

SKM 22GD123D



SEMITRANS™ 6

IGBT Modules

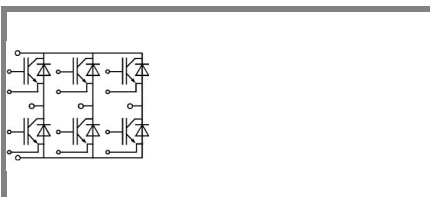
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Features

- 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 Technology
- Large clearance (9 mm) and creepage distances (13 mm)

Typical Applications

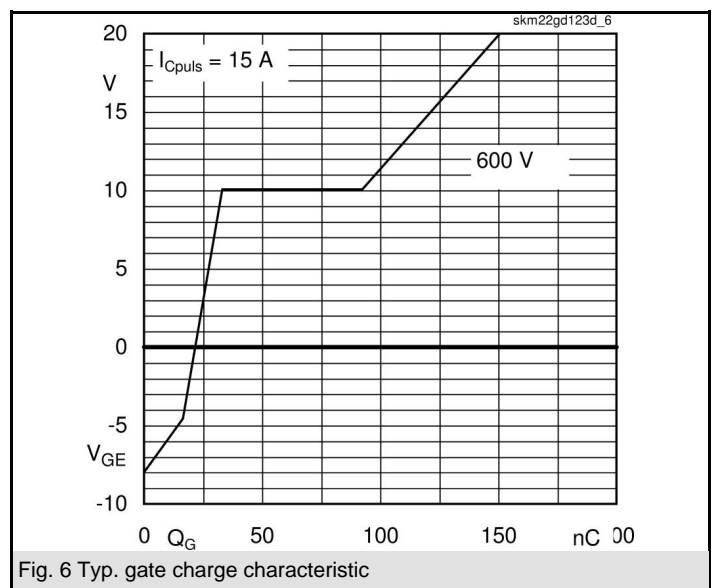
