

SKM 600 GAL 126 DT ...

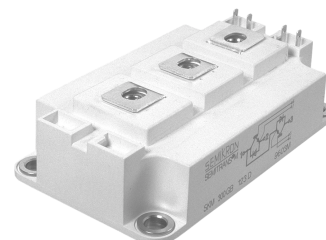
Absolute Maximum Ratings		$T_{case} = 25\text{ °C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_{case} = 25\text{ (80) °C}$	600 (430)	A
I_{CM}	$T_{case} = 25\text{ (80) °C}$, $t_p = 1\text{ ms}$	1200 (860)	A
V_{GES}		± 20	V
T_j , (T_{stg})	$T_{OPERATION} \leq T_{stg}$	$-40 \dots +150\text{ (125)}$	°C
V_{isol}	AC, 1 min.	2500	V
Inverse Diode			
$I_F = -I_C$	$T_{case} = 25\text{ (80) °C}$	150 (100)	A
$I_{FM} = -I_{CM}$	$T_{case} = 25\text{ (80) °C}$, $t_p < 1\text{ ms}$	400 (300)	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ °C}$	1450	A
Freewheeling Diode			
$I_F = -I_C$	$T_{case} = 25\text{ (80) °C}$	460 (320)	A
$I_{FM} = -I_{CM}$	$T_{case} = 25\text{ (80) °C}$, $t_p < 1\text{ ms}$	1200 (860)	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ °C}$	2900	A

Characteristics		$T_{case} = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 12\text{ mA}$	5,0	5,8	6,5	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25\text{ (125) °C}$		0,05(3)	5 (15)	mA
V_{CEO}	$V_{GE} = 15\text{ V}$, $T_j = 25\text{ (125) °C}$		0,97(0,88)		V
r_{CE}	$V_{GE} = 15\text{ V}$, $T_j = 25\text{ (125) °C}$		2,1 (3,4)	(4,2)	mΩ
V_{CESat}	$I_C = 400\text{ A}$, $V_{GE} = 15\text{ V}$, $T_j = 25\text{ (125) °C}$ chip level		1,8 (2,2)		V
C_{ies}			29		nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25\text{ V}$, $f = 1\text{ MHz}$		2		nF
C_{res}			1,9		nF
L_{CE}				20	nH
$R_{CC'+EE'}$	resistance, terminal-chip 25 (125) °C		0,4(0,6)		mΩ
$t_{d(on)}$	$V_{CC} = 600\text{ V}$		210		ns
t_r	$I_C = 400\text{ A}$		75		ns
$t_{d(off)}$	$R_{Gon} = R_{Goff} = 5\text{ Ω}$		850		ns
t_f	$T_j = 125\text{ °C}$		120		ns
E_{on}	$V_{GE} \pm 15\text{ V}$		55		mJ
E_{off}			60		mJ
Inverse Diode					
$V_F = V_{EC}$	$I_F = 150\text{ A}$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125) °C}$		2,2 (1,95)	2,7	V
V_{TO}	$T_j = 25\text{ (125) °C}$		– (1,3)	1,5	V
r_T	$T_j = 25\text{ (125) °C}$		– (9)	(13)	mΩ
I_{RRM}	$I_F = 150\text{ A}$; $T_j = 125\text{ °C}$		55		A
Q_{rr}	$V_{GE} = 0\text{ V}$		19		μC
E_{rr}	$R_{Gon} = R_{Goff} = 5\text{ Ω}$				mJ
Freewheeling Diode of GAL/GAR type					
$V_F = V_{EC}$	$I_F = 400\text{ A}$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125) °C}$		1,8 (1,9)	2,2	V
V_{TO}	$T_j = 25\text{ (125) °C}$		1,14(0,95)	1,2	V
r_T	$T_j = 25\text{ (125) °C}$		– (1,7)	(4,0)	mΩ
I_{RRM}	$I_F = 400\text{ A}$; $T_j = 125\text{ °C}$		390		A
Q_{rr}	$V_{GE} = 0\text{ V}$		85		μC
E_{rr}	$R_{Gon} = R_{Goff} = 5\text{ Ω}$		32		mJ
Thermal Characteristics					
R_{thjc}	per IGBT		0,065		K/W
R_{thjc}	per FWD		0,125		K/W
R_{thjc}	per Inverse Diode		0,25		K/W
R_{thch}	per module		0,038		K/W
Mechanical Data					
M_1	to heatsink (M6)	3	5		Nm
M_2	for terminals (M5)	2,5	5		Nm
w			325		g

