

SKM 200 GB 128 D

Absolute Maximum Ratings $T_{case} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified			
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$	285 (205)	A
I_{CRM}	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$, $t_p = 1\text{ ms}$	650 (470)	A
V_{GES}		± 20	V
T_{vj} , (T_{stg})	$T_{OPERATION} \leq T_{stg}$	$-40 \dots +150\text{ (125)}$	$^{\circ}\text{C}$
V_{isol}	AC, 1 min.	4000	V
Inverse Diode			
$I_{FAV} = -I_C$	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$	190 (130)	A
I_{FRM}	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$, $t_p < 1\text{ ms}$	650 (470)	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ }^{\circ}\text{C}$	1450	A
Freewheeling Diode			
$I_{FAV} = -I_C$	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$		A
I_{FRM}	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$, $t_p < 1\text{ ms}$		A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ }^{\circ}\text{C}$		A

Characteristics $T_{case} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified					
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(TO)}$	$V_{GE} = V_{CE}$, $I_C = 6\text{ mA}$	4,5	5,5	6,45	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$			tbd	mA
$V_{CE(TO)}$	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		1,0 (0,9)	1,15	V
r_{CE}	$V_{GE} = 15\text{ V}$, $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		6,7 (9,3)	8,3(tbd)	m Ω
$V_{CE(sat)}$	$I_C = 150\text{ A}$, $V_{GE} = 15\text{ V}$, chip level		2,0 (2,3)	2,4	V
C_{ies}	$V_{GE} = 0$, $V_{CE} = 25\text{ V}$, $f = 1\text{ MHz}$		13		nF
C_{oes}			2		nF
C_{res}			2		nF
L_{CE}				20	nH
$R_{CC' + EE'}$	resistance, terminal-chip $25\text{ (125)}\text{ }^{\circ}\text{C}$		0,35 (0,5)		m Ω
$t_{d(on)}$	under following conditions: $V_{CC} = 600\text{ V}$, $I_C = 150\text{ A}$		125		ns
t_r	$R_{Gon} = R_{Goff} = 7\text{ }\Omega$, $T_j = 125\text{ }^{\circ}\text{C}$,		50		ns
$t_{d(off)}$	$V_{GE} \pm 15\text{ V}$		620		ns
t_f			55		ns
$E_{on} (E_{off})$			18 (15)		mJ
Inverse Diode under following conditions:					
$V_F = V_{EC}$	$I_F = 150\text{ A}$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		2,0 (1,8)	2,5	V
$V_{T(TO)}$	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		1,1 (tbd)	1,2	V
r_T	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		6 (tbd)	8,7(tbd)	m Ω
I_{RRM}	$I_F = 150\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$		190		A
Q_{rr}	$di/dt = 4800\text{ A}/\mu\text{s}$		24		μC
E_{rr}	$V_{GE} = 0\text{ V}$		8		mJ
FWD under following conditions:					
$V_F = V_{EC}$	$I_F = A$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$				V
V_{TO}	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$				V
r_T	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$				m Ω
I_{RRM}	$I_F = A$; $T_j = 125\text{ }^{\circ}\text{C}$				A
Q_{rr}	$V_{GE} = 0\text{ V}$				μC
E_{rr}					mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0,095	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,25	K/W
$R_{th(j-c)FD}$	per FWD			—	K/W
$R_{th(c-s)}$	per module			0,038	K/W
Mechanical Data					
M_s	to heatsink (M6)	3		5	Nm
M_t	for terminals (M5)	2,5		5	Nm
W				325	g

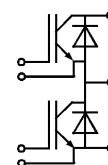
SEMITRANS™ M SPT IGBT Module

SKM 200 GB 128 D

Preliminary Data



SEMITRANS 3



GB

Features

- Homogeneous Si
- SPT = Soft-Punch-Through technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications

