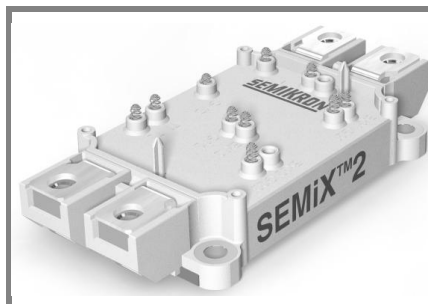




SEMiX® 2s

Trench IGBT Modules

SEMiX 452GB126HDs

Preliminary Data

Features

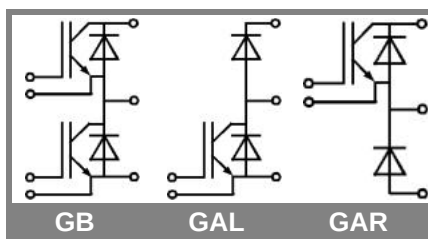
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

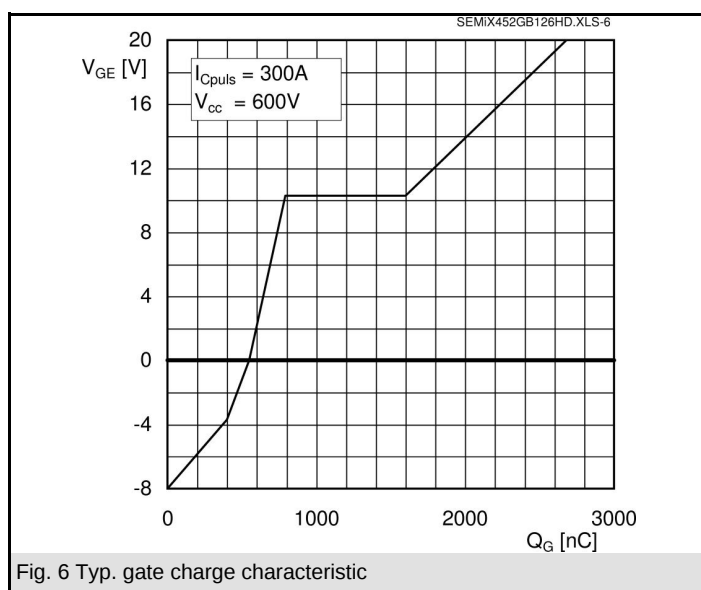