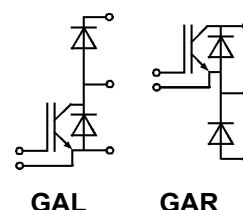
SEMITRANS™ M Trench IGBT Module

SKM 600 GAL 126 DT SKM 600 GAR 126 DT

Preliminary Data



SEMITRANS 3



Features

- NPT-IGBT with positive temperature coefficient of V_{CESat}
- Short circuit, self limiting to $6 \times I_C$
- Corresponds to standards IEC 60721-3-3 (humidity) class 3KH/IE32 and IEC 68T.1 (climate) 40/125/56

Typical Applications

- Wind generators
- Inverter drives
- UPS

$$I_{DC} \leq 500\text{ A for } T_{Terminal} = 100\text{ °C}$$

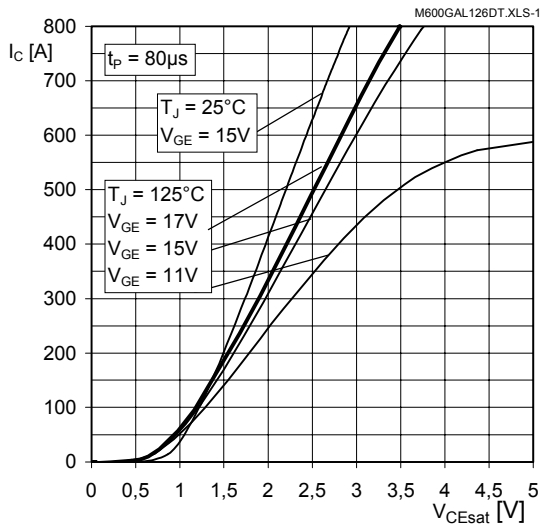


Fig. 1 Typ. output characteristic, inclusive $R_{CC} + EE'$