- AC inverter drives
- UPS
- Electronic welders f_{sw} up to 20kHz

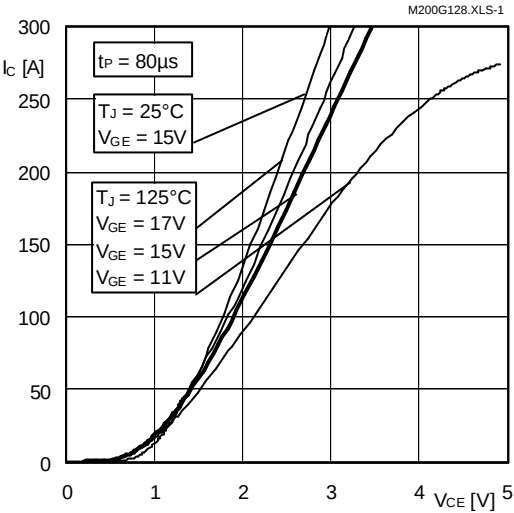


Fig. 1 Typ. output characteristic, inclusive $R_{CC'} + E_{E'}$

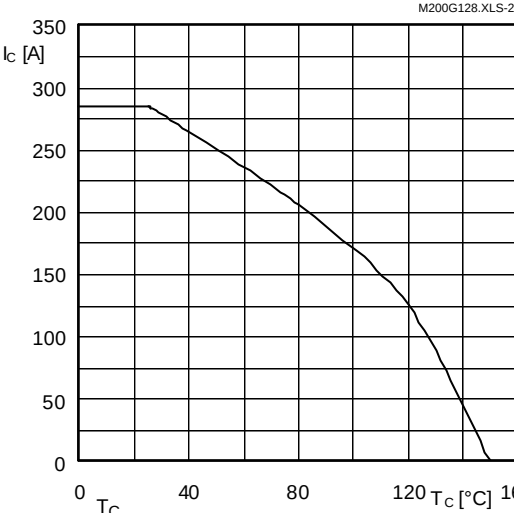


Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

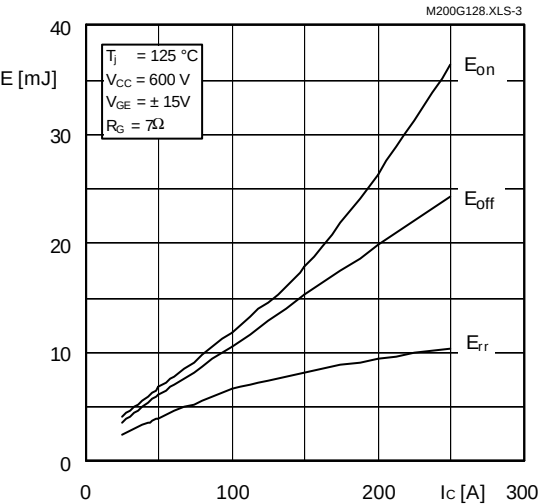


Fig. 3 Typ. turn-on /-off energy = $f(I_C)$

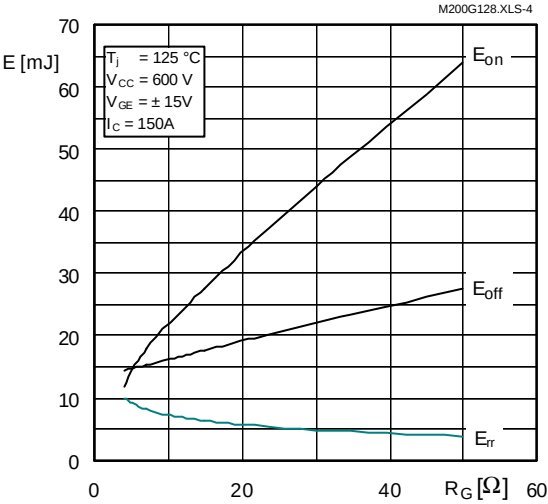


