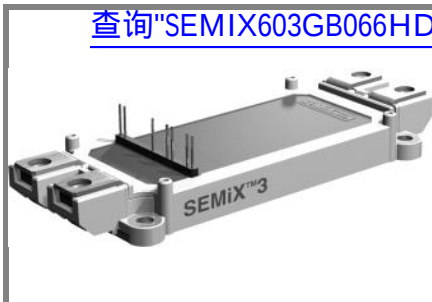


SEMiX 603GB066HD ...

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SEMiX® 3

Trench IGBT Modules

SEMiX 603GB066HD

SEMiX 603GAL066HD

SEMiX 603GAR066HD

Target Data

Features

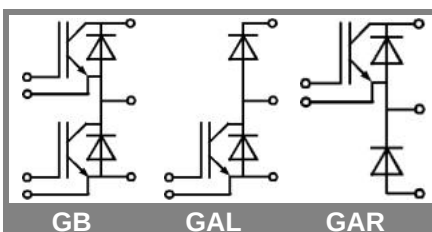
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient

Typical Applications

- Matrix Converter
- Resonant Inverter
- Current Source Inverter

Remarks

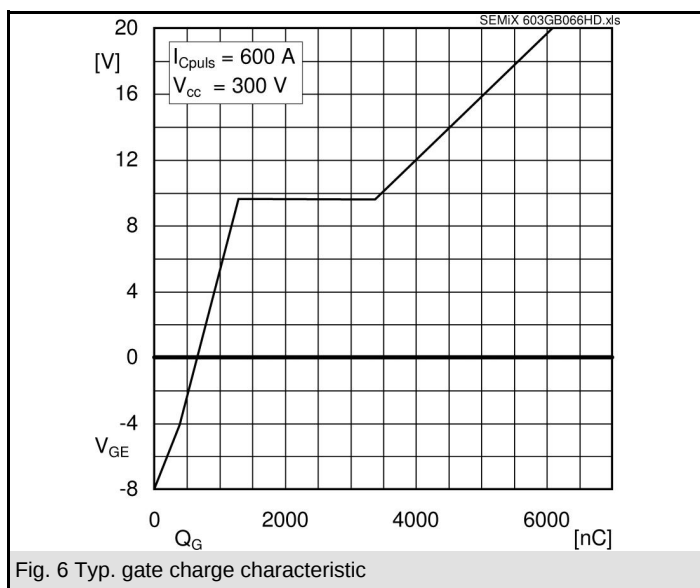