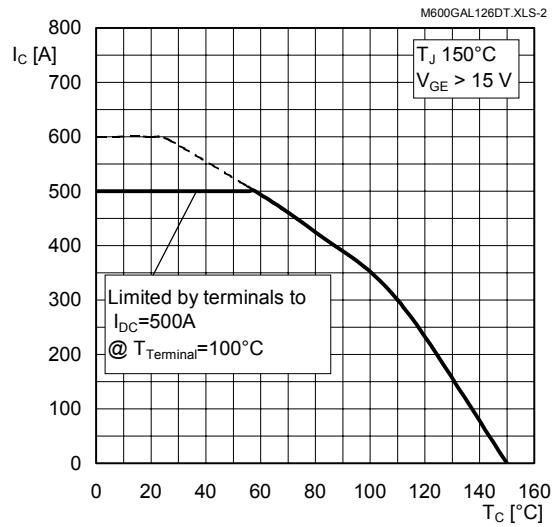


Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

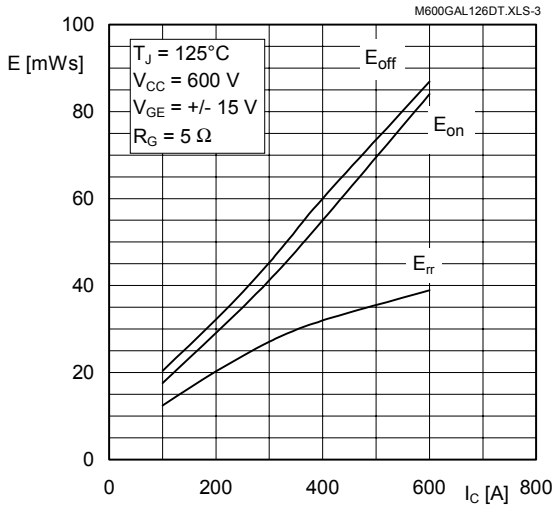


Fig. 3 Typ. turn-on /-off energy = $f(I_C)$

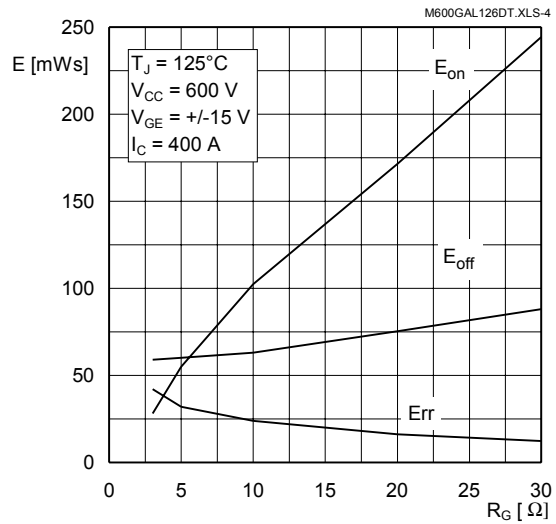


Fig. 4 Typ. turn-on /-off energy = $f(R_G)$

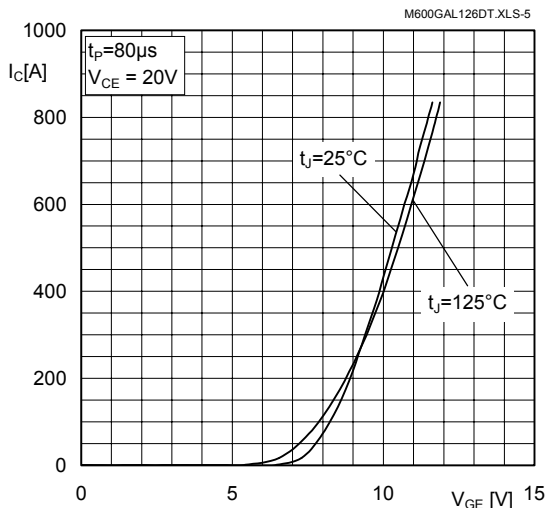


Fig. 5 Typ. transfer characteristic

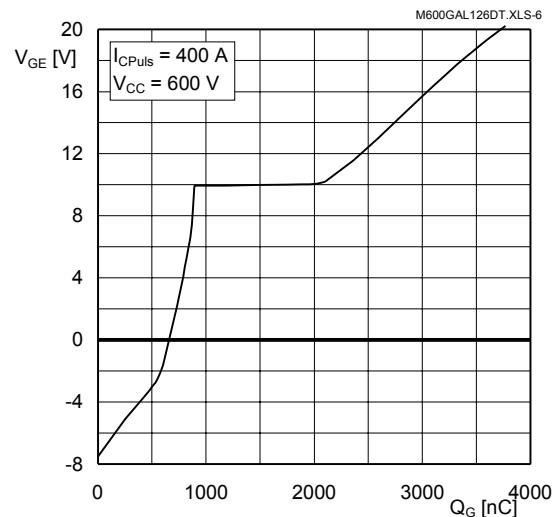
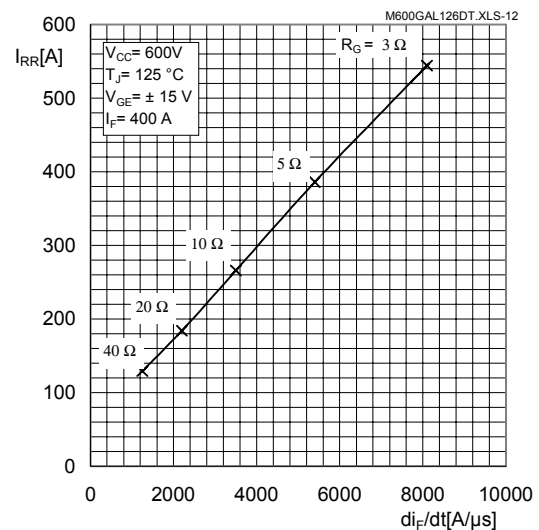
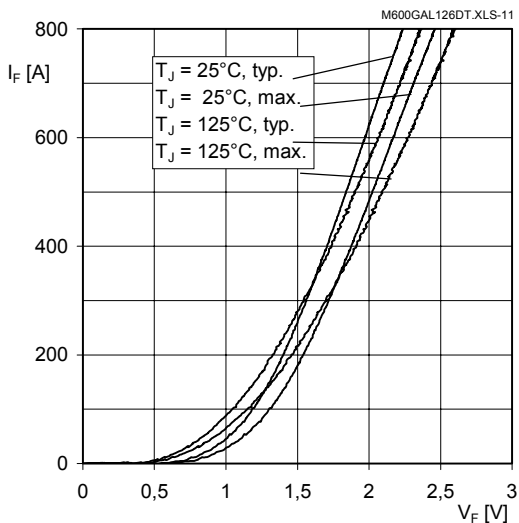
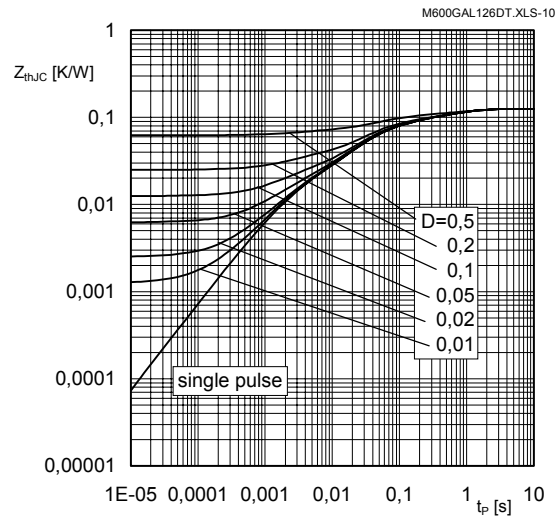
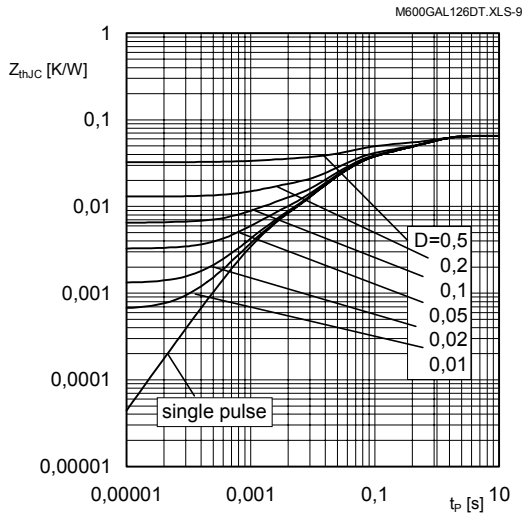
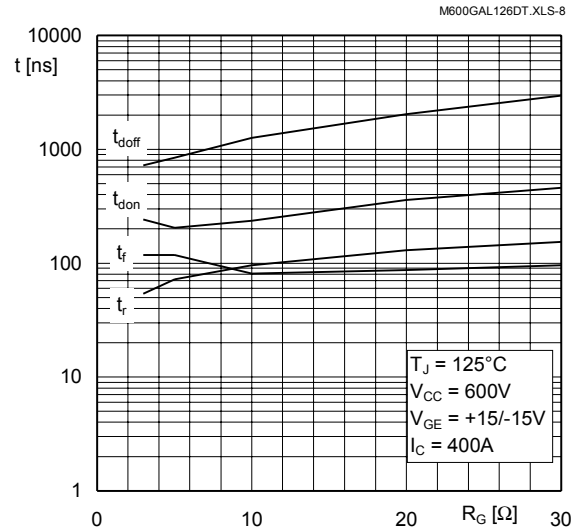
