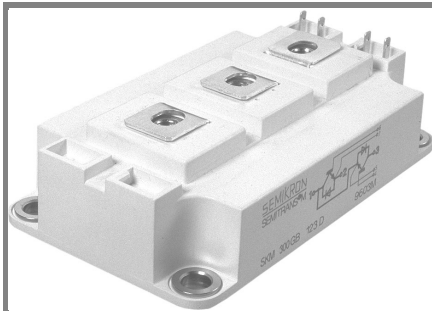


SKM 300GB125D



SEMITRANS™ 3

Ultra Fast IGBT Module

SKM 300GB125D

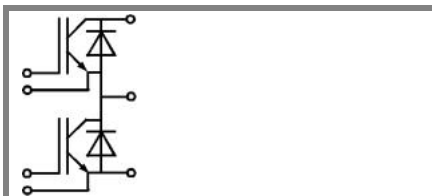
Preliminary Data

Features

- N channel, homogeneous Silicon structure (NPT - Non punch-through IGBT)
- Low inductance case
- Short tail current with low temperature dependence
- High short circuit capability, self limiting
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology
- Large clearance (10 mm) and creepage distances (20 mm)

Typical Applications

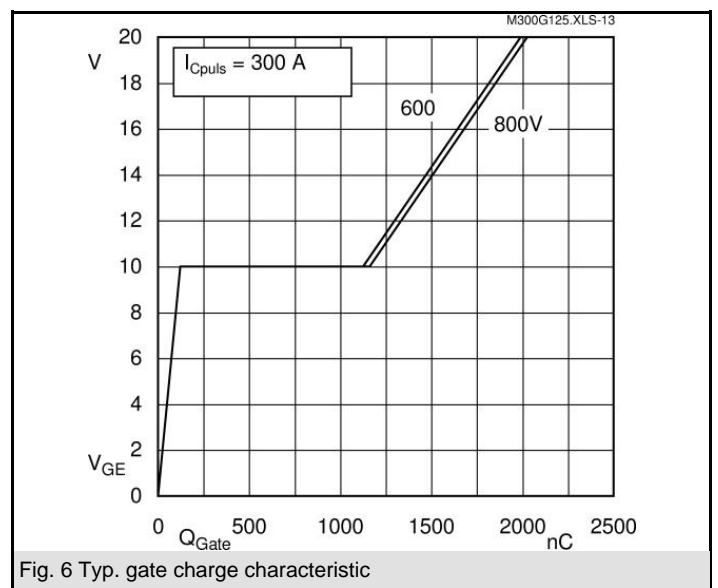
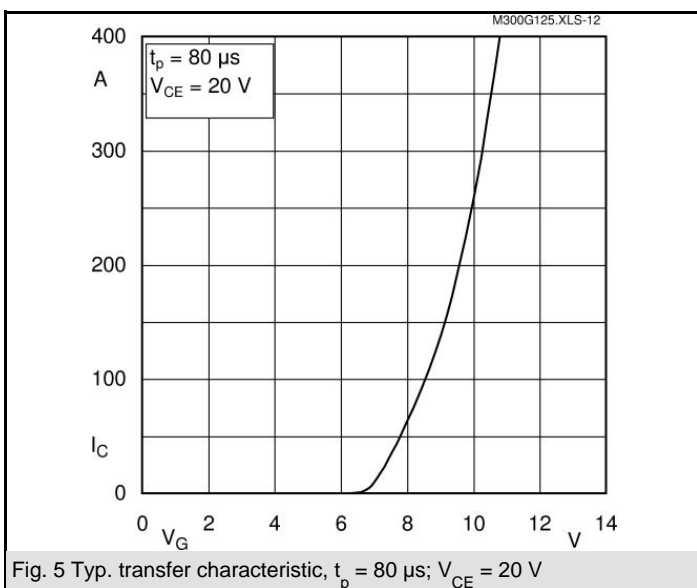
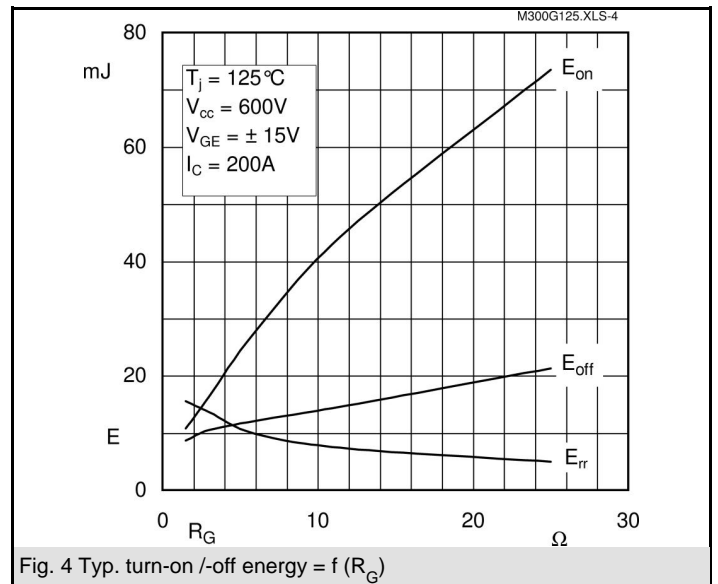
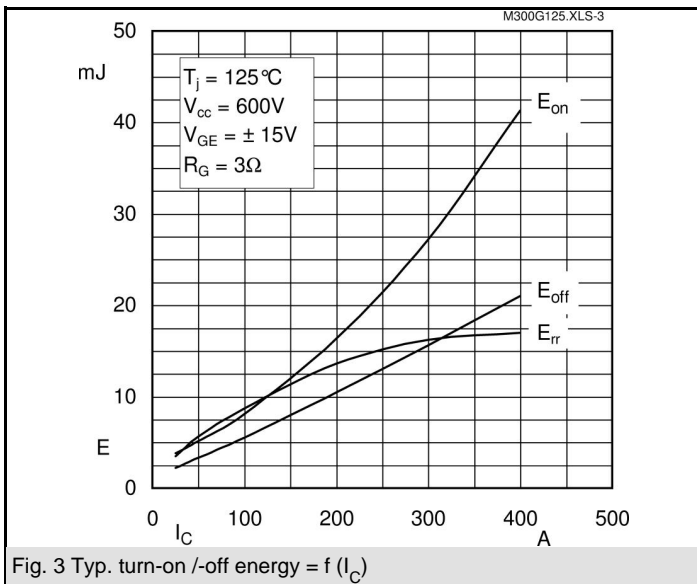
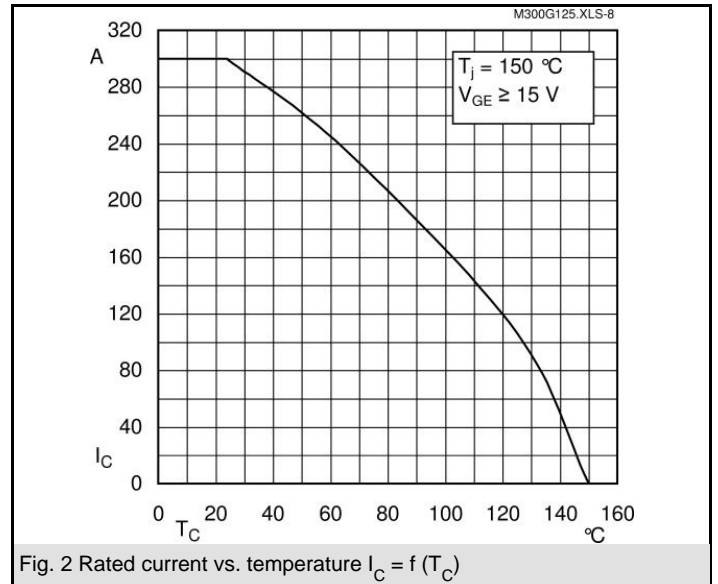
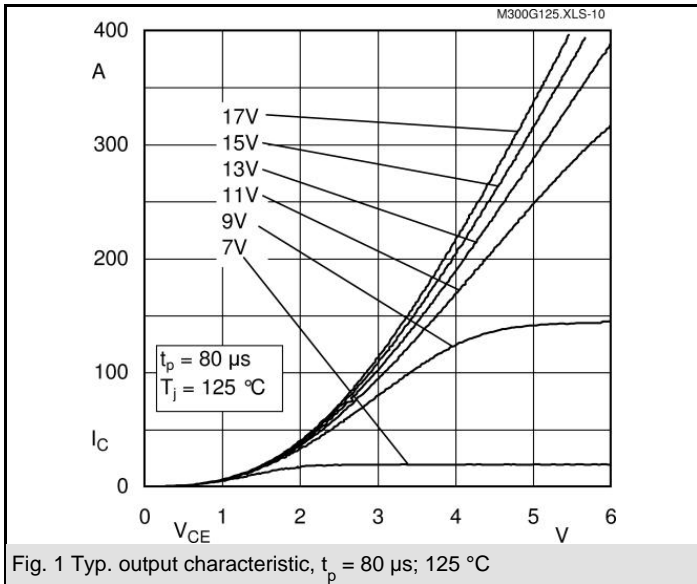
- Switched mode power supplies at $f_{sw} > 20$ kHz
- Resonant inverters up to 100 kHz
- Silent AC motor speed control (elevators)
- Inductive heating
- Silent UPS Uninterruptable power supplies at $f_{sw} > 20$ kHz
- Electronic (also portable) welders at $f_{sw} > 20$ kHz

