

SKM 100 GB 128 DN

Absolute Maximum Ratings		$T_{case} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$	135 (100)	A
I_{CRM}	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$, $t_p = 1\text{ ms}$	270 (200)	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			
$I_{FAV} = -I_C$	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$	95 (65)	A
I_{FRM}	$T_{case} = 25\text{ (80)}\text{ }^{\circ}\text{C}$, $t_p < 1\text{ ms}$	270 (200)	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ }^{\circ}\text{C}$	720	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					
$V_{GE(TO)}$	$V_{GE} = V_{CE}$, $I_C = 3\text{ mA}$	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}	$V_{GE} = 15\text{ V}$, $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		13 (19)	17	m Ω
$V_{CE(sat)}$	$I_C = 75\text{ A}$, $V_{GE} = 15\text{ V}$, chip level		2,0 (2,3)	2,4	V
C_{ies}			6,2		nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25\text{ V}$, $f = 1\text{ MHz}$		0,74		nF
C_{res}			0,71		nF
L_{CE}				25	nH
R_{CC+EE}	resistance, terminal-chip $25\text{ (125)}\text{ }^{\circ}\text{C}$		0,75 (1)		m Ω
$t_{d(on)}$	under following conditions:		150		ns
t_r	$V_{CC} = 600\text{ V}$, $I_C = 75\text{ A}$,		45		ns
$t_{d(off)}$	$R_{Gon} = R_{Goff} = 12\text{ }\Omega$, $T_j = 125\text{ }^{\circ}\text{C}$,		560		ns
t_f	$V_{GE} \pm 15\text{ V}$		50		ns
$E_{on} (E_{off})$			8,5 (7,5)		mJ
Inverse Diode					
$V_F = V_{EC}$	$I_F = 75\text{ A}$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		2,0 (1,8)	2,5	V
$V_{T(TO)}$	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		1,05 (tbd)	1,3 (tbd)	V
r_T	$T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$		13 (tbd)	16 (tbd)	m Ω
I_{RRM}	$I_F = 75\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$		105		A
Q_{rr}	$di/dt = 3100\text{ A}/\mu\text{s}$		10,5		μC
E_{rr}	$V_{GE} = 0\text{ V}$		3,4		mJ
Freewheeling Diode of GAL/GAR type					
$V_F = V_{EC}$	$I_F = A$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125)}\text{ }^{\circ}\text{C}$				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			0,21	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,5	K/W
$R_{th(j-c)FD}$	per FWD				K/W
$R_{th(c-s)}$	per module			0,05	K/W
Mechanical Data					
M_s	to heatsink (M6)	3		5	Nm
M_t	for terminals (M5)	2,5		5	Nm
w				160	g

SEMITRANS™ M SPT IGBT Module

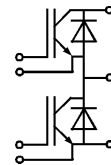
SKM 100 GB 128 DN

Preliminary Data



SEMITRANS 2N

low inductance case



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 at $f_{sw} > 20\text{ kHz}$

