

SKM 600GA126D



SEMITRANS® 4

Trench IGBT Modules

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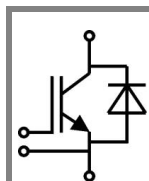
Preliminary Data

Features

- Trench = Trenchgate 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



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Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	1200	V	
I_C	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	660	A
		$T_c = 80^\circ\text{C}$	460	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	800	A	
V_{GES}		± 20	V	
t_{psc}	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10	μs	
Inverse Diode				
I_F	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	490	A
		$T_c = 80^\circ\text{C}$	340	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	800	A	
I_{FSM}	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 150^\circ\text{C}$	2900	A
Module				
$I_{t(RMS)}$		500	A	
T_{vj}		-40 ... +150	$^\circ\text{C}$	
T_{stg}		-40 ... +125	$^\circ\text{C}$	
V_{isol}	AC, 1 min.	4000	V	

Characteristics		$T_{case} = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 16\text{ mA}$	5	5,8	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25^\circ\text{C}$	0,2	0,6	mA
		$T_j = 125^\circ\text{C}$			mA
V_{CE0}		$T_j = 25^\circ\text{C}$	1	1,2	V
		$T_j = 125^\circ\text{C}$	0,9	1,1	V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	1,8	2,4	$\text{m}\Omega$
		$T_j = 125^\circ\text{C}$	2,8	3,4	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 400\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,7	2,15	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	2	2,45	V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	29		nF
C_{oes}			1,5		nF
C_{res}			1,3		nF
Q_G	$V_{GE} = -8\text{ V} - +20\text{ V}$		3600		nC
R_{Gint}	$T_j = ^\circ\text{C}$		1,88		Ω
$t_{d(on)}$	$R_{Gon} = 2\ \Omega$	$V_{CC} = 600\text{ V}$ $I_C = 400\text{ A}$	330		ns
t_r			65		ns
E_{on}			39		mJ
$t_{d(off)}$	$R_{Goff} = 2\ \Omega$	$T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	630		ns
t_f			130		ns
E_{off}			64		mJ
$R_{th(j-c)}$	per IGBT			0,055	K/W