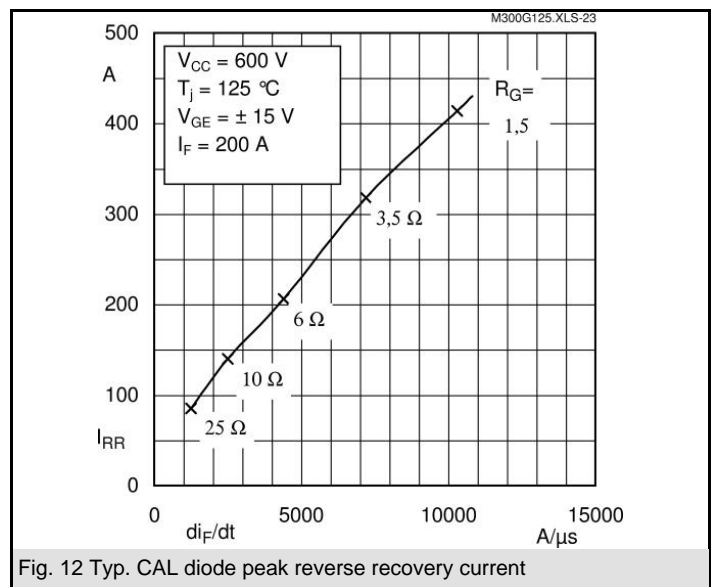
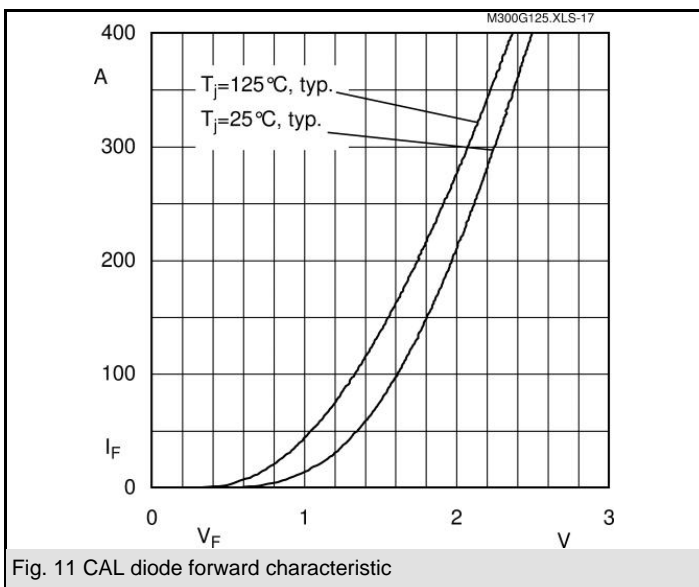
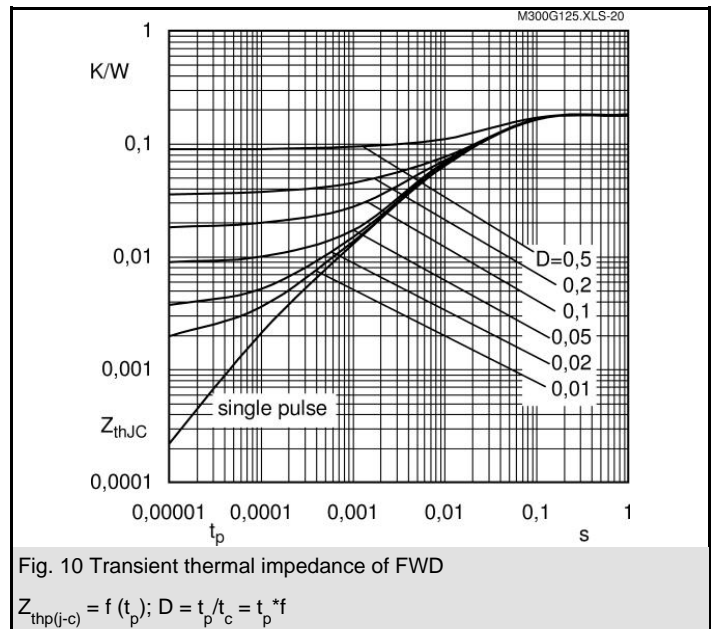