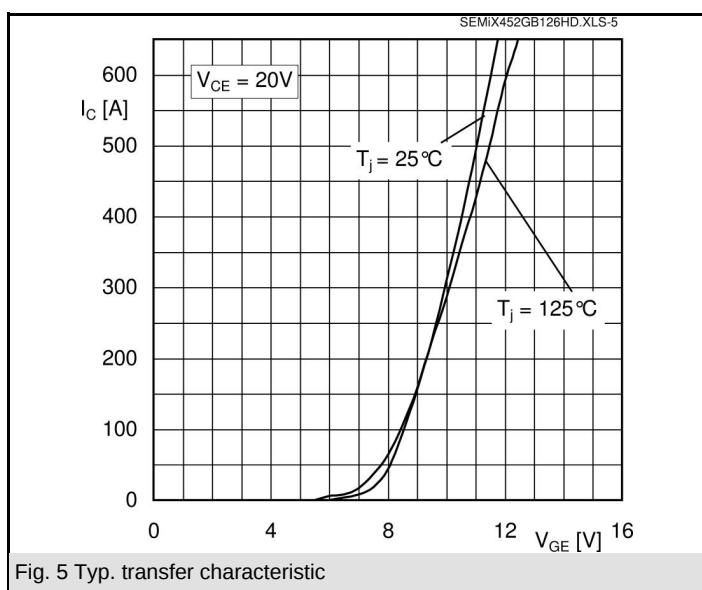
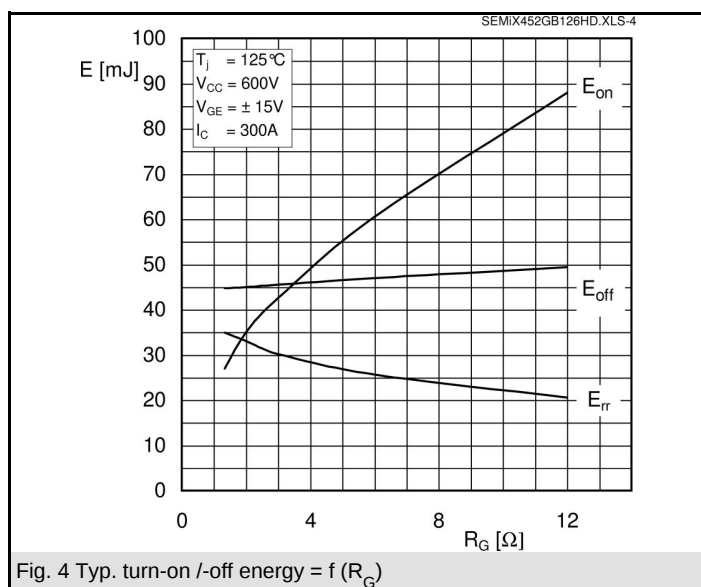
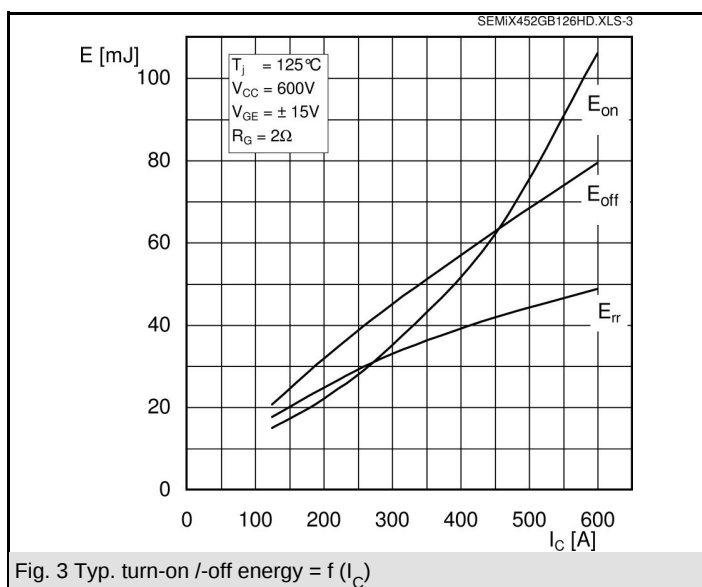
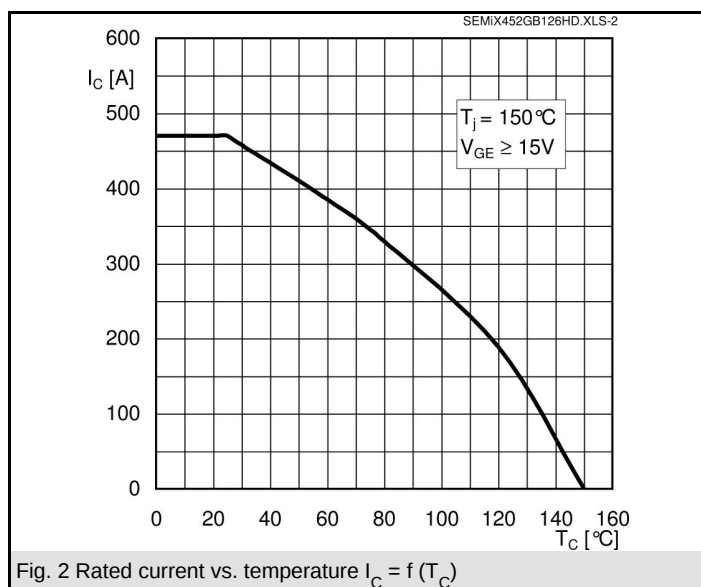
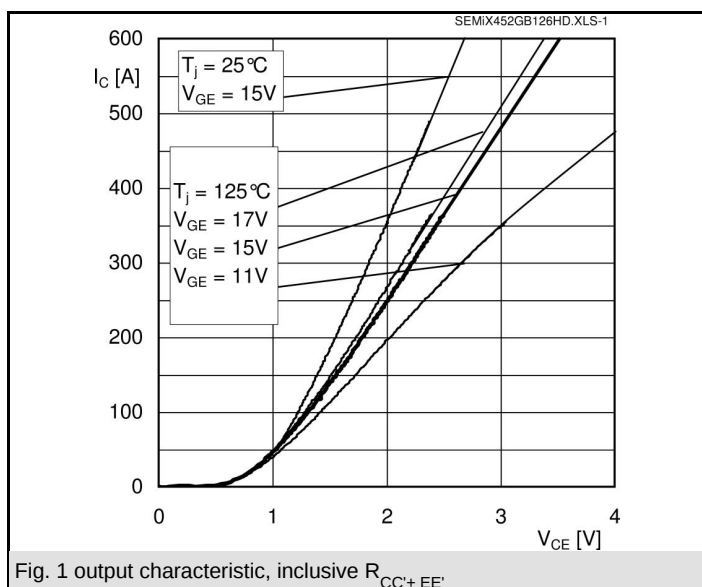
Typical Applications

