



SEMITRANS™ 3

Superfast NPT-IGBT Modules

SKM 150GB063D

Features

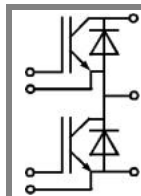
- N channel, Homogeneous Silicon structure (NPT - Non punch-through IGBT)
- Low tail current with low temperature dependence
- High short circuit capability, self limiting if term. G is clamped to E
- Pos. temp.-coeff- of V_{CEsat}
- 50 % less turn off losses
- 30 % less short circuit current
- Very low C_{ies} , C_{oes} , C_{res}
- Latch-up free
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology without hard mould
- Large clearance (13 mm) and creepage distances (20 mm)

Typical Applications

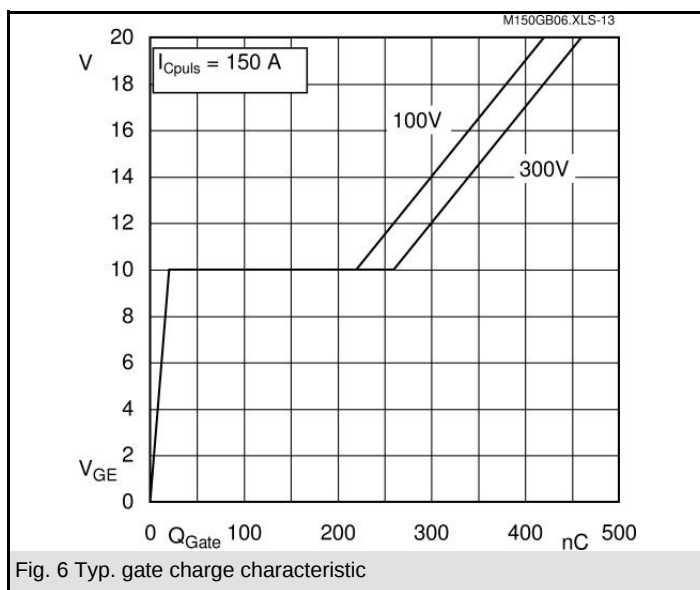
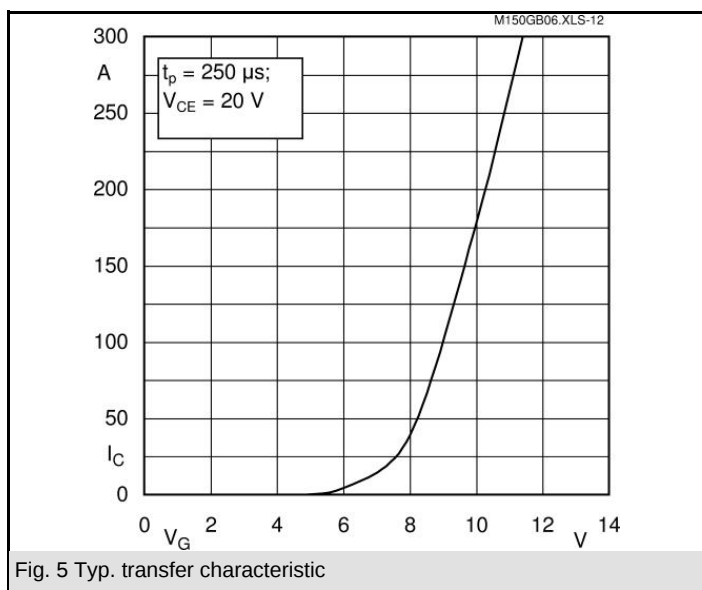
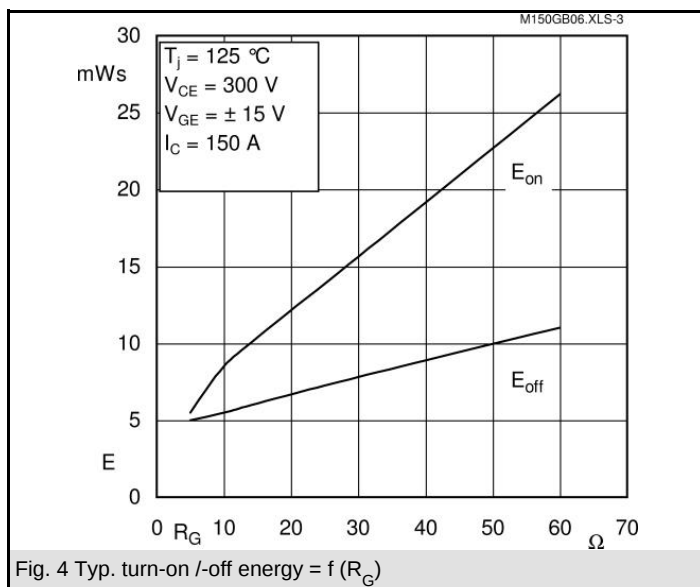
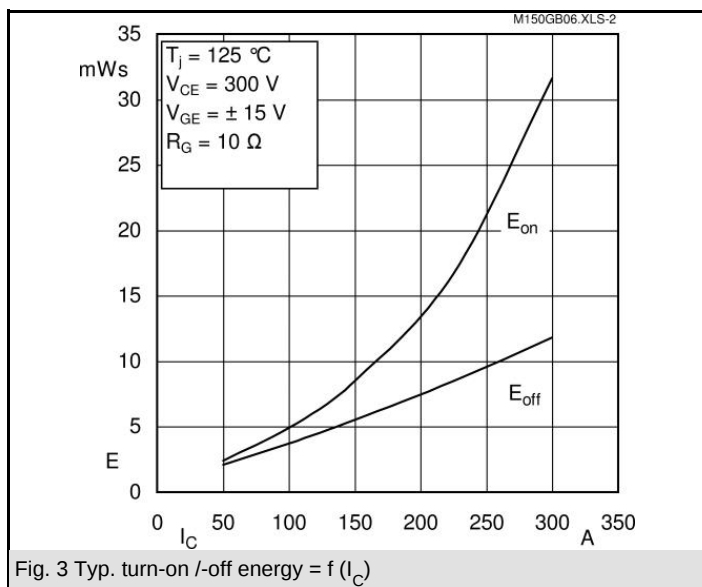
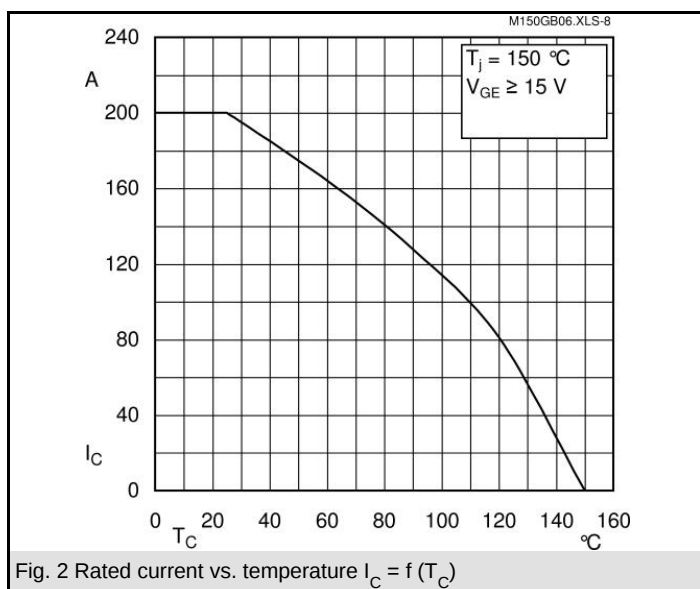
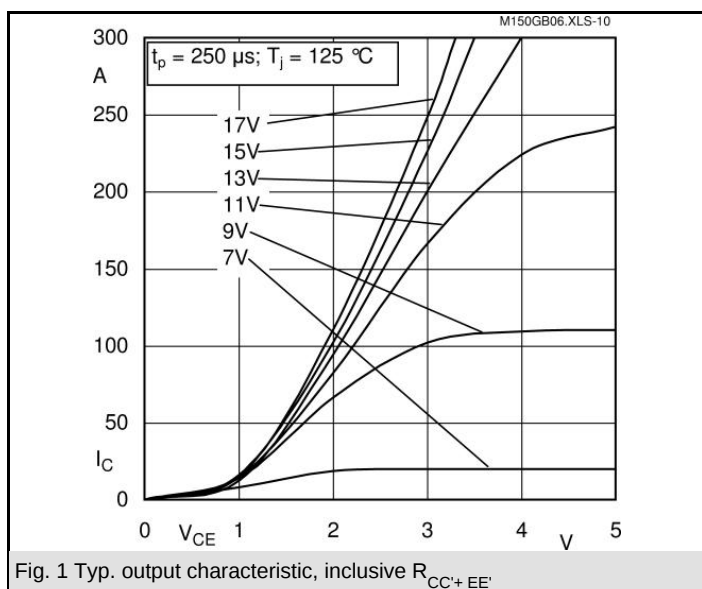
- Switching (not for linear use)
- Switched mode power supplies
- UPS
- AC inverter servo drives
- Pulse frequencies also above 10 kHz
- Welding inverters

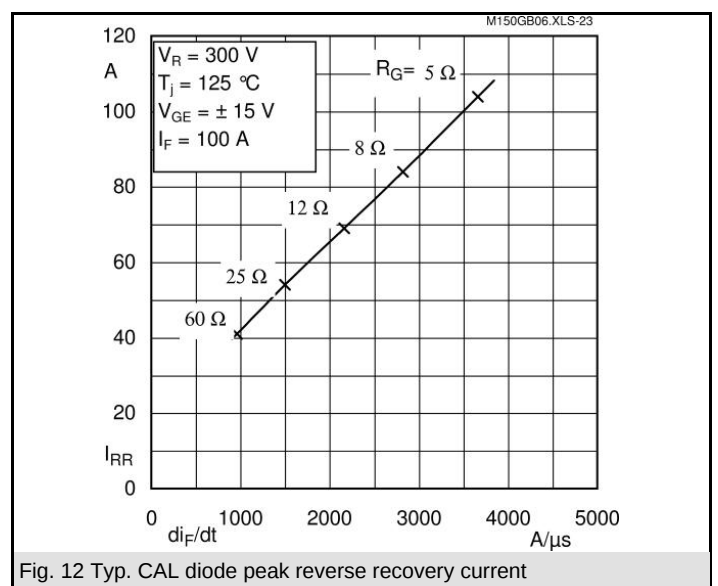
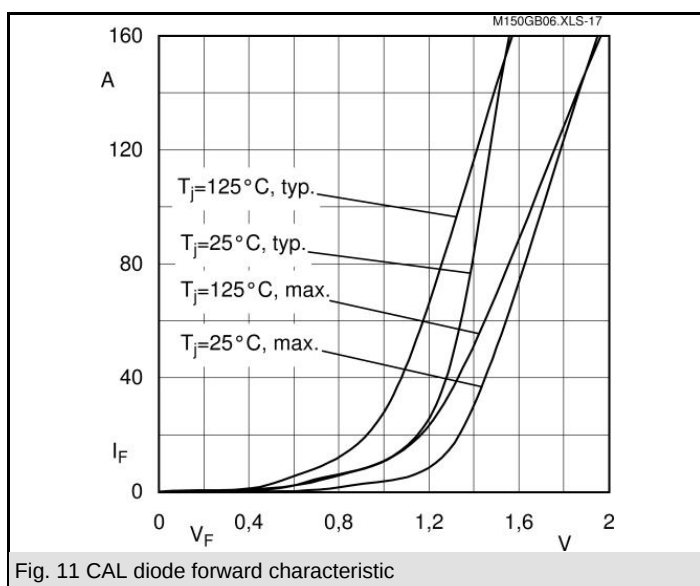