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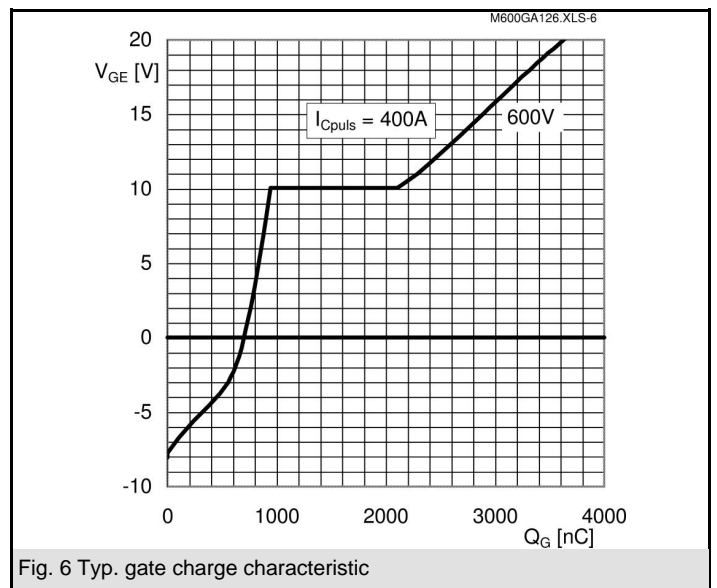
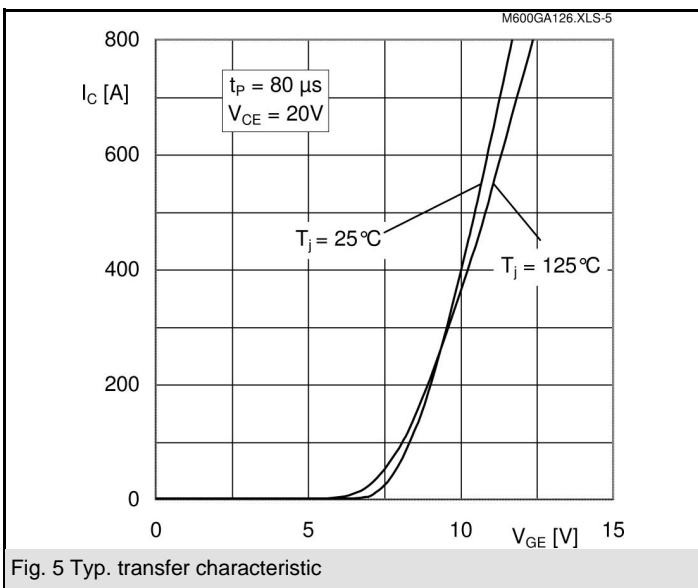
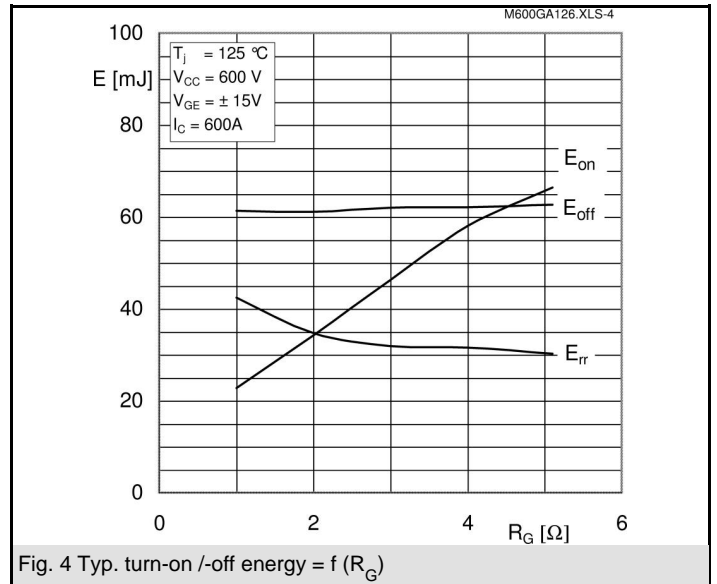
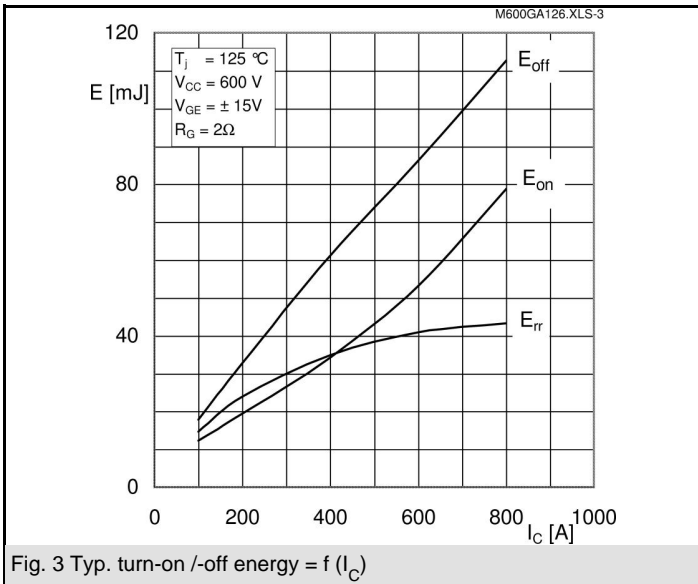
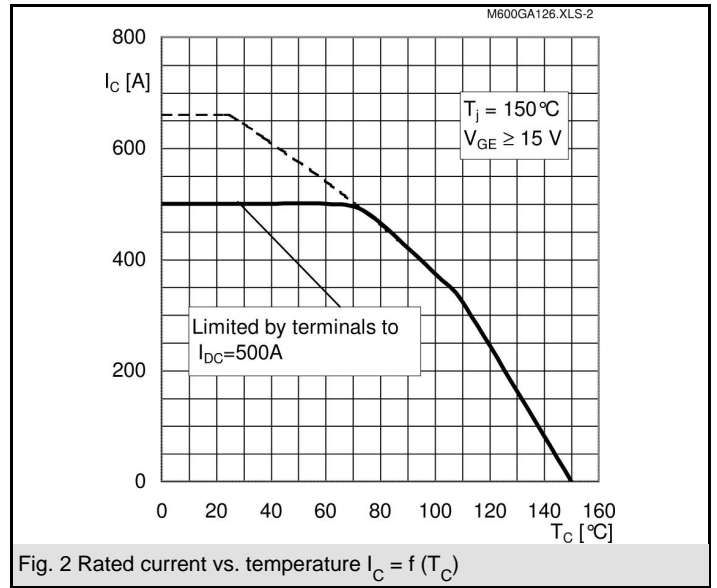
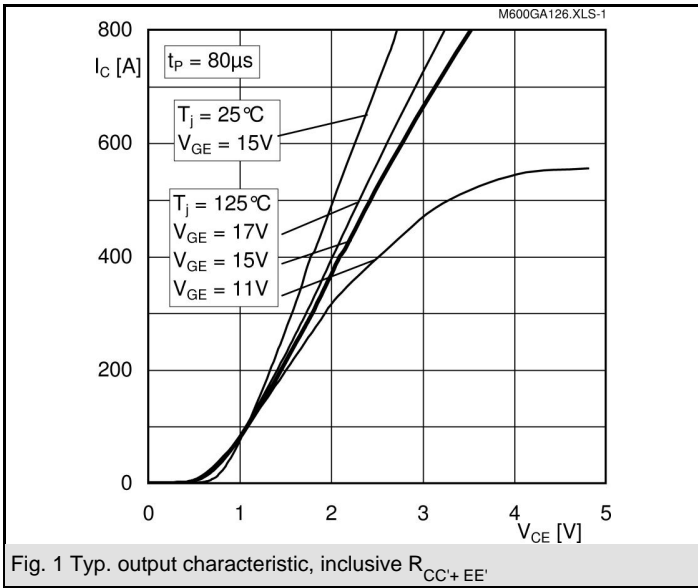