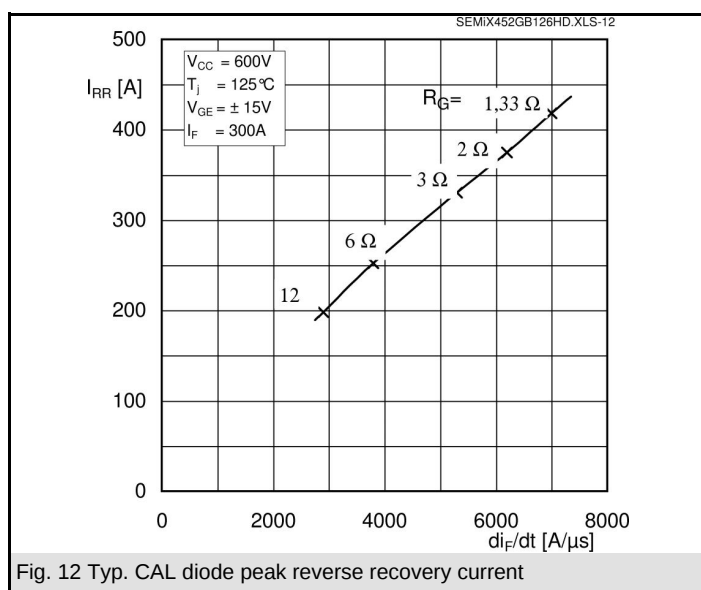
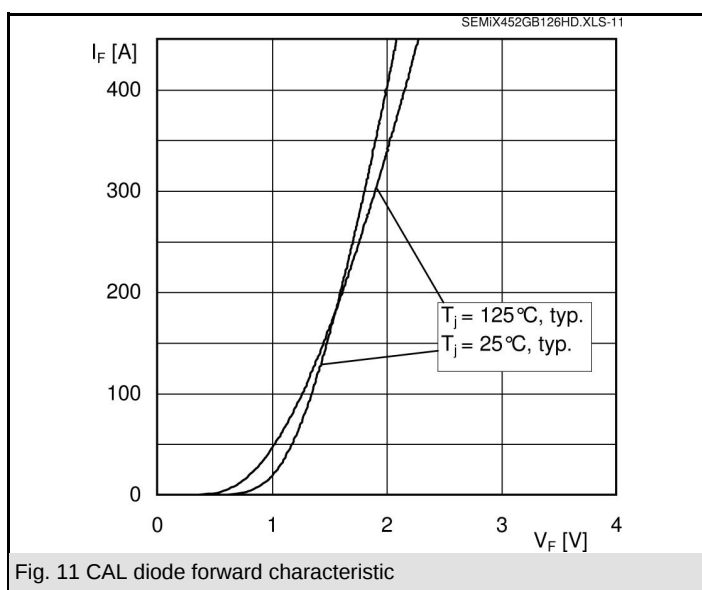
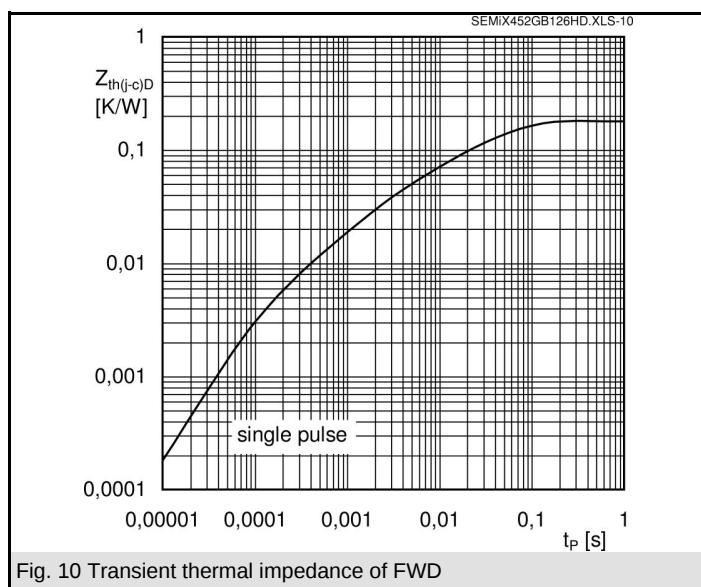
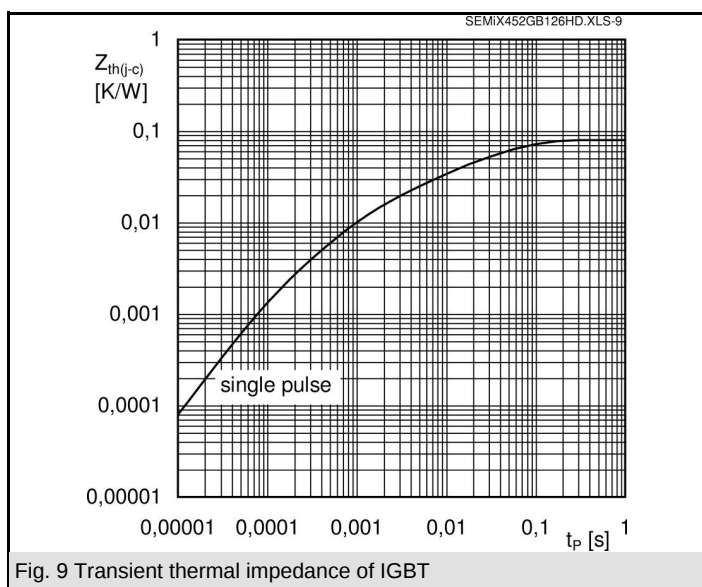
