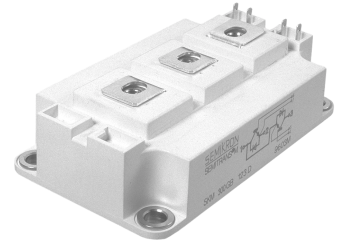


Absolute Maximum Ratings		$T_{case} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
$V_{CES}$		1700	V
$I_C$	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$	260 (190)	A
$I_{CRM}$	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$ , $t_p = 1\text{ ms}$	520 (380)	A
$V_{GES}$		$\pm 20$	V
$T_{vj}$ , ( $T_{stg}$ )	$T_{OPERATION} \leq T_{stg}$	$-40 \dots +150\text{ (125)}$	$^{\circ}\text{C}$
$V_{isol}$	AC, 1 min.	4000	V
<b>Inverse Diode</b>			
$I_{FAV} = -I_C$	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$	200 (140)	A
$I_{FRM}$	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$ , $t_p < 1\text{ ms}$	520 (380)	A
$I_{FSM}$	$t_p = 10\text{ ms}$ ; sin.; $T_j = 150\text{ }^{\circ}\text{C}$	1450	A
<b>Freewheeling Diode</b>			
$I_{FAV} = -I_C$	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$		A
$I_{FRM}$	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$ , $t_p < 1\text{ ms}$		A
$I_{FSM}$	$t_p = 10\text{ ms}$ ; sin.; $T_j = 150\text{ }^{\circ}\text{C}$		A

## SEMITRANS™ M Trench IGBT Module

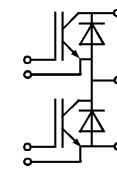
### SKM 200 GB 176 D

Target Data



SEMITRANS 3

Characteristics		$T_{case} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(To)}$	$V_{GE} = V_{CE}$ , $I_C = 6\text{ mA}$	5,2	5,8	6,4	V
$I_{CES}$	$V_{GE} = 0$ , $V_{CE} = V_{CES}$ , $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$			0,9	mA
$V_{CE(To)}$	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		1,0 (0,9)	1,2 (1,1)	V
$r_{CE}$	$V_{GE} = 15\text{ V}$ , $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		6,7 (10)	8,3	m $\Omega$
$V_{CE(sat)}$	$I_C = 150\text{ A}$ , $V_{GE} = 15\text{ V}$ , chip level		2,0 (2,4)	2,45	V
$C_{ies}$			11,4		nF
$C_{oes}$	$V_{GE} = 0$ , $V_{CE} = 25\text{ V}$ , $f = 1\text{ MHz}$		0,56		nF
$C_{res}$			0,44		nF
$L_{CE}$				20	nH
$R_{CC+EE}$	resistance, terminal-chip $25\text{ (125)}\text{ }^{\circ}\text{C}$		0,35 (0,5)		m $\Omega$
$t_{d(on)}$	under following conditions: $V_{CC} = 1200\text{ V}$ , $I_C = 150\text{ A}$				ns
$t_r$	$R_{Gon} = R_{Goff} = 12\text{ }^{\Omega}$ , $T_j = 125\text{ }^{\circ}\text{C}$ ,				ns
$t_{d(off)}$	$V_{GE} \pm 15\text{ V}$				ns
$t_f$					ns
$E_{on} (E_{off})$			103 (52)		mJ
<b>Inverse Diode</b> under following conditions:					
$V_F = V_{EC}$	$I_F = 150\text{ A}$ ; $V_{GE} = 0\text{ V}$ ; $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		1,6 (1,6)	1,9	V
$V_{T(To)}$	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		1,1 (0,9)	1,3 (1,1)	V
$r_T$	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		3,3 (4,7)	4	m $\Omega$
$I_{RRM}$	$I_F = 150\text{ A}$ ; $T_j = 125\text{ }^{\circ}\text{C}$		tbd		A
$Q_{rr}$	$di/dt = 1500\text{ A}/\mu\text{s}$		tbd		$\mu\text{C}$
$E_{rr}$	$V_{GE} = 0\text{ V}$		tbd		mJ
<b>FWD</b> under following conditions:					
$V_F = V_{EC}$	$I_F = \text{A}$ ; $V_{GE} = 0\text{ V}$ ; $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$				V
$V_{TO}$	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$				V
$r_T$	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$				m $\Omega$
$I_{RRM}$	$I_F = \text{A}$ ; $T_j = 125\text{ }^{\circ}\text{C}$				A
$Q_{rr}$	$V_{GE} = 0\text{ V}$				$\mu\text{C}$
$E_{rr}$					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 = Trench gate technology
- $V_{CE(sat)}$  with positive temperature coefficient
- High short circuit capability, self limiting to  $6 \times I_C$

### Typical Applications

- AC inverter drives mains 575 - 750V AC
- Public transport (auxiliary syst.)

This is an electrostatic discharge sensitive device (ESDS).

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

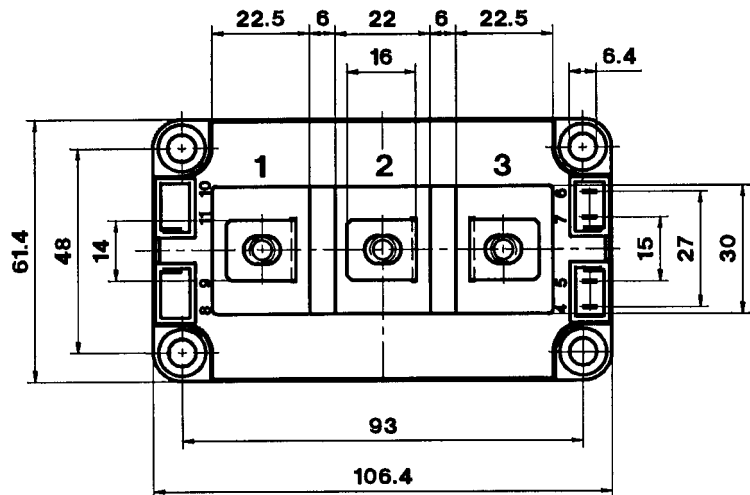
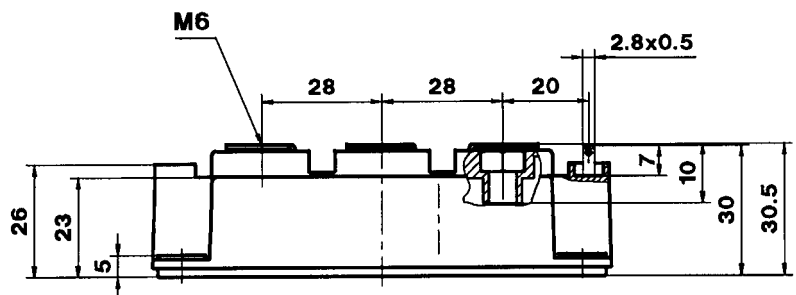
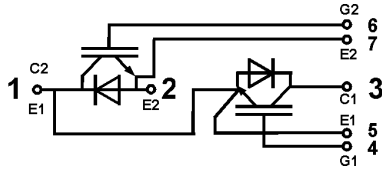
Packing Unit	12 pcs	SEMIBOX D
Mounting Kit	10 pcs	Ident-No. 33321100

**SEMITRANS 3**

Case D 56  
 UL Recognized  
 File no. E 63 532

CASED56

**SKM 200 GB 176 D**



Dimensions in mm

Case outline and circuit diagrams

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.