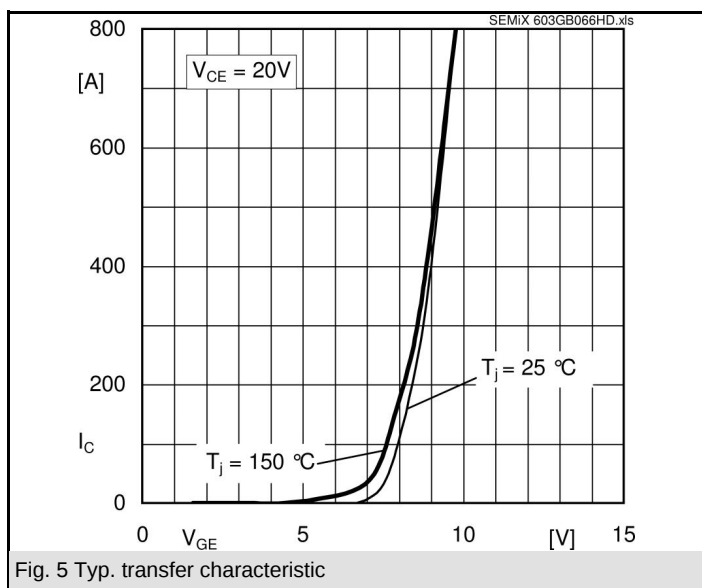
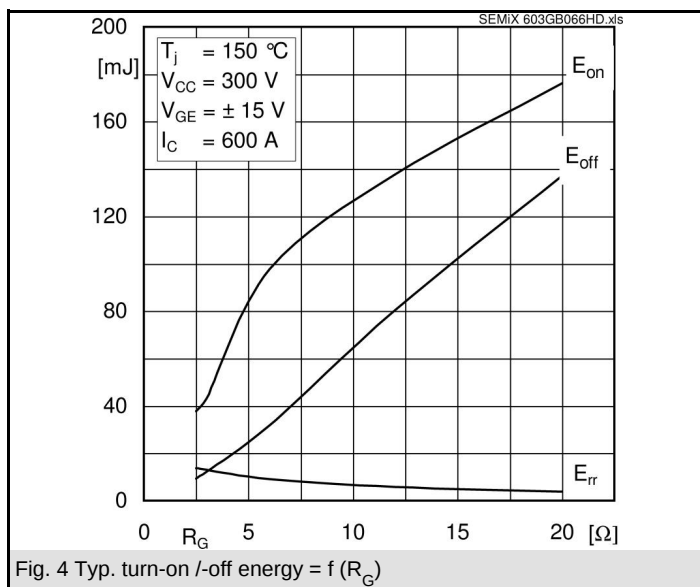
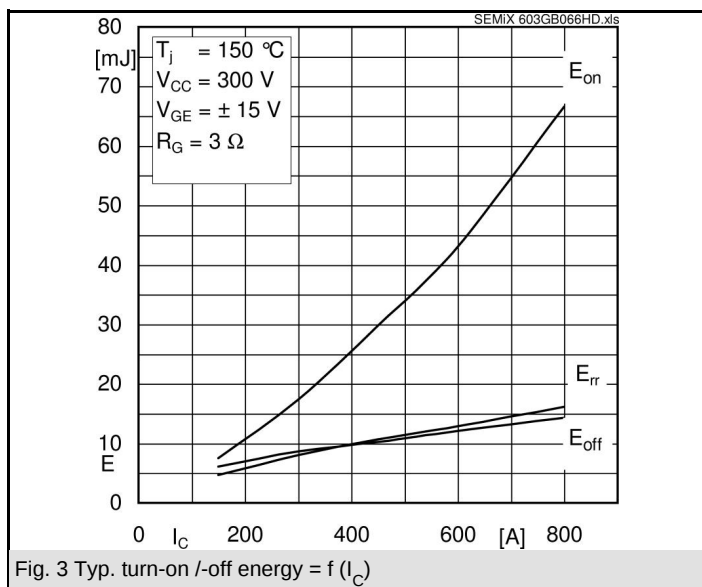
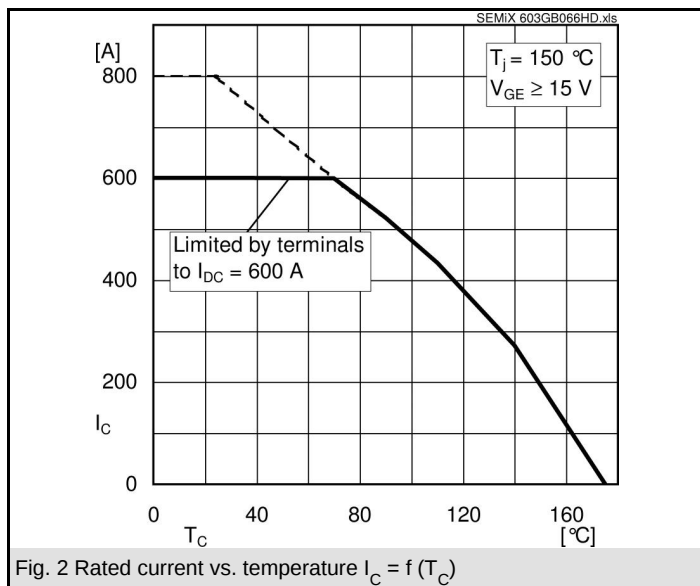
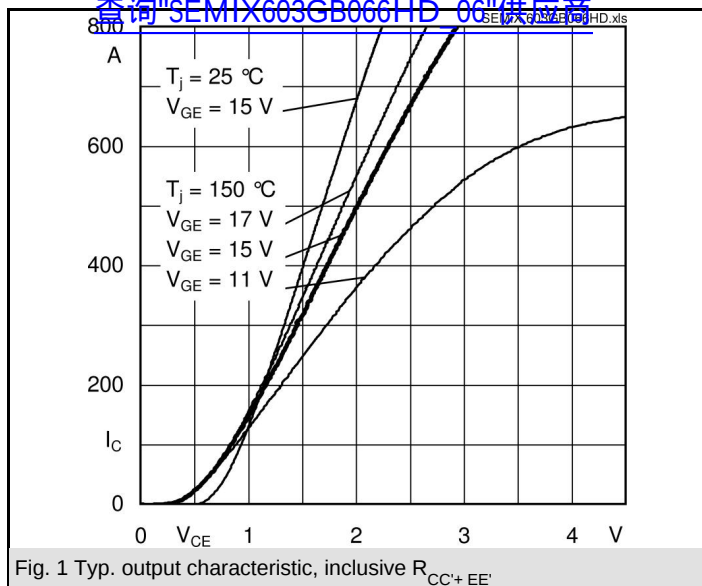
- Case temperature limited to $T_C = 125^\circ\text{C}$ max.
- Product reliability results are valid for $T_j = 150^\circ\text{C}$
- SC data: $t_p \leq 6 \mu\text{s}$; $V_{GE} \leq 15 \text{ V}$; $T_j = 150^\circ\text{C}$; $V_{CC} = 360 \text{ V}$
-



