

**SEMITOP® 2**

## IGBT Module

**SK 15GD126**

Preliminary Data

### Features

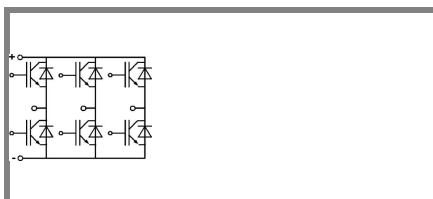
- Fast Trench IGBTs
- Soft freewheeling diodes in CAL High Density technology
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)

### 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
$V_{GES}$		± 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		µs
<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		°C
$T_{stg}$		-40 ... +125		°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
$I_{GES}$	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}$	$T_j = 125\text{ °C}$		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		mΩ
		$T_j = 125\text{ °C}$	70		mΩ
$V_{CE(sat)}$	$I_{Cnom} = 15\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	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
$t_{d(on)}$	$R_{Gon} = 50\text{ }\Omega$	$V_{CC} = 600\text{ V}$ $I_{Cnom} = 15\text{ A}$	35		ns
$t_r$			20		ns
$E_{on}$	$R_{Goff} = 50\text{ }\Omega$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	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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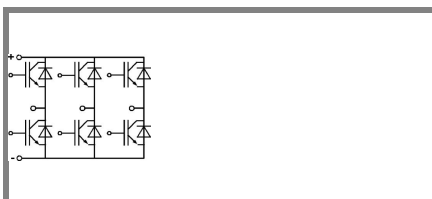
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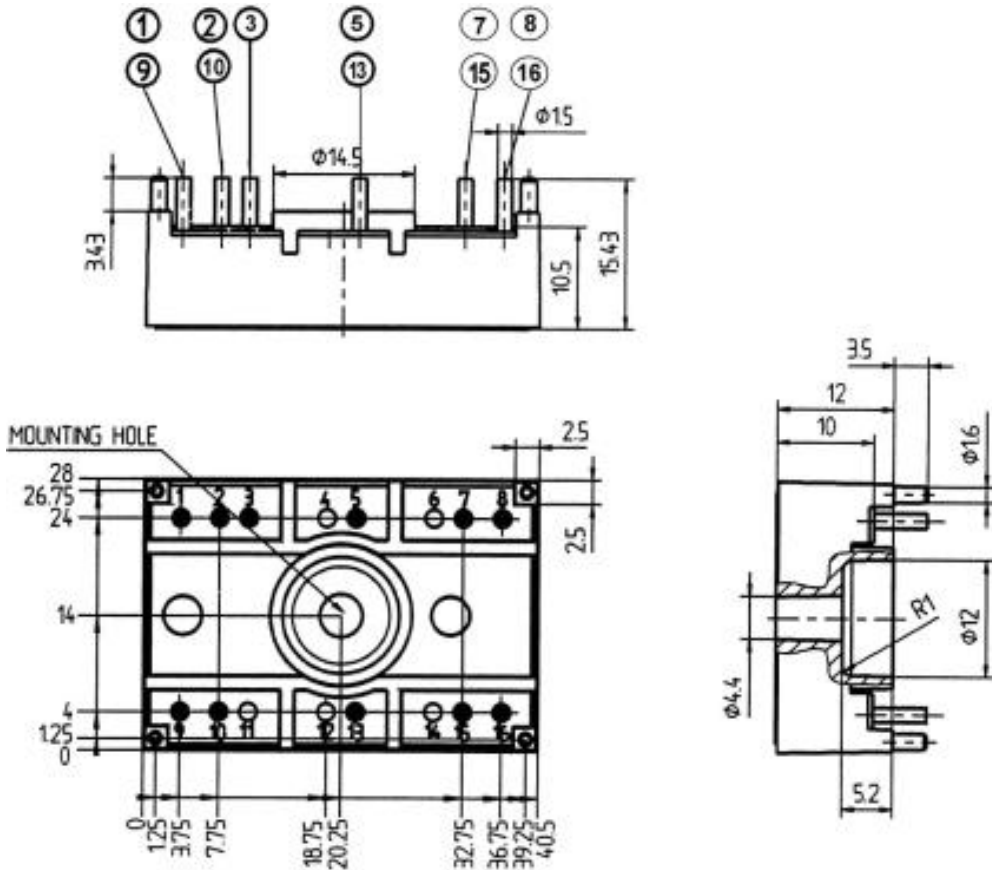
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### Characteristics

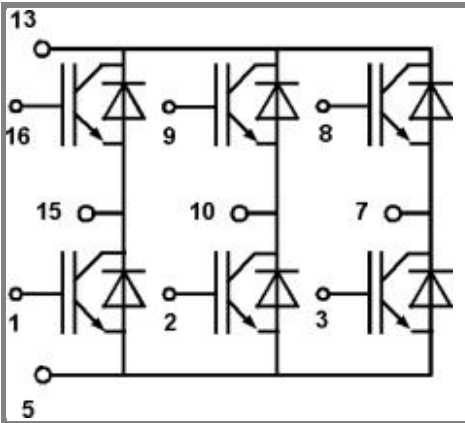
Symbol	Conditions	min.	typ.	max.	Units	
<b>Inverse Diode</b>						
$V_F = V_{EC}$	$I_{Fnom} = 11 \text{ A}; V_{GE} = 0 \text{ V}$		$T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$	1,6	1,8	V
			$T_j = 125 \text{ }^\circ\text{C}_{\text{chiplev.}}$	1,6	1,8	V
$V_{F0}$			$T_j = 25 \text{ }^\circ\text{C}$	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 $\Omega$
$I_{RRM}$	$I_{Fnom} = 15 \text{ A}$ $di/dt = 570 \text{ A}/\mu\text{s}$ $V_{CC} = 600\text{V}$		$T_j = 125 \text{ }^\circ\text{C}$	21		A
$Q_{rr}$				3,5		$\mu\text{C}$
$E_{rr}$				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.

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 T47 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T47

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