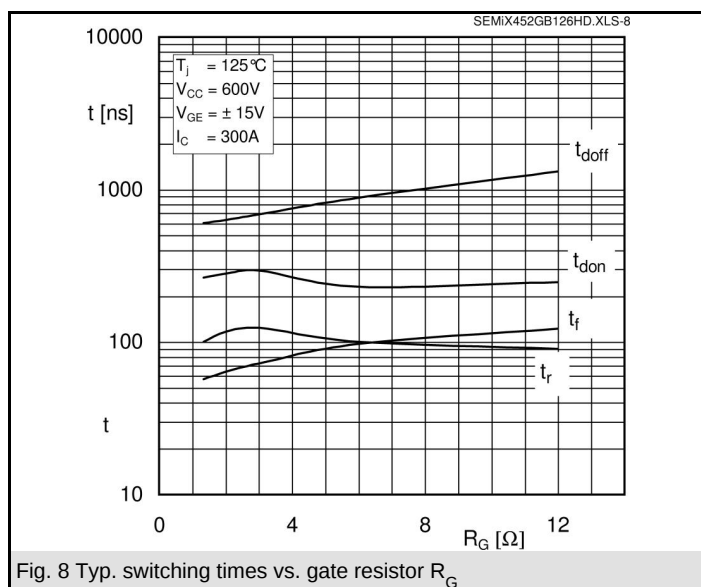
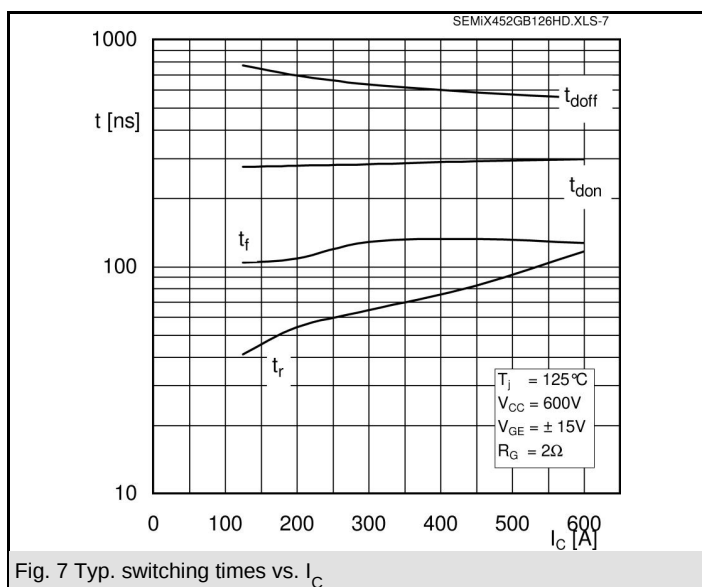
- AC inverter drives
- UPS
- Electronic welders

