

SKM 300GA123D



SEMITRANS™ 4

IGBT Modules

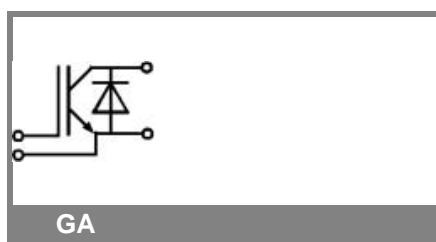
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Features

- 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 (12 mm) and creepage distances (20 mm)

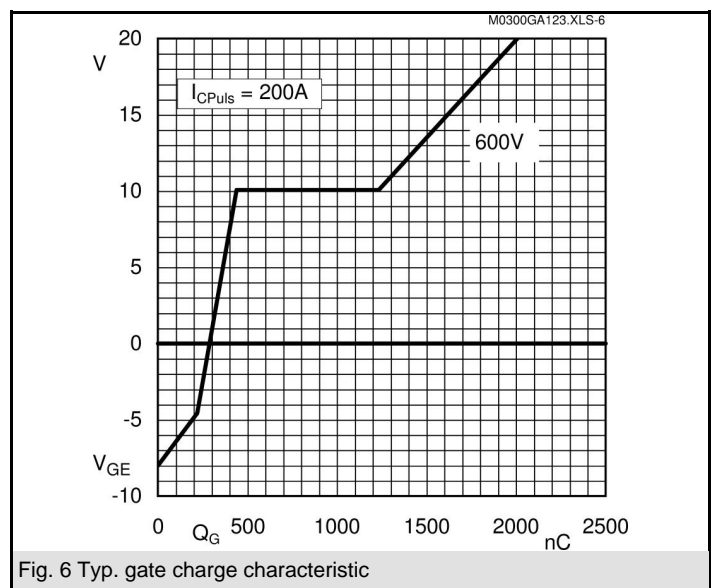
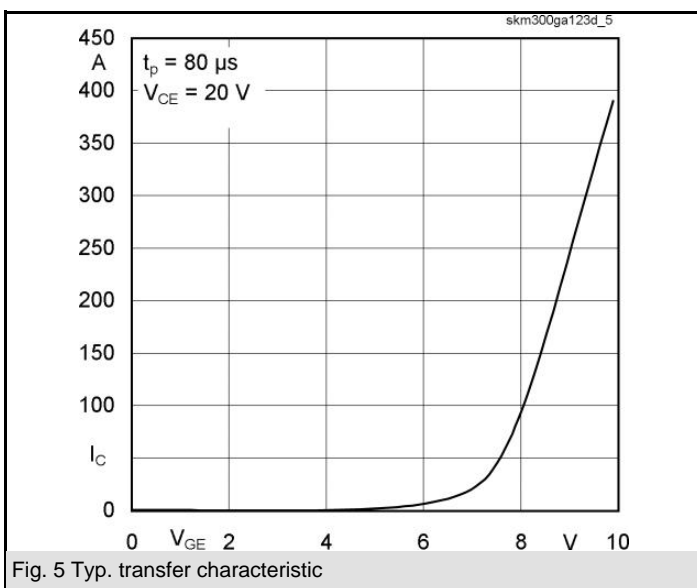
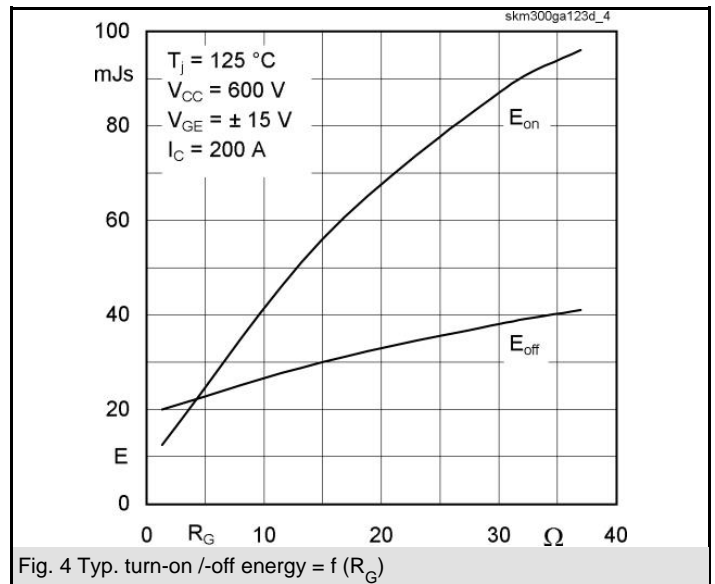
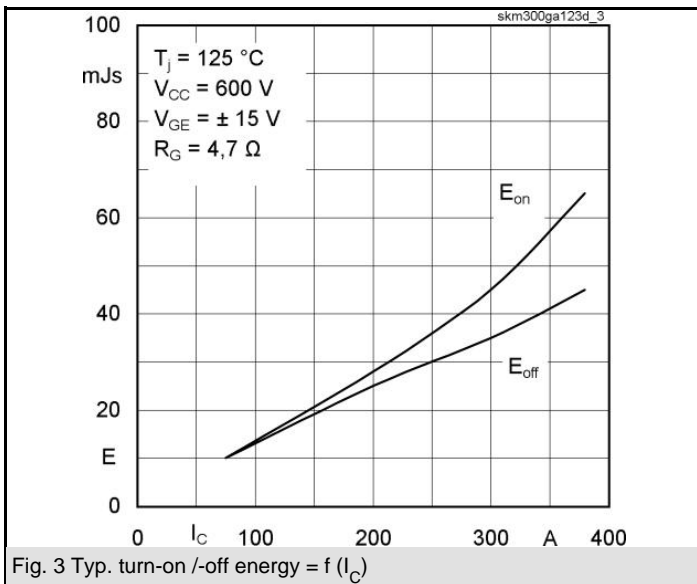
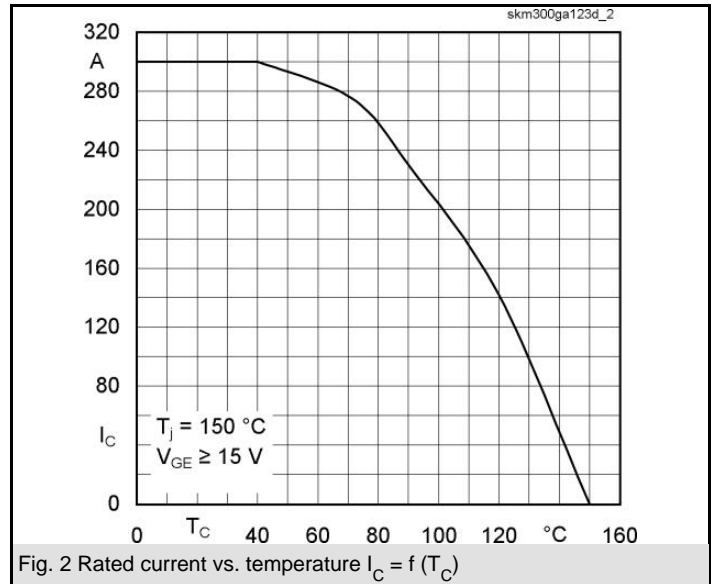
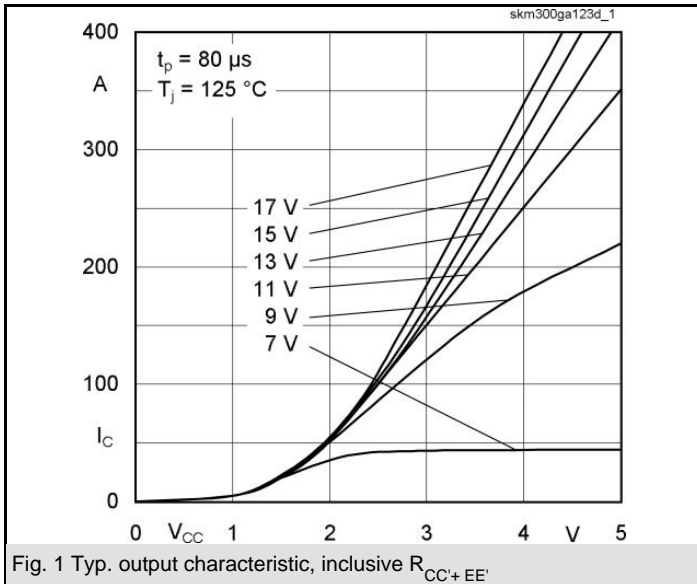
Typical Applications