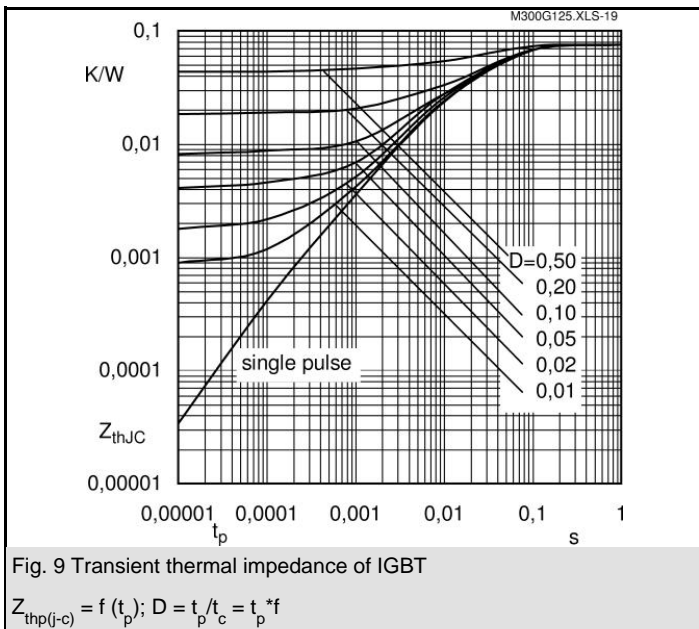
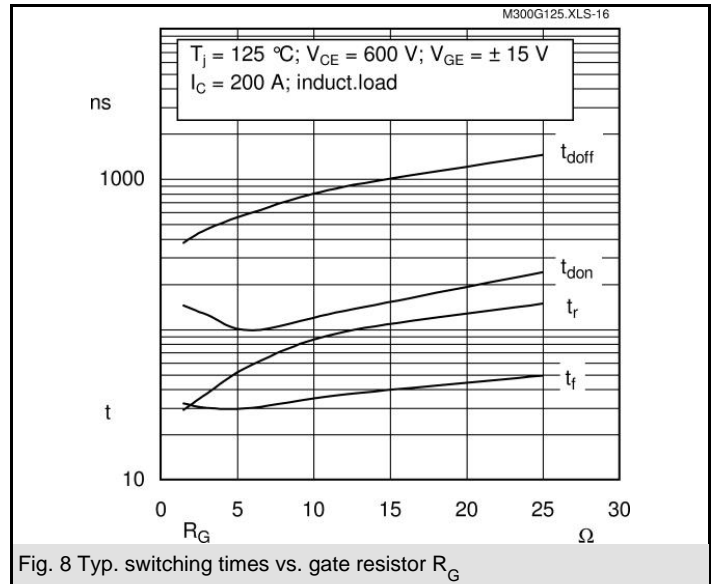
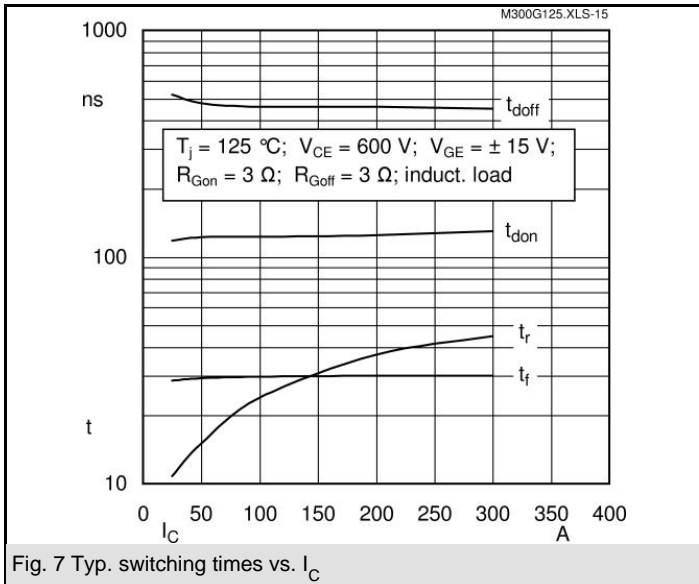