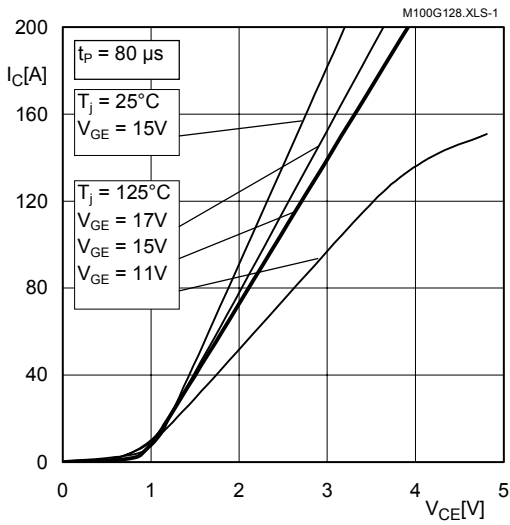


Fig. 1 Typ. output characteristic, inclusive $R_{CC}+EE$

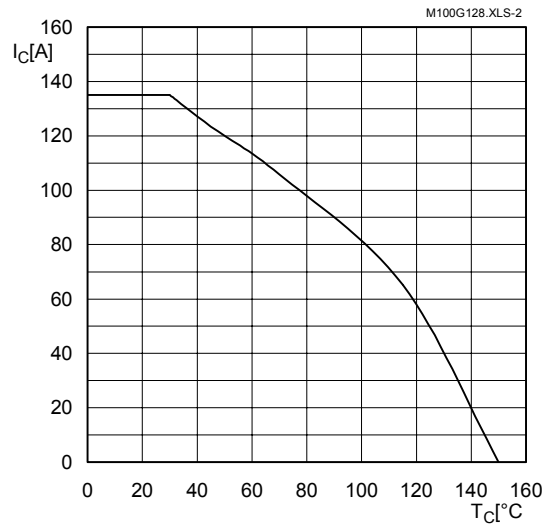


Fig. 2 Rated current vs. temperature $I_c = f(T_c)$

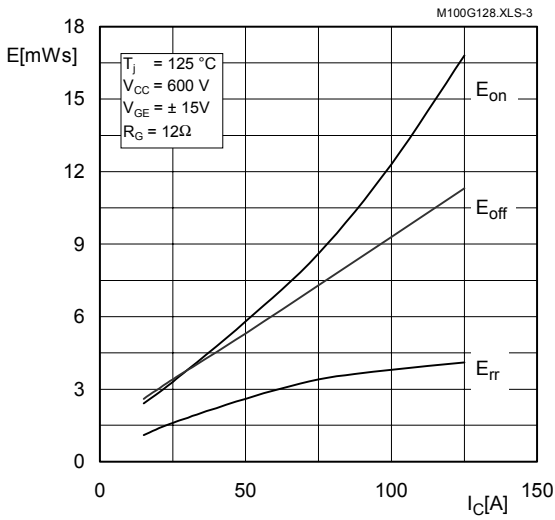