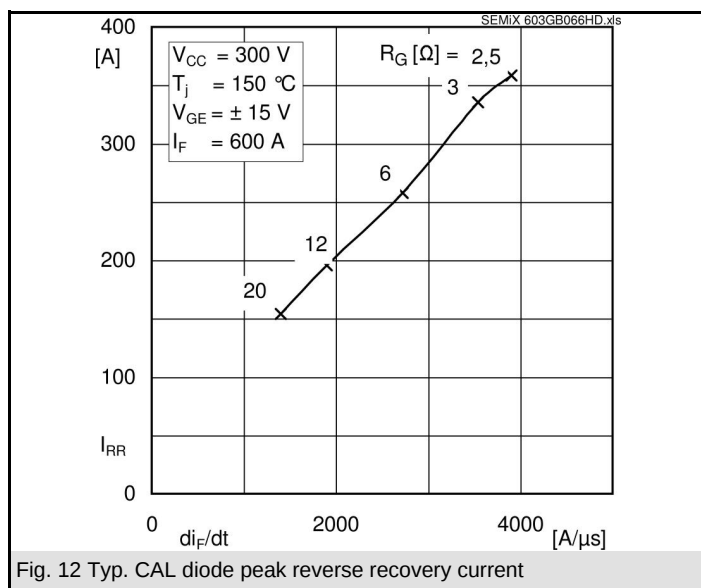
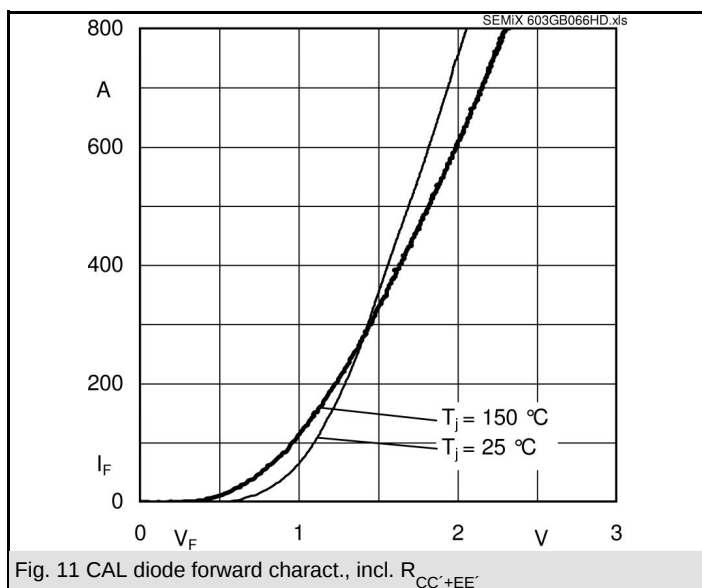
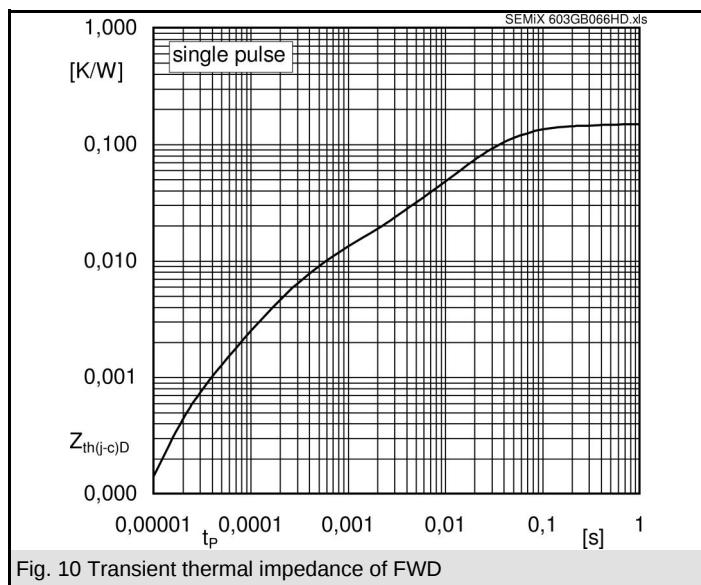
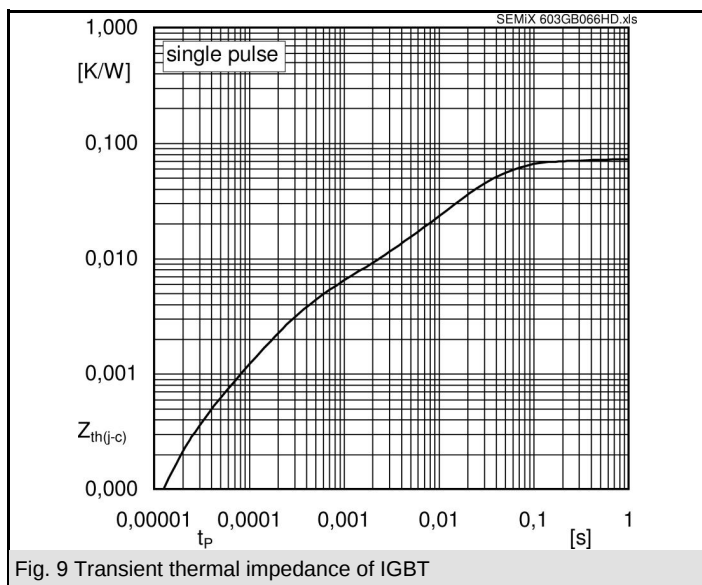
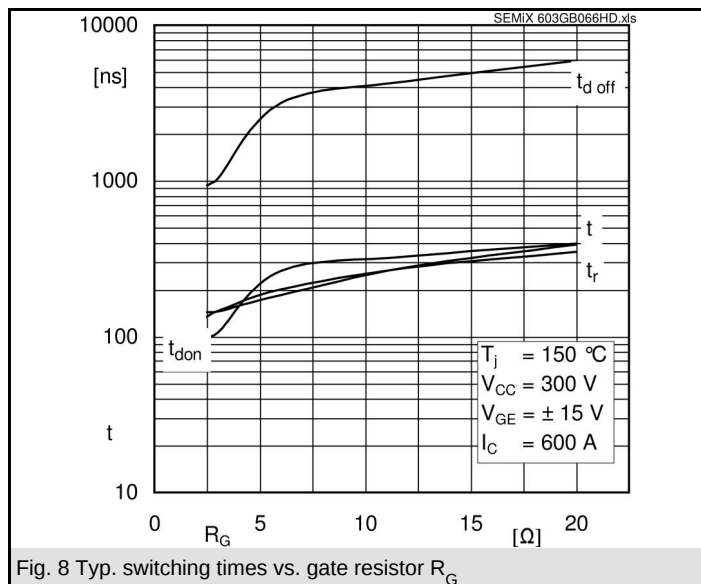
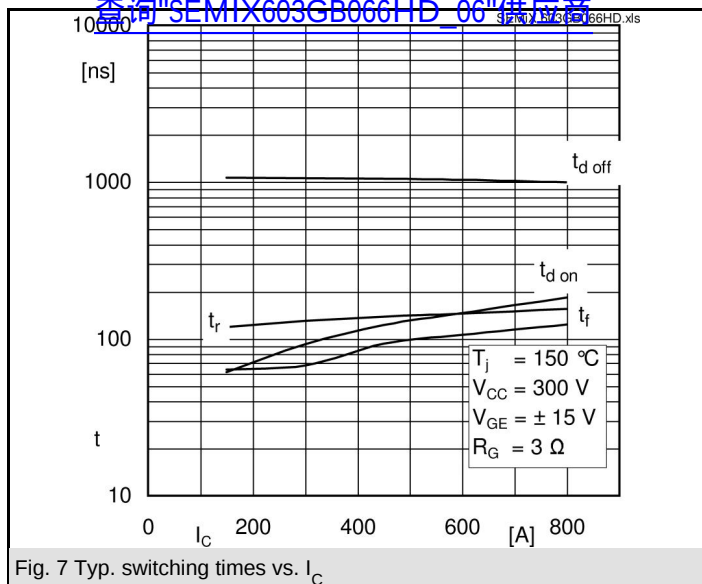
Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		600	V
I_C	$T_c = 25 (80)^\circ\text{C}$, $T_j = 150^\circ\text{C}$	730 (520)	A
I_C	$T_c = 25 (80)^\circ\text{C}$, $T_j = 175^\circ\text{C}$	800 (610)	A
I_{CRM}	$t_p = 1 \text{ ms}$	1200	A
V_{GES}		± 20	V
$T_j, (T_{stg})$		- 40 ... + 175 (125)	$^\circ\text{C}$
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	$T_c = 25 (80)^\circ\text{C}$, $T_j = 150^\circ\text{C}$	530 (350)	A
I_F	$T_c = 25 (80)^\circ\text{C}$, $T_j = 175^\circ\text{C}$	590 (430)	A
I_{FRM}	$t_p = 1 \text{ ms}$	1200	A
I_{FSM}	$t_p = 10 \text{ ms}$; sin.; $T_j = 25^\circ\text{C}$	2700	A
Freewheeling diode			
I_F	$T_c = 25 (80)^\circ\text{C}$, $T_j = 150^\circ\text{C}$	640 (430)	A
I_F	$T_c = 25 (80)^\circ\text{C}$, $T_j = 150^\circ\text{C}$	710 (520)	A
I_{FSM}	$t_p = 10 \text{ ms}$; ; $T_j = 175^\circ\text{C}$		A