GB

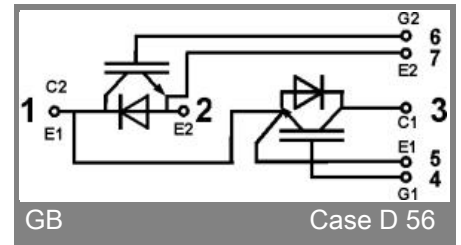
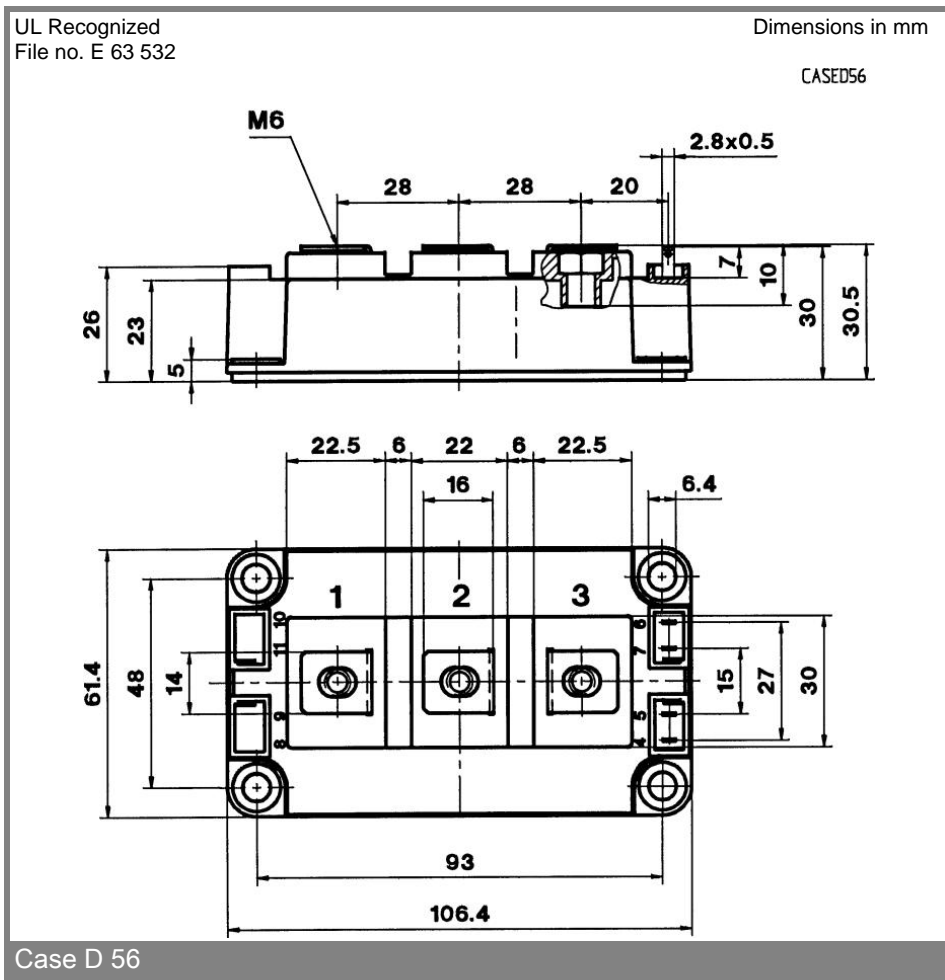
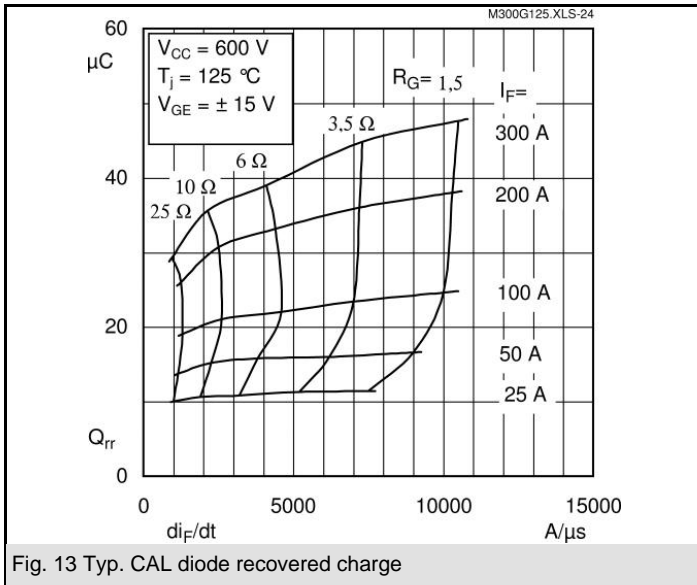
Absolute Maximum Ratings		$T_c = 25\text{ °C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_c = 25$ (80) °C	300 (210)	A
I_{CRM}	$T_c = 25$ (80) °C, $t_p = 1$ ms	600 (420)	A
V_{GES}		± 20	V
T_{vj} (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	°C
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	$T_c = 25$ (80) °C	260 (180)	A
I_{FRM}	$T_c = 25$ (80) °C, $t_p = 1$ ms	600 (420)	A
I_{FSM}	$t_p = 10$ ms; sin.; $T_j = 150$ °C	2200	A