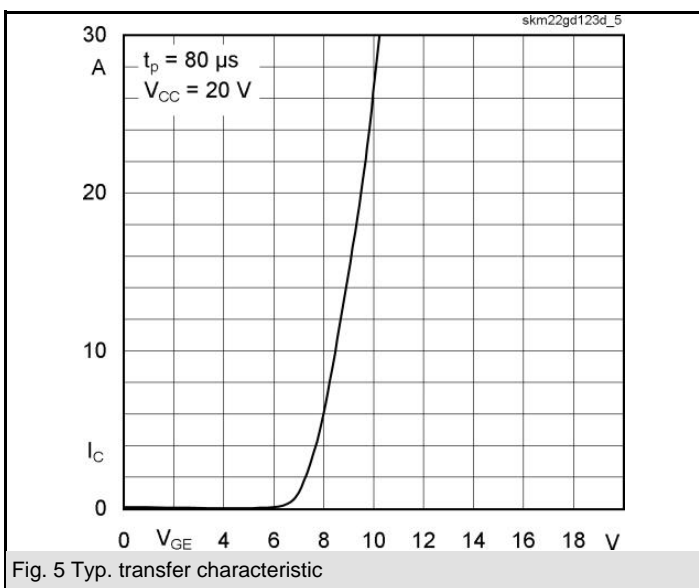
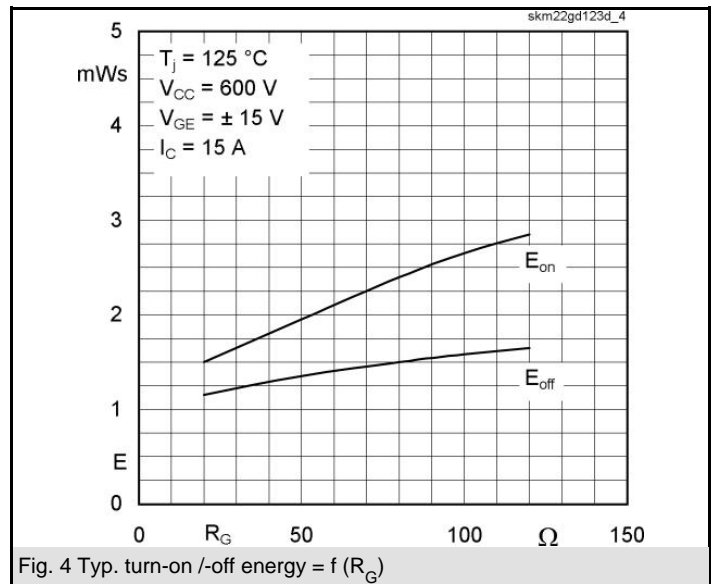
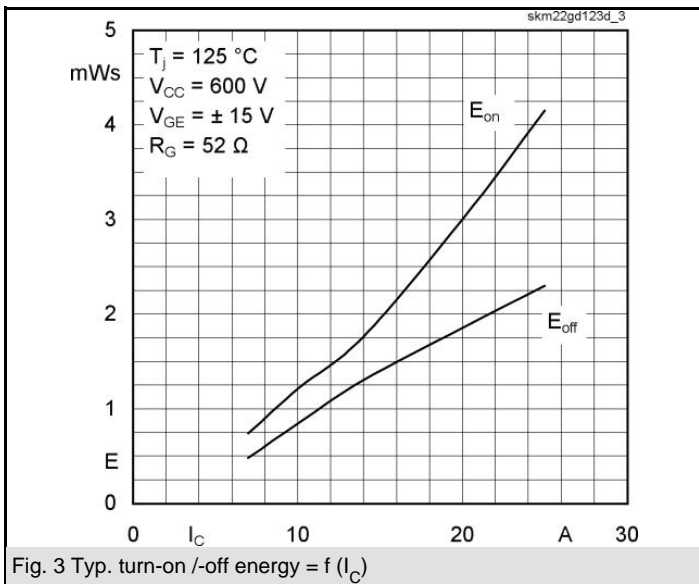
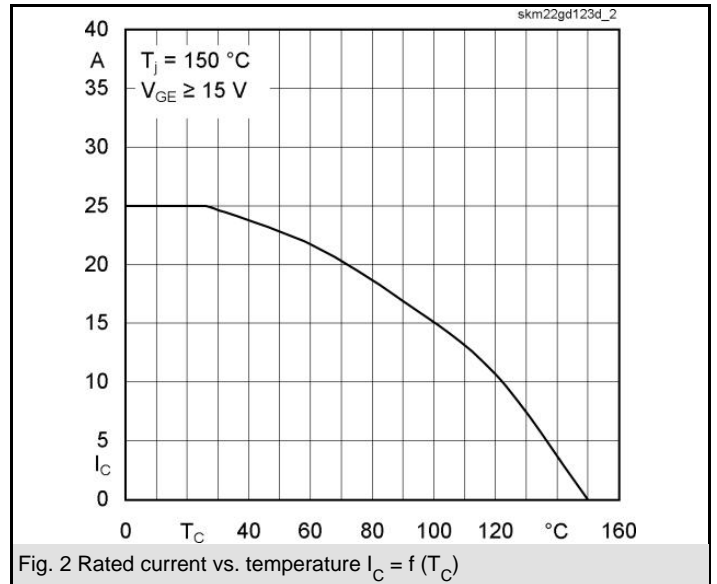
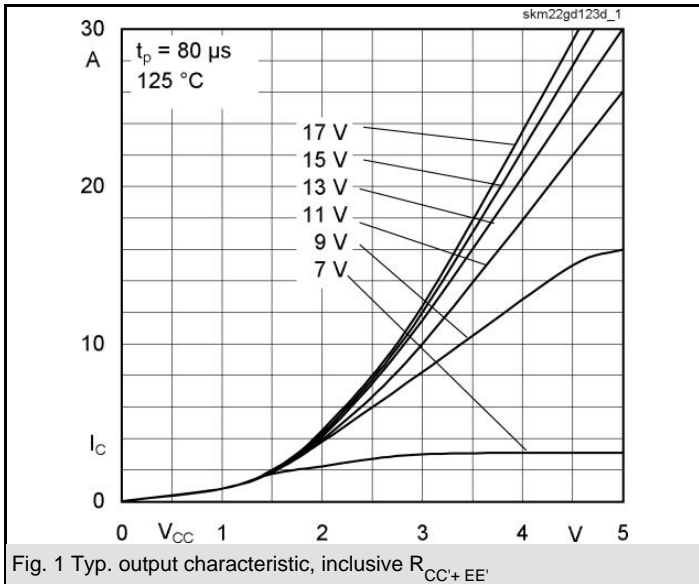
- Switched mode power supplies
- Three phase inverters for AC motor speed control
- General power switching applications
- Pulse frequencies also above 15 kHz