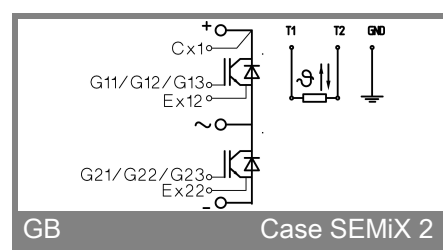
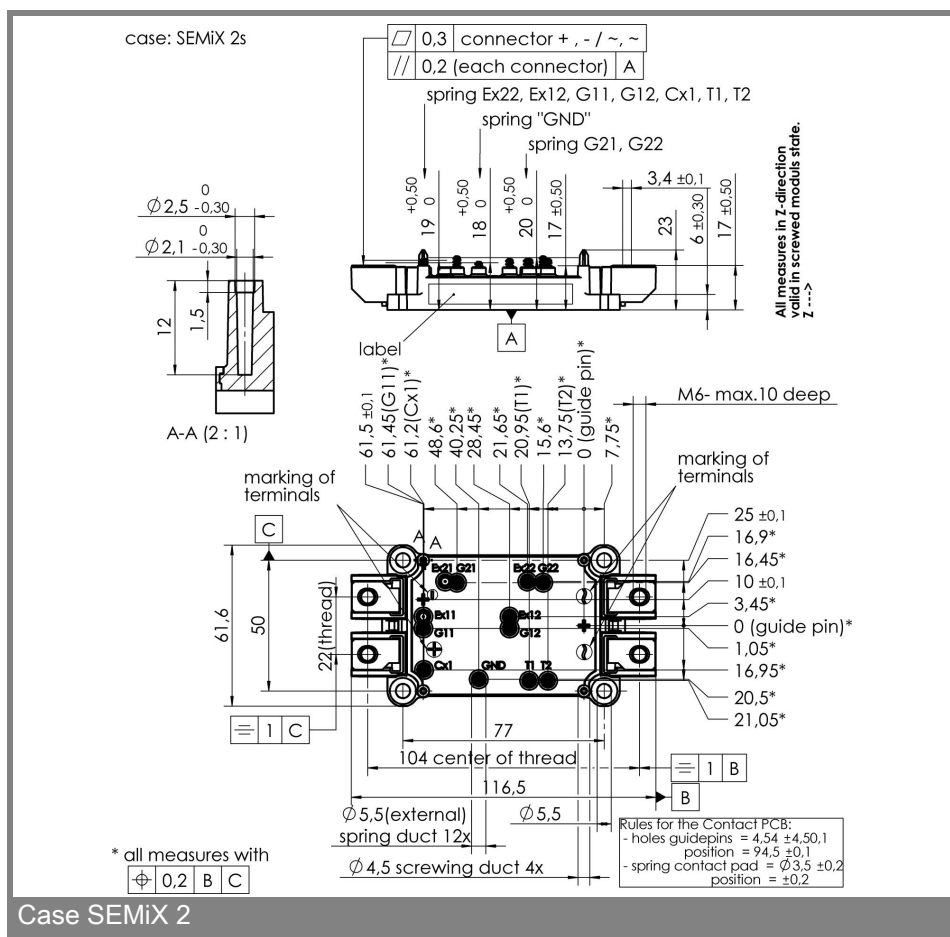
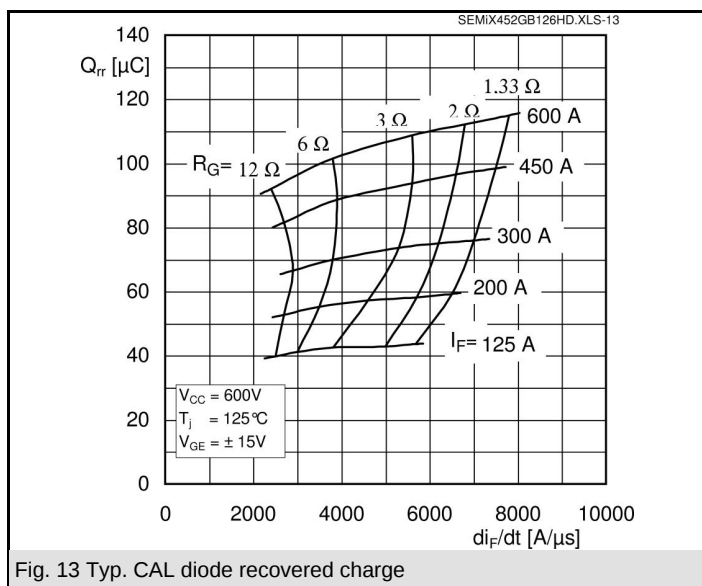
Absolute Maximum Ratings		$T_{case} = 25^{\circ}\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_c = 25\ (80)^{\circ}\text{C}$	470 (330)	A
I_{CRM}	$t_p = 1\ \text{ms}$	600	A
V_{GES}		± 20	V
T_{vj} , (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^{\circ}\text{C}$
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	$T_c = 25\ (80)^{\circ}\text{C}$	350 (240)	A
I_{FRM}	$t_p = 1\ \text{ms}$	600	A
I_{FSM}	$t_p = 10\ \text{ms}$; sin.; $T_j = 25^{\circ}\text{C}$	1900	A