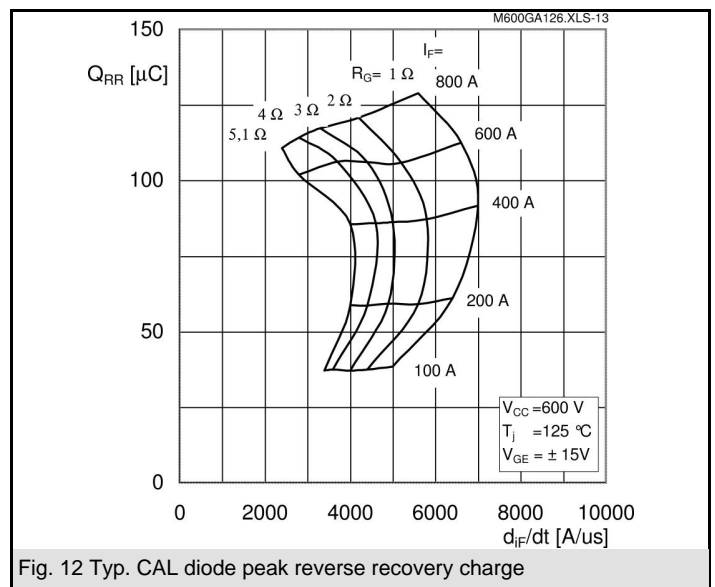
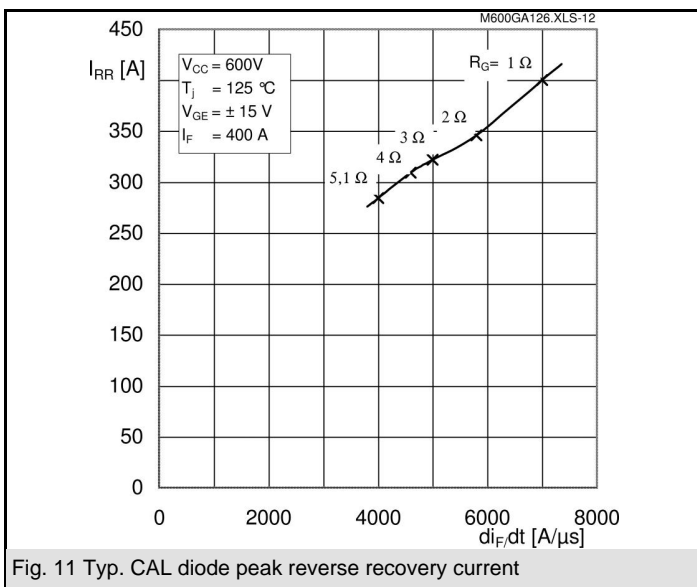
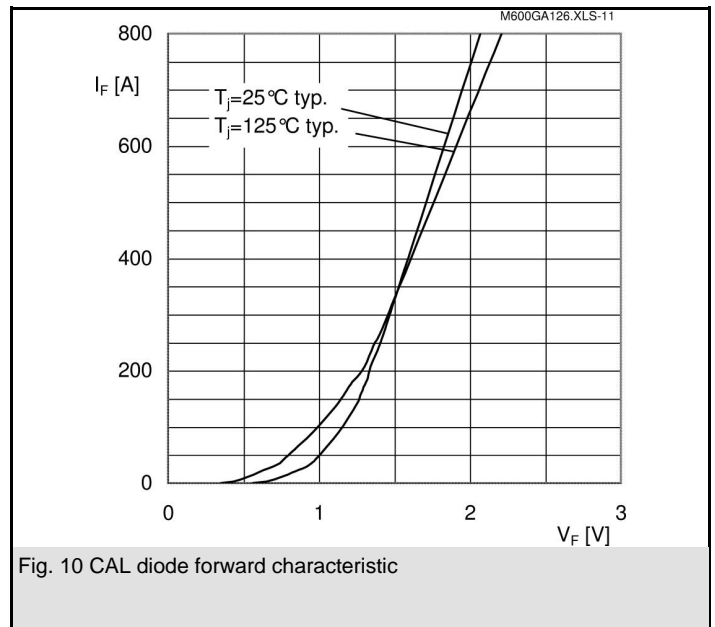
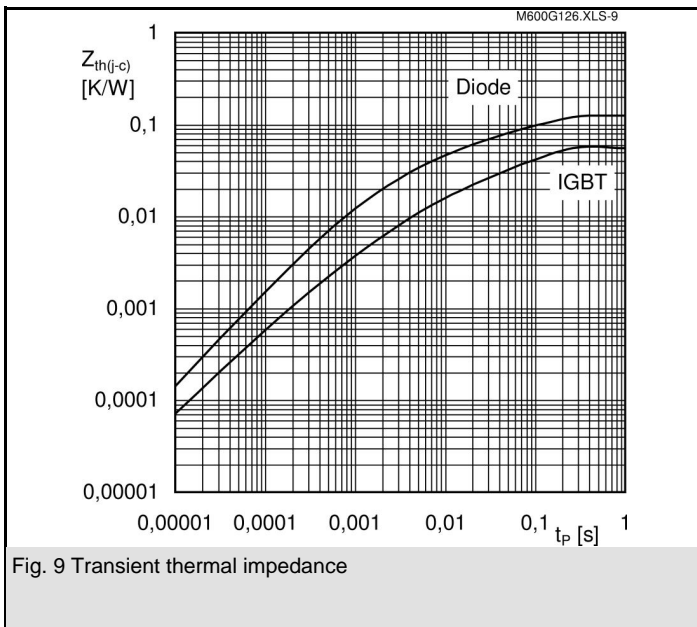
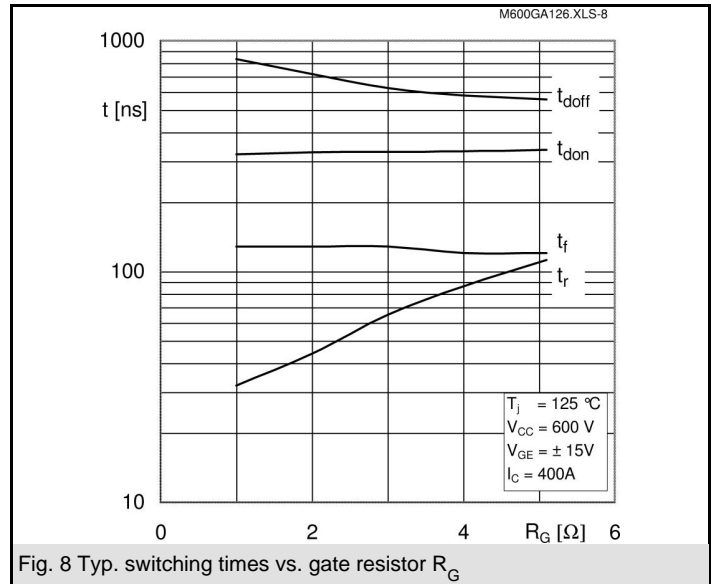
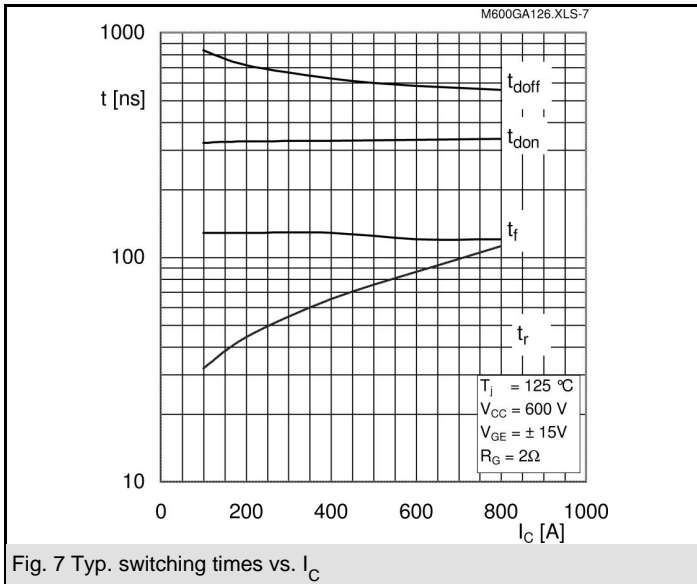
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Characteristics				min.	typ.	max.	Units
Symbol	Conditions						
Inverse diode							
$V_F = V_{EC}$	$I_{Fnom} = 400 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$		1,6	1,8		V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$		1,6	1,8		V
V_{F0}		$T_j = 25 \text{ }^\circ\text{C}$		1	1,1		V
		$T_j = 125 \text{ }^\circ\text{C}$		0,8	0,9		V
r_F		$T_j = 25 \text{ }^\circ\text{C}$		1,5	1,8		mΩ
		$T_j = 125 \text{ }^\circ\text{C}$		2	2,3		mΩ
I_{RRM}	$I_F = 400 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$		350			A
Q_{rr}	$di/dt = 5800 \text{ A}/\mu\text{s}$			87			μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$						mJ
$R_{th(j-c)D}$	per diode				0,125		K/W
Module							
L_{CE}				15	20		nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ }^\circ\text{C}$		0,18			mΩ
		$T_{case} = 125 \text{ }^\circ\text{C}$		0,22			mΩ
$R_{th(c-s)}$	per module				0,038		K/W
M_s	to heat sink M6			3	5		Nm
M_t	to terminals M6 (M4)			2,5 (1,1)	5 (2)		Nm
w					330		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.