Fig. 3 Typ. turn-on /-off energy = $f(I_c)$

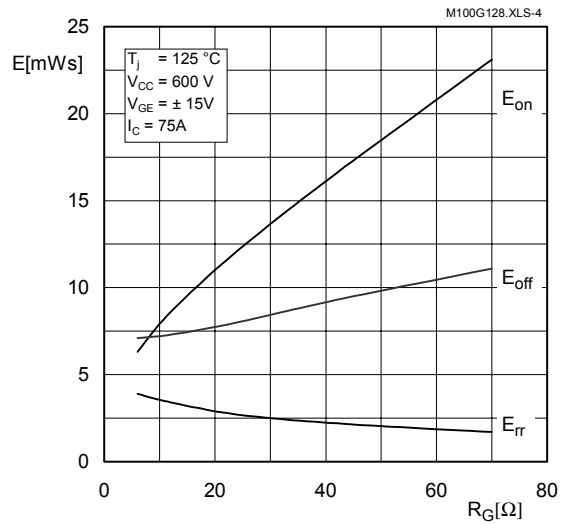


Fig. 4 Typ. turn-on /-off energy = $f(R_G)$

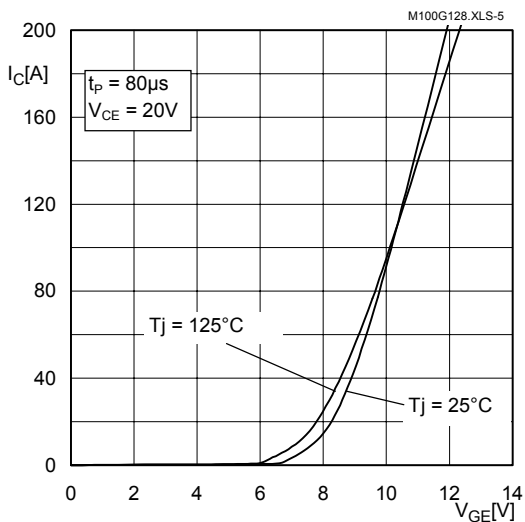


Fig. 5 Typ. transfer characteristic

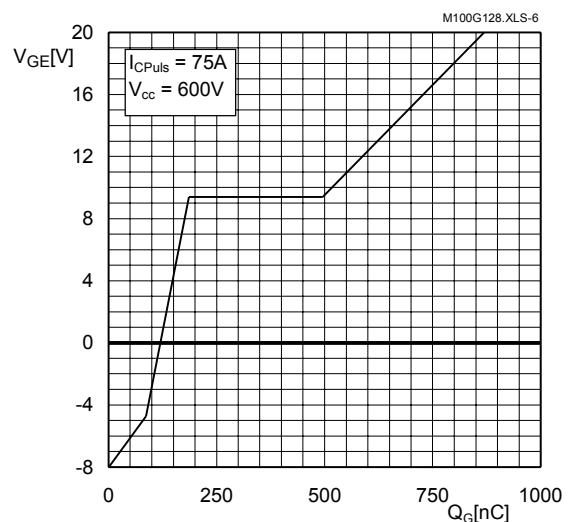
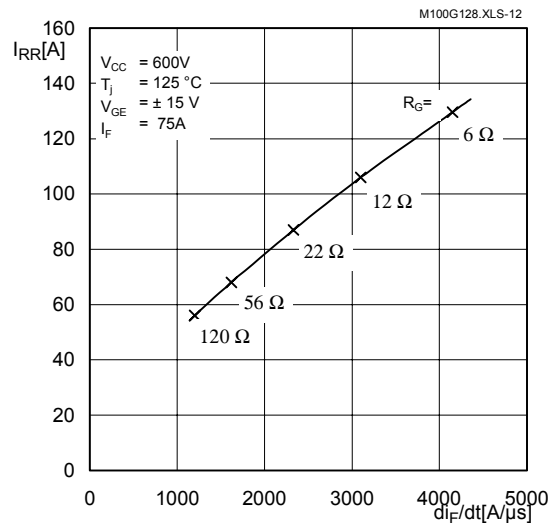