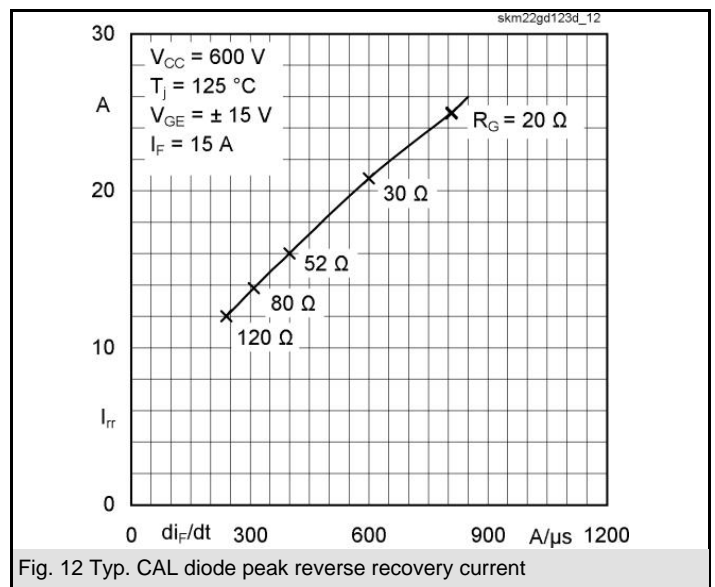
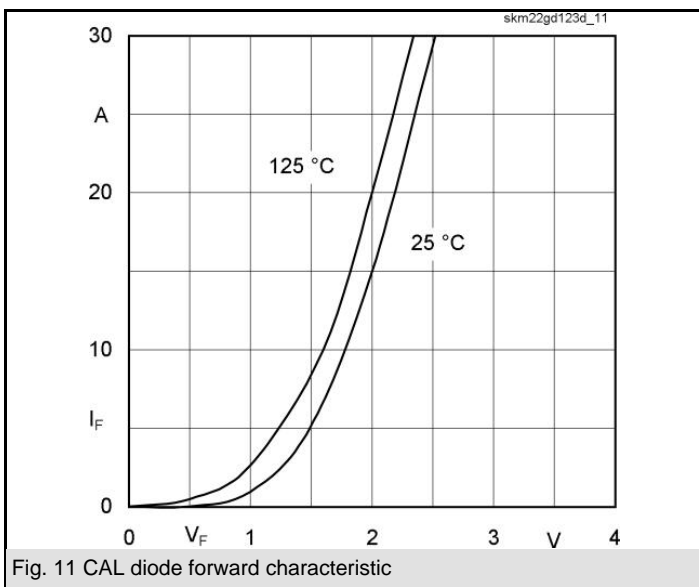
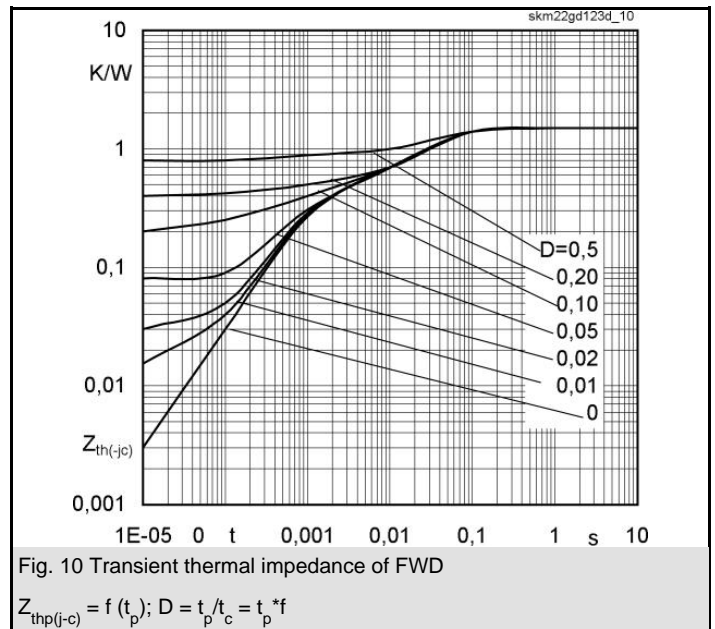