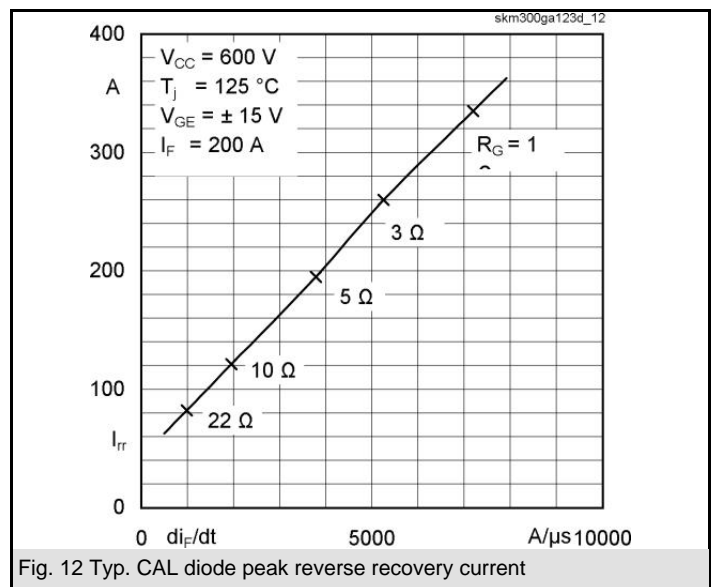
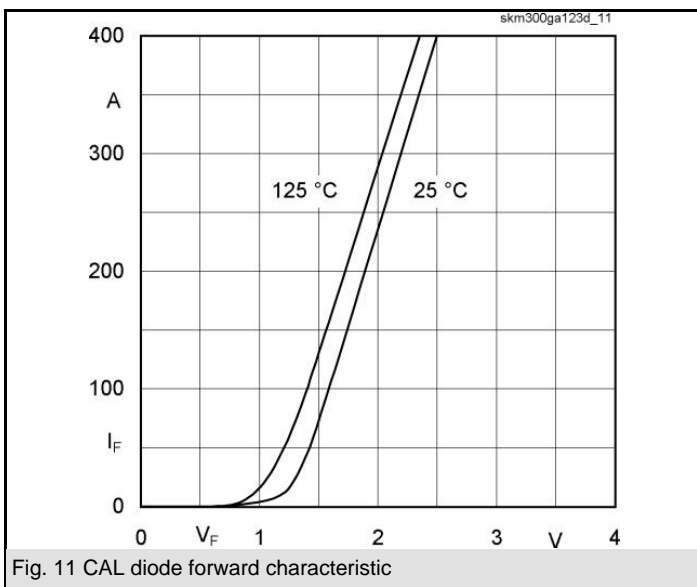
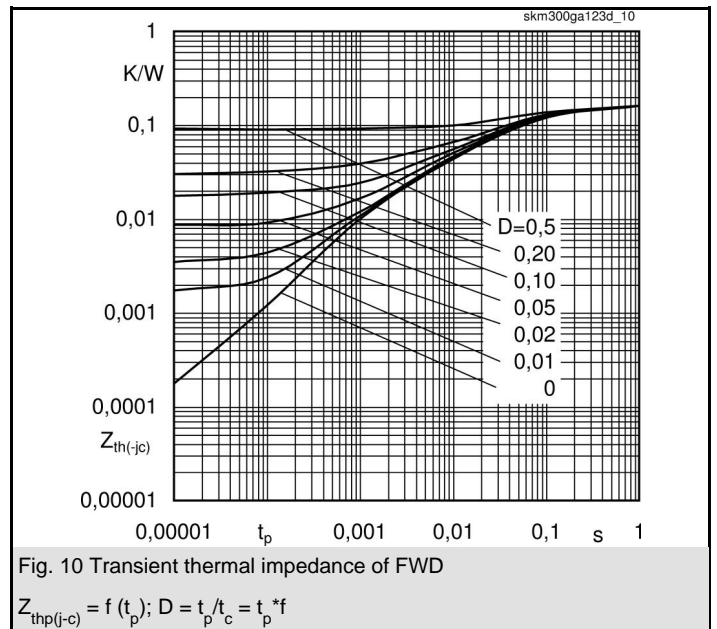