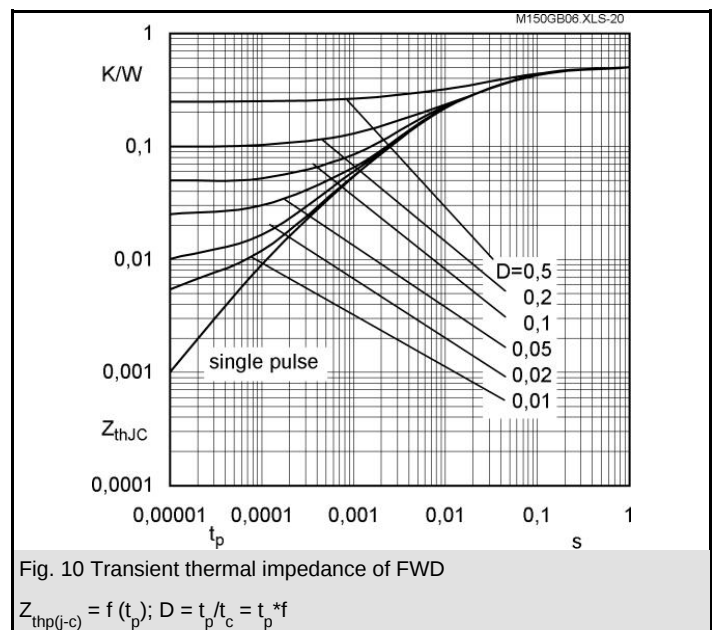
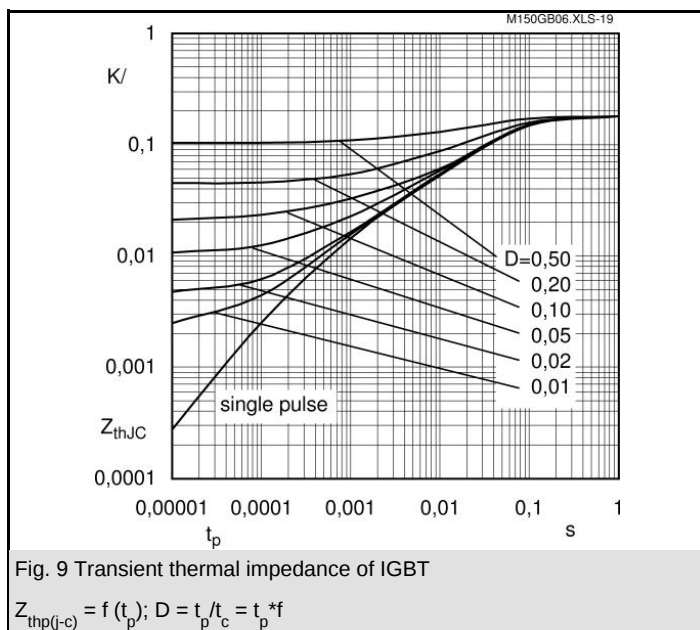
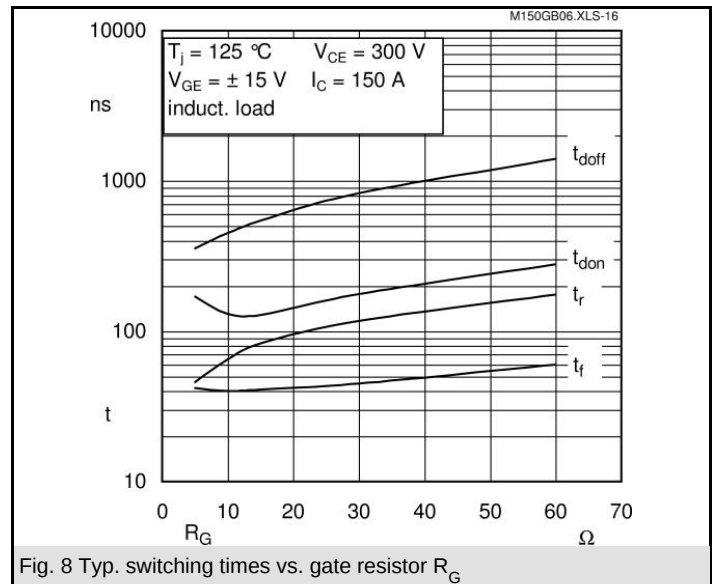
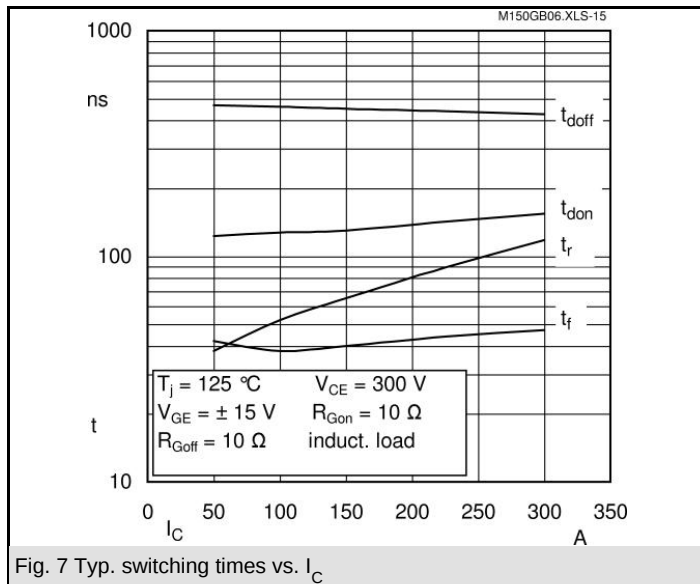
Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		600	V
I_C	$T_c = 25 (70)^\circ\text{C}$	200 (150)	A
I_{CRM}	$t_p = 1 \text{ ms}$	300	A
V_{GES}		± 20	V
T_{vj} , (T_{stg})	$T_{OPERATION} \leq T_{stg}$	-40 ... +150 (125)	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V
Inverse diode			
I_F	$T_c = 25 (80)^\circ\text{C}$	130 (90)	A
I_{FRM}	$t_p = 1 \text{ ms}$	300	A