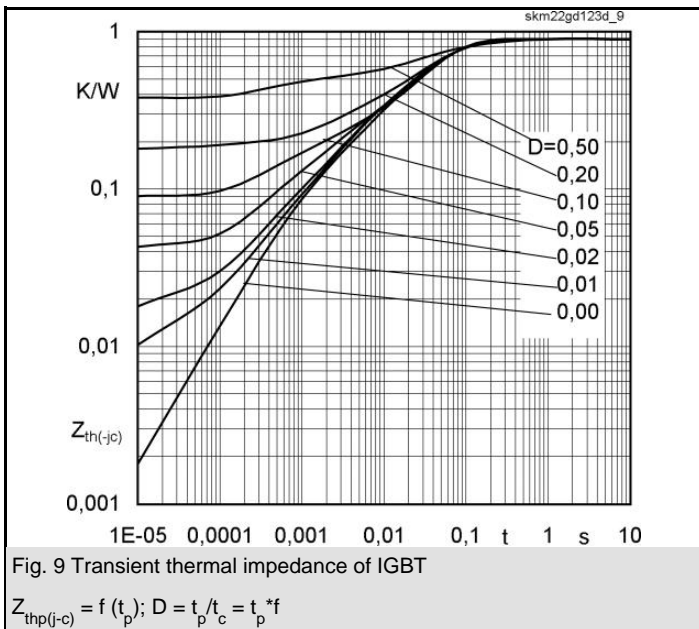
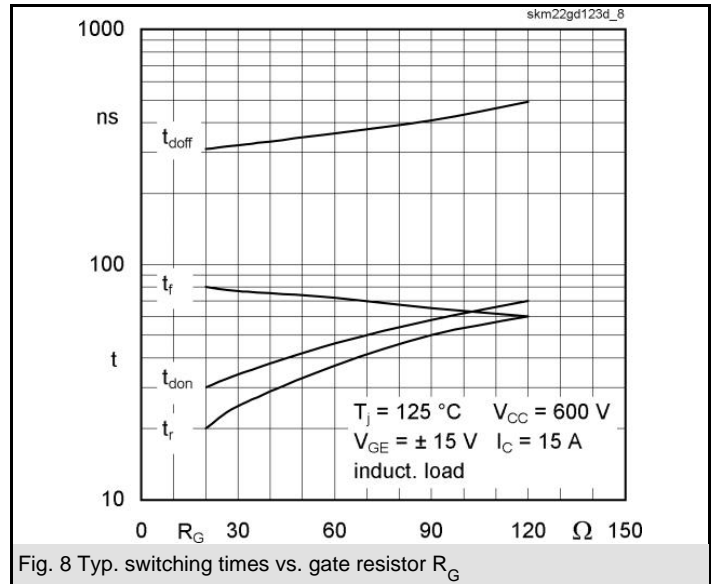
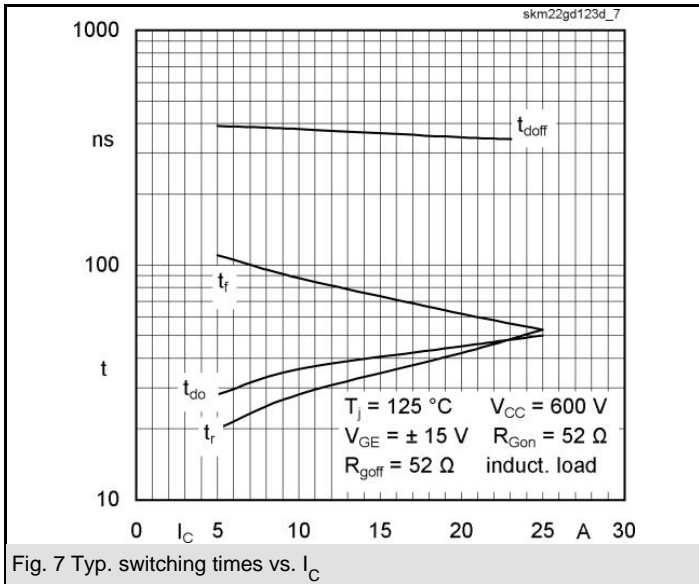