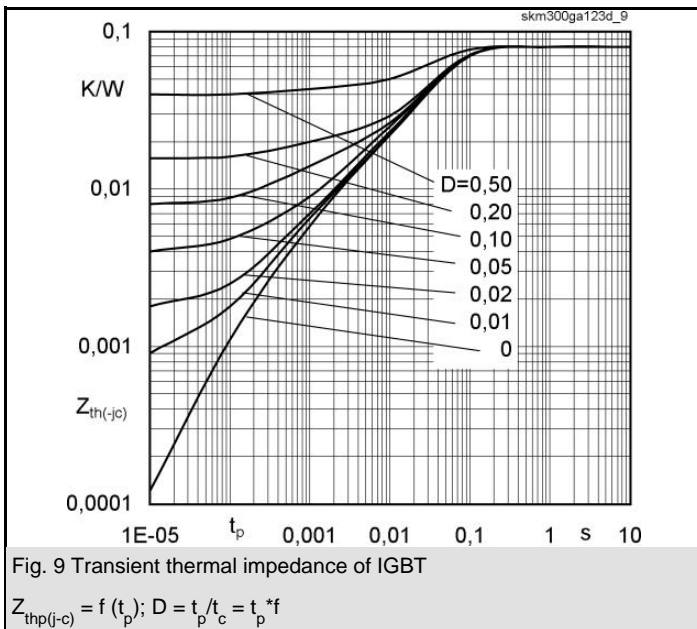
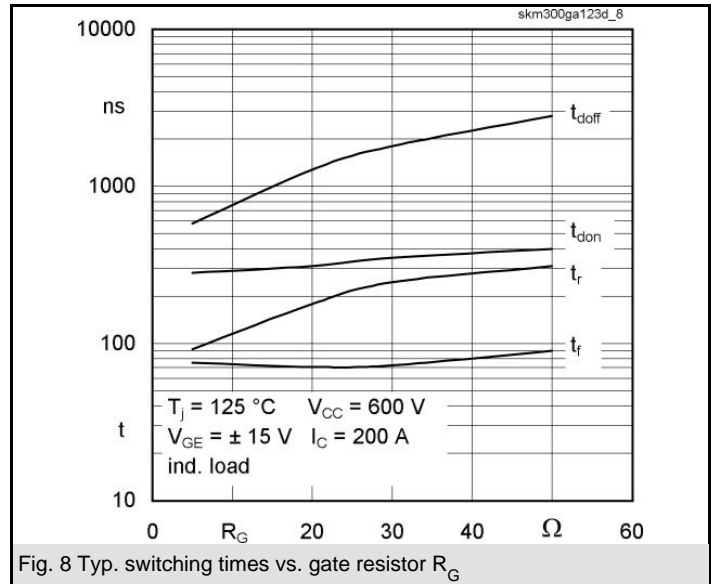
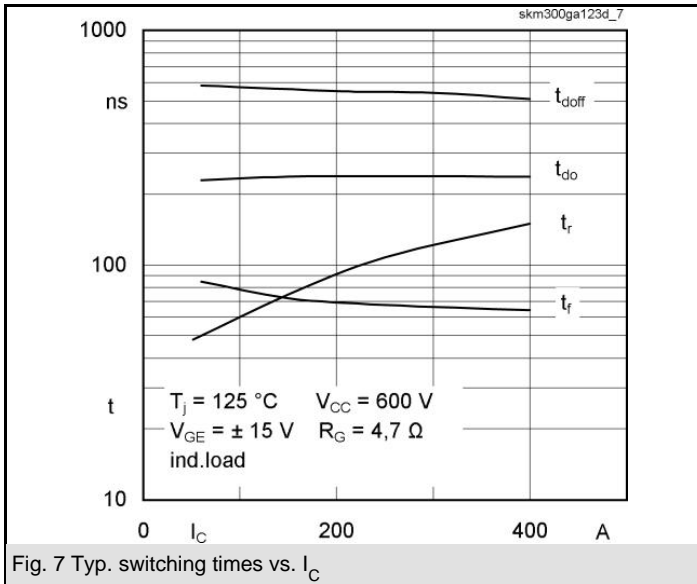
- Switching (not for linear use)