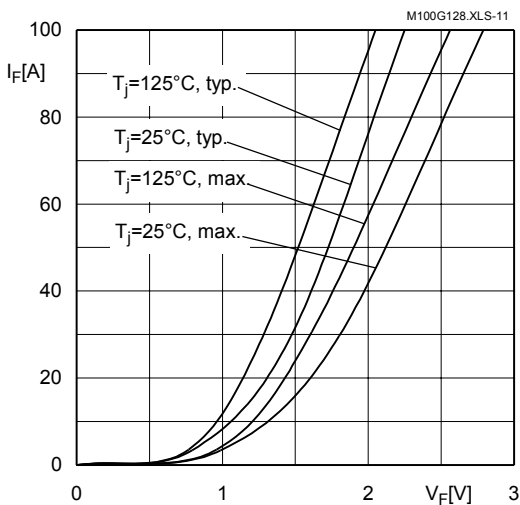
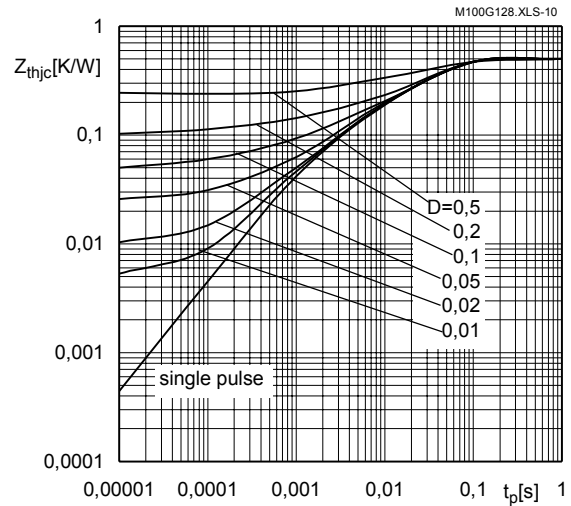
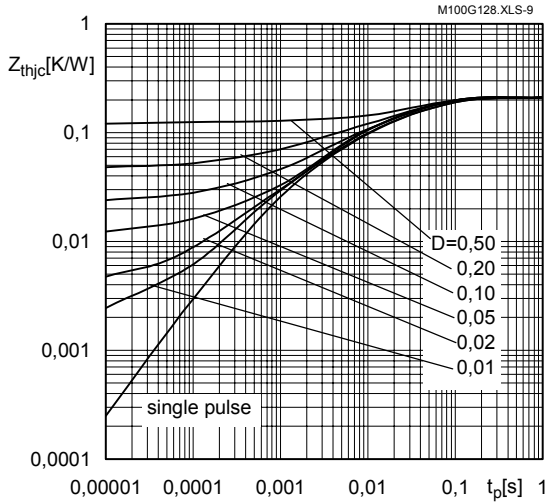
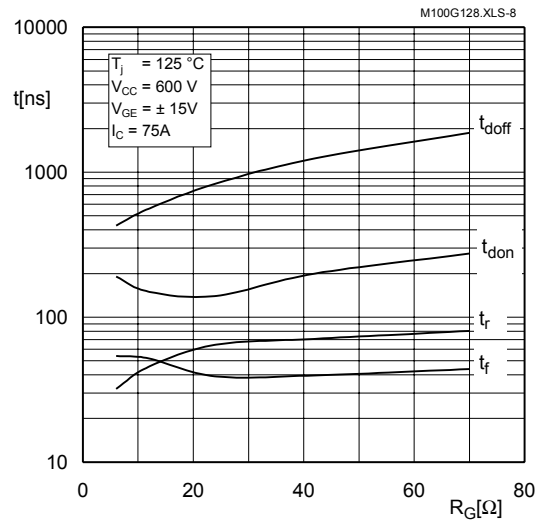
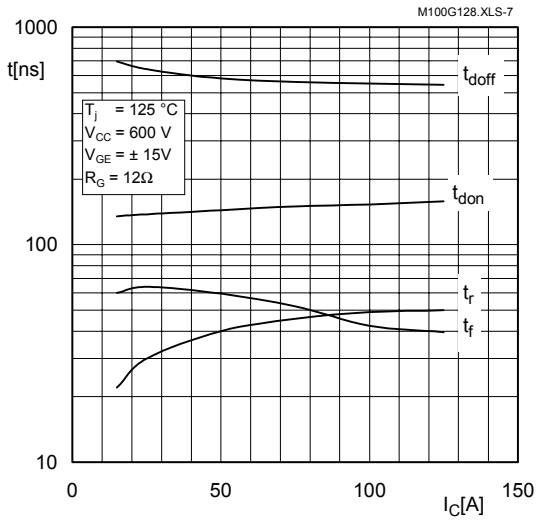
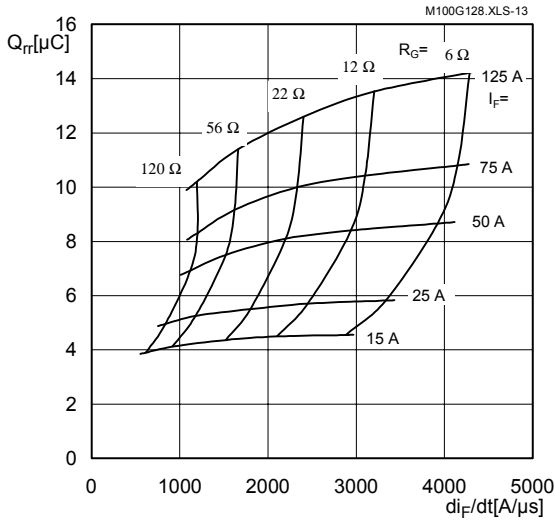