I_{FSM}	$t_p = 10 \text{ ms}$; sin.; $T_j = 150^\circ\text{C}$	880	A

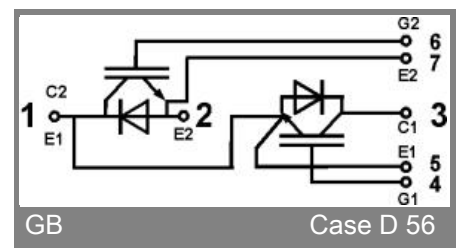
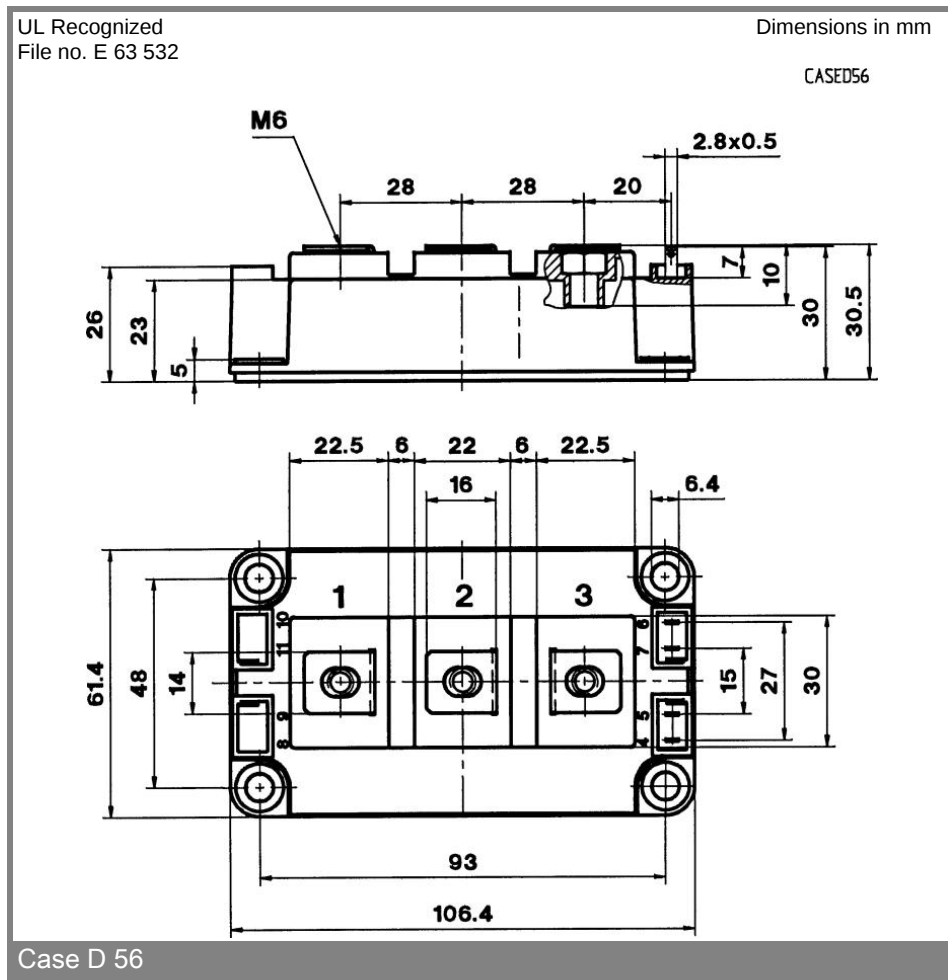
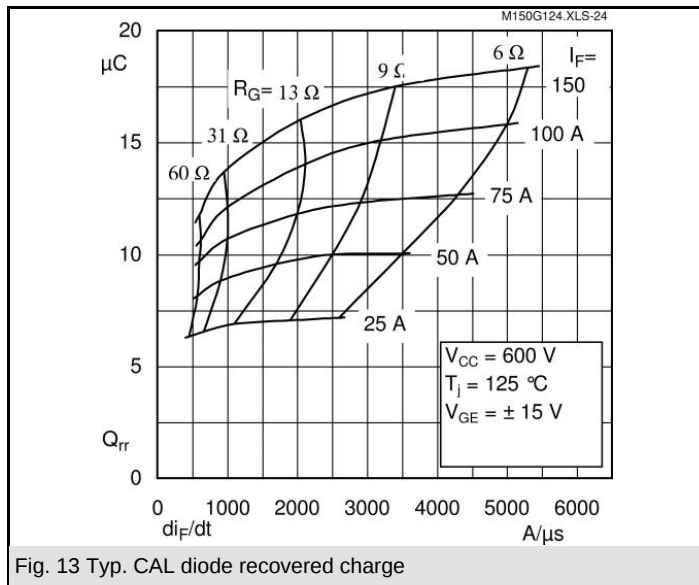
Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 1 \text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25 (125)^\circ\text{C}$		0,15	0,45	mA
$V_{CE(TO)}$	$T_j = 25 (125)^\circ\text{C}$		1,05 (1)		V
r_{CE}	$V_{GE} = 15 \text{ V}$, $T_j = 25 (125)^\circ\text{C}$		7 (8,7)		m Ω
$V_{CE(sat)}$	$I_{Cnom} = 150 \text{ A}$, $V_{GE} = 15 \text{ V}$, chip level		2,1 (2,4)	2,5 (2,8)	V
