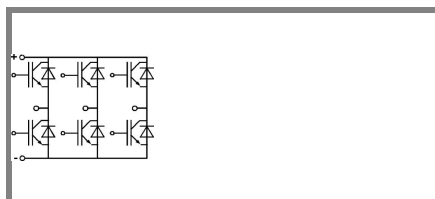
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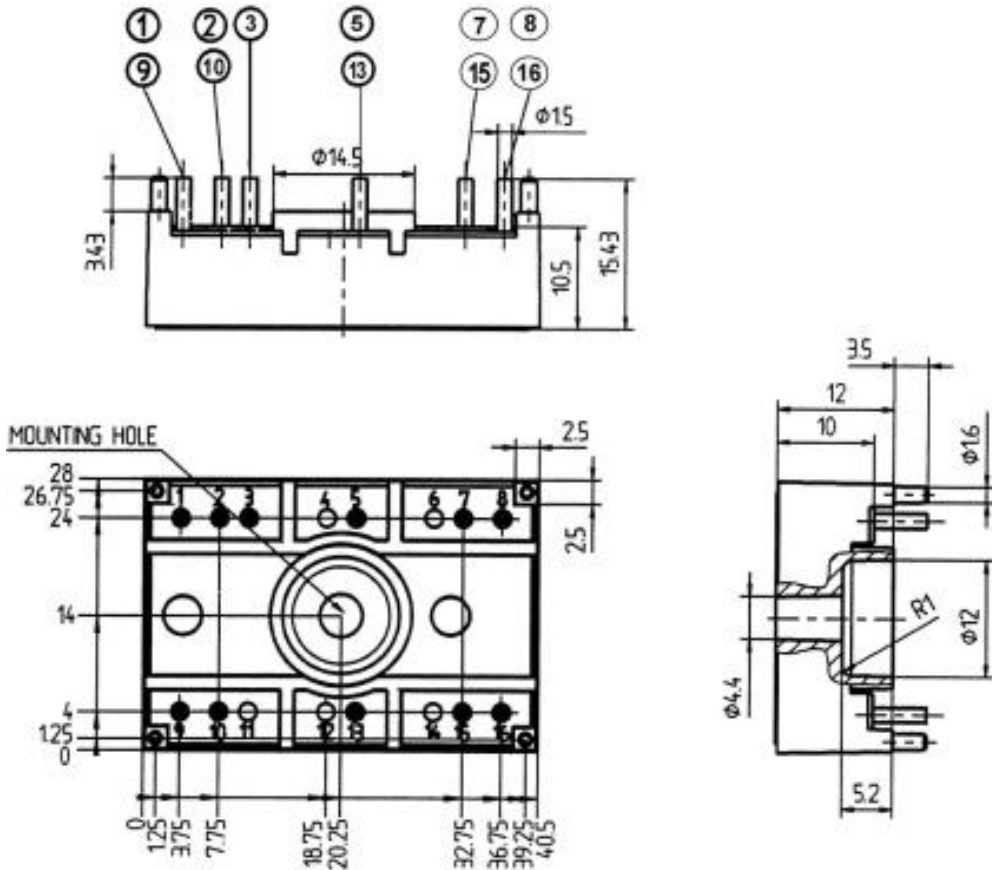
**GD**

### Characteristics

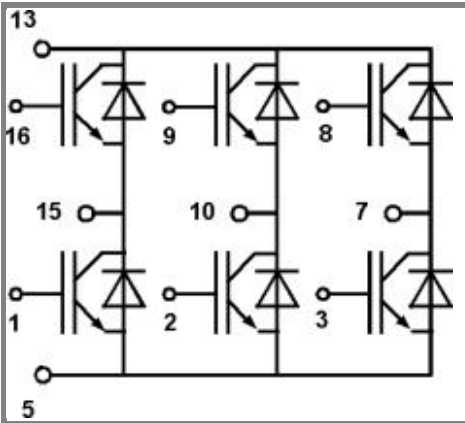
Symbol	Conditions	min.	typ.	max.	Units
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 11 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$	1,6	1,8	V
		$T_j = 125 \text{ }^\circ\text{C}_{\text{chiplev.}}$	1,6	1,8	V
$V_{F0}$		$T_j = 25 \text{ }^\circ\text{C}$	1	1,1	V
		$T_j = 125 \text{ }^\circ\text{C}$	0,8		V
$r_F$		$T_j = 25 \text{ }^\circ\text{C}$	40	47	m $\Omega$
		$T_j = 125 \text{ }^\circ\text{C}$	53		m $\Omega$
$I_{RRM}$	$I_{Fnom} = 15 \text{ A}$		21		A
$Q_{rr}$	$di/dt = 570 \text{ A}/\mu\text{s}$		3,5		$\mu\text{C}$
$E_{rr}$	$V_{CC} = 600\text{V}$		1,4		mJ
$R_{th(j-s)D}$	per diode			2,1	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 T47 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T47

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