

### SEMITRANS™ M Trench IGBT Module

#### SKM 300 GB 126 D

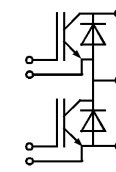
Target Data



SEMITRANS 3

Absolute Maximum Ratings		$T_{case} = 25\text{ °C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
$V_{CES}$		1200	V
$I_C$	$T_{case} = 25\text{ (80) °C}$	310 (220)	A
$I_{CRM}$	$T_{case} = 25\text{ (80) °C}$ , $t_p = 1\text{ ms}$	610 (440)	A
$V_{GES}$		$\pm 20$	V
$T_{vj}$ , ( $T_{stg}$ )	$T_{OPERATION} \leq T_{stg}$	- 40 ... +150 (125)	°C
$V_{isol}$	AC, 1 min.	4000	V
<b>Inverse Diode</b>			
$I_{FAV} = -I_C$	$T_{case} = 25\text{ (80) °C}$	250 (170)	A
$I_{FRM}$	$T_{case} = 25\text{ (80) °C}$ , $t_p < 1\text{ ms}$	620 (440)	A
$I_{FSM}$	$t_p = 10\text{ ms}$ ; sin.; $T_j = 150\text{ °C}$		A
<b>Freewheeling Diode</b>			
$I_{FAV} = -I_C$	$T_{case} = 25\text{ (80) °C}$		A
$I_{FRM}$	$T_{case} = 25\text{ (80) °C}$ , $t_p < 1\text{ ms}$		A
$I_{FSM}$	$t_p = 10\text{ ms}$ ; sin.; $T_j = 150\text{ °C}$		A

Characteristics		$T_{case} = 25\text{ °C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(TO)}$	$V_{GE} = V_{CE}$ , $I_C = 8\text{ mA}$	5	5,8	6,5	V
$I_{CES}$	$V_{GE} = 0$ , $V_{CE} = V_{CES}$ , $T_j = 25\text{ (125) °C}$			1,3	mA
$V_{CE(TO)}$	$T_j = 25\text{ (125) °C}$		1,0 (0,9)	1,2	V
$r_{CE}$	$V_{GE} = 15\text{ V}$ , $T_j = 25\text{ (125) °C}$		3,5 (5,5)	4,7	mΩ
$V_{CE(sat)}$	$I_C = 200\text{ A}$ , $V_{GE} = 15\text{ V}$ , chip level		1,7 (2,0)	2,15	V
$C_{ies}$			tbd		nF
$C_{oes}$	$V_{GE} = 0$ , $V_{CE} = 25\text{ V}$ , $f = 1\text{ MHz}$		tbd		nF
$C_{res}$			tbd		nF
$L_{CE}$				20	nH
$R_{CC+EE}$	resistance, terminal-chip 25 (125) °C		0,35(0,5)		mΩ
$t_{d(on)}$	under following conditions: $V_{CC} = 600\text{ V}$ , $I_C = 200\text{ A}$ ,		tbd		ns
$t_r$	$R_{Gon} = R_{Goff} = 6\text{ Ω}$ , $T_j = 125\text{ °C}$ ,		tbd		ns
$t_{d(off)}$	$V_{GE} \pm 15\text{ V}$		tbd		ns
$t_f$			tbd		ns
$E_{on} (E_{off})$			22 (28)		mJ
<b>Inverse Diode</b> under following conditions:					
$V_F = V_{EC}$	$I_F = 200\text{ A}$ ; $V_{GE} = 0\text{ V}$ ; $T_j = 25\text{ (125) °C}$		1,6 (1,6)	1,8	V
$V_{T(TO)}$	$T_j = 25\text{ (125) °C}$		1,0 (0,8)	1,1	V
$r_T$	$T_j = 25\text{ (125) °C}$		3,0 (3,9)	3,3	mΩ
$I_{RRM}$	$I_F = 200\text{ A}$ ; $T_j = 125\text{ °C}$		tbd		A
$Q_{rr}$	$di/dt = 3000\text{ A/μs}$		tbd		μC
$E_{rr}$	$V_{GE} = 0\text{ V}$		tbd		mJ
<b>FWD</b> under following conditions:					
$V_F = V_{EC}$	$I_F = A$ ; $V_{GE} = 0\text{ V}$ ; $T_j = 25\text{ (125) °C}$				V
$V_{TO}$	$T_j = 25\text{ (125) °C}$				V
$r_T$	$T_j = 25\text{ (125) °C}$				mΩ
$I_{RRM}$	$I_F = A$ ; $T_j = 125\text{ °C}$				A
$Q_{rr}$	$V_{GE} = 0\text{ V}$				μC
$E_{rr}$					mJ
<b>Thermal Characteristics</b>					
$R_{th(j-c)}$	per IGBT			0,12	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,25	K/W
$R_{th(j-c)FD}$	per FWD				K/W
$R_{th(c-s)}$	per module			0,038	K/W
<b>Mechanical Data</b>					
$M_s$	to heatsink (M6)	3		5	Nm
$M_t$	for terminals (M5)	2,5		5	Nm
$w$				325	g



