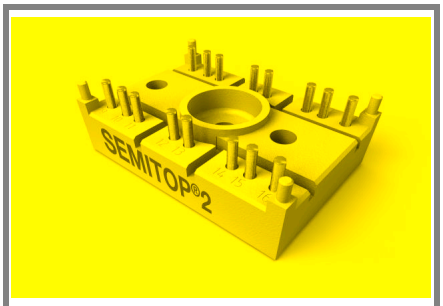


SEMITOP® 2

IGBT Module

SK 40GB123

Preliminary Data

Features

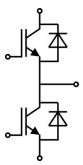
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- N-channel homogeneous silicon structure (NPT-Non punch-through IGBT)
- Low tail current with low temperature dependence

Typical Applications*

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

Remarks

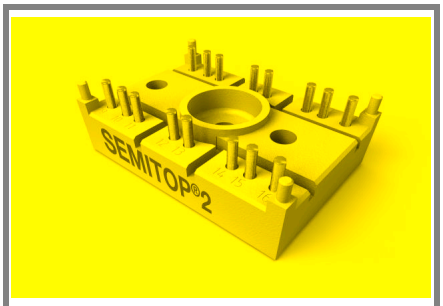
- V_F = chip level value



GB

Absolute Maximum Ratings	T_s = 25 °C, unless otherwise specified			
Symbol	**Conditions**		**Values**	**Units**
IGBT				
V_{CES}	T_j = 25 °C		1200	V
I_C	T_j = 125 °C	T_s = 25 °C	40	A
		T_s = 80 °C	27	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}		60	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 600 V; $V_{GE} \leq$ 20 V; V_{CES} < 1200 V	T_j = 125 °C	10	µs
Inverse Diode				
I_F	T_j = 150 °C	T_s = 25 °C	48	A
		T_s = 80 °C	34	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}		60	A
Module				
$I_{t(RMS)}$				A
T_{vj}			-40 ... +150	°C
T_{stg}			-40 ... +125	°C
V_{isol}	AC, 1 min.		2500	V

Characteristics	T_s = 25 °C, unless otherwise specified					
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
IGBT						
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 1,2 mA		4,5	5,5	6,5	V
I_{CES}	V_{GE} = 30 V, V_{CE} = V_{CES}	T_j = 25 °C			0,2	mA
		T_j = 125 °C				mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 30 V	T_j = 25 °C			560	nA
		T_j = 125 °C				nA
V_{CE0}		T_j = 25 °C		1,2		V
		T_j = 125 °C		1,2		V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		43		mΩ
		T_j = 125°C		63		mΩ
$V_{CE(sat)}$	I_{Cnom} = 30 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$	2	2,5	3	V
		T_j = 125°C$_{chiplev.}$		3,1	3,7	V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		2		nF
C_{oes}				0,3		nF
C_{res}				0,14		nF
$t_{d(on)}$	R_{Gon} = 20 Ω	V_{CC} = 600V		35		ns
t_r		I_C= 30A		45		ns
E_{on}		T_j = 125 °C		3,2		mJ
$t_{d(off)}$	R_{Goff} = 20 Ω	V_{GE}=±15V		250		ns
t_f				45		ns
E_{off}				3,6		mJ
$R_{th(j-s)}$	per IGBT				0,85	K/W



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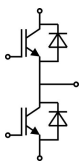

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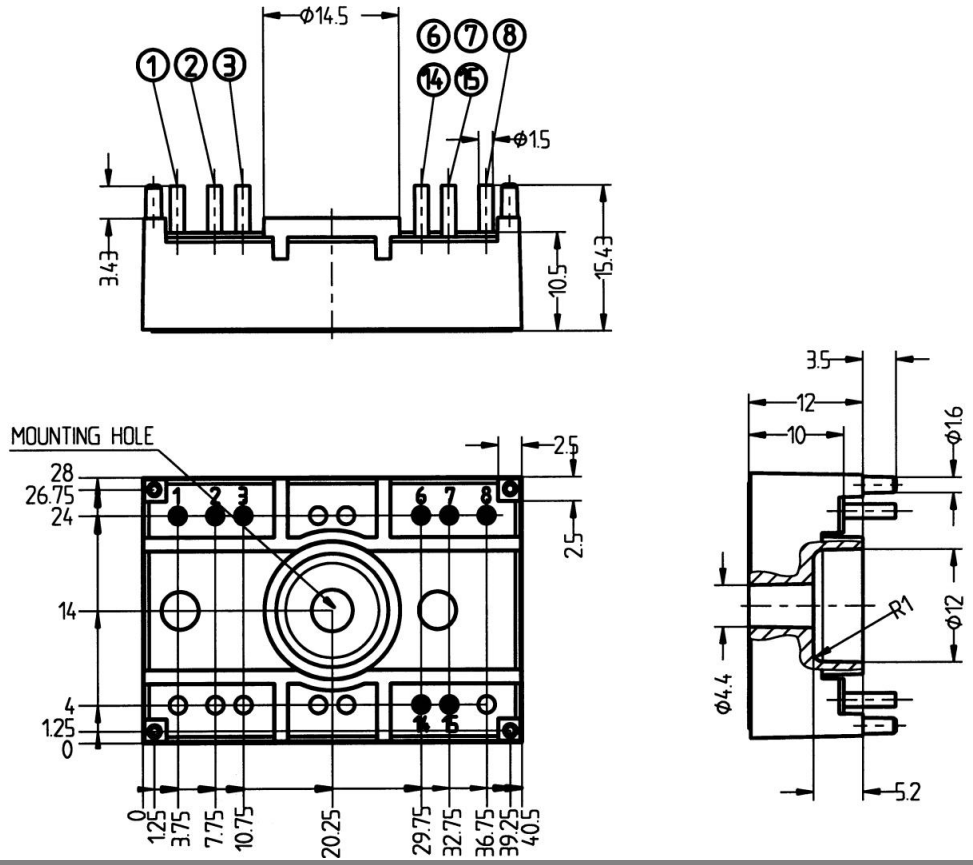
Characteristics

Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 30 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		2		V
		T_j = 125 °$C_{chiplev.}$		1,8		V
V_{F0}		T_j = 125 °C		1	1,2	V
r_F		T_j = 125 °C		53	73	mΩ
I_{RRM}	I_F = 30 A	T_j = 125 °C		32		A
Q_{rr}	di/dt = 400 A/µs			5,4		µC
E_{rr}	V_{CC}= 600V			1,2		mJ
$R_{th(j-s)D}$	per diode				1	K/W
M_s	to heat sink M1				2	Nm
w				21		g

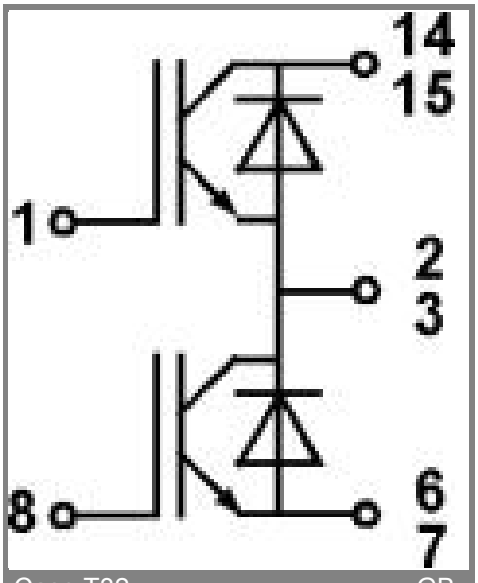
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.

UL recognized file no. E 63 532



Case T32 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T32 GB

