

# SKM 150GB173D



**SEMITRANS™ 3**

## IGBT Modules

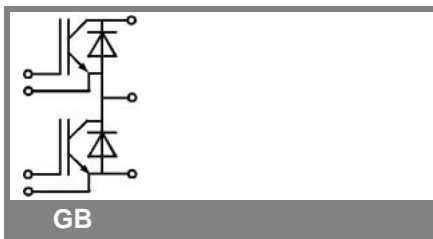
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#### Features

- 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
- Large clearance (13 mm) and creepage distances (20 mm)

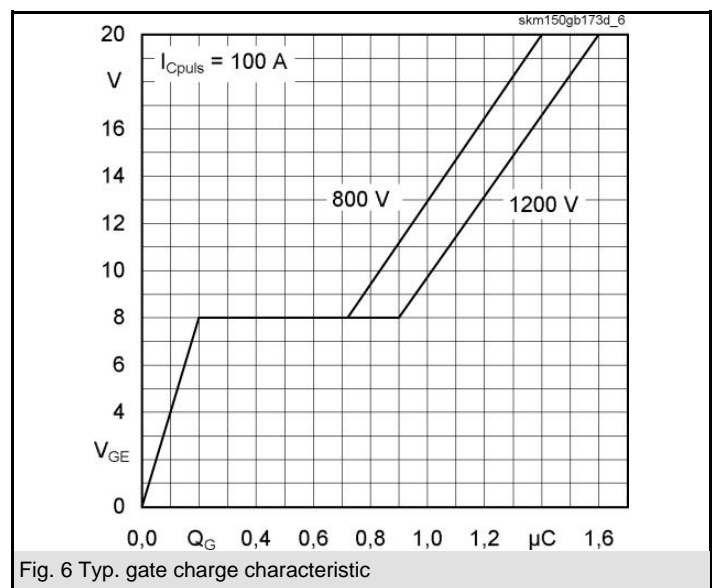
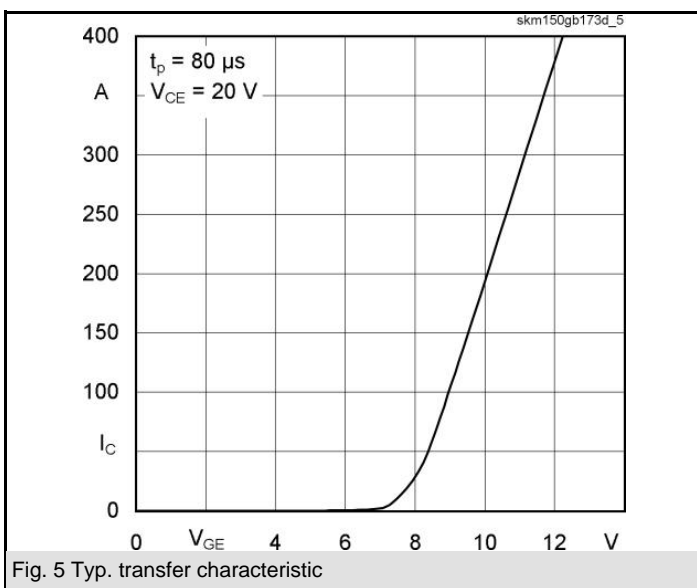
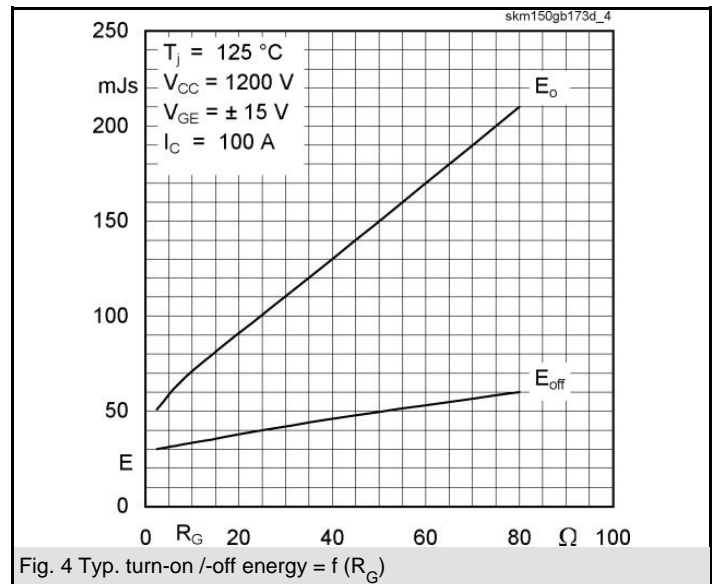
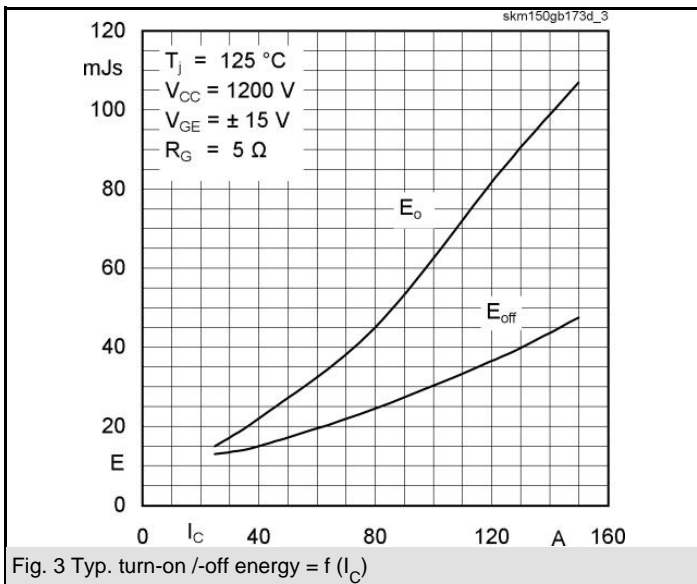
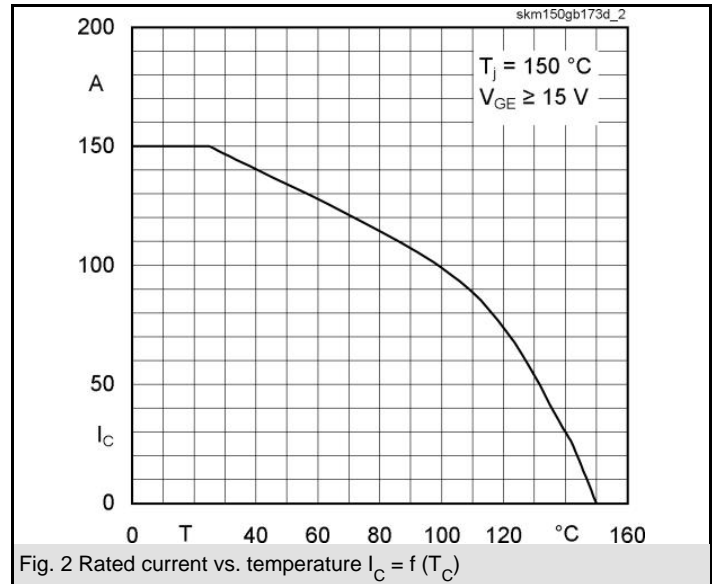
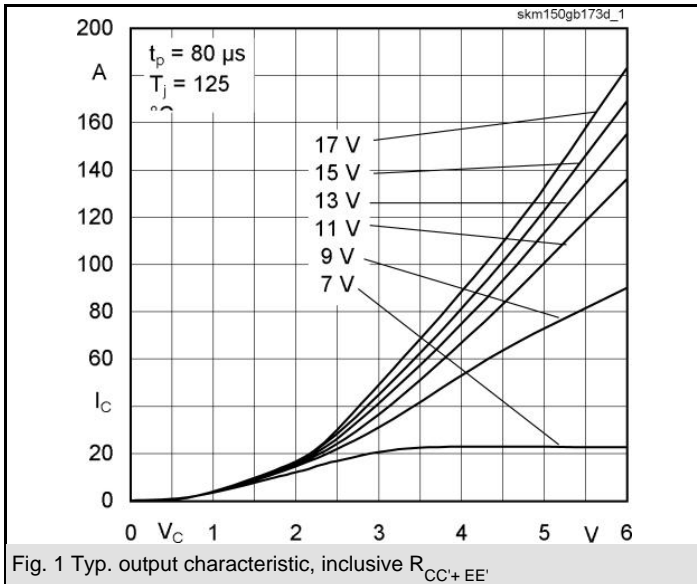
#### Typical Applications