C_{ies}	under following conditions		8,4		nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25 \text{ V}$, $f = 1 \text{ MHz}$		1		nF
C_{res}			0,6		nF
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c = 25 (125)^\circ\text{C}$		0,35 (0,5)		m Ω
$t_{d(on)}$	$V_{CC} = 300 \text{ V}$, $I_{Cnom} = 150 \text{ A}$		130		ns
t_r	$R_{Gon} = R_{Goff} = 10 \Omega$, $T_j = 125^\circ\text{C}$		65		ns
$t_{d(off)}$	$V_{GE} = \pm 15 \text{ V}$		450		ns
t_f			40		ns
$E_{on} (E_{off})$			8,5 (5,5)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 150 \text{ A}$; $V_{GE} = 0 \text{ V}$; $T_j = 25 (125)^\circ\text{C}$		1,55 (1,55)	1,9	V
$V_{(TO)}$	$T_j = 125 ()^\circ\text{C}$			0,9	V
r_T	$T_j = 125 ()^\circ\text{C}$		6	8	m Ω
I_{RRM}	$I_{Fnom} = 150 \text{ A}$; $T_j = 125 ()^\circ\text{C}$		53		A
Q_{rr}	$di/dt = \text{A}/\mu\text{s}$		8,1		μC
E_{rr}	$V_{GE} = \text{V}$				mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,18	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,5	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	2,5		5	Nm
w				325	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.