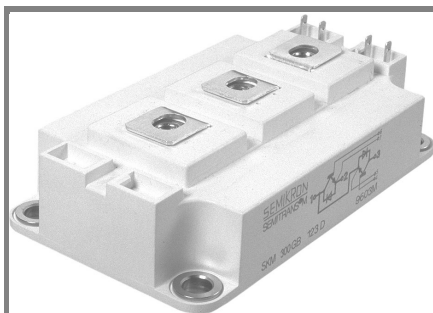


SKM 200GB173D



SEMITRANS™ 3

IGBT Modules

SKM 200GB173D

SKM 200GB173D1

SKM 200GAL173D

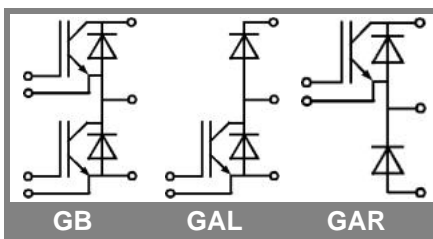
SKM 200GAR173D

Features

- MOS input (voltage controlled)
- N channel , Homogeneous Si
- Low inductance case
- Very low tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{Cnom}$
- Latch-up free
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology
- Large clearance (13 mm) and creepage distance (20 mm)

Typical Applications

- AC inverter drives on mains 575 - 750 V_{AC}
- DC bus voltage 750 - 1200 V_{DC}
- Public transport (auxiliary syst.)
- Switching (not for linear use)



Absolute Maximum Ratings		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1700	V
I_C	$T_c = 25\text{ (80) }^\circ\text{C}$	220 (150)	A
I_{CRM}	$t_p = 1\text{ ms}$	300	A
V_{GES}		± 20	V
T_{vj} (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^\circ\text{C}$
V_{isol}	AC, 1 min.	4000	V

Inverse diode			
Symbol	Conditions	Values	Units
I_F	$T_c = 25\text{ (80) }^\circ\text{C}$	150 (100)	A
I_{FRM}	$t_p = 1\text{ ms}$	300	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ }^\circ\text{C}$	1450	A

Freewheeling diode			
Symbol	Conditions	Values	Units
I_F	$T_c = 25\text{ (80) }^\circ\text{C}$	230 (150)	A
I_{FRM}	$t_p = 1\text{ ms}$	400	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ }^\circ\text{C}$	2200	A