Fig. 6 Typ. gate charge characteristic



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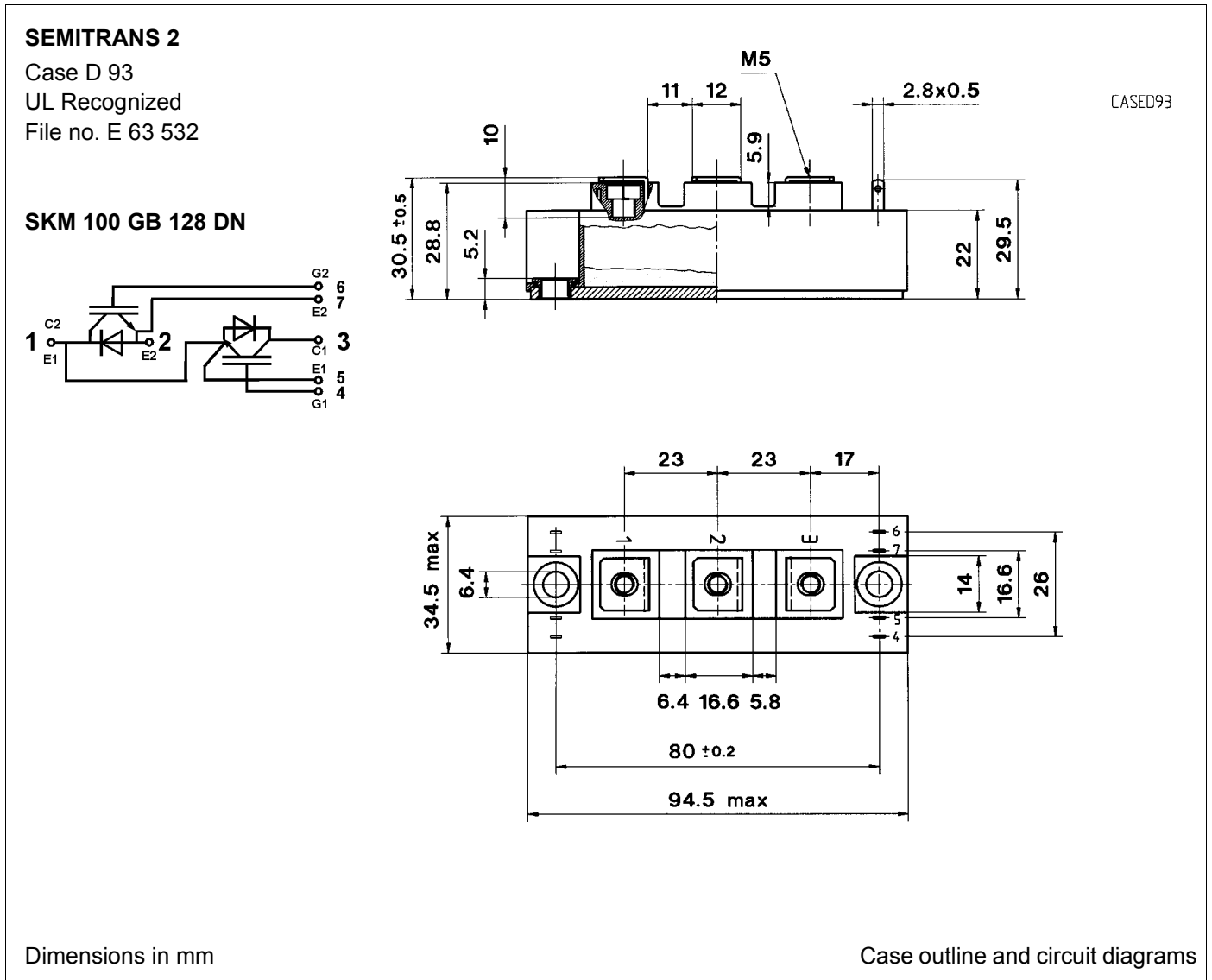


This is an electrostatic discharge sensitive device (ESDS).

Please observe the international standard IEC 60747-1, Chapter IX.

Packing Unit	8 pcs	SEMIBOX A
Mounting Kit	10 pcs	Ident-No. 33321100

Fig. 13 Typ. CAL diode recovered charge



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