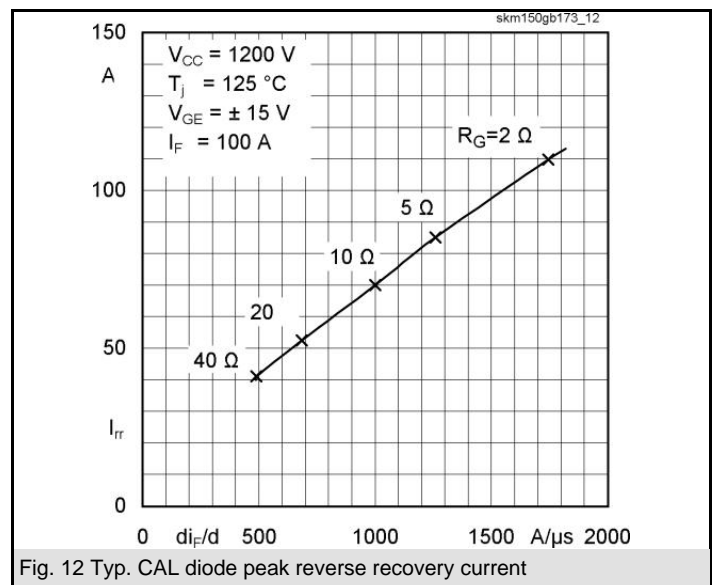
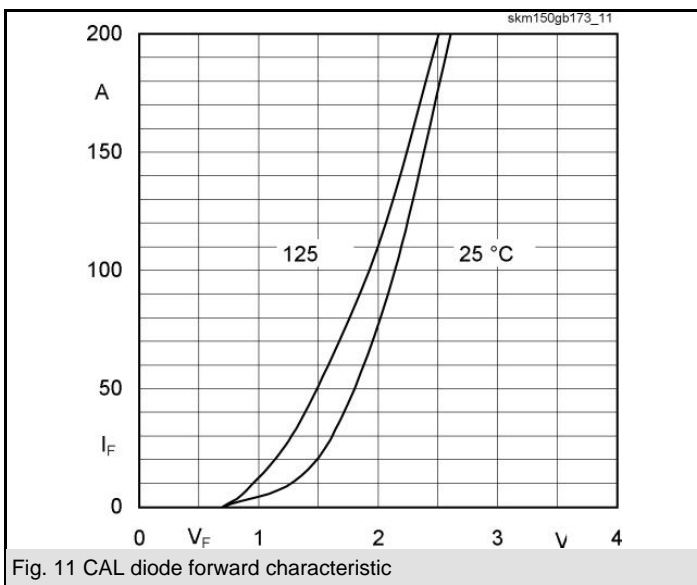
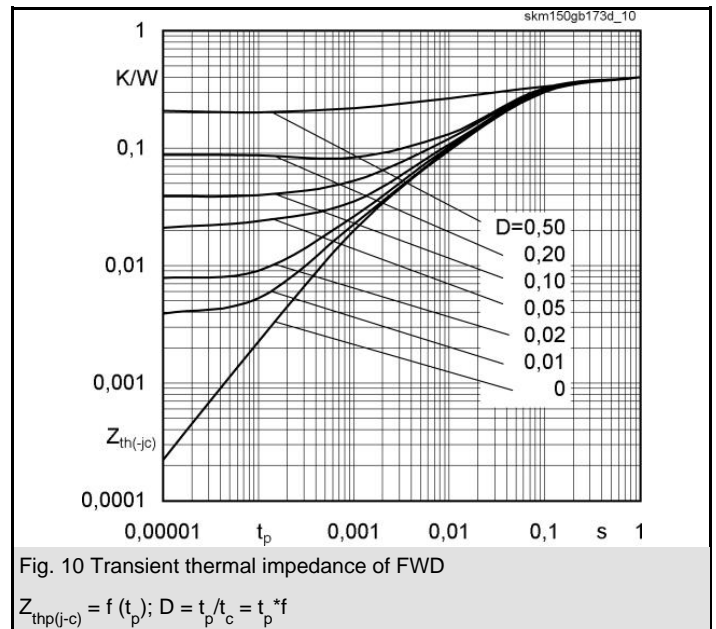
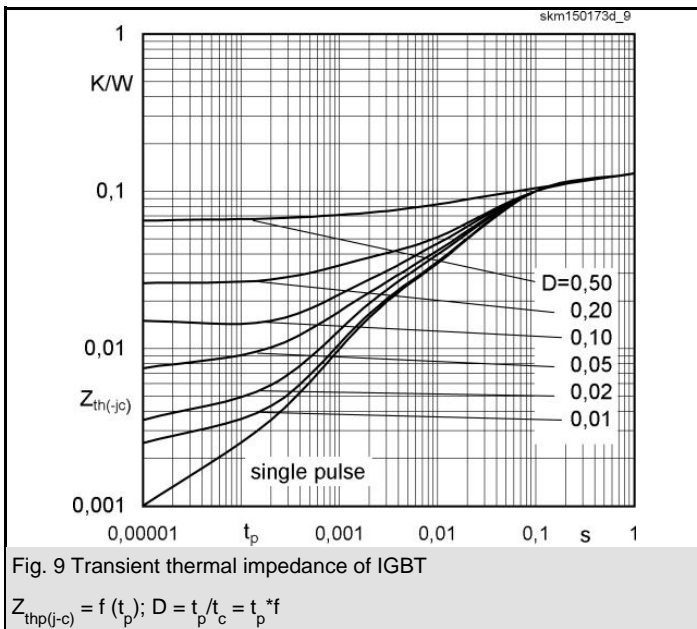
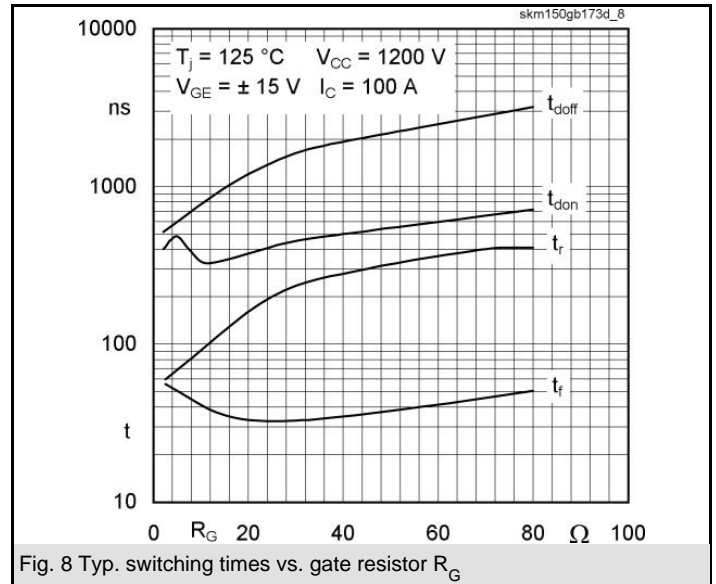
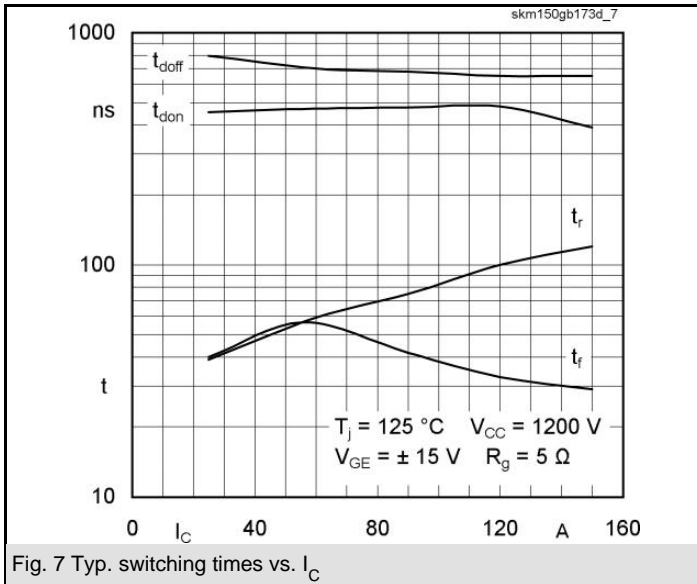
- AC inverter drives on mains 575 - 750 V<sub>AC</sub>
- DC bus voltage 750 - 1200 V<sub>DC</sub>
- Public transport (auxiliary syst.)
- Switching (not for linear use)