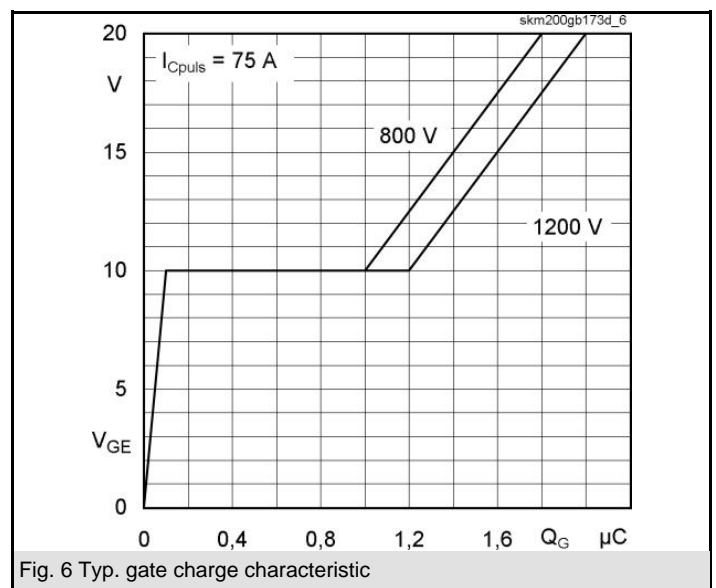
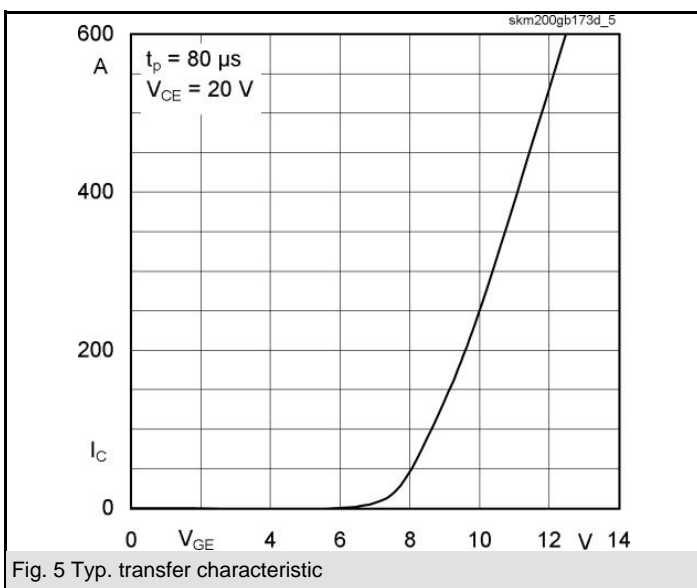
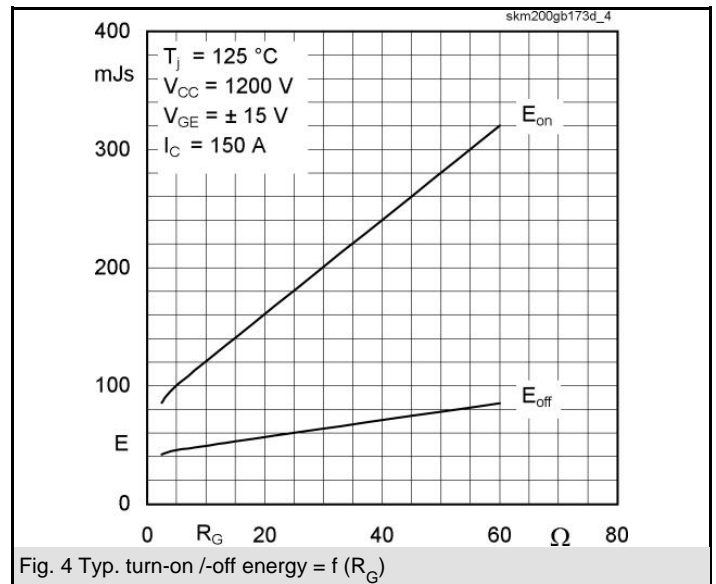
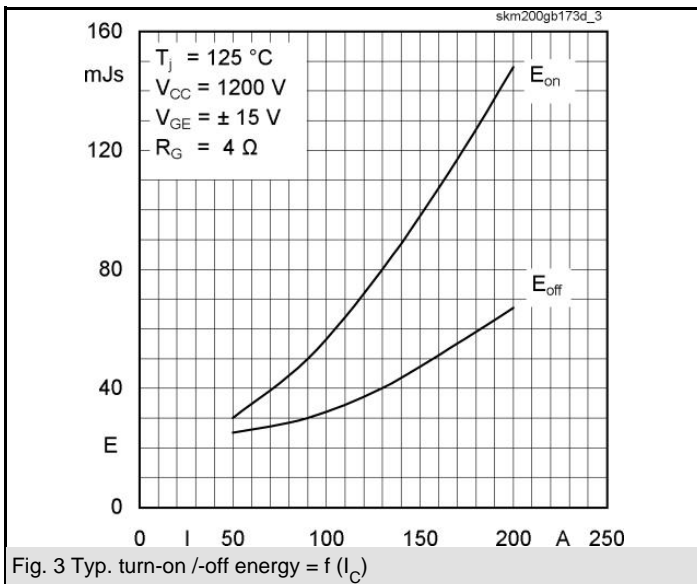
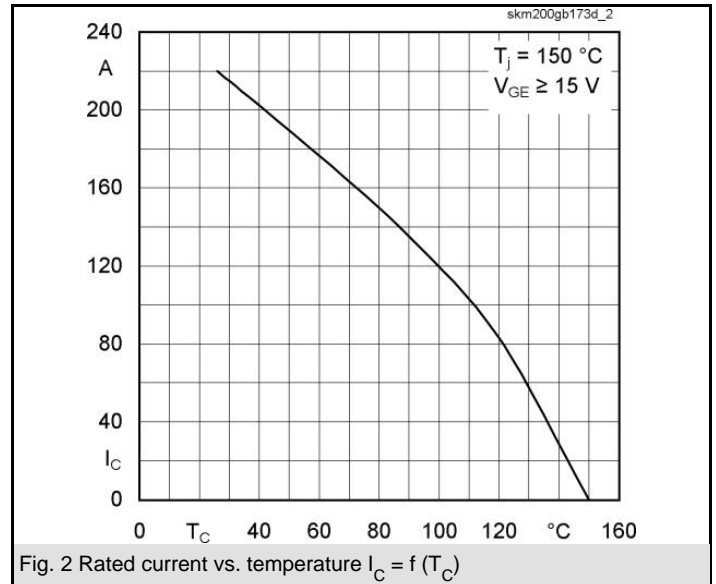
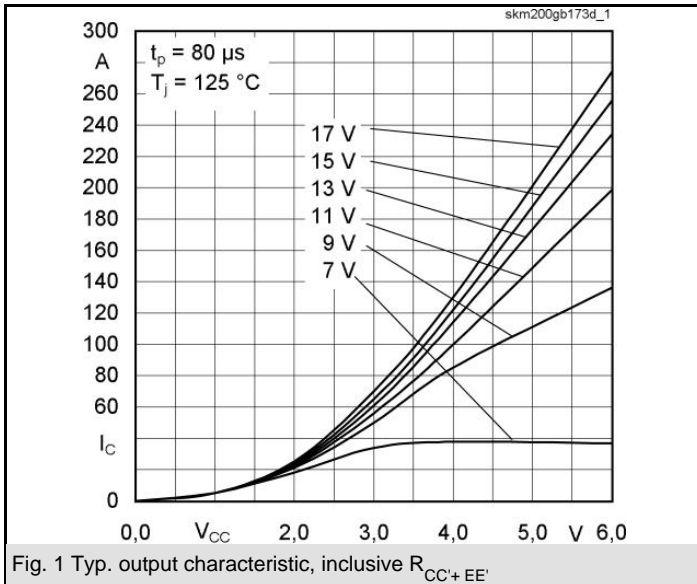
Characteristics		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 10\text{ mA}$	4,8	5,5	6,2	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25\text{ (125) }^\circ\text{C}$		0,1	0,3	mA
$V_{CE(TO)}$	$T_j = 25\text{ (125) }^\circ\text{C}$		1,65 (1,9)	1,9 (2,15)	V
r_{CE}	$V_{GE} = 15\text{ V}$, $T_j = 25\text{ (125) }^\circ\text{C}$		11,7 (17,3)	13,3 (19)	m Ω
$V_{CE(sat)}$	$I_{Cnom} = 150\text{ A}$, $V_{GE} = 15\text{ V}$, chip level		3,4 (4,5)	3,9 (5)	V
C_{res}	under following conditions		20		nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25\text{ V}$, $f = 1\text{ MHz}$		2		nF
C_{res}			0,55		nF
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c = 25\text{ (125) }^\circ\text{C}$		0,35 (0,5)		m Ω
$t_{d(on)}$	$V_{CC} = 1200\text{ V}$, $I_{Cnom} = 150\text{ A}$		580		ns
t_r	$R_{Gon} = R_{Goff} = 4\text{ }^\circ\Omega$, $T_j = 125\text{ }^\circ\text{C}$		100		ns
$t_{d(off)}$	$V_{GE} = \pm 15\text{ V}$		750		ns
t_f			40		ns
$E_{on} (E_{off})$			95 (45)		mJ