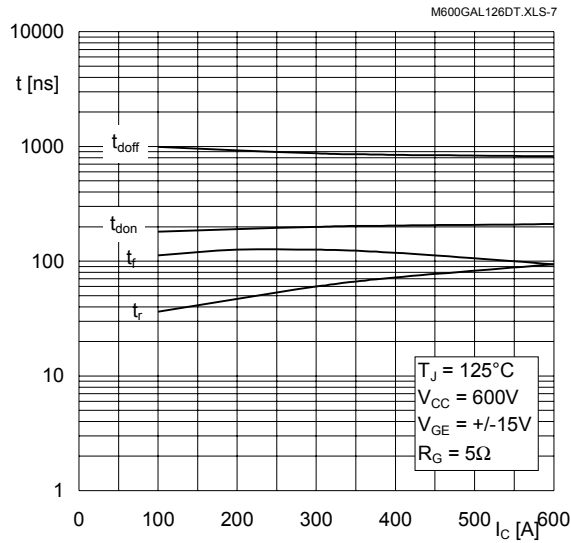
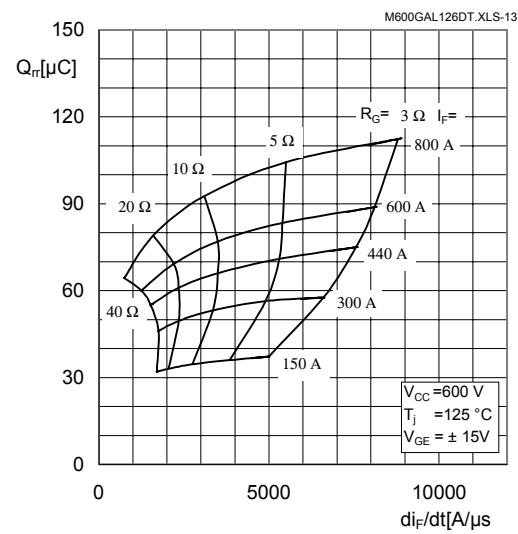


Fig. 6 Typ. gate charge characteristic





This is an electrostatic discharge sensitive device (ESDS).

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

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

Temperatur Sensor			
R _{TS}	T = 25 / 100 °C	1000/1670	Ω

Fig. 13 Typ. CAL diode recovered charge

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

SKM 600 GAL 126 DT
Case D 57 (→ D 56)

SKM 600 GAR 126 DT
Case D 58 (→ D 56)

Dimensions in mm

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.