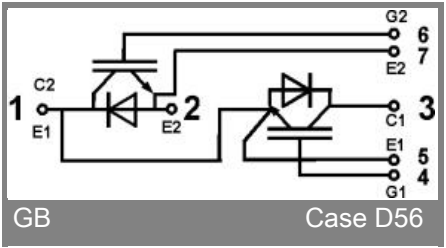
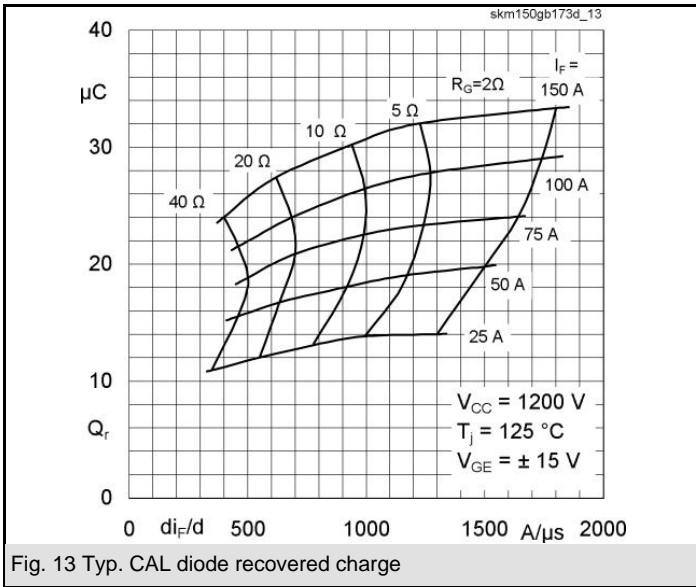
Absolute Maximum Ratings		$T_c = 25\text{ °C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
$V_{CES}$		1700	V
$I_C$	$T_c = 25\text{ (80) °C}$	150 (100)	A
$I_{CRM}$	$t_p = 1\text{ ms}$	200	A
$V_{GES}$		$\pm 20$	V
$T_{vj}$ ( $T_{stg}$ )	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	°C
$V_{isol}$	AC, 1 min.	4000	V
<b>Inverse diode</b>			
$I_F$	$T_c = 25\text{ (80) °C}$	125 (80)	A
$I_{FRM}$	$t_p = 1\text{ ms}$	200	A
$I_{FSM}$	$t_p = 10\text{ ms; sin.; } T_j = 150\text{ °C}$	1100	A