GB

#### Features

- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$  with positive temperature coefficient
- High short circuit capability, self limiting to  $6 \times I_C$

#### Typical Applications

- AC inverter drives
- UPS
- Electronic welders

This is an electrostatic discharge sensitive device (ESDS).

Please observe the international standard IEC 60747-1, Chapter IX.

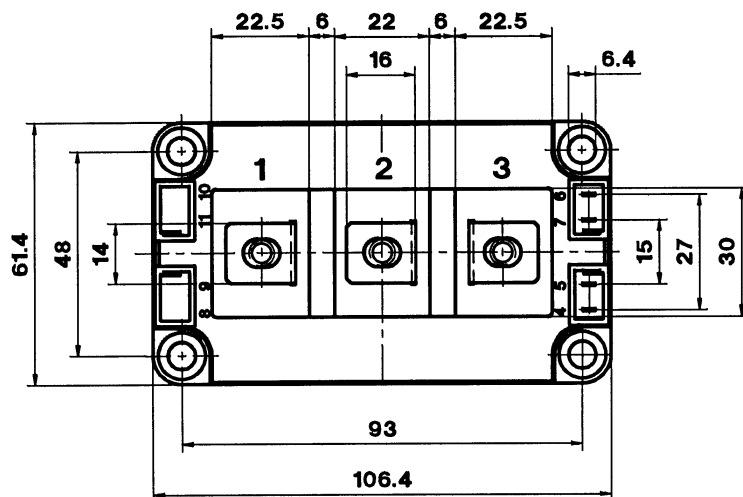
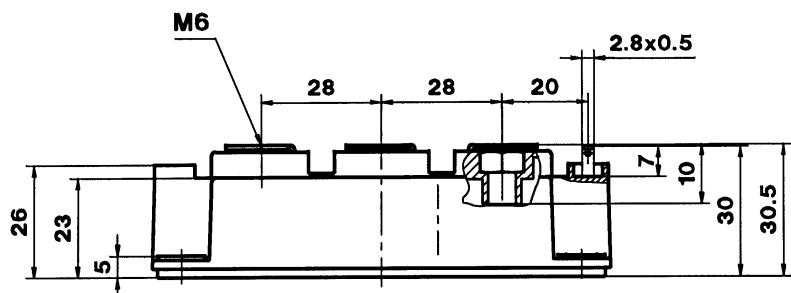
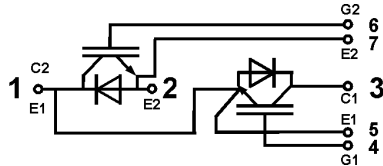
Packing Unit	12 pcs	SEMIBOX D
Mounting Kit	10 pcs	Ident-No. 33321100

**SEMITRANS 3**

Case D 56  
UL Recognized  
File no. E 63 532

CASED56

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Dimensions in mm

Case outline and circuit diagrams

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