Characteristics		$T_c = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$; $I_C = 8$ mA	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$; $T_j = 25$ (125) °C		0,1	0,3	mA
$V_{CE(TO)}$	$T_j = 25$ (125) °C		1,5 (1,7)	1,75	V
r_{CE}	$V_{GE} = 15$ V, $T_j = 25$ (125) °C		9 (11,5)	10,5	mΩ
$V_{CE(sat)}$	$I_C = 200$ A, $V_{GE} = 15$ V, chip level		3,3 (4)	3,85	V
C_{ies}	under following conditions		18	24	nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25$ V, $f = 1$ MHz		2,5	3,2	nF
C_{res}			1	1,3	nF
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c = 25$ (125) °C		0,35 (0,5)		mΩ
$t_{d(on)}$	$V_{CC} = 600$ V, $I_C = 200$ A		130		ns
t_r	$R_{Gon} = R_{Goff} = 3\ \Omega$, $T_j = 125$ °C		40		ns
$t_{d(off)}$	$V_{GE} = \pm 15$ V		460		ns
t_f			30		ns
$E_{on} (E_{off})$			16 (11)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_F = 200$ A; $V_{GE} = 0$ V; $T_j = 25$ (125) °C		2 (1,8)	2,5	V
$V_{(TO)}$	$T_j = 125$ () °C		1,1	1,2	V
r_T	$T_j = 125$ () °C		3	5,5	mΩ
I_{RRM}	$I_F = 200$ A; $T_j = 125$ () °C		340		A
Q_{rr}	$di/dt = 8000$ A/ μ s		46		μ C
E_{rr}	$V_{GE} = 0$ V		13,6		mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,075	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,18	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





SKM 300GB125D



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.