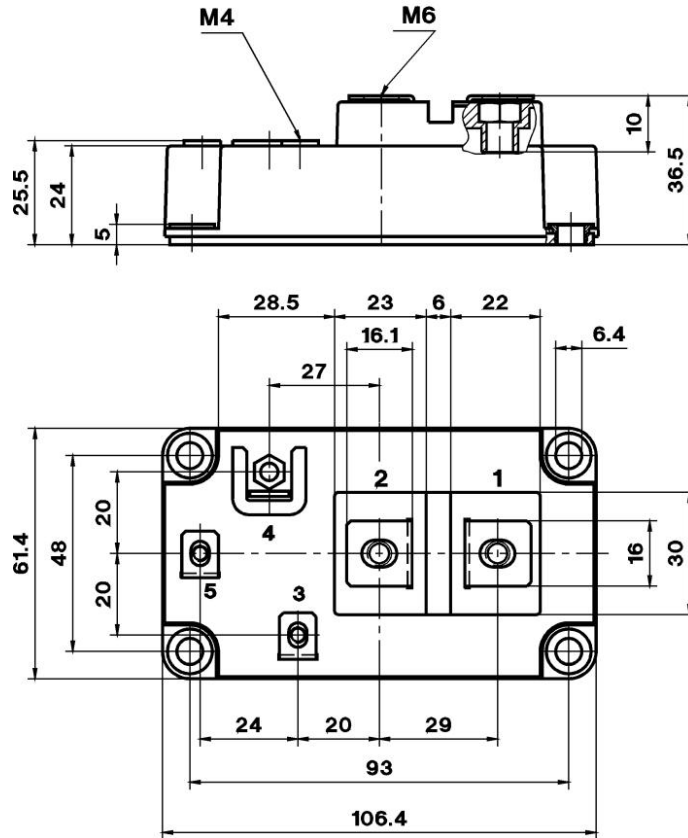


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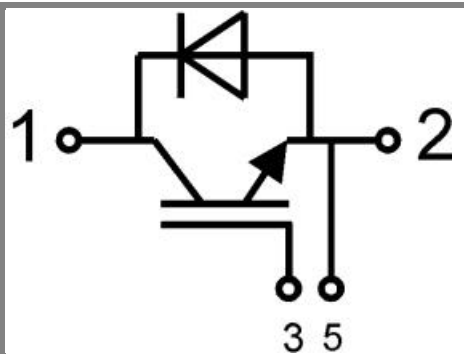
UL Recognized

CASED59

File no. 63532



Case D 59



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Case D59