Characteristics		$T_{case} = 25^{\circ}\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 12\ \text{mA}$	5	5,8	6,5	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25\ (125)^{\circ}\text{C}$			2	mA
$V_{CE(TO)}$	$T_j = 25\ (125)^{\circ}\text{C}$		1 (0,9)	1,2 (1,1)	V
r_{CE}	$V_{GE} = 15\ \text{V}$, $T_j = 25\ (125)^{\circ}\text{C}$		2,2 (3,7)	3,2 (4,5)	$\text{m}\Omega$
$V_{CE(sat)}$	$I_C = 300\ \text{A}$, $V_{GE} = 15\ \text{V}$, $T_j = 25\ (125)^{\circ}\text{C}$, chip level		1,7 (2)	2,15 (2,45)	V
C_{ies}	under following conditions		22		nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25\ \text{V}$, $f = 1\ \text{MHz}$		1,2		nF
C_{res}			1		nF
L_{CE}			18		nH
$R_{CC'+EE'}$	terminal-chip, $T_c = 25\ (125)^{\circ}\text{C}$				$\text{m}\Omega$
$t_{d(on)}/t_r$	$V_{CC} = 600\ \text{V}$, $I_C = 300\ \text{A}$		285 / 65		ns
$t_{d(off)}/t_f$	$V_{GE} = \pm 15\ \text{V}$		635 / 130		ns
$E_{on}\ (E_{off})$	$R_{Gon} = R_{Goff} = 2\ \Omega$, $T_j = 125^{\circ}\text{C}$		35 (45)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_F = 300\ \text{A}$; $V_{GE} = 0\ \text{V}$; $T_j = 25\ (125)^{\circ}\text{C}$, chip level		1,6 (1,6)	1,8 (1,8)	V
$V_{(TO)}$	$T_j = 25\ (125)^{\circ}\text{C}$		1 (0,8)	1,1 (0,9)	V
r_T	$T_j = 25\ (125)^{\circ}\text{C}$		2 (2,7)		$\text{m}\Omega$
I_{RRM}	$I_F = 300\ \text{A}$; $T_j = 25\ (125)^{\circ}\text{C}$		(375)		A
Q_{rr}	$di/dt = 6200\ \text{A}/\mu\text{s}$		(75)		μC
E_{rr}	$V_{GE} = -15\ \text{V}$		(33)		mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,08	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,18	K/W
$R_{th(j-c)FD}$	per FWD				K/W
$R_{th(c-s)}$	per module		0,045		K/W
Temperature sensor					
R_{25}	$T_c = 25^{\circ}\text{C}$		5 $\pm 5\%$		k Ω
$B_{25/85}$	$R_2 = R_1 \exp[B(1/T_2 - 1/T_1)]$; $T[K]; B$		3420		K
Mechanical data					
M_s/M_t	to heatsink (M5) / for terminals (M6)	3/2,5		5 / 5	Nm
w			250		g









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.