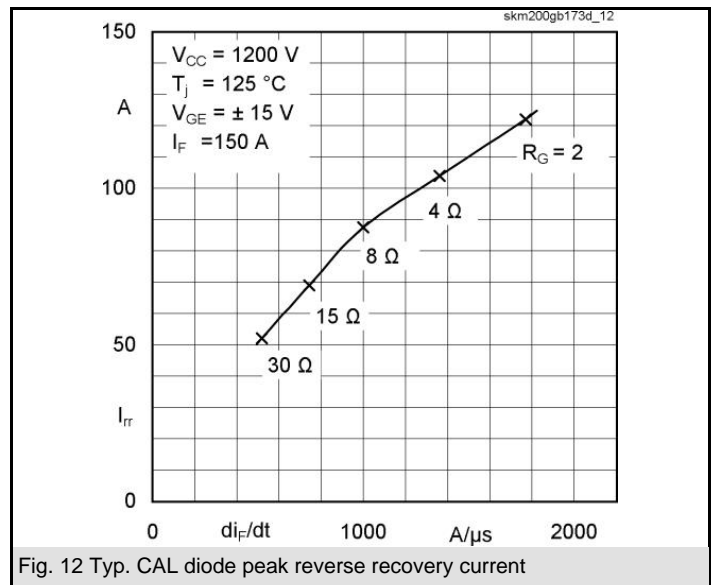
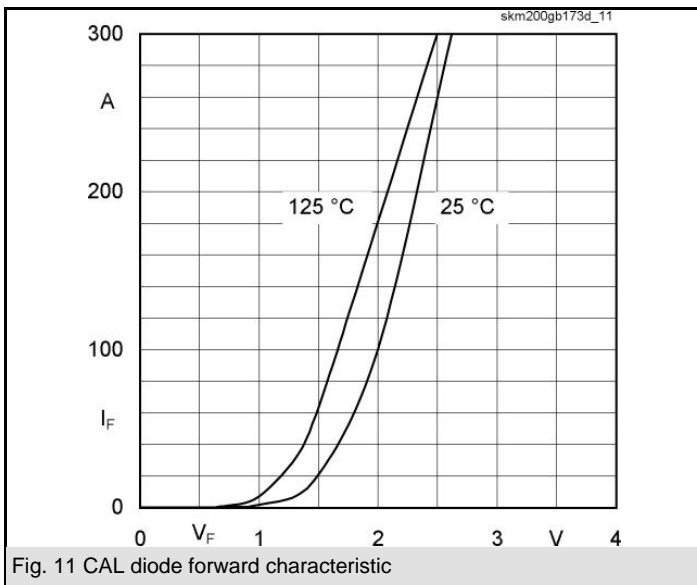
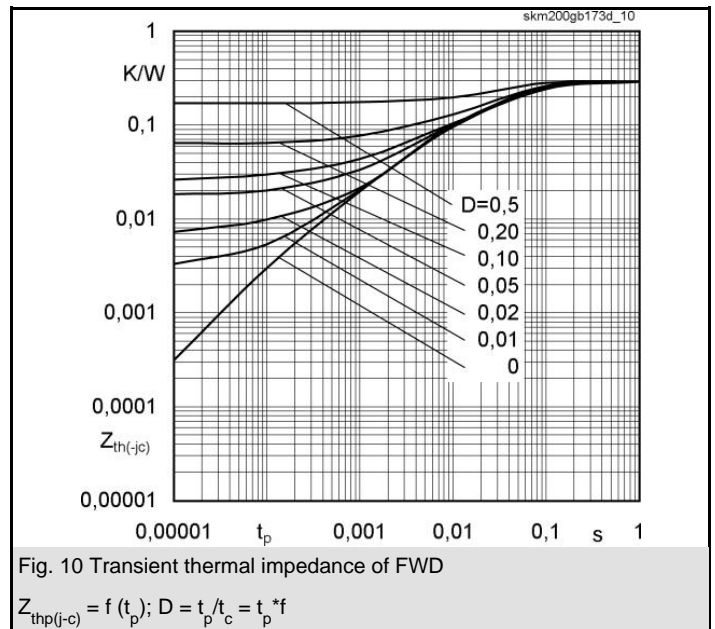
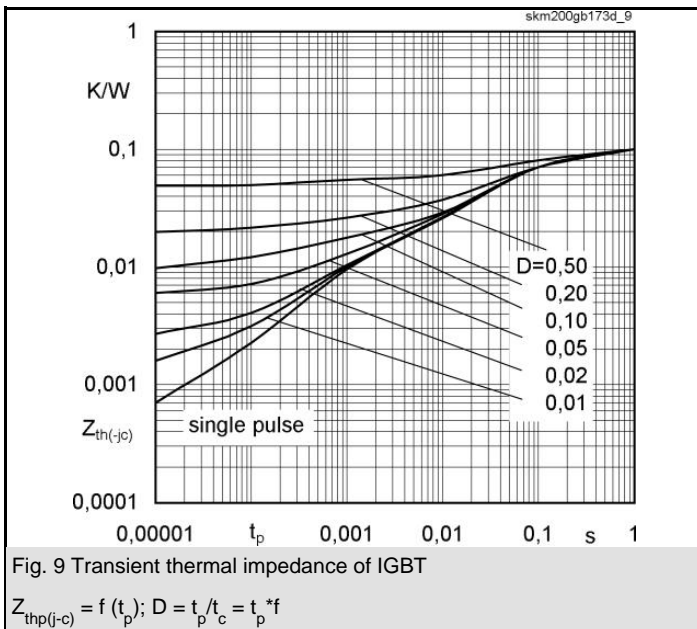
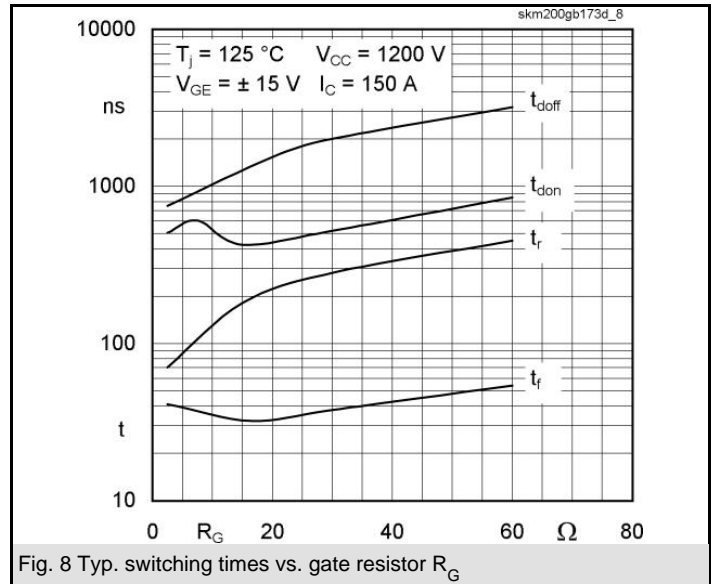
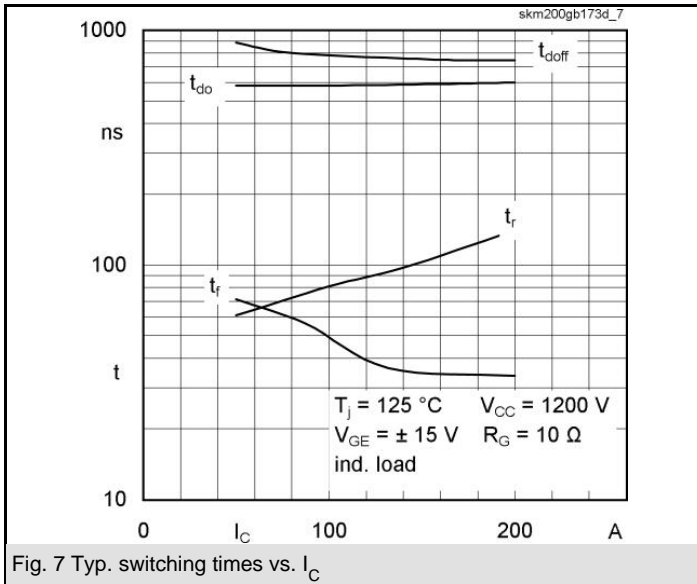
Inverse diode					
Symbol	Conditions	min.	typ.	max.	Units
$V_F = V_{EC}$	$I_{Fnom} = 150\text{ A}$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125) }^\circ\text{C}$		2,2 (1,9)	2,7	V
$V_{(TO)}$	$T_j = 125\text{ () }^\circ\text{C}$		1,3	1,5	V
r_T	$T_j = 125\text{ () }^\circ\text{C}$		4,5	6,2	m Ω
I_{RRM}	$I_{Fnom} = 150\text{ A}$; $T_j = 25\text{ (125) }^\circ\text{C}$		60 (85)		A
Q_{rr}	$di/dt = 1000\text{ A}/\mu\text{s}$		15 (38)		μC
E_{rr}	$V_{GE} = 0\text{ V}$				mJ