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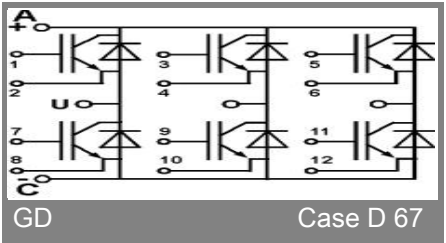
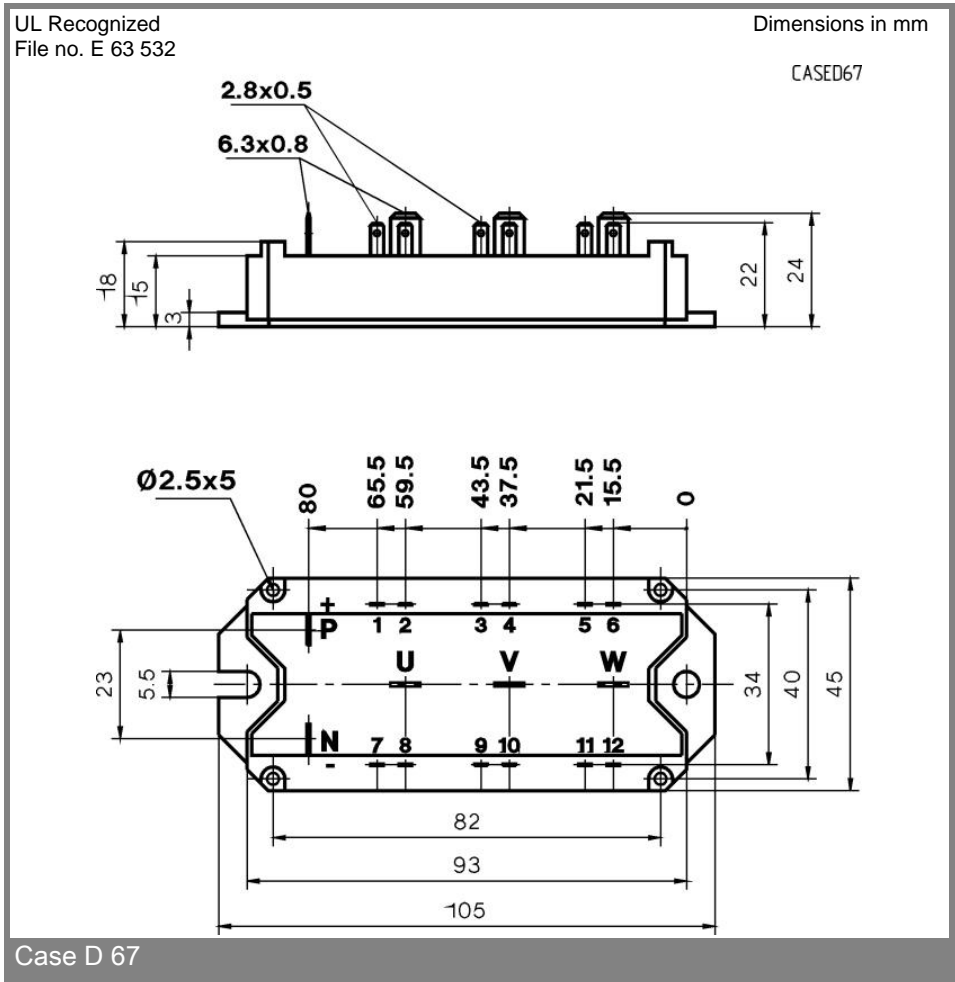
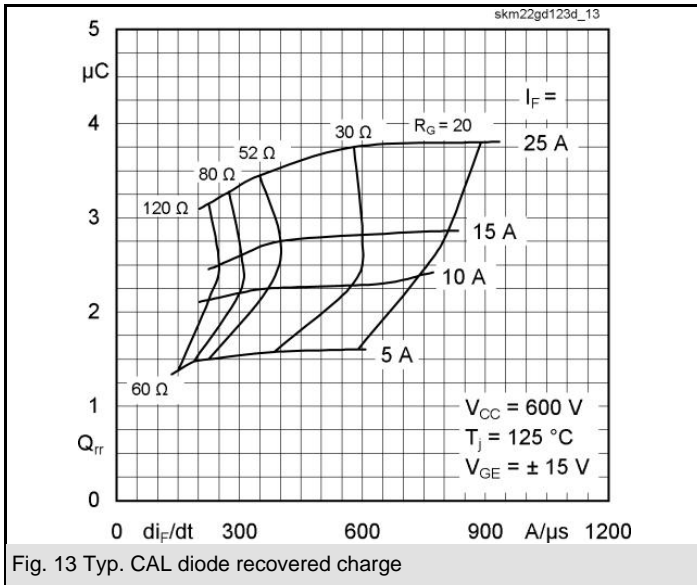
Absolute Maximum Ratings		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_c = 25\text{ (80) }^\circ\text{C}$	25 (15)	A
I_{CRM}	$t_p = 1\text{ ms}$	50	A
V_{GES}		± 20	V
T_{vj} (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V
Inverse diode			
I_F	$T_c = 25\text{ (80) }^\circ\text{C}$	25 (15)	A
I_{FRM}	$t_p = 1\text{ ms}$	50	A
I_{FSM}	$t_p = 10\text{ ms; sin.; } T_j = 150\text{ }^\circ\text{C}$	200	A