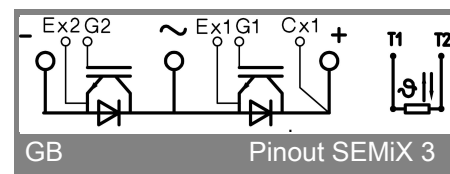
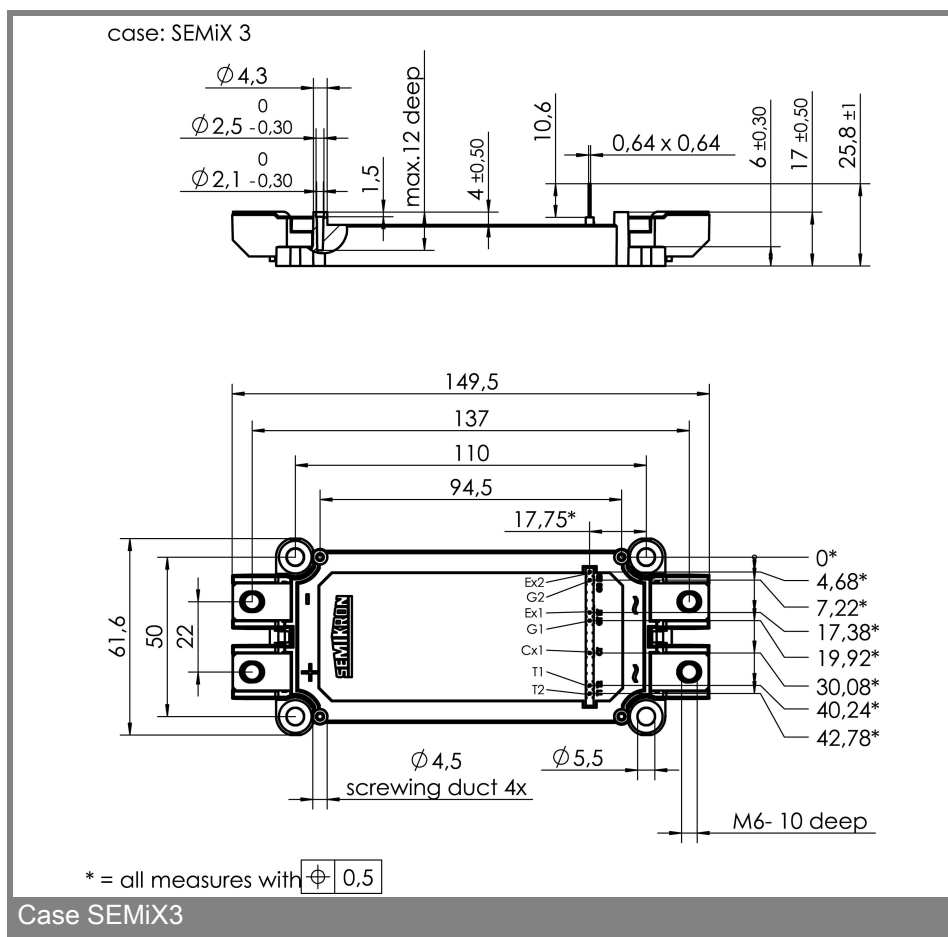
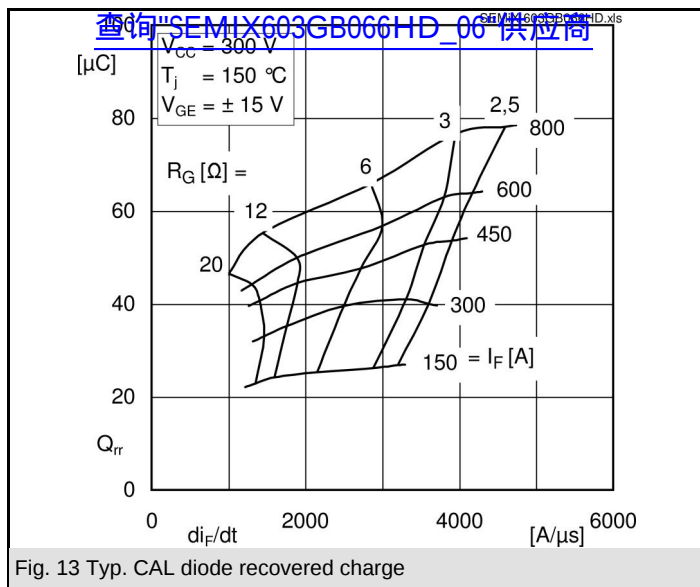
Characteristics		T _{case} = 25°C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 4 mA		5,8		V
I _{CES}	V _{GE} = 0, V _{CE} = V _{CES} , T _j = 25 () °C			0,1	mA
V _{CE(TO)}	T _j = 25 (150) °C		0,9 (0,85)	1 (0,9)	V
r _{CE}	V _{GE} = 15 V, T _j = 25 (150) °C		0,9 (1,4)	1,5 (2)	mΩ
V _{CE(sat)}	I _{Cnom} = 600 A, V _{GE} = 15 V, T _j = 25 (150) °C, chip level		1,45 (1,7)	1,9 (2,1)	V
C _{ies}	under following conditions		37		nF
C _{oes}	V _{GE} = 0, V _{CE} = 25 V, f = 1 MHz		2,3		nF
C _{res}			1,1		nF
L _{CE}			20		nH
R _{CC'+EE'}	terminal-chip, T _c = 25 (125) °C		0,7 (1,05)		mΩ
t _{d(on)} /t _r	V _{CC} = 300 V, I _{Cnom} = 600 A		145 / 145		ns
t _{d(off)} /t _f	V _{GE} = ±15V		1030 / 105		ns
E _{on} (E _{off})	R _{Gon} = R _{Goff} = 3 Ω, T _j = 150 °C		12 (43)		mJ
Inverse diode, Freewheeling diode					
V _F = V _{EC}	I _{Fnom} = 600 A; V _{GE} = 0 V; T _j = 25 (150) °C, chip level		1,4 (1,4)	1,6	V
V _(TO)	T _j = 25 (150) °C		1 (0,85)	1,1	V
r _T	T _j = 25 (150) °C		0,7 (0,9)	0,83	mΩ
I _{RRM}	I _{Fnom} = 600 A; T _j = 25 (150) °C		352		A
Q _{rr}	di/dt = 3800 A/μs		63		μC
E _{rr}	V _{GE} = -15 V		13		mJ
Thermal characteristics					
R _{th(j-c)}	per IGBT			0,073	K/W
R _{th(j-c)D}	per Inverse Diode			0,15	K/W
R _{th(j-c)FD}	per FWD				K/W
R _{th(c-s)}	per module		0,04		K/W
Temperature sensor					
R ₂₅	T _c = 25 °C		5 ±5%		kΩ
B _{25/85}	R ₂ =R ₁ exp[B(1/T ₂ -1/T ₁)] ; T[K];B		3420		K
Mechanical data					
M _s /M _t	to heatsink (M5) / for terminals (M6)	3/2,5		5 /5	Nm
w			289		g

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

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