FWD					
Symbol	Conditions	min.	typ.	max.	Units
$V_F = V_{EC}$	$I_F = 150\text{ A}$; $V_{GE} = 0\text{ V}$, $T_j = 25\text{ (125) }^\circ\text{C}$		2 (1,8)	2,4	V
$V_{(TO)}$	$T_j = 125\text{ () }^\circ\text{C}$		1,3	1,5	V
r_T	$T_j = 125\text{ () }^\circ\text{C}$		3,5	4,5	m Ω
I_{RRM}	$I_F = 150\text{ A}$; $T_j = 25\text{ (125) }^\circ\text{C}$		75 (110)		A
Q_{rr}	$di/dt = \text{A}/\mu\text{s}$		20 (50)		μC
E_{rr}	$V_{GE} = \text{V}$				mJ

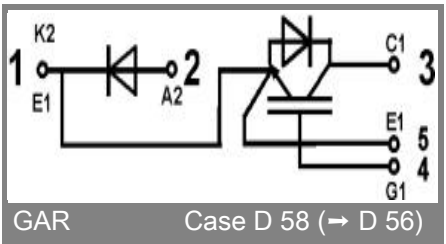
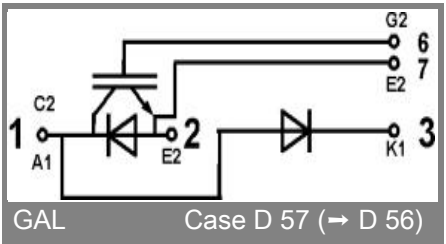
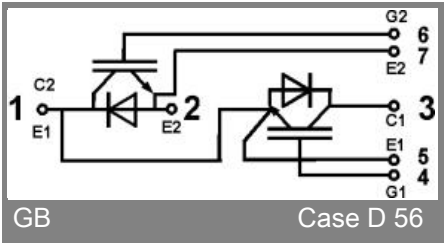
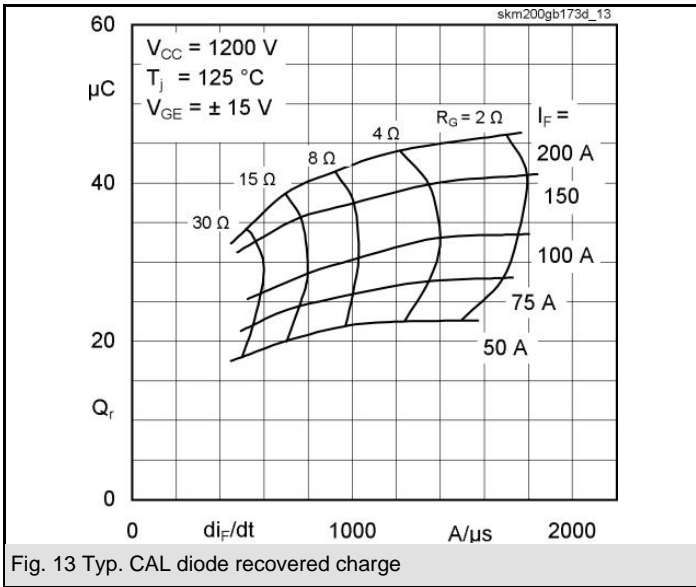
Thermal characteristics			
Symbol	Conditions	Value	Units
$R_{th(j-c)}$	per IGBT	0,1	K/W
$R_{th(j-c)D}$	per Inverse Diode	0,32	K/W
$R_{th(j-c)FD}$	per FWD	0,21	K/W
$R_{th(c-s)}$	per module	0,038	K/W

Mechanical data			
Symbol	Conditions	Value	Units
M_s	to heatsink M6	3	Nm
M_t	to terminals M6		Nm
w			325 g





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

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