Characteristics		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}; I_C = 1\text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0; V_{CE} = V_{CES}; T_j = 25\text{ (125) }^\circ\text{C}$		0,3	0,9	mA
$V_{CE(TO)}$	$T_j = 25\text{ (125) }^\circ\text{C}$		1,4 (1,6)	1,6 (1,8)	V
r_{CE}	$V_{GE} = 15\text{ V}; T_j = 25\text{ (125) }^\circ\text{C}$		73,33 (100)	93,33 (126,66)	m Ω
$V_{CE(sat)}$	$I_{Cnom} = 15\text{ A}; V_{GE} = 15\text{ V}$, chip level		2,5 (3,1)	3 (3,7)	V
C_{ies}	under following conditions		1		nF
C_{oes}	$V_{GE} = 0; V_{CE} = 25\text{ V}; f = 1\text{ MHz}$		0,15		nF
C_{res}			0,07		nF
L_{CE}				60	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c = \text{ }^\circ\text{C}$				m Ω
$t_{d(on)}$	$V_{CC} = 600\text{ V}; I_{Cnom} = 25\text{ A}$		40		ns
t_r	$R_{Gon} = R_{Goff} = 52\text{ }^\circ\Omega; T_j = 125\text{ }^\circ\text{C}$		35		ns
$t_{d(off)}$	$V_{GE} = \pm 15\text{ V}$		350		ns
t_f			70		ns
$E_{on} (E_{off})$			2 (1,4)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 15\text{ A}; V_{GE} = 0\text{ V}; T_j = 25\text{ (125) }^\circ\text{C}$		2 (1,8)	2,5	V
$V_{(TO)}$	$T_j = 125\text{ () }^\circ\text{C}$		1,1	1,2	V
r_T	$T_j = 125\text{ () }^\circ\text{C}$		45	70	m Ω
I_{RRM}	$I_{Fnom} = 15\text{ A}; T_j = 25\text{ (125) }^\circ\text{C}$		12 (16)		A
Q_{rr}	$di/dt = \text{A}/\mu\text{s}$		1 (2,7)		μC
E_{rr}	$V_{GE} = \text{V}$				mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,86	K/W
$R_{th(j-c)D}$	per Inverse Diode			1,5	K/W
$R_{th(c-s)}$	per module			0,05	K/W
Mechanical data					
M_s	to heatsink M5	4		5	Nm
M_t	to terminals				Nm
w				175	g





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

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