Characteristics		$T_c = 25\text{ °C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}; I_C = 8\text{ mA}$	4,8	5,5	6,2	V
$I_{CES}$	$V_{GE} = 0; V_{CE} = V_{CES}; T_j = 25\text{ (125) °C}$		0,1	0,3	mA
$V_{CE(TO)}$	$T_j = 25\text{ (125) °C}$		1,65 (1,9)	1,9 (2,15)	V
$r_{CE}$	$V_{GE} = 15\text{ V}; T_j = 25\text{ (125) °C}$		17,5 (23)	20 (28,5)	mΩ
$V_{CE(sat)}$	$I_{Cnom} = 100\text{ A}; V_{GE} = 15\text{ V}$ , chip level		3,4 (4,2)	3,9 (5)	V
$C_{ies}$	under following conditions		16		nF
$C_{oes}$	$V_{GE} = 0; V_{CE} = 25\text{ V}; f = 1\text{ MHz}$		1,3		nF
$C_{res}$			0,5		nF
$L_{CE}$				20	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c = 25\text{ (125) °C}$		0,35 (0,5)		mΩ
$t_{d(on)}$	$V_{CC} = 1200\text{ V}; I_{Cnom} = 100\text{ A}$		470		ns
$t_r$	$R_{Gon} = R_{Goff} = 5\text{ Ω}; T_j = 125\text{ °C}$		90		ns
$t_{d(off)}$	$V_{GE} = \pm 15\text{ V}$		650		ns
$t_f$			50		ns
$E_{on} (E_{off})$			60 (32)		mJ
<b>Inverse diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 100\text{ A}; V_{GE} = 0\text{ V}; T_j = 25\text{ (125) °C}$		2,2 (1,9)	2,7 (2,4)	V
$V_{(TO)}$	$T_j = 125\text{ ( ) °C}$		1,2	1,5	V
$r_T$	$T_j = 125\text{ ( ) °C}$		7	9	mΩ
$I_{RRM}$	$I_{Fnom} = 100\text{ A}; T_j = 25\text{ (125) °C}$		50 (70)		A
$Q_{rr}$	$di/dt = 1000\text{ A/μs}$		10 (27)		μC
$E_{rr}$	$V_{GE} = V$				mJ
<b>Thermal characteristics</b>					
$R_{th(j-c)}$	per IGBT			0,125	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,4	K/W
$R_{th(c-s)}$	per module			0,038	K/W
<b>Mechanical data</b>					
$M_s$	to heatsink M6	3		5	Nm
$M_t$	to terminals M6	2,5		5	Nm
w				325	g





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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.