Fig. 4 Typ. turn-on /-off energy = $f(R_G)$

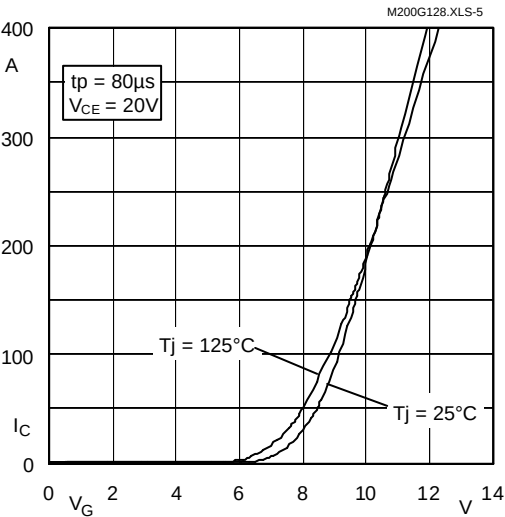


Fig. 5 Typ. transfer characteristic

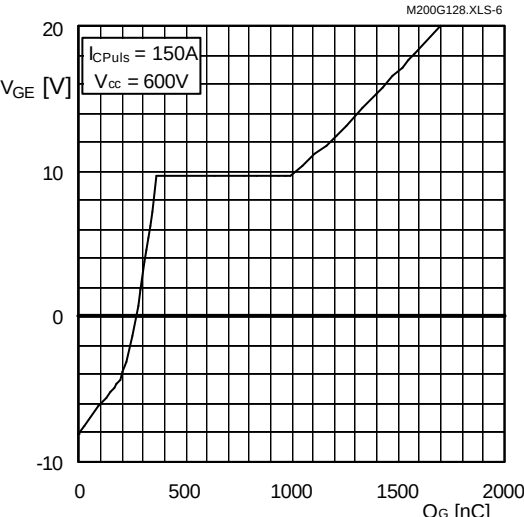
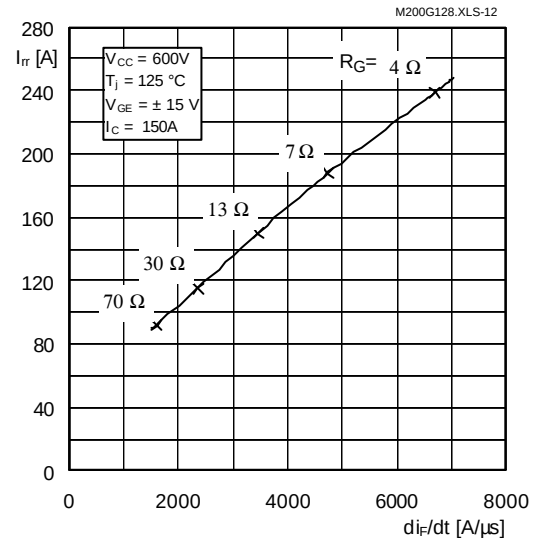
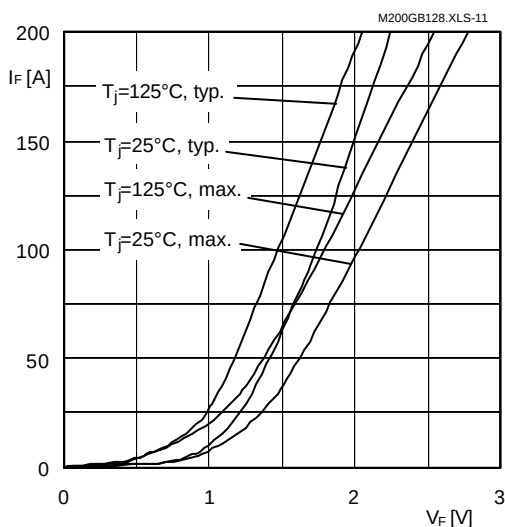
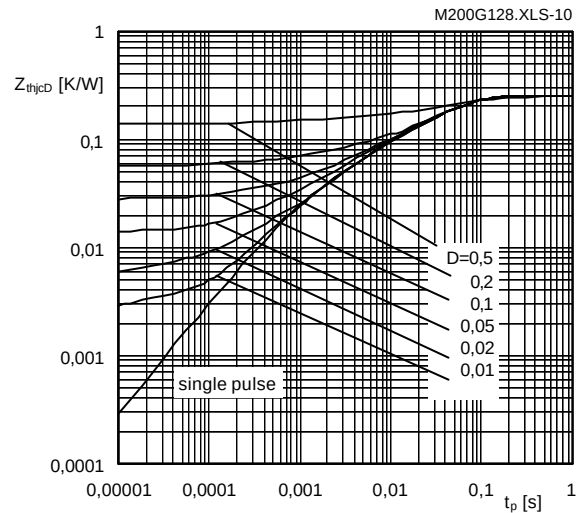
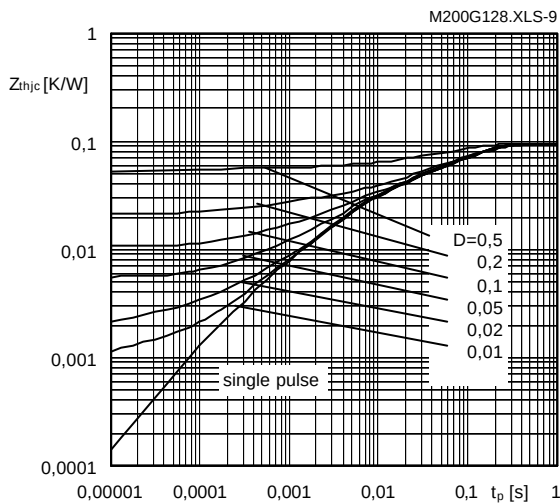
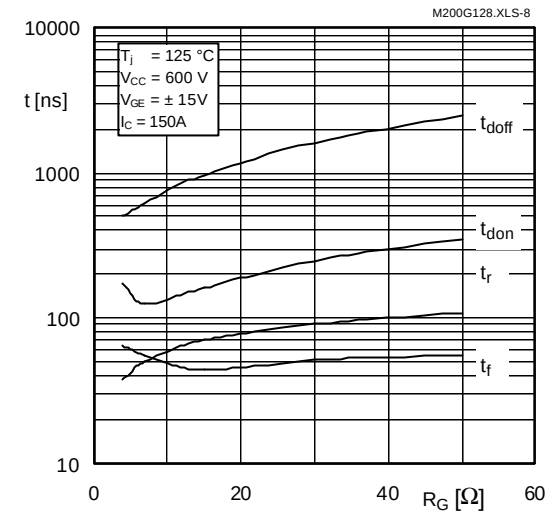
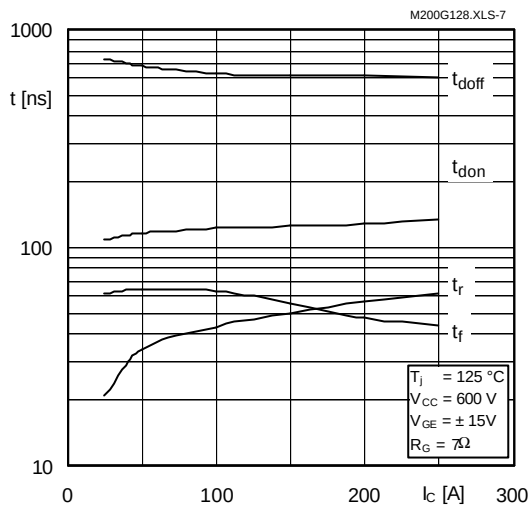
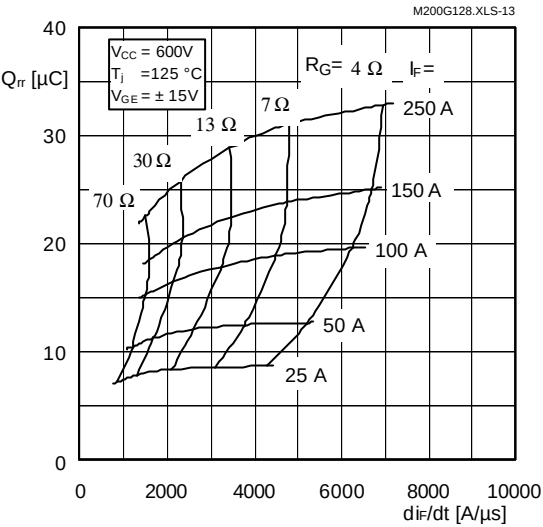


Fig. 6 Typ. gate charge characteristic





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

Packing Unit	12 pcs	SEMIBOX D
Mounting Kit	10 pcs	Ident-No. 33321100

Fig. 13 Typ. CAL diode recovered charge

SEMITRANS 3
Case D 56
UL Recognized
File no. E 63 532

SKM 200 GB 128 D

Dimensions in mm

CASED56

Case outline and circuit diagrams

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.