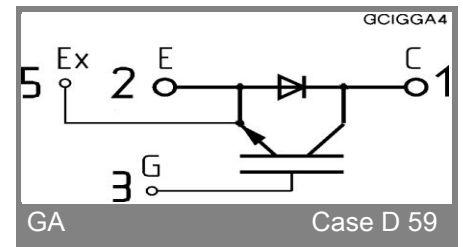
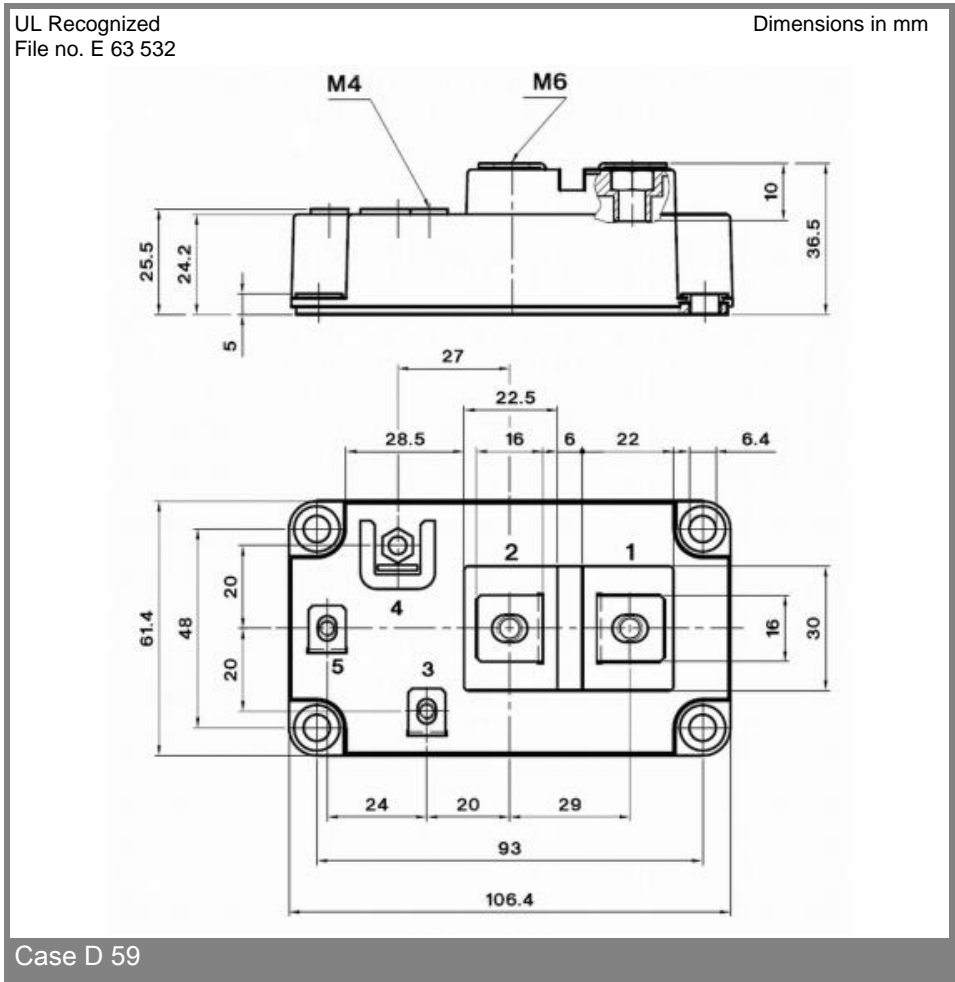
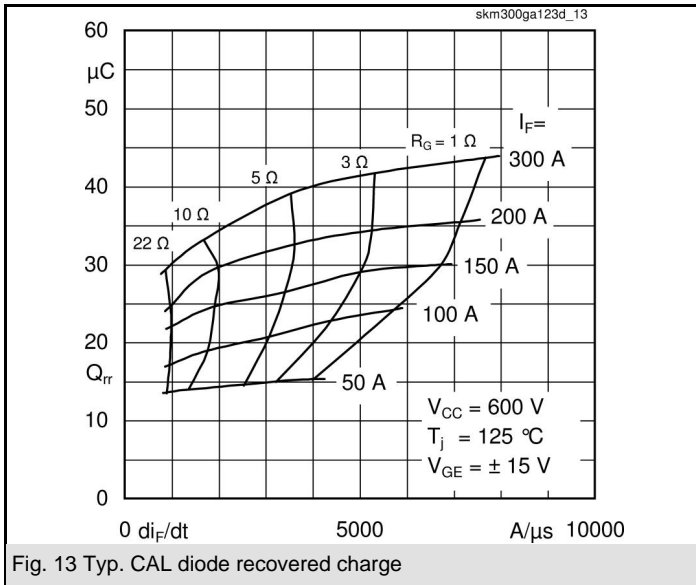
Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_c = 25 (80)^\circ\text{C}$	300 (220)	A
I_{CRM}	$t_p = 1 \text{ ms}$	400	A
V_{GES}		± 20	V
T_{vj} (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V
Inverse diode			
I_F	$T_c = 25 (80)^\circ\text{C}$	300 (200)	A
I_{FRM}	$t_p = 1 \text{ ms}$	400	A
I_{FSM}	$t_p = 10 \text{ ms}$; sin.; $T_j = 150^\circ\text{C}$	2200	A

Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$; $I_C = 8 \text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0$; $V_{CE} = V_{CES}$; $T_j = 25 (125)^\circ\text{C}$		0,1	0,3	mA
$V_{CE(TO)}$	$T_j = 25 (125)^\circ\text{C}$		1,4 (1,6)	1,6 (1,8)	V
r_{CE}	$V_{GE} = 15 \text{ V}$; $T_j = 25 (125)^\circ\text{C}$		5,5 (7,5)	7 (9,5)	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 200 \text{ A}$; $V_{GE} = 15 \text{ V}$; chip level		2,5 (3,1)	3 (3,7)	V
C_{ies}	under following conditions		15	19	nF
C_{oes}	$V_{GE} = 0$; $V_{CE} = 25 \text{ V}$; $f = 1 \text{ MHz}$		2	2,6	nF
C_{res}			1	1,3	nF
L_{CE}				20	nH
$R_{CC'+EE'}$	res.; terminal-chip $T_c = 25 (125)^\circ\text{C}$		0,18 (0,22)		$\text{m}\Omega$
$t_{d(on)}$	$V_{CC} = 600 \text{ V}$; $I_{Cnom} = 200 \text{ A}$		250	400	ns
t_r	$R_{Gon} = R_{Goff} = 4,7 \Omega$; $T_j = 125^\circ\text{C}$		90	160	ns
$t_{d(off)}$	$V_{GE} = \pm 15 \text{ V}$		550	700	ns
t_f			70	100	ns
$E_{on} (E_{off})$			26 (22)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 200 \text{ A}$; $V_{GE} = 0 \text{ V}$; $T_j = 25 (125)^\circ\text{C}$		2 (1,8)	2,5	V
$V_{(TO)}$	$T_j = 125 ()^\circ\text{C}$			1,2	V
r_T	$T_j = 125 ()^\circ\text{C}$		3	5,5	$\text{m}\Omega$
I_{RRM}	$I_{Fnom} = 200 \text{ A}$; $T_j = 25 (125)^\circ\text{C}$		80 (120)		A
Q_{rr}	$di/dt = \text{A}/\mu\text{s}$		11 (29)		μC
E_{rr}	$V_{GE} = 0 \text{ V}$				mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,075	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,15	K/W
$R_{th(c-s)}$	per module			0,038	K/W
Mechanical data					
M_s	to heatsink M6		3	5	Nm
M_t	to terminals M6 (M4)		2,5 (1,1)	5 (2)	